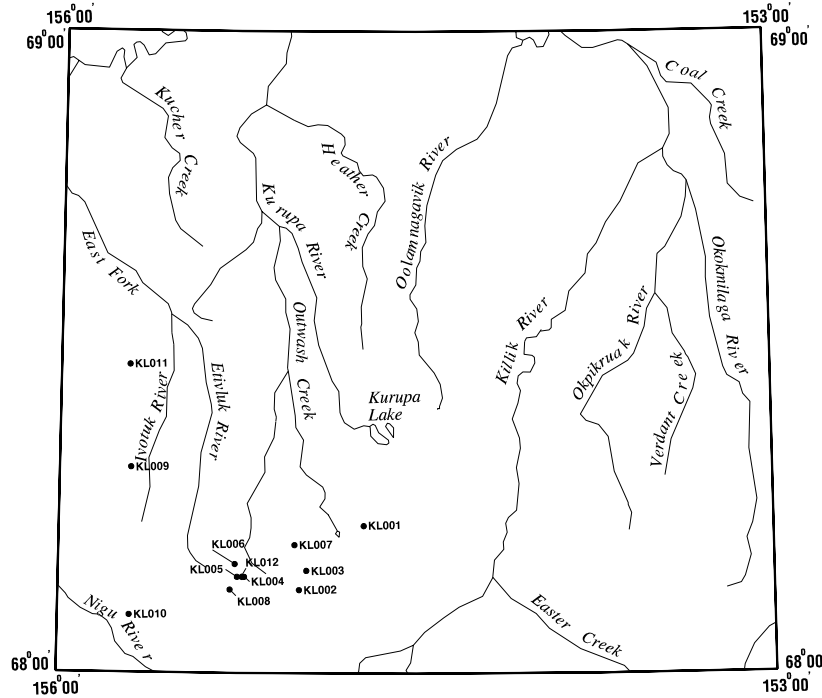


U.S. Department of the Interior - U.S. Geological Survey

Killik River quadrangle

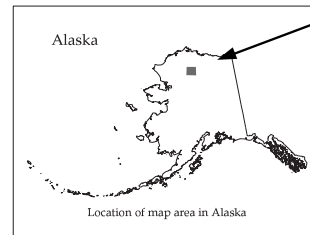
Descriptions of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for a description of the information content of each field in the records. The data presented here are maintained as part of a statewide database on mines, prospects and mineral occurrences throughout Alaska.



Distribution of mineral occurrences in the Killik River 1:250,000-scale quadrangle, north central Alaska

This and related reports are accessible through the USGS World Wide Web site <http://www-mrs-ak.wr.usgs.gov/ardf>. Comments or information regarding corrections or missing data, or requests for digital retrievals should be directed to the author(s) of this compilation:

Karen Kelley
 MS 973
 U.S. Geological Survey
 Denver Federal Center
 Lakewood, CO 80225
 Voice: (303) 236-2467
 e-mail: kdkelley@usgs.gov



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Site: Kurupa River Southwest**Type:** Occurrence**ARDF no.** KL001**Latitude:** 68.23**Quadrangle:** KL**Longitude:** 154.72**Location description and accuracy:**

Meyer and Kurtak, 1992 location KR64. Located on an unnamed northwestern tributary near the headwaters of the Kurupa River. Known to within one mile.

Commodities:**Main:** Cu**Other:****Ore minerals:** Chalcopyrite, malachite, azurite**Gangue minerals:****Geologic description:**

Outcrops of sandstone and siltstone of the Kanayut Conglomerate are cut by sulfide-bearing anastomosing quartz veins that trend north-south and are exposed for 60 meters along strike. Chalcopyrite was the only sulfide identified, and it occurs with associated malachite and azurite stain.

Alteration:**Workings/Exploration:**

Samples of quartz-bearing veins contain up to 0.56% Cu.

Age:**Deposit model:**

Sandstone-hosted Cu

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Meyer and Kurtak, 1992, USBM OFR 75-92; Kurtak and others, 1995, USBM OFR 8-95.

Primary reference: Meyer and Kurtak, 1992, USBM OFR 75-92**Reporter:** J.M. Schmidt; K.D. Kelley

Reporter affiliation: USGS

Last report date: 2/7/97

Site: Kakivilak Creek**Type:** Occurrence**ARDF no.** KL002**Latitude:** 68.13**Quadrangle:** KL**Longitude:** 154.99**Location description and accuracy:**

Meyer and Kurtak, 1992 location KR28. Located at the headwaters of a northwest tributary to Kakivilak Creek. Known to within one mile.

Commodities:**Main:** Pb**Other:** Cu, Zn**Ore minerals:** Galena, chalcopyrite**Gangue minerals:** Pyrite**Geologic description:**

Occurrence consists of slate float containing pyrite, galena, and chalcopyrite.

Alteration:**Workings/Exploration:**

One sample from float contained 15.37% Pb, 0.07% Zn and 0.64% Cu.

Age:**Deposit model:**

Pb-Zn quartz veins

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Meyer and Kurtak, 1992, Meyer and Kurtak, 1992

Primary reference:**Reporter:** J.M. Schmidt; K.D. Kelley**Reporter affiliation:** USGS**Last report date:** 2/7/97

Site: Kakivilik Creek North**Type:** Occurrence**ARDF no.** KL003**Latitude:** 68.16**Quadrangle:** KL**Longitude:** 154.96**Location description and accuracy:**

Meyer and Kurtak, 1992 location KR31. Located along a ridge near the headwaters of Kakivilak Creek. Known to within one mile.

Commodities:**Main:** Pb, Zn**Other:** Ag, Cu**Ore minerals:** Galena, sphalerite, chalcopyrite**Gangue minerals:** Quartz**Geologic description:**

Bedrock in the area is probably Devonian Hunt Fork Shale. Sulfide-bearing quartz veins crop out along the crest of a south-trending ridge. One vein measured 1.5 m in width, but extent is unknown.

Alteration:**Workings/Exploration:**

Outcrop and float samples of quartz veins and quartz-cemented breccias containing galena, chalcopyrite and sphalerite contain up to 3.61% Pb, 7.72% Zn, 0.64% Cu and 2.76 oz per ton Ag.

Age:**Deposit model:**

Pb-Zn quartz veins

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Meyer and Kurtak, 1992, USBM OFR 75-92; Kurtak and others, 1995, USBM OPR 8-95.

Primary reference: Meyer and Kurtak, 1992, USBM OFR 75-92**Reporter:** J.M. Schmidt; K.D. Kelley

Reporter affiliation: USGS

Last report date: 2/7/97

Site: Outwash Creek South-Southwest**Type:** Occurrence**ARDF no.** KL004**Latitude:** 68.15**Quadrangle:** KL**Longitude:** 155.22**Location description and accuracy:**

USBM OFR 75-92 locations KR18 and KR19. Known to within one mile.

Commodities:**Main:** Ag, Pb, Zn**Other:** Cu**Ore minerals:** Galena, sphalerite**Gangue minerals:** Pyrite, quartz**Geologic description:**

Quartz veins with galena and pyrite; quartz rubble with galena, and silicified shale float with galena and sphalerite.

Alteration:**Workings/Exploration:**

Samples of quartz veins contain up to 25.39% Pb, 9.31% Zn, 0.09% Cu and 10.27 oz per ton Ag. Silicified shale contains 1.64% Pb, 4.96% Zn, 163 ppm Cu and 1.18% Mn.

Age:**Deposit model:**

Pb-Zn quartz veins

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Meyer and Kurtak, 1992, USBM OFR 75-92

Primary reference:**Reporter:** J.M. Schmidt**Reporter affiliation:** USGS**Last report date:** 11/3/92

Site: Outwash Creek Southwest**Type:** Occurrence**ARDF no.** KL005**Latitude:** 68.15**Quadrangle:** KL**Longitude:** 155.25**Location description and accuracy:**

USBM OFR 75-92 location KR17. Located near ridgetop on southwest side of Outwash Creek, near headwaters. Known to within one mile.

Commodities:**Main:** Pb, Zn**Other:** Mn, Ni**Ore minerals:** Galena, sphalerite**Gangue minerals:****Geologic description:**

Host rock is the Hunt Fork Shale. The occurrence consists of silicified sandstone and conglomerate rubblecrop with galena and sphalerite. Width and extent of the mineralized zone is unknown.

Alteration:**Workings/Exploration:**

Samples contain up to 0.62% Pb, 2.79% Zn, 4370 ppm Mn, and 0.11% Ni.

Age:**Deposit model:**

Disseminated Pb-Zn

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Meyer and Kurtak, 1992, USBM OFR 75-92; Kurtak and others, 1995, USBM OPR 8-95.

Primary reference: Meyer and Kurtak, 1992, USBM OFR 75-92**Reporter:** J.M Schmidt; K.D. Kelley**Reporter affiliation:** USGS**Last report date:** 2/7/97

Site: Outwash Creek West**Type:** Occurrence**ARDF no.** KL006**Latitude:** 68.17**Quadrangle:** KL**Longitude:** 155.26**Location description and accuracy:**

Meyer and Kurtak, 1992 locations KR21 and KR22. Near divide between headwaters of Etivluk River and Outwash Creek. Known to within one mile.

Commodities:**Main:** Ag, Pb, Zn**Other:** Cu**Ore minerals:** Sphalerite, galena**Gangue minerals:** Pyrite, quartz**Geologic description:**

Rocks in the area consist of quartzite and sandstone. Occurrence consists of outcrop and float of quartz veins with sphalerite, galena and pyrite. The width and extent of the quartz veining is unknown.

Alteration:**Workings/Exploration:**

A sample of outcropping quartz vein contained 7.1% Zn, 1.95% Pb, and 0.2% Cu. Samples of quartz float contained up to 24.04% Zn, 8.93% Pb, 0.23% Cu and 4.99 oz per ton Ag.

Age:**Deposit model:**

Pb-Zn quartz vein

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Meyer and Kurtak, 1992, USBM OFR 75-92; Kurtak and others, 1995, USBM OFR 8-95

Primary reference: Meyer and Kurtak, 1992, USBM OFR 75-92**Reporter:** J.M. Schmidt; K.D. Kelley

Reporter affiliation: USGS

Last report date: 2/7/97

Site: Kady**Type:** Occurrence**ARDF no.** KL007**Latitude:** 68.2**Quadrangle:** KL**Longitude:** 155.01**Location description and accuracy:**

Located along east-west-trending upper tributary of Outwash Creek. Known to within one mile.

Commodities:**Main:** Ag, Pb, Zn**Other:** Au, Cu**Ore minerals:** Spalerite, galena, chalcopyrite, pyrite**Gangue minerals:** quartz, calcite**Geologic description:**

Bedrock in the area consists of sandstone and conglomerate of the Kanayut Conglomerate. Veins up to 0.6 m in width occur in outcrops as well as widespread mineralized float. Mineralized rocks consist of massive banded sulfides in quartz veins, sulfide-bearing breccias, and sulfide minerals disseminated in sandstone and conglomerate units adjacent to veins. Mineralized zone covers an area of at least 1.3 km².

Alteration:**Workings/Exploration:**

The most highly mineralized rocks contain up to 21% Zn, 2% Cu, 150 ppm Ag, 0.07% Pb, and 0.20 ppm Au.

Age:

probably Late Devonian-Mississippian

Deposit model:

Pb-Zn quartz veins and vein-breccias

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Duttweiler, 1987, USGS Circular 998, p. 27-30; Kelley, and Kelley, 1992; Kelley, and Mull, 1995, MF-2225-A; Kelley and others, 1995, MF-2225-C.

Primary reference: Kelley and Mull, 1995, MF-2225-A**Reporter:** J.M. Schmidt; K.D. Kelley

Reporter affiliation: USGS

Last report date: 2/7/97

Site: Vidlee**Type:** Occurrence**ARDF no.** KL008**Latitude:** 68.13**Quadrangle:** KL**Longitude:** 155.28**Location description and accuracy:**

Tributary of Itilyiargiok Creek draining into Itilyiargiok Creek from the north. Known to within one mile.

Commodities:**Main:** Ag, Pb, Zn**Other:** Au, Cu**Ore minerals:** Galena, sphalerite, chalcopyrite, pyrite**Gangue minerals:****Geologic description:**

Occurrence consists of quartz veins and breccias hosted in shale and shaly siltstone of the Hunt Fork Shale. Outcrop of mineralized rocks is exposed along a stream drainage over a distance of about 25 m. It cannot be traced from this single exposure due to tundra cover. Mineralized rocks are primarily quartz veins and breccias containing galena and sphalerite, although chalcopyrite and pyrite are also present.

Alteration:**Workings/Exploration:**

Mineralized rocks contain up to 25% Zn, 1% Cu, 1.5-2% Pb, 300 ppm Ag, 1,000 ppm As, and 0.75 Au.

Age:

Probably Late Devonian-Mississippian

Deposit model:

Pb-Zn quartz veins and vein-breccias

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Duttweiler, 1987, USGS Circular 998, p. 27-30; Kelley and Kelley, 1992; Kelley and Mull, 1995, MF-2225-A; Kelley and others, 1995, MF-2225-C.

Primary reference: Kelley and Mull, 1995, MF-2225-A**Reporter:** J.M. Schmidt; K.D. Kelley

Reporter affiliation: USGS

Last report date: 2/6/97

Site: Otuk Creek**Type:** Occurrence**ARDF no.** KL009**Latitude:** 68.32**Quadrangle:** KL**Longitude:** 155.7**Location description and accuracy:**

Located on east side of upper tributary of Otuk Creek. Known to within one mile.

Commodities:**Main:** Pb, Zn**Other:****Ore minerals:** Sphalerite, pyrite, and galena**Gangue minerals:** iron carbonate, calcite**Geologic description:**

Outcrop of Kayak Shale contains Fe-rich sulfide-bearing concretions that range from 7.6 cm to 20 cm in diameter. The cores of some concretions contain sphalerite, pyrite, and minor galena.

Alteration:**Workings/Exploration:**

Sulfide-bearing concretions have up to 2.3 ppm Ag, more than 5,000 ppm Ba, and 1,500 ppm Zn.

Age:

Lower Mississippian

Deposit model:

Sediment-hosted Pb-Zn

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Kelley and Mull, 1995, MF-2225-A; Kelley and others, 1995, MF-2225-C.

Primary reference: Kelley and Mull, 1995, MF-2225-A**Reporter:** K.D. Kelley**Reporter affiliation:** USGS**Last report date:** 2/7/97

Site: Ivotuk Hills**Type:** Occurrence**ARDF no.** KL010**Latitude:** 68.09**Quadrangle:** KL**Longitude:** 155.7**Location description and accuracy:**

Located on southwest side of the Ivotuk Hills in Otuk Creek. Known to within one mile.

Commodities:**Main:** Zn**Other:****Ore minerals:** Sphalerite, pyrite**Gangue minerals:****Geologic description:**

Pyrite nodules up to 10 cm in diameter with cores of sphalerite occur as float in stream. Outcrops south of the Ivotuk Hills near this site consist of shale and chert of Permian to Jurassic age.

Alteration:**Workings/Exploration:**

Sphalerite-bearing concretions contain up to 200 ppm As, more than 20 % Fe, and 500 ppm Zn.

Age:**Deposit model:**

Sediment-hosted Pb-Zn

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Kelley and Mull, 1995, MF-2225-A; Kelley and Mull, 1995, MF-2225-B.

Primary reference: Kelley and Mull, 1995, MF-2225-A.**Reporter:** K.D. Kelley**Reporter affiliation:** USGS**Last report date:** 2/7/97

Site: Ivotuk Hills**Type:** Occurrence**ARDF no.** KL011**Latitude:** 68.48**Quadrangle:** KL**Longitude:** 155.71**Location description and accuracy:**

Location is at west end of Ivotuk Hills, 100 m from Otuk Creek. Known to within one mile.

Commodities:**Main:** P, U, V**Other:****Ore minerals:** apatite**Gangue minerals:****Geologic description:**

A 1.2 m-thick sequence of interbedded phosphatic pelletal limestone and shale of the Otuk Formation is exposed on the north side of the Ivotuk Hills. The limestone beds are lensey, average approximately 78 mm thick, and comprise up to 50% of the 1.2 m-thick section. This occurrence is unique because rocks with such high phosphate content are not common in the Otuk Formation. The Lisburne Ridge phosphate occurrence, 47 km to the northwest may be an extension of the Ivotuk phosphorites.

Alteration:**Workings/Exploration:**

Geochemical analysis showed the phosphatic limestone contained 30.7% P₂O₅, 0.11% V, and 150 ppm U.

Age:**Deposit model:**

Bedded phosphorite

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):

34c

Production: No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Kurtak and others, 1995, USBM OFR 8-95

Primary reference:**Reporter:** K.D. Kelley

Reporter affiliation: USGS

Last report date: 2/7/97

Site: Outwash Creek Southeast**Type:** Occurrence**ARDF no.** KL012**Latitude:** 68.15**Quadrangle:** KL**Longitude:** 155.23**Location description and accuracy:**

USBM OFR 75-92 location KR47. Location is near the head of a southwest tributary to upper Outwash Creek. Known to within one mile.

Commodities:**Main:** Pb, Zn**Other:** Ag, Cu**Ore minerals:** Galena, sphalerite, pyrite**Gangue minerals:** quartz**Geologic description:**

Occurrence consists of quartz veins and breccias cutting shale and siltstone in rubblecrop and outcrop. Sulfides consist of galena, sphalerite, and pyrite. The width and extent of the veins and breccias are unknown.

Alteration:**Workings/Exploration:**

A sample of quartz-cemented shale breccia from outcrop contains 25.4% Pb and 352 grams/tonne Ag. Another sample of quartz float contained 0.33% Pb, 7.3% Zn, and 173 ppm Cu.

Age:**Deposit model:**

Pb-Zn quartz veins

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Meyer and Kurtak, 1992, USBM OFR 75-92; Kurtak and others, 1995, USBM OFR 8-95

Primary reference: Meyer and Kurtak, 1992, USBM OFR 75-92**Reporter:** J.M. Schmidt.

Reporter affiliation: USGS

Last report date: 11/3/92

References Cited

- Bliss, J.D., ed., 1992, Developments in deposit mineral deposit modeling: U.S. Geological Survey Bulletin 2004, 168 p.
- Cox, D.P., and Singer, D.A., eds., 1986, Mineral deposit models: U.S. Geological Survey Bulletin 1992, 379 p.
- Duttweiler, K.A., 1987, Use of factor analysis in locating base metal mineralization in the Killik River quadrangle, Alaska in Hamilton, T.D., and Galloway, J.P., eds., 1987, Geologic studies in Alaska by the U.S. Geological Survey during 1986: U.S. Geological Survey Circular 998, p. 27-30.
- Kelley, K.D., and Kelley, D.L., 1992, Reconnaissance exploration geochemistry in the central Brooks Range, northern Alaska; implications for exploration of sediment-hosted zinc-lead-silver deposits: *Journal of Geochemical Exploration*, v. 42, no. 2-3, p. 273-300.
- Kelley, K.D., and Mull, C.G., 1995, Maps showing areas of potential for mineral resources in the Killik River quadrangle, Brooks Range, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-2225-A, scale 1:250,000.
- Kelley, K.D., and Mull, C.G., 1995, Maps showing the distribution of selected elements in minus-100-mesh and minus-80-mesh sediment samples from the Killik River quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies MF-2225-B, scale 1:250,000.
- Kelley, K.D., Mull, C. G., and Barton, H. N., 1995, Maps showing the distribution of selected elements in minus 30-mesh stream-sediment samples from the southern part of the Killik River quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-2225-C, scale 1:250,000.
- Kurtak, J.M., Hicks, R.W., Werdon, M.B., Meyer, M.P., and Mull, C.G., 1995, Mineral investigations in the Colville mining district and southern National Petroleum Reserve in Alaska: U.S. Bureau of Mines Open-File Report 8-95, 217 p.
- Meyer, M.P., and Kurtak, J.M., 1992, Results of the 1991 U.S. Bureau of Mines Colville Mining District study: U.S. Bureau of Mines Open-File Report 75-92, 101 p.
- U.S. Geological Survey, 1996, Descriptions of the fields used to report brief descriptions of mines, prospects, and mineral occurrences in Alaska and Hawaii: U.S. Geological Survey Open-File Report 96-79, 5 p.