Chehalis Basin Partnership

2003 Chehalis Basin Water Quantity Evaluation

October 2003

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2003 CHEHALIS BASIN
WATER QUANTITY EVALUATION

OCTOBER 2003

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CHAPTER 1.
INTRODUCTION

PROJECT SCOPE

This report documents the results of a water quantity evaluation of the Chehalis River Basin conducted by Tetra Tech/KCM and Triangle Associates on behalf of the Chehalis Basin Partnership. This study was done to support the Partnership in developing a watershed management plan for the Chehalis Basin under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan." Under the 2514 planning process, the Partnership elected to address four elements: water quantity, water quality, habitat, and in-stream flow.

This report addresses the magnitude and distribution of consumptive water use in the basin. Water use information represents the most significant data gap identified in previous Chehalis Basin studies. Data compiled to date indicate that water allocations in the basin exceed the actual stream flow in the river between April and October. However, since the river still flows during these months, actual consumption is clearly less than the amount legally allocated. An understanding of allocated water rights and actual consumptive use, and the difference between the two, is critical in developing the watershed management plan. Since the current state of knowledge suggests that water in the basin is over-appropriated, it leaves little opportunity for developing new management strategies.

The distribution of the allocated and actual uses throughout the watershed is also important to understand. If a city is looking for a new water supply, its search pertains to a specific geographic area. Likewise, the Department of Ecology evaluates water supply requests on a site-specific basis. For this reason, it is necessary to better understand the "drain" on the river system from consumptive uses for fairly small geographic regions. This evaluation must be done at the subbasin (or smaller) scale.

This study consisted of two major tasks:

- Prepare a rough-cut basin-wide water balance to provide a better understanding of water budget issues in the basin.
- Conduct a pilot water quantity evaluation for the group of Chehalis subbasins identified as "Priority Group 1:"
  - Subbasin 5, South Fork Newaukum River
  - Subbasin 6, North Fork Newaukum River
  - Subbasin 7, Newaukum River
  - Subbasin 8, Salzer Creek
  - Subbasin 9, Skookumchuck River
  - Subbasin 10, Middle Chehalis River #1

The Steering/Technical Committee of the Chehalis Basin Partnership selected this group of six subbasins through a prioritization exercise that evaluated relative risks to various aspects of watershed function: (1) risk to fish; (2) risk to humans (that is, not having enough water to supply growing human populations); (3) meeting regulatory minimum flow levels; (4) extent of "protected" land (not available for conversion to a higher impact land use); (5) existing land use; and (6) growth pressure.

The pilot study involved geographic location of water rights in the targeted subbasins to the extent practicable, review of selected large water rights, estimate of water usage, estimate of exempt wells, and analysis of water balance issues.

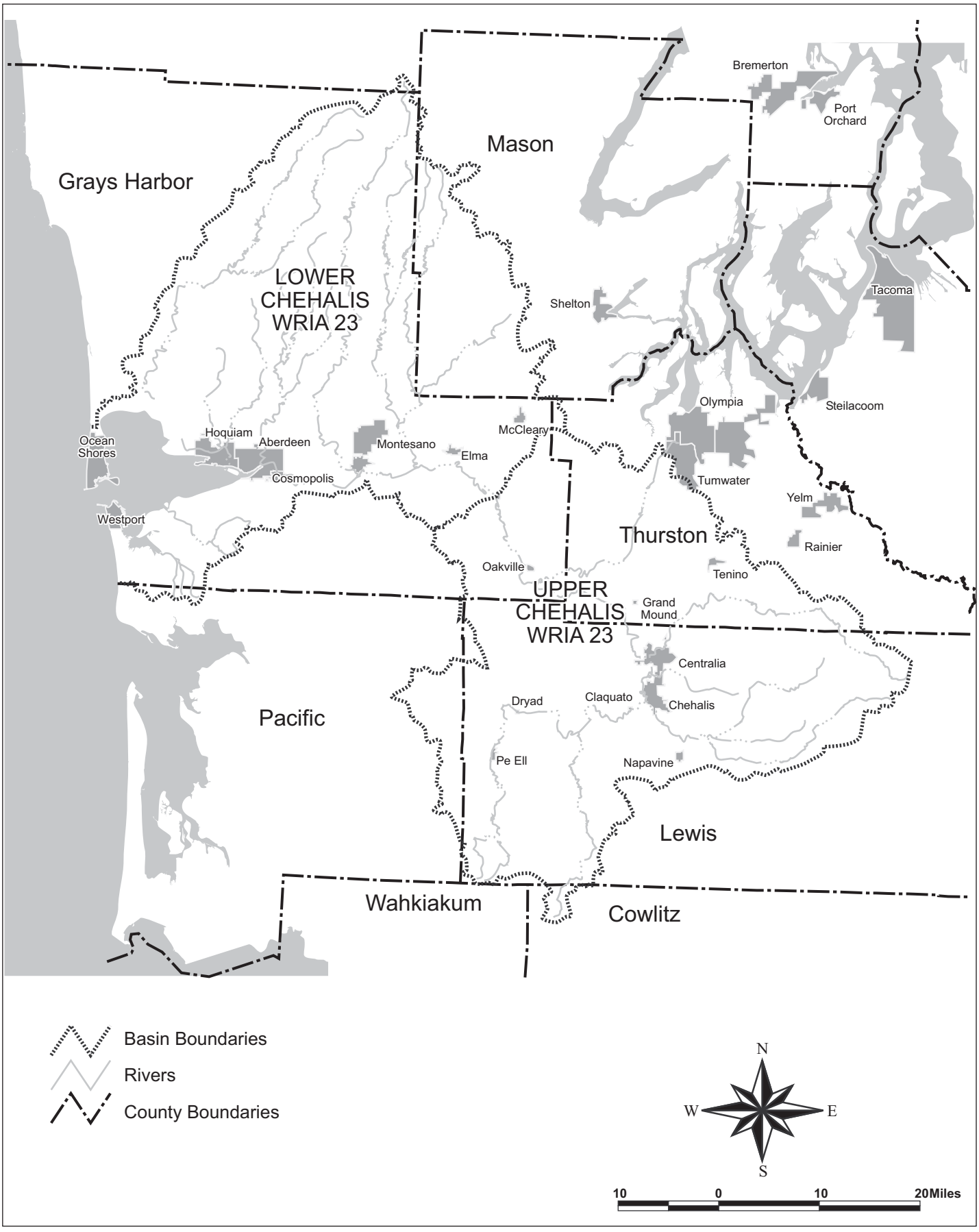
BASIN DESCRIPTION

The Chehalis Basin consists of the Lower Chehalis Basin, also known as Water Resource Inventory Area (WRIA) 22, and the Upper Chehalis Basin, or WRIA 23. The Chehalis Basin includes 31 subbasins and covers significant portions of Lewis, Grays Harbor, and Thurston Counties and smaller areas in Pacific, Jefferson, Cowlitz, and Wahkiakum Counties. Figure 1-1 shows the basin boundaries. The Chehalis Basin is the second largest basin in Washington, encompassing approximately 2,600 square miles. The 31 subbasins are listed in Table 1-1 and shown in Figure 1-2. Subbasins 1 through 21, and 30 drain to the Chehalis River. Subbasins 22 through 29 and 31 drain directly into Grays Harbor and the Pacific Ocean.

The terrain and topography of the Chehalis Basin vary from coastal lowlands to forested valley floors and hills to the southern flanks of the Olympic mountain range and western edge of the Cascades. According to the *Level 1 Assessment* of the basin (Envirovision, 2000) annual rainfall in the Chehalis Basin varies from 51 inches in the Middle Chehalis River #1 subbasin (Subbasin 10) to over 127 inches in the Humptulips River subbasin (Subbasin 25).

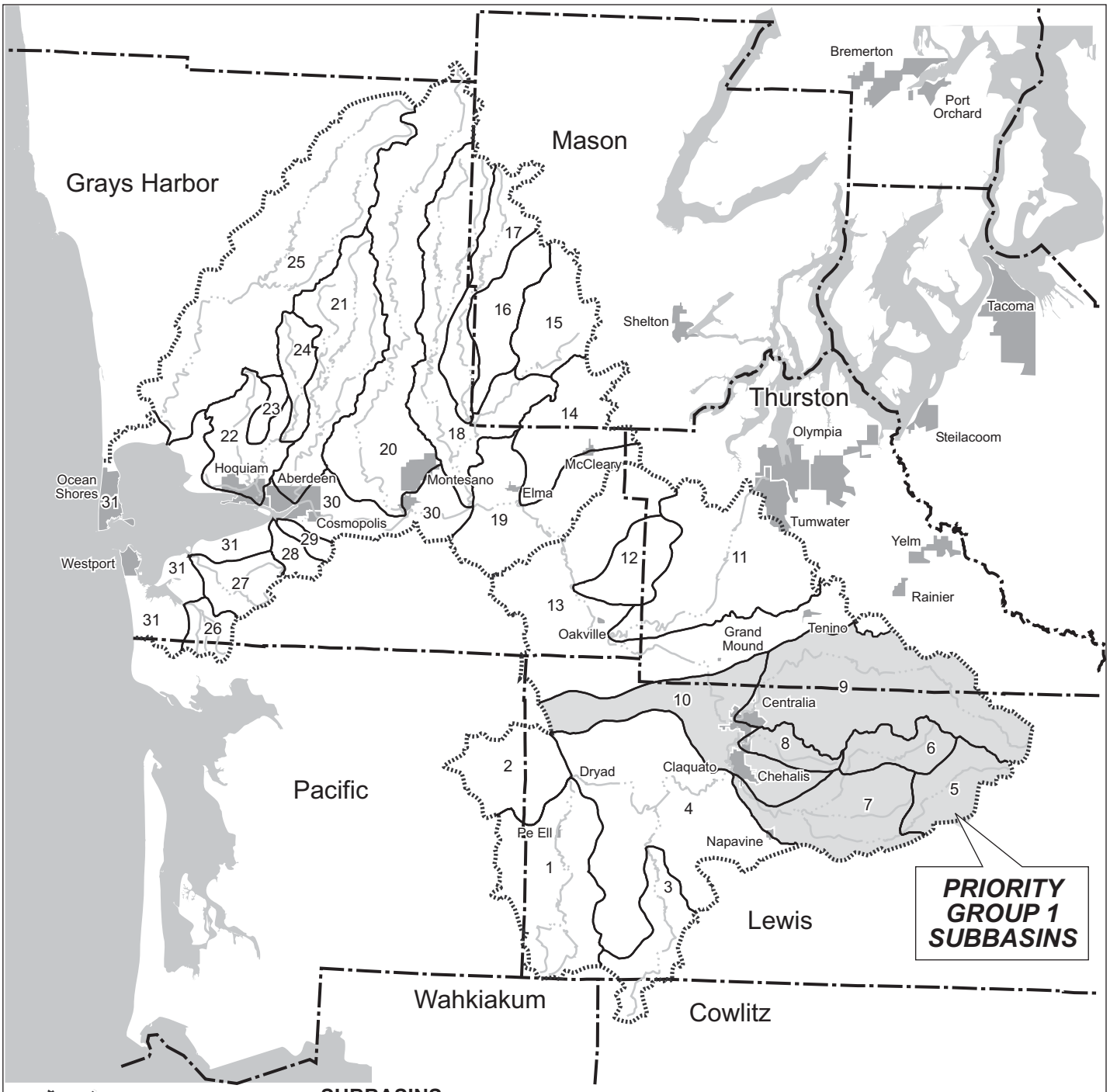
No stream flow records are available for the lowermost reaches of the Chehalis River. Based on data from 1957 to 1972 and 1976 to 1998, the estimated 50-percent exceedance flow of the Chehalis River at Montesano ranged from about 900 cubic feet per second (cfs) in September to 13,400 cfs in January. The 50-percent exceedance flow is the flow that, statistically, is exceeded 50 percent of the time. These flow figures include depletions from water usage in the basin and returns from unconsumed or treated water, and, therefore, do not represent the natural flow of the river. Unadjusted flows measured over the same period at Porter, which represents the flow from the upper Chehalis Basin, ranged from less than 500 cfs in August to over 9,000 cfs in January.

Land use information from the U.S. Geological Survey (USGS) shows that the basin is largely rural, with large areas still forested (90 percent), dispersed areas of agriculture (6 percent), and concentrations of urban/residential development (3 percent). Table 1-2 gives the land use breakdown by subbasin for the major categories of forest, agriculture, urban/residential, water/wetland, and bare. Due to spatial delineations, the USGS land use data have a small variance (less than 0.5 percent) in total basin area from the area given in Table 1-1 (2,597 square miles instead of 2,605 square miles). This variance is negligible for the purposes of this study.



2140067/1-1BasinBoundaries.fh10

Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 1-1. CHEHALIS RIVER BASIN



Basin Boundaries
Subbasin Boudaries
Rivers
County Boundaries

N W E S

10 0 10 20Miles

SUBBASINS

1. Chehalis River Headwaters
2. Elk Creek
3. South Fork Chehalis River
4. Upper Chehalis River
5. South Fork Newaukum River
6. North Fork Newaukum River
7. Newaukum River
8. Salzer Creek
9. Skookumchuck River
10. Middle Chehalis River #1
11. Black River
12. Cedar Creek
13. Middle Chehalis River #2
14. Collquallum Creek
15. East Fork Satsop River
16. Decker Creek
17. Middle Fork Satsop River
18. Satsop River
19. Lower Chehalis River #1
20. Wynoochee River
21. Wishkah River
22. Hoquiam River
23. Middle Fork Hoquiam River
24. East Fork Hoquiam River
25. Humptulips River
26. Elk River
27. Johns River
28. Newskah Creek
29. Charley Creek
30. Lower Chehalis River #2
31. Grays Harbor

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Chehalis Basin Partnership
2003 CHEHALIS BASIN
WATER QUANTITY EVALUATION

Figure 1-2.
CHEHALIS RIVER BASIN
SUBBASINS

TABLE 1-1.
CHEHALIS BASIN SUBBASIN AREA

Subbasin Number	Subbasin Name	Area	
		Acres	Sq. mi.
WRIA 23 - Upper Chehalis			
1	Chehalis River Headwaters	73,988	116
2	Elk Creek	38,714	60
3	South Fork Chehalis River	31,755	50
4	Upper Chehalis River	134,742	211
5[a]	South Fork Newaukum River	26,803	42
6[a]	North Fork Newaukum River	20,611	32
7[a]	Newaukum River	52,307	82
8[a]	Salzer Creek	12,459	19
9[a]	Skookumchuck River	113,319	177
10[a]	Middle Chehalis River #1	65,339	102
11	Black River	87,713	137
12	Cedar Creek	25,146	39
13	Middle Chehalis River #2	144,619	226
	Subtotal	**827,515**	**1,293**
WRIA 22 - Lower Chehalis			
14	Cloquallum Creek	45,013	70
15	East Fork Satsop River	36,202	57
16	Decker Creek	30,907	48
17	Middle Fork Satsop River	36,660	57
18	Satsop River	87,753	137
19	Lower Chehalis River #1	60,366	94
20	Wynoochee River	126,408	198
21	Wishkah River	66,641	104
22	Hoquiam River	33,551	52
23	Middle Fork Hoquiam River	6,705	10
24	East Fork Hoquiam River	16,866	26
25	Humptulips River	156,384	244
26	Elk River	11,227	18
27	Johns River	19,459	30
28	Newskah Creek	7,845	12
29	Charley Creek	4,806	8
30	Lower Chehalis River #2	38,124	60
31	Grays Harbor	55,697	87
	Subtotal	**840,614**	**1,312**
	Total	**1,668,129**	**2,605**

a. Priority Group 1 Subbasin

TABLE 1-2.
LAND USE/LAND COVER BY SUBBASIN

Subbasin		Portion of Total Area by Land Use/Land Cover				
		Forest	Agriculture/ Field	Urban	Water	Bare
WRIA 23 - Upper Chehalis						
1	Chehalis River Headwaters	96%	3%	1%	0%	0%
2	Elk Creek	99%	1%	0%	0%	0%
3	South Fork Chehalis River	90%	10%	0%	0%	0%
4	Upper Chehalis River	82%	17%	1%	0%	0%
5	South Fork Newaukum River	93%	7%	0%	0%	0%
6	North Fork Newaukum River	95%	5%	0%	0%	0%
7	Newaukum River	70%	28%	2%	0%	0%
8	Salzer Creek	84%	13%	3%	0%	0%
9	Skookumchuck River	88%	8%	2%	0%	2%
10	Middle Chehalis River #1	69%	21%	10%	0%	0%
11	Black River	76%	20%	3%	1%	0%
12	Cedar Creek	96%	2%	2%	0%	0%
13	Middle Chehalis River #2	78%	16%	6%	0%	0%
	WRIA-wide Average[1]	**83%**	**13%**	**3%**	**<1%**	**<1%**
WRIA 22 - Lower Chehalis						
14	Cloquallum Creek	92%	4%	4%	0%	0%
15	East Fork Satsop River	98%	0%	1%	1%	0%
16	Decker Creek	96%	4%	0%	0%	0%
17	Middle Fork Satsop River	100%	0%	0%	0%	0%
18	Satsop River	95%	3%	2%	0%	0%
19	Lower Chehalis River #1	79%	6%	15%	0%	0%
20	Wynoochee River	96%	3%	0%	1%	0%
21	Wishkah River	96%	2%	2%	0%	0%
22	Hoquiam River	95%	0%	5%	0%	0%
23	Middle Fork Hoquiam River	100%	0%	0%	0%	0%
24	East Fork Hoquiam River	98%	1%	1%	0%	0%
25	Humptulips River	98%	2%	0%	0%	0%
26	Elk River	99%	1%	0%	0%	0%
27	Johns River	98%	2%	0%	0%	0%
28	Newskah Creek	98%	2%	0%	0%	0%
29	Charley Creek	95%	5%	0%	0%	0%
30	Lower Chehalis River #2	66%	6%	25%	3%	0%
31	Grays Harbor	75%	9%	12%	3%	1%
	WRIA-wide Average[1]	92%	3%	4%	<1%	<1%
	Basinwide Average[1]	88%	8%	3%	<1%	<1%

1 Basin averages are area weighted percentages.

Forested areas in the basin are primarily corporate-owned; the remainder are government-owned, including the Capitol State Forest and portions of Mt. Baker-Snoqualmie National Forest and Olympic National Forest.

Agricultural activities include commercial dairy, livestock and crop farming operations in the low-lying valleys adjacent to the Chehalis River and its major tributaries. Principal crops include pasture, hay, and silage, with some vegetables and small grains, berries, and tree farms. There are several private aquaculture facilities in the Grand Mound/Rochester area.

Most industrial development is located in the Chehalis/Centralia and Aberdeen/Hoquiam areas. There is a coal mine/power plant site south of Bucoda, and isolated industrial facilities are located throughout the basin. The principal industrial use of water is in the manufacturing of wood, pulp and paper products.

Estimated total population in the Chehalis Basin in 2000, excluding the outer Grays Harbor area, was 141,230 (2000 US Census, spatial estimate). Major population centers were Chehalis (7,057), and Centralia (14,741) in the upper basin, and Aberdeen (16,461) and Hoquiam (9,097) at the mouth of the Chehalis. Portions of Thurston County along the I-5 corridor and around Black Lake are undergoing urban growth. The Chehalis Indian Reservation is located near the mouth of the Black River.

DATA SOURCES

This study used data from the following sources:

- The Level 1 Assessment report text and appendices by the Chehalis Basin Partnership
- Geographic information system (GIS) data:
  - Level 1 geographic datasets
  - GeoData Viewer Data (developed by the Chehalis Basin Partnership)
  - 2000 Census data from the State Department of Health and the Office of Financial Management
  - GIS data from Grays Harbor, Lewis, and Thurston Counties
  - Precipitation data from the PRISM project at Oregon State University
  - U.S. Environmental Protection Agency (EPA) GIS water rights data
- Research and issue papers on various topics, including internet sources
- Department of Ecology water rights files and data
- Water use data and notes from EPA, the Washington Department of Fish and Wildlife, and the U.S. Department of Agriculture
- Other sources as available.

PRODUCTS

The primary products of the water quantity evaluation are the findings presented in this report and GIS datasets that were compiled. New GIS data were compiled for use in the State Plan NAD 27 reference frame. Several GIS datasets were compiled into an ArcView project for use by the Chehalis Basin Partnership, which is included in Appendix A on the ArcView Project CD-ROM.

CHAPTER 2.
WATER BALANCE

A basinwide water balance was conducted to provide a better understanding of how water is distributed throughout the watershed. The water balance was based on the fundamental water balance equation:

Precipitation = Runoff + Evapotranspiration + Water Use + Change in Groundwater Storage

Figure 2-1 is a schematic of the water balance components. Estimates of each component except change in groundwater storage were made based on historical data. The change in groundwater storage was then estimated using the water balance equation. References in this chapter to the "water balance study area" indicate an area consisting of Subbasins 1 through 21 and 30. Subbasins 22 through 29 and 31 were excluded from the water balance because they drain directly into Grays Harbor and do not contribute flow to the Chehalis River.

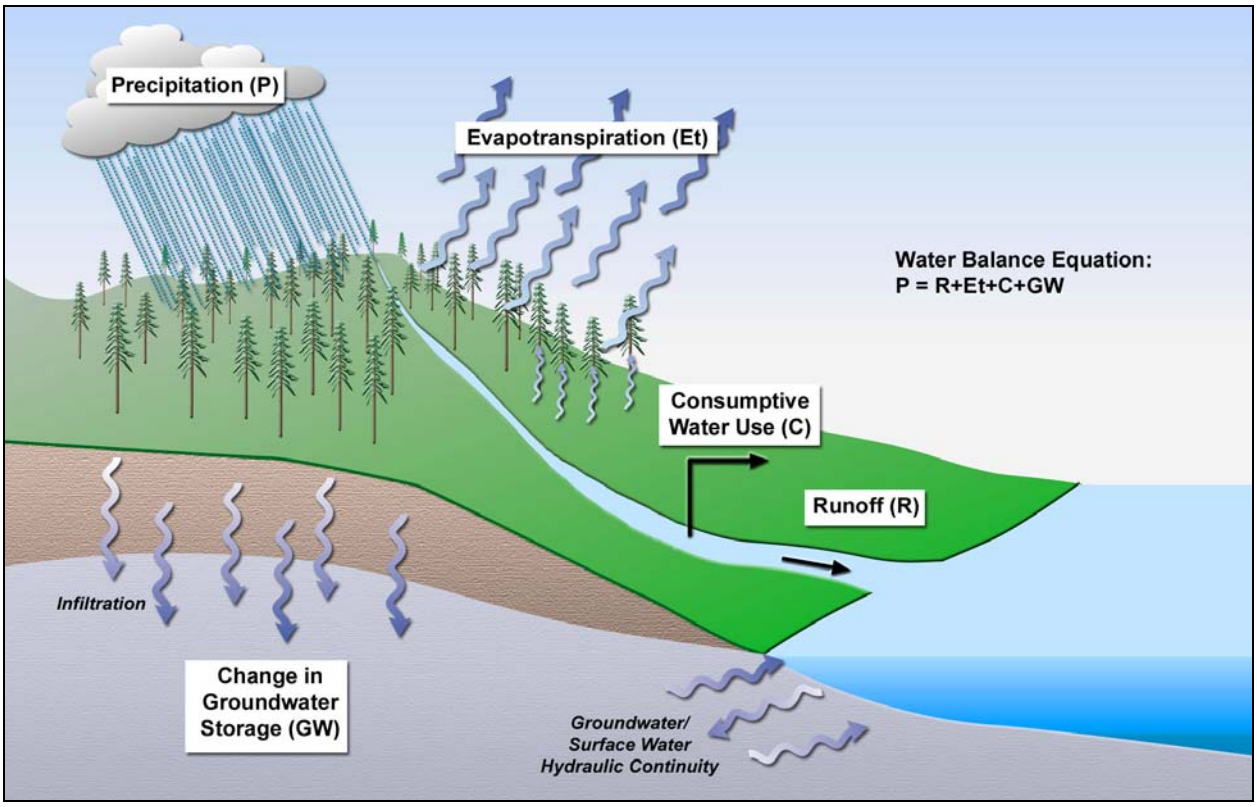


Figure 2-1. Components of the Water Balance Equation

PRECIPITATION

Estimates of total annual precipitation were taken from two sources. The Level 1 Assessment report provided average rainfall by subbasin, with a total of 8.2 million acre-feet per year. The period of record for the rainfall data was not given, but it is assumed to be that of the weather stations in Table A-3 in Appendix A of the Level 1 Assessment report. For the five weather stations selected as providing a representative geographic coverage of the Chehalis Basin (Aberdeen, Aberdeen 20 NNE, Elma, Centralia, and Olympia WSO AP), the periods of record ranged from 1931 to 2001. Only records through 1995 were available for the Level 1 Assessment report, however. A number of other stations had shorter periods of record. The second source of precipitation information, the Oregon Climate Service (OCS) at Oregon State University, provided a total annual rainfall estimate of 9.0 million acre-feet. The OCS rainfall contours were developed using weather data for the period 1961-1990. Tables 2-1 and 2-2 compare the rainfall depth and total volume from the two sources, respectively.

Table 2-3 summarizes the climate oscillation cycles between wet and dry periods listed in the Level 1 Assessment report. The Level 1 weather stations collectively tended to have slightly more dry period observations than wet. The OCS data tended to cover slightly more wet period observations than dry. The differences in observation periods may explain the lower precipitation estimate using the Level 1 subbasin averages.

Snow data were available at the weather station level but were not used in the calculations. Little or no snow accumulation was recorded at the weather stations in the Chehalis Basin. For the purposes of this study, snow as a form of water storage was considered negligible and therefore not included. In a more comprehensive analysis of water balance, snow should be included.

RUNOFF

Comparisons between precipitation and surface runoff can be complicated by the delay between a rainfall event and the time that runoff actually discharges to a river or stream. In a large forested watershed, about 50 percent of the runoff is detained and discharges about one month after the rainfall event (Dunn and Leopold, 1978). In the Chehalis Basin, the timing between rainfall and runoff is further complicated by the presence of numerous dams that regulate flow. For this analysis, runoff was estimated as river flow at the mouth of the Chehalis River. The estimated flow at Montesano was used to represent runoff for the upstream Subbasins 1 through 20; the 50-percent exceedance flow was used to represent normal flow. Runoff from Subbasins 21 and 30, which are downstream of Montesano, was estimated by multiplying their total area by the unit runoff for the basin (the average runoff per area), then added to the flow at Montesano. Table 2-4 shows the resulting normal stream flows as well as the low flows (90 percent exceedance flow).

TABLE 2-1.
ANNUAL RAINFALL BY SUBBASIN

Subbasin Number	Subbasin Name	Average Annual Rainfall (inches) Level 1 Data	OCS Data
WRIA 23 - Upper Chehalis			
1	Chehalis River Headwaters	89	90
2	Elk Creek	73	85
3	South Fork Chehalis River	74	74
4	Upper Chehalis River	56	60
5	South Fork Newaukum River	63	64
6	North Fork Newaukum River	57	59
7	Newaukum River	45	51
8	Salzer Creek	42	48
9	Skookumchuck River	53	55
10	Middle Chehalis River #1	45	53
11	Black River	48	56
12	Cedar Creek	54	68
13	Middle Chehalis River #2	51	65
WRIA 22 - Lower Chehalis			
14	Cloquallum Creek	68	78
15	East Fork Satsop River	98	94
16	Decker Creek	106	106
17	Middle Fork Satsop River	114	121
18	Satsop River	102	122
19	Lower Chehalis River #1	59	74
20	Wynoochee River	123	126
21	Wishkah River	106	107
22	Hoquiam River	82	83
23	Middle Fork Hoquiam River	94	86
24	East Fork Hoquiam River	104	97
25	Humptulips River	127	118
26	Elk River	71	86
27	Johns River	75	85
28	Newskah Creek	88	89
29	Charley Creek	87	87
30	Lower Chehalis River #2	75	80
31	Grays Harbor	Not available	79
	Average[a]	**73**	**80**

a. Average excludes subbasins draining directly to Grays Harbor (Subbasins 22, 23, 24, 25, 26, 27, 28, 29, 31).

TABLE 2-2.
AVERAGE RAINFALL BY MONTH

Month	Level 1 Data (Five Stations, 1931-95, intermittent) Rainfall (acre-feet)	Level 1 Data (Five Stations, 1931-95, intermittent) Percent of Annual Total	OCS Data 1961-90 (continuous) Rainfall (acre-feet)	OCS Data 1961-90 (continuous) Percent of Annual Total
October	760,459	9.2%	796,909	8.9%
November	1,192,513	14.5%	1,296,418	14.4%
December	1,342,277	16.3%	1,461,892	16.3%
January	1,240,782	15.0%	1,378,185	15.3%
February	994,263	12.1%	1,050,397	11.7%
March	876,176	10.6%	972,436	10.8%
April	567,812	6.9%	615,551	6.8%
May	346,505	4.2%	378,373	4.2%
June	263,111	3.2%	290,703	3.2%
July	140,067	1.7%	148,633	1.7%
August	179,286	2.2%	206,470	2.3%
September	346,290	4.2%	400,219	4.4%
Total Rain (acre-feet)	**8,249,973**		**8,996,186**	
Total Rain (inches)	**73**		**80**	
Wet/Dry Year Balance	307/332		16/14	

TABLE 2-3
PACIFIC NORTHWEST
PACIFIC DECADAL OSCILLATION CYCLES

Pacific Northwest Climate Cycles	Time Period
Cool/Wet Phase	1890-1924
Warm/Dry Phase	1925-1945
Cool/Wet Phase	1946-1976
Warm/Dry Phase	1977-1995
Cool/Wet Phase	1995 shift speculated

Source: Level 1 Assessment Report, Table A-7

TABLE 2-4.
ESTIMATED CHEHALIS FLOW AT RIVER MOUTH

Month	Flow (cfs)	
	Normal (50% Exceedance)	Low (90% Exceedance)
October	2,244	894
November	8,991	2,622
December	14,231	6,066
January	14,556	5,432
February	14,063	6,532
March	11,108	5,465
April	7,428	4,151
May	4,066	2,537
June	2,302	1,563
July	1,447	960
August	992	667
September	1,059	672
Average	**6,841**	**3,114**

Annual normal flow for the water balance study area was estimated to be 5.0 million acre-feet, approximately 60 percent of annual precipitation. Elsewhere, runoff has been found to be from 0 to 60 percent of precipitation in California; from 20 to 30 percent in the Midwest, and about 50 percent in the East (Kittredge, 1948). Stream flow is rarely equal to or greater than precipitation, but where there is substantial snow melt, sufficient fog drop, groundwater flow, or importation of water, stream flow might exceed the precipitation recorded by normal gauges.

The period of record for the Montesano flow measurements was 1957 to 1972 and 1976 to 1998, which generally reflects a drier climatic period (22 dry years, 17 wet years). For this reason, the precipitation records used for comparison in the water balance are those taken from the Level 1 Assessment report, which also had more dry years than wet years, rather than the OCS data. The Montesano flow measurement records also include years before and after construction of the Wynoochee Dam on the Wynoochee River.

EVAPOTRANSPIRATION

Evapotranspiration is water lost to evaporation or uptake by plants. Total annual evapotranspiration (Et) was estimated for this water balance using several methods. Land cover data by subbasin was obtained from the "land use/land cover" GIS data developed by the USGS and converted to the ArcInfo format by the EPA.

The Thornthwaite method was used for forested areas, which make up 86 percent of the total study area. This approach uses solar radiation, soil moisture retention depth, tree stand maturity and density, and other factors. Et rates were estimated using weather data from the five weather stations identified in the precipitation discussion above, then

averaged for the basin as a whole. Soil moisture retention depth was assumed to be from 12 to 16 inches. The estimated forest Et was 2.3 million acre-feet, or 28 percent of total annual precipitation. The Et as an annual water depth equivalent of 23.8 inches is comparable to an estimated range of 25 to 60 inches for Pacific Douglas fir (Kittredge, 1948) and to an estimated range of 15.6 to 22.5 inches using an adapted Thornthwaite method (Kolka, unpublished).

The remaining 13 percent of the water balance study area land use is about 9 percent agriculture, and 4 percent urban, with bare and water areas each covering less than 1 percent of the total. Et for these areas was estimated using the Penman reference method, which estimates Et based on the nature of ground cover (e.g., agriculture, fields, or urban areas). The Penman reference Et rates were originally developed for the WRIA 1 area (Mount Vernon, Clearbrook). The WRIA 1 temperature and precipitation patterns are similar to conditions in the WRIA 22 lowland areas, and considered appropriate for use. As a conservative simplification, the Et rate for grass (30.2 inches/year) was used for estimating Et in the non-forest areas. This rate is approximately equal to that of alfalfa and greater than that of other crop types (hay, berries, fruit tree, etc.) and it is representative of urban vegetative cover (lawn). Urban Et was calculated assuming 50 percent vegetated surface for lawn and landscaping. Bare land (beaches, quarries) is a very small proportion of the land area; it was assumed to have urban Et characteristics. Evaporation from water surfaces was based on evaporation pan data for Bellingham (estimated at 27.2 inches per year). The combined Et from these non-forested areas was estimated to be 5 percent of total precipitation, with four-fifths of that amount attributable to agriculture.

Table 2-5 lists the estimated Et by month. The annual total was estimated to be 2.7 million acre-feet per year, approximately 33 percent of total precipitation. Other available methods for estimating Et could be used as a check of the method used for this analysis or for further investigation. One method of interest is the interpretation of satellite imagery to determine radiation levels over large areas, known as the Surface Energy Balance Algorithm for Land (SEBAL), which is the topic of a joint study by the Idaho Department of Water Resources and other agencies. The method has been applied to the Snake River plain and Bear River Basin areas; it would require adaptation to work with the mountain terrain and lakes in the coastal Washington area.

WATER USE

Estimated Actual Use

Four categories of water use were estimated for this analysis: domestic, commercial, irrigation, and stock watering. Domestic water use was estimated using the 33 cfs average rate for the entire Chehalis Basin presented in the Level 1 Assessment report. Water usage was proportioned on a monthly basis to estimated Et using the rationale that more water would be consumed during the growing season for lawn watering, outdoor activity, etc. Commercial water use was obtained from 1995 USGS estimates for freshwater withdrawals and deliveries in the Chehalis Basin (USGS web site, http://wa.water.usgs.gov/wuse/main.huc8.95.txt).

TABLE 2-5.
EVAPOTRANSPIRATION BY MONTH AND LAND USE

	Estimated Evapotranspiration (acre-feet)					
Month	Forest	Agriculture	Urban	Water	Bare soil	**Total**
October	174,321	14,068	2,637	463	135	**191,624**
November	100,073	7,887	1,478	0	76	**109,514**
December	50,356	6,501	1,219	0	62	**58,138**
January	46,644	7,887	1,478	0	76	**56,085**
February	69,974	11,617	2,178	0	111	**83,880**
March	119,555	21,103	3,956	0	202	**144,816**
April	178,518	29,842	5,594	710	286	**214,950**
May	278,241	45,083	8,451	1,587	432	**333,794**
June	344,906	49,239	9,230	1,880	472	**405,728**
July	368,855	53,183	9,970	2,177	510	**434,694**
August	316,146	45,935	8,611	1,919	440	**373,051**
September	273,333	29,096	5,454	1,149	279	**309,311**
Total	**2,320,922**	**321,441**	**60,256**	**9,885**	**3,081**	**2,715,585**

Water use for irrigation and stock was estimated from EPA figures for Lewis and Grays Harbor counties obtained from the Natural Resources Conservation Service. As a conservative estimate, the countywide values for irrigation were assumed to be concentrated in the Chehalis Basin, and the irrigation values for Thurston County were assumed be the same as in Lewis County.

Table 2-6 gives estimated water use. Total consumptive fresh water use was estimated to be 0.04 million acre-feet annually, or 0.4 percent of total annual precipitation. This was a conservative estimate, since it did not consider wastewater returns. However, the quantity is relatively small compared to total precipitation. When estimated returns from treatment facilities are included (approximately 0.02 million acre-feet), the total consumption would be reduced by about half to approximately 0.02 million acre-feet annually, or 0.2 percent of total annual precipitation.

Allocated Water Rights

The estimated water use totals are significantly less than the water right allocations for the Chehalis Basin. Two approaches were used to assess the total allocated right as an annual volume of water. The results of these two approaches are summarized in Table 2-7.

Year-Round Continuous Withdrawal Approach

In the first approach, it was assumed that all holders of water rights in the basin withdraw water at their maximum allocated flow rate for the entire year. This approach yields an annual water right by volume of 2.0 million acre-feet for the entire basin and 1.9 million acre-feet for the water balance study area. This is about 23 percent of annual precipitation.

TABLE 2-6.
WATER CONSUMPTION BY MONTH AND USE

	Estimated Water Consumption (acre-feet)				
	Irrigation	Stock	Domestic	Commercial	**Total**
October	0	4	1,046	345	**1,396**
November	0	2	587	194	**782**
December	0	2	484	160	**645**
January	0	2	587	194	**782**
February	0	3	864	285	**1,152**
March	0	6	1,570	518	**2,094**
April	0	8	2,220	733	**2,960**
May	0	13	3,353	1,107	**4,473**
June	4,481	14	3,662	1,209	**9,365**
July	3,146	15	3,955	1,306	**8,422**
August	2,717	13	3,416	1,128	**7,274**
September	0	8	2,164	714	**2,886**
Total	**10,344**	**90**	**23,908**	**7,893**	**42,231**

Several water rights in the basin are nonconsumptive; that is, the water withdrawn is quickly returned to the river. These include a 1,400 cfs right for the Aberdeen hydroelectric power station, 140 cfs for the Skookumchuck Dam power station, and larger fish propagation facilities. Some water rights also were found to be duplications in one form or another of other rights in the basin.

Reducing the volumes calculated by this approach to account for the nonconsumptive uses and known redundancies yields an annual total withdrawal of 0.9 million acre-feet for the whole basin and 0.7 million acre-feet for the water balance study area, about 9 percent of annual precipitation. This is essentially a "worst case scenario" for water withdrawals authorized through water right permits and certificates. It does not include water right claims.

Volume Limit Approach

Because it assumes all water-right holders withdraw at their maximum flow rate nonstop for a year, which is a highly unlikely scenario, the first approach results in an unrealistically high annual volume of allocated water. A more realistic approach was used to estimate the annual volume of allocated water rights using the following assumptions:

- For water rights that have annual volume limits in addition to instantaneous withdrawal rate limits, the annual volume limits were used; in the water balance study area, rights with these limits total 0.3 million acre-feet per year.
- Water rights for irrigation were assumed to be used at a rate of 2 acre-feet per acre per year.

- Water rights for single-connection domestic use were assumed to be used at a rate of 1 acre-foot per year.
- For all other water rights, withdrawal for the entire year at the maximum rate allowed by the water right was assumed, except for multiple connection domestic rights, for which withdrawal for the entire year at 0.01 cfs was assumed.
- Volumes calculated in this approach associated with nonconsumptive uses were subtracted from the total. This included dams used for storage, which have a basinwide annual storage limit of 0.1 million acre-feet, as well as the hydroelectric power facilities and state hatcheries mentioned above. (Rights for private hatcheries were not deducted because their nonconsumptive use has not been confirmed.)
- Some water rights could have redundant volume limits (e.g., several wells owned by a single entity), but these were assumed to be relatively few. Accounting for all such water right volume limits was beyond the scope of this study, but could be resolved on a case-by-case basis.

The resulting annual totals are 0.23 million acre-feet for the entire basin and 0.22 million acre-feet for the water balance study area. The latter value for the study area represents only about 2.7 percent of annual precipitation.

TABLE 2-7.
ESTIMATED TOTAL WATER RIGHT ALLOCATION FOR WATER BALANCE STUDY AREA DETERMINED BY THREE METHODS[1]

Method	Total Annual Volume acre-feet in million $	Percentage of Annual Precipitation
Unadjusted Year-Round Continuous Withdrawal	1.9	23%
Adjusted Year-Round Continuous Withdrawal	0.7	9%
Volume Limit	0.22	2.7%

[1] – See text for description of methodology.

CHANGE IN GROUNDWATER STORAGE

For this analysis, the change in groundwater storage was estimated as the balance, or residual, in the water balance calculation. Based on the estimates for precipitation, runoff, evapotranspiration and water use described above, the estimated change in groundwater storage is a net recharge of 0.5 million acre-feet, or 7 percent of the total precipitation. The rough analysis performed for this study shows groundwater storage increasing during the rainy season, and decreasing during summer, which is typical.

In the Chehalis Basin, most of the groundwater currently being used is believed to have strong hydraulic continuity with surface water; that is, water moves easily between the groundwater and surface water sources. Groundwater in the basin is drawn from the

shallow, water-table aquifer, with most wells being less than 100 feet deep. Data from one study suggest that the speed of groundwater flow is rapid, averaging 16 feet per day (Garrigues, et al., 1998). Another study indicates that water flows into the Chehalis and Black Rivers from the groundwater at a rate of between 1.8 and 3.1 cfs per river mile (Sinclair and Hirschey, 1992). At this rate of inflow, groundwater adds up to 30 cfs to the river over a 10-mile length. This is very significant, considering that a typical August stream flow in the Chehalis River at Grand Mound is 242 cfs.

A hydraulic continuity issue paper prepared for the Chehalis Basin Partnership as part of the Watershed Management Plan recommended a groundwater study to provide the information necessary to assess hydraulic continuity (CBP, 2003)[1]. This study would provide specific information about the character of the groundwater throughout the Chehalis Basin to help decision-makers better evaluate whether an individual water right application would impact stream flows. This study would also provide the information to evaluate whether a strategic groundwater pumping schedule could be developed for a particular site that would delay impacts on the river until the high flow period.

OBSERVATIONS

The components of the water balance are compiled in Table 2-8, along with low-flow values and total water rights. Figure 2-2 shows the balance components and water rights. Several observations can be made based on the water balance evaluation:

- The Chehalis Basin receives a lot of precipitation annually.
- Runoff and evapotranspiration are the two major ways that water leaves the Chehalis Basin, with runoff at approximately 60 percent of estimated annual precipitation, and combined evapotranspiration at approximately 33 percent, together totaling 93 percent of precipitation.
- From a total basin standpoint, human consumptive water use is a very small fraction of the total amount of input water from precipitation (less than 1 percent).
- Legal water rights allocations substantially exceed estimated consumptive use. Using three different methods (described above), estimates for the legal water right allocation range from 2.7% to 23% of the total annual precipitation.
- The three methods used to estimate legal water rights allocations demonstrate that determining an accurate legal allocation quantity is not a straightforward exercise. The lowest estimate calculated through the "volume limit" approach (2.7% of annual precipitation) is likely to be the most accurate.
- Because of the close hydraulic continuity believed to exist in the Chehalis Basin, groundwater withdrawals can reduce water available for surface waters. When considering the water balance equation, it may be more

[1] Hydraulic Continuity Issue Paper, Chehalis Basin Watershed Management Plan, October, 2003.

appropriate to take the perspective of the net effect on runoff (river flow), which represents the extent of water available for use.

- The quality and consistency of information available for this basin level water balance varied. Long-term climate oscillations and the completeness of weather and gauge information can affect the water balance evaluation. Undocumented water withdrawals, water transfers, variation in hydrologic and climate conditions, and other factors can have cumulative impacts on the water budget. These factors could also affect a water balance evaluation at a subbasin level.

TABLE 2-8.
ESTIMATED WATER BALANCE, LOW FLOW AND WATER RIGHTS

	Volume (acre-feet, rounded figures)								
Month	Precipitation	Runoff (50% exceedance flow)	Et	Use (C)	R + C + Et	Balance	Runoff (90% exceedance flow)	Total Rights (with Volume Limits)[1]	Total Rights (Year-Round Continuous Withdrawal[1]
October	760,000	138,000	192,000	1,000	331,000	429,000	55,000	18,500	161,000
November	1,193,000	535,000	110,000	1,000	646,000	547,000	156,000	18,500	161,000
December	1,342,000	875,000	58,000	1,000	934,000	408,000	373,000	18,500	161,000
January	1,241,000	895,000	56,000	1,000	952,000	289,000	334,000	18,500	161,000
February	994,000	788,000	84,000	1,000	873,000	121,000	366,000	18,500	161,000
March	876,000	683,000	145,000	2,000	830,000	46,000	336,000	18,500	161,000
April	568,000	442,000	215,000	3,000	660,000	-92,000	247,000	18,500	161,000
May	347,000	250,000	334,000	4,000	588,000	-241,000	156,000	18,500	161,000
June	263,000	137,000	406,000	9,000	552,000	-289,000	93,000	18,500	161,000
July	140,000	89,000	435,000	8,000	532,000	-392,000	59,000	18,500	161,000
August	179,000	61,000	373,000	7,000	441,000	-262,000	41,000	18,500	161,000
September	346,000	63,000	309,000	3,000	375,000	-29,000	40,000	18,500	161,000
Total	**8,249,000**	**4,956,000**	**2,717,000**	**41,000**	**7,714,000**	**535,000**	**2,256,000**	**222,000**	**1,932,000**
% of Precip.	100%	60.1%	32.9%	0.5%	93.5%	6.5%		2.7%	23.4%

1 – See pages 2-7 to 2-9 for discussion of methodology. Monthly average water right estimates are unadjusted for seasonal differences. Without seasonal adjustment, the allocations greatly exceed the estimated 90 percent exceedance flow of the Chehalis from May through November.

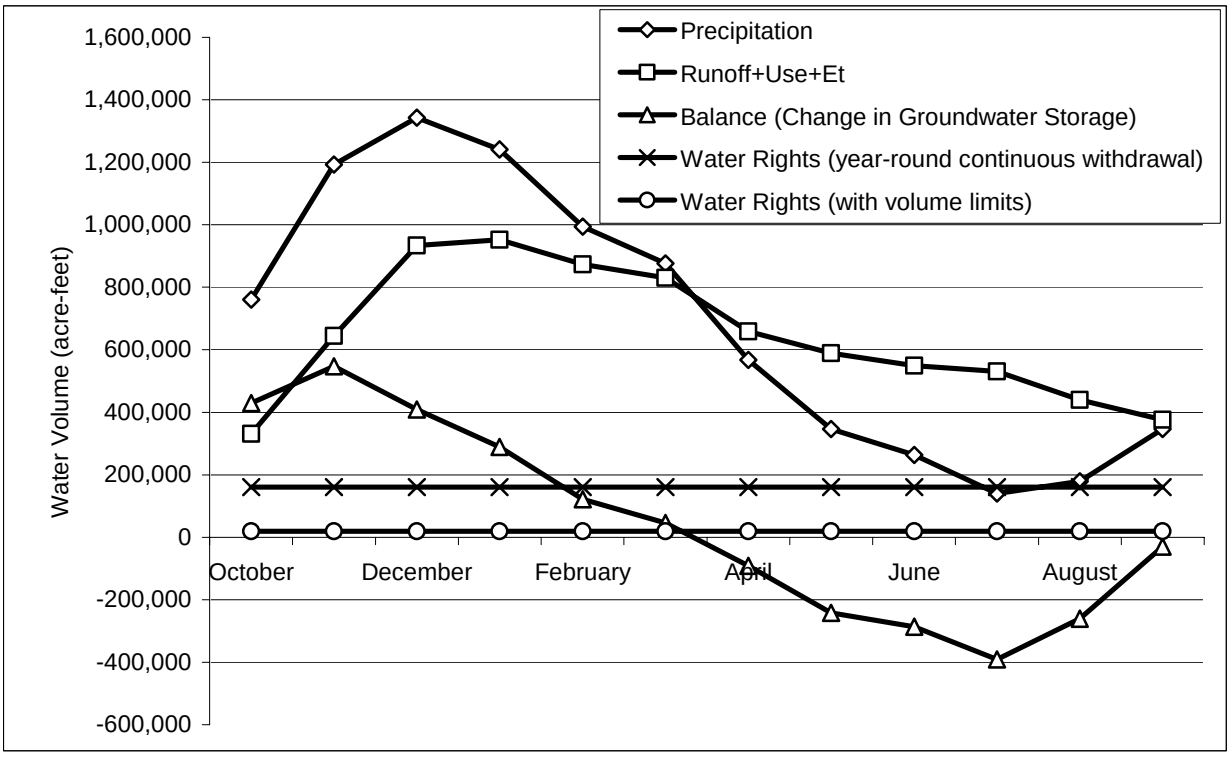


Figure 2-2. Comparison of Water Balance and Allocated Water Rights

CHAPTER 3.
PRIORITY GROUP 1 SUBBASINS
WATER RIGHT INVESTIGATIONS

The Steering/Technical Committee of the Chehalis Basin Partnership selected the six Priority Group 1 Subbasins through a prioritization exercise that evaluated relative risks to various aspects of watershed function: (1) risk to fish; (2) risk to humans (that is, not having enough water to supply growing human populations); (3) meeting regulatory minimum flow levels; (4) extent of "protected" land (not available for conversion to a higher impact land use); (5) existing land use; and (6) growth pressure.

Three investigations were conducted to gather information related to water rights in the combined area of the Priority Group 1 subbasins:

- Mapping of water rights to the quarter-quarter section. This was conducted by the EPA, using a Public Land Survey (PLS) grid that was developed for the Chehalis Basin Partnership.
- Detailed examination of the 49 largest water rights in the following categories: power, agricultural, fish propagation, municipal, domestic, and commercial. The intent was to determine the location of these rights and the likelihood of water right usage to the allocated capacity.
- Review of the potential number of exempt wells. This was approached through an estimate of the potential number of self-supplied or unserved domestic (equivalent residential) units.

Table 3-1 lists the Priority Group 1 subbasins, which are shown in Figure 3-1. The Priority Group 1 subbasins encompass 454 square miles, with an estimated population of 39,822, based on the 2000 Census. Cities and towns in the subbasins include Centralia, Chehalis, Napavine, Bucoda, Onalaska, Galvin, Fords Prairie, and Alpha.

TABLE 3-1.
PRIORITY GROUP 1 SUBBASINS

Subbasin Number	Subbasin Name	Area (acres)	Area (square miles)	2000 Population
5	South Fork Newaukum River	26,803	42	616
6	North Fork Newaukum River	20,611	32	124
7	Newaukum River	52,307	82	6,718
8	Salzer Creek	12,459	19	1,023
9	Skookumchuck River	113,319	177	10,392
10	Middle Chehalis River #1	65,339	102	20,949
	Total	**290,838**	**454**	**39,822**

WATER RIGHT MAPPING

As part of this study, it was necessary to manually assign location coordinates to each water right in the Priority Group 1 Subbasins. This manual step was necessary because the existing township-range-section location description in Ecology records is not usable within a GIS. Several automated techniques were explored, but none were determined to be reliable enough to provide the required data quality. Most of these difficulties were caused by irregularly shaped sections, some dating back to original homestead parcels.

The EPA mapped 604 water rights to the quarter-quarter section level, as feasible, in the Priority Group 1 Subbasins. These rights have a combined allocated instantaneous withdrawal rate of 463 cfs. Most rights were mapped at or near the center point of their township-range-section grid. Where there were multiple rights for the same location, the rights were mapped in a roughly circular pattern around the center point. This provided unique estimated locations for each right, and the ability to conduct spatial analysis.

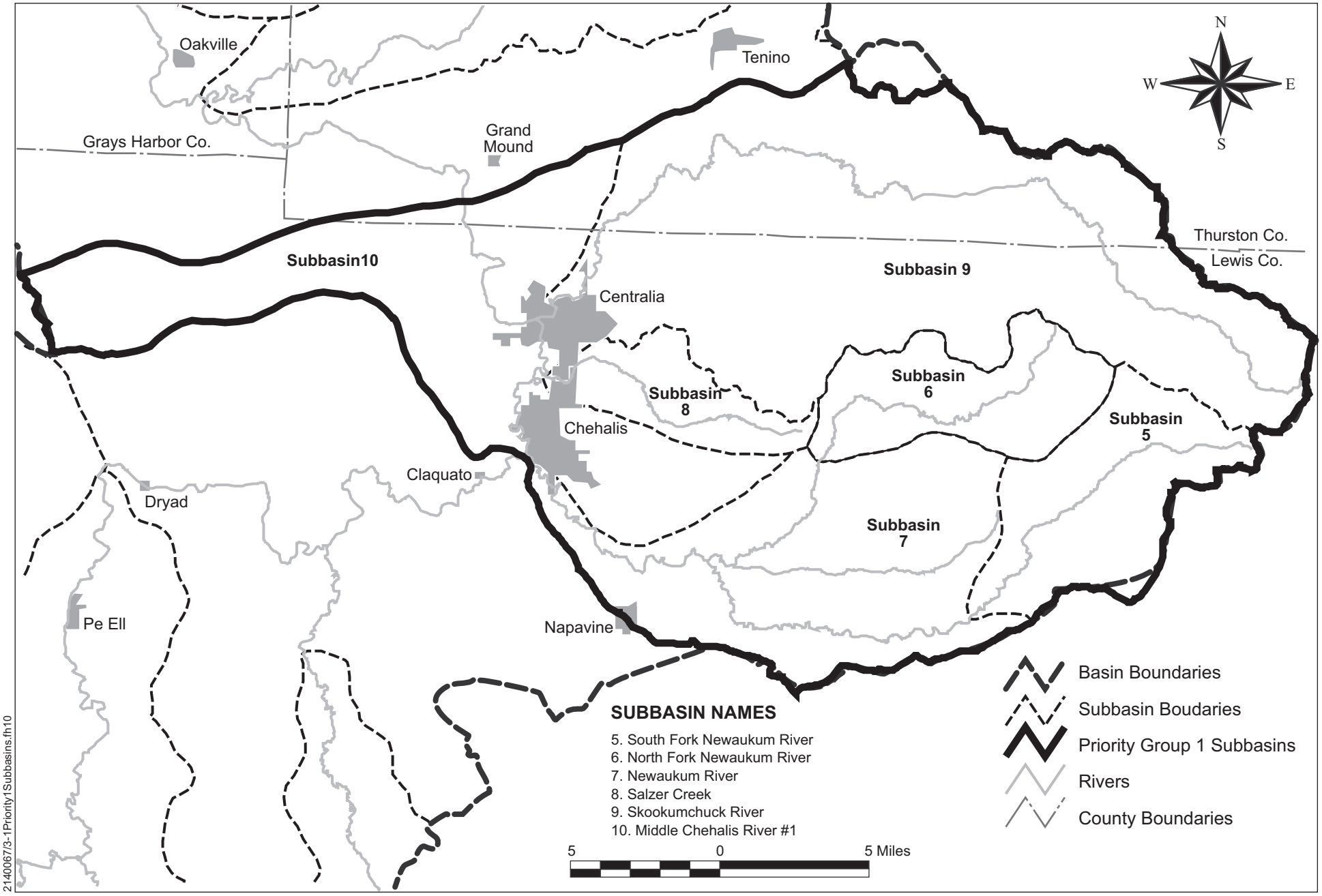
Most of the rights were successfully mapped using this method. However, the mapping of 30 rights with a combined allocated withdrawal rate of 17.4 cfs was complicated by odd-shaped sections. The largest six of these rights (totaling 12.7 cfs in allocated withdrawal rate) were examined using aerial photographs and information from the original record of examination to provide a more accurate location. The remaining 24 rights all have allocated withdrawal rates of less than 1 cfs and most of them are for irrigation or domestic purposes. In almost every case, they appear to be within one section of their correct location, and all appear to be in the correct subbasin.

This result of this investigation is a GIS map that allows spatial analysis with a small potential error margin (about 1 percent of the total instantaneous flow). Figure 3-2 shows the mapped water rights in the Priority Group 1 area.

REVIEW OF 49 LARGEST WATER RIGHTS

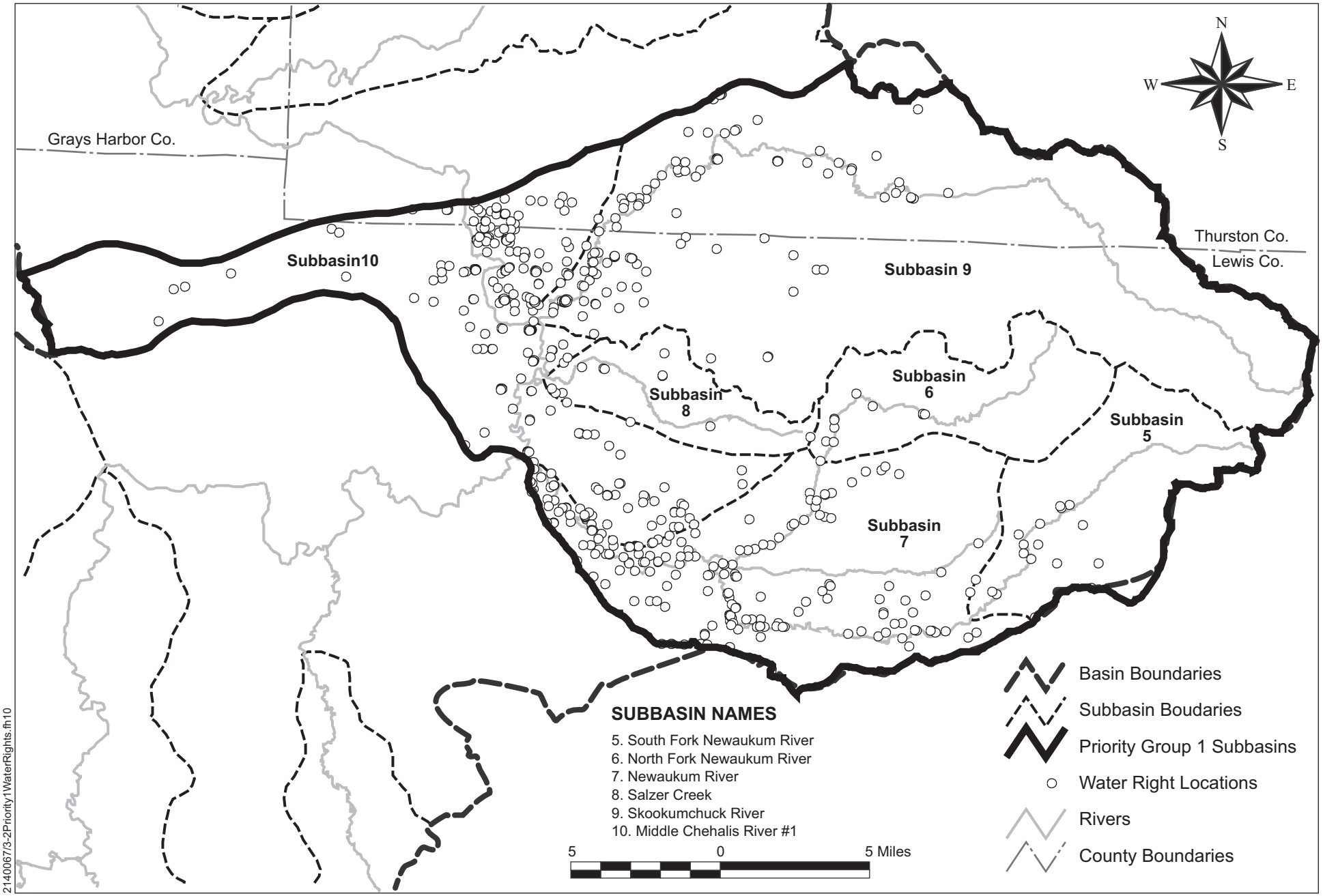
The Washington Department of Ecology's 2001 Water Right Application Tracking System (WRATS) indicated 610 total rights in the Priority Group 1 subbasins, representing 466 cfs of instantaneous allocated withdrawals. The database's number of rights and combined withdrawal rate is slightly higher than what the EPA mapped because the EPA eliminated some duplicate entries from its mapping effort. These rights were grouped into six broad categories with total allocated withdrawal rates as follows:

- Power (223 cfs)
- Agriculture (127 cfs)
- Fish propagation (50 cfs)
- Municipal (47 cfs)
- Domestic (11 cfs)
- Commercial (8 cfs).



2140067/3-1Priority1Subbasins.fh10

Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 3-1. PRIORITY GROUP 1 SUBBASINS



2140067/3-2Priority1WaterRights.fh10

Tetra Tech/ KCM, Inc. *1917 First Avenue* *Seattle, Washington 98101*	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 3-2. PRIORITY GROUP 1 SUBBASIN WATER RIGHT MAPPING

Table 3-2 summarizes key information on these rights in each category, and identifies the largest rights in each.[1] "Largest rights" for the purposes of this work were defined as rights that stood out as significantly larger from the rest of their use-group. In many cases, these "largest rights" dominate their use-class, and therefore it is informative to evaluate them individually.

Table 3-3 gives information on each of the 49 large rights noted in Table 3-2. Because the largest rights from each category were selected, the 49 rights listed do not represent the 49 largest rights overall, but most of the overall largest rights are included. The selection by category provides a better understanding of the role of different groups of water users in defining total water demand.

Four of the large municipal rights from the WRATS database appear to be modifications of other rights listed rather than separate rights. These modifications are shown in italics in the table, and allocated withdrawal totals are shown both with and without the apparent duplications. Totaling the top 49 WRATS listings gives a combined withdrawal allocation of 339 cfs, or 73 percent of the allocated water for all of the Priority Group 1 subbasins. The total excluding the four apparent duplicate municipal listings is 328 cfs. Figure 3-3 shows the locations of the top water rights, numbered as listed in Table 3-3.

Power

The four certificates identifying power generation as one of the purposes of the water right allocate a total instantaneous withdrawal of 223 cfs, with 35,000 acre-feet of storage. The two largest certificates hold the right to 220 cfs of the allocated withdrawal and all of the storage; both are held by Pacific Power and Light in the Skookumchuck subbasin.

One certificate (S2-25872, April 3, 1981; the "S" prefix indicates a surface water right) is for nonconsumptive use of 140 cfs for hydroelectric power from the Skookumchuck Reservoir, at a dam on the Skookumchuck River approximately 15 miles northeast of Centralia. The 140 cfs with an elevation drop of 110 feet represents a small generation capacity with a theoretical power output of about 1,750 hp [1.3 megawatts (MW)], although the permit proposed a generator rated at 1,300 hp (0.97 MW) The power output feeds into the existing electrical grid. The maximum 1.3 MW output would be sufficient to power about 54 homes without electric heat, or about 27 homes with electric heat.

[1] The summary of largest rights in Table 3-2 varies slightly from a similar summary previously provided to the Chehalis Basin Partnership (EPA, 2002) because review of the previous list showed that one right was listed as both a commercial and a domestic right. The previous commercial listing was deleted and a new commercial one was chosen to replace it.

TABLE 3-2.
SUMMARY OF PRIORITY GROUP 1 SUBBASIN WATER RIGHTS[a] BY PURPOSE

Purpose[b]	No. of Rights	Total Qi[c] (cfs)	Largest Qi (cfs)	Largest Rights	Comment
Power	4	223	140	Top 2 = 220.0 cfs (140 and 80)	• Largest total and individual Qi • Highly concentrated • Largest right is probably not consumptive • Second right probably is at least partially consumptive
Agriculture	450	127	3.1	Top 8 = 15.4 cfs	• Largest number of rights • Large total Qi • Average Qi is low • Partially consumptive
Fish Propagation	23	50	20	Top 8 = 47.5 cfs	• Not consumptive • Medium total Qi
Municipal	19	47	11	Top 10 = 42.5 cfs	• Small number • Medium total Qi
Domestic	94	11	2	Top 13 = 7.0 cfs	• Small total Qi • Large number
Commercial	20	8	2	Top 8 = 6.7 cfs	• Small total Qi • Small number • Does not include steam plant right (80 cfs) which included in the power category
Summary	610[d]	466[d]	140	Top 49 = 339.1 cfs	• Top 49 rights represent 73% of the allocated water for all Priority Group 1 subbasins

a. Washington Department of Ecology Water Rights Applications Tracking System (WRATS), data current as of September 2001
b. Purpose derived from the WRATS data field "Purpose Code". "Municipal" and "domestic" uses both pertain primarily to human uses such as drinking water and other household use. Typically the term "municipal" has been assigned to domestic use supplied by cities and water purveyors (such as water districts). "Domestic" use is usually assigned to community and individual water supply.
c. Qi is the allocated instantaneous flow rate associated with the water rights. The data reflect rights as indicated by WRATS. Actual use may vary substantially from these numbers
d. Due to multiple purposes in WRATS, there is some duplication in these numbers. The result is totals for numbers of rights for Qi that are slightly in excess of the correct Priority Group 1 totals

Source: Original data, EPA, 2002, revised 2003

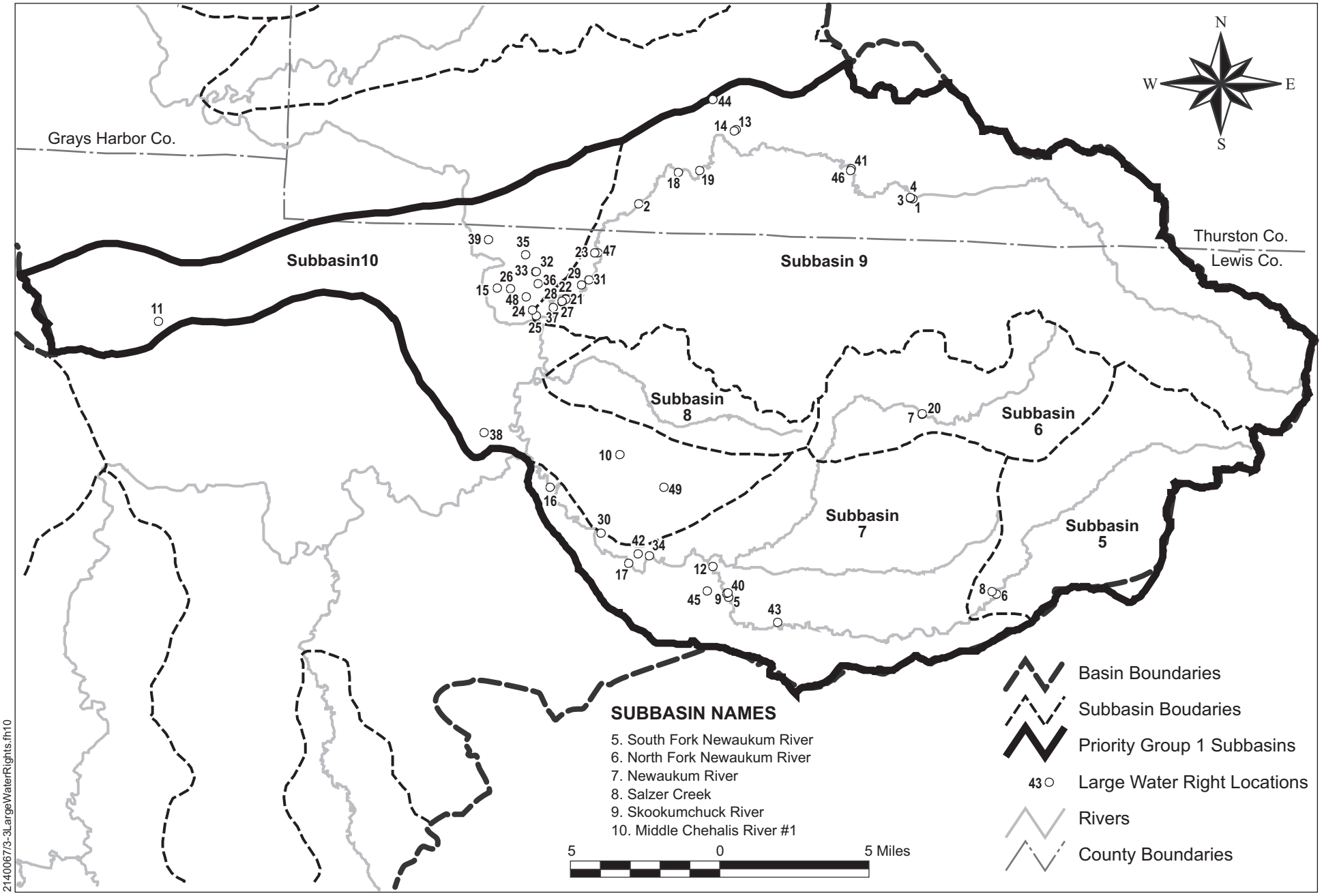
TABLE 3-3.
TOP 49 WATER RIGHTS LISTED IN WRATS DATABASE FOR PRIORITY GROUP 1 SUBBASINS

Large Right No.	Subbasin No.	Certificate or Permit No.[a]	Holder of Right	Date	Allocated Withdrawal (cfs)	Allocated Consumptive Withdrawal (cfs)	Purpose (primary/ secondary/ tertiary)[b]	Permitted Storage Volume (acre-feet)	Area to Be Irrigated (acres)	Water Source
Power										
1	10	S2-25872	Pacific Power & Light	4/3/81	140.00	—	PO	—	—	Skookumchuck River
2	10	R2-11862	Pacific Power & Light	11/28/66	80.00	80.00	PO/CI	35,000	—	Skookumchuck River
Subtotal					**220.00**	**80.00**				
Fish Propagation										
3	10	S2-25145CWRIS	WDFW	2/13/79	20.00	—	FS	—	—	—
4	10	S2-25996CWRIS	WDFW	9/8/81	10.00	—	FS	—	—	—
5	7	S2-25939CWRIS	Marshall Jack C	6/15/81	5.00	—	FS	—	—	Lucas Creek
6	5	S2-25089CWRIS	Hendrix Robert et al.	12/5/78	4.50	—	FS	—	—	Unnamed Spring
7	9	S2-00849CWRIS	WDFW	4/20/70	3.00	—	FS	—	—	North Fork Newaukum River
8	5	G2-24820CWRIS	Hendrix Robert et al.	3/2/78	2.67	—	FS	1,936	—	Well
9	7	G2-00025CWRIS	Marshall Jack C	1/22/71	1.34	—	FS	800	—	Well
10	10	S2-*13741CWRIS	Canty. R.A.	2/14/56	1.00	—	FS	—	—	Unnamed Stream
Subtotal					**47.51**					
Agriculture: Irrigation/Stock										
11	10	S2-*02460CWRIS	Scherer J.F.	11/20/28	3.08	0.08	PO/IR	—	3	Wildcat Creek
12	7	S2-*05255C	Scheer W	9/6/40	2.50	2.50	ST/IR/DM	—	175	South Fork Newaukum River
13	10	G2-00216CWRIS	Agnew S.J.	3/25/69	1.78	1.78	IR	90	40	Well
14	10	G2-00300CWRIS	Agnew S.J.	2/22/72	1.78	1.78	IR	271	120	Well
15	10	G2-26448CWRIS	Leprechaun Holsteins, Inc.	12/9/83	1.78	1.78	ST/IR	397	190	Well
16	7	S2-01055CWRIS	WA Department of Natural Resources	2/22/71	1.60	1.60	IR	203	90	Newaukum River
17	7	S2-*15397CWRIS	Breen S.C.	4/13/59	1.50	1.50	IR	300	150	Newaukum River
18	10	S2-20709	Leduc R.	1/23/68	1.40	1.40	IR	210	140	Skookumchuck River
Subtotal					**15.42**	**12.43**				
Municipal										
19	10	S2-*01249CWRIS	Bucoda Town	12/17/24	11.10	11.10	MU	—	—	Skookumchuck River
20	9	S2-*00889CWRIS	Chehalis City	2/6/23	10.00	10.00	MU/CI	—	—	North Fork Newaukum River
21	9	G2-*00713SWRIS	Centralia City	1/1/37	3.12	3.12	MU/CI	372	—	Well
22	*9*	*G2-28214*	*Centralia City*	*7/9/91*	*3.12*[c]		*MU*	*1,886*	—	*Well*
23	10	G2-24010CWRIS	Centralia City	11/10/75	2.90	2.90	MU	2,000	—	Well
24	*9*	*G2-24010*	*Centralia City*	*11/10/75*	*2.90*[c]		*MU*	*2,000*	—	*Well*
25	*10*	*G2-4491*	*Centralia City*	*10/10/57*	*2.67*[c]		*MU*	*1,920*	—	*Well*
26	10	G2-*04714ALCWRIS	Centralia City	10/10/57	2.67	2.67	MU	1,920	—	Well
27	9	G2-*00712SWRIS	Centralia City	1/1/37	2.01	2.01	MU/CI	238	—	Well
28	*9*	*G2-28215*	*Centralia City*	*7/9/91*	*2.01*[c]		*MU*	*1,214*	—	*Well*
Subtotal					**42.50**	**31.80**				
Subtotal[c]					***31.80***					

TABLE 3-3 (continued).
TOP 49 WATER RIGHTS LISTED IN WRATS DATABASE FOR PRIORITY GROUP 1 SUBBASINS

Large Right No.	Subbasin No.	Certificate or Permit No.[a]	Holder of Right	Date	Allocated Withdrawal (cfs)	Allocated Consumptive Withdrawal (cfs)	Purpose (primary/ secondary/ tertiary)[b]	Permitted Storage Volume (acre-feet)	Area to Be Irrigated (acres)	Water Source
Commercial										
29	10	S2-*09793CWRIS	Sylvan Products, Inc	7/26/50	2.00	2.00	CI	—	—	Skookumchuck River
30	8	G2-*05682CWRIS	Hatfield H / I	7/27/60	1.34	1.34	CI	200	—	Infiltration Trench
31	10	G2-01085CWRIS	Agnew S.J.	9/23/70	1.11	1.11	FR/CI	600	—	Well
32	10	G2-*00351C	Washington Asphalt	8/24/46	0.56	0.56	CI	96	—	Well
33	*10*	*G2-*00351CWRIS*	*Pacific Sand & Gravel*	*8/24/46*	*0.56*[c]		*CI*	*96*	—	*Well*
34	7	S2-*16213CWRIS	Lewis County	6/10/60	0.50	0.50	CI		—	Newaukum River
35	10	G2-20053CWRIS	Dulin L.T. & I.J.	3/22/72	0.33	0.33	CI	10	—	Well
36	10	G2-26681CWRIS	Harsco/Kinnear	4/16/85	0.29	0.29	CI	26	—	Well
Subtotal					**6.69**	**6.13**				
Subtotal[c]					***6.13***					
Domestic										
37	9	G2-00168CWRIS	Centralia City	9/28/60	2.23	2.23	DM	1,600	—	Well
38	10	G2-00953CWRIS	Lewis County Water Assn & View Ridge	5/26/70	1.11	1.11	DM	60	—	Well
39	10	G2-20166CWRIS	Quarnstrom R.	4/26/72	0.67	0.67	DS	46	20	Well
40	7	G2-*08190CWRIS	Marshall J.C.	7/11/66	0.47	0.47	FS/DS	159	—	Well
41	10	G2-25400CWRIS	Skookumchuck Maintenance Co.	10/22/79	0.45	0.45	DM	20	—	Well
42	7	G2-26648CWRIS	Hamilton A.R.	1/25/85	0.36	0.36	DM	27	—	Well
43	7	G2-*07731CWRIS	Lewis County	8/4/65	0.33	0.33	DM/CI	4	—	Well
44	10	G2-24073C	Nationwide Enterprises, Inc.	2/24/76	0.25	0.25	DM	20	—	Well
45	7	G2-26163ALCWRIS	Clearwater Utilities	6/3/82	0.22	0.22	DM	35	—	Well
46	10	G2-00935CWRIS	Skookumchuck Maintenance Co.	10/16/70	0.22	0.22	DM	20	—	Well
47	10	G2-24062CWRIS	Lewis County Parks and Recreation	2/6/76	0.22	0.22	DM	3	—	Well
48	9	G2-00155CWRIS	Coluccio Robert P.	5/17/71	0.22	0.22	DM	16	—	Well
49	7	S2-*04546CWRIS	Balsom J.P.	6/23/38	0.20	0.20	FS/DS	—	—	Little Creek
Subtotal					**6.95**	**6.95**				
Total					**339.07**	**137.86**				
Total[c]					***327.81***					

a. All rights listed are held by certificate, except for Large Right No. 18, which is held by permit.
b. Purpose Codes: CI = commercial/industrial; DM = domestic, multiple; DS = domestic, single; FR = fire; FS = fish propagation; IR = irrigation; MU = municipal; PO = power; ST = stock watering.
c. Review of the largest rights in the Priority Group 1 subbasins indicated that some rights listed represent changes to other rights in the database or duplications, rather than separate rights. Four rights noted as such are municipal rights, and one is a commercial right. All are shown in italics in this table. The municipal and commercial withdrawal subtotals and overall withdrawal total are shown with these duplicate listings subtracted in italics.



Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 3-3. PRIORITY GROUP 1 SUBBASINS LARGE WATER RIGHT LOCATIONS

The second certificate (R2-11862, November 28, 1966; the "R" prefix indicates a reservoir water right) is for reservoir construction and consumptive use of 80 cfs from the Skookumchuck River to make up losses from steam generation and water circulation at the Centralia coal-fired power plant at Big Hanaford Road, northeast of Centralia. The permitted storage of the Skookumchuck Reservoir is 35,000 acre feet. The existing Centralia power plant is a coal-fired plant with two generating units, with a total power capacity of 1,340 MW. A new gas-fired plant is planned, which would add 248 MW to the total plant capacity. The power plant has recently come under the ownership of TransAlta, a joint venture by PacifiCorp (47.5 percent ownership), Avista Energy (second largest share), Seattle City Light, Tacoma Power, and Snohomish PUD (roughly equal shares), Puget Sound Energy (a slightly smaller share), and Grays Harbor County PUD (smallest share).

The point of withdrawal of the 80 cfs under certificate R2-11862 is 13.3 miles downstream of the Skookumchuck Reservoir. The water is pumped to the Centralia Power Plant for storage and use; return water reenters the Skookumchuck River by way of Hanaford Creek. The point of return is 3.2 miles downstream of the point of withdrawal. The amount of return flow is unknown. The annual volume limit on this right is 35,000 acre-feet, equivalent to a continuous year-round withdrawal rate of 48 cfs, about 60 percent of the allocated instantaneous withdrawal rate.

Under a private agreement between Pacific Power and Light and the City of Centralia related to certificate R2-11862, the City may claim a withdrawal rate of 3.1 cfs with written notice and a 1-year waiting period. In its October 18, 1995 letter, Ecology explored possibilities for formalizing the City's claim, but resolution of the issue has not be documented.

Municipal

Municipal rights, like domestic rights, pertain primarily to human water use for drinking and household supply. Municipal use is differentiated from domestic use in Ecology's tracking system. "Municipal" use is typically assigned to cities and water purveyors (such as water districts) who supply water to people. These water purveyors may also supply some amount of water for commercial use. "Domestic" use is assigned to community and individual water supply.

The Town of Bucoda and Cities of Chehalis and Centralia hold the 10 largest water rights among the 19 municipal rights in the Priority Group 1 subbasins. The total allocated withdrawal for the 10 largest water rights is 31.8 cfs. The remaining nine municipal water rights in Priority Group 1 subbasins total 5.0 cfs.

These water agencies, along with Lewis County Water District No. 2, are entirely within the Priority Group 1 boundaries and have their own service areas, water supply and distribution systems, and water plans. The Boistfort and Napavine water districts are partially within the boundaries. Table 3-4 lists the large water systems that overlap the Priority Group 1 subbasins. Each water system's reference years for existing and projected conditions are based on the year the system's most recent comprehensive plan was prepared. The reference years for existing conditions are as follows: Bucoda, 2000;

Centralia, 1997; Chehalis, 1995; Napavine, 2000 (population is for 1999); and Boistfort Valley, 1998. Figure 3-4 shows the existing service area boundaries.

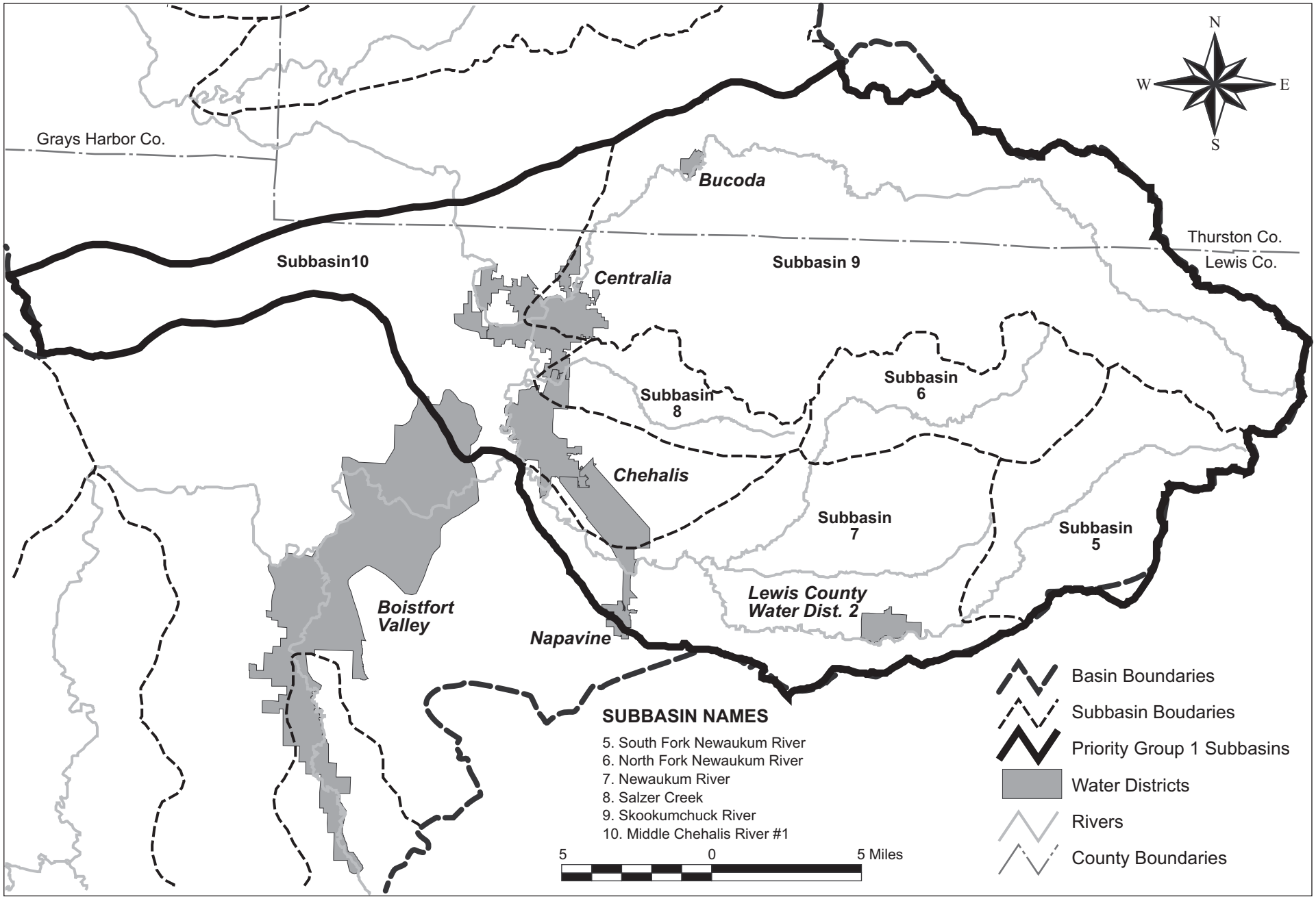
TABLE 3-4.
LARGE WATER SYSTEMS IN THE PRIORITY GROUP 1 SUBBASINS

	Bucoda	Centralia	Chehalis	Napavine	Boistfort Valley	Lewis County Water District No. 2
Population						
Existing	610	15,965	8,491	1,320	2,263[a]	407[b]
20-Year Projected	640	18,772	10,567	2,754	2,721[a]	—
Annual Growth Rate (%)	0.24	0.8	1.1	3.7	0.9	—
Current Water Demand						
Average Day (mgd)	0.05	2.42	1.96	0.128	0.264	—
Peak Day (mgd)	0.11	4.84	3.51	0.243	0.636	—
Annual (acre-feet)	54.9	2,710.4	2,195.2	143.36	295.68	—
Projected 20-Year Water Demand						
Average Day (mgd)	0.05	5.16	2.63	0.267	0.322	—
Peak Day (mgd)	0.12	8.32	4.81	0.507	0.795	—
Annual (acre-feet)	58.2	5,779.2	2,945.6	299.04	360.64	—
Water Rights						
Allocated Withdrawal (mgd)	0.72	9.6	9.3	0.34	1.86	0.14
Annual Volume Limit (acre-feet)	157	3,808	10,371	168	662	56
Surplus/Deficit						
Current Maximum Demand (mgd)	0.609	4.76	5.79	0.097	1.224	—
Current Annual Demand (acre-feet)	102.12	1,097.6	8,175.8	24.64	366.32	—
Projected 20-Year Peak Day (mgd)	0.603	1.28	4.49	-0.167	1.065	—
Projected 20-Year Annual Demand (acre-feet)	98.76	-1,971.2	7,425.4	-131.04	301.36	—
Conservation Goal from Water System Plan (%)	1	4	2.5	5	—	—

a. Population based on 2.2 persons per equivalent residential unit
b . Estimated population based on service area boundaries. Information for Lewis County Water District 2 is limited to information obtained from the WRATS database.

Town of Bucoda

The Town of Bucoda's water right on the list of 10 largest municipal rights is a surface water right (11.1 cfs, S2-*01249CWRIS) that appears to have been originally issued to a logging company (Mutual Lumber) on December 17, 1924. The right does not include an annual limit on total volume of withdrawal. The Town's water system comprehensive plan (*Town of Bucoda Water System Comprehensive Plan*, 2002) projected that population served by the system would grow to 640 by 2020, with a projected peak-day water demand at that time of 0.12 million gallons per day (mgd). Bucoda has additional water rights for



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Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 3-4. PRIORITY GROUP 1 SUBBASINS WATER SERVICE AREAS

2.1 cfs, for a total of 13.2 cfs of instantaneous flow, or 12 mgd, exceeding the 20-year projected peak-day demand.

City of Chehalis

The City of Chehalis' water right on the list of 10 largest municipal rights is a surface water right (10 cfs, S2-*00889CWRIS) with no annual limit on total volume of withdrawal. The City has a growing water system that in 1995 served a population of 8,491. The high end population projection for 2015 is 10,567 (City of Chehalis 1997 Water System Plan). The 1995 average daily demand was 1.96 mgd (3.03 cfs) with a peak-hour demand of 4.67 mgd (7.22 cfs). The projected 2015 average daily demand is 2.63 mgd (4.1 cfs) with a peak-hour demand of 6.46 mgd (10.0 cfs). The City of Chehalis has additional rights noted in its Comprehensive Water System Plan that are not counted among the largest municipal rights for this study because they are not formally or completely documented in the WRATS database. They include an adjudicated right for withdrawal of 2.8 mgd (4.3 cfs) from the North Fork of the Newaukum River, and a permit for withdrawal of 15 cfs from the Chehalis River; for a total right of 29.3 cfs, well above the projected peak-hour demand.

City of Centralia

The remaining eight large municipal water rights listed in the WRATS database are held by the City of Centralia for groundwater withdrawals. Centralia, which also has other, smaller water rights, has had to amend its water rights in response to water supply and water quality problems. From 1914 to late 1991, the city's major water supply was a diversion from the North Fork of the Newaukum River under a presumed vested right of 6.9 cfs (June 6, 1997 report for G2-28214; the "G" prefix indicates a groundwater right). A Certificate of Change in Point of Diversion was issued for this diversion in 1928, and Lewis County Superior Court Decree No. 22433 (October 4, 1954) supported the vested right. Due to landslides in the watershed and failure and reconstruction of the reservoir that received and stored the river water, over the years Centralia increasingly relied on its wells for municipal water. By the mid-1990s, Centralia relied entirely on wells for the public water supply.

Four of the Centralia listings among the top 10 municipal water rights are changes to original certificates that are also listed in the top 10. The allocated withdrawal rates defined in the change certificates (totaling 10.7 cfs) are already accounted for in the original listings of the right, so they should not be included in the allocated withdrawal totals. Two of the changes increased annual volume limits (one from 372 acre-feet to 1,886 acre-feet, the other from 238 acre-feet to 1,214 acre-feet).

Two of the water rights are under active review for further change (G2-28214 and G2-28215), including additional points of withdrawals as well as larger withdrawals. Reasons for additional points of withdrawal include contamination of original wells, increased production capacity at new locations, and loss of surface water supply.

The City of Centralia's water system service area population was 15,965 in 1997. The 1997 Centralia Comprehensive Water Plan projected a 2016 population of 18,772. The high projection for 2016 water demand, assuming conservation, is 7.9 cfs (5.16 mgd) for average daily demand, and 12.9 cfs (8.32 mgd) for peak-day demand. The city's four large water

rights listed in Table 3-3 have a combined allocated withdrawal rate of 10.7 cfs. With its other, smaller water rights, Centralia has a total instantaneous allocated flow rate of 22.4 cfs (14.4 mgd). The available water rights exceed the projected demand. The City of Centralia is projecting a deficit in annual demand however, compared to its water right allocation.

Fish Propagation

Eight large water rights for fish propagation account for 48 cfs of allocated withdrawal, compared to 50 cfs for the 23 rights noted in Table 3-2. Three large rights belonged to the Washington Department of Fish and Wildlife (S2-25145CWRIS, 20 cfs; S2-25996CWRIS, 10 cfs; and S2-00849CWRIS, 3 cfs). The other large rights are privately held. Two belong to Jack Marshall (S2-25939CWRIS, 5.0 cfs; G2-00025CWRIS, 1.3 cfs), two to Robert Hendrix et al. (S2-25089CWRIS, 4.5 cfs; G2-24820CWRIS, 2.7 cfs), and one to R.A. Canty (S2-*13741CWRIS, 1.0 cfs).

Washington Department of Fish and Wildlife

The Washington Department of Fish and Wildlife (WDFW) reviewed its water rights in the Chehalis Basin in a white paper dated June 27, 2002; the findings generally applied to the Priority Group 1 rights. WDFW has 21 water rights in the Chehalis Basin, allocating a total withdrawal rate of 173.8 cfs. Eighteen are surface water rights and three are groundwater rights. The agency has five hatcheries in the basin, with a total allocation of 156 cfs (15 rights), including two rights in the Skookumchuck subbasin with a combined allocation of 30 cfs. None has annual limits on the volume of withdrawal. WDFW also operates some very small nonconsumptive facilities without formal rights. A few have permits and most operate under a letter of permission from the Department of Ecology. Water use for virtually all the WDFW hatcheries is nonconsumptive. However, hatchery withdrawals may result in reduced flow in some reaches due to different points of withdrawal and return. The agency also has three very small consumptive rights for domestic use and stock watering at the Chehalis Game Farm.

In the Priority Group 1 area, the largest fish propagation water right (S2-25145CWRIS, 20 cfs) was issued March 31, 1980 for a fish-rearing facility (the Skookumchuck Project) with a 1.75-acre pond at the base of the Skookumchuck Reservoir. It was created when the Skookumchuck Dam was built by Pacific Power and Light as mitigation for the dam. The 20 cfs is a nonconsumptive use of water, as the water is taken from and returned to the same source. The required flow rate for a fish-rearing facility depends on the type of facility, type and size of fish, elevation, and water temperature, which affects oxygen and nutrient depletion and loading rates. The Skookumchuck Project was planned for 90,000 pounds of production capacity, or 1 cfs per 4,500 pounds of fish. This is comparable to other fish-rearing facilities, such as the Weaver Creek Salmon Hatchery (1 cfs per 4,500 pounds), the Icy Creek Hatchery (1 cfs per 4,200 pounds), and the Nooksack project (1 cfs per 4,800 pounds).

The next largest right (S2-25996CWRIS, 10 cfs) was issued February 24, 1987 for a wildlife propagation facility (coded as fish rearing) at the same location as the 20-cfs fish-rearing facility, at the base of Skookumchuck Reservoir. Both facilities were built as mitigation for the Skookumchuck Dam. The 10-cfs flow is a nonconsumptive use. The project uses the

water for a complex of six small dikes that impound water seasonally for wetland wildlife use.

The third large fish propagation water right owned by WDFW (S2-00849CWRIS) diverts 3.0 cfs nonconsumptively from the North Fork of the Newaukum River for operation of a fish ladder.

Marshall Property

The two large fish propagation water rights belonging to Jack Marshall (S2-25939CWRIS, surface right for 5.0 cfs; G2-00025CWRIS, groundwater right for 1.3 cfs) are on the same property at 194 Middle Fork Road in Chehalis. The 5-cfs flow, issued June 26, 1986 for a 2.5-acre pond, is nonconsumptive and is subject to low flow limitations. The 1.3 cfs right was issued May 12, 1972 for fish propagation facilities, and is also nonconsumptive. The well for the 1.3 cfs right is 200 feet from the South Fork of the Newaukum River. No information was available from the file on the specific facilities served by the well. The Marshall property holds the following additional water rights from different sources and for different uses (Report of Examination, October 21, 1981):

- Groundwater right G2-*08190CWRIS for 0.5 cfs for fish propagation and domestic water supply. This water right is reviewed below as a domestic supply.
- Surface water certificate No. 7002 for 0.12 cfs and 24 acre-feet per year for 12 acres of irrigation. No further information was obtained on this right.
- Groundwater certificate No. 6603A:
  - Domestic supply: 10 gallons per minute (gpm) (0.02 cfs) and 1 acre-foot per year
  - Fish propagation: 100 gpm (0.2 cfs) and 94 acre-feet from January 1 to August 1; 200 gpm (0.4 cfs) and 40-acre-feet from August 1 to September 15; 50 gpm (0.1 cfs) and 24 acre-feet from September 15 to January 1.

The maximum total of the above withdrawals for the Marshall property is 7.2 cfs, subject to flow and schedule limitations.

Hendrix et al.

Two large fish propagation water rights belong to Robert Hendrix et al. (S2-25089CWRIS, surface right for 4.5 cfs; G2-24820CWRIS, groundwater right for four wells withdrawing 2.7 cfs, with a total annual limit of 1,936 acre-feet). These two rights are for the same property on State Highway 508 in Onalaska. The surface water use is stated as nonconsumptive, with two points of withdrawal about 223 feet apart—one on the south fork of the Newaukum River and the other at an unnamed spring. The surface water right is subject to regulation during lows flows in the Chehalis River. The return point is about a quarter-mile downstream of the intake. Although not stated explicitly, the water use from the wells is primarily nonconsumptive: the description of the pond system fed by the wells provides for overflow into an unnamed stream that feeds to the Newaukum River.

Canty

The last large fish propagation water right belongs to R. A. Canty (S2-*13741CWRIS, 1.0 cfs, issued November 20, 1957). The right included construction of a small dam on a tributary to Coal Creek (now named Ojibway Creek), which feeds into Salzer Creek and the Chehalis River. The small dam created a pond that was stocked with fish. The water use is nonconsumptive.

Commercial

There are 20 commercial water rights in the Priority Group 1 subbasins with a combined instantaneous withdrawal allocation of 8 cfs. The largest seven rights total 6.7 cfs of allocated withdrawal, about 84 percent of the total. The largest three of these are for partially nonconsumptive uses:

- S2-*09793CWRIS—A 2.0-cfs surface water right held by Sylvan Products for a lumber pond near the Skookumchuck River.
- G2-*05682CWRIS—A 1.3-cfs groundwater right held by Hatfield for gravel washing and fish propagation and diverting water from a well located within 600 feet of the Newaukum River.
- G2-*01085CWRIS—A 1.1-cfs groundwater right held by Agnew for industrial processing and fish propagation; water is obtained from a well, which according to application information, is located within 1,000 feet of the Skookumchuck River. (Based on map data, the well may be within 400 feet of the river.)

The fourth largest commercial right is a groundwater right for withdrawal of 0.56 cfs listed under two numbers: G2-*00351C and G2-*00351CWRIS. The two documents were listed separately in the water-rights database, so the original flow could have been counted twice in the total water rights allocation for Priority Group 1. This is a groundwater right for gravel wash water. The well location could not be precisely determined from the information in the water right file.

The fifth largest commercial water right (S2-*16213CWRIS) is held by Lewis County for withdrawal of 0.5 cfs from the Newaukum River for gravel washing. Another right owned by the County is listed as both domestic and commercial and is included in the list of top domestic rights.

The sixth largest commercial water right (G2-20053CWRIS) is held by Dulin for 0.33 cfs of groundwater withdrawal for gravel washing and curing precast concrete. No disposal method was indicated in the water right file. The well was difficult to locate but appears to be approximately 4,400 feet east of the Chehalis River.

The last of the large commercial water rights (G2-26681CWRIS) is held by Harsco/Kinnear Corporation (now Wayne Dalton Manufacturing), located in Centralia 0.7 miles from the Skookumchuck River and 1.4 miles from the Chehalis River. The manufacturing operation is a plant for commercial garage doors. The groundwater right is a junior right for 0.29 cfs, with a priority date of April 16, 1985. It includes an annual volume limit of 26 acre-feet.

Agriculture

Agriculture is the category with the largest number of water rights (450 rights, with 127 cfs of instantaneous flow). Although the average individual instantaneous flow is low, the number of rights is large, so this category accounts for a significant total flow. The largest eight rights are for a total withdrawal of 15.4 cfs from surface and groundwater sources. The agricultural rights represent primarily irrigation, with some stock watering and other use. Most are also authorized to store water. One of the rights (S2-20709) is a permit for 1.4 cfs that does not appear to have been perfected as a certificate.

The largest two agriculture rights (3.0 cfs and 2.5 cfs) involve power generation, stock watering, irrigation and domestic uses. The remaining rights all have flows of less than 2 cfs and are mostly for irrigation. Some properties have multiple rights, for surface water and groundwater withdrawals, such as the Agnew property (G2-00216CWRIS, and G2-00300CWRIS). The irrigation water allocations reviewed generally have annual volume limits equivalent to about 2 acre-feet of water per acre of irrigated land, or about 13 to 14 inches per acre per year. The Level 1 Assessment report assumes a delivery efficiency of 50 percent.

Domestic

Domestic rights, like municipal rights, pertain to human water use for drinking and household supply. Domestic use is differentiated from municipal use in Ecology's tracking system. "Municipal" use is typically assigned to cities and water purveyors (such as water districts) who supply water to people. "Domestic" use is assigned to community and individual water supply.

The domestic category has the second largest number of rights (94) but a relatively small total flow (11 cfs total instantaneous). Domestic water use is largely consumptive. Thirteen large rights in the domestic category have a total allocation of 6.95 cfs. However, the largest domestic right listed (G2-00168CWRIS) is held by the City of Centralia and appears to have been misclassified as domestic. The 2.23 cfs right held by Centralia is used for groundwater withdrawal for municipal supply. The revised total flow for the remaining 12 large domestic rights is 4.7 cfs. The domestic use volume limits were set by the Department of Ecology. There are few single domestic rights in this group since the focus is on large domestic water rights, which tend to be represented by multiple domestic or combination uses.

EXEMPT WELLS

Exempt wells are wells drawing limited amounts of water for limited uses that are allowed under state law without an official water right. It is difficult to accurately estimate the number of exempt wells due to a number of factors, including possible surface water diversion instead of well usage, multiple connections to a well, and the variability in water rights in terms of defining primary and secondary water uses. The potential number of exempt wells was estimated by subtracting the total number of households served by a public water district or drawing water through a listed water right from the total number of households in the Priority Group 1 subbasins. Homes not within a public water district or using a listed water right are assumed to be potential users of exempt wells.

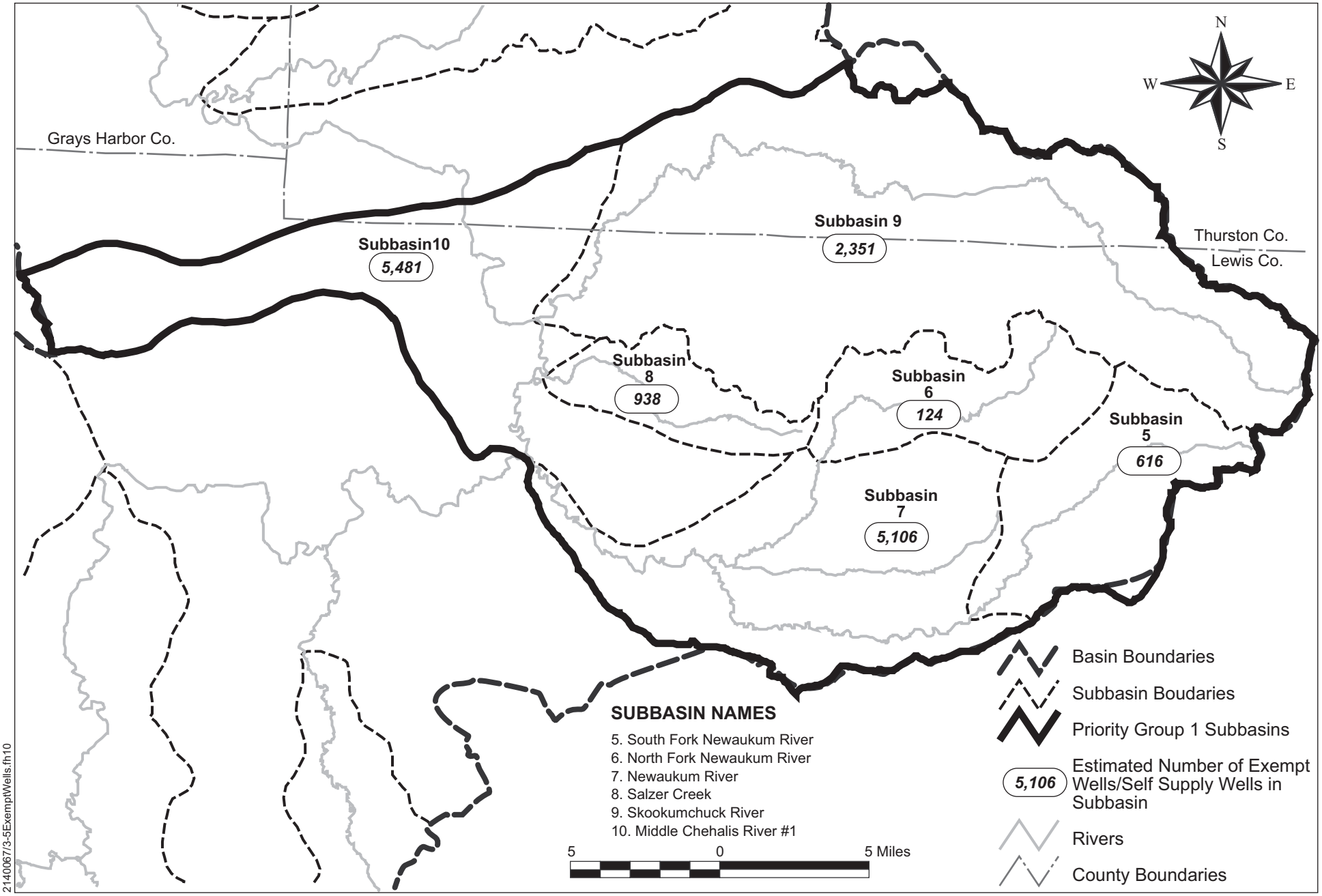
The analysis did not estimate the number of exempt wells used for commercial, agricultural, municipal, industrial or other purposes. By definition, the exemption status is accorded to relatively small uses which tend to cover residential purposes. Therefore, only these water purpose types were examined. Information used for the estimate was gathered as follows:

- GIS maps were obtained from Lewis, Thurston, and Grays Harbor Counties.
- Hard copy maps were obtained from a number of water districts.
- Where boundary information for water service areas was not available, boundaries were estimated based on incorporated area, urban growth area, or aerial photographs.
- WRATS data and GIS maps and data for Priority Group 1 subbasins were obtained from the EPA.
- 2000 Census GIS maps were obtained from the Washington Department of Health and Office of Financial Management.
- Maps of wells were obtained from the Washington Department of Health and Lewis County. (These were examined but not used.)
- Information was taken from the Level 1 Assessment report.
- Aerial photographs and other GIS data were obtained from the Chehalis Basin Partnership.

Population was estimated on a density per acre basis for areas outside water service areas. The number of households was estimated based on population data, assuming an average of 2.5 residents per household. The estimate of households served by a listed water right outside public water districts used the following assumptions:

- Water rights whose primary purpose is given as "domestic, single" (DS) were assumed to account for one household.
- For water rights whose primary purpose is given as "domestic, general" (DG), it was assumed that one household is served for every 0.01 cfs of allocated withdrawal. This is a typical household water use rate.
- For water rights whose primary purpose is given as "domestic, multiple" (DM) or "municipal" (MU), it was assumed that one household is served for every 0.04 cfs of allocated withdrawal. This accounts for the typical household water use of 0.01 cfs and the likelihood that the right is used for other purposes in addition to domestic use. Municipal rights held by public water agencies were not included in this count; only privately held rights listed as municipal were counted.

The results are given in Table 3-5 and shown in Figure 3-5. The estimated number of exempt wells is 5,388. The three subbasins with the largest estimated number of potential exempt wells are Subbasins 10, 7 and 9, with a combined total of 4,747.



Tetra Tech/ KCM, Inc. *1917 First Avenue* *Seattle, Washington 98101*	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 3-5. ESTIMATED EXEMPT WELLS/SELF SUPPLY IN PRIORITY GROUP 1 SUBBASINS

TABLE 3-5.
ESTIMATED NUMBER OF DOMESTIC EXEMPT WELLS AND SELF-SUPPLY

Subbasin	5	6	7	8	9	10	**Total**
Population Outside Water Service Area	616	124	5,106	938	2,351	5,481	**14,616**
Households Outside Service Area[a]	246	50	2,042	375	941	2,192	**5,846**
Water Rights Outside Service Area							
Domestic, Single (# of rights)	4	4	54	4	25	68	**159**
Domestic, Multiple (combined flow, cfs)	0.04	0	3.95	0.10	2.29	1.60	**7.98**
Domestic, General (combined flow, cfs)	0	0	0.85	0	0	0	**0.85**
Private Municipal (combined flow, cfs)	0.25	0	0	0.36	0	0	**0.61**
Households Outside Service Areas Served by Water Rights[b]	11	4	238	15	82	108	**458**
Potential Number of Exempt Wells	**235**	**46**	**1,805**	**360**	**858**	**2,084**	**5,388**

a. Assumes 2.5 persons per household
b. Assumes one household per right for DS, one household per 0.01 cfs for DG, and one household per 0.04 cfs for DM and MU

WATER RIGHT CLAIMS

Water right claims are another unquantified, unvalidated type of possible water right. Water right claims document asserted use of water before the water right certificate program began (in 1917 for surface water and 1944 for groundwater). There are 4,968 claims in the Priority Group 1 Subbasins. These are discussed in Section 4.

OBSERVATIONS AND CONCLUSIONS

Water Right Mapping

The mapping method provided a reasonable estimate of the location of diversion or withdrawal. In most cases, the water right was mapped to the quarter-quarter section level, or to within about a sixteenth of a mile (330 feet). Anomalies with section shapes made mapping difficult without photographs to check ground conditions. The Public Land Survey system provides only an estimate of true location. Assessor's maps could provide more references to define locations of properties associated with water rights.

The Department of Health has a GIS dataset of wells, with locations determined using GPS latitude and longitude coordinates where available, and PLS reference for other well locations. The use of latitude and longitude coordinates, if carried out to water rights as well as the remainder of wells, would greatly aid in providing accurate locations for mapping and spatial analysis of these water resources.

The approach used to map water rights was determined to be an appropriate level-of-effort given the timing and budgetary constraints of this project. The resulting mapped water rights are considerably more accurately located, and usable for analysis. The recommended next step evaluating these water rights would be a field survey to physically locate each water right, including water source and place of use.

Review of 49 Largest Water Rights

Metering is conducted by water purveyors for billing, tracking and planning purposes. Metering data is generally not available for private water rights. The lack of metering data on water use makes it difficult to estimate the extent of water rights that is used.

Municipal water rights have the most water use information available, through the public entities managing the associated water systems. However, the extent of use compared to total rights and the status of such rights vary. Three water systems were represented among the largest rights reviewed: Centralia, Chehalis, and Bucoda. All except Centralia have water rights in excess of projected need. Centralia's loss of surface water supply and its need to develop and maintain groundwater resources presents an additional challenge.

For other water right types, estimates can be made indirectly by evaluating the water volume limitations and limitations on the extent of potential use (acres irrigated, household usage, timing restrictions). For individual commercial and even domestic uses, the extent of water use would need to be evaluated on a case by case basis. Most fish propagation and power uses tend to be nonconsumptive, but exceptions exist and need to be checked individually. The largest fish propagation water rights in the Priority Group 1 subbasins are generally nonconsumptive. However, the remaining, unexamined fish propagation rights likely have some degree of consumption, and individual review of such rights would be needed to develop an accurate assessment.

Exempt Wells

The review of exempt wells provided some understanding of the extent of population unserved by water systems. The extent of exempt wells can be compared with the number of general domestic claims that have been filed. In WRIA 23, which includes the Priority Group 1 subbasins, 4,968 claims were on file with Department of Ecology for general domestic purposes. This is comparable to the 5,388 potential exempt wells estimated for Priority Group 1, which has most of the population of WRIA 23.

The method used to estimate the potential number of exempt wells was based on population, water service areas, and water rights, and provides a general level of understanding. Another approach, which could be used to develop an inventory of exempt wells, was discussed in the Level 1 Report. This method would use County assessor's data, matching up water rights and service connections with individual properties. This approach would require much more research, but could be used to find properties with undocumented water supply.

Water Right Claims

Water right claims are another unquantified, unvalidated type of possible water right. The potential impact of water use under water right claims is discussed in Section 4.

SECTION 4.
PRIORITY GROUP 1 SUBBASIN CONDITIONS

Conditions in the six subbasins in Priority Group 1 are reviewed in this section. For each subbasin, a discussion is provided on stream flows and water rights. Figure 4-1 shows key features in the Priority Group 1 subbasins.

DESCRIPTION OF CONCEPTS AND METHODS

To simplify the description of conditions in each subbasin, the general concepts addressed and methods used to assess all subbasins are described below.

Stream Flow Assessment

The stream flow discussions present month-by-month flow averages based on historical stream gauge data for each subbasin's main surface water. Three values are presented: the mean flow, the 50-percent exceedance (median) flow, and the 90-percent exceedance (low) flow. These are compared to the river's "regulatory base flow," which is the minimum month-by-month instream flow defined under Washington Administrative Code (WAC) Chapter 173-522. The regulatory base flow represents the minimum flow deemed suitable to maintain the river in a sound environmental condition. Recorded low flows falling beneath the regulatory base flow can indicate that too much water is being withdrawn from the stream. In addition to month-by-month comparisons of recorded flows and regulatory base flows, comparisons are presented for the annual volume represented by each.

Water Rights Assessment

The discussions of water rights address total allocated instantaneous withdrawal rates and cumulative annual volume of withdrawal in each subbasin, as well as a breakdown of these values by purpose (what the water is intended to be used for).

For allocated instantaneous withdrawal rates, subbasin totals are presented with and without nonconsumptive uses included. These uses include fish propagation facilities, for which it is assumed that water is returned to the stream near the point where it is withdrawn, having little impact on stream flow. The totals include surface water diversions and groundwater withdrawals but not water claims or exempt wells.

Even with the removal of nonconsumptive uses, values for total allocated instantaneous withdrawal rates should be used with caution. Because different water rights are used at different times of day, instantaneous flow is not truly additive. For example, domestic water use tends to be heaviest during early to mid-morning, and late afternoon to mid-evening hours, coinciding with household activity periods. Commercial and irrigation uses tend to occur during working hours, generally complementing domestic use.

Since many rights have no associated annual volume limits, an effort was made for each subbasin to estimate the maximum total volume likely to be withdrawn in a year. This estimate used the following assumptions:

- For water rights that include annual volume limits, that limit is used for the estimate.
- Fish propagation rights of 1 cfs or larger are assumed to be nonconsumptive, meaning that no net withdrawal occurs, so an annual volume of zero is assumed.
- Domestic water rights are assumed to consume 1 acre-foot per year per household. Rights for "domestic, single" are assumed to serve one household, and rights for "domestic, multiple" are assumed to serve four households.
- Irrigation rights without assigned annual volume limits are assumed to consume 2 acre-feet per irrigated acre per year.
- For all other rights, the maximum annual withdrawal volume is calculated assuming nonstop year-round withdrawal at the allocated instantaneous withdrawal rate. This includes fish propagation rights of less than 1 cfs, which may be for facilities that are prone to losses or are otherwise consumptive.

  Many factors can preclude nonstop year-round withdrawal, such as restrictions on withdrawal when flow in the water sources is low or seasonal uses for which there is no need to withdraw water year-round. Lacking a feasible approach for accounting for these factors, however, and to provide conservative estimates, such factors are not addressed.

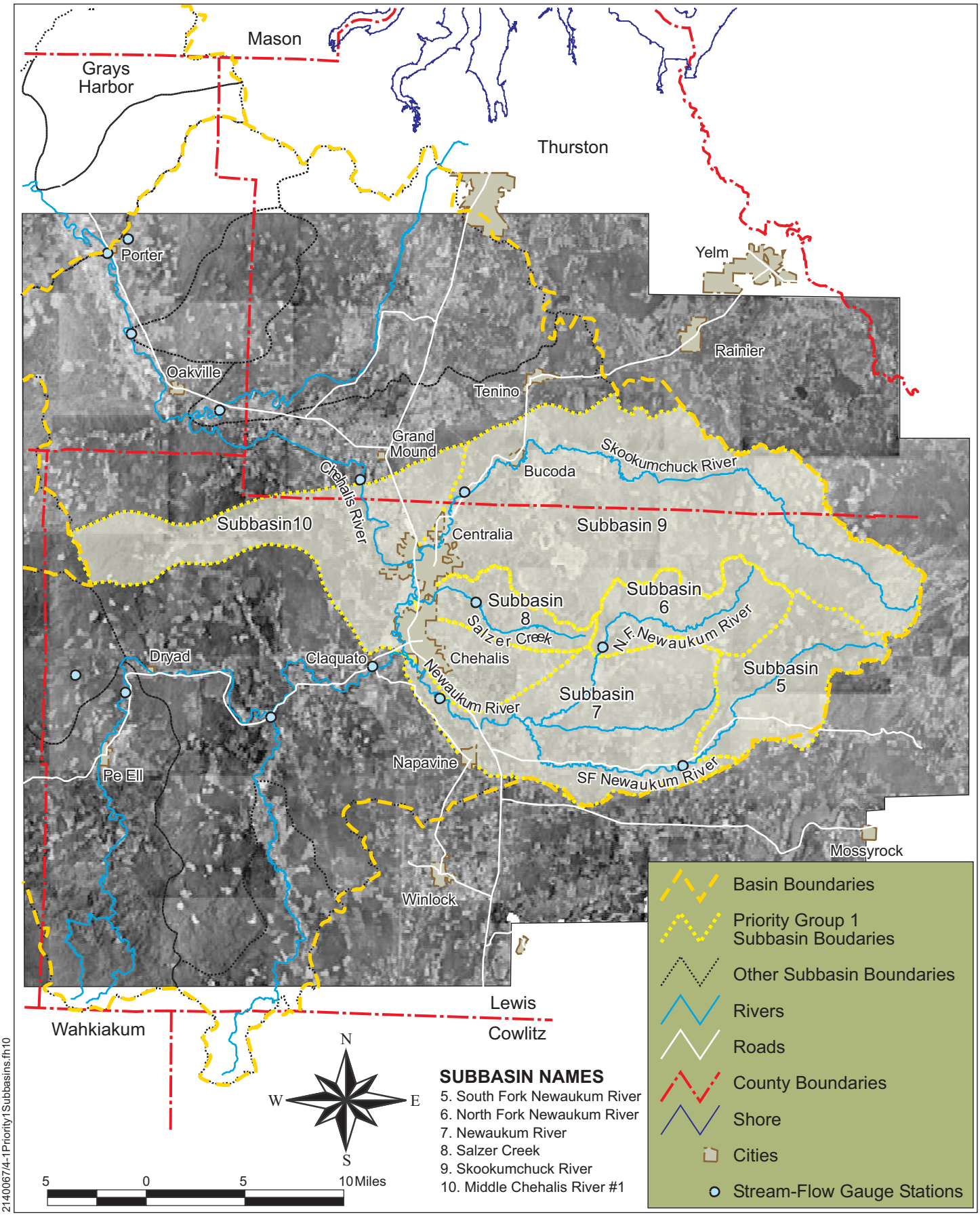
Analysis of municipal water rights is complicated by the effective transfer of some water among Subbasins 6, 7, 8, 9, and 10 (North Fork Newaukum River, Newaukum River, Salzer Creek, Skookumchuck River, and Middle Chehalis River No. 1). Centralia lies in Subbasins 8, 9 and 10, and has several water rights in Subbasins 9 and 10, with a listed total of 25.6 cfs, of which 10.7 cfs appears to be redundant. Chehalis lies in Subbasins 7, 8, 9 and 10, and has two rights in Subbasin 6 for a total of 10.1 cfs. Chehalis also has a water claim for 4.3 cfs from Subbasin 6.

Also presented for each subbasin is an estimate of the potential number of exempt wells, based on the analysis presented in Chapter 3, a summary of water claims (claims to water use that were made before Washington State adopted codes formalizing water rights), a review of pending water rights applications, and identification of sources of water returning to the stream.

SUBBASIN 5, SOUTH FORK NEWAUKUM RIVER

General Conditions

The South Fork Newaukum River subbasin (see Figure 4-2) has an area of approximately 41 square miles. This is slightly less than the 42 square miles reported in the Level 1 Assessment report, and the difference is due to a revised basin delineation used for this review. Residential areas include the community of Alpha, for which no specific census population data is available. The South Fork Newaukum River subbasin is still largely forested (93 percent), with agriculture as the next largest land use (7 percent). Table 4-1 summarizes land use, precipitation, and estimated population in the subbasin.



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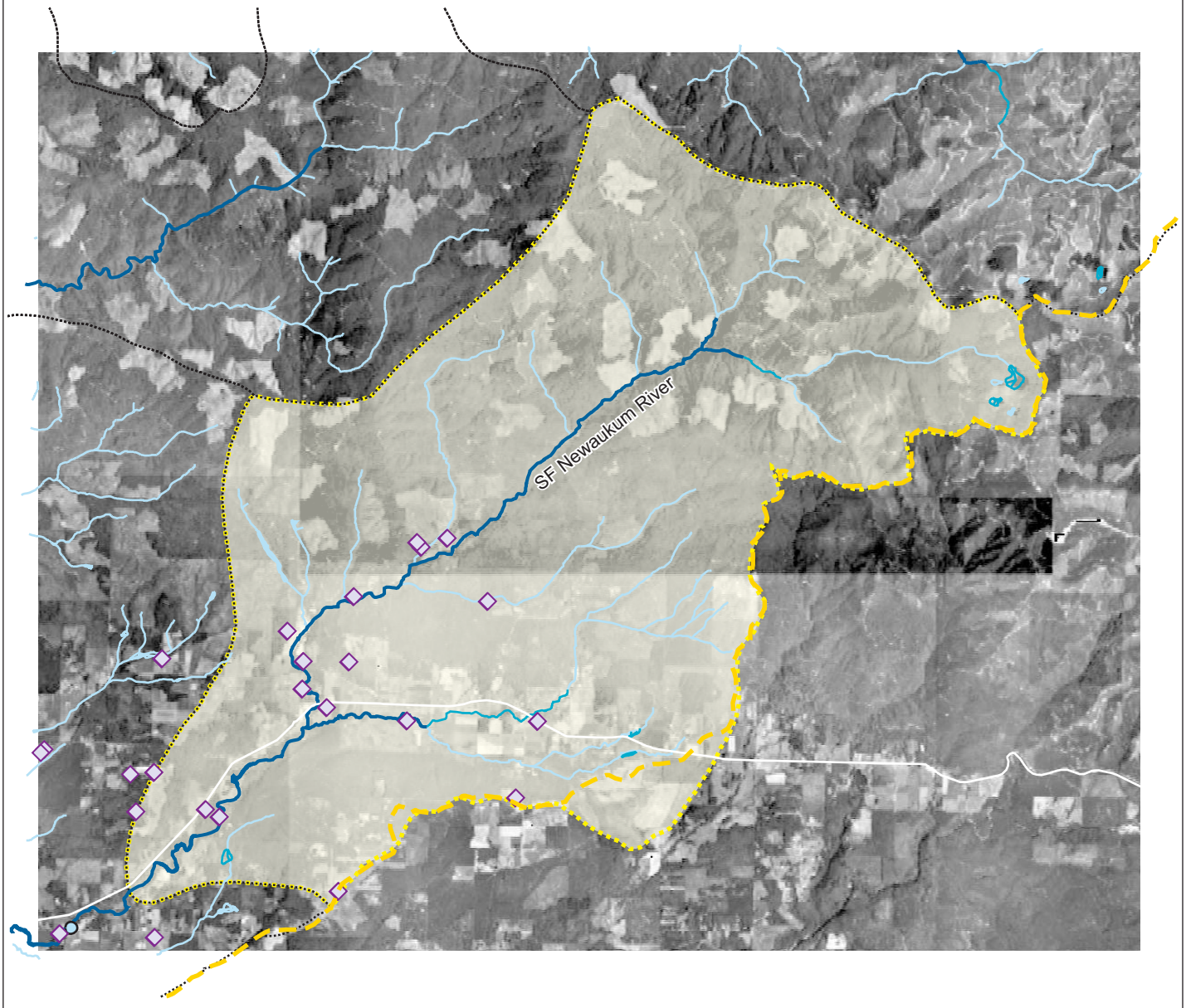
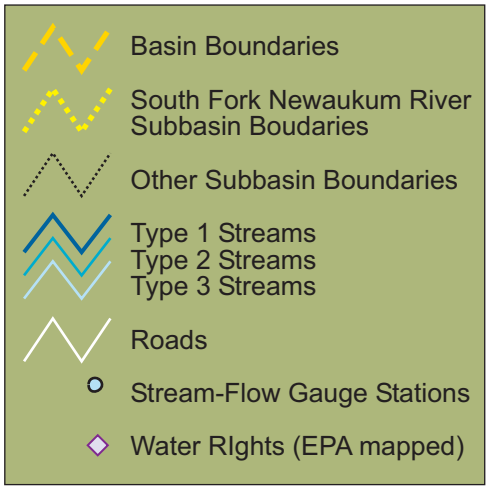
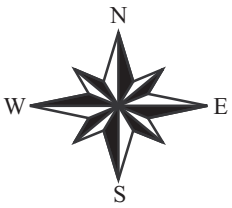
Seattle, Washington 98101

Chehalis Basin Partnership
2003 CHEHALIS BASIN
WATER QUANTITY EVALUATION

Figure 4-1.
PRIORITY GROUP 1 SUBBASINS
KEY FEATURES







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Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 4-2. SUBBASIN 5, SOUTH FORK NEWAUKUM RIVER

TABLE 4-1. SUBBASIN 5, SOUTH FORK NEWAUKUM RIVER, GENERAL CONDITIONS	
Estimated Population (2000)	616
Average Annual Precipitation (inches)	66.2
Area (square miles, percent of total)	
Forest	38.1 (93%)
Agriculture/Field	2.5 (7%)
Urban	0.1 (<1%)
Water	0.0 (<1%)
Total	**41 (100%)**

Stream Flow

Table 4-2 and Figure 4-3 summarize stream flow in the South Fork Newaukum River and the river's regulatory base flow. Stream flows are based on stream-gauge data recorded at USGS Control Station 12024000 from 1944 through 1948, 1957 through 1971, and 1998 to the present.

TABLE 4-2.
SOUTH FORK NEWAUKUM RIVER FLOWS AND REGULATORY BASE FLOW

	Recorded Stream Flows (cfs)			Regulatory Base Flow (cfs)	Monthly Flow Volume (acre-feet)		
Month	Mean flow	50% Exceedance	90% Exceedance		Mean Flow	90% Exceedance	Base Flow
Oct	104.1	66	32	40	6,399	1,968	2,460
Nov	286.9	185	72	85	17,072	4,284	5,058
Dec	364.4	278	134	125	22,404	8,239	7,686
Jan	412.1	316	125	125	25,342	7,686	7,686
Feb	354.2	287	149.2	125	19,847	8,360	7,004
Mar	271.4	232	130	125	16,685	7,993	7,686
Apr	230.1	203	131	125	13,692	7,795	7,438
May	147.5	128	76	88	9,071	4,673	5,411
Jun	89.7	75	47	56	5,337	2,797	3,332
Jul	52.2	44	30	36	3,209	1,845	2,214
Aug	39.0	34	23	27	2,400	1,414	1,660
Sep	51.4	36	24	27	3,060	1,428	1,607
Total					**144,518**	**58,482**	**59,242**

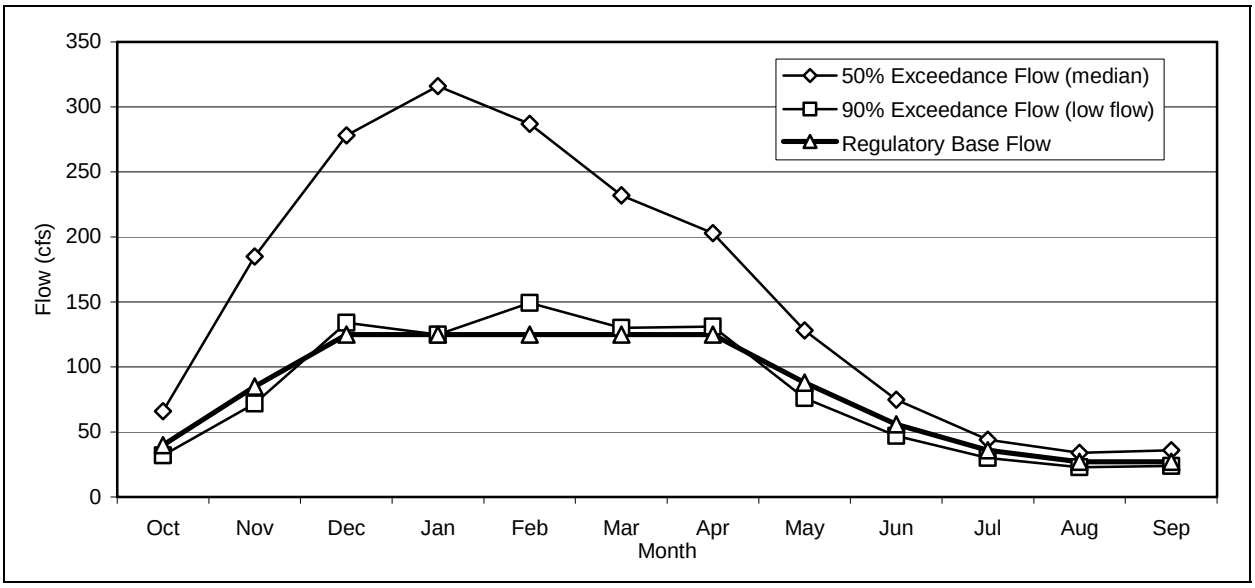


Figure 4-3. South Fork Newaukum River Stream Flows and Regulatory Base Flow

During August and September, the summer months with lowest flow, mean gauged flows are 39 and 51 cfs, respectively; 50-percent exceedance flows are 34 and 36 cfs, respectively; and 90-percent exceedance flows are 23 and 24 cfs, respectively. The August 90-percent exceedance flow is 15 percent below the regulatory base flow of 27 cfs.

Table 4-2 also shows the annual flow volume corresponding to the stream flows and regulatory base flow. On an annual basis, mean flow is more than double the regulatory base flow, but the 90-percent exceedance level flow is slightly lower than the regulatory base flow.

Water Rights and Estimated Use

Allocated Instantaneous Withdrawal Rates

Table 4-3 summarizes allocated instantaneous withdrawal rates in the South Fork Newaukum River subbasin by primary purpose. The total allocated instantaneous withdrawal rate for the 16 water rights in the South Fork Newaukum River subbasin is 8.9 cfs. The largest water rights in this subbasin are two fish propagation rights owned by Hendrix, with total allocated withdrawal of 7.2 cfs, and a municipal right owned by Cartwright, for 0.25 cfs. The fish propagation rights are nonconsumptive. Irrigation rights total 1.3 cfs of allocated instantaneous withdrawal. One domestic-single right has an allocated instantaneous withdrawal rate of 0.01 cfs.

The revised allocated withdrawal listed in Table 4-3 represents the subtraction of nonconsumptive water rights. In the South Fork Newaukum River subbasin, this revision applies only to fish propagation water rights. The net effect is reduction of total allocated withdrawal from 8.9 cfs to 1.7 cfs.

TABLE 4-3.
ALLOCATED WITHDRAWAL RATES BY PRIMARY PURPOSE
FOR THE SOUTH FORK NEWAUKUM RIVER SUBBASIN

Primary Purpose	Number of Rights	Allocated Instantaneous Withdrawal (cfs)	
		Defined by Rights	Without Nonconsumptive Uses
Commercial/Industrial	0	0	0
Domestic, Multiple	0	0	0
Domestic, Single	1	0.0	0.0
Fire	0	0	0
Fish Propagation	2	7.2	0.0
Heat Exchange	0	0	0
Irrigation	8	1.3	1.3
Mining	0	0	0
Municipal	1	0.3	0.3
Power	0	0	0
Recreation	1	0.1	0.1
Railway	0	0	0
Stock Watering	3	0.1	0.1
Wildlife	0	0	0
Total	**16**	**9.0**	**1.8**

Cumulative Annual Withdrawal Volumes

Table 4-4 lists annual withdrawal volumes by purpose. Water rights in this subbasin establish annual volume limits totaling 112 acre-feet. Using the assumptions described at the beginning of this chapter, the maximum estimated annual withdrawal in this subbasin is 192 acre-feet.

Exempt Wells

Based on the analysis of exempt wells presented in Chapter 3, there are an estimated 235 potential exempt wells in the South Fork Newaukum River subbasin.

Claims

Table 4-5 lists claims in the South Fork Newaukum River subbasin by purpose. The subbasin has an estimated total of 118 claims. This is about half the estimated number of exempt wells in the subbasin. WRATS claims locations were given by section. EPA tabulated claims by subbasin by assigning claims to the centroid of each section and then summing the number of claims based on the number of centroids located inside the subbasin boundaries. Our analysis used an area-weighted approach to summarize the number of claims and volume limits per subbasin. This analysis is described in more detail in Chapter 5. The flows (allocated instantaneous withdrawal) were based on listed values where available. For many claims, including many of the domestic (DG) claims, this was not available, and an assumed 0.02 cfs was used per claim. The resulting numbers were approximate but gave some spatial distribution to the numbers, types, and flows associated

with claims in each subbasin. There were also a relatively large number of sections that were truncated by subbasin boundaries. The area-weighted analysis resulted in generally lower claim counts than EPA's method, though larger flows due to assigning an assumed value of 0.02 cfs to the majority of the claims.

Pending Water Rights Applications

No new applications or changes in the South Fork Newaukum River subbasin have been submitted to the Department of Ecology since 2001.

TABLE 4-4.
ANNUAL WITHDRAWAL VOLUME BY PRIMARY PURPOSE
FOR THE SOUTH FORK NEWAUKUM RIVER SUBBASIN

Primary Purpose	Number of Rights	Annual Withdrawal Volume (acre-feet)	
		Limits Defined in Rights	Estimated
Commercial/Industrial	0	0	0
Domestic, Multiple	0	0	0
Domestic, Single	1	0	1
Fire	0	0	0
Fish Propagation	2	0	0
Heat Exchange	0	0	0
Irrigation	8	84	274
Mining	0	0	0
Municipal	1	20	20
Power	0	0	0
Recreation	1	1	1
Railway	0	0	0
Stock Watering	3	7	8
Wildlife	0	0	0
Total	**16**	**112**	**304**

TABLE 4-5.
CLAIMS IN THE SOUTH FORK NEWAUKUM RIVER SUBBASIN

Claim Type	Number	Allocated Instantaneous Withdrawal (cfs)	Annual Volume Limit (acre-feet)	Irrigated Area (acres)
Domestic, General	108	2.16	0.0	16
Irrigation	3	0.06	0.0	41
Stock Watering	5	0.1	0.0	47
Unclassified	2	0.04	0.0	0.0
Total	**118**	**2.36**	**0.0**	**104.0**

Water Returns

The 7.2 cfs in fish propagation rights is the only source of water returns identified in this subbasin.

SUBBASIN 6, NORTH FORK NEWAUKUM RIVER

General Conditions

The North Fork Newaukum River subbasin (see Figure 4-4) has an area of approximately 32 square miles. The subbasin is largely forested (95 percent), with agriculture as the next largest land use (5 percent). There is a farmland/agricultural area in the southwest portion of the subbasin with some residential development. Table 4-6 summarizes land use, precipitation, and estimated population in the subbasin.

TABLE 4-6.
SUBBASIN 6, NORTH FORK NEWAUKUM RIVER, GENERAL CONDITIONS

Estimated Population (2000)	125
Average Annual Precipitation (inches)	59.3
Area (square miles, percent of total)	
Forest	30.7 (95%)
Agriculture/Field	1.2 (5%)
Urban	0.0 (0%)
Water	0.0 (0%)
Total	**32.2 (100%)**

Stream Flow

Table 4-7 and Figure 4-5 summarize stream flow in the North Fork Newaukum River and the river's regulatory base flow. Stream flows are based on stream-gauge data recorded at USGS Control Station 12024500 from 1960 through 1966.

During August and September, the summer months with lowest flow, mean gauged flows are 14 and 12 cfs, respectively; 50-percent exceedance flows (median gauged flows) are 10 and 9 cfs, respectively; and 90-percent exceedance flows (low flow) are 4 and 3 cfs, respectively. The September 90-percent exceedance flows is 57 percent below the regulatory base flow of 7 cfs for these months.

Table 4-7 also shows the annual flow volume corresponding to the stream flows and regulatory base flow. On an annual basis, mean flow is almost three times the regulatory base flow, but the 90-percent exceedance level flow is slightly below the regulatory base flow.

TABLE 4-7.
NORTH FORK NEWAUKUM RIVER FLOWS AND REGULATORY BASE FLOW

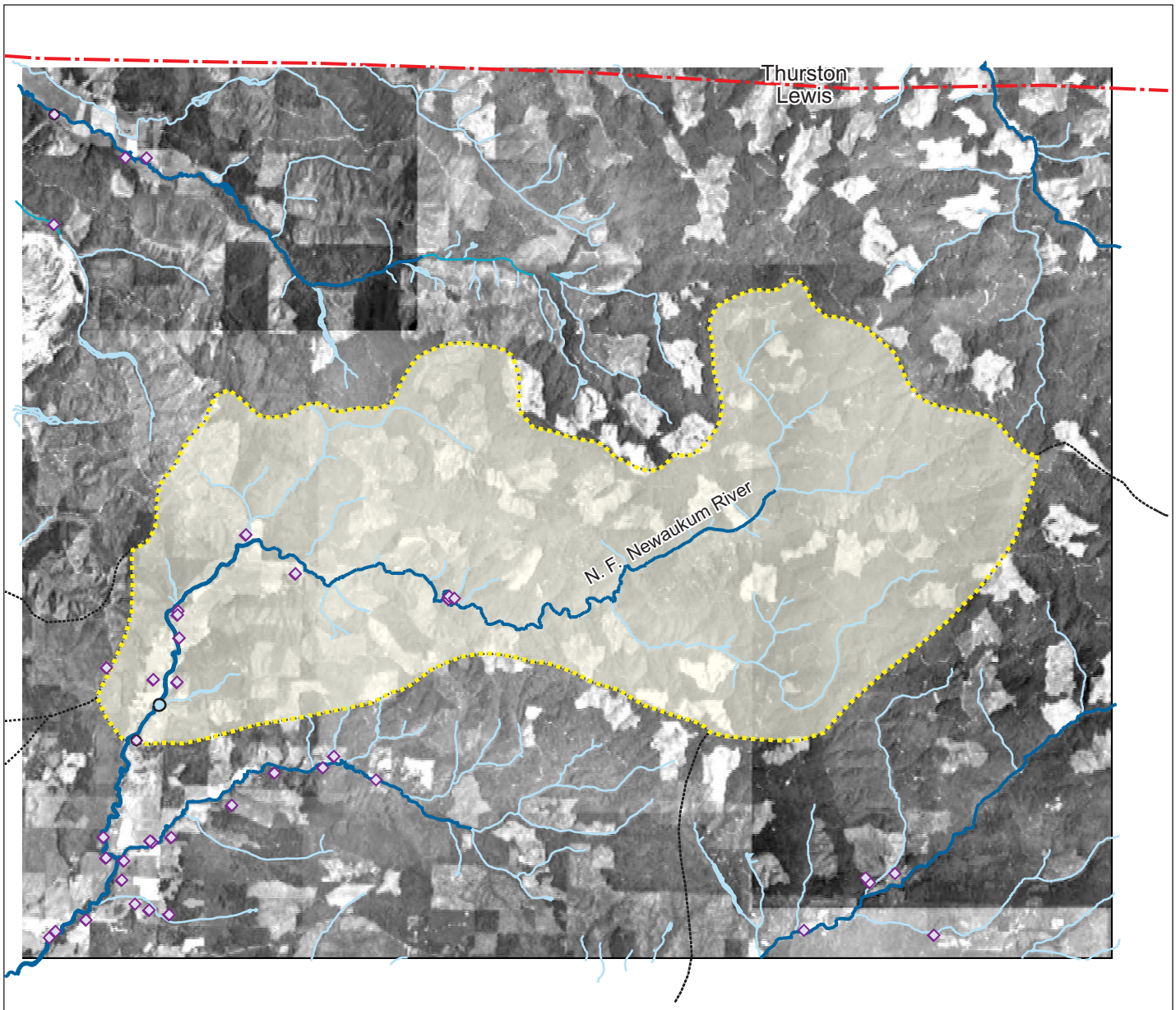
	Recorded Stream Flows (cfs)			Regulatory	Monthly Flow Volume (acre-feet)		
Month	Mean flow	50% Exceedance	90% Exceedance	Base Flow (cfs)	Mean Flow	90% Exceedance	Base Flow
Oct	33	20	8	10	2,020	480	615
Nov	162	89	30	34	9,629	1,773	2,023
Dec	176	123	60	62	10,842	3,689	3,812
Jan	236	195	69	62	14,507	4,243	3,812
Feb	201	150	76	62	11,265	4,247	3,474
Mar	173	144	59	62	10,653	3,628	3,812
Apr	115	98	49	62	6,818	2,910	3,689
May	68	55	33	36	4,189	1,998	2,214
Jun	33	26	16	21	1,963	952	1,250
Jul	19	16	7	12	1,162	433	738
Aug	14	10	4	7	886	234	430
Sep	12	9	3	7	735	202	417
Total					**74,669**	**24,789**	**26,286**

Water Rights and Estimated Use

Allocated Instantaneous Withdrawals

Table 4-8 summarizes allocated instantaneous withdrawal rates in the North Fork Newaukum River subbasin by primary purpose. The total allocated instantaneous withdrawal of the 11 water rights in the North Fork Newaukum River subbasin is 14.0 cfs. The largest water rights in this subbasin are a 10-cfs right for municipal use owned by the City of Chehalis and a 3.0-cfs fish propagation right owned by WDFW, totaling 13.0 cfs of the 14.0 cfs allocated withdrawal in the subbasin. The fish propagation rights are nonconsumptive. The remaining rights include irrigation, domestic-single, additional fish propagation, and stock watering rights. There are 77 acres under irrigation. The City of Chehalis, which is located in several subbasins (7, 8, 9, and 10), has two water rights in this subbasin totaling 10.13 cfs. This effectively results in a partial transfer of some of the water from Subbasin 6 to other nearby subbasins for use and return.

The revised allocated withdrawal listed in Table 4-8 represents the subtraction of nonconsumptive water rights (WDFW's 3.0 cfs right for fish propagation), reducing the total allocated withdrawal from 14.0 cfs to 11.0 cfs.



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North Fork Newaukum River Subbasin Boudaries
Other Subbasin Boundaries
Type 1 Streams
Type 2 Streams
Type 3 Streams
County Boundaries
Stream-Flow Gauge Stations
Water RIghts (EPA mapped)

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Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 4-4. SUBBASIN 6, NORTH FORK NEWAUKUM RIVER

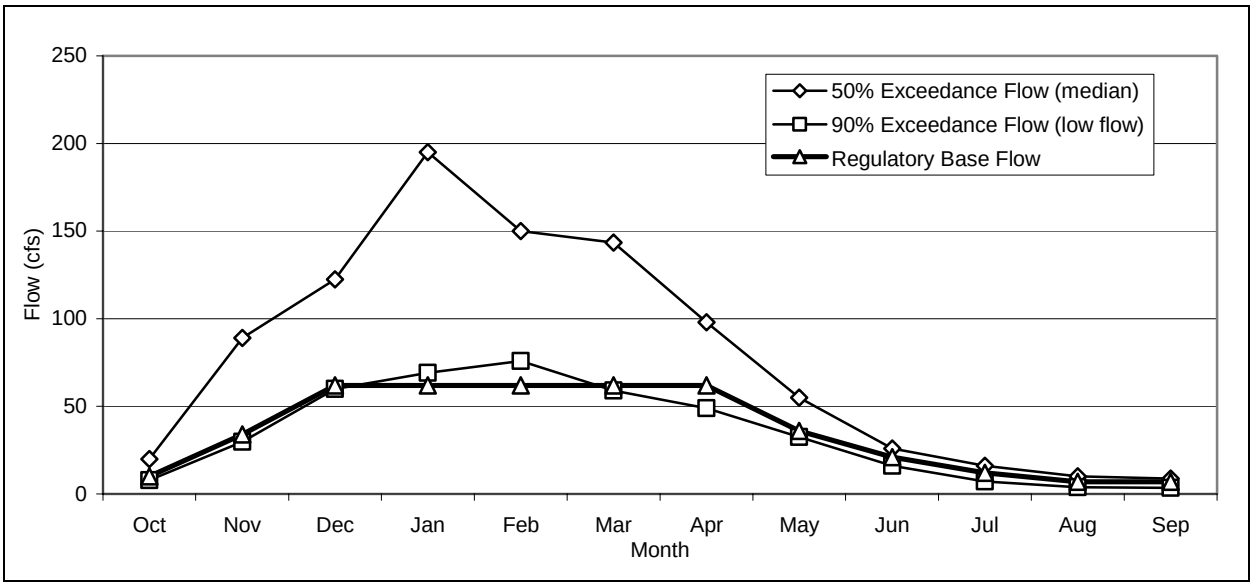


Figure 4-5. North Fork Newaukum River Stream Flows and Regulatory Base Flow

TABLE 4-8.
ALLOCATED WITHDRAWAL RATES BY PRIMARY PURPOSE
FOR THE NORTH FORK NEWAUKUM RIVER SUBBASIN

Primary Purpose	Number of Rights	Allocated Instantaneous Withdrawal (cfs)	
		Defined by Rights	Without Nonconsumptive Uses
Commercial/Industrial	0	0	0
Domestic, Multiple	0	0	0
Domestic, Single	4	0.1	0.1
Fire	0	0	0
Fish Propagation	2	3.1	0.1
Heat Exchange	0	0	0
Irrigation	3	0.8	0.8
Mining	0	0	0
Municipal	1	10.0	10.0
Power	0	0	0
Recreation	0	0	0
Railway	0	0	0
Stock Watering	1	0.0	0.0
Wildlife	0	0	0
Total	**11**	**14**	**11**

Cumulative Annual Withdrawal Volumes

Table 4-9 lists annual withdrawal volumes by purpose. Water rights in this subbasin establish annual volume limits totaling 18 acre-feet. Using the assumptions described at the beginning of this chapter, the maximum estimated annual withdrawal in this subbasin is 7,494 acre-feet.

TABLE 4-9.
ANNUAL WITHDRAWAL VOLUME BY PRIMARY PURPOSE
FOR THE NORTH FORK NEWAUKUM RIVER SUBBASIN

Primary Purpose	Number of Rights	Annual Withdrawal Volume (acre-feet)	
		Limits Defined in Rights	Estimated
Commercial/Industrial	0	0	0
Domestic, Multiple	0	0	0
Domestic, Single	4	4	4
Fire	0	0	0
Fish Propagation	2	0	96
Heat Exchange	0	0	0
Irrigation	3	10	150
Mining	0	0	0
Municipal	1	0	7,240
Power	0	0	0
Recreation	0	0	0
Railway	0	0	0
Stock Watering	1	4	4
Wildlife	0	0	0
Total	**11**	**18**	**7,494**

Exempt Wells

Based on the analysis of exempt wells presented in Chapter 3, there are an estimated 46 potential exempt wells in the North Fork Newaukum River subbasin.

Claims

Table 4-10 lists claims in the North Fork Newaukum River subbasin by purpose. The subbasin has one municipal claim (City of Chehalis) totaling 4.34 cfs with 3,136 acre-feet of listed volume limit. There are 7 domestic general claims, with irrigated lands of approximately 15 acres, and 1 stock watering claim of 0.02 cfs (no acre-ft or irrigated acreage was assigned to the claim).

TABLE 4-10.
CLAIMS IN THE NORTH FORK NEWAUKUM RIVER SUBBASIN

Claim Type	Number	Allocated Instantaneous Withdrawal (cfs)	Annual Volume Limit (acre-feet)	Irrigated Area (acres)
Domestic, General	7	0.12	0	15
Stock	1	0.02	0	0
Municipal	1	4.34	3,136	0
Total	**9**	**4.48**	**3,136**	**15**

Pending Water Rights Applications

No new applications or changes in the North Fork Newaukum River subbasin have been submitted to the Department of Ecology since 2001.

Water Returns

The 3.0 cfs in fish propagation rights is the only source of water returns identified in this subbasin.

SUBBASIN 7, NEWAUKUM RIVER

General Conditions

The Newaukum River subbasin (see Figure 4-6) has an area of approximately 81 square miles. There are still substantial areas of forested land (70 percent). There is a substantial amount of farmland/agricultural land use (28 percent) along the valley floor areas, and urban development along the I-5 corridor (Napavine) and in the central area (Onalaska). Table 4-11 summarizes land use, precipitation, and estimated population in the subbasin.

TABLE 4-11.
SUBBASIN 7, NEWAUKUM RIVER, GENERAL CONDITIONS

Estimated Population (2000)	6,718
Average Annual Precipitation (inches)	52.6
Area (square miles, percent of total)	
Forest	56.6 (70%)
Agriculture/Field	22.9 (28%)
Urban	1.9 (2%)
Water	0.0 (0)
Total	**81.4 (100%)**

Stream Flow

Table 4-12 and Figure 4-7 summarize stream flow in the Newaukum River and the river's regulatory base flow. Stream flows are based on stream-gauge data recorded at USGS Control Station 12025000 from 1929 through 1931 and 1942 to the present.

The Newaukum River receives the flows of the North Fork and South Fork Newaukum Rivers. During August and September, the summer months with lowest flow, mean gauged flows are 55 and 68 cfs, respectively; 50-percent exceedance flows are 47 and 49 cfs, respectively; and 90-percent exceedance flows are 30 and 29 cfs, respectively. The September 90-percent exceedance flow is 17 percent below the regulatory base flow of 35 cfs.

TABLE 4-12.
NEWAUKUM RIVER FLOWS AND REGULATORY BASE FLOW

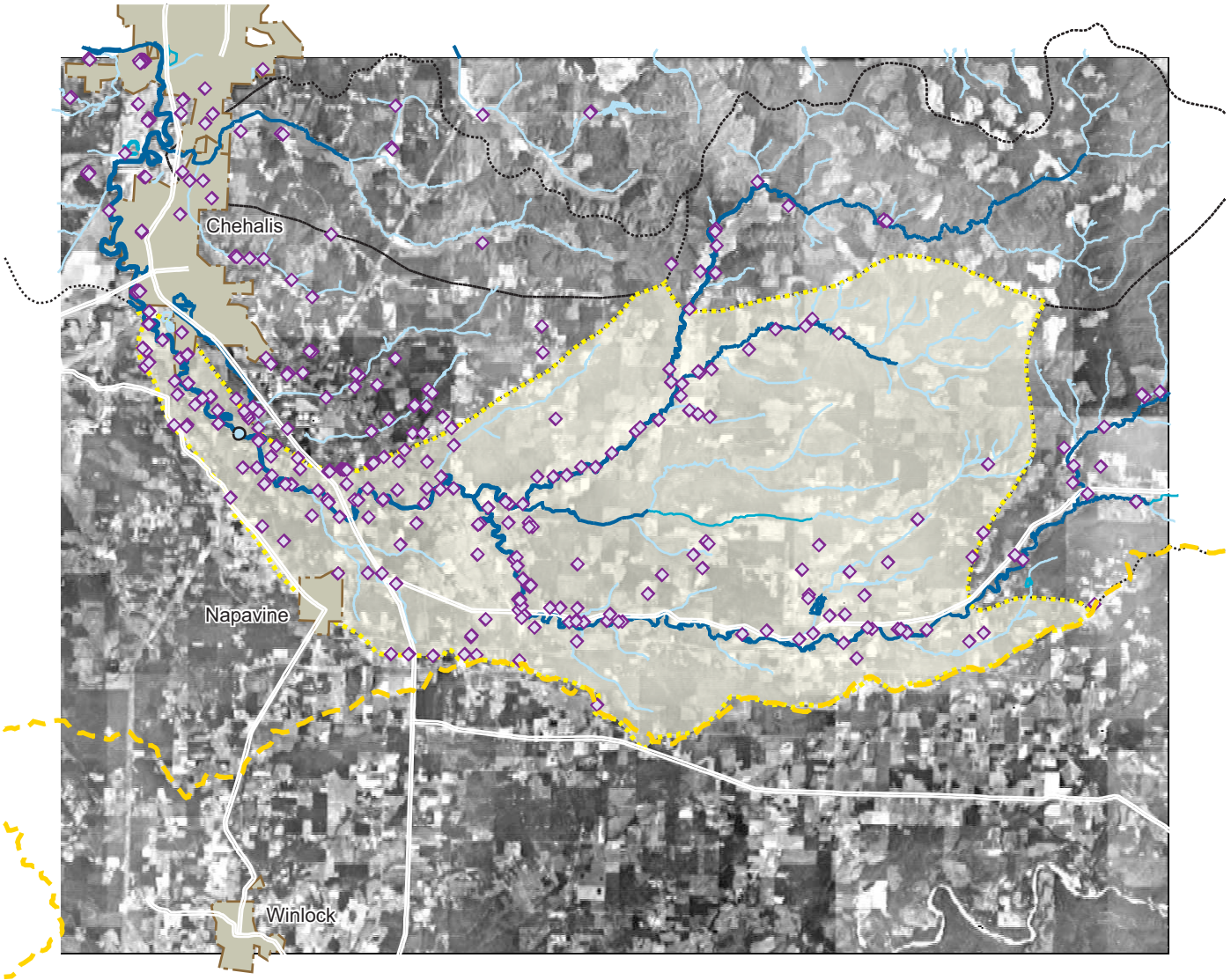
	Recorded Stream Flows (cfs)			Regulatory	Monthly Flow Volume (acre-feet)		
Month	Mean flow	50% Exceedance	90% Exceedance	Base Flow (cfs)	Mean Flow	90% Exceedance	Base Flow
Oct	182	83	38	54	11,194	2,337	3,320
Nov	733	436	91	150	43,604	5,415	8,926
Dec	1,051	740	270	250	64,626	16,596	15,372
Jan	1,078	768	280	250	66,267	17,217	15,372
Feb	987	733	323	250	55,292	18,121	14,008
Mar	764	605	287	250	47,005	17,647	15,372
Apr	541	430	241	250	32,177	14,335	14,876
May	296	236	133	160	18,194	8,178	9,838
Jun	185	141	82	90	11,003	4,873	5,355
Jul	90	75	44	52	5,562	2,705	3,197
Aug	55	47	30	35	3,371	1,845	2,152
Sep	68	49	29	35	4,074	1,726	2,083
Total					**362,369**	**110,995**	**109,871**

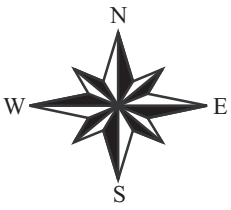
Table 4-12 also shows the annual flow volume corresponding to the stream flows and regulatory base flow. On an annual basis, mean flow is more than three times the regulatory base flow, and the 90-percent exceedance level flow is slightly above the regulatory base flow.

Water Rights and Estimated Use

Allocated Instantaneous Withdrawal Rates

Table 4-13 summarizes allocated instantaneous withdrawal rates in the Newaukum River subbasin by primary purpose. The total allocated instantaneous withdrawal rate for the 178 water rights in the subbasin is 56.3 cfs. The largest water right in the Newaukum subbasin is a 5.0 cfs right for fish propagation use held by Marshall, who also holds a fish propagation water right of 1.34 cfs. There is by a 2.5-cfs stock water right owned by Sheer. These are followed by seven irrigation or stock related water rights of 1.0 cfs or more. The remaining water rights, all under 1.0 cfs each, include many irrigation and domestic water rights. In many cases, the domestic purpose is secondary to the irrigation purpose.





2 0 2 4 Miles

- Basin Boundaries
- Newaukum River Subbasin Boudaries
- Other Subbasin Boundaries
- Type 1 Streams
  Type 2 Streams
  Type 3 Streams
- Roads
- Cities
- Stream-Flow Gauge Stations
- Water RIghts (EPA mapped)

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Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 4-6. SUBBASIN 7, NEWAUKUM RIVER

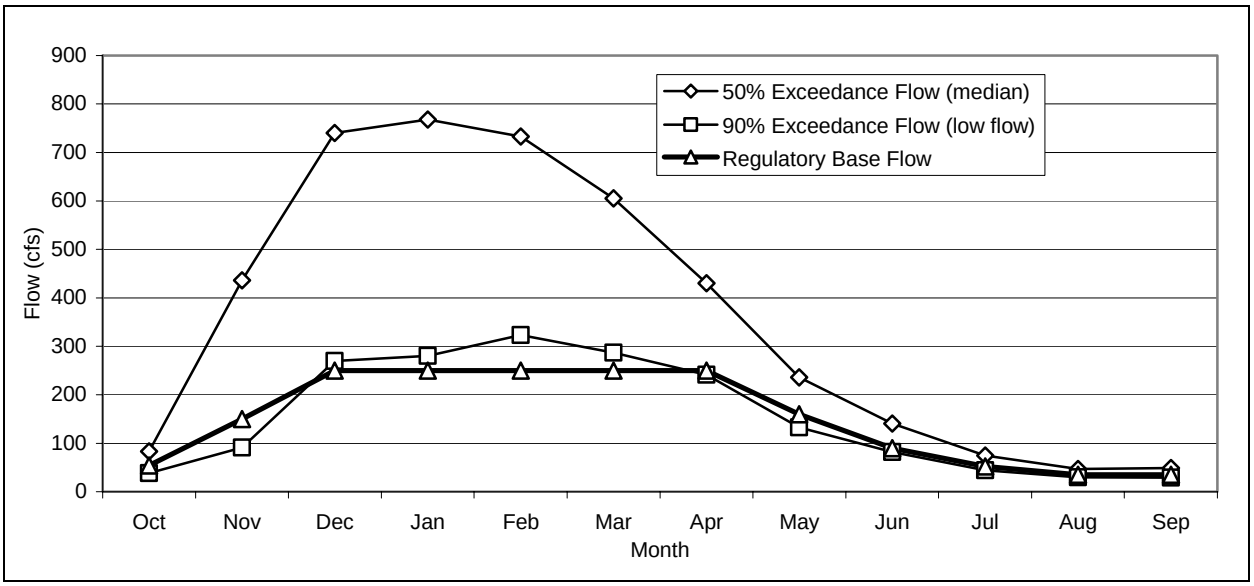


Figure 4-7. Newaukum River Stream Flows and Regulatory Base Flow

TABLE 4-13.
ALLOCATED WITHDRAWAL RATES BY PRIMARY PURPOSE
FOR THE NEWAUKUM RIVER SUBBASIN

Primary Purpose	Number of Rights	Allocated Instantaneous Withdrawal (cfs)	
		Defined by Rights	Without Nonconsumptive Uses
Commercial/Industrial	1	1.3	1.3
Domestic, Multiple	11	1.4	1.4
Domestic, Single	7	0.1	0.1
Fire	0	0.0	0.0
Fish Propagation	5	7.0	0.7
Heat Exchange	0	0.0	0.0
Irrigation	122	36.7	36.7
Mining	0	0.0	0.0
Municipal	3	0.3	0.3
Power	1	0.1	0.1
Recreation	2	0.4	0.4
Railway	0	0.0	0.0
Stock Watering	23	8.5	8.5
Wildlife	3	0.5	0.5
Total	**178**	**56.3**	**50**

The total instantaneous withdrawal rate of water rights with irrigation for a primary purpose is 36.7 cfs (of the subbasin's total of 56.3 cfs). The next largest group purpose is stock watering, with 8.5 cfs, followed by fish propagation, at 7.0 cfs. Each of the remaining purposes (commercial/industrial, domestic multiple, domestic single, municipal, recreation, wildlife propagation) has less than 1.5 cfs total allocated instantaneous withdrawal. The Onalaska area is supplied through municipal water rights owned by Lewis County. The

City of Napavine has two water rights in the Upper Chehalis subbasin, essentially transferring 0.702 cfs (168 acre-feet limit) from there to the Newaukum River subbasin.

The revised allocated withdrawal listed in Table 4-13 represents the subtraction of nonconsumptive water rights. In the Newaukum River subbasin, this revision applies only to 6.3 cfs of large fish propagation water rights. The net effect is reduction of total allocated withdrawal from 56.3 cfs to 50.0 cfs.

Cumulative Annual Withdrawal Volumes

Table 4-14 lists annual withdrawal volumes by purpose. Water rights in this subbasin establish annual volume limits totaling 3,098 acre-feet, the majority being for irrigation (2,265 acre-feet). Using the assumptions described at the beginning of this chapter, the maximum estimated annual withdrawal in this subbasin is 10,323 acre-feet.

TABLE 4-14.
ANNUAL WITHDRAWAL VOLUME BY PRIMARY PURPOSE
FOR THE NEWAUKUM RIVER SUBBASIN

Primary Purpose	Number of Rights	Annual Withdrawal Volume (acre-feet)	
		Limits Defined in Rights	Estimated
Commercial/Industrial	1	0	968
Domestic, Multiple	11	151	151
Domestic, Single	7	5	8
Fire	0	0	0
Fish Propagation	5	0	484
Heat Exchange	0	0	0
Irrigation	122	2,265	6,681
Mining	0	0	0
Municipal	3	56	196
Power	1	0	3
Recreation	2	10	191
Railway	0	0	0
Stock Watering	23	543	1,573
Wildlife	3	68	68
Total	**178**	**3,098**	**10,323**

Exempt Wells

Based on the analysis of exempt wells presented in Chapter 3, there are an estimated 1,805 potential exempt wells in the Newaukum River subbasin.

Claims

Table 4-15 lists claims in the Newaukum River subbasin by purpose. The subbasin has a total of 651 claims, with 56 acre-feet of listed volume limits. This is about 36 percent of the estimated number of exempt wells in the subbasin.

TABLE 4-15.
CLAIMS IN THE NEWAUKUM RIVER SUBBASIN

Claim Type	Number	Allocated Instantaneous Withdrawal (cfs)	Annual Volume Limit (acre-feet)	Irrigated Area (acres)
Domestic, General	614	12.4	35	899
Irrigation	10	0.37	14	133
Stock Watering	24	0.47	7	152
Unclassified	3	0.06	0	19
Total	**651**	**13.3**	**56**	**1203**

Pending Water Rights Applications and Development Projects with Near-Term Additional Water Needs

Three change applications in the Newaukum River subbasin have been received since 2001: McCune (CG2-078634CL, 2/23/2001), Chehalis Power (CG2-05682, 11/6/2002) and City of Napavine (CG2-24534, 12/19/2002). Details on the first two change applications are not available, however the City of Napavine provided some information about its change application. The water right transfer will transfer ownership to the City for 400 acre-feet of water from an individual. This transfer would assist the City address its projected water supply deficit.

Lewis County reported that a major new development in the county that is likely to apply for water right in the near future is the Sovran Industrial Plant (also known as Napavine Industrial Park) outside of Napavine's corporate and UGA limits. Napavine may help supply the new development with water.

The City of Napavine is aware of one additional pending development project that will need water supply, the Allen Creek project off Rush Road in Napavine. This is an 80-acre development planned to be a multi-use development with 180 residential units as well as commercial/ industrial uses. The project sponsors may not ask for more water, depending on availability of present water rights, however they may need to ask for more as the development will add an estimated 400 people..

Water Returns

Two large fish propagation rights in this subbasin, totaling 6.3 cfs, are nonconsumptive, and a water district facility owned by Lewis County has a return flow of 0.12 cfs.

SUBBASIN 8, SALZER CREEK

General Conditions

The Salzer Creek subbasin (see Figure 4-8) is the smallest of the Priority Group 1 subbasins, with an area of 19.5 square miles. There are substantial areas of forested land (84 percent), with farmland/agricultural land use (13 percent) along the valley floor areas. There is a small amount of urban development (3 percent) to the west, between Centralia

and Chehalis. Table 4-16 summarizes land use, precipitation, and estimated population in the Salzer Creek subbasin.

TABLE 4-16.
SUBBASIN 8, SALZER CREEK,
GENERAL CONDITIONS

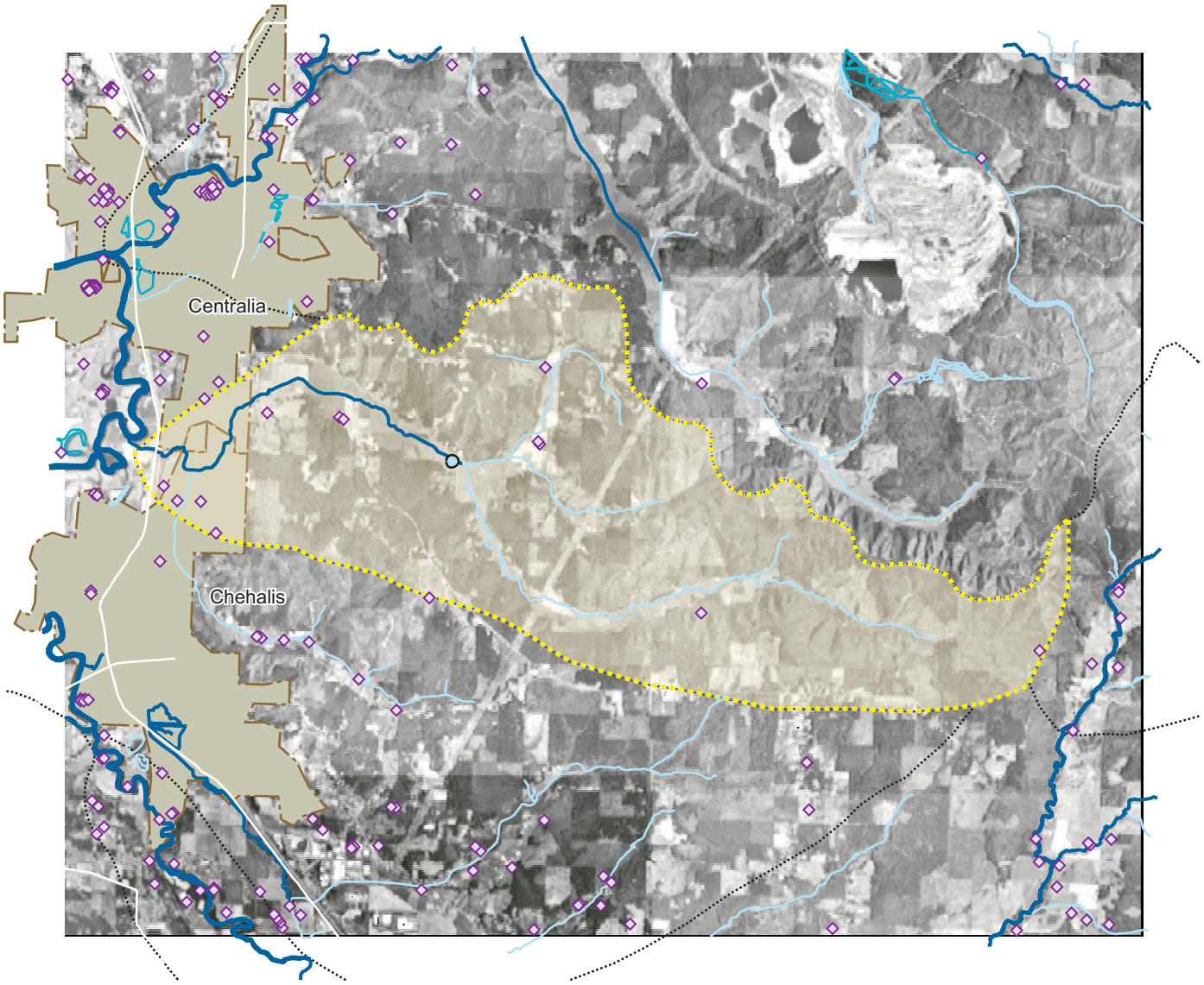
Estimated Population (2000)	1,023
Average Annual Precipitation (inches)	48.3
Area (square miles, percent of total)	
Forest	16.4 (84%)
Agriculture/Field	2.5 (13%)
Urban	0.6 (3%)
Water	0.0 (0%)
Total	**19.5 (100%)**

Stream Flow

Table 4-17 and Figure 4-9 summarize stream flow in Salzer Creek and the creek's regulatory base flow. Stream flows are based on stream-gauge data recorded at USGS Control Station 12025300 from 1968 through 1971.

TABLE 4-17.
SALZER CREEK FLOWS AND REGULATORY BASE FLOW

	Recorded Stream Flows (cfs)			Regulatory	Monthly Flow Volume (acre-feet)		
Month	Mean flow	50% Exceedance	90% Exceedance	Base Flow (cfs)	Mean Flow	90% Exceedance	Base Flow
Oct	8.9	2.2	0.15	0.4	548	9	25
Nov	25.0	17	3.37	3.9	1,486	201	232
Dec	80.0	58	18.2	11	4,922	1,119	676
Jan	97.8	79	12.2	11	6,015	750	676
Feb	50.6	30	15	11	2,837	840	616
Mar	39.7	22	9.4	11	2,438	578	676
Apr	18.7	17	8.69	11	1,116	517	655
May	9.2	5.8	2.14	2.8	567	132	172
Jun	5.0	1.4	0.33	0.73	296	20	43
Jul	0.5	0.32	0.05	0.2	33	3	12
Aug	1.2	0.05	0.02	0.05	73	1	3
Sep	2.3	0.54	0.04	0.05	138	2	3
Total					**20,469**	**4,172**	**3789**



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Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 4-8. SUBBASIN 8, SALZER CREEK

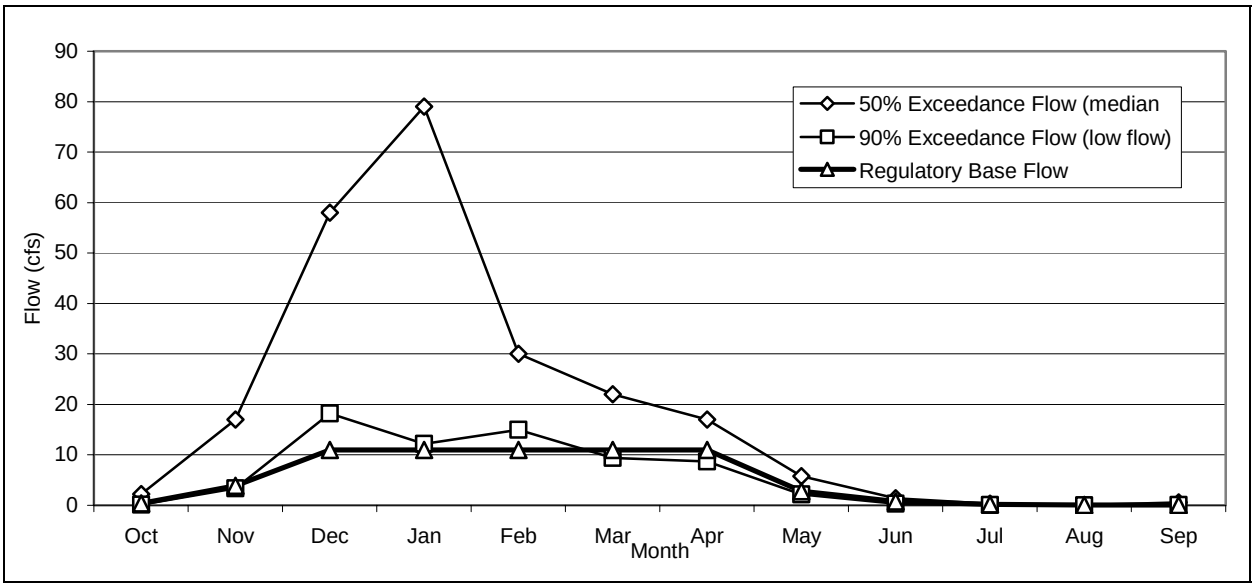


Figure 4-9. Salzer Creek Stream Flows and Regulatory Base Flow

During July, August and September, the summer months with lowest flow, mean gauged flows are 0.5, 1.2, and 2.3 cfs, respectively; 50-percent exceedance flows (median gauged flows) are 0.32, 0.05, and 0.54 cfs, respectively; and 90-percent exceedance flows (low flow) are 0.05, 0.02 and 0.04 cfs, respectively. The July 90-percent exceedance flows is 75 percent below the regulatory base flow of 0.2 cfs for July, and the August 90-percent exceedance flow is 60 percent below the regulatory base flow of 0.05 cfs for August and September.

Table 4-17 also shows the annual flow volume corresponding to the stream flows and regulatory base flow. On an annual basis, mean flow is more than five times the regulatory base flow, and the 90-percent exceedance level flow is about 10 percent above the regulatory base flow.

Water Rights and Estimated Use

Allocated Instantaneous Withdrawals

Table 4-18 summarizes allocated instantaneous withdrawal rates in the Salzer Creek subbasin by primary purpose. The total allocated instantaneous withdrawal of the 12 water rights in the Salzer Creek subbasin is 2.5 cfs. The largest water right in the subbasin is a 1.0-cfs right for fish propagation owned by Marth. There are seven irrigation rights totaling 1.9 cfs. One municipal right for 0.367 cfs is owned by Nix. There are two stock watering rights totaling 0.1 cfs, and two domestic multiple rights totaling 0.1 cfs. There are no deductions for nonconsumptive water rights, as all of the rights are considered consumptive.

TABLE 4-18.
ALLOCATED WITHDRAWAL RATES BY PRIMARY PURPOSE
FOR THE SALZER CREEK SUBBASIN

Primary Purpose	Number of Rights	Allocated Instantaneous Withdrawal (cfs)	
		Defined by Rights	Without Nonconsumptive Uses
Commercial/Industrial	0	0	0
Domestic, Multiple	2	0.1	0.1
Domestic, Single	0	0	0
Fire	0	0	0
Fish Propagation	0	0	0
Heat Exchange	0	0	0
Irrigation	7	1.9	1.9
Mining	0	0	0
Municipal	1	0.4	0.4
Power	0	0	0
Recreation	0	0	0
Railway	0	0	0
Stock Watering	2	0.1	0.1
Wildlife	0	0	0
Total	**12**	**2.5**	**2.5**

Cumulative Annual Withdrawal Volumes

Table 4-19 lists annual withdrawal volumes by purpose. Water rights in this subbasin establish annual volume limits totaling 157 acre-feet. Using the assumptions described at the beginning of this chapter, the maximum estimated annual withdrawal in this subbasin is 742 acre-feet.

Exempt Wells

Based on the analysis of exempt wells presented in Chapter 3, there are an estimated 360 potential exempt wells in the Salzer Creek subbasin.

Claims

Table 4-20 lists claims in the Salzer Creek subbasin by purpose. The subbasin has a total of 91 claims, with 756,003 acre-feet of listed volume limits. This is about 25 percent of the estimated number of exempt wells in the subbasin. One claim by a private interest, 756,000 acre-feet for stock watering, appears to be well overstated given trends observed for stock watering rights and irrigation.

Pending Water Rights Applications

No new applications or changes in the Salzer Creek subbasin have been submitted to the Department of Ecology since 2001.

TABLE 4-19.
ANNUAL WITHDRAWAL VOLUME BY PRIMARY PURPOSE
FOR THE SALZER CREEK SUBBASIN

Primary Purpose	Number of Rights	Annual Withdrawal Volume (acre-feet)	
		Limits Defined in Rights	Estimated
Commercial/Industrial	0	0	0
Domestic, Multiple	2	9	9
Domestic, Single	0	0	0
Fire	0	0	0
Fish Propagation	0	0	0
Heat Exchange	0	0	0
Irrigation	7	73	659
Mining	0	0	0
Municipal	1	50	50
Power	0	0	0
Recreation	0	0	0
Railway	0	0	0
Stock Watering	2	25	25
Wildlife	0	0	0
Total	**12**	**157**	**743**

TABLE 4-20.
CLAIMS IN THE SALZER CREEK SUBBASIN

Claim Type	Number	Allocated Instantaneous Withdrawal (cfs)	Annual Volume Limit (acre-feet)	Irrigated Area (acres)
Domestic, General	83	1.64	3	61
Irrigation	1	0.02	0	15
Stock Watering	5	0.11	756,000	5
Unclassified	2	0.04	0	0
Total	**91**	**1.81**	**756,003**	**81**

Water Returns

No water return was estimated, as all uses were considered consumptive. No major facility with a discharge permit under the National Pollutant Discharge Elimination System (NPDES) was identified.

SUBBASIN 9, SKOOKUMCHUCK RIVER

General Conditions

The Skookumchuck River subbasin (see Figure 4-10) is the largest subbasin in Priority Group 1, with an area of 176.9 square miles and a population of 10,392 in 2000. The subbasin has substantial areas of forested land (88 percent), with farmland/agricultural land use (8 percent) along the valley floor areas. Urban development (2 percent) is associated with the Town of Bucoda and the City of Centralia. There is a large coal strip mine connected with the TransAlta steam generated electrical power plant in the middle of the subbasin, as well as the Skookumchuck Reservoir, which provides 80 cfs of process water for the plant. The reservoir is also used for hydroelectricity (140 cfs) and fish propagation (20 cfs). These water rights were discussed in detail in Chapter 3. The large water area reflects the Skookumchuck Reservoir and possibly the pond system used by the electrical plant for water storage. Table 4-21 summarizes land use, precipitation, and estimated population in the Skookumchuck River subbasin.

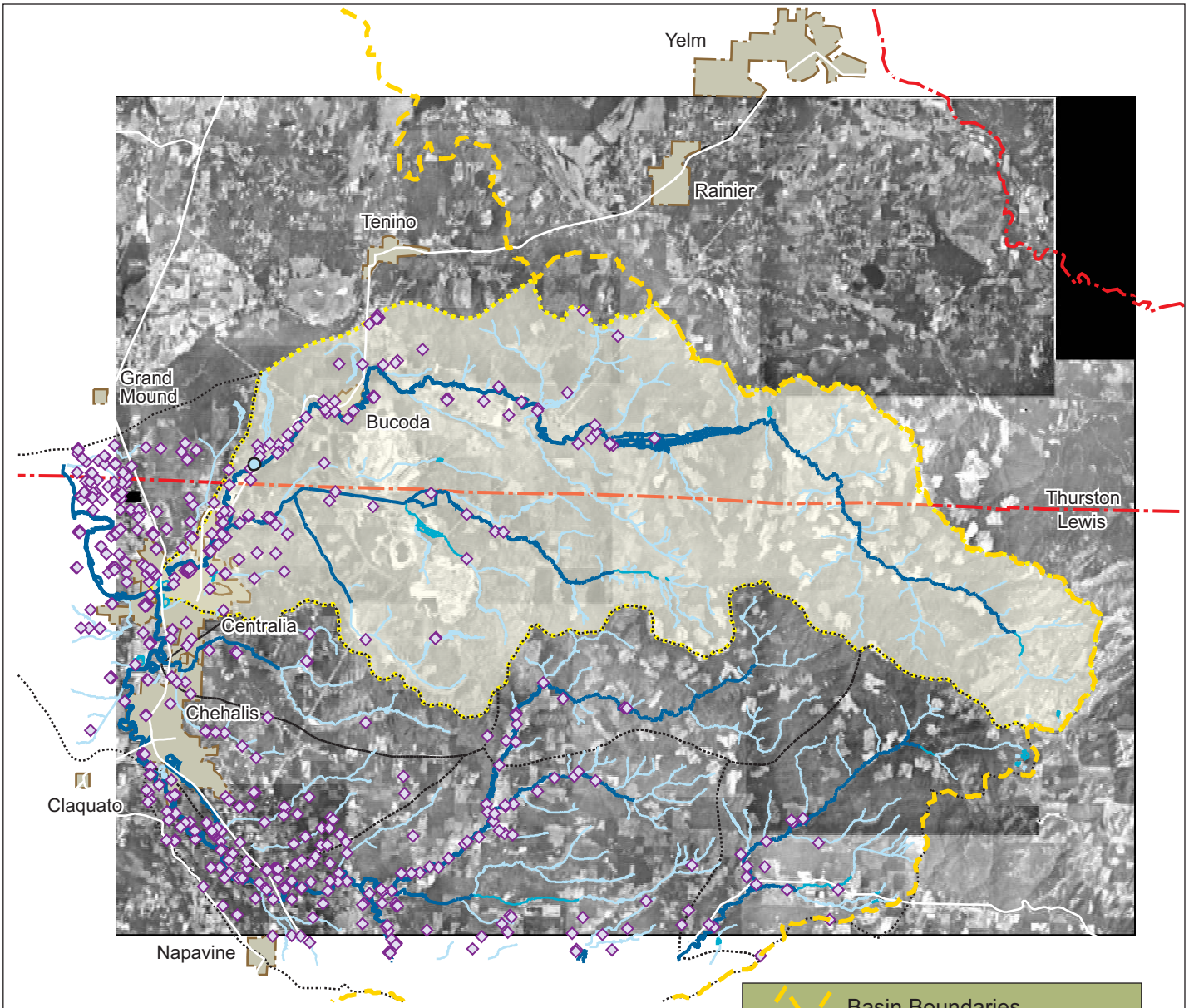
TABLE 4-21.
SUBBASIN 9, SKOOKUMCHUCK RIVER,
GENERAL CONDITIONS

Estimated Population (2000)	10,392
Average Annual Precipitation (inches)	54.8
Area (square miles, percent of total)	
Forest	155.3 (88%)
Agriculture/Field	13.6 (8%)
Urban	3.9 (2%)
Bare	3.1 (2 %)
Water	1.0 (<1%)
Total	**176.9 (100%)**

Stream Flow

Review of stream flow data for this subbasin needs to consider the effects of the Skookumchuck Dam, constructed in 1971. Flow records are available from 1968 through 2000 for Control Station 12026500 at Bucoda (near the control point for regulatory base flows) and from 1969 through 2001 for Control Station 12026150 at Centralia downstream. Tables 4-22, 4-23, and 4-24 summarize the flows at Bucoda for the entire period of record, for the period before construction of the dam, and for the period after construction of the dam, respectively. Flows before and after dam construction are plotted together with regulatory base flow on Figures 4-11 and 4-12, respectively. Table 4-25 and Figure 4-13 present the flow data for the Centralia stream gauge for the entire period of record.

For post-dam flows in the Skookumchuck River at Bucoda, the 90-percent exceedance levels in July, August and September are 76, 57 and 94 cfs, respectively, compared with regulatory base flows of 54, 35 and 35 cfs. The storage of flows in the winter results in lower than regulatory flows during November through May. For cumulative annual volumes, the



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Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 4-10. SUBBASIN 9, SKOOKUMCHUCK RIVER

mean and 90-percent exceedance values both exceed the regulatory base flow. However, the 90 percent exceedance for post-dam conditions is substantially lower than for the pre-dam conditions, reflecting more frequently modulated flows (i.e., greater frequency of lower flows). The total mean annual flows are approximately the same for all data, pre-dam data, and post-dam data (between 353 to 357 cfs).

TABLE 4-22.
SKOOKUMCHUCK RIVER FLOWS AT BUCODA FOR ENTIRE PERIOD OF RECORD, AND REGULATORY BASE FLOW

	Recorded Stream Flows (cfs)			Regulatory	Monthly Flow Volume (acre-feet)		
Month	Mean flow	50% Exceedance	90% Exceedance	Base Flow (cfs)	Mean Flow	90% Exceedance	Base Flow
Oct	147	130.0	91.0	35	9,015	5,595	2,152
Nov	350	200.5	90.0	96	20,795	5,355	5,712
Dec	723	506.0	142.0	160	44,450	8,731	9,838
Jan	760	531.0	185.6	160	46,741	11,412	9,838
Feb	697	500.0	170.0	160	39,066	9,526	8,965
Mar	546	413.0	162.0	160	33,575	9,961	9,838
Apr	398	294.0	162.0	160	23,703	9,640	9,521
May	225	189.5	115.0	130	13,819	7,071	7,993
Jun	157	130.0	83.0	83	9,363	4,939	4,939
Jul	98	96.0	65.0	54	6,032	3,997	3,320
Aug	80	80.0	52.0	35	4,945	3,197	2,152
Sep	122	124.0	84.0	35	7,242	4,998	2,083
Annual	**357**			**Total**	**258,746**	**84,422**	**76,351**

TABLE 4-23.
SKOOKUMCHUCK RIVER FLOWS AT BUCODA BEFORE DAM CONSTRUCTION, AND REGULATORY BASE FLOW

	Recorded Stream Flows (cfs)			Regulatory	Monthly Flow Volume (acre-feet)		
Month	Mean flow	50% Exceedance	90% Exceedance	Base Flow (cfs)	Mean Flow	90% Exceedance	Base Flow
Oct	188.01	113.0	34.2	35	11,561	2,103	2,152
Nov	315.32	201.0	72.8	96	18,763	4,332	5,712
Dec	744.24	590.0	289.6	160	45,762	17,807	9,838
Jan	870.02	682.0	246.2	160	53,495	15,138	9,838
Feb	838.68	560.0	315.6	160	46,994	17,684	8,965
Mar	454.51	376.0	220.4	160	27,947	13,552	9,838
Apr	370.32	331.0	229.6	160	22,035	13,662	9,521
May	183.03	175.0	111.4	130	11,255	6,850	7,993
Jun	141.47	87.0	52.0	83	8,417	3,094	4,939
Jul	53.49	49.0	30.0	54	3,290	1,845	3,320
Aug	51.45	33.0	24.0	35	3,164	1,476	2,152
Sep	83.07	63.0	26.0	35	4,943	1,547	2,083
Annual	**356**			**Total**	**257,626**	**99,090**	**76,351**

TABLE 4-24.
SKOOKUMCHUCK RIVER FLOWS AT BUCODA AFTER DAM CONSTRUCTION, AND REGULATORY BASE FLOW

	Recorded Stream Flows (cfs)			Regulatory	Monthly Flow Volume (acre-feet)		
Month	Mean flow	50% Exceedance	90% Exceedance	Base Flow (cfs)	Mean Flow	90% Exceedance	Base Flow
Oct	141.6	130.0	94.0	35	8,707	5,780	2,152
Nov	352.3	188.5	89.9	96	20,962	5,349	5,712
Dec	716.4	475.0	134.0	160	44,048	8,239	9,838
Jan	720.6	507.0	171.8	160	44,310	10,564	9,838
Feb	685.6	493.5	158.0	160	38,415	8,853	8,965
Mar	543.9	411.5	158.0	160	33,443	9,715	9,838
Apr	395.7	287.0	159.9	160	23,547	9,515	9,521
May	229.1	187.5	114.9	130	14,087	7,065	7,993
Jun	158.9	131.0	90.0	83	9,455	5,355	4,939
Jul	102.2	98.0	76.0	54	6,284	4,673	3,320
Aug	83.0	81.0	57.0	35	5,104	3,505	2,152
Sep	125.0	124.0	94.0	35	7,438	5,593	2,083
Annual	**353**			**Total**	**255,800**	**84,206**	**76,351**

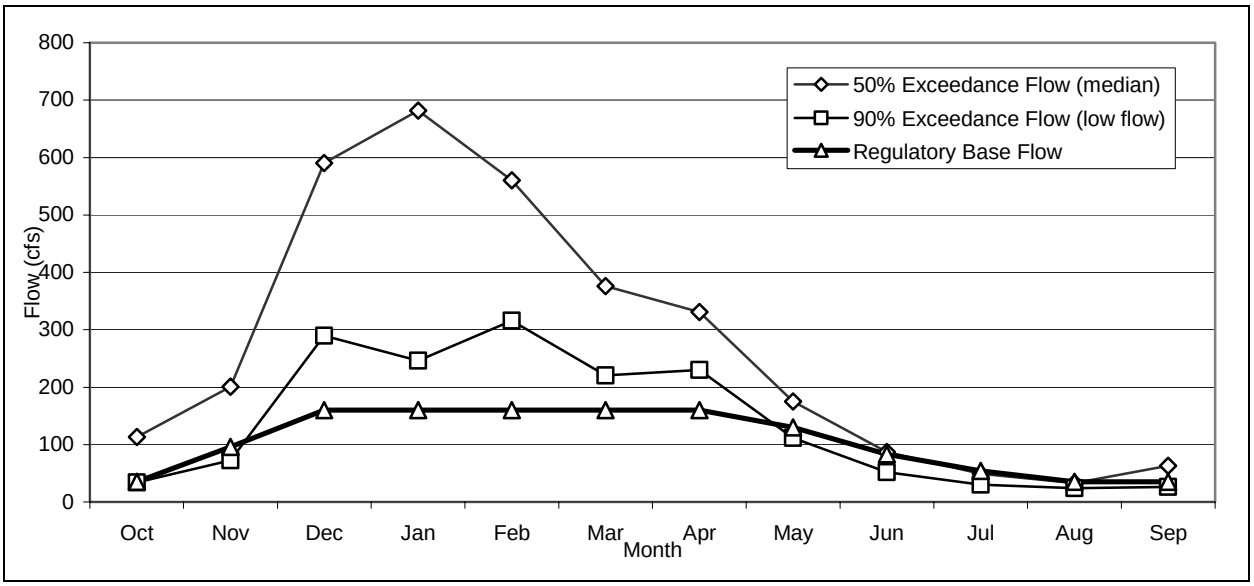


Figure 4-11. Skookumchuck River Stream Flows at Bucoda Before Dam, and Regulatory Base Flow

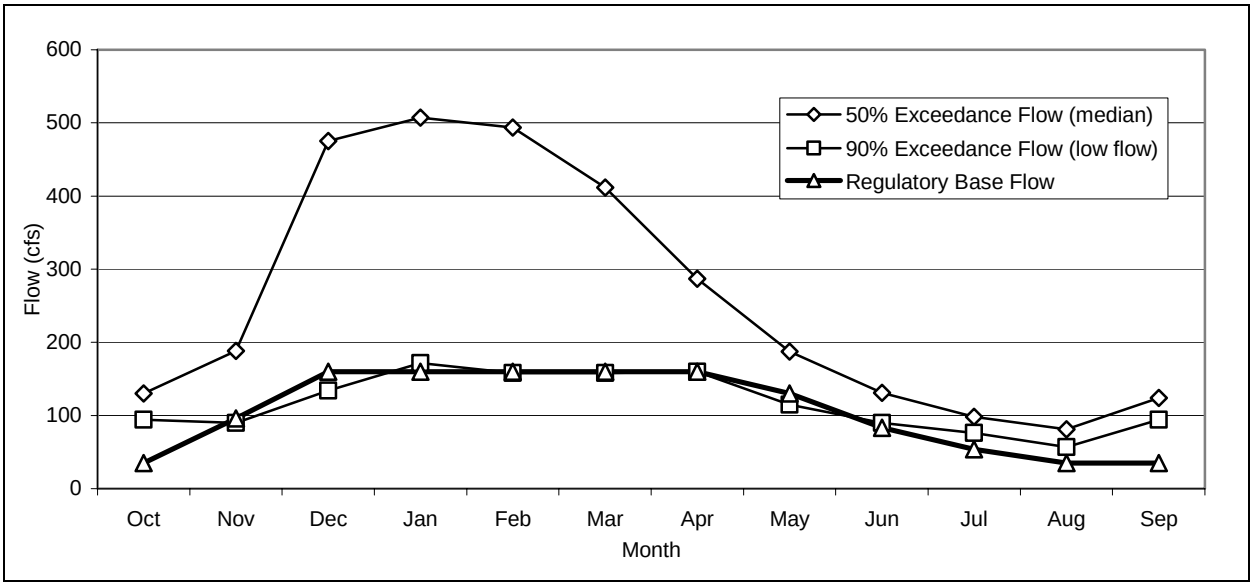


Figure 4-12. Skookumchuck River Stream Flows at Bucoda After Dam, and Regulatory Base Flow

TABLE 4-25.
SKOOKUMCHUCK RIVER FLOWS AT CENTRALIA
FOR ENTIRE PERIOD OF RECORD

	Recorded Stream Flows (cfs)		
Month	Mean flow	50% Exceedance	90% Exceedance
Oct	140	139.0	96.0
Nov	232	141.0	96.0
Dec	484	338.0	115.1
Jan	516	375.5	123.0
Feb	465	354.0	116.9
Mar	376	285.0	112.1
Apr	292	223.0	127.0
May	183	158.0	101.0
Jun	135	119.0	88.0
Jul	103	102.0	87.0
Aug	93	96.0	76.0
Sep	132	138.0	96.0
Annual	**262**		

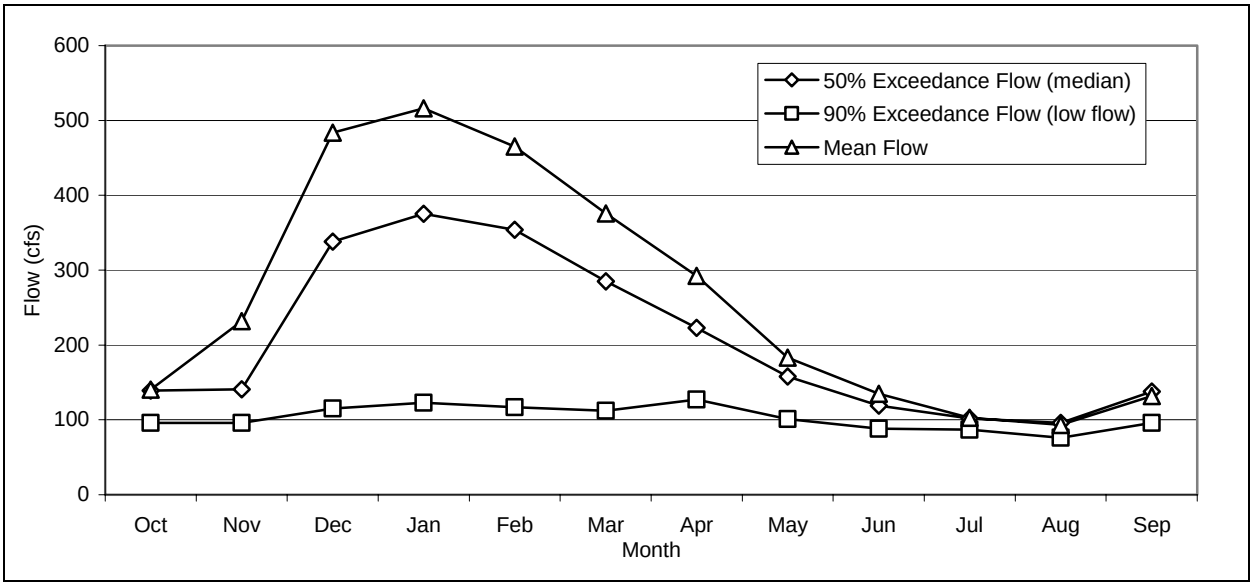


Figure 4-13. Skookumchuck River Stream Flows at Centralia

According to the water rights documents associated with the Skookumchuck Dam (Certificate R2-11862), 80 cfs of flow is diverted for consumptive electrical power use, as process water. The post-dam mean flow at Bucoda upstream of the 80 cfs consumptive power diversion was approximately 353 cfs. The mean flow downstream at Centralia, which is a mostly post-dam average, was approximately 262 cfs, a drop of 91 cfs, which would include the consumptive power diversion and other intervening diversions.

Water Rights and Estimated Use

Allocated Instantaneous Withdrawal Rates

Table 4-26 summarizes allocated instantaneous withdrawal rates in the Skookumchuck River subbasin by primary purpose. The total allocated instantaneous withdrawal rate for the 120 water rights in the subbasin is 307 cfs, making the Skookumchuck the most heavily appropriated Priority Group 1 subbasin in terms of recorded water rights.

TABLE 4-26.
ALLOCATED WITHDRAWAL RATES BY PRIMARY PURPOSE
FOR THE SKOOKUMCHUCK RIVER SUBBASIN

Primary Purpose	Number of Rights	Allocated Instantaneous Withdrawal (cfs)	
		Defined by Rights	Without Nonconsumptive Uses
Commercial/Industrial	4	2.1	2.1
Domestic, Multiple	11	3.9	3.9
Domestic, Single	9	0.2	0.2
Fire	2	1.2	1.2
Fish Propagation	2	30.0	0.0
Heat Exchange	0	0	0.0
Irrigation	66	20.3	20.3
Mining	1	0.8	0.8
Municipal	8	26.4	18.3
Power	2	220.0	80.0
Recreation	1	0.1	0.1
Railway	1	0.9	0.9
Stock Watering	10	0.9	0.9
Wildlife	3	0.4	0.4
Total	**120**	**307.2**	**129.1**

The largest water right in the Skookumchuck subbasin is the 140.0 cfs for nonconsumptive hydropower use at the Skookumchuck Dam, followed by the 80 cfs consumptive power use, both originally owned by Pacific Power and Light (now by TransAlta). There are two nonconsumptive fish propagation rights (20 cfs and 10 cfs) owned by WDFW, and municipal rights totaling 13.2 cfs (11.1 cfs, 1.1 cfs and 1 cfs) owned by the Town of Bucoda.

The City of Centralia holds several municipal rights and one domestic multiple right, totaling 15.7 cfs. However, some of the Centralia rights are change applications relocating water rights from the Middle Chehalis No. 1 subbasin, so that the instantaneous withdrawal total includes some redundant flows (total of 3.12, 2.9 and 2.01 cfs); Centralia's unique rights total 7.4 cfs in the Skookumchuck subbasin.

Irrigation is another major group of water rights in the Skookumchuck subbasin, with 66 rights totaling 20.3 cfs. Rights of more than 1 cfs are owned by Agnew (two rights of 1.8 cfs each), Leduc (one right with 1.4 cfs), and Kelley (one right with 1.05 cfs).

The revised allocated withdrawal listed in Table 4-26 represents the subtraction of nonconsumptive water rights. Deductions for nonconsumptive water rights in this subbasin include hydropower and the large fish propagation right. Redundant rights owned by Centralia were deducted, totaling 8.1 cfs. Municipal water right owned by Bucoda in excess of need was not deducted. Bucoda does not use the 11.1 cfs water right, but this water right may still be perfected and subject to transfer. The net effect is reduction of total allocated withdrawal from 307 cfs to 129.1 cfs.

Cumulative Annual Withdrawal Volumes

Table 4-27 lists annual withdrawal volumes by purpose. Water rights in this subbasin establish annual volume limits totaling 1,001 acre-feet, the majority being for irrigation (761 acre-feet). Many of the rights had secondary and tertiary purposes, including irrigation, domestic-single, domestic-multiple, commercial and industrial, fire, and fish propagation. Using the assumptions described at the beginning of this chapter, the maximum estimated annual withdrawal in this subbasin is 84,252 acre-feet.

Exempt Wells

Based on the analysis of exempt wells presented in Chapter 3, there are an estimated 858 potential exempt wells in the Skookumchuck River subbasin.

Claims

Table 4-28 lists claims in the Skookumchuck River subbasin by purpose. The subbasin has a total of 333 claims, with 186 acre-feet of listed volume limits. This is about a 39 percent of the estimated number of exempt wells in the subbasin.

Pending Water Rights Applications

One change application for a well in the Skookumchuck River subbasin has been received since 2001—from the City of Centralia (CG2-0071321, 3/11/2002). Details on this change application were not available. An official at the City of Centralia noted that the City's 1997 water comprehensive plan indicates three pending water rights to provide an additional 1,633 acre-feet per year. These appeared to be old, as the submittal dates were 1991, 1993, and 1991. These were temporary use permits that have to be renewed annually. The water right sponsors would be applying for 8 mgd from the Skookumchuck Filter Plant to acquire more surface water rights. This would not divert additional water from the river but would transfer the ownership of the water right.

The 1997 plan seems to verify this on page 4-8, where it says that the City was at the time negotiating with PacifiCorp to access up to 8.8 mgd of water in exchange for some share of the expense to operate and maintain the Skookumchuck River reservoir.

Water Returns

Nonconsumptive hydropower and fish propagation uses in this subbasin total 170 cfs. Water returns also include reported NPDES point-source discharges (TransAlta), totaling 7.46 cfs.

TABLE 4-27.
ANNUAL WITHDRAWAL VOLUME BY PRIMARY PURPOSE
FOR THE SKOOKUMCHUCK RIVER SUBBASIN

Primary Purpose	Number of Rights	Annual Withdrawal Volume (acre-feet)	
		Limits Defined in Rights	Estimated
Commercial/Industrial	4	0	1,520
Domestic, Multiple	11	113	117
Domestic, Single	9	8	6
Fire	2	6	813
Fish Propagation	2	0	0
Heat Exchange	0	0	0
Irrigation	66	761	3,215
Mining	1	0	543
Municipal	8	0	19,084
Power	2	0	57,917
Recreation	1	2	2
Railway	1	0	645
Stock Watering	10	94	125
Wildlife	3	17	265
Total	**120**	**1001**	**84,252**

TABLE 4-28.
CLAIMS IN THE SKOOKUMCHUCK RIVER SUBBASIN

Claim Type	Number	Allocated Instantaneous Withdrawal (cfs)	Annual Volume Limit (acre-feet)	Irrigated Area (acres)
Domestic, General	294	5.85	26	144
Irrigation	19	1.35	160	183
Stock Watering	13	0.26	0	14
Unclassified	7	0.11	0	0
Total	**333**	**7.57**	**186**	**341**

SUBBASIN 10, MIDDLE CHEHALIS RIVER NO. 1

General Conditions

The Middle Chehalis River No. 1 subbasin (see Figure 4-14) is the second largest subbasin in Priority Group 1, with an area of 102 square miles and an estimated population of 21,283 in 2000. There are substantial areas of forested land (69 percent), with large areas of farmland/agricultural land use (21.8 percent) along the valley floor areas. The subbasin has the most urban development in Priority Group 1, with 9.7 square miles (10 percent of the subbasin area) associated with the I-5 corridor and surrounding communities, including

Centralia, Chehalis, Fords Prairie, Galvin, and Grand Mound. Table 4-29 summarizes land use, precipitation, and estimated population in the Middle Chehalis River No. 1 subbasin.

TABLE 4-29.
SUBBASIN 10, MIDDLE CHEHALIS RIVER NO. 1, GENERAL CONDITIONS

Estimated Population (2000)	21,283
Average Annual Precipitation (inches)	52.5
Area (square miles, percent of total)	
Forest	70.5 (69%)
Agriculture/Field	21.8 (21%)
Urban	9.7 (10%)
Water	0.0 (0%)
Total	**102 (100%)**

Stream Flow

Table 4-30 and Figure 4-15 summarize stream flow in the Chehalis River at Ground Mound and the river's regulatory base flow. Stream flows are based on stream-gauge data recorded at USGS Control Station 12027500 from 1928 through 2001.

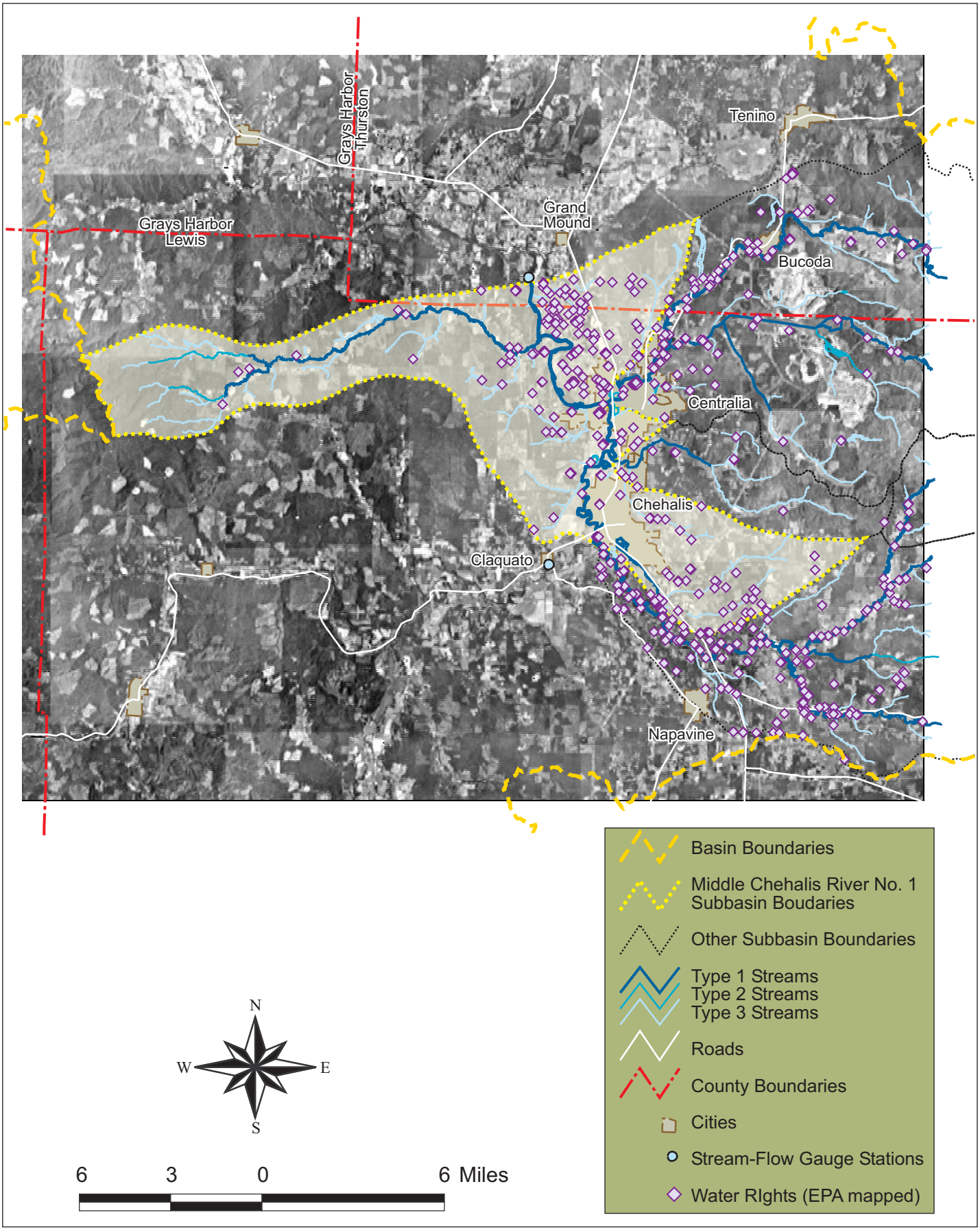
During August and September, the summer months with lowest flow, mean gauged flows are 242 and 339 cfs, respectively; 50-percent exceedance flows are 219 and 261 cfs, respectively; and 90-percent exceedance flows are 146 cfs for both months. The 90-percent exceedance flow is 12 percent below the regulatory base flow of 165 cfs.

Table 4-30 also shows the annual flow volume corresponding to the stream flows and regulatory base flow. On an annual basis, mean flow is more than three times the regulatory base flow, but the 90-percent exceedance level flow is about 10 percent below the regulatory base flow.

Water Rights and Estimated Use

Allocated Instantaneous Withdrawal Rates

Table 4-31 summarizes allocated instantaneous withdrawal rates in the Middle Chehalis River No. 1 subbasin by primary purpose. The total allocated instantaneous withdrawal rate for the 266 water rights in the subbasin (the most of all the Priority Group 1 subbasins) is 74 cfs. This subbasin has many small water rights. The largest water right is a 3.1-cfs right for hydropower and irrigation owned by Scherer. The next largest rights are four municipal rights owned by Centralia, ranging from 1.6 to 2.9 cfs, and a stock and irrigation right owned by Leprechaun Holstein, for 1.8 cfs. Other rights larger than 1 cfs include a domestic multiple right for 1.1 cfs (Lewis County) and four irrigation rights for 1.1 cfs each under various owners.



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Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 4-14. SUBBASIN 10, MIDDLE CHEHALIS RIVER NO. 1

TABLE 4-30.
MIDDLE CHEHALIS RIVER NO. 1 FLOWS AND REGULATORY BASE FLOW

	Recorded Stream Flows (cfs)			Regulatory	Monthly Flow Volume (acre-feet)		
Month	Mean flow	50% Exceedance	90% Exceedance	Base Flow (cfs)	Mean Flow	90% Exceedance	Base Flow
Oct	922	430	211	200	56,672	12,974	12,298
Nov	3,807	2,095	444	760	226,536	26,420	45,223
Dec	6,294	4,200	1,340	1,300	386,980	82,393	79,934
Jan	6,359	4,510	1,530	1,300	391,022	94,076	79,934
Feb	5,870	4,130	1,630	1,300	328,914	91,334	72,843
Mar	4,500	3,350	1,540	1,300	276,677	94,691	79,934
Apr	2,938	2,160	1,130	1,300	174,804	67,240	77,355
May	1,393	1,100	633	780	85,641	38,946	47,960
Jun	817	644	380	600	48,630	22,606	35,702
Jul	382	337	204	275	23,508	12,556	16,909
Aug	242	219	146	165	14,867	8,977	10,145
Sep	339	261	146	165	20,149	8,688	9,818
Total					**2,034,400**	**560,901**	**568,055**

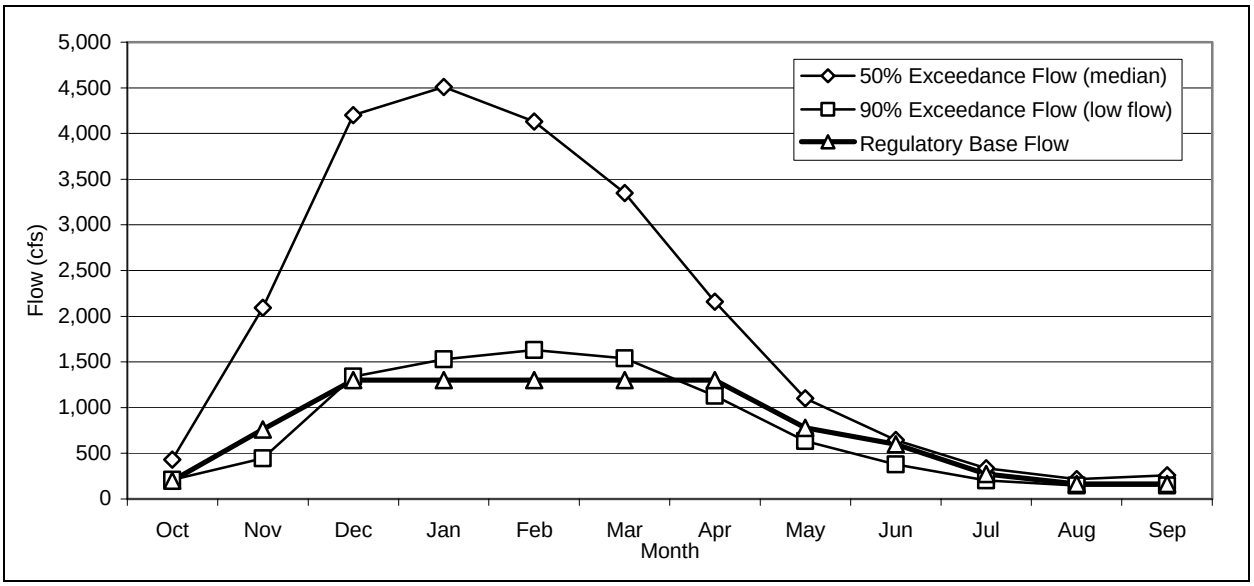


Figure 4-15. Middle Chehalis River No. 1 Stream Flows and Regulatory Base Flow

TABLE 4-31.
ALLOCATED WITHDRAWAL RATES BY PRIMARY PURPOSE
FOR THE MIDDLE CHEHALIS RIVER NO. 1 SUBBASIN

Primary Purpose	Number of Rights	Allocated Instantaneous Withdrawal (cfs)	
		Defined by Rights	Without Nonconsumptive Uses
Commercial/Industrial	9	2.5	2.0
Domestic, Multiple	17	3.0	3.0
Domestic, Single	27	1.2	1.2
Fire	1	0.0	0.0
Fish Propagation	5	1.3	0.3
Heat Exchange	1	0.1	0.1
Irrigation	174	47.8	47.8
Mining	0	0.0	0.0
Municipal	5	10.2	7.6
Power	1	3.1	3.1
Recreation	2	0.2	0.2
Railway	0	0.0	0.0
Stock Watering	22	4.6	4.6
Wildlife	2	0.0	0.0
Total	**266**	**74**	**69.9**

The greatest number and flow quantity of water rights are in irrigation, with 174 rights totaling 47.8 cfs. The next largest groups of rights are domestic-single (27 rights, 1.2 cfs), stock watering (22 rights, 4.6 cfs), and domestic multiple (17 rights, 3.0 cfs). As previously noted, Centralia and Chehalis occupy several subbasins, including subbasin 10, and have several water rights in other subbasins that effectively transfer water across subbasins.

The revised allocated withdrawal listed in Table 4-31 represents the subtraction of nonconsumptive hydropower and fish propagation water rights. The net effect is reduction of total allocated withdrawal from 74 cfs to 69.9 cfs.

Cumulative Annual Withdrawal Volumes

Table 4-32 lists annual withdrawal volumes by purpose. Water rights in this subbasin establish annual volume limits totaling 3,923 acre-feet, the majority being for irrigation (2,981 acre-feet). Using the assumptions described at the beginning of this chapter, the maximum estimated annual withdrawal in this subbasin is 15,659 acre-feet.

Exempt Wells

Based on the analysis of exempt wells presented in Chapter 3, there are an estimated 2,084 potential exempt wells in the Middle Chehalis River No. 1 subbasin.

TABLE 4-32.
ANNUAL WITHDRAWAL VOLUME BY PRIMARY PURPOSE
FOR THE MIDDLE CHEHALIS RIVER NO. 1 SUBBASIN

Primary Purpose	Number of Rights	Annual Withdrawal Volume (acre-feet)	
		Limits Defined in Rights	Estimated
Commercial/Industrial	9	356	718
Domestic, Multiple	17	212	212
Domestic, Single	27	78	82
Fire	1	5	5
Fish Propagation	5	0	232
Heat Exchange	1	80	80
Irrigation	174	2,981	7,931
Mining	0	0	0
Municipal	5	8	5,493
Power	1	0	6
Recreation	2	0	145
Railway	0	0	0
Stock Watering	22	186	753
Wildlife	2	17	2
Total	**266**	**3,923**	**15,659**

Claims

Table 4-33 lists claims in the Middle Chehalis River No. 1 subbasin by purpose. The subbasin has a total of 992 claims, with 488,716 acre-feet of listed volume limits. One private claim, for 488,371 acre-feet for 2 acres of irrigation and some domestic general use appears to be well overstated given the trends observed for stock watering rights and irrigation. The number of claims is 48% of the estimated number of exempt wells in the subbasin.

Pending Water Rights Applications

Five change applications were submitted by City of Centralia on October 10, 2002 (in addition to the one change application in the Skookumchuck subbasin), four of which were for municipal purposes (CG2-00684, CS2-04845, CS2-04687, CG2-20927, CG2-02019). Details on these change applications were not available. Previous change applications submitted earlier in 2002 included G2-28214 and G2-28215 for changing points of diversion for wells.

Water Returns

Several NPDES discharge facilities, including municipal wastewater treatment plants and a private facility, return 10.7 cfs to the Middle Chehalis River No. 1 subbasin. This includes the wastewater treatment plants at Centralia and Chehalis, a treatment facility owned by Pe Ell, and a facility at Westfarm Foods.

TABLE 4-33.
CLAIMS IN THE MIDDLE CHEHALIS RIVER NO. 1 SUBBASIN

Claim Type	Number	Allocated Instantaneous Withdrawal (cfs)	Annual Volume Limit (acre-feet)	Irrigated Area (acres)
Domestic, General	898	17.82	1	842
Irrigation	45	1.86	488690	273
Stock Watering	42	13.99	25	58
Unclassified	7	0.14	0	7
Total	**992**	**33.81**	**488716**	**1180**

PRIORITY GROUP 1 WATER BALANCE

A water balance for Priority Group 1 subbasins was developed for illustration purposes. The Middle Chehalis River No. 1 subbasin was omitted from the balance because no adequate data is available on stream flow entering that subbasin from upstream reaches. The water balance was evaluated for each of the other Priority Group 1 subbasins individually and combined. The following information sources and assumptions were used in developing the water balance:

- Groundwater was assumed to be hydraulically connected with surface water in the subbasins, as discussed in Chapter 2.
- Mean annual precipitation was derived from the Oregon State Prism data.
- Mean annual flows were derived from USGS gage data.
- Evapotranspiration was estimated based on data from the Centralia weather station, and applied to the various subbasin land uses in proportion to their surface areas.
- Return flows were taken from NPDES facility discharges identified in the Level 1 Assessment report; locations were checked with Department of Ecology GIS data.
- Transfer of flow into Subbasin 7 was assumed because the City of Napavine is in Subbasin 7 but the diversion points for the city's water rights are in Subbasin 4.
- Domestic consumption was assumed to be 100 gallons per capita per day (gpcd), based on planning figures from water system plans for Centralia, Boistfort Valley, Napavine, and Bucoda (estimated residential per capita demand ranged from approximately 77 gpcd to 97 gpcd); data for Chehalis was not available.
- Several cities overlap several subbasins (Centralia, Chehalis, and Napavine), making it difficult to account for total commercial demand particular to a subbasin, including municipally supplied and self-supplied sources. Therefore, commercial demand was estimated based on USGS data for the Chehalis Basin, proportioned by population to the Priority Group 1 subbasins.

- Irrigation demand was based on information for Lewis County: 4,000 to 5,000 acres are currently under irrigation from June to August, averaging approximately 13.5 inches per year. The acreage is lower than the reported irrigated acreage for the Priority Group 1 area (8,879 acres in Lewis County, 2,058 acres in Thurston County) in the WRATs database. Irrigation volumes in Lewis County were proportioned to each subbasin based on the reported irrigated land. As a conservative assumption, it was assumed that all of the irrigated acreage is in the Priority Group 1 area, and that acreage in Thurston County was similarly irrigated.
- The water balance does not include water claims or potential exempt wells, which are unmonitored. Exempt wells are generally not a large source of consumptive water use.
- Change in groundwater storage was calculated as the difference between total inflow and total outflow.

The subbasin water balances are summarized in Table 4-34. These subbasin water balances show a wide range of resolution, with the three Newaukum subbasins showing significantly more water leaving each subbasin than entering. Salzer Creek and the Skookumchuck River show more water coming in (via precipitation) than leaving. The "surplus" or "deficit" may be real, or may be an inaccuracy caused by over/underestimates of water balance components. The following considerations apply to the surplus/deficit calculated for the subbasin water balances:

- It could represent actual change in groundwater storage.
- It could be the result of using mean historical values to represent river flow, which may overstate actual flow volumes relative to the water demands of population and urban areas. Such demands grow over time, whereas mean river flows tend to reduce over time due to such demand..
- The stream gage in subbasin 8 (Salzer Creek) is relatively high in the watershed, and would tend to understate flows. If this is indeed the case, then the overall groundwater storage deficit for subbasins 5 through 9 would then tend to increase..
- The surplus/deficit could represent actual change in groundwater storage.
- The effects of transfers across subbasins in terms of surface water transfers and groundwater hydraulic continuity also need further accounting..

TABLE 4-34.
WATER BALANCE FOR PRIORITY GROUP 1 SUBBASINS

Subbasin	Annual Water Volume (acre-feet) SF Newauk. (5)	NF Newauk. (6)	Newauk (7)	Salzer (8)	Skook. (9)	**Total**[a]
Inflow						
Precipitation	143,785	101,790	466,958	50,159	517,126	**1,034,243**
Return Flows[b]	—	—	90	—	5,403	**5,493**
Transfers In[c]	—	—	509	—	—	**509**
Total Inflow	**143,785**	**101,790**	**467,557**	**50,159**	**522,529**	**1,040,245**
Outflow						
Mean Stream Flow	144,519	74,636	362,369	20,443	258,745	**641,557**
Evapotranspiration						
Forest[d]	47,048	37,931	154,907	20,238	191,960	**367,105**
Agriculture	2,049	1,214	21,662	2,025	10,930	**34,617**
Urban	90	0	1,588	459	3,132	**5,179**
Water	28	0	62	0	1,388	**1,450**
Bare	0	0	46	0	2,470	**2,516**
Total	*49,215*	*39,145*	*178,265*	*22,722*	*209,880*	***410,867***
Consumption						
Domestic	69	14	836	115	1,165	**2,116**
Commercial	35	7	377	57	583	**1,017**
Irrigation[e]	49	24	1,369	100	885	**1,901**
Total	*153*	*45*	*2,582*	*272*	*2,633*	***5,487***
Total Outflow	**193,887**	**113,826**	**543,216**	**43,437**	**471,258**	**1,057,911**
Groundwater Storage Change (% of Annual Precipitation)	**-50,102 (34.8%)**	**-12,036 (11.8%)**	**-75,659 (16.2%)**	**6,671 (-13.4%)**	**50,041 (-9.8%)**	**-19,542 (1.7%)**

a. Except for return flows and transfers in, subbasin totals are calculated as the sum of Subbasins 7, 8, and 9; quantities for Subbasins 5 and 6 are included in those for Subbasin 7.
b. Return flows based on NPDES facilities discharges.
c. Transfer into Subbasin 7 represents City of Napavine water drawn from water rights in Subbasin 4. Other transfers not documented in WRATS are not included.
d. Evapotranspiration for forest assumes 23.17 inches per year as estimated for Centralia weather station.
e. Reduction factor of 0.54 for estimated net usage.
f. Data does not include 4.3 cfs from NF Newaukum adjudicated to the City of Chehalis.

OBSERVATIONS AND CONCLUSIONS

This review of water quantity in the Priority Group 1 subbasins provides a more detailed understanding of river flow, water right allocations, potential and estimated water usage, and pending water right activities. The trial water balance shows possible agreement at the aggregate level between inflow and outflow, but substantial variation at the local level, warranting further study. Metering data are available for water purveyors, but not for other water rights. There is a substantial number of water claims, and a potentially sizable number of self-supplied households in the form of exempt wells or undocumented diversions. The possible effect of groundwater hydraulic continuity across subbasins also needs to be considered.

It is clear from the data, however, that all of the subbasins in Priority Group 1 are at or near their allocation limits during periods of low flow. Water management to ensure the availability of water during such periods could include storage, conservation, or other measures. During average year conditions, water availability may be approaching water capacity, but more study and data will be needed to provide an accurate water balance evaluation.

Existing water supply systems appear to have sufficient water rights for current planning needs. However, the City of Centralia is actively improving its water supplies, in view of recent change applications, for water quality and supply reliability.

SECTION 5.
PRIORITY GROUP 1 GIS PROJECT

DESCRIPTION OF GIS PROJECT

This section summarizes work performed to create a GIS database characterizing water use in Priority Group 1. The water use GIS was created in ArcView 3.1 to provide current water resource information for planners, administrators, and the public. The database was created from data sources including the USGS, Ecology, EPA, WDFW, the Level 1 Assessment, municipalities and water purveyors in the Priority Group 1 area, and Oregon State University (other sources are identified in the GIS data). In addition to providing a single place for the storage of available water use information, the GIS includes new datasets created specifically for the Priority Group 1 area that were not previously available; such as estimates of water use by land use type, estimates of the potential number of exempt wells and self-supplied households, and return flow quantities and sources.

PRIORITY GROUP 1 PROJECT FILE

The ArcView project file (included in Appendix A in the ArcView Project CD) presents water use information at a broader subbasin scale and at the township, section, and range (Section) scale. The section scale is useful for a visual presentation of the general distribution of parameters such as population, water rights, water right claims, or water right applications at a smaller, more uniform scale. Water use information was summarized at the section level because this scale allows viewers to identify specific areas that have the greatest impact on water use. Existing datasets on water right claims and applications that were used to create the new GIS were grouped by section, so no finer level of resolution is possible using only existing information.

RELIABILITY OF THE DATASETS

The datasets created for this project are only as reliable as the scale and reliability of the existing datasets used to develop them. For example, the water right claims and applications data summarized by subbasin are estimated but are not exact because the exact locations of the water right claims and applications were not known. What was known was the public-land-survey coordinates. The EPA database identified the section where each claim and application is located. EPA recently mapped all water rights in its database to the nearest quarter-quarter. Using this and other available information and aerial photographs, TetraTech/KCM mapped the largest 49 water rights to their most likely location. In summarizing the number of claims and applications located in each major WRIA subbasin, EPA mapped the centroid of each section and applied the number of claims and applications in that section to that point. They then summarized the number of points located in each basin. This is an all or nothing approach, but one that works well on large scale areas, like WRIA's, where the section areas are relatively small in relation to the size of the basin. The majority of the claims and applications are likely to be located in sections entirely within the WRIA basin. There will be some error incurred where basin boundaries

cut across sections, however if the basin size is large in relation to the size of the sections, the error incurred will be relatively small.

For our subbasin analysis, estimates of the total number of claims and applications were made by using an area-weighted summation for each subbasin. This was chosen rather than the centroid "all or nothing" approach to better account for the significant number of subbasin boundary-section line crossings. Making an area-weighted summation still only results in an estimation, since area weighting assumes that the distribution of claims and applications are uniformly spaced across the section. In reality they are more likely to be grouped around rivers and other sources or in high use areas like cities.

Since the water rights were mapped to the nearest quarter-quarter section or at the source for the 49 largest water rights, the subbasin level calculations were based directly off summarizing the mapped points.

The next step toward increasing the reliability of the water rights, claims, and applications datasets would be to map each in the field, using GPS equipment for example, which would enable each location to be identified with latitude-longitude coordinates. This would allow future water use studies for the Priority Group 1 area to be conducted using hydrologic boundaries and exact points in space rather than section boundaries. Accurate densities could be represented at any scale. For example it would be possible to determine the actual number of domestic multiple water rights in Subbasin X between River Mile A and B, or the density of claims per square mile in Subbasin Z. It would also be beneficial for creating estimates of water balances along stream and river reaches.

VIEWS

Table 5-1 describes the four views in the ArcView project file. Samples of information that can be presented in each view are provided in Figures 5-1 through 5-4.

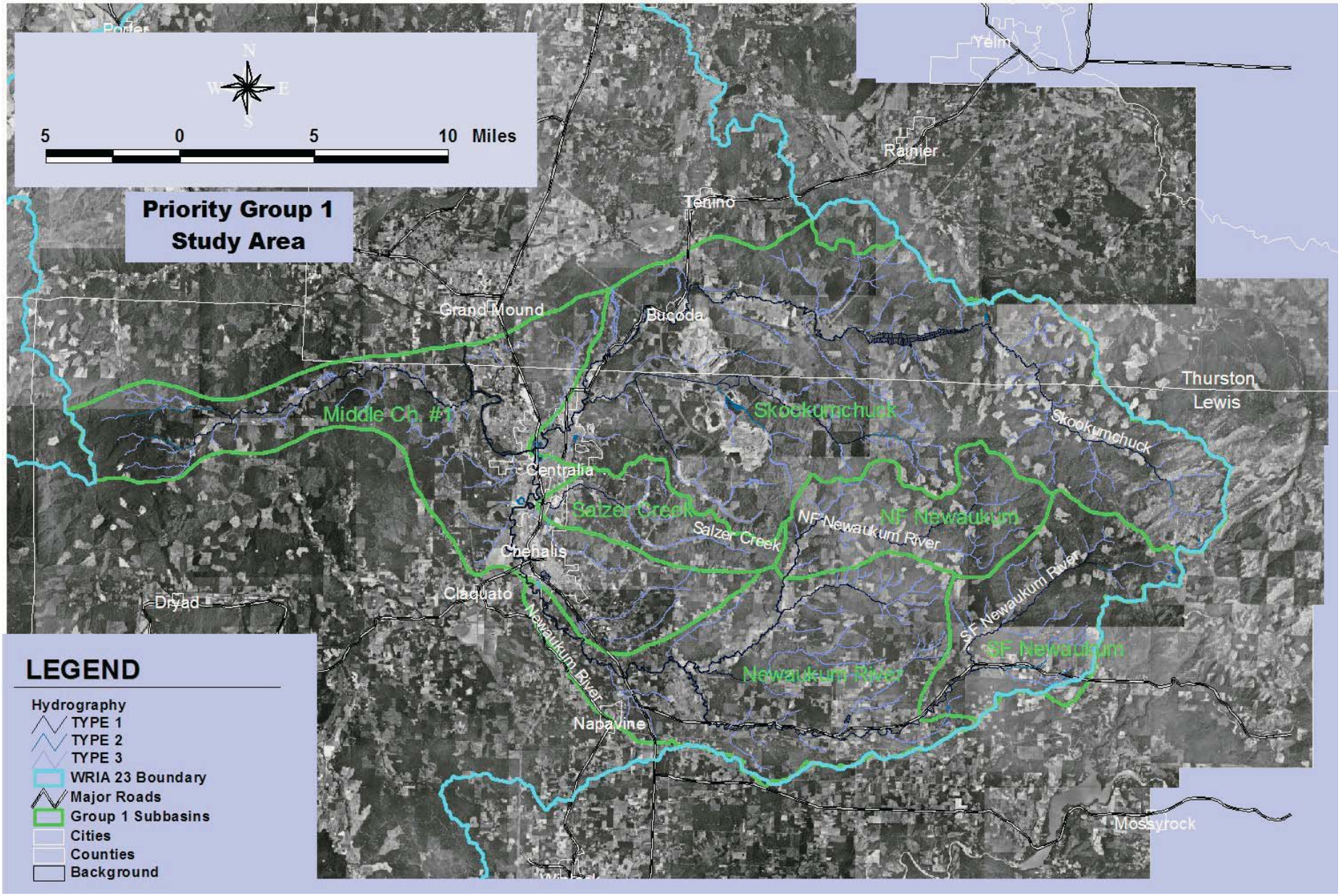
DATASET DESCRIPTIONS

This section gives a brief description of each dataset incorporated into or created for this project, including the dataset's ArcView file name, its information source, whether it was modified, and how it was created. Appendix B provides metadata files created for each modified dataset that was created and also includes a copy of the data descriptions for EPA shapefiles and a copy of Ecology's data dictionary for the Water Rights Application Tracking System (WRATS).

Water Rights Datasets

Mapped Water Rights (wtr_right_pts.shp)

This dataset was provided by the EPA and was originally gathered from data in the State's WRATS. EPA mapped all water rights to the nearest quarter-quarter. TetraTech/KCM mapped the largest 49 water rights to their most likely location using EPA's database, available information and aerial photographs. Included in the dataset is the name or entity associated with the water right, whether the right is a permit or certificate, the land use



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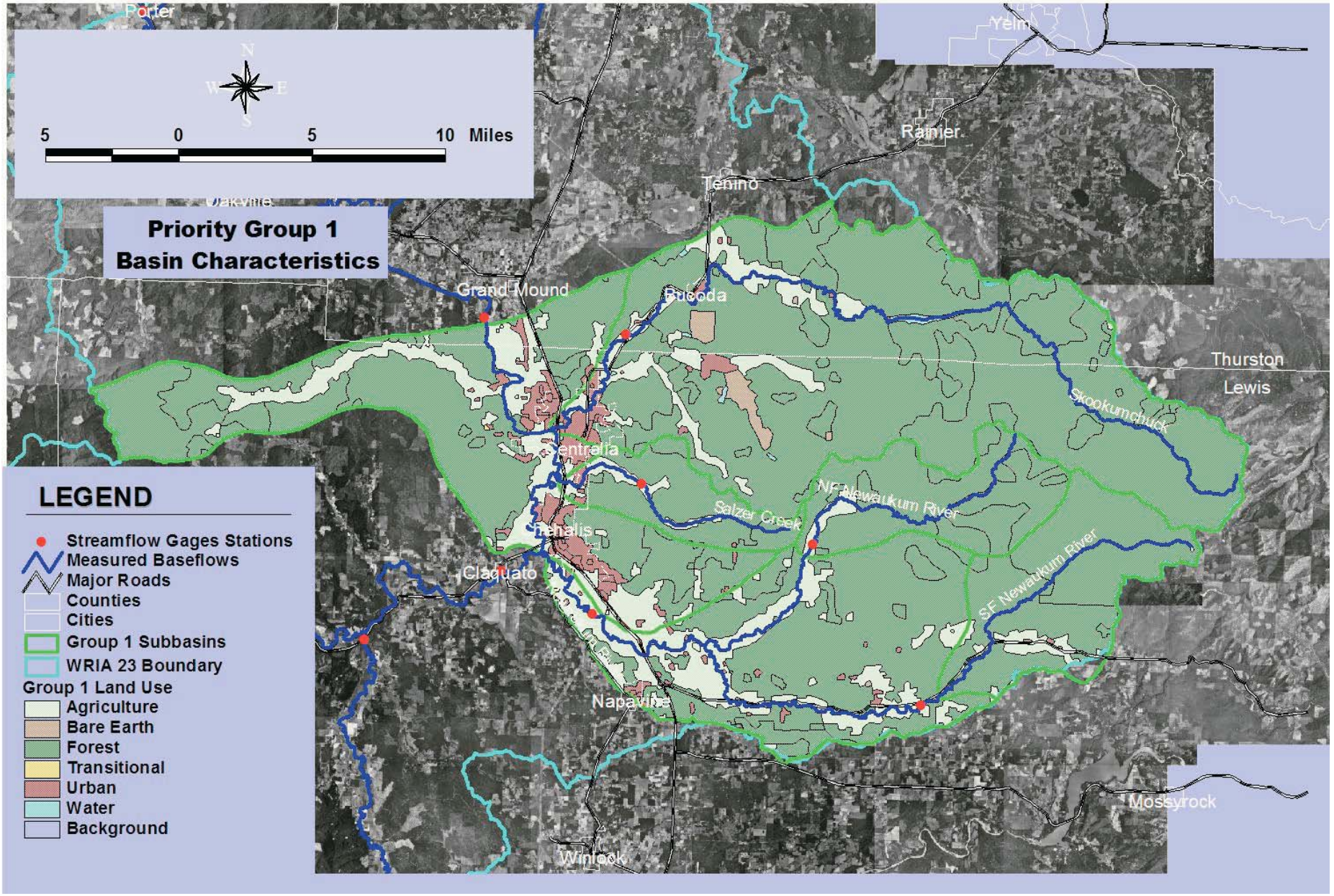
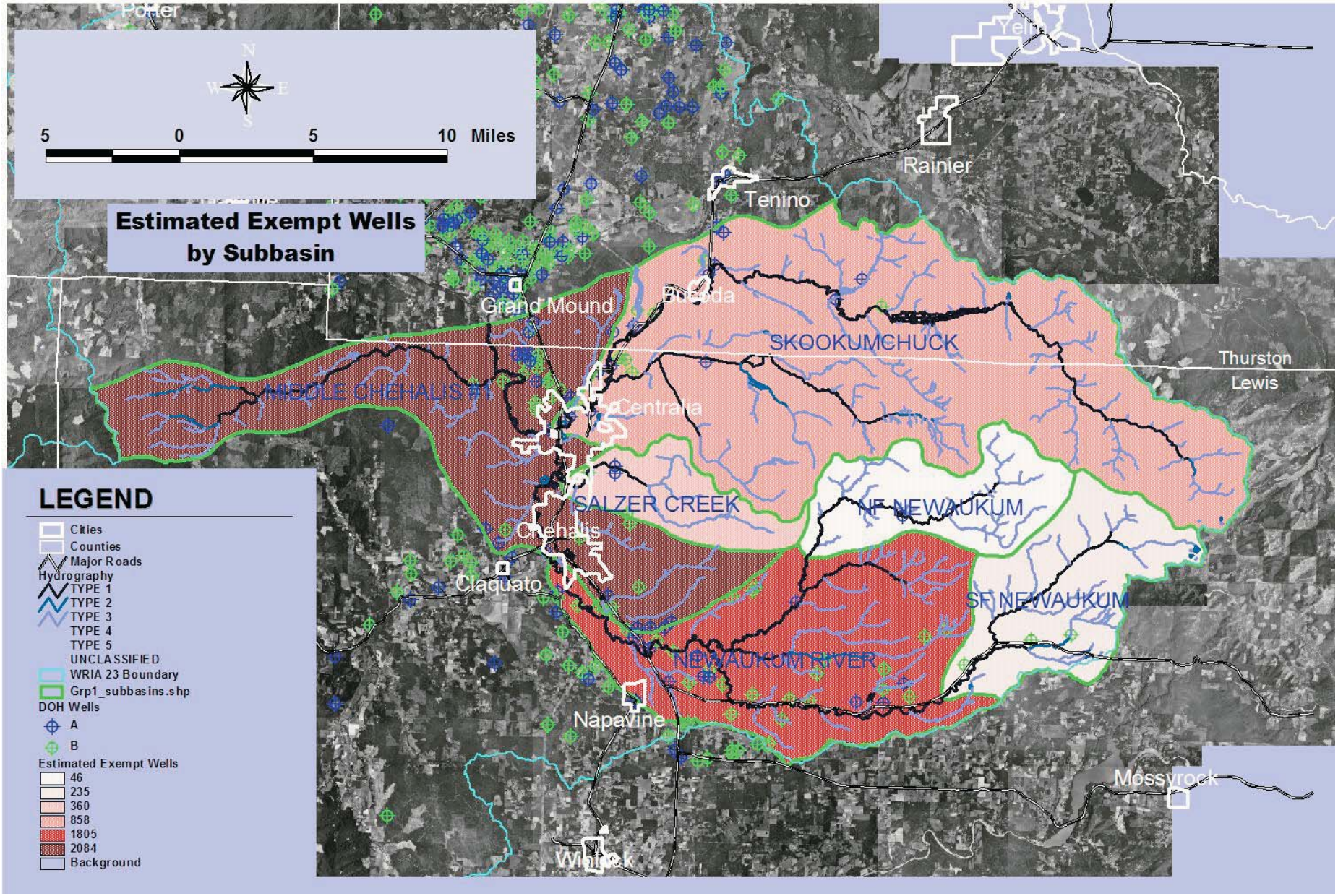
Tetra Tech/ KCM, Inc. *1917 First Avenue* *Seattle, Washington 98101*	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 5-1. SAMPLE OUTPUT FROM PRIORITY GROUP 1 VIEW



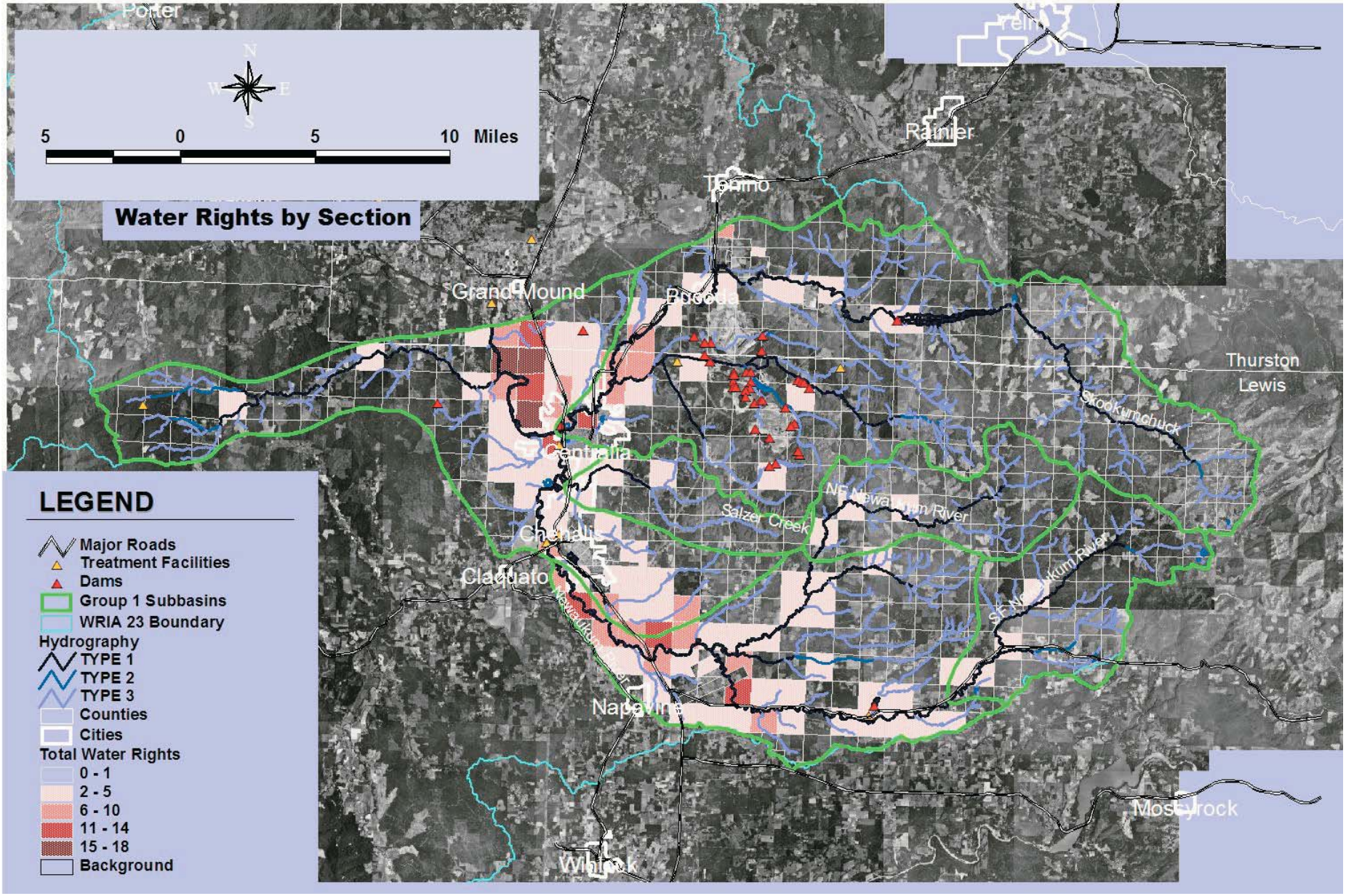
2140067/5-2View-BasinChar.fh10

Tetra Tech/ KCM, Inc. *1917 First Avenue* *Seattle, Washington 98101*	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 5-2. SAMPLE OUTPUT FROM BASIN CHARACTERISTICS VIEW



2140067/5-3View-Subbasins.fh10

Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 5-3. SAMPLE OUTPUT FROM SUBBASINS VIEW



2140067/5-4View-Sections.fh10

Tetra Tech/ KCM, Inc. 1917 First Avenue Seattle, Washington 98101	Chehalis Basin Partnership 2003 CHEHALIS BASIN WATER QUANTITY EVALUATION	Figure 5-4. SAMPLE OUTPUT FROM SECTIONS VIEW

associated with the water right, annual withdrawal volume limit in acre-feet if applicable, return flow if applicable, and other information.

Water Rights Summarized by Section (grp1_wr_perm_cert_by_trs.shp) and Subbasin (wr_perm_cert_by_subbasin.shp)

The summary by section summarizes mapped water rights by township, section and range. Information in the datasets include the intended water use (e.g., irrigation, commercial, or domestic-single), annual withdrawal volume limit in acre-feet if applicable, estimated peak instantaneous withdrawal rate, irrigated area, and return flow (in cfs). The summary by subbasin includes the same but at the subbasin scale, and was created from the same parent theme provided by EPA. The original EPA dataset lists all known water rights as of 2001. An effort was made to identify later water rights by contacting EPA, Lewis and Thurston Counties, and the cities of Bucoda, Chehalis, Centralia, and Napavine. Post-2001 water rights are listed in separate fields that summarize the total number of new water rights and their estimated annual withdrawal volumes.

Water rights are not mapped with latitude-longitude coordinates; in some cases the nearest quarter-quarter section is used, so some uncertainty exists in the values provided.

TABLE 5-1.
CONTENTS OF PRIORITY GROUP 1 PROJECT FILE

View	Description	Contents
All	A base map containing common contents used to build all views	• Political boundaries (cities, counties) • Watershed boundaries (Priority Group 1 subbasins and WRIA 23) • Hydrology (Washington Department of Natural Resources (DNR) stream types) • Major highways and roads • DNR orthophoto (dated 2000) • Background
Priority Group 1	Addition of general geographic information to the common base map	• Survey boundaries (township, range, section) • Census data (provided by the Washington Department of Health (DOH))
Priority Group 1 Basin Characteristics	Land cover, precipitation, topography, hydrology, wells and water purveyor service areas, summarized for the entire Priority Group 1 area	• Average annual precipitation contour map • Average annual precipitation by subbasin • Water purveyor service areas (existing public and private) • Type A and B wells (as mapped by the DOH) • Active stream flow gages • USGS-measured stream flows • Regulatory base flows • Land use/cover • 40-foot topographic contours

TABLE 5-1 (Continued).
CONTENTS OF PRIORITY GROUP 1 PROJECT FILE

View	Description	Contents
Priority Group 1 Subbasins	Water use data summarized and presented at the subbasin scale, including total number of rights and allocated flows for each type of water use (e.g. irrigation, commercial) and totals for each subbasin	• Water rights (permits and certificates) • Water claims • Water right applications • Treatment facilities (wastewater, water, etc. which have significant return flows) • Dams • Mapped water rights (permits and certificates as mapped by EPA) • Water purveyor service areas (existing public and private) • Type A and B wells (as mapped by the DOH) • Estimate of exempt wells and self-supplied households • Active stream flow gages • USGS-measured stream flows • Established base flows
Priority Group 1 Sections	Water use data summarized and presented at the section scale.	• Water rights (permits and certificates by subbasin) • Water claims • Water right applications • Treatment facilities (wastewater, water, etc. which have significant return flows) • Dams • Mapped water rights (permits and certificates as mapped by EPA) • Water purveyor service areas (existing public and private) • Type A and B wells (as mapped by the DOH) • Active stream flow gages • USGS-measured stream flows • Established base flows

Water Right Applications Summarized by Section (wr_apps_by_trs.shp) and Subbasin (wr_apps_by_subbasin.shp)

The EPA's water right applications database (22_23_applications) lists the township, section, and range of each application for a water right. The water right applications are summarized by intended water use (e.g., irrigation, commercial, or domestic-single), estimated annual withdrawal volume, estimated peak discharge, and estimated irrigated area. Also included are the total number of rights, estimated irrigated area, estimated annual withdrawal volume and instantaneous withdrawal rate (where given by the applicant), and peak discharge. The summary by subbasin includes the same type of information but at the subbasin scale, and was created from the same parent theme provided by EPA.

Water rights are not mapped with latitude-longitude coordinates; since only the section the right is located in is known, some uncertainty exists in the values provided.

Water Right Claims Summarized by Section (claims_by_trs.shp) and Subbasin (claims_by_subbasin.shp)

The EPA supplied water claim information (22_23_claims database) including township, section, and range each water right claim was located in. The datasets contain the same type of data for each field (attribute) as the water right applications datasets. Many of the claims in the EPA dataset do not have information on the estimated flow rate for water withdrawal. For planning purposes, a peak discharge of 0.02 cfs was applied to each claim where this information was not supplied. 0.02 cfs is the estimated instantaneous peak flow that has been used by the Department of Ecology in the past to estimate potential water use for domestic-single users.

Water right claims are not mapped with latitude-longitude coordinates; since only the section the claim is located in is known, some uncertainty exists in the values provided.

Political and Survey Boundaries Datasets

Cities (cities.shp)

This dataset, from the Level I Assessment, includes all cities in Washington State. The shapefile was originally supplied to the Chehalis Basin Partnership from the USGS. The data is dated February 2000.

Counties (counties.shp)

This dataset, from the Level I Assessment (WRIA 23 Geodata Viewer CD), includes all county boundaries in Washington State. The shapefile was originally supplied to the Chehalis Basin Partnership by the Washington Department of Natural Resources (DNR). The dataset is dated September 2001.

Priority Group 1 Sections (grp1_sections_clipped.shp)

This dataset consists of all sections mapped by the EPA in Priority Group 1. Sections that overlapped the basin boundaries were clipped and the area recalculated to display the truncated area rather than the area of the entire section. Several of the sections are irregular in shape and represent public land trust/donation areas. The original dataset, which was derived from DNR, used numbers above 36 to incorporate these irregular sections into its township, range, section labeling system. This approach to assigning labels to irregular sections differs significantly from the approach used by Lewis County; the fields "LC_TRS" and "Message" in the dataset identify the alternate section number assigned by Lewis County.

Watershed Boundaries and Topography

WRIA 23 Boundary (wria23_bound.shp)

This dataset depicts WRIA boundaries as mapped by the DNR. There are some small discrepancies between the mapped WRIA boundary and the Group 1 Subbasins boundaries due to the fact that they came from two different sources. A significant discrepancy was

noted at the north edge of the Skookumchuck River subbasin, where the basin boundaries were drawn differently across a flat valley where the drainage divide was difficult to identify. The variation may also be related to the parent topographic map or Digital Elevation Model (DEM) used in the process of delineating the basins.

Group 1 Subbasins (grp1_subbasins.shp)

This dataset, depicting boundaries as mapped by the EPA, includes subbasin names and numbers.

40-Foot Topographic Contours (40ft_cont.shp)

This unmodified dataset from DNR contains 40-foot topographic contours of the study area created in 1999.

Hydrology

Hydrography (hydrography.shp)

DNR-defined stream types include first- through fifth-order streams and unclassified streams.

Precipitation (precip_iso.shp)

The original data source for this map depicting value bands for average annual precipitation over the state of Washington was the University of Oregon Climatological Center, now known as the Spatial Climate Analysis Service (SCAS).

Average Annual Precipitation by Subbasin (avg_precip_by_subbasin.shp)

Average annual precipitation by subbasin is estimated from two sources: local precipitation gauges and a calculation that involved intersecting the subbasin boundaries with the SCAS average annual precipitation contour map. The average for each subbasin was computed as a weighted average of the resulting precipitation value polygons bounded by each subbasin. Both estimates are included in the shapefile.

Active USGS Stream Flow Gages (i_f_cs_pts.shp)

This unmodified dataset from the EPA maps locations of active USGS stream flow gages in the Priority Group 1 area and contains the regulatory baseflows, as established by WAC Chapter 173-522 (1976).

USGS Measured Stream Flows (USGS_avg_flows.shp)

This dataset from the EPA maps reaches and gives mean monthly flows over the period of record for each stream flow gage. The stream flows are applied uniformly to the reach in which the gage is located and no adjustment is made for location along the reach (i.e. locations upstream of the gage would tend to have low flows due to small or contributing watershed areas, but this is not always the case).

Regulatory Base Flows (i_f_cs_reaches.shp)

This unmodified dataset from the EPA depicts established regulatory base flows for river reaches in the Priority Group 1 area, as established by WAC Chapter 173-522 (1976).

Land Use and Census Data

Census Data for Priority Group 1 (grp1_censusblk.shp) and for WRIAs 22 and 23 (cb22_23.shp)

Census block data supplied by DOH was revised by removing the demographic data to show specifically population data for each block.

Population by Section (pop_by_trs.shp) and Subbasin (wr_perm_cert_by_subbasin.shp)

The population estimates for sections and subbasins were derived from the census block data supplied by DOH. Estimates were made by intersecting datasets and using area-weighted calculations based on an estimated population per acre for each census block. The population across each census block was assumed to be uniform. The population per acre for each census block was derived by dividing the total population of the block by its area.

Land Use (grp1_lu.shp)

This is a simplified version of the USGS land use/land cover map. The original land use classifications were aggregated into six categories; urban, transitional, agriculture, forested, bare earth, and water. The transitional zone is a suburban area used to depict the low density development found between more urbanized areas and undeveloped areas. The original USGS data was compiled in 1990 based on manual interpretation and aerial photography from the 1980's.

Water Service Areas and Related Infrastructure

Water Purveyor Service Areas in Priority Group 1 (grp1_service_areas) and in WRIAs 22 and 23 (service_areas_nofut.shp)

Input from water purveyors, Lewis County, Thurston County, and Grays Harbor County was used to create these datasets. The mapped boundaries include all existing water purveyor service areas for which mapped service area boundaries were obtained.

Type A and B Wells (dohwells.shp)

This unmodified dataset depicts private and public wells mapped by the state Department of Health (DOH). Along with information relating to the construction of the well, the dataset includes well depth and capacity. It appears that most of the wells were mapped to the nearest quarter-quarter section (and some according to latitude-longitude coordinates).

Estimate of the Number of Exempt Wells and self-supplied households per Subbasin (grp1_exempt_wells.shp)

An estimate of exempt wells and self-supplied households was made at the subbasin level using a population based approach. Exempt well users were identified by capturing the total population outside of service area boundaries not covered by domestic water rights. This was done in GIS using the population estimates from the census block shapefile, mapped service area boundaries, and the mapped water rights points shapefile. For more background on this analysis refer to Chapter 3.

Dams (dams.shp)

This dataset comes from two data sources, the Ecology data in the Chehalis Basin Partnership CD-ROM (WRIA 23 CD Data Viewer), and the Level 1 Assessment, which identified some dams not included in the Ecology dataset.

Treatment Facilities (treat_fac.shp)

This point theme dataset was developed from data contained in the Level 1 Assessment, and identifies treatment plant facilities, including wastewater and water treatment facilities, and flow rates in million gallons per day (MGD) for both WRIA 22 and 23.

Other

Major Highways and Roads (mjroads.shp)

This dataset, from the Level 1 Assessment, shows state highways as well as some primary routes.

DNR Orthophoto (dnrortho.sid)

An orthophoto image of the study area taken during 2000. The MrSID Image Support extension needs to be activated in ArcView to view the image. The image is used as a background on each view.

Background (background.shp)

This simple polygon was added to each view to color areas not covered by the orthophoto.

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APPENDIX A.
ARCVIEW® PROJECT CD-ROM

The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits arising out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc.

APPENDIX B.
GIS DATA DESCRIPTIONS

The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits arising out of use of or reliance on the geographical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc.

The following GIS data descriptions were created and edited using the ArcCatalog metadata editor, and appear in screen format. Certain items were intentionally left blank due to limitations in the scope of this project (e.g., publication, data storage, contact, etc.). Bounding coordinates (limits of coverage) have been provided in alternate grid coordinates (State Plane NAD 27, Washington South), or, where available, in geographic coordinates (latitude-longitude). Supplemental metadata files from original sources were included where available for data that were largely used unmodified.

A copy of the data description for EPA shapefiles for subbasin, section, and instream flow datasets is included.

A copy of the Department of Ecology data dictionary for the Water Rights Applications Tracking System (WRATS) is also included.

GIS Metadata Files

(Supplemental metadata from source files noted in parentheses)

Apps_by_trs.shp.xml
Avg_precip_by_subbasin.shp.xml
Background.shp.xml
Cb22_23.shp.xml *(blk00.htm)*
Cities.shp.xml *(citybnd.htm)*
Claims_by_subbasin.shp.xml
Claims_by_trs.shp.xml *(section.htm)*
Cont_40ft.shp.xml
Counties.shp.xml *(county.htm)*
Dams.shp.xml *(dams.htm)*
Dohwells.shp.xml *(dohwells01.htm)*
Grp1_censusblk.shp.xml
Grp1_exempt_wells.shp.xml
Grp1_landuse.shp.xml *(usgslulc.htm)*
Grp1_lu.shp.xml
Grp1_sections_clipped.shp.xml
Grp1_serviceareas.shp.xml
Grp1_subbasins.shp.xml
Grp1_wr_perm_cert_by_trs.shp.xml
Grp1_wtr_right_pts.shp.xml
Hydrography.shp.xml *(hydro.htm)*
i_f_cs_pts.shp.xml
i_f_cs_reaches.shp.xml
Mjroads.shp.xml
Pop_by_trs.shp.xml
Precip_iso.shp.xml *(wa_vect_meta.htm)*
Service_areas_nofut.shp.xml
Treat_fac.shp.xml
Usgs measured streamflows.shp.xml
Wr_apps_by_subbasin.shp.xml
Wr_perm_cert_by_subbasin.shp.xml
Wria23_bound.shp.xml *(wria100k.htm, wria.htm)*
Wtr_rights_pts.shp.xml

EPA Data Description

Letter of May 20, 2002, with Enclosures 2, 2a and 3

Department of Ecology

Water Rights Application Tracking System – Data Dictionary

Apps_by_trs.shp.xml

apps_by_trs

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Tetra Tech/KCM, Inc.
Publication_Date: September 26, 2003
Title: apps_by_trs
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\Cadd\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
The dataset contains spatial information for water right applications located in six subbasins of WRIA 23 in the Upper Chehalis Basin. These six subbasins, termed the Priority Gruop 1 area, include Middle Channel Chehalis River #1, North Fork Newaukum River, South Fork Newaukum River, Newaukum River, Salzer Creek, and Skookumchuck River.
Purpose:
Providing a spatial database represented as a polygon theme summarizing water right applications for the Priority Group 1 area by township, section and range.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Currentness_Reference:
REQUIRED: The basis on which the time period of content information is determined.
Status:

Progress: Complete
Maintenance_and_Update_Frequency: As needed

Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
REQUIRED: Western-most coordinate of the limit of coverage expressed in longitude.
East_Bounding_Coordinate:
REQUIRED: Eastern-most coordinate of the limit of coverage expressed in longitude.
North_Bounding_Coordinate:
REQUIRED: Northern-most coordinate of the limit of coverage expressed in latitude.
South_Bounding_Coordinate:
REQUIRED: Southern-most coordinate of the limit of coverage expressed in latitude.

Keywords:
Theme:
Theme_Keyword_Thesaurus: none
Theme_Keyword: water right application
Theme_Keyword: water use
Theme_Keyword: Chehalis
Theme_Keyword: regulated
Place:
Place_Keyword_Thesaurus: none
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: Northwest

Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: apps_by_trs
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:

Lineage:
Source_Information:
Type_of_Source_Media: CD ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\DOCUME~1\alee\LOCALS~1\Temp\xml4E.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xmlFCD.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 565

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Grid_Coordinate_System:
Grid_Coordinate_System_Name: State Plane Coordinate System
State_Plane_Coordinate_System:
Lambert_Conformal_Conic:
Standard_Parallel: 45.8333333333333333
Standard_Parallel: 47.3333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.3333333333333333
False_Easting: 2000000.0
False_Northing: 0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927, Washington South
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: apps_by_trs
Entity_Type_Definition: water right applications by township, section, range
Attribute:

Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: AREA_FEET
Attribute:
Attribute_Label: PERIMETER_
Attribute:
Attribute_Label: TOWNSHIP
Attribute:
Attribute_Label: TOWNSECT
Attribute_Definition: Sorting key used to sort records by township, section, range
Attribute:
Attribute_Label: SECT
Attribute_Definition: Section #
Attribute:
Attribute_Label: COUNTY
Attribute:
Attribute_Label: Z_CI
Attribute_Definition: Number of commercial applications
Attribute:
Attribute_Label: Z_DM
Attribute_Definition: number of domestic multiple applications
Attribute:
Attribute_Label: Z_DS
Attribute_Definition: number of domestic single applications
Attribute:
Attribute_Label: Z_EN
Attribute_Definition: number of environmental use applications
Attribute:
Attribute_Label: Z_FS
Attribute_Definition: number of fisheries use applications
Attribute:
Attribute_Label: Z_IR
Attribute_Definition: number of irrigation applications
Attribute:
Attribute_Label: Z_MU
Attribute_Definition: number of domestic municipal applications
Attribute:
Attribute_Label: Z_PO
Attribute_Definition: number of power production applications
Attribute:

Attribute_Label: Z_ST
Attribute_Definition: number of stock applications
Attribute:
Attribute_Label: Z_WL
Attribute_Definition: number of wildlife protection applications
Attribute:
Attribute_Label: CFS_CI
Attribute_Definition: Maximum allowable instantaneous flow commercial
Attribute:
Attribute_Label: CFS_DM
Attribute_Definition: Maximum allowable instantaneous flow domestic multiple
Attribute:
Attribute_Label: CFS_DS
Attribute_Definition: Maximum allowable instantaneous flow domestic single
Attribute:
Attribute_Label: CFS_EN
Attribute_Definition: Maximum allowable instantaneous flow environmental use
Attribute:
Attribute_Label: CFS_FS
Attribute_Definition: Maximum allowable instantaneous flow fisheries use
Attribute:
Attribute_Label: CFS_IR
Attribute_Definition: Maximum allowable instantaneous flow irrigation
Attribute:
Attribute_Label: CFS_MU
Attribute_Definition: Maximum allowable instantaneous flow domestic municipal
Attribute:
Attribute_Label: CFS_PO
Attribute_Definition: Maximum allowable instantaneous flow power production
Attribute:
Attribute_Label: CFS_ST
Attribute_Definition: Maximum allowable instantaneous flow stock
Attribute:
Attribute_Label: CFS_WL
Attribute_Definition: Maximum allowable instantaneous flow wildlife protection
Attribute:
Attribute_Label: AI_CI
Attribute_Definition: acres irrigated, commercial
Attribute:
Attribute_Label: AI_DM
Attribute_Definition: acres irrigated, domestic multiple
Attribute:
Attribute_Label: AI_DS
Attribute_Definition: acres irrigated domestic single
Attribute:
Attribute_Label: AI_EN
Attribute_Definition: acres irrigated environmental use
Attribute:
Attribute_Label: AI_FS
Attribute_Definition: acres irrigated fisheries
Attribute:

Attribute_Label: AI_IR
Attribute_Definition: acres irrigated, irrigation
Attribute:
Attribute_Label: AI_MU
Attribute_Definition: acres irrigated, domestic municipal
Attribute:
Attribute_Label: AI_PO
Attribute_Definition: acres irrigated, power production
Attribute:
Attribute_Label: AI_ST
Attribute_Definition: acres irrigated, stock
Attribute:
Attribute_Label: AI_WL
Attribute_Definition: acres irrigated, wildlife protection
Attribute:
Attribute_Label: T__APPS
Attribute_Definition: total applications
Attribute:
Attribute_Label: T_CFS_APPS
Attribute_Definition: Total of maximum allowable instantaneous flows
Attribute:
Attribute_Label: T_AI_APPS
Attribute_Definition: Total acres irrigated

Distribution_Information:
Resource_Description: Downloadable Data
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set. Although these data have been processed succcessfully on Tetra Tech/KCM, Inc. computuers, no warranty, expresed or iimplied, is made by Tetra Tech/KCM, Inc. regarding use of thesedata on any other system, nor does the fact of distribution constitute or implay any such warranty. In no event shall Tetra Tech/KCM, Inc. have any liability whatsoever for payment or any consequential, incidental, indirect, special or tort damages of any kind, including, but not limited to, any loss of profits arising out of use of or reliance on the geographical data or arising out of the delivery, installation, operation, or support by Tetra Tech/KCM.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.421

Metadata_Reference_Information:
Metadata_Date: 20031023

Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Thu Oct 23 14:32:06 2003

Avg_precip_by_subbasin.shp.xml

avg_precip_by_subbasin

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator:
Original data from Oregon Spatial Climate Analysis Service (SCAS), modified by TetraTech/KCM, Inc. for use in WRIA 22 and 23.
Publication_Date: Unknown
Title: avg_precip_by_subbasin
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Polygon theme computed by intersecting the subbasin boundaries with the Oregon State University Spatial Climate Analasis Service's average annual precipitation contour map. The average for each subbasin was computed as a weighted average of the resulting precipitation value polygons bounded by each subbasin.
Purpose:
Provide a spatial database represented as a polygon theme summarizing avg precipitation in each subbsin within the Chehalis Watershed.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:

Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: precipitation
Theme_Keyword: Chehalis
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: avg_precip_by_subbasin
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml194.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 6

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: avg_precip_by_subbasin
Entity_Type_Definition: average precipitation (inch) by subbasin
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Shape Type
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: SUBBASIN_N

Attribute_Definition: Subbasin Name
Attribute:
Attribute_Label: SUB_NUMBER
Attribute_Definition: Subbasin number
Attribute:
Attribute_Label: AVG_SCAS
Attribute_Definition:
Average precipitation in inches, based on SCAS precipitation map
Attribute:
Attribute_Label: AVG_GAGES
Attribute_Definition: Based on historical precipitation records in Priority Group 1

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Ecology.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.

City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 13:54:38 2003

Background.shp.xml

background

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: US EPA
Publication_Date: Unknown
Title: background
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
This simple polygon was added to each view to color areas not covered by the orthophoto.
Purpose:
This simple polygon was added to each view to color areas not covered by the orthophoto.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:

West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:

Keywords:

Theme:

Theme_Keyword_Thesaurus: None
Theme_Keyword: Chehalis

Place:

Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest

Access_Constraints: None

Use_Constraints:

The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.

Browse_Graphic:

Browse_Graphic_File_Name: background
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG

Native_Data_Set_Environment:

Microsoft Windows 2000 Version 5.1 (Build 2600) Service Pack 1; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:

Lineage:

Source_Information:

Type_of_Source_Media: CD-ROM

Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp

Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp

Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml1D.tmp

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 1

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: background
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: ID

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by TetraTech/KCM, Inc.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20030926
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Sep 26 16:15:15 2003

Cb22_23.shp.xml

cb22_23

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator:
Developed from census block GIS dataset from US Census, provided by Washington State Department of Health
Title: cb22_23
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\Cadd\GIS\2140067-Chehalis\cd transfer\final shapefiles 2\cb22_23.shp
Description:
Abstract:
Census block information for the WRIA 22 and 23 area. Subset of Census block dataset provided by Washington State Department of Health. Refer to metadata in blk00.htm for complete description of original source data, at <ftp://ftp3.doh.wa.gov/geodata/layers/blk00.exe>. Attribute PPAC added for calculating population per acre, and Tot_Pop for storing calculated total population of polygon. Population information joined from blk00.dbf.
Purpose: Developed for water quantity evaluation study.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: unknown
Currentness_Reference: 2000 Census
Status:
Progress: Complete
Maintenance_and_Update_Frequency: None planned
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:

REQUIRED: Western-most coordinate of the limit of coverage expressed in longitude.

East_Bounding_Coordinate:
REQUIRED: Eastern-most coordinate of the limit of coverage expressed in longitude.

North_Bounding_Coordinate:
REQUIRED: Northern-most coordinate of the limit of coverage expressed in latitude.

South_Bounding_Coordinate:
REQUIRED: Southern-most coordinate of the limit of coverage expressed in latitude.

Keywords:

Theme:

Theme_Keyword_Thesaurus: none

Theme_Keyword: population

Access_Constraints: None

Use_Constraints:

The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.

Browse_Graphic:

Browse_Graphic_File_Name: cb22_23

Browse_Graphic_File_Description: simple image

Native_Data_Set_Environment:

Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Vector

Point_and_Vector_Object_Information:

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: G-polygon

Point_and_Vector_Object_Count: 8730

Entity_and_Attribute_Information:

Detailed_Description:

Entity_Type:

Entity_Type_Label: cb22_23

Attribute:

Attribute_Label: FID

Attribute_Definition: Internal feature number.

Attribute_Definition_Source: ESRI

Attribute_Domain_Values:

Unrepresentable_Domain:

Sequential unique whole numbers that are automatically generated.

Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: AREA
Attribute_Definition: Census block area, square feet
Attribute:
Attribute_Label: PERIMETER
Attribute:
Attribute_Label: ORBLK_AREA
Attribute:
Attribute_Label: STATE
Attribute:
Attribute_Label: COUNTY
Attribute:
Attribute_Label: BLOCK_CODE
Attribute:
Attribute_Label: TRACT
Attribute:
Attribute_Label: BLOCK
Attribute:
Attribute_Label: PPAC
Attribute_Definition:
Population per acre in census block based on # of persons per occupied household and # of households
Attribute:
Attribute_Label: TOT_POP
Attribute_Definition:
Estimated total population in census block based on population per acre

---

Distribution_Information:
Resource_Description: Downloadable Data
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 6.197

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:

REQUIRED: The organization responsible for the metadata information.

Contact_Person: REQUIRED: The person responsible for the metadata information.

Contact_Address:

Address_Type:

REQUIRED: The mailing and/or physical address for the organization or individual.

City: REQUIRED: The city of the address.

State_or_Province: REQUIRED: The state or province of the address.

Postal_Code: REQUIRED: The ZIP or other postal code of the address.

Contact_Voice_Telephone:

REQUIRED: The telephone number by which individuals can speak to the organization or individual.

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata

Metadata_Standard_Version: FGDC-STD-001-1998

Metadata_Time_Convention: local time

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:15:02 2003

Cities.shp.xml

cities

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Washington State Department of Transportation
Publication_Date: Refer to citybnd.html for complete metadata on this shapefile.
Title: cities
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\Cadd\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\cities.shp
Description:
Abstract:
Copy of citybnd.shp shapefile provided by the Washington State Department of Transportation to the Chehalis Basin Partnership in the WRIA 23 Geodata Viewer. Refer to citybnd.html for complete metadata on this shapefile.
Purpose: City boundaries
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date:
REQUIRED: The year (and optionally month, or month and day) for which the data set corresponds to the ground.
Currentness_Reference:
REQUIRED: The basis on which the time period of content information is determined.
Status:
Progress: REQUIRED: The state of the data set.
Maintenance_and_Update_Frequency:
REQUIRED: The frequency with which changes and additions are made to the data set after the initial data set is completed.
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
REQUIRED: Western-most coordinate of the limit of coverage expressed in longitude.

East_Bounding_Coordinate:
REQUIRED: Eastern-most coordinate of the limit of coverage expressed in longitude.
North_Bounding_Coordinate:
REQUIRED: Northern-most coordinate of the limit of coverage expressed in latitude.
South_Bounding_Coordinate:
REQUIRED: Southern-most coordinate of the limit of coverage expressed in latitude.

Keywords:
Theme:
Theme_Keyword_Thesaurus: none
Theme_Keyword: city boundaries
Access_Constraints: None
Use_Constraints: None
Browse_Graphic:
Browse_Graphic_File_Name: cities
Browse_Graphic_File_Description: simple image
Native_Data_Set_Environment:
Microsoft Windows 2000 Version 5.1 (Build 2600) Service Pack 1; ESRI ArcCatalog 8.2.0.700

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 79

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: cities
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:

Attribute_Label: AREA
Attribute:
Attribute_Label: PERIMETER
Attribute:
Attribute_Label: CITIES_
Attribute:
Attribute_Label: CITIES_ID
Attribute:
Attribute_Label: POLY_
Attribute:
Attribute_Label: SUBCLASS
Attribute:
Attribute_Label: SUBCLASS_
Attribute:
Attribute_Label: CITIESP_
Attribute:
Attribute_Label: CITIESP_ID
Attribute:
Attribute_Label: NAME

Distribution_Information:
Resource_Description: Downloadable Data
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.063

Metadata_Reference_Information:
Metadata_Date: 20030926
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata

Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Sep 26 16:15:56 2003

Claims_by_subbasin.shp.xml

claims_by_subbasin

Metadata also available as

Metadata:

Identification_Information:

Citation:

Citation_Information:

Originator: TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: claims_by_subbasin
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp

Description:

Abstract:

Water Right Claims Summarized by Subbasin EPA supplied this information from the 22_23_claims database, which included the township, section, and range each water right claim was located in. The datasets contain the same information as the water right applications polygon themes. Many of the claims did not have information on the estimated cfs for water withdrawal. For planning purposes, a peak discharge of .02 cfs was applied to each claim where this information was not supplied.

It should be noted that the water rights were mapped with Public Land Survey System (PLSS) coordinates (township/range/section) to the quarter-quarter section as feasible. Therefore, locations are approximate, as are the values derived from tabulations by subbasin.

Purpose:

Provide a spatial database represented as a polygon theme summarizing water claims in each subbasin within the Chehalis Watershed.

Supplemental_Information:

This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."

Time_Period_of_Content:

Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: water rights
Theme_Keyword: Chehalis
Theme_Keyword: water claims
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: claims_by_subbasin
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml194.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml1AA.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xmlFEC.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 6

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: claims_by_subbasin
Entity_Type_Definition: water rights to the nearest quarter - quarter section
Attribute:

Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.

Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.

Attribute:
Attribute_Label: SUBBASIN_N
Attribute_Definition: Subbasin Name

Attribute:
Attribute_Label: AREA_FEET
Attribute_Definition: Subbasin area in square feet

Attribute:
Attribute_Label: ACRES
Attribute_Definition: Subbasin area in acres

Attribute:
Attribute_Label: HECTARES
Attribute_Definition: Subbasin area in hectares

Attribute:
Attribute_Label: Z_UNCL
Attribute_Definition: Number of unclassified use claims

Attribute:
Attribute_Label: Z_DG
Attribute_Definition: Number of domestic general claims

Attribute:
Attribute_Label: Z_IR
Attribute_Definition: Number of agricultural irrigation claims

Attribute:
Attribute_Label: Z_MUN
Attribute_Definition: Number of domestic municipal claims

Attribute:
Attribute_Label: Z_STOCK
Attribute_Definition: Number of stock water claims

Attribute:
Attribute_Label: TOT_#
Attribute_Definition: Total number of claims for all uses

Attribute:
Attribute_Label: CFS_DG
Attribute_Definition: Max instantaneous flow allowed for domestic general claims

Attribute:
Attribute_Label: CFS_IR
Attribute_Definition: Max instantaneous flow allowed for irrigation claims

Attribute:
Attribute_Label: CFS_MUN
Attribute_Definition: Max instantaneous flow allowed for domestic municipal claims

Attribute:
Attribute_Label: CFS_STOCK
Attribute_Definition: Max instantaneous flow allowed for stock watering claims
Attribute:
Attribute_Label: CFS_UNCL
Attribute_Definition: Max instantaneous flow allowed for unclassified use claims
Attribute:
Attribute_Label: CFS_TOT
Attribute_Definition: Total max instantaneous flow allowed for all uses
Attribute:
Attribute_Label: ACFT_UNCL
Attribute_Definition: Maximum yearly volume allowed for unclassified use claims
Attribute:
Attribute_Label: ACFT_DG
Attribute_Definition: Maximum yearly volume allowed for domestic general claims
Attribute:
Attribute_Label: ACFT_IR
Attribute_Definition: Maximum yearly volume allowed for irrigation claims
Attribute:
Attribute_Label: ACFT_MUN
Attribute_Definition: Maximum yearly volume allowed for domestic municipal use claims
Attribute:
Attribute_Label: ACFT_STOCK
Attribute_Definition: Maximum yearly volume allowed for stock watering claims
Attribute:
Attribute_Label: ACFT_TOT
Attribute_Definition: Total maximum yearly volume allowed for all uses
Attribute:
Attribute_Label: ACIR_UNCL
Attribute_Definition: Acres irrigated, unclassified use claims
Attribute:
Attribute_Label: ACIR_DG
Attribute_Definition: Acres irrigated, domestic general use claims
Attribute:
Attribute_Label: ACIR_IR
Attribute_Definition: Acres irrigated, irrigation claims
Attribute:
Attribute_Label: ACIR_MUN
Attribute_Definition: Acres irrigated, domestic municipal claims
Attribute:
Attribute_Label: ACIR_STOCK
Attribute_Definition: Acres irrigated, stock watering claims
Attribute:
Attribute_Label: ACIR_TOT
Attribute_Definition: Total acres irrigated, all uses

Distribution_Information:
Resource_Description: Data on CD

Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support byTT/KCM.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:17:28 2003

Claims_by_trs.shp.xml

claims_by_trs

Metadata also available as

Metadata:

Identification_Information:

Citation:

Citation_Information:

Originator: TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: claims_by_trs
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp

Description:

Abstract:

Water Right Claims Summarized by Section The original data was provided by EPA, which developed this information from the Department of Ecology Water Rights Application Tracking System (WRATS) database. The datasets contain the same attribute (fields) as the water right applications polygon themes, but many fields lack information. For planning purposes, a peak discharge of 0.02 cfs was applied to each claim where this information was not provided, based on the range of historical water rights data for domestic single rights.

It should be noted that the water rights were mapped with Public Land Survey System (PLSS) coordinates (township/range/section) to the quarter-quarter section as feasible. Therefore, locations are approximate, as are the values derived from tabulations.

Purpose:

Provide a spatial database represented as a polygon theme summarizing water claims in each subbasin within the Chehalis Watershed.

Supplemental_Information:

This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."

Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: water rights
Theme_Keyword: Chehalis
Theme_Keyword: water claims
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: claims_by_trs
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM

Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml194.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml1AA.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml1B5.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xmlFD4.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 557

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:

Entity_Type:
Entity_Type_Label: claims_by_trs
Entity_Type_Definition: water rights to the nearest quarter - quarter section
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: UNIQUE_ID
Attribute_Definition: Key used to identify township, range, and section
Attribute:
Attribute_Label: TOWNSHIP
Attribute:
Attribute_Label: SECTION
Attribute:
Attribute_Label: AREA_FEET
Attribute_Definition:
Section area in square feet (may be truncated if on Priority Group 1 boundary)
Attribute:
Attribute_Label: ACRES
Attribute_Definition:
Section area in acres (may be truncated if on Priority Group 1 boundary)
Attribute:
Attribute_Label: HECTARES
Attribute_Definition:
Section area in hectares (may be truncated if on Priority Group 1 boundary)
Attribute:
Attribute_Label: Z_UNCLASSI
Attribute_Definition: # unclassified claims
Attribute:
Attribute_Label: Z_DOMESTIC
Attribute_Definition: # general domestic claims
Attribute:
Attribute_Label: Z_IRRIGATI
Attribute_Definition: # of irrigation claims
Attribute:
Attribute_Label: Z_MUNICIPA
Attribute_Definition: # domestic munipical claims
Attribute:
Attribute_Label: Z_STOCK
Attribute_Definition: # of stock watering claims
Attribute:

Attribute_Label: Z_TOTAL
Attribute_Definition: Total claims
Attribute:
Attribute_Label: CFS_DOMEST
Attribute_Definition: Domestic general claims max allowable instantaneous flow
Attribute:
Attribute_Label: CFS_IRRIGA
Attribute_Definition: Irrigation claims max allowable instantaneous flow
Attribute:
Attribute_Label: CFS_MUNICI
Attribute_Definition: Domestic municipal claims max allowable instantaneous flow
Attribute:
Attribute_Label: CFS_STOCK
Attribute_Definition: Stock watering claims max allowable instantaneous flow
Attribute:
Attribute_Label: CFS_UNCLAS
Attribute_Definition: Unclassified use claims max allowable instantaneous flow
Attribute:
Attribute_Label: CFS_TOTAL
Attribute_Definition: Total allowable max instantaneous flow for all uses
Attribute:
Attribute_Label: ACFT_UNCLA
Attribute_Definition: Maximum allowable acre ft annually unclassified claims
Attribute:
Attribute_Label: ACFT_DOMES
Attribute_Definition: Maximum allowable acre ft annually for domestic general claims
Attribute:
Attribute_Label: ACFT_IRRIG
Attribute_Definition: Maximum allowable acre ft annually for irrigation claims
Attribute:
Attribute_Label: ACFT_MUNIC
Attribute_Definition:
Maximum allowable acre ft annually for domestic municipal claims
Attribute:
Attribute_Label: ACFT_STOCK
Attribute_Definition: Maximum allowable acre ft annually for stock watering claims
Attribute:
Attribute_Label: ACFT_TOTAL
Attribute_Definition: Maximum allowable acre ft annually for all claims
Attribute:
Attribute_Label: ACIRRIG_U
Attribute_Definition: Acres irrigated, unclassified claims
Attribute:
Attribute_Label: ACIRRIG__D
Attribute_Definition: Acres irrigated, domestic general claims
Attribute:
Attribute_Label: ACIRRIG__I
Attribute_Definition: Acres irrigated, irrigation claims
Attribute:
Attribute_Label: ACIRRIG_MU

Attribute_Definition: Acres irrigated, domestic municipal claims
Attribute:
Attribute_Label: ACIRRIG_ST
Attribute_Definition: Acres irrigated, stock watering claims
Attribute:
Attribute_Label: ACIRRIG_TOT
Attribute_Definition: Acres irrigated, Total for all uses

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support byTT/KCM.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:

REQUIRED: The telephone number by which individuals can speak to the organization or individual.

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
  Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
  Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
  Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
  Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
  Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
  Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
  Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
  Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
  Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
  Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
  Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
  Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:18:10 2003

Cont_40ft.shp.xml

cont_40ft

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Washington State Department of Natural Resources
Publication_Date: unknown
Title: cont_40ft
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\Cadd\GIS\2140067-Chehalis\cd transfer\final shapefiles 2\cont_40ft.shp
Description:
Abstract:
Contour lines, 40 foot contours derived from scanned U.S. Geological Survey elevation data, 1:24,000 map scale. Source: U.S. Geological Survey/Department of Natural Resources. Last Update: 1999. Provided by Washington Department of Natural Resources, Chehalis Basin Partnership, WRIA 23 Geodata Viewer CD.
Purpose: Drainage basin analysis
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: unknown
Currentness_Reference: ground condition
Status:
Progress: Complete
Maintenance_and_Update_Frequency: None planned
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
REQUIRED: Western-most coordinate of the limit of coverage expressed in longitude.
East_Bounding_Coordinate:

REQUIRED: Eastern-most coordinate of the limit of coverage expressed in longitude.

North_Bounding_Coordinate:
REQUIRED: Northern-most coordinate of the limit of coverage expressed in latitude.

South_Bounding_Coordinate:
REQUIRED: Southern-most coordinate of the limit of coverage expressed in latitude.

Keywords:

Theme:

Theme_Keyword_Thesaurus: none

Theme_Keyword: Topographic elevation contours

Access_Constraints: None

Use_Constraints:

The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.

Browse_Graphic:

Browse_Graphic_File_Name: cont_40ft

Browse_Graphic_File_Description: simple image

Native_Data_Set_Environment:

Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Vector

Point_and_Vector_Object_Information:

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: String

Point_and_Vector_Object_Count: 48778

Entity_and_Attribute_Information:

Detailed_Description:

Entity_Type:

Entity_Type_Label: cont_40ft

Attribute:

Attribute_Label: FID

Attribute_Definition: Internal feature number.

Attribute_Definition_Source: ESRI

Attribute_Domain_Values:

Unrepresentable_Domain:

Sequential unique whole numbers that are automatically generated.

Attribute:

Attribute_Label: Shape

Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: CONTOUR
Attribute:
Attribute_Label: LENGTHFEET

Distribution_Information:
Resource_Description: Downloadable Data
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 51.187

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:18:46 2003

Counties.shp.xml

counties

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Washington State Department of Natural Resources
Publication_Date: Unknown
Title: counties
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Shapefile depicting county boundaries. Provided by Washington Department of Natural Resources, Chehalis Basin Partnership, WRIA 23 Geodata Viewer CD. Refer to original data description on WRIA 23 Geodata View CD.
Purpose: County boundaries
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:

East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:

Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: counties
Theme_Keyword: Washington
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: counties
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml41.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml44.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 12

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: counties
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:

Attribute_Label: AREA
Attribute:
Attribute_Label: PERIMETER
Attribute_Definition: Facility Name
Attribute:
Attribute_Label: COUNTY_
Attribute_Definition: Lattitude
Attribute:
Attribute_Label: COUNTY_ID
Attribute_Definition: Longitude
Attribute:
Attribute_Label: NAME
Attribute_Definition: Common Name of Facility
Attribute:
Attribute_Label: FIPS
Attribute:
Attribute_Label: ACRES

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.

Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:19:11 2003

Dams.shp.xml

dams

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator:
Washington State Department of Ecology, updated to Level 1 Assessment data by Tetra Tech/KCM, Inc.
Publication_Date: Unknown
Title: dams
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Original source of the dams shapefile is Washington State Department of Ecology. This theme is a combination of two versions of this dataset, one directly from DOE through the WRIA 23 Geodata Viewer, and the other from the Level I Assessment GIS dataset. The DOE shapefile was updated by Tetra Tech/KCM, Inc. to include additional dams listed in the Level I Assessment. DOE metadata should be referenced for complete information.
Purpose: Watershed conditions
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:

Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: dams
Theme_Keyword: Chehalis
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: dams
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:
Process_Description: Metadata imported.

Source_Used_Citation_Abbreviation: C:\TEMP\xml41.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: Entity point
Point_and_Vector_Object_Count: 44

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: dams
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:

Unrepresentable_Domain: Coordinates defining the features.

Attribute:
Attribute_Label: GEO_LOC_ID

Attribute:
Attribute_Label: FACILIT_NM
Attribute_Definition: Facility Name

Attribute:
Attribute_Label: LAT_DD_QT
Attribute_Definition: Lattitude

Attribute:
Attribute_Label: LON_DD_QT
Attribute_Definition: Longitude

Attribute:
Attribute_Label: COMMON_NM
Attribute_Definition: Common Name of Facility

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc

Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.

Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:19:35 2003

Dohwells.shp.xml

dohwells

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Department of Health
Publication_Date: Unknown
Title: dohwells
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Unmodified point theme depicting private and public wells mapped by the State Department of Health. Along with other information relating to the construction of the well, the dataset also includes well depth and capacity. Wells were mapped to geographic (lat-long) coordinates where available, and otherwise to PLSS (townshiop/section/range) coordinates, to the nearest quarter-quarter section. Original source for this shapefile was Washington State Department of Ecology, from the WRIA 23 Geodata Viewer. The original metadata should be consulted for complete information.
Purpose:
Provide a spatial database represented as a point theme of private and public wells within Chehalis Basin.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown

Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: sections
Theme_Keyword: Chehalis
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: dohwells
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp

Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml223.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: Entity point
Point_and_Vector_Object_Count: 588

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: dohwells
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.

Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: PWS_ID
Attribute:
Attribute_Label: SFX
Attribute:
Attribute_Label: SYSNAME
Attribute:
Attribute_Label: GROUP
Attribute:
Attribute_Label: SYSTYPE
Attribute:
Attribute_Label: COUNTY
Attribute:
Attribute_Label: RGN
Attribute:
Attribute_Label: SRCNUM
Attribute:
Attribute_Label: SRCTYPE
Attribute:
Attribute_Label: USE
Attribute:
Attribute_Label: WELLDEPTH
Attribute:
Attribute_Label: CAPACITY
Attribute:
Attribute_Label: QTRSEC
Attribute:
Attribute_Label: TWNSHIP
Attribute:
Attribute_Label: SRC_TREATE
Attribute:
Attribute_Label: SRCNAME
Attribute:
Attribute_Label: X_COORD
Attribute:
Attribute_Label: Y_COORD
Attribute:
Attribute_Label: KEY
Attribute:
Attribute_Label: SRC_PURCHA
Attribute:
Attribute_Label: SRC_EFFECT
Attribute:
Attribute_Label: SRC_INACTI
Attribute:
Attribute_Label: ORIGIN
Attribute:
Attribute_Label: SCTION

Attribute:
Attribute_Label: RNGE
Attribute:
Attribute_Label: TREATMENT
Attribute:
Attribute_Label: RESPOP
Attribute:
Attribute_Label: TOTALCONN

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.

Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:20:11 2003

Grp1_censusblk.shp.xml

grp1_censusblk

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: grp1_censusblk
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Combination of two themes, grp1_censusblk.shp, depicting census block data specifically for the Priority Group 1 area, and cb22_23.shp, which combines the census block themes for WRIA's 22 and 23. Attributes from both themes were reduced by removing the demographic data to show specifically population data for each block. The census block data was obtained from DOH.
Purpose:
Provide a spatial database represented as a polygon theme of population estimates within group 1 priority basins.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete

Maintenance_and_Update_Frequency: As needed

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:

Keywords:

Theme:

Theme_Keyword_Thesaurus: None
Theme_Keyword: group 1 priority subbasins
Theme_Keyword: Chehalis
Theme_Keyword: Population
Theme_Keyword: census

Place:

Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest

Access_Constraints: None

Use_Constraints:

The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.

Browse_Graphic:

Browse_Graphic_File_Name: grp1_censusblk
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG

Native_Data_Set_Environment:

Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:

Lineage:

Source_Information:

Type_of_Source_Media: CD-ROM

Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp

Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp

Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml15.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2B.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 2049

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: grp1_censusblk
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:

Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: AREA_FEET
Attribute_Definition: Area in feet
Attribute:
Attribute_Label: PERIMETER_
Attribute_Definition: perimeter in feet
Attribute:
Attribute_Label: ACRES
Attribute_Definition: Area in acres
Attribute:
Attribute_Label: ORBLK_AREA
Attribute:
Attribute_Label: STATE
Attribute:
Attribute_Label: COUNTY
Attribute:
Attribute_Label: BLOCK_CODE
Attribute:
Attribute_Label: TRACT
Attribute_Definition: Township and Range
Attribute:
Attribute_Label: BLOCK
Attribute_Definition: Section Number
Attribute:
Attribute_Label: PPAC
Attribute_Definition: Area of section in ft
Attribute:
Attribute_Label: TOT_POP
Attribute_Definition: Area of section in acres
Attribute:
Attribute_Label: TOT_POP
Attribute_Definition: Total estimated population in section
Attribute:
Attribute_Label: BLOCK00
Attribute:
Attribute_Label: BLOCK_CODE
Attribute:
Attribute_Label: TRACT
Attribute:
Attribute_Label: BLOCK
Attribute:
Attribute_Label: TRACT_ID
Attribute:
Attribute_Label: PPAC
Attribute:
Attribute_Label: TOT_POP

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by TetraTech/KCM, Inc.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:21:12 2003

Grp1_exempt_wells.shp.xml

grp1_exempt_wells

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Tetra Tech/KCM, Inc.
Publication_Date: September 26, 2003
Title: grp1_exempt_wells
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\Cadd\GIS\2140067-Chehalis\cd transfer\final shapefiles 2
\grp1_exempt_wells.shp
Description:
Abstract:
Estimated number of potential exempt wells/self supplied households in priority group 1 subbasins in WRIA 23.
Purpose:
Evaluation of water quantity in WRIA 23 priority group 1 subbasins.
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date:
REQUIRED: The year (and optionally month, or month and day) for which the data set corresponds to the ground.
Currentness_Reference:
REQUIRED: The basis on which the time period of content information is determined.
Status:
Progress: REQUIRED: The state of the data set.
Maintenance_and_Update_Frequency:
REQUIRED: The frequency with which changes and additions are made to the data set after the initial data set is completed.
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
REQUIRED: Western-most coordinate of the limit of coverage expressed in longitude.

East_Bounding_Coordinate:
REQUIRED: Eastern-most coordinate of the limit of coverage expressed in longitude.
North_Bounding_Coordinate:
REQUIRED: Northern-most coordinate of the limit of coverage expressed in latitude.
South_Bounding_Coordinate:
REQUIRED: Southern-most coordinate of the limit of coverage expressed in latitude.

Keywords:
Theme:
Theme_Keyword_Thesaurus:
REQUIRED: Reference to a formally registered thesaurus or a similar authoritative source of theme keywords.
Theme_Keyword:
REQUIRED: Common-use word or phrase used to describe the subject of the data set.

Access_Constraints: None

Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.

Browse_Graphic:
Browse_Graphic_File_Name: grp1_exempt_wells
Browse_Graphic_File_Description: simple image

Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 6

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: grp1_exempt_wells
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI

Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: SUBBASIN_N
Attribute:
Attribute_Label: SUBNAME
Attribute:
Attribute_Label: EX_WELLS

Distribution_Information:
Resource_Description: Downloadable Data
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.043

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:21:35 2003

Grp1_lu.shp.xml

grp1_lu

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator:
Original source data from USGS via Washington State Department of Natural Resources, Level 1 Assessment and WRIA 23 Geodata Viewer. Modified by TetraTech/KCM, Inc. for water quantity evaluation.
Publication_Date: Unknown
Title: grp1_lu
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
This is a reduced version of the LULC land use map originally developed by USGS in 1990 and converted to ArcInfo format by EPA. The shapefile was provided by Washington State Department of Natural Resources through the Chehalis Level 1 Assessment dataset and the WRIA 23 Geodata Viewer, and modified by Tetra Tech/KCM for the water quantity evaluation. Land use classifications were aggregated into six categories; urban, transitional, agriculture, forested, bare earth, and water. The transitional zone is a suburban area used to depict the low density development found between more urbanized areas and undeveloped areas.
Purpose: Provide a simplified version of the 1999 DNR land use map.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01

Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: sections
Theme_Keyword: Chehalis
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: grp1_lu
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.

Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml3D.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 336

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: grp1_lu
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape

Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: LULC_
Attribute:
Attribute_Label: LULC_ID
Attribute:
Attribute_Label: DESCRIPT
Attribute:
Attribute_Label: CATEGORY
Attribute:
Attribute_Label: SUBBASIN
Attribute:
Attribute_Label: AREA
Attribute:
Attribute_Label: PERIMETER
Attribute:
Attribute_Label: ACRES
Attribute:
Attribute_Label: LUCODE

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024

Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:22:17 2003

Grp1_sections_clipped.shp.xml

grp1_sections_clipped

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator:
Original source data from Washington State Department of Natural Resources, modified by Tetra Tech/KCM, Inc. for the water quantity evaluation.
Publication_Date: Unknown
Title: grp1_sections_clipped
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Modified polygon theme generated from section shapefile originally from Washington State Department of Natural Resources, provided to the Chehalis Basin for the Level 1 Assessment. Another version appears in the WRIA 23 Geodata Viewer. The section theme has been clipped to limits of the Chehalis Basin.
Purpose: Water quantity evaluation.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed

Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: sections
Theme_Keyword: Chehalis
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: grp1_sections_clipped
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 560

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: grp1_sections_clipped
Attribute:
Attribute_Label: Area_sf
Attribute_Definition: Are in square feet
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Township
Attribute_Definition: Township and Range number
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: Sect
Attribute_Definition: Section Number
Attribute:

Attribute_Label: Perimeter
Attribute_Definition: Perimeter in feet
Attribute:
Attribute_Label: Area_acres
Attribute_Definition: Area in acres
Attribute:
Attribute_Label: PERIMETER
Attribute:
Attribute_Label: AREA_ACRES

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Ecology.

, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.

Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:

Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:23:05 2003

Grp1_serviceareas.shp.xml

grp1_serviceareas

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: grp1_serviceareas
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Several sources of information were used to created this theme; input from water purveyors, Lewis, Thurston, and Grays Harbor County. Two themes were added to the CD including service areas for the entire WRIA 22-23 region (service_areas_nofut.shp) and those inside the Priority Group 1 area (grp1_service_areas). The mapped boundaries include all known existing water purveyor service areas for whicih ampps were available.
Purpose: Water quantity evaluation.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed

Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: service areas
Theme_Keyword: Chehalis
Theme_Keyword: group 1 priority
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: grp1_serviceareas
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml1C.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 8

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: grp1_serviceareas
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:

Attribute_Label: AREA
Attribute_Definition: Area of shape in feet
Attribute:
Attribute_Label: PERIMETER
Attribute_Definition: Perimeter in feet
Attribute:
Attribute_Label: CITIES_
Attribute_Definition: Name of service area
Attribute:
Attribute_Label: CITIES_ID
Attribute_Definition: Flag if theme was modified from source data
Attribute:
Attribute_Label: POLY_
Attribute_Definition: Area in acres
Attribute:
Attribute_Label: SUBCLASS
Attribute_Definition: Theme that was original source of data
Attribute:
Attribute_Label: SUBCLASS_
Attribute:
Attribute_Label: RINGS_OK
Attribute:
Attribute_Label: RINGS_NOK
Attribute:
Attribute_Label: CITIESP_
Attribute:
Attribute_Label: CITIESP_ID
Attribute:
Attribute_Label: NAME
Attribute:
Attribute_Label: POP
Attribute:
Attribute_Label: EDITED
Attribute:
Attribute_Label: TYPE
Attribute:
Attribute_Label: AREA_1
Attribute:
Attribute_Label: PERIMETE_1
Attribute:
Attribute_Label: CITYLIM_LC
Attribute:
Attribute_Label: CITYLIM__1
Attribute:
Attribute_Label: CITY
Attribute:
Attribute_Label: ACRES
Attribute:
Attribute_Label: SOURCETHM

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

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Grp1_subbasins.shp.xml

grp1_subbasins

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Chehalis Basin Partnership, Level 1 Assessment
Publication_Date: Unknown
Title: grp1_subbasins
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Polygon theme of subbasins within Chehalis Basin. Original data was from the Level 1 Assessment.
Purpose: Spatial database of subbasins within Chehalis Basin..
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:

North_Bounding_Coordinate:
South_Bounding_Coordinate:

Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: sections
Theme_Keyword: Chehalis
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest

Access_Constraints: None

Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.

Browse_Graphic:
Browse_Graphic_File_Name: grp1_subbasins
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG

Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml70.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector

Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 6

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: grp1_subbasins
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: SUB_NAME
Attribute_Definition: Subbasin Name
Attribute:
Attribute_Label: SUB_NUMBER

Attribute_Definition: Subbasin Number

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by TetraTech/KCM, Inc
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:24:21 2003

Grp1_wr_perm_cert_by_trs.shp.xml

grp1_wr_perm_cert_by_trs

Metadata also available as

Metadata:

Identification_Information:

Citation:

Citation_Information:

Originator:

Original dataset compiled by EPA, modified by TetraTech/KCM, Inc.

Publication_Date: September 26, 2003

Title: grp1_wr_perm_cert_by_trs

Geospatial_Data_Presentation_Form: vector digital data

Online_Linkage:

\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp

Description:

Abstract:

The section summary theme summarizes the mapped water rights point theme data by township, section and range. Information in the datasets include usage type (i.e. irrigation, commercial, domestic single), acre-ft, estimated peak discharge in cfs, irrigated acres, and return flow (in cfs). The original EPA dataset lists all water rights currently known as of 2001. An effort was made to identify later water rights by contacting EPA, Lewis and Thurston Counties, and the cities of Bucoda, Chehalis, Centralia, and Napavine. Post 2001 water rights are listed in separate fields which summarize the total number of new water rights and their estimated acre-ft in the dataset.

Purpose:

Provide a spatial database represented as a polygon theme of water rights by section within Chehalis Basin..

Supplemental_Information:

This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: sections
Theme_Keyword: Chehalis
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: wr_perm_cert_by_trs
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml92.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml9D.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 565

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: grp1_wr_perm_cert_by_trs
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:

Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.

Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.

Attribute:
Attribute_Label: AREA_FEET
Attribute_Definition: Area in square feet

Attribute:
Attribute_Label: PERIMETER_

Attribute:
Attribute_Label: SECTION_ID
Attribute_Definition: Section number

Attribute:
Attribute_Label: TOWNSHIP

Attribute:
Attribute_Label: TOWNSECT
Attribute_Definition: Unique identifier used to sort by township, section, and range

Attribute:
Attribute_Label: LC_TRS
Attribute_Definition:
Lewis County township, range, and section, which used a different method of labeling irregular sections

Attribute:
Attribute_Label: MESSAGE
Attribute_Definition:
note relating to labeling method used by Lewis County for sections

Attribute:
Attribute_Label: CI___
Attribute_Definition: Number of Commercial/Industrial water rights

Attribute:
Attribute_Label: DM___
Attribute_Definition: Number of domestic multiple water rights

Attribute:
Attribute_Label: DS___
Attribute_Definition: Number of domestic single water rights

Attribute:
Attribute_Label: FR___
Attribute_Definition: Number of fire protection water rights

Attribute:
Attribute_Label: FS___
Attribute_Definition: Number of fisheries use water rights

Attribute:
Attribute_Label: HE___
Attribute_Definition: Number of heat exchange use water rights

Attribute:
Attribute_Label: IR___
Attribute_Definition: Number of irrigation water rights

Attribute:
Attribute_Label: MI___
Attribute_Definition: Number of mining water rights
Attribute:
Attribute_Label: MU___
Attribute_Definition: Number of domestic municipal water rights
Attribute:
Attribute_Label: PO___
Attribute_Definition: Number of power production water rights
Attribute:
Attribute_Label: RE___
Attribute_Definition: Number of recreational use water rights
Attribute:
Attribute_Label: RW___
Attribute_Definition: Number of railway use water rights
Attribute:
Attribute_Label: ST___
Attribute_Definition: Number of stock watering use water rights
Attribute:
Attribute_Label: WL___
Attribute_Definition: Number of wildlife protection water rights
Attribute:
Attribute_Label: Z_CERT__
Attribute_Definition: Total number of water right certificates
Attribute:
Attribute_Label: Z_PER__
Attribute_Definition: Total number of water right permits
Attribute:
Attribute_Label: TOT_RTS
Attribute_Definition: Total number of water rights (permits + certificates)
Attribute:
Attribute_Label: CI_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for commercial uses
Attribute:
Attribute_Label: DM_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for domestic multiple uses
Attribute:
Attribute_Label: DS_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for domestic single uses
Attribute:
Attribute_Label: FR_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for fire protection uses
Attribute:
Attribute_Label: FS_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for fisheries uses
Attribute:

Attribute_Label: HE_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for heat exchange uses

Attribute:
Attribute_Label: IR_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for irrigation uses

Attribute:
Attribute_Label: MI_QMD
Attribute_Definition: Maximum allowable instantaneous flow (modified) for mining uses

Attribute:
Attribute_Label: MU_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for domestic municipal uses

Attribute:
Attribute_Label: PO_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for power production uses

Attribute:
Attribute_Label: RE_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for recreational uses

Attribute:
Attribute_Label: RW_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for railway uses

Attribute:
Attribute_Label: ST_QMD
Attribute_Definition: Maximum allowable instantaneous flow (modified) for stock uses

Attribute:
Attribute_Label: WL_QMD
Attribute_Definition:
Maximum allowable instantaneous flow (modified) for wildlife protection uses

Attribute:
Attribute_Label: QMD_TOT
Attribute_Definition:
Total maximum allowable instantaneous flow (modified) for all uses

Attribute:
Attribute_Label: CI_IRAC
Attribute_Definition: Total irrigated acres for commercial industrial use

Attribute:
Attribute_Label: DM_IRAC
Attribute_Definition: Total irrigated acres for domestic multiple use

Attribute:
Attribute_Label: DS_IRAC
Attribute_Definition: Total irrigated acres for domestic single use

Attribute:
Attribute_Label: FR_IRAC

Attribute_Definition: Total irrigated acres for fire protection use
Attribute:
Attribute_Label: FS_IRAC
Attribute_Definition: Total irrigated acres for fish propagation use
Attribute:
Attribute_Label: HE_IRAC
Attribute_Definition: Total irrigated acres for heat exchange use
Attribute:
Attribute_Label: IR_IRAC
Attribute_Definition: Total irrigated acres for irrigated agricultural use
Attribute:
Attribute_Label: MI_IRAC
Attribute_Definition: Total irrigated acres for mining use
Attribute:
Attribute_Label: MU_IRAC
Attribute_Definition: Total irrigated acres for domestic municipal use
Attribute:
Attribute_Label: PO_IRAC
Attribute_Definition: Total irrigated acres for power use
Attribute:
Attribute_Label: RE_IRAC
Attribute_Definition: Total irrigated acres for recreational use
Attribute:
Attribute_Label: RW_IRAC
Attribute_Definition: Total irrigated acres for railway use
Attribute:
Attribute_Label: ST_IRAC
Attribute_Definition: Total irrigated acres for stock watering use
Attribute:
Attribute_Label: WL_IRAC
Attribute_Definition: Total irrigated acres for wildlife protection use
Attribute:
Attribute_Label: TOT_IRAC
Attribute_Definition: Total irrigated acres for all uses
Attribute:
Attribute_Label: CI_ACFT
Attribute_Definition:
Total allowable yearly volume for commercial/industrial use (ac-ft)
Attribute:
Attribute_Label: DM_ACFT
Attribute_Definition: Total allowable yearly volume for domestic multiple use (ac-ft)
Attribute:
Attribute_Label: DS_ACFT
Attribute_Definition: Total allowable yearly volume for domestic single use (ac-ft)
Attribute:
Attribute_Label: FR_ACFT
Attribute_Definition: Total allowable yearly volume for fire protection use (ac-ft)
Attribute:
Attribute_Label: FS_ACFT
Attribute_Definition: Total allowable yearly volume for fish propagatione use (ac-ft)
Attribute:

Attribute_Label: HE_ACFT
Attribute_Definition: Total allowable yearly volume for heat exchange use (ac-ft)
Attribute:
Attribute_Label: IR_ACFT
Attribute_Definition: Total allowable yearly volume for irrigation use (ac-ft)
Attribute:
Attribute_Label: MI_ACFT
Attribute_Definition: Total allowable yearly volume for mining use (ac-ft)
Attribute:
Attribute_Label: MU_ACFT
Attribute_Definition:
Total allowable yearly volume for domestic municipal use (ac-ft)
Attribute:
Attribute_Label: PO_ACFT
Attribute_Definition: Total allowable yearly volume for power use (ac-ft)
Attribute:
Attribute_Label: RE_ACFT
Attribute_Definition: Total allowable yearly volume for recreational use (ac-ft)
Attribute:
Attribute_Label: RW_ACFT
Attribute_Definition: Total allowable yearly volume for railway use (ac-ft)
Attribute:
Attribute_Label: ST_ACFT
Attribute_Definition: Total allowable yearly volume for stock watering use (ac-ft)
Attribute:
Attribute_Label: WL_ACFT
Attribute_Definition:
Total allowable yearly volume for wildlife protection use (ac-ft)
Attribute:
Attribute_Label: TOT_ACFT
Attribute_Definition: Total allowable yearly volume for all uses (ac-ft)
Attribute:
Attribute_Label: RTN_FLOW
Attribute_Definition: Estimated return flow (cfs)
Attribute:
Attribute_Label: RTNQ_TYPE
Attribute_Definition: Return flow use type(s)

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc.

regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by TetraTech/KCM, Inc.

Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

Transfer_Size: 0.392

Metadata_Reference_Information:

Metadata_Date: 20031024

Metadata_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization:

REQUIRED: The organization responsible for the metadata information.

Contact_Person: REQUIRED: The person responsible for the metadata information.

Contact_Address:

Address_Type:

REQUIRED: The mailing and/or physical address for the organization or individual.

City: REQUIRED: The city of the address.

State_or_Province: REQUIRED: The state or province of the address.

Postal_Code: REQUIRED: The ZIP or other postal code of the address.

Contact_Voice_Telephone:

REQUIRED: The telephone number by which individuals can speak to the organization or individual.

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata

Metadata_Standard_Version: FGDC-STD-001-1998

Metadata_Time_Convention: local time

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:25:01 2003

Grp1_wtr_right_pts.shp.xml

grp1_wtr_right_pts

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: US EPA, modified by TetraTech/KCM, Inc.
Publication_Date: September 26, 2003
Title: grp1_wtr_right_pts
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Modified point theme for priority group 1 subbasin water rights developed by EPA and modified by Tetra Tech/KCM, Inc. for the priority group 1 study. Water rights were mapped to the nearest quarter-quarter section and adjusted based on map and aerial photo data. Included in the shapefile is the name or entity associated with the water right, whether the right is a permit or certificate, the land use associated with the water right, acre-ft, return flow if applicable, and other information.
Purpose:
Provide a spatial database represented as a point theme summarizing water rights by quarter-quarter section.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:

Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: water rights
Theme_Keyword: water use
Theme_Keyword: Chehalis
Theme_Keyword: regulated
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: grp1_wtr_right_pts
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml47.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: Entity point
Point_and_Vector_Object_Count: 603

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: grp1_wtr_right_pts
Entity_Type_Definition: water rights to the nearest quarter - quarter section
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.

Attribute:
Attribute_Label: ID
Attribute_Definition: Point ID
Attribute:
Attribute_Label: GRP1_NO_
Attribute_Definition: Group 1 ID number
Attribute:
Attribute_Label: DOCUMENT_T
Attribute_Definition: Document Type
Attribute:
Attribute_Label: KEY_MAIN
Attribute_Definition: Document ID Number Uniquely Identifies water right record
Attribute:
Attribute_Label: DOCUMENT_N
Attribute_Definition: Water Right ID Number
Attribute:
Attribute_Label: BUSINESS_N
Attribute_Definition: Business Name of applicant
Attribute:
Attribute_Label: LAST_NAME
Attribute_Definition: Last anme of applicant
Attribute:
Attribute_Label: FIRST_NAME
Attribute_Definition: First name of applicant
Attribute:
Attribute_Label: PRIORITY_D
Attribute_Definition: Date when application was initially filed
Attribute:
Attribute_Label: SENIORITY
Attribute:
Attribute_Label: CFS_TOTAL
Attribute_Definition: maximum rate water may be diverted
Attribute:
Attribute_Label: CFS_MOD
Attribute:
Attribute_Label: P_1
Attribute_Definition: Purpose Consumptive Flag
Attribute:
Attribute_Label: P_2
Attribute_Definition: Purpose Consumptive Flag
Attribute:
Attribute_Label: P_3
Attribute_Definition: Purpose Consumptive Flag
Attribute:
Attribute_Label: P_4
Attribute_Definition: Purpose Consumptive Flag
Attribute:
Attribute_Label: CI
Attribute_Definition: Commercial and Industrial Manufacturing
Attribute:
Attribute_Label: DG

Attribute_Definition: Domestic General
Attribute:
Attribute_Label: DM
Attribute_Definition: Domestic Multiple
Attribute:
Attribute_Label: DS
Attribute_Definition: Domestic Single
Attribute:
Attribute_Label: DY
Attribute_Definition: Dairying
Attribute:
Attribute_Label: EN
Attribute_Definition: Environmental Quality
Attribute:
Attribute_Label: FP
Attribute_Definition: Frost Protection
Attribute:
Attribute_Label: FR
Attribute_Definition: Fire Protection
Attribute:
Attribute_Label: FS
Attribute_Definition: Fish Propagation
Attribute:
Attribute_Label: HE
Attribute_Definition: Heat Exchange
Attribute:
Attribute_Label: HW
Attribute_Definition: Highway
Attribute:
Attribute_Label: IR
Attribute_Definition: Irrigation
Attribute:
Attribute_Label: MI
Attribute_Definition: municipal intertie system
Attribute:
Attribute_Label: MU
Attribute_Definition: domestic municipal
Attribute:
Attribute_Label: PO
Attribute_Definition: Power
Attribute:
Attribute_Label: RE
Attribute_Definition: Recreation and Beautification
Attribute:
Attribute_Label: RW
Attribute_Definition: Railway
Attribute:
Attribute_Label: ST
Attribute_Definition: Stock Watering
Attribute:
Attribute_Label: WL

Attribute_Definition: Wildlife Protection
Attribute:
Attribute_Label: TOWNSHIP
Attribute_Definition: Township where diversion or well is located
Attribute:
Attribute_Label: SECTION
Attribute_Definition: Section where diversion or well is located
Attribute:
Attribute_Label: RANGE
Attribute_Definition: Range where diversion or well is located
Attribute:
Attribute_Label: RANGE_EW
Attribute_Definition: Range Direction east or west of meridian
Attribute:
Attribute_Label: QUAD_DESIG
Attribute_Definition: quarter, quarter-quarter, quarter-quarter-quarter section
Attribute:
Attribute_Label: ACRE_FEET
Attribute_Definition: Total annual withdrawal per year
Attribute:
Attribute_Label: ACRES_IRR
Attribute_Definition: Number of acres irrigated
Attribute:
Attribute_Label: DOMESTIC_U
Attribute_Definition: Number of homes to be served for domestic use purposes
Attribute:
Attribute_Label: TRS_INDICA
Attribute_Definition: Township, Section, Range
Attribute:
Attribute_Label: SOURCE_NAM
Attribute_Definition: name of source
Attribute:
Attribute_Label: TRIBUTARY_
Attribute_Definition: Diversions source flows into the tributary body of water
Attribute:
Attribute_Label: SUBBASIN
Attribute:
Attribute_Label: SUBBASIN_N
Attribute_Definition: subbasin name
Attribute:
Attribute_Label: STUDY_AREA
Attribute:
Attribute_Label: RTN_FLOW

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM,

Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support byTetraTech/KCM, Inc

Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

Transfer_Size: 0.392

Metadata_Reference_Information:

Metadata_Date: 20031024

Metadata_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization:

REQUIRED: The organization responsible for the metadata information.

Contact_Person: REQUIRED: The person responsible for the metadata information.

Contact_Address:

Address_Type:

REQUIRED: The mailing and/or physical address for the organization or individual.

City: REQUIRED: The city of the address.

State_or_Province: REQUIRED: The state or province of the address.

Postal_Code: REQUIRED: The ZIP or other postal code of the address.

Contact_Voice_Telephone:

REQUIRED: The telephone number by which individuals can speak to the organization or individual.

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata

Metadata_Standard_Version: FGDC-STD-001-1998

Metadata_Time_Convention: local time

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:25:47 2003

Hydrography.shp.xml

hydrography

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator:
Washington State Department of Natural Resources, provided for the Chehalis Basin Level 1 Assessment and WRIA 23 Geodata Viewer.
Publication_Date: Unknown
Title: hydrography
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
DNR Stream Types. The stream types include first through fifth order streams and unclassified streams. Provided by DNR for the Level 1 Assessment and WRIA 23 Geodata Viewer. The original source metadata (Hydro.html) should be referenced for complete information.
Purpose:
DNR Stream Types. The stream types include first through fifth order streams and unclassified streams.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:

Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: DNR
Theme_Keyword: Chehalis
Theme_Keyword: stream types
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: hydrography
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml3A.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: String
Point_and_Vector_Object_Count: 28776

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: hydrography
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI

Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: RVR_RCH_NO
Attribute_Definition: Section Number
Attribute:
Attribute_Label: STRMNAME
Attribute_Definition: Perimeter in feet
Attribute:
Attribute_Label: PERIODICIT
Attribute_Definition: Area in acres
Attribute:
Attribute_Label: CRSTYPE
Attribute:
Attribute_Label: CRSTYPEDES
Attribute:
Attribute_Label: INPUTMETH
Attribute:
Attribute_Label: INPMETHDES
Attribute:
Attribute_Label: WATERTYPE
Attribute:
Attribute_Label: WTRTYPEDES
Attribute:
Attribute_Label: PERDCTYDES
Attribute:
Attribute_Label: LENGTHFEET
Attribute:
Attribute_Label: WTRTYPDATE
Attribute:
Attribute_Label: LENGTH

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc

Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:26:17 2003

i_f_cs_pts.shp.xml

i_f_cs_pts

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: i_f_cs_pts
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Mapped locations (points) of active USGS streamflow gages in the Priority Group 1 area. This shapefile was provided by EPA. The EPA data description dated August 12, 2002 should be used for complete information regarding this dataset.
Purpose:
Mapped locations (points) of active USGS streamflow gages in the Priority Group 1 area
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:

Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: USGS
Theme_Keyword: Chehalis
Theme_Keyword: streamflow
Theme_Keyword: gages
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: apps_by_trs
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml39.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: Entity point
Point_and_Vector_Object_Count: 31

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: i_f_cs_pts
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:

Attribute_Label: ID
Attribute_Definition: Section Number
Attribute:
Attribute_Label: NAME
Attribute_Definition: Perimeter in feet
Attribute:
Attribute_Label: CS_NUMBER
Attribute_Definition: Area in acres
Attribute:
Attribute_Label: JAN_1
Attribute:
Attribute_Label: JAN_15
Attribute:
Attribute_Label: FEB_1
Attribute:
Attribute_Label: FEB15
Attribute:
Attribute_Label: MAR_1
Attribute:
Attribute_Label: MAR_15
Attribute:
Attribute_Label: APR_1
Attribute:
Attribute_Label: APR_15
Attribute:
Attribute_Label: MAY_1
Attribute:
Attribute_Label: MAY_15
Attribute:
Attribute_Label: JUN_1
Attribute:
Attribute_Label: JUN_15
Attribute:
Attribute_Label: JUL_1
Attribute:
Attribute_Label: JUL_15
Attribute:
Attribute_Label: AUG_1
Attribute:
Attribute_Label: AUG_15
Attribute:
Attribute_Label: SEP_1
Attribute:
Attribute_Label: SEP_15
Attribute:
Attribute_Label: OCT_1
Attribute:
Attribute_Label: OCT_15
Attribute:
Attribute_Label: NOV_1
Attribute:

Attribute_Label: NOV_15
Attribute:
Attribute_Label: DEC_1
Attribute:
Attribute_Label: DEC_15

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

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i_f_cs_reaches.shp.xml

i_f_cs_reaches

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator:
REQUIRED: The name of an organization or individual that developed the data set.
Publication_Date:
REQUIRED: The date when the data set is published or otherwise made available for release.
Title: i_f_cs_reaches
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\Cadd\GIS\2140067-Chehalis\cd transfer\final shapefiles 2\i_f_cs_reaches.shp
Description:
Abstract: REQUIRED: A brief narrative summary of the data set.
Purpose:
REQUIRED: A summary of the intentions with which the data set was developed.
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date:
REQUIRED: The year (and optionally month, or month and day) for which the data set corresponds to the ground.
Currentness_Reference:
REQUIRED: The basis on which the time period of content information is determined.
Status:
Progress: REQUIRED: The state of the data set.
Maintenance_and_Update_Frequency:
REQUIRED: The frequency with which changes and additions are made to the data set after the initial data set is completed.
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
REQUIRED: Western-most coordinate of the limit of coverage expressed in

longitude.

East_Bounding_Coordinate:
REQUIRED: Eastern-most coordinate of the limit of coverage expressed in longitude.

North_Bounding_Coordinate:
REQUIRED: Northern-most coordinate of the limit of coverage expressed in latitude.

South_Bounding_Coordinate:
REQUIRED: Southern-most coordinate of the limit of coverage expressed in latitude.

Keywords:

Theme:

Theme_Keyword_Thesaurus:
REQUIRED: Reference to a formally registered thesaurus or a similar authoritative source of theme keywords.

Theme_Keyword:
REQUIRED: Common-use word or phrase used to describe the subject of the data set.

Access_Constraints:
REQUIRED: Restrictions and legal prerequisites for accessing the data set.

Use_Constraints:
REQUIRED: Restrictions and legal prerequisites for using the data set after access is granted.

Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Vector

Point_and_Vector_Object_Information:

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: String

Point_and_Vector_Object_Count: 63

Entity_and_Attribute_Information:

Detailed_Description:

Entity_Type:

Entity_Type_Label: i_f_cs_reaches

Attribute:

Attribute_Label: FID

Attribute_Definition: Internal feature number.

Attribute_Definition_Source: ESRI

Attribute_Domain_Values:

Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.

Attribute:

Attribute_Label: Shape

Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.

Attribute:
Attribute_Label: NAME
Attribute:
Attribute_Label: NUMBER
Attribute:
Attribute_Label: COUNT
Attribute:
Attribute_Label: CS_NUMBER
Attribute:
Attribute_Label: JAN_1
Attribute:
Attribute_Label: JAN_15
Attribute:
Attribute_Label: FEB_1
Attribute:
Attribute_Label: FEB15
Attribute:
Attribute_Label: MAR_1
Attribute:
Attribute_Label: MAR_15
Attribute:
Attribute_Label: APR_1
Attribute:
Attribute_Label: APR_15
Attribute:
Attribute_Label: MAY_1
Attribute:
Attribute_Label: MAY_15
Attribute:
Attribute_Label: JUN_1
Attribute:
Attribute_Label: JUN_15
Attribute:
Attribute_Label: JUL_1
Attribute:
Attribute_Label: JUL_15
Attribute:
Attribute_Label: AUG_1
Attribute:
Attribute_Label: AUG_15
Attribute:
Attribute_Label: SEP_1
Attribute:
Attribute_Label: SEP_15
Attribute:
Attribute_Label: OCT_1
Attribute:

Attribute_Label: OCT_15
Attribute:
Attribute_Label: NOV_1
Attribute:
Attribute_Label: NOV_15
Attribute:
Attribute_Label: DEC_1
Attribute:
Attribute_Label: DEC_15

Distribution_Information:
Resource_Description: Downloadable Data
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.242

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

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Mjroads.shp.xml

mjroads

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Chehalis Basin Partnership, Level 1 Assessment
Publication_Date: Unknown
Title: mjroads
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\Cadd\GIS\2140067-Chehalis\cd transfer\final shapefiles 2\mjroads.shp
Description:
Abstract:
Theme from the Level I Assessment, which shows state highways as well as some primary routes.
Purpose: Provide spatial refernce with major transportation corridors.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:

South_Bounding_Coordinate:

Keywords:

Theme:

Theme_Keyword_Thesaurus: None
Theme_Keyword: roads
Theme_Keyword: Chehalis

Place:

Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest

Access_Constraints: None

Use_Constraints:

The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.

Browse_Graphic:

Browse_Graphic_File_Name: mjroads
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG

Native_Data_Set_Environment:

Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:

Lineage:

Source_Information:

Type_of_Source_Media: CD-ROM

Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp

Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp

Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml20.tmp

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Vector

Point_and_Vector_Object_Information:

SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: String
Point_and_Vector_Object_Count: 113

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: mjroads
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: FNODE_
Attribute_Definition: Section Number
Attribute:
Attribute_Label: TNODE_
Attribute_Definition: Perimeter in feet

Attribute:
Attribute_Label: LPOLY_
Attribute_Definition: Area in acres
Attribute:
Attribute_Label: RPOLY_
Attribute:
Attribute_Label: LENGTH
Attribute:
Attribute_Label: MJROADS_
Attribute:
Attribute_Label: MJROADS_ID
Attribute:
Attribute_Label: TYPE
Attribute_Definition: Type of road
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: U
Enumerated_Domain_Value_Definition: US Highway Route
Enumerated_Domain:
Enumerated_Domain_Value: I
Enumerated_Domain_Value_Definition: Interstate Route
Enumerated_Domain:
Enumerated_Domain_Value: S
Enumerated_Domain_Value_Definition: WA State Highway
Attribute:
Attribute_Label: ROUTE
Attribute_Definition: Route number

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:28:37 2003

Pop_by_trs.shp.xml

pop_by_trs

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: pop_by_trs
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
The population estimates were derived from the census block data supplied by DOH. Estimates were made by intersecting themes and by using area weighted calculations based on an estimated population per acre for each census block. The population across each census block was assumed to be uniform. The population per acre for each census block was derived by dividing the total population of the block by its area.
Purpose:
Provide a spatial database represented as a polygon theme ofpopulation estimates within Chehalis Basin..
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:

Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: sections
Theme_Keyword: Chehalis
Theme_Keyword: Population
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: pop_by_trs
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml15.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 558

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: pop_by_trs
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI

Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: TOWNSECT
Attribute_Definition: Unique ID based on township, section, and range
Attribute:
Attribute_Label: COUN
Attribute_Definition: County
Attribute:
Attribute_Label: TOWN
Attribute_Definition: Township
Attribute:
Attribute_Label: SECT
Attribute_Definition: Section Number
Attribute:
Attribute_Label: AREA_FT
Attribute:
Attribute_Label: ACRES
Attribute:
Attribute_Label: TOT_POP
Attribute_Definition: Total estimated population in section based on census data

---

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support byTetraTech/KCM, Inc.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:

Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:29:03 2003

Precip_iso.shp.xml

precip_iso

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator:
REQUIRED: The name of an organization or individual that developed the data set.
Publication_Date:
REQUIRED: The date when the data set is published or otherwise made available for release.
Title: precip_iso
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\Cadd\GIS\2140067-Chehalis\cd transfer\final shapefiles 2\precip_iso.shp
Description:
Abstract: REQUIRED: A brief narrative summary of the data set.
Purpose:
REQUIRED: A summary of the intentions with which the data set was developed.
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date:
REQUIRED: The year (and optionally month, or month and day) for which the data set corresponds to the ground.
Currentness_Reference:
REQUIRED: The basis on which the time period of content information is determined.
Status:
Progress: REQUIRED: The state of the data set.
Maintenance_and_Update_Frequency:
REQUIRED: The frequency with which changes and additions are made to the data set after the initial data set is completed.
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
REQUIRED: Western-most coordinate of the limit of coverage expressed in

longitude.

East_Bounding_Coordinate:
REQUIRED: Eastern-most coordinate of the limit of coverage expressed in longitude.

North_Bounding_Coordinate:
REQUIRED: Northern-most coordinate of the limit of coverage expressed in latitude.

South_Bounding_Coordinate:
REQUIRED: Southern-most coordinate of the limit of coverage expressed in latitude.

Keywords:

Theme:

Theme_Keyword_Thesaurus:
REQUIRED: Reference to a formally registered thesaurus or a similar authoritative source of theme keywords.

Theme_Keyword:
REQUIRED: Common-use word or phrase used to describe the subject of the data set.

Access_Constraints:
REQUIRED: Restrictions and legal prerequisites for accessing the data set.

Use_Constraints:
REQUIRED: Restrictions and legal prerequisites for using the data set after access is granted.

Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Vector

Point_and_Vector_Object_Information:

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: G-polygon

Point_and_Vector_Object_Count: 3786

Entity_and_Attribute_Information:

Detailed_Description:

Entity_Type:

Entity_Type_Label: precip_iso

Attribute:

Attribute_Label: FID

Attribute_Definition: Internal feature number.

Attribute_Definition_Source: ESRI

Attribute_Domain_Values:

Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.

Attribute:

Attribute_Label: Shape

Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: AREA
Attribute:
Attribute_Label: PERIMETER
Attribute:
Attribute_Label: WA_ANN_
Attribute:
Attribute_Label: WA_ANN_ID
Attribute:
Attribute_Label: RANGE
Attribute:
Attribute_Label: LEGEND

Distribution_Information:
Resource_Description: Downloadable Data
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 6.688

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:29:28 2003

Service_areas_nofut.shp.xml

service_areas_nofut

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: service_areas_nofut
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Several sources of information were used to created this theme; input from water purveyors, Lewis, Thurston, and Grays Harbor County. Two themes were added to the CD including service areas for the entire WRIA 22-23 region (service_areas_nofut.shp) and those inside the Priority Group 1 area (grp1_service_areas). The mapped boundaries include all known existing water purveyor service areas for which maps were avaible.
Purpose:
Provide a spatial database represented as a polygon theme of boundaries of water service areas within the entire Chehalis Basin.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:

Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: service areas
Theme_Keyword: Chehalis
Theme_Keyword: group 1 priority
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: service_areas_nofut
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml1C.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xmlE.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 24

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: service_areas_nofut
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:

Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.

Attribute:
Attribute_Label: AREA
Attribute_Definition: Area of shape in feet

Attribute:
Attribute_Label: PERIMETER
Attribute_Definition: Perimeter in feet

Attribute:
Attribute_Label: NAME
Attribute_Definition: Name of service area

Attribute:
Attribute_Label: TYPE
Attribute_Definition: Flag indicates the the source of information.
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: Existing
Enumerated_Domain_Value_Definition: Exisitng Service area as defined by the district
Enumerated_Domain:
Enumerated_Domain_Value: UGA
Enumerated_Domain_Value_Definition: Service area based on Urban Growth area

Attribute:
Attribute_Label: ACRES
Attribute_Definition: Area in acres

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc
Standard_Order_Process:
Digital_Form:

Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by `mp` version 2.7.3 on Fri Oct 24 16:30:03 2003

Treat_fac.shp.xml

treat_fac

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: treat_fac
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Point theme developed by Tetra Tech / KCM, Inc that contains the location of wastewater treatment facilities within the Chehalis basin. This information was developed from data contained in the Level 1 assessment.
Purpose:
Provide a spatial database represented as a point theme of wastewater treatment facilities within Chehalis Basin..
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:

Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:

Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: waster water
Theme_Keyword: Chehalis
Theme_Keyword: facilities
Theme_Keyword: NPDES
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest

Access_Constraints: None

Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.

Browse_Graphic:
Browse_Graphic_File_Name: treat_fac
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG

Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml355.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: Entity point
Point_and_Vector_Object_Count: 24

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: treat_fac
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:

Attribute_Label: FACILITY
Attribute:
Attribute_Label: LAT
Attribute_Definition: Lattitude Coordinate of facility
Attribute:
Attribute_Label: LONG
Attribute_Definition: Longitude Coordinate of facility
Attribute:
Attribute_Label: FLOW_MGD
Attribute_Definition: Treatment capacity of facility (MGD)
Attribute:

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM, Inc.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.

City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:30:39 2003

Usgs measured streamflows.shp.xml

usgs measured streamflows

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator:
USGS stream flow data, adapted to EPA-provided GIS shapefile by TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: usgs measured streamflows
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Shapefile provided by EPA. Contains mapped reaches (polylines) and mean monthly flows over the period of record for each streamflow gage. Stream flows are representative of subbasin conditions relative to state regulated minimum flows, at specific control stations, and are not to be construed as actual flow along the entire reach of stream in the subbasins.
Purpose:
Contains mapped reaches (polylines) and mean monthly flows over the period of record for each streamflow gage
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date

Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: USGS
Theme_Keyword: stream flows
Theme_Keyword: Chehalis
Theme_Keyword: regulated
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: usgs measured streamflows
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.

Source_Used_Citation_Abbreviation: C:\TEMP\xml226.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: String
Point_and_Vector_Object_Count: 6

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: usgs measured streamflows
Entity_Type_Definition: water rights to the nearest quarter - quarter section
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI

Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: NAME
Attribute_Definition: Name of stream gage
Attribute:
Attribute_Label: SUBBASIN
Attribute_Definition: Subbasin Number
Attribute:
Attribute_Label: USGS_GAGE
Attribute_Definition: USGS Gage Number
Attribute:
Attribute_Label: PERIOD
Attribute_Definition: Period of record
Attribute:
Attribute_Label: DIV_REGFLO
Attribute_Definition: Diversion or regulated flow
Attribute:
Attribute_Label: JAN
Attribute_Definition: Avg daily flow (cfs)
Attribute:
Attribute_Label: FEB
Attribute_Definition: Avg daily flow (cfs)
Attribute:
Attribute_Label: MAR
Attribute_Definition: Avg daily flow (cfs)
Attribute:
Attribute_Label: APR
Attribute_Definition: Avg daily flow (cfs)
Attribute:
Attribute_Label: MAY
Attribute_Definition: Avg daily flow (cfs)
Attribute:
Attribute_Label: JUN
Attribute_Definition: Avg daily flow (cfs)
Attribute:
Attribute_Label: JUL
Attribute_Definition: Avg daily flow (cfs)
Attribute:
Attribute_Label: AUG
Attribute_Definition: Avg daily flow (cfs)
Attribute:
Attribute_Label: SEP
Attribute_Definition: Avg daily flow (cfs)
Attribute:
Attribute_Label: OCT
Attribute_Definition: Avg daily flow (cfs)
Attribute:
Attribute_Label: NOV
Attribute_Definition: Avg daily flow (cfs)
Attribute:

Attribute_Label: DEC
Attribute_Definition: Avg daily flow (cfs)

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by TetraTech/KCM, Inc.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time

Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:31:22 2003

Wr_apps_by_subbasin.shp.xml

wr_apps_by_subbasin

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: wr_apps_by_subbasin
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
The dataset contains spatial information for water right applications located in six subbasins of WRIA 23 in the Upper Chehalis Basin. These six subbasins, termed the Priority Group 1 area, include Middle Channel Chehalis River #1, North Fork Newaukum River, Newaukum River, South Fork Newaukum River, Salzer Creek, and Skookumchuck River.
Purpose:
Providing a spatial database represented as a polygon theme summarizing water right applications for the Priority Group 1 area by subbasin.
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete

Maintenance_and_Update_Frequency: As needed

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:

Keywords:

Theme:

Theme_Keyword_Thesaurus: None
Theme_Keyword: water right application
Theme_Keyword: water use
Theme_Keyword: Chehalis
Theme_Keyword: regulated

Place:

Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest

Access_Constraints: None

Use_Constraints:

The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.

Browse_Graphic:

Browse_Graphic_File_Name: wr_apps_by_subbasin
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG

Native_Data_Set_Environment:

Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:

Lineage:

Source_Information:

Type_of_Source_Media: CD-ROM

Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml1D7.tmp

Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xmlFDD.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 6

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: wr_apps_by_subbasin
Entity_Type_Definition: water right applications by township, section and range
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.

Attribute:
Attribute_Label: SUBBASIN_N
Attribute_Definition: Subbasin Name
Attribute:
Attribute_Label: Z___CI
Attribute_Definition: Number of commercial applications
Attribute:
Attribute_Label: Z___DM
Attribute_Definition: Number of domestic multiple applications
Attribute:
Attribute_Label: Z___DS
Attribute_Definition: Number of domestic single applications
Attribute:
Attribute_Label: Z___EN
Attribute_Definition: Number of environmental quality applications
Attribute:
Attribute_Label: Z___FS
Attribute_Definition: Number of fish propagation applications
Attribute:
Attribute_Label: Z___IR
Attribute_Definition: Number of irrigation applications
Attribute:
Attribute_Label: Z___MU
Attribute_Definition: Number of municipal domestic applications
Attribute:
Attribute_Label: Z___PO
Attribute_Definition: Number of power generation applications
Attribute:
Attribute_Label: Z___ST
Attribute_Definition: Number of stock watering applications
Attribute:
Attribute_Label: Z___WL
Attribute_Definition: Number of wildlife protection applications
Attribute:
Attribute_Label: CFS_CI
Attribute_Definition: Instantaneous flow commercial/industrial
Attribute:
Attribute_Label: CFS_DM
Attribute_Definition: Instantaneous flow domestic multiple
Attribute:
Attribute_Label: CFS_DS
Attribute_Definition: Instantaneous flow domestic single applications
Attribute:
Attribute_Label: CFS_EN
Attribute_Definition: Instantaneous flow environmental quality
Attribute:
Attribute_Label: CFS_FS
Attribute_Definition: Instantaneous flow for fish propagation applications
Attribute:
Attribute_Label: CFS_IR
Attribute_Definition: Instantaneous flow for irrigation applications

Attribute:
Attribute_Label: CFS_MU
Attribute_Definition: Instantaneous flow for municipal domestic applications
Attribute:
Attribute_Label: CFS_PO
Attribute_Definition: Instantaneous flow for power generation applications
Attribute:
Attribute_Label: CFS_ST
Attribute_Definition: Instantaneous flow for stock watering applications
Attribute:
Attribute_Label: CFS_WL
Attribute_Definition: Instantaneous flow for wildlife protection applications
Attribute:
Attribute_Label: ACFT_CI
Attribute_Definition:
Max yearly volume for commercial/industrial applications (ac-ft)
Attribute:
Attribute_Label: ACFT_DM
Attribute_Definition: Max yearly volume for domestic multiple applications (ac-ft)
Attribute:
Attribute_Label: ACFT_DS
Attribute_Definition: Max yearly volume for domestic single applications (ac-ft)
Attribute:
Attribute_Label: ACFT_EN
Attribute_Definition:
Max yearly volume for environmental quality applications (ac-ft)
Attribute:
Attribute_Label: ACFT_FS
Attribute_Definition: Max yearly volume for fish propagation applications (ac-ft)
Attribute:
Attribute_Label: ACFT_IR
Attribute_Definition:
Max yearly volume for agricultural irrigation applications (ac-ft)
Attribute:
Attribute_Label: ACFT_MU
Attribute_Definition: Max yearly volume for domestic municipal applications (ac-ft)
Attribute:
Attribute_Label: ACFT_PO
Attribute_Definition: Max yearly volume for power generation applications (ac-ft)
Attribute:
Attribute_Label: ACFT_ST
Attribute_Definition: Max yearly volume for stock watering applications (ac-ft)
Attribute:
Attribute_Label: ACFT_WL
Attribute_Definition: Max yearly volume for wildlife protection applications (ac-ft)
Attribute:
Attribute_Label: ACIR_CI
Attribute_Definition: acres irrigated commercial
Attribute:
Attribute_Label: ACIR_DM
Attribute_Definition: acres irrigated domestic multiple

Attribute:
Attribute_Label: ACIR_DS
Attribute_Definition: acres irrigated domestic single
Attribute:
Attribute_Label: ACIR_EN
Attribute_Definition: acres irrigated environmental quality
Attribute:
Attribute_Label: ACIR_FS
Attribute_Definition: acres irrigated fish propagation
Attribute:
Attribute_Label: ACIR_IR
Attribute_Definition: acres irrigated agricultural
Attribute:
Attribute_Label: ACIR_MU
Attribute_Definition: acres irrigated municipal domestic
Attribute:
Attribute_Label: ACIR_PO
Attribute_Definition: acres irrigated power generation
Attribute:
Attribute_Label: ACIR_ST
Attribute_Definition: acres irrigated stock watering
Attribute:
Attribute_Label: ACIR_WL
Attribute_Definition: acres irrigated wildlife protection
Attribute:
Attribute_Label: TOT_#
Attribute_Definition: Total applications
Attribute:
Attribute_Label: ACFT_TOT
Attribute_Definition:
Total yearly volume allowed within subbasin for all applications
Attribute:
Attribute_Label: ACIR_TOT
Attribute_Definition: Total irrigated acres for all applications within subbasin
Attribute:
Attribute_Label: PERIMETER
Attribute:
Attribute_Label: ACRES
Attribute_Definition: Total subbasin area in acres
Attribute:
Attribute_Label: CFS_TOT
Attribute_Definition: Total instantaneous flow allowed for all uses

---

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in

this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Tt/KCM.

Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

Transfer_Size: 0.392

Metadata_Reference_Information:

Metadata_Date: 20031024

Metadata_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization:

REQUIRED: The organization responsible for the metadata information.

Contact_Person: REQUIRED: The person responsible for the metadata information.

Contact_Address:

Address_Type:

REQUIRED: The mailing and/or physical address for the organization or individual.

City: REQUIRED: The city of the address.

State_or_Province: REQUIRED: The state or province of the address.

Postal_Code: REQUIRED: The ZIP or other postal code of the address.

Contact_Voice_Telephone:

REQUIRED: The telephone number by which individuals can speak to the organization or individual.

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata

Metadata_Standard_Version: FGDC-STD-001-1998

Metadata_Time_Convention: local time

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Metadata_Extensions:

Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:31:52 2003

Wr_perm_cert_by_subbasin.shp.xml

wr_perm_cert_by_subbasin

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: wr_perm_cert_by_subbasin
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
The subbasin summary theme includes the same type of information but at the subbasin scale, and was created from the same parent theme provided by EPA. The original EPA dataset lists all water rights currently known as of 2001. An effort was made to identify later water rights by contacting EPA, Lewis and Thurston Counties, and the cities of Bucoda, Chehalis, Centralia, and Napavine. Post 2001 water rights are listed in separate fields which summarize the total number of new water rights and their estimated acre-ft in the dataset.
Purpose:
Provide a spatial database represented as a polygon theme of water rights by section within Chehalis Basin..
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date

Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: sections
Theme_Keyword: Chehalis
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest
Access_Constraints: None
Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.
Browse_Graphic:
Browse_Graphic_File_Name: wr_perm_cert_by_subbasin
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG
Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:

Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml92.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xmlFF3.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 6

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: wr_perm_cert_by_subbasin
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:

Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.

Attribute:
Attribute_Label: SUBBASIN_N
Attribute_Definition: Subbasin Name

Attribute:
Attribute_Label: SUBBASIN__
Attribute_Definition: Subbasin Number

Attribute:
Attribute_Label: Z_APPS
Attribute_Definition: number of applications within subbasin

Attribute:
Attribute_Label: Z_PERMITS
Attribute_Definition: Number of permits within a subbasin

Attribute:
Attribute_Label: Z_CERT
Attribute_Definition: Number if certificates within subbasin

Attribute:
Attribute_Label: Z_CLAIMS
Attribute_Definition: Number of claims within a subbasin

Attribute:
Attribute_Label: Z_TOTAL_AL
Attribute_Definition: Total claims, applications, certificates and permits

Attribute:
Attribute_Label: Z_RIGHTS
Attribute_Definition: Total water rights (permits + certificates)

Attribute:
Attribute_Label: QI_CERT
Attribute_Definition: Total instantaneous flow from water certificates (cfs)

Attribute:
Attribute_Label: QIMOD_CERT
Attribute_Definition:
Total instantaneous flow from water certificates (cfs), modified

Attribute:
Attribute_Label: QI_PER
Attribute_Definition: Total instantaneous flow from water permits (cfs)

Attribute:
Attribute_Label: QI_APPS
Attribute_Definition: Total instantaneous flow from water right applications (cfs)

Attribute:
Attribute_Label: ZWR_COM
Attribute_Definition: Number of water rights for commercial use

Attribute:
Attribute_Label: ZWR_MINING
Attribute_Definition: Number of water rights for mining use

Attribute:
Attribute_Label: ZWR_POWER
Attribute_Definition: Number of water rights for power generation

Attribute:
Attribute_Label: ZWR_REC
Attribute_Definition: Number of water rights for recreation
Attribute:
Attribute_Label: ZWR_RAIL
Attribute_Definition: Number of water rights for railroad use
Attribute:
Attribute_Label: ZWR_STOCK
Attribute_Definition: Number of water rights for stock watering
Attribute:
Attribute_Label: POST2001_wr
Attribute_Definition: Types of use for water right applications filed after 2001
Attribute:
Attribute_Label: POPULATION
Attribute_Definition: Total population based on census data
Attribute:
Attribute_Label: QI_WR
Attribute_Definition:
Maximum allowable instantaneous flow for all water rights (permits+certificates)
Attribute:
Attribute_Label: QIMOD_WR
Attribute_Definition:
Modified maximum allowable instantaneous flow for all water rights (permits+certificates)
Attribute:
Attribute_Label: ZWR_DM
Attribute_Definition: Number of water rights for domestic multiple use
Attribute:
Attribute_Label: ZWR_DS
Attribute_Definition: Number of water rights for domestic single use
Attribute:
Attribute_Label: ZWR_FIRE
Attribute_Definition: Number of water rights for fire protection uses
Attribute:
Attribute_Label: ZWR_FISH
Attribute_Definition: Number of water rights for fish propagation
Attribute:
Attribute_Label: ZWR_HTEX
Attribute_Definition: Number of water rights for heat exchange
Attribute:
Attribute_Label: ZWR_IR
Attribute_Definition: Number of water rights for irrigation use
Attribute:
Attribute_Label: ZWR_MUN
Attribute_Definition: Number of water rights for domestic municipal uses
Attribute:
Attribute_Label: ZWR_WLIFE
Attribute_Definition: Number of water rights for wildlife protection
Attribute:
Attribute_Label: POST01WR_Q

Attribute_Definition:
Maximum allowable instantaneous flow assigned to water right applications files after 2001 (cfs)

Attribute:
Attribute_Label: #POST01_WR
Attribute_Definition: Number of water right applications files after 2001

Attribute:
Attribute_Label: #FISH_NCON
Attribute_Definition: Number of nonconsumptive water rights used for fisheries

Attribute:
Attribute_Label: FISHRTNQ
Attribute_Definition: Return flow in cfs for nonconsumptive fisheries uses

Attribute:
Attribute_Label: #POW_NCON
Attribute_Definition:
Number of nonconsumptive water rights assigned to power production uses

Attribute:
Attribute_Label: POW_RTNQ
Attribute_Definition: Estimated return flow from nonconsumptive power production uses

Attribute:
Attribute_Label: QIMOD_PERM
Attribute_Definition:
Modified maximum allowable instantaneous flow for all water rights permits (cfs)

Attribute:
Attribute_Label: QI_CLAIMS
Attribute_Definition:
Maximum allowable instantaneous flow for all water rights claims

---

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Ecology.
Standard_Order_Process:
Digital_Form:

Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:32:20 2003

Wria23_bound.shp.xml

wria23_bound

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator:
Original data from Washington State Department of Ecology, modified by TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: wria23_bound
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Modified polygon theme generated from WRIA boundaries orignally provided by DOE for the Chehalis Basin study. Theme has been clipped to limits of WRIA 23
Purpose:
Provide a spatial database represented as arc theme of Chehalis Basin..
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:

Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:

Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: Chehalis
Theme_Keyword: WRIA
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest

Access_Constraints: None

Use_Constraints:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty, express or implied, concerning the accuracy of the information contained in the geographic data. The burden for determining fitness for use lies entirely with the user, and the user accepts all risks associated with the use of this data set.

Browse_Graphic:
Browse_Graphic_File_Name: wria23_bound
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG

Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml5B.tmp
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml8D.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 1

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: wria23_bound
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: AREA
Attribute_Definition: Area in square feet

Attribute:
Attribute_Label: PERIMETER
Attribute_Definition: Perimeter in feet
Attribute:
Attribute_Label: WRIA_
Attribute_Definition: WRIA Number
Attribute:
Attribute_Label: WRIA_ID
Attribute:
Attribute_Label: WRIA_NR
Attribute:
Attribute_Label: WRIA_AREA_
Attribute:
Attribute_Label: WRIA_NM
Attribute_Definition: WRIA Name

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:
The user is cautioned that this geographic data set is based on the best available information at the time of its creation. Tt/KCM, Inc. provides this geographic data set "as is". Tt/KCM, Inc. makes no guarantee or warranty concerning the accuracy of information contained in this data set. Tt/KCM, Inc. further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on TetraTech/KCM, Inc. computers, no warranty, expressed or implied, is made by TetraTech/KCM, Inc. regarding the use of these data on any other system, nor does the fact of distribution consitute or imply any such warranty. In no event shall TetraTech/KCM, Inc. have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits ariseing out of use of or reliance on the geograhical data or arising out of the delivery, installation, operation, or support by Ecology.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.

Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

Generated by mp version 2.7.3 on Fri Oct 24 16:32:48 2003

Wtr_rights_pts.shp.xml

wtr_rights_pts

Metadata also available as

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator:
Original mapping by EPA, dataset modified by TetraTech/KCM, Inc.
Publication_Date: Unknown
Title: wtr_rights_pts
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage:
\\CADD\GIS\2140067-Chehalis\KCM Created\finalprojectfiles\final shapefiles\apps_by_trs.shp
Description:
Abstract:
Reduced set (1 point) of water right from grp1_wtr_right_pts, containing certificate no. R2-11862 for a reservoir on the Skookumchuck River.
Purpose:
Provide a spatial database represented as a point theme summarizing water rights by quarter-quarter section..
Supplemental_Information:
This database was created as part of a Water Quantity Study which was completed to support the Partnership in developing a Watershed Management Plan under the State of Washington's Watershed Management Act (RCW 90.82), also known as a "2514 Watershed Plan."
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 9/1/01
Time_of_Day: unknown
Currentness_Reference: publication date
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:

Bounding_Coordinates:
West_Bounding_Coordinate:
East_Bounding_Coordinate:
North_Bounding_Coordinate:
South_Bounding_Coordinate:

Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: water rights
Theme_Keyword: water use
Theme_Keyword: Chehalis
Theme_Keyword: regulated
Place:
Place_Keyword: Chehalis
Place_Keyword: WRIA 23
Place_Keyword: Lewis County
Place_Keyword: Thurston County
Place_Keyword: Washington
Place_Keyword: Pacific
Place_Keyword: northwest

Access_Constraints: None

Use_Constraints:
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Browse_Graphic:
Browse_Graphic_File_Name: wtr_rights_pts
Browse_Graphic_File_Description: simple image
Browse_Graphic_File_Type: JPEG

Native_Data_Set_Environment:
Microsoft Windows NT Version 4.0 (Build 1381) Service Pack 6; ESRI ArcCatalog 8.2.0.700

Data_Quality_Information:
Lineage:
Source_Information:
Type_of_Source_Media: CD-ROM
Process_Step:
Process_Description: Metadata imported.
Source_Used_Citation_Abbreviation: C:\TEMP\xml2D.tmp

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:

SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: Entity point
Point_and_Vector_Object_Count: 1

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Lambert Conformal Conic
Lambert_Conformal_Conic:
Standard_Parallel: 45.833333333333333
Standard_Parallel: 47.333333333333333
Longitude_of_Central_Meridian: -120.5
Latitude_of_Projection_Origin: 45.333333333333333
False_Easting: 2000000.0
False_Northing: 0.0
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.9786982

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: wtr_rights_pts
Entity_Type_Definition: water rights to the nearest quarter - quarter section
Attribute:
Attribute_Label: FID
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition: Feature geometry.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Coordinates defining the features.
Attribute:
Attribute_Label: ID
Attribute:
Attribute_Label: GRP1_NO_
Attribute:

Attribute_Label: DOCUMENT_T
Attribute:
Attribute_Label: KEY_MAIN
Attribute:
Attribute_Label: DOCUMENT_N
Attribute:
Attribute_Label: BUSINESS_N
Attribute:
Attribute_Label: LAST_NAME
Attribute:
Attribute_Label: FIRST_NAME
Attribute:
Attribute_Label: PRIORITY_D
Attribute:
Attribute_Label: SENIORITY
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Attribute_Label: CFS_TOTAL
Attribute:
Attribute_Label: CFS_MOD
Attribute:
Attribute_Label: P_1
Attribute:
Attribute_Label: P_2
Attribute:
Attribute_Label: P_3
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Attribute_Label: P_4
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Attribute_Label: CI
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Attribute_Label: DG
Attribute:
Attribute_Label: DM
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Attribute_Label: DS
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Attribute_Label: DY
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Attribute_Label: EN
Attribute:
Attribute_Label: FP
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Attribute_Label: HE
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Attribute_Label: HW
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Attribute_Label: IR

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Attribute_Label: MI
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Attribute_Label: MU
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Attribute_Label: PO
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Attribute_Label: RW
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Attribute_Label: ST
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Attribute_Label: WL
Attribute:
Attribute_Label: TOWNSHIP
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Attribute_Label: SECTION
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Attribute_Label: RANGE
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Attribute_Label: RANGE_EW
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Attribute_Label: QUAD_DESIG
Attribute:
Attribute_Label: ACRE_FEET
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Attribute_Label: ACRES_IRR
Attribute:
Attribute_Label: DOMESTIC_U
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Attribute_Label: TRS_INDICA
Attribute:
Attribute_Label: SOURCE_NAM
Attribute:
Attribute_Label: TRIBUTARY_
Attribute:
Attribute_Label: SUBBASIN
Attribute:
Attribute_Label: SUBBASIN_N
Attribute:
Attribute_Label: PRIORITY_G
Attribute:
Attribute_Label: STUDY_AREA
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Attribute_Label: STUDY_AREB
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Attribute_Label: SQ_MILES
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Attribute_Label: SECTIONS_
Attribute:

Attribute_Label: SECTIONS_I
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Attribute_Label: TOWN_ID
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Attribute_Label: WR_APPL
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Attribute:
Attribute_Label: GRP1_NO_1
Attribute:
Attribute_Label: SELECTED
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Attribute_Label: RTN_FLOW

Distribution_Information:
Resource_Description: Data on CD
Distribution_Liability:

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Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 0.392

Metadata_Reference_Information:
Metadata_Date: 20031024
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization:
REQUIRED: The organization responsible for the metadata information.
Contact_Person: REQUIRED: The person responsible for the metadata information.
Contact_Address:
Address_Type:
REQUIRED: The mailing and/or physical address for the organization or individual.
City: REQUIRED: The city of the address.
State_or_Province: REQUIRED: The state or province of the address.
Postal_Code: REQUIRED: The ZIP or other postal code of the address.
Contact_Voice_Telephone:
REQUIRED: The telephone number by which individuals can speak to the organization or individual.
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

Reply To
Attn Of: ECO-081

20 May 2002

Mark Swartout
Thurston County Department of
Water and Waste Management
921 Lake Ridge Drive SW
Olympia, WA 98502

Dear Mr. Swartout:

I am writing in your capacity as the Chair of the Chehalis Basin Partnership ("the Partnership") Steering and Technical Committee to provide you with a summary of work that I have done to create Geographic Information System (GIS) data sets to assist the Partnership with its planning efforts under the Washington State Watershed Management Act. This letter describes the work products that I have completed to date. All tables and files referenced in this letter are written on the enclosed CD (Enclosure One). I have also included an ArcView project called **Chehalis.apr** on this CD to provide a readily available option for viewing this data.

(1) Base (Instream) Flow Spatial Data:

The spatial data that I developed to assist the Partnership include two data sets that portray the significant features of the instream flow regime in the basin. These represent the substance of Chapter 173-522 of the Washington Administrative Code, March 10, 1976, which established base flows and monitoring units for the Chehalis Basin.

These data sets are in the form of ArcView shape files named **if_reaches.shp**, which portrays the Chehalis Basin streams for which base flows are set, and **if_cs_points.shp**, which portrays the points at which base flows are to be measured. A brief description of the contents of these shapefiles and the steps by which I developed them is provided in Enclosure Two.

(2) Water Rights Spatial Data

This consists of two ArcView shapefiles named **Sum_Subbasin31_all_p_c_s_j_a_c.shp** and **Sum_Sections_all_p_c_s_j_a_c.shp**.[•] These two shapefiles portray, respectively,

[•] A number of the names of files and tables that I am transmitting with this letter are long and may appear to be unnecessarily complicated. I did not shorten these to more convenient names because the longer names, although they may be awkward, are intended to provide a key to the contents of the documents.

Chehalis water rights data summarized at the Level 1 Assessment subbasin level and at the Public Land Survey section level. These files allow information on rights, claims, etc. to be displayed in ArcView or on a hard copy map of the entire basin or of specific areas within the basin. A brief description of these files and the steps that I followed in creating them is provided in Enclosure Three.

(3) Water Rights Tabular Data

I developed a series of tables summarizing the information on water rights in the Chehalis Basin. These are based on Department of Ecology's Water Rights Applications Tracking System (WRATS) data for WRIAs 22 and 23, which make up the Chehalis Basin. For this, I used WRATS data that was current as of August/September 2001. These tables can be used in concert with other GIS data, e.g. GIS layers developed as part of the Chehalis Basin Level 1 Assessment, to portray the distribution of water rights within the basin. The steps that I followed in creating these tables and a brief description of each one is provided in Enclosure Three.

I would like to note several caveats concerning the use of the enclosed water rights information and data sets:

(1) The WRATS derived tables and water right shapefiles are based on data that was in the WRATS database as of August/September 2001. Ecology staff informed me that there has been some changes to Chehalis Basin WRATS records since then. They also indicted that they believe these changes to be relatively minor. Nevertheless, users should be aware that more current WRATS data probably would differ slightly the data set that I used.

(2) A second issue arises as a result of converting the tabular data to spatial data for use in ArcView. One of the very useful capabilities of ArcView is its capability to summarize by geographic area. For example, it can summarize instantaneous flow of all water rights that exist in the Chehalis for each Public Land Survey section in the basin. In an area such as the Chehalis, this involves matching thousands of rights with thousands of sections. As this is done there is the potential that some rights in WRATS will not match to a section or will be counted twice. As a result there may be some slight differences in totals derived from WRAT data using ArcView and totals derived using a spreadsheet program such as Excel. I checked summaries from the two approaches (ArcView/Excel) and found that differences were minor. However, any user of this data should be aware that some differences do exist.

(3) A third issue is the general area of the reliability of WRATS. Ecology staff and others have cautioned me that WRATS data is not completely accurate reflection of actual water allocations in the basin. As I understand it, this results in part from of a shortage of resources update the system as regularly as would be ideal, in part from limitations in the system itself, and in part from gaps in the underlying Ecology water rights records. I understand that the Ecology Water Resources Program intends is addressing these concerns and is in the process of reviewing WRATS with the intention of either improving the system or replacing it.

I believe that the concerns that have been expressed about the WRATS go primarily to the issue of whether or not it is adequate to support an active program of water rights management. Putting this issue aside, I believe that WRATS is very useful as a source of general information for

planning purposes. That is, it can provide a broad picture of the scope of rights at the basin, subbasin level, and section level. Also, it can provide significant information about specific rights of interest. This is particularly true if WRATS based products are subject to "ground truthing" through a review by Chehalis Basin Partnership members and others familiar with the basin. In fact, ground truthing has had meaningful results already – Ecology staff reviewed some of the larger rights in the basin and identified approximately 640 Cubic Feet Per Second of rights that were included in WRATS but are not actually authorized. This represents approximately 20 percent of the total Chehalis Basin rights.

I am pleased to be able to provide the enclosed files and background information to support the Partnership in its efforts to prepare a watershed plan for the Chehalis Basin. If you have questions regarding the enclosed data or any other issue raised in this letter, please feel free to contact me. I can be reached at 206-553-1380 or by email at <daneker.lee@epa.gov>.

Very truly yours,

Lee Daneker
Outreach Unit
Office of Ecosystems and Communities

Enclosures

CC: Mayor Robert Spahr, Chair, Chehalis Basin Partnership
Lee Napier, Project Coordinator, Chehalis Basin Partnership
Kahle Jennings, Washington Department of Ecology

ENCLOSURE TWO
20 May 2002

Base Flow Shapefiles, Chehalis Basin

[For information contact: Lee Daneker, USEPA, 206-553-1380, <daneker.lee@epa.gov]

Chapter 173-522 of the Washington Administrative Code March 10, 1976 established base flows (aka instream flows) for the Chehalis River Basin. I developed two ArcView shapefiles in order to be able to display the substance of WAC 173-522. These are called **if_reaches.shp**, which portrays the Chehalis Basin streams for which base flows are set, and **if_cs_points.shp**, which portrays the points at which base flows are to be measured. A brief description of the contents of each shapefile and the steps by which I developed them follows:

1) **If_reaches.shp**:

   a) Source of GIS data for **if_reaches.shp**

      i) This file is based on a Washington Department of Ecology shapefile of rivers in the Chehalis basin. The accuracy with which **if_reaches.shp** represents the length and location of base flow reaches is dependent on the accuracy of the data in **streams.shp**. I did no work to verify the accuracy of the data in **streams.shp**.

   b) Contents of **if_reaches.shp**

      i) The file is a ArcView shapefile (line)
      ii) All 31 Chehalis Basin reaches with a base flow set in WAC 173-522 are represented
      iii) For each of the 31 reaches, the following attributes are included:
         (1) Name of the reach
         (2) Number, which corresponds to the order in which the reaches appear in WAC 173-522
         (3) Count, which is the number of segments that made up this reach in **streams.shp**
         (4) Base Flow Control Station Number from WAC 173-522
         (5) Base Flow in CFS to be attained at the Control Station bimonthly over the calendar year (Jan. 1, Jan. 15 … Dec. 1, Dec. 15) as established by WAC 173-522

      Note: The East Fork and the West Fork of the Humptulips are included in this file with only their names and no other attributes. This is because the Department of Ecology considers them to be part of the main stem of Humptulips for base flow regulation.

   c) Steps to create **if_reaches.shp**

      i) Identified all of the reaches for which base flows were set in WAC 173-522
      ii) Working in **streams.shp**, I selected all of the segments that made up the base flow reaches in WAC 173-522 and I saved these as a separate shapefile called **if_reaches.shp**
      iii) Edited the attribute table of the new shapefile to include the control station, number (reflecting the sequence in which each reach appears in WAC 173-522), and the base flow targets throughout the year.

   d) Projection

      Washington State Plane South (Lambert Conformal Conic), NAD27, map units are feet.

2) If_cs_points.shp

a) Contents of **if_cs_points.shp**

i) The file is a ArcView shapefile (point)

ii) The control stations of all 31 Chehalis Basin reaches with a base flow set in WAC 173-522 are represented. For each of the 31 control stations, the following attributes are included:

(1) Name of the reach

(2) Number, which corresponds to the order in which the reaches appear in WAC 173-522

(3) Control Station Number from WAC 173-522

(4) Base Flow in CFS to be attained at the Control Station bimonthly over the calendar year (Jan. 1, Jan. 15 … Dec. 1, Dec. 15) as established by WAC 173-522

b) Steps to **create if_cs_points.shp**

i) I established the location of each control station using the Public Land Survey section information and river mile information in WAC 173-522. Note: WAC 173-522 identifies control station locations only by river miles and Public Land Survey section number. It does not include latitude and longitude.

ii) For each control station, I identified the section using the GIS theme **sections.shp** (derived from the Chehalis Basin Level 1 GIS data). I located the river mile using **streams.shp** and the ArcView measuring tool. Through these two steps, I was able identify the reliable locations, accurate to the section level, for almost all of the control stations in WAC 173-522.

iii) In a few instances, the section/river mile approach did not provide a clear result. These fall into two separate cases. Either the stream in question did not flow through the section identified in WAC 173-522 OR the stream mile and the section approach resulted in significantly different locations. In most these cases there were apparent solutions because the stream reach was in a section that was adjacent or nearby, or there was an active or historic stream gage that suggested the locations of the control point. In some cases, however, the information in WAC 173-522 was clearly inconsistent with the locations of sections and reaches as indicated in GIS. These few instances noted in the "Table on Base Flow Control Stations and Stream Gage Sites" that I transmitted to Kahle Jennings, Department of Ecology by letter on 12 April 2002. A copy of this table is attached as Enclosure 2A. I believe that it suggests some typographic or other errors in WAC 173-522.

iv) I converted the control station points that I identified as approximate (to the section level)/best judgment locations into the ArcView shapefile **if_cs_points.shp**.

c) Projection

Washington State Plane South (Lambert Conformal Conic), NAD27, map units are feet.

d) Caveat:

Given the fact that control stations are not identified by latitude and longitude and that the section/stream mile approach did not provide clear locations in all cases, I recommend that users of **if_cs_points.shp** regard the control station locations as approximate/best judgment locations.

Enclosure 2A
FINAL DRAFT, 12 April 2002

CHEHALIS WATERSHED BASE (INSTREAM) FLOW CONTROL STATIONS AND CORRESPONDING STREAM GAUGE SITES [<Daneker Final Draft, 12 April 2002, <daneker.lee@epa.gov>]		
Instream Flow Control Point Location	**Gauging Station**	**Comments**
Chehalis River @ Elk Creek	Active	The Control Station (CS) and the stream gage are both close to the downstream end of the unit.
Elk Creek	Historic See Comment	Elk Creek does not cross Section 18 of Township 13, Range 5w (18-13-5W) as indicated in Chapter 173-522 of the Washington Administrative Code (WAC), which established base flows and monitoring units for the Chehalis River Basin. The 18 may be a typo. If the Section were 8 rather than 18, the CS would be just about at the downstream end of the reach at the same point at which an historic gage was located. In the GIS instream control station theme created for this project, the CS is placed in 8-13-5W, which is the same location as the historic gage. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage. (3) Clarify the location of the control station. (4) Correct the WAC if necessary.
SF Chehalis River	No	CS is near the mouth of the reach. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.
Chehalis @ Newakum River	Historic	The CS and the historic gage location are both near the downstream end of the unit. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.
SF Newaukum River	Active	The CS and the stream gage are both located near the downstream end of the unit.
NF Newaukum River	No	The CS is fairly high up in the basin. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage. (3) Review location of the CS to determine if the location is appropriate.
Newaukum River	Active	The CS and the gage are both located fairly near the downstream end of the reach.

Salzer Creek	Historic	The CS and the location of the historic gage are fairly high up in the basin – about half way between the headwaters and the mouth. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage. (3) Review location of the CS to determine if the location is appropriate.
Skookumchuck River	Active	The WAC states that the CS should be in 12-15-2W and 6.4 river miles from the mouth. Use of river miles from the WAC would place the CS in 22-15-2W, which is where there is a stream gage. The S/T/R location from the WAC 12-15-2W would place the CS another 4 or 5 miles upstream of the gage. In the GIS instream control station theme created for this project, the CS is placed at the stream gage in 22-15-2W. Suggested Actions: (1) Clarify the location of the control station. (2) Correct the WAC if necessary. (3) Consider whether the CS and gage should be closer to the mouth.
Chehalis @ Grand Mound	Active	The CS and the stream gage are both located near the downstream end of the reach
Black River	No	The CS is close to the mouth of the reach. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.
Cedar River	Historic	The CS and the location of the historic stream gage are both near the downstream end of the unit. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.
Porter Creek	Historic	The CS and the location of the historic stream gage are both near the downstream end of the unit. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.
Chehalis River @ Porter	Active	The CS and the stream gage are both located near the downstream end of the reach.

Coloquallum Creek	Historic	The CS and the location of the historic stream gage are both near the downstream end of the unit. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.
EF Satsop River	Historic	The CS and the historic stream gage location are both located about a quarter of the way between the downstream end of the reach and the headwaters. Suggested Actions: Review the location of the gage and the CS and determine whether they are appropriate.
Decker Creek	No	The CS is close to the mouth of the reach. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.
MF Satsop River	No	The CS is close to the mouth of the reach. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.
Satsop River	Active	The CS and the stream gage are both located near the downstream end of the reach
Chehalis River @ Satsop	No See Comment	There was an historic stream gage about 2 miles downstream Suggested Actions: (1) Determine whether this should be a priority location for a stream gage. (2) Review tidal influence on this unit and determine how this would influence stream gage performance.
Wynoochee River	Active	The CS and the stream gage are both located near the downstream end of the reach
Wishkah River	No	The CS is fairly far up in the basin, possibly in order to be above tidal influence. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.

EF Wishkah River	No	The CS is close to the mouth of the reach. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.
WF Hoquiam River	No	The CS is fairly far up in the basin, possibly in order to be above tidal influence. The S/T/R references in the WAC for the MF and WF of the Hoquiam are probably reversed. Neither stream passes through the S/T/R listed in the WAC; both pass through the Section listed for the other unit. In the GIS instream control station theme created for this project, the MF CS is placed in 14-18-10W (WAC for the WF) and the WF CS is place in 4-18-10W(WAC for the MF). Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage. (3) Clarify the location of the control station. (4) Correct the WAC if necessary.
MF Hoquiam River	No	The CS is close to the mouth of the reach. See previous comment regarding CS for WF Hoquiam. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage. (3) Clarify the location of the control station. (4) Correct the WAC if necessary.
EF Hoquiam River	No	The CS is fairly far up in the basin, possibly in order to be above tidal influence. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.
Humptulips River	Historic	The CS and the historic gage are at the same location. Approximately 80 percent of main stem are below the control station. All of the EF and WF are above the control station. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage. (3) Determine whether the CS location is appropriate.

Elk River	No	None of Elk River is in 3-16-11W as listed in the in WAC. The river is not even close to this section. Approximating the river miles as stated in the WAC places the CS in 31-16-10W. Suggested Actions: 1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage. (3) Clarify the location of the control station. (4) Correct the WAC if necessary.
Johns River	Historic	The CS and the location of the historic stream gage are in the same area, but about 90 percent of the reach is below their location. Possibly they are located high in the watershed in order to be above tidal influence. Suggested Actions: (1) Identify the tidally influenced portions of this river (2) Review the location of the CS. (3) Determine whether this basin should be a priority for placement of an additional stream gage.
Newskah Creek	Historic	The CS and the historic stream gage location are collocated, but they are about half way between the mouth and the headwaters of the reach. . Possibly they are high in the watershed to be above tidal influence. Suggested Actions: (1) Identify the tidally influenced portions of this river (2) Review the location of the CS. (3) Determine whether this basin should be a priority for placement of an additional stream gage.
Charlie Creek	Historic	The CS is close to the mouth of the reach. Historic gage is not located correctly on Level 1 GIS layer. Suggested Actions: (1) Review water rights and land use in this basin. (2) Determine whether this basin should be a priority for placement of an additional stream gage.
DATA SOURCES: Data source for active stream gages: USGS, http://water.usgs.gov/nwis Data source for historic stream gages: USGS as cited and Chehalis Basin Level 1Assessment GIS data (Envirovision) Data source for instream flow control points and management units: Chapter 173-522 of the Washington Administrative Code		

ENCLOSURE THREE
20 May 2002

Description of Tabular and Spatial Data on Chehalis Basin Water Rights Derived from Department of Ecology Water Rights Applications Tracking System

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The Department of Ecology maintains data on water rights in Washington State in its Water Rights Applications Tracking System (WRATS). The Department of Ecology provided me with WRATS data for WRIAs 22 and 23 (the Chehalis Basin) that was current as of August/September 2001.

I used the Chehalis Basin WRATS data provided by Ecology to create a set of tables that provide a "best available" summary of water rights allocations and related information for the basin. I obtained this data in order to use it in concert with spatial data (from the Chehalis Basin Level 1 Assessment) to portray the distribution of water rights within the basin.

The remainder of this document consists of the following:

- A description of the two ArcView Shapefiles which can be used to view WRATS tabular data as spatial data in ArcView
- A list of the WRATS derived tables, a brief description of their content, and the steps by which I created them from the WRATS data set provided by Ecology

1) ARCVIEW SHAPEFILES:

a) Source
   i) I created two water rights shapefiles by joining the WRATS derived tabular data on water rights to the Chehalis Basin Level 1 GIS themes that represent the Public Land Survey Sections (Sections.shp) and the Subbasins (Subbasins_31.shp). This produced two shapefiles named **Sum_subbasins31_all_p_c_s_j_a_c.shp** and **Sum_sections _all_p_c_s_j_a_c.shp**[1]
   ii) These shapefiles are in projected in Washington State Plane South (Lambert Conformal Conic), NAD27, map are feet.

b) **Sum_subbasins31_all_p_c_s_j_a_c.shp --** This shapefile can be used to view the following features for each of the 30 Chehalis Basin Partnership Level 1Assessment subbasins in the Chehalis Basin plus the land around Grays Harbor (Subbasin 31):

- Qi, Modified Qi[2], and number of all rights (permits and certificates) in each Subbasin
- Qi, and number of permits by Subbasin
- Qi, Modified Qi, and number of certificates by Subbasin
- Qi, Modified Qi, and number of senior rights (priority dates older than Base Flow date) by Subbasin
- Qi, Modified Qi, and number of junior rights (priority dates more recent than Base Flow date) by Subbasin
- Qi and number of applications by Subbasin
- Qi and number of claims by Subbasin
- Level 1 Assessment data: Number of permits, certificates, applications, claims, and the total number of rights by Subbasin

[1] A number of the names of the files and tables that I created are long and may appear to be unnecessarily complicated. I did not shorten these to more convenient names because the longer names, although they may be awkward, do provide a useful key to their contents.

[2] Qi is the instantaneous flow of each right. Modified Qi reflects corrections to the Qi in WRATS data based on other available information.

c) **Sum_sections_all_p_c_s_j_a_c.shp --** This ArcView theme can be used to display the following features for each Public Land Survey Section in the Chehalis Basin:

- Qi, Modified Qi, and number of all rights (permits and certificates) in each section
- Qi and number of permits by section
- Qi, Modified Qi, and number of certificates by section
- Qi, Modified Qi, and number of senior rights (priority dates older than Base Flow date) by section
- Qi, Modified Qi, and number of junior rights (priority dates more recent than Base Flow date) by section
- Qi and number of applications by section
- Qi and number of claims by section
- Level 1 data: Number of permits, certificates, applications, claims, and the total number of rights by section

2) WRATS BASED TABLES LIST AND CONTENT:

a) **22_23_dbs_dbm.dbf**. (12,435 records)

i) This table contains all general identification and source data that the Department of Ecology provided me for the Chehalis Basin. The data set that Ecology provided consisted of two Microsoft Access data sets, one for each of WRIA 22 and 23. Each data set consisted of three tables:

- DMMSDDBM: Master Table
- DMMSDDBP: Purpose Table
- DMMSDDBS: Source Table

I combined the Master Table and the Source Table for both WRIAs to create **22_23_dbs_dbm.dbf**. I did not combine the Purpose Table because I did not need the detail on purposes that it included.

I modified **22_23_dbs_dbm.dbf** as follows:

(1) Expressed all instantaneous flow (Qi) data in CFS. The Qi data for surface water In WRATS is in CFS, but the ground water rights are expressed in GPM. I converted the ground water rights to CFS using a conversion factor of 448.8. I created a new field called CFS-Total to store this data. This field includes the Qi for both surface water rights and groundwater rights expressed in same units (CFS) so that they can be compared.

(2) Added a field called CFS-Mod to capture the changed Qi of any rights for which the WRATS Qi was determined to be inaccurate. As of 10 May 2002 I have entered a modified Qi for only two rights. These are the Lake Arrowhead Community Club, which was reduced from 570 CFS to 1.27 CFS, and WPPS Satsop, which was reduced from 80 CFS to 9.5 CFS. Both reductions were based on information provided by the Department of Ecology.

(3) Added 5 fields (P-1... P-5) and divided the original PURPOSE field so that the purposes for each right would be expressed in a separate field.

(4) Added a new field called TRS-indicator, which expressed the Township, Range, and Section Identifiers of each right in the same format as they were expressed in the Chehalis Basin Level One Assessment "Sections" GIS coverage.

(5) Added a new field called SENIORITY, and used the field to classify all rights as "senior" (to the base flow priority date of March 10, 1976), "junior", or "no date."

ii) With these changes, **22_23_dbs_dbm.dbf** contained the following 42 fields [3]:

Key Main	Tributary	State
Document Number	CFS	Zip
Document Type	GPM	Old Certificate
Business Name	Acre Feet	Document Status
Last Name	Acres Irrigated	TRS
First Name	Domestic Units	Township
Priority Date	Pdate-Yr *	Section
Seniority*	Pdate-Mo *	Range
CFS-Total*	Pdate_Day *	Range EW
CFS-Mod *	Purpose List	Quad Designation
P-1…P-5 *	County Name	Key Source
TRS-Indicator*	WRIA	Date Permit Issued
Source Name	City	

b) **22_23_dbs_dbm_rejected.xls**. (1163 records)

This table contains all records labeled as "rejected", "permit cancelled", "change-withdrawn", "change-cancelled", "certificate-relinquished", "application-rejected", or "application-denied" in the DOCUMENT STATUS FIELD. These were cut from **22_23_dbs_dbm.dbf**

c) **22_23_applications.xls** (133 records, 116 records after eliminating 17 duplicate records which I saved as **22_23_duplicates_apps.xls**)

This table contains all records identified as applications in the DOCUMENT TYPE field. These were cut from **22_23_dbs_dbm.dbf**

d) **22_23_claims.xls** (8,485 records).

This table contains all records identified as claims in DOCUMENT TYPE field. These were cut from **22_23_dbs_dbm.dbf**

e) **22_23_changes.xls** (87 records)

This table contains all records identified as changes of any kind in DOCUMENT TYPE field. These were cut from **22_23_dbs_dbm.dbf**

f) **22_23_duplicates_cert&perm.xls** (81 records)

This table contains all records with the same Key Number, Document Number, Name, Priority Date, and Qi. These were cut from **22_23_dbs_dbm.dbf**

g) 23_23_working.dbf (2,486 records)
This table contains all remaining records -- the "best available" approximation of the valid permits and certificates in the Chehalis Basin based on WRATS data.

[3] The asterisks (*) indicate fields that I added. All other fields are standard WRATS fields.