# 2009 Minerals Yearbook

## WASHINGTON [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

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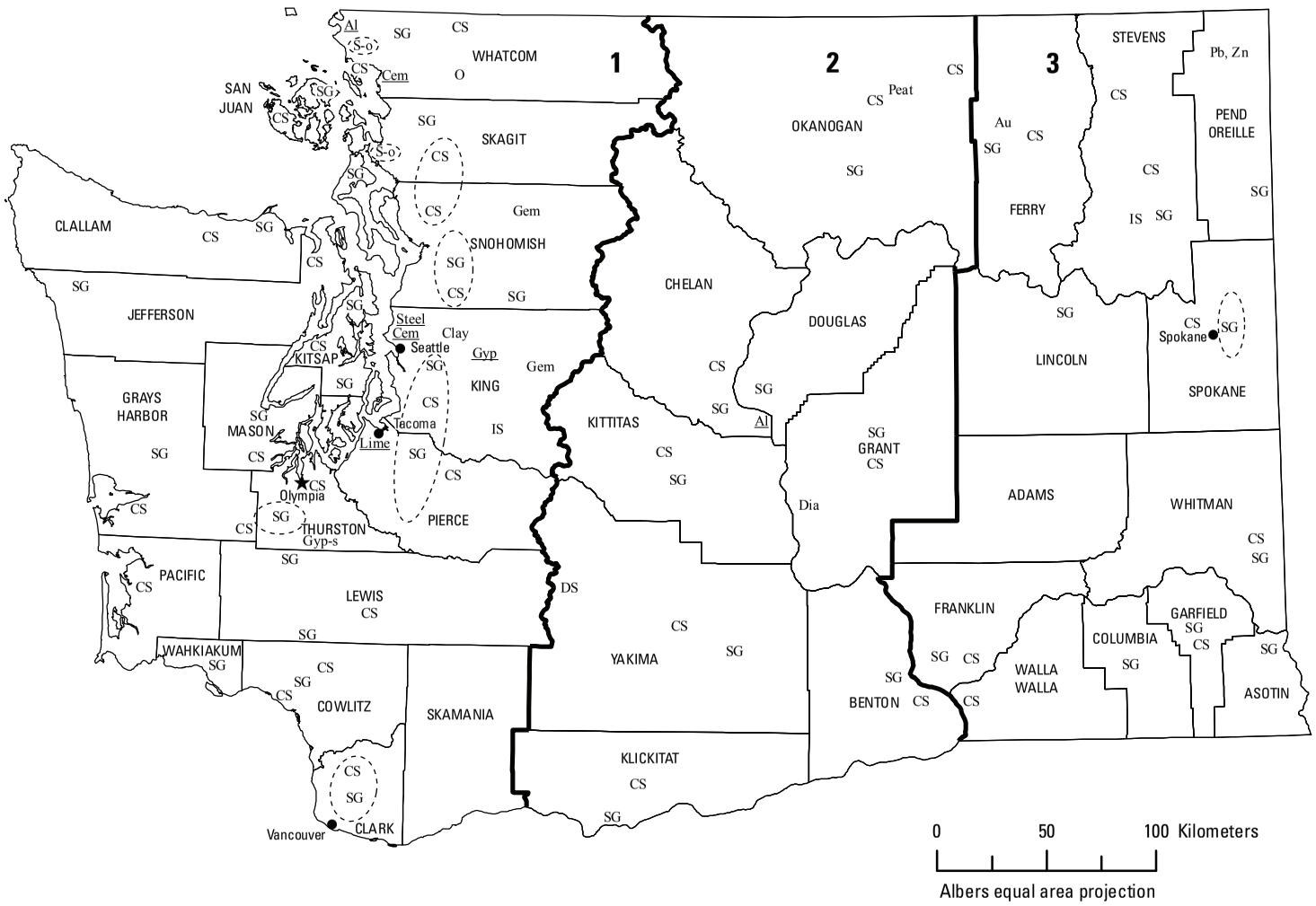
# WASHINGTON




## LEGEND

County boundary

★ Capital

● City

1 Crushed stone/sand and gravel district boundary

### MINERAL SYMBOLS
### (Principal producing areas)

| | |
|---|---|
| Al | Aluminum plant |
| Au | Gold |
| Cem | Cement plant |
| Clay | Common clay |
| CS | Crushed stone |
| Dia | Diatomite |
| DS | Dimension stone |
| Gem | Gemstones |
| Gyp | Gypsum plant |
| Gyp-s | Synthetic gypsum |
| IS | Industrial sand |
| Lime | Lime plant |
| O | Olivine |
| Pb | Lead |
| Peat | Peat |
| SG | Construction sand and gravel |
| S-o | Sulfur (oil) |
| Steel | Steel plant |
| Zn | Zinc |

Concentration of mineral operations

**Source: Washington State Division of Geology and Earth Resources/U.S. Geological Survey (2009).**

# The Mineral Industry of Washington

**This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Washington Department of Natural Resources, Division of Geology and Earth Resources, for collecting information on all nonfuel minerals.**

In 2009, Washington's nonfuel raw mineral production[1] was valued at $650 million, based upon annual U.S. Geological Survey (USGS) data. This was a nearly 10% decrease, or $72 million, from the $722 million total value for 2008, which was down by 3.6%, or $27 million, from that of 2007, $749 million. In spite of the decreases in total value, the State remained 29th in rank among the 50 States in total nonfuel raw mineral production value, accounting for slightly more than 1% of the U.S. total nonfuel mineral production value in 2009.

In 2009, Washington's leading nonfuel mineral commodities by production value were, in descending order of value, construction sand and gravel, gold, crushed stone, portland cement, and lime. Construction sand and gravel and crushed stone accounted for almost 56% of the State's total nonfuel mineral value, down significantly from 68% in 2008, primarily due to the 9.7 million metric ton (Mt) decrease in construction sand and gravel production and the 2.8 Mt decrease in crushed stone production.

The largest increase in production value in the State in 2009 took place with gold. Gold production, which resumed in 2008 in the State, increased four-fold with a five-fold increase in production value (actual values for gold withheld—company proprietary data). The next largest increase, a 294% increase in the production value of diatomite, was still significantly smaller than the increase in the production value of gold. Other increases in production values took place with lime, peat, and gemstones (lime and peat values withheld—company proprietary data).

The largest decreases in production value took place in construction sand and gravel, zinc, crushed stone, portland cement, and lead. The production value of construction sand and gravel was down $96 million, or almost 30%, from $326 million in 2008 to $230 million in 2009. The production value of crushed stone was down $37 million, from $168 million in 2008 to $131 million in 2009. Both mineral commodities had slight increases in production values from 2007 to 2008, although production levels were down by 13% for construction sand and gravel and almost 3% for crushed stone over the same time period.

Washington had significant metal production in 2009, although two of the major metals produced in the State—lead and zinc—had sharp declines. Zinc production increased almost 22% from 2007 to 2008, but declined by 86% from 2008 to 2009. Zinc production values, however, declined almost 30% from 2007 to 2008 and continued to decline by a further 88% from 2008 to 2009. Lead, which had increased 21% in production and 18% in production value from 2007 to 2008, and accounted for the largest increase in production value among all mineral commodities produced in the State in 2008, decreased by almost 83% and 88% from 2008 to 2009, respectively.

In 2009, Washington continued to be first in the quantities of olivine produced of the two olivine-producing States and fifth of five lead-producing States. The State decreased to fourth from third in the production of zinc. After rising to fifth in 2008, the State decreased to eighth in the production of construction sand and gravel in 2009. Primary aluminum and raw steel also were produced in Washington, but both metals were processed from materials acquired from foreign and other domestic sources. In 2009, notwithstanding a 17% decrease in production and almost 46% decrease in production value, the State remained third in rank, based on production, of the 10 States that produced primary aluminum.

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[1]The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 2009 USGS mineral production data published in this chapter are those available as of September 2011. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL http://minerals.usgs.gov/minerals.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN WASHINGTON[1, 2]

(Thousand metric tons and thousand dollars)

| Mineral | 2007 | | 2008 | | 2009 | |
|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| Clays, common | 84 | 170 | 88 | 360 | W | W |
| Gemstones, natural | NA | 49 | NA | 50 | NA | 65 |
| Peat | W | 66 | W | 75 | W | W |
| Sand and gravel, construction | 45,700 r | 325,000 r | 39,600 r | 326,000 r | 29,900 | 230,000 |
| Stone, crushed | 18,000 | 166,000 | 17,500 r | 168,000 r | 14,700 | 131,000 |
| Combined values of cadmium (byproduct from zinc concentrates), cement (portland), clays [fire (2009)], diatomite, gold (2008–09), lead, lime, olivine, sand and gravel (industrial), stone (dimension), zinc, and values indicated by symbol W | XX | 258,000 | XX | 228,000 | XX | 289,000 |
| Total | XX | 749,000 r | XX | 722,000 r | XX | 650,000 |

[r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data. Withheld values included in "Combined values" data.
XX Not applicable.

[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

[2]Data are rounded to no more than three significant digits; may not add to totals shown.

TABLE 2
WASHINGTON: CRUSHED STONE SOLD OR USED, BY TYPE[1]

| Type | 2008 | | | 2009 | | |
|---|---|---|---|---|---|---|
| | Number of quarries | Quantity (thousand metric tons) | Value (thousands) | Number of quarries | Quantity (thousand metric tons) | Value (thousands) |
| Limestone[2] | 10 r | 1,230 r | $14,200 r | 10 | 988 | $9,150 |
| Dolomite | 15 r | 122 r | 633 r | 14 | 102 | 454 |
| Granite | 11 | 1,420 | 14,900 | 9 | 885 | 8,630 |
| Traprock | 74 r | 8,260 r | 72,100 r | 68 | 5,810 | 49,000 |
| Sandstone and quartzite | 4 | 779 | 12,900 | 7 | 717 | 13,000 |
| Volcanic cinder and scoria | -- r | -- r | -- r | -- | -- | -- |
| Miscellaneous stone | 33 r | 5,690 r | 53,200 r | 35 | 6,220 | 51,100 |
| Total | XX | 17,500 r | 168,000 r | XX | 14,700 | 131,000 |

[r]Revised. XX Not applicable. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes limestone-dolomite reported with no distinction between the two.

TABLE 3
WASHINGTON: CRUSHED STONE SOLD OR USED BY
PRODUCERS IN 2009, BY USE[1]

(Thousand metric tons and thousand dollars)

| Use | Quantity | Value |
|---|---|---|
| Construction: | | |
| Coarse aggregate (+1½ inch): | | |
| Macadam | 101 | 821 |
| Riprap and jetty stone | 124 | 1,870 |
| Filter stone | 89 | 872 |
| Other coarse aggregate | 18 | 70 |
| Coarse aggregate, graded: | | |
| Concrete aggregate, coarse | 303 | 2,120 |
| Bituminous aggregate, coarse | 431 | 3,140 |
| Bituminous surface-treatment aggregate | 122 | 1,230 |
| Railroad ballast | 510 | 2,800 |
| Other graded coarse aggregate | 138 | 951 |
| Fine aggregate (-⅜ inch): | | |
| Stone sand, concrete | W | W |
| Stone sand, bituminous mix or seal | W | W |
| Screening, undesignated | 42 | 323 |
| Other fine aggregate | 3 | 66 |
| Coarse and fine aggregate: | | |
| Graded road base or subbase | 1,120 | 6,830 |
| Unpaved road surfacing | 286 | 1,580 |
| Crusher run or fill or waste | W | W |
| Roofing granules | W | W |
| Other coarse and fine aggregates | 79 | 667 |
| Other construction materials | 80 | 1,380 |
| Agricultural: | | |
| Limestone | W | W |
| Poultry grit and mineral food | W | W |
| Chemical and metallurgical: | | |
| Cement manufacture | W | W |
| Lime manufacture | W | W |
| Flux stone | W | W |
| Glass manufacture | W | W |
| Special: | | |
| Asphalt fillers or extenders | W | W |
| Whiting or whiting substitute | W | W |
| Other fillers or extenders | W | W |
| Other miscellaneous uses and specified uses not listed | 45 | 843 |
| Unspecified:[2] | | |
| Reported | 4,330 | 39,700 |
| Estimated | 5,320 | 48,500 |
| Total | 14,700 | 131,000 |

W Withheld to avoid disclosing company proprietary data; included in "Total."

[1]Data are rounded to no more than three significant digits.

[2]Reported and estimated production without a breakdown by end use.

TABLE 4
WASHINGTON: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2009, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

| Use | District 1 | | District 2 | | District 3 | | Unspecified districts | |
|---|---|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value |
| Construction: | | | | | | | | |
| Coarse aggregate (+1½ inch)[2] | 308 | 3,280 | W | W | W | W | -- | -- |
| Coarse aggregate, graded[3] | W | W | 32 | 235 | W | W | -- | -- |
| Fine aggregate (-⅜ inch)[4] | 205 | 2,030 | W | W | W | W | -- | -- |
| Coarse and fine aggregate[5] | W | W | W | W | 530 | 2,400 | 95 | 420 |
| Other construction materials | 3 | 36 | -- | -- | 77 | 1,350 | -- | -- |
| Agricultural[6] | -- | -- | W | W | -- | -- | -- | -- |
| Chemical and metallurgical[7] | W | W | -- | -- | W | W | -- | -- |
| Special[8] | -- | -- | W | W | W | W | -- | -- |
| Other miscellaneous uses | 5 | 27 | -- | -- | 40 | 816 | -- | -- |
| Unspecified:[9] | | | | | | | | |
| Reported | 294 | 3,340 | 268 | 2,490 | 396 | 3,610 | 3,370 | 30,300 |
| Estimated | 4,160 | 38,000 | 806 | 6,980 | 356 | 3,560 | -- | -- |
| Total | 7,150 | 62,300 | 1,510 | 13,900 | 2,600 | 24,500 | 3,470 | 30,700 |

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.
[3]Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregate.
[4]Includes screening (undesignated), stone sand (bituminous mix or seal), stone sand (concrete), and other fine aggregate.
[5]Includes crusher run or fill or waste, graded road base or subbase, roofing granules, unpaved road surfacing, and other coarse and fine aggregates.
[6]Includes limestone and poultry grit and mineral food.
[7]Includes cement, lime, and glass manufacture, and flux stone.
[8]Includes asphalt fillers or extenders, whiting or whiting substitute, and other fillers or extenders.
[9]Reported and estimated production without a breakdown by end use.

TABLE 5
WASHINGTON: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2009, BY MAJOR USE CATEGORY[1]

| Use | Quantity (thousand metric tons) | Value (thousands) | Unit value |
|---|---|---|---|
| Concrete aggregate (including concrete sand) | 6,370 | $62,100 | $9.75 |
| Plaster and gunite sands | 10 | 102 | 10.20 |
| Concrete products (blocks, bricks, pipe, decorative, etc.) | 19 | 216 | 11.37 |
| Asphaltic concrete aggregates and other bituminous mixtures | 1,060 | 9,370 | 8.84 |
| Road base and coverings[2] | 4,780 | 30,200 | 6.32 |
| Fill | 2,010 | 11,300 | 5.63 |
| Snow and ice control | 99 | 582 | 5.88 |
| Railroad ballast | 86 | 679 | 7.90 |
| Golf course | 105 | 1,030 | 9.84 |
| Other miscellaneous uses | 43 | 400 | 9.30 |
| Unspecified:[3] | | | |
| Reported | 4,120 | 33,000 | 8.01 |
| Estimated | 11,200 | 80,700 | 7.23 |
| Total or average | 29,900 | 230,000 | 7.69 |

[1]Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.
[2]Includes road and other stabilization (lime).
[3]Reported and estimated production without a breakdown by end use.

TABLE 6

WASHINGTON: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2009, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

| Use | District 1 | | District 2 | | District 3 | |
|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| Concrete aggregates and concrete products[2] | 5,520 | 55,400 | 594 | 4,640 | 291 | 2,430 |
| Asphaltic concrete aggregates and road base materials[3] | 3,480 | 25,800 | 1,980 | 10,900 | 375 | 2,870 |
| Fill | 1,790 | 10,100 | 201 | 1,170 | 20 | 101 |
| Snow and ice control | 46 | 298 | W | W | W | W |
| Railroad ballast | 73 | 641 | W | W | W | W |
| Other miscellaneous uses[4] | 122 | 1,350 | 26 | 138 | 63 | 266 |
| Unspecified:[5] | | | | | | |
| Reported | 963 | 8,090 | 1,340 | 10,400 | 1,540 | 12,000 |
| Estimated | 10,400 | 74,900 | 273 | 2,070 | 515 | 3,690 |
| Total | 22,400 | 177,000 | 4,410 | 29,400 | 2,800 | 21,400 |

| Use | Unspecified districts | |
|---|---|---|
| | Quantity | Value |
| Concrete aggregates and concrete products[2] | -- | -- |
| Asphaltic concrete aggregates and road base materials[3] | -- | -- |
| Fill | -- | -- |
| Snow and ice control | -- | -- |
| Railroad ballast | -- | -- |
| Other miscellaneous uses[4] | -- | -- |
| Unspecified:[5] | | |
| Reported | 281 | 2,480 |
| Estimated | -- | -- |
| Total | 281 | 2,480 |

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses." -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes plaster and gunite sands.

[3]Includes road and other stabilization (lime).

[4]Includes golf course.

[5]Reported and estimated production without a breakdown by end use.