

File to accompany USGS Fact Sheet 2021–3004, A 40-Year Story of River Sediment at Mount St. Helens

Additional Resources

Suspended-sediment and streamflow data for Washington and Oregon.

[ft³, cubic foot; mi², square mile; WY, water year; USGS, U.S. Geological Survey]

Basin or USGS streamgage station (drainage area [mi ²])	Mean annual streamflow ¹ (ft ³ /second)	Annual suspended- sediment load ² (tons/year)	Annual suspended- sediment yield ³ (tons/year/mi ²)	Time period when sediment-load data were collected	USGS station ID or basin	Reference no.
Toutle River at Tower Road near Silver Lake, Wash. (496)	2,145	6,530,000	13,165	1981–2018	14242580	1
White River below Clearwater River near Buckley, Wash. (375)	1,829	676,020	1,803	June 1974–June 1976	12097850	2
Nooksack, Wash. (840)	3,200	1,400,000	1,667	1964–66, 1996–98, 2000	Nooksack River Basin	3
Puyallup, Wash. (980)	3,600	980,000	1,000	1964–66, 2000	Puyallup River Basin	3
Skagit, Wash. (3,200)	18,000	2,800,000	875	1974–93, 2006–09	Skagit River Basin	3
White River near Tygh Valley, Oreg. (417)	563	229,664	551	WY 1982–83	14101500	4
Green River near Tukwila, Wash. (440)	1,502	184,412	419	Oct. 1963–June 1966	12113350	2
Duwamish, Wash. (500)	1,400	210,000	420	1964–66, 1996–98, 2000	Green/Duwamish River Basin	3
Snoqualmie River near Carnation, Wash. (603)	3,963	240,236	398	Oct. 1966–June 1969	12149000	2
Skykomish River at Monroe, Wash. (834)	6,411	266,937	320	Oct. 1966–June 1969	12141100	2
Little North Santiam River near Mehama, Oreg. (113)	676	33,161	294	Oct. 1998–Jan. 2009	14182500	5
North Santiam River below Boulder Creek near Detroit, Oreg. (216)	986	62,472	289	Oct. 1998–Dec. 2007	14178000	5
Blowout Creek near Detroit, Oreg. (26)	111	7,328	282	Oct. 1999–Oct. 2008	14180300	5

Snohomish, Wash. (1,800)	10,000	490,000	272	1964–66, 1967–68, 2000	Snohomish River Basin	3
Breitenbush River above French Cr near Detroit, Oreg. (106)	541	23,567	222	Nov. 1998–Jan. 2009	14179000	5
Deschutes, Wash. (170)	400	35,000	206	1952–98	Deschutes River Basin	3
North Santiam River at Mehama, Oreg. (658)	3,375	130,218	198	Oct. 1998–Jan. 2009	14182500	5
Skookumchuck River near Bucoda, Wash. (112)	386	15,213	136	WY 1969–71	12026400	2
Stillaguamish, Wash. (700)	2,700	18,000	112	WY 1964–66	Stillaguamish River Basin	3
Chehalis River at Porter, Wash. (1,294)	4,081	133,784	103	WY 1962–71	12031000	2
Bull Run River near Multnomah Falls, Oreg. (47.9)	406	4,135	86.3	WY 1967–71, 1978–86	14138850	4
North Fork Bull Run River near Multnomah Falls, Oreg. (8.32)	71	688	82.7	WY 1979–86	14138900	4
Pudding River at Aurora, Oreg. ⁴ (484)	1,230	35,443	73.2	Oct. 1991–Sept. 2012	14202000	5
Willamette River at Portland, Oreg. (11,200)	34,005	715,982	64	Nov. 1991–Sept. 2012	14211720	5
Rogue River below Prospect, Oreg. (379)	1,227	21,971	58	Oct. 1977–Apr. 1981	14330000	4
Clackamas River near Oregon City, Oreg. ⁴ (943)	3,395	50,444	53.5	Oct. 1991–Sept. 2012	14211010	5
Lookout Creek near Blue River, Oreg. (25)	113	1,313	52.5	May 2005–Mar. 2010	14161500	5
Columbia River at Vancouver, Wash./Oreg. (241,000)	201,833	10,697,370	44.4	WY 1964–69	14144700	2
South Fork Bull Run River near Bull Run, Oreg. (15.7)	106	644	41	WY 1979–86	14139800	4
North Santiam River at Niagara, Oreg. (454)	2,259	16,767	37	Oct. 1998–Jan. 2009	14181500	5
South Fork Rogue River south of Prospect, Oreg. (246)	234	8,612	35	Oct. 1977–Apr. 1981	14334700	4
Mollala River near Canby, Oreg. ⁴ (344)	1,084	10,809	31.4	Oct. 1991–Sept. 2012	14200000	5
Fir Creek near Brightwood, Oreg. (5.46)	35	147	27	WY 1978–86	14138870	4
McKenzie River near Walterville, Oreg. ⁴ (1,063)	3,263	24,099	22.7	July 1995–Sept. 2012	14163900	5
Coast Fork Willamette River near Goshen, Oreg. ⁴ (656)	1,472	9,265	14.1	Oct. 1991–Sept. 2012	14157500	5
Middle Fork Willamette River at Jasper, Oreg. ⁴ (1,349)	4,133	14,149	10.5	Oct. 1991–Sept. 2012	14152000	5
Rogue River at McLeod, Oreg. (697)	1,347	5,127	7.4	Oct. 1977–Apr. 1981	14335075	4

¹Mean annual streamflow computed using daily mean streamflow for each water year.

²Annual sediment load computed using average of all water year totals.

³Sediment yields computed by dividing total sediment load by drainage area.

⁴Oregon Department of Environmental Quality (DEQ) used total suspended solids (TSS) method.

References Listed in Table Above

1. U.S. Geological Survey, 2021, USGS 14242580 Toutle River at Tower Rd near Silver Lake, Washington, in USGS water data for the Nation: U.S. Geological Survey National Water Information System database, accessed July 15, 2021, at <https://doi.org/10.5066/F7P55KJN>. [Site information directly accessible at https://waterdata.usgs.gov/nwis/inventory/?site_no=14242580&agency_cd=USGS.]
2. Washington Water Data Reports; see lists below.
3. Czuba, J., Magirl, C., Czuba, C., Grossman, E., Curren, C., Gendaszek, A., and Dinicola, R., 2011, Sediment load from major rivers into Puget Sound and its adjacent waters: U.S. Geological Survey Fact Sheet 2011–3083, 4 p., accessed June 19, 2021, at <https://doi.org/10.3133/fs20113083>.
4. Oregon Water Data Reports; see lists below.
5. Wise, D.R., and O'Connor, J.E., 2016, A spatially explicit suspended-sediment load model for Western Oregon: U.S. Geological Survey Scientific Investigations Report 2016–5079, 25 p., accessed July 15, 2021, at <https://doi.org/10.3133/sir20165079>.

Sediment and Streamflow Data for Washington and Oregon

Sediment and streamflow data for Washington and Oregon are listed below. Listed first are data from after the 1980 Mount St. Helens eruption, followed by annual data reports from before the eruption though today, separated by State. Finally, the current database—the National Water Information System—is listed.

Washington—Data for Toutle River at Tower Road, 1980–1990

Starting with sediment and streamflow data from Mount St. Helens, data for Toutle River at Tower Road (station 14242580) for the first 10 years after the 1980 volcanic eruption are available in the following reference.

Dinehart, R.L., 1998, Sediment transport at gaging stations near Mount St. Helens, Washington, 1980-90, Data Collection and Analysis: U.S. Geological Survey Professional Paper 1573, 111 p., <https://pubs.usgs.gov/pp/1573>.

Washington—Water Data Reports, 1991–2005

Continuing with sediment and streamflow records from Mount St. Helens and other Washington streamgaging stations, the Washington Water Data Reports for water years 1991 to 2005 are listed chronologically below. Washington Water Data Reports for water years 1991 to 2001 are available in hardcopy form only; the weblinks provide publication details only. Washington Water Data Reports for water years 2002 to 2005 are available digitally at the links provided.

Miles, M.B., Wiggins, W.D., Ruppert, G.P., Blaz, R.L., Reed, L.L., and Hubbard, L.E., 1992, Water resources data, Washington, water year 1991: U.S. Geological Survey Water Data Report WA-91-1, 439 p., <https://doi.org/10.3133/wdrWA911>.

Miles, M.B., Wiggins, W.D., Ruppert, G.P., Blaz, R.L., Reed, L.L., and Hubbard, L.E., 1993, Water resources data, Washington, water year 1992: U.S. Geological Survey Water Data Report WA-92-1, 459 p., <https://doi.org/10.3133/wdrWA921>.

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Wiggins, W.D., Ruppert, R.R. Smith, R.L., Reed, L.L., Hubbard, L.E., and Courts, M.L., 1995, Water resources data, Washington, water year 1994: U.S. Geological Survey Water Data Report WA-94-1, 466 p., <https://doi.org/10.3133/wdrWA941>.

Wiggins, W.D., Ruppert, R.R. Smith, R.L., Reed, L.L., Hubbard, L.E., and Courts, M.L., 1996, Water resources data, Washington, water year 1995: U.S. Geological Survey Water Data Report WA-95-1, 456 p., <https://doi.org/10.3133/wdrWA951>.

Wiggins, W.D., Ruppert, R.R. Smith, R.L., Reed, L.L., Hubbard, L.E., and Courts, M.L., 1997, Water resources data, Washington, water year 1996: U.S. Geological Survey Water Data Report WA-96-1, 494 p., <https://doi.org/10.3133/wdrWA961>.

Wiggins, W.D., Ruppert, R.R. Smith, R.L., Reed, L.L., and Courts, M.L., 1998, Water resources data, Washington, water year 1997: U.S. Geological Survey Water Data Report WA-97-1, 527 p., <https://doi.org/10.3133/wdrWA971>.

Wiggins, W.D., Ruppert, R.R. Smith, R.L., Reed, L.L., and Courts, M.L., 1999, Water resources data, Washington, water year 1998: U.S. Geological Survey Water Data Report WA-98-1, 546 p., <https://doi.org/10.3133/wdrWA981>.

Zembrzuski, T.J., Wiggins, W.D., Smith, R.L., Ruppert, R.R, Knowles, S.M., and Renslow, V.F., 2001, Water resources data, Washington, water year 1999: U.S. Geological Survey Water Data Report WA-99-1, 548 p., <https://doi.org/10.3133/wdrWA991>.

Kimbrough, R.A., Ruppert, R.R., Wiggins, W.D., Knowles, S.M., and Renslow, V.F., 2001, Water resources data, Washington, water year 2000: U.S. Geological Survey Water Data Report WA-00-1, 582 p., <https://doi.org/10.3133/wdrWA001>.

Kimbrough, R.A., Ruppert, R.R., Wiggins, W.D., Smith, R.L., Knowles, S.M., and Renslow, V.F., 2002, Water resources data, Washington, water year 2001: U.S. Geological Survey Water Data Report WA-01-1, 622 p., <https://doi.org/10.3133/wdrWA011>.

Kimbrough, R.A., Wiggins, W.D., Smith, R.L., Ruppert, R.R., Knowles, S.M., and Renslow, V.F., 2003, Water resources data, Washington, water year 2002: U.S. Geological Survey Water Data Report WA-02-1, 578 p., <https://doi.org/10.3133/wdrWA021>.

Kimbrough, R.A., Smith, R.L., Ruppert, R.R., and Wiggins, W.D., 2004, Water resources data, Washington, water year 2003: U.S. Geological Survey Water Data Report WA-03-1, 626 p., <https://doi.org/10.3133/wdrWA031>.

Kimbrough, R.A., Ruppert, R.R., Wiggins, W.D., and Smith, R.L., 2005, Water resources data, Washington, water year 2004: U.S. Geological Survey Water Data Report WA-04-1, 825 p., <https://doi.org/10.3133/wdrWA041>.

Kimbrough, R.A., Ruppert, R.R., Wiggins, W.D., Smith, R.L., and Kresch, D.L., 2006, Water resources data, Washington, water year 2005: U.S. Geological Survey Water Data Report WA-05-1, 804 p., <https://doi.org/10.1311/wdrWA051>.

Washington and Oregon—Water Supply Papers, Water Years 1964–1970

Sediment records and annual data reports for Washington and Oregon for water years 1964 to 1970 are listed below (chronologically by water year). These reports are from before the 1980 eruption of Mount St. Helens.

U.S. Geological Survey, 1970, Quality of surface waters of the United States, 1964, Parts 12-15, Pacific slope basins in Washington and upper Columbia River basin to Alaska: U.S. Geological Survey Water Supply Paper 1959, 428 p., <https://doi.org/10.3133/wsp1959>.

U.S. Geological Survey, 1970, Quality of surface waters of the United States, 1965, Parts 12-16, Pacific slope basins in Washington and upper Columbia River basin to Hawaii and other Pacific areas: U.S. Geological Survey Water Supply Paper 1966, 462 p., <https://doi.org/10.3133/wsp1966>.

U.S. Geological Survey, 1971, Quality of surface waters of the United States, 1966, Parts 12-16, North Pacific slope basins, Alaska and Hawaii and other Pacific areas: U.S. Geological Survey Water Supply Paper 1996, 433 p., <https://doi.org/10.3133/wsp1996>.

U.S. Geological Survey, 1972, Quality of surface waters of the United States, 1967, Parts 12-16, North Pacific slope basins, Alaska and Hawaii and other Pacific areas: U.S. Geological Survey Water Supply Paper 2016, 431 p., <https://doi.org/10.3133/wsp2016>.

U.S. Geological Survey, 1973, Quality of surface waters of the United States, 1968, Parts 12-16, North Pacific slope basins, Alaska and Hawaii and other Pacific areas: U.S. Geological Survey Water Supply Paper 2100, 464 p., <https://doi.org/10.3133/wsp2100>.

U.S. Geological Survey, 1974, Quality of surface waters of the United States, 1969, Parts 12-16, North Pacific slope basins, Alaska and Hawaii and other Pacific areas: U.S. Geological Survey Water Supply Paper 2150, 480 p., <https://doi.org/10.3133/wsp2150>.

U.S. Geological Survey, 1976, Quality of surface waters of the United States, 1970, Parts 12-16, North Pacific slope basins, Alaska and Hawaii and other Pacific areas: U.S. Geological Survey Water Supply Paper 2160, 501 p., <https://doi.org/10.3133/wsp2160>.

Washington—Water Data Reports, Water Years 1971–1990

Continuing with early Washington sediment and streamflow records, the Washington Water Data Reports for water years 1971 to 1990 are listed chronologically below. Washington Water Data Reports for water years 1971 to 1990 are available in hardcopy form only; the weblinks provide publication details only. Sediment records for water years 1971 to 1974 are listed in the water quality records (part 2) reports. After water year 1974, the Washington Water Data Report is one report for both surface water and water quality records, which includes sediment records. Starting with water year 1976, the Washington Water Data Report is published as two separate volumes, for western Washington (v. 1) and eastern Washington (v. 2). Starting with water year 1983, the Washington Water Data Report is one report for both western and eastern Washington.

U.S. Geological Survey, 1972, Water resources data for Washington, water year 1971; Part 2, Water quality records: U.S. Geological Survey Water Data Report WA-71-2, 266 p., <https://doi.org/10.3133/wdrWA712>.

U.S. Geological Survey, 1973, Water resources data for Washington, water year 1972; Part 2, Water quality records: U.S. Geological Survey Water Data Report WA-72-2, 252 p., <https://doi.org/10.3133/wdrWA722>.

U.S. Geological Survey, 1974, Water resources data for Washington, water year 1973; Part 2, Water quality records: U.S. Geological Survey Water Data Report WA-73-2, 330 p., <https://doi.org/10.3133/wdrWA732>.

U.S. Geological Survey, 1975, Water resources data for Washington, water year 1974; Part 2, Water quality records: U.S. Geological Survey Water Data Report WA-74-2, 383 p., <https://doi.org/10.3133/wdrWA742>.

U.S. Geological Survey, 1976, Water resources data for Washington, water year 1975: U.S. Geological Survey Water Data Report WA-75-1, 684 p., <https://doi.org/10.3133/wdrWA751>.

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U.S. Geological Survey, 1982, Water resources data for Washington, water year 1980, Vol. 1—Western Washington: U.S. Geological Survey Water Data Report WA-80-1, 488 p., <https://doi.org/10.3133/wdrWA801>.

U.S. Geological Survey, 1983, Water resources data for Washington, water year 1981, Vol. 1—Western Washington: U.S. Geological Survey Water Data Report WA-81-1, 337 p., <https://doi.org/10.3133/wdrWA811>.

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Western Washington: U.S. Geological Survey Water Data Report WA-82-1, 310 p.,
<https://doi.org/10.3133/wdrWA821>.

U.S. Geological Survey, 1985, Water resources data for Washington, water year 1983: U.S.
Geological Survey Water Data Report WA-83-1, 433 p., <https://doi.org/10.3133/wdrWA831>.

U.S. Geological Survey, 1986, Water resources data for Washington, water year 1984: U.S.
Geological Survey Water Data Report WA-84-1, 427 p., <https://doi.org/10.3133/wdrWA841>.

U.S. Geological Survey, 1987, Water resources data for Washington, water year 1985: U.S.
Geological Survey Water Data Report WA-85-1, 460 p., <https://doi.org/10.3133/wdrWA851>.

U.S. Geological Survey, 1988, Water resources data for Washington, water year 1986: U.S.
Geological Survey Water Data Report WA-86-1, 517 p., <https://doi.org/10.3133/wdrWA861>.

McGavock, E.M., Wiggins, W.D., Boucher, P.R., Blaz, R.L., Reed, L.L., and Smith, M.L.,
1989, Water resources data for Washington, water year 1987: U.S. Geological Survey Water
Data Report WA-87-1, 509 p., <https://doi.org/10.3133/wdrWA871>.

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Report WA-88-1, 471 p., <https://doi.org/10.3133/wdrWA881>.

Miles, M.B., Wiggins, W.D., Ruppert, G.P., Blaz, R.L., Reed, L.L., and Hubbard, L.F., 1990,
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Oregon—Water Data Reports, Water Years 1971–2005

Sediment and streamflow records for Oregon for water years 1971–2005 are listed chronologically below. Sediment records for water years 1971 to 1974 are listed in the water quality records (part 2) report. For water years 1975 to 1979, the Oregon Water Data Report is one report for surface water and water quality records and includes the sediment records. For water years 1980 to 1990, the Oregon Water Data Report is published as two separate volumes, for eastern Oregon (v. 1) and western Oregon (v. 2). Starting with water year 1991, the Oregon Water Data Report is one report for both eastern and western Oregon.

U.S. Geological Survey, 1972, Water resources data for Oregon, water year 1971; Part 2, Water quality records: U.S. Geological Survey Water Data Report OR-71-2, 123 p.,
<https://doi.org/10.3133/wdrOR712>.

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<https://doi.org/10.3133/wdrOR722>.

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<https://doi.org/10.3133/wdrOR732>.

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U.S. Geological Survey, 1977, Water resources data for Oregon, water year 1975: U.S.

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Geological Survey Water Data Report OR-76-1, 424 p., <https://doi.org/10.3133/wdrOR761>.

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U.S. Geological Survey, 1981, Water resources data for Oregon, water year 1979: U.S.

Geological Survey Water Data Report OR-79-1, 743 p., <https://doi.org/10.3133/wdrOR791>.

U.S. Geological Survey, 1981, Water resources data for Oregon, water year 1980, Vol. 2—

Western Oregon: U.S. Geological Survey Water Data Report OR-80-2, 491 p.,

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Western Oregon: U.S. Geological Survey Water Data Report OR-81-2, 509 p.,

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U.S. Geological Survey, 1983, Water resources data for Oregon, water year 1982, Vol. 2—

Western Oregon: U.S. Geological Survey Water Data Report OR-82-2, 419 p.,

<https://doi.org/10.3133/wdrOR822>.

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for Oregon, water year 1985, Vol. 2—Western Oregon: U.S. Geological Survey Water Data
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Survey Water Data Report OR-86-2, 398 p., <https://doi.org/10.3133/wdrOR862>.

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Geological Survey Water Data Report OR-89-2, 314 p., <https://doi.org/10.3133/wdrOR892>.

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Washington and Oregon—National Water Information System, 2006–2018

The sediment and streamflow data from 2006 to 2018 are from the U.S. Geological Survey National Water Information System (NWIS) website for Washington and Oregon (online version). To access the data, select the statewide streamflow table, then select USGS ID for desired station. Next select the available parameters needed, output format, and the begin and end date. Data for Washington can be accessed at <https://waterdata.usgs.gov/wa/nwis/rt>. Data for Oregon can be accessed at <https://waterdata.usgs.gov/or/nwis/rt>.