



KVITKIVSKA BLOCK WITH “KVITKA” GOLD ORES PROSPECTIVE FIELD (East & Central ore occurrences)

Mineral: gold ore.

Type and period of subsoil use: 20-years licenses for exploration, pilot development and production.

Location: Podilskyi district of Odesa region, between the villages of Krychunove, Polyanetske and Hlybochok. A hard-surface road passes through the northern part of the block. The distance from the block to the Kyiv - Odessa (M 05) highway is 15 km. Located approximately 20 km northwest of the site, Zavalivsky Graphite Plant has access tracks from the Khashchuvate station of the Odesa Railway.

Plot area: 670,73 ha.

Geological summary. Within the block, a mineralized zone has been identified and traced for approximately 6 km in the submeridional direction. The Central ore-bearing zone tends to the submeridional Central fault and is traced from north to south for more than 5 km. It includes two ore-bearing zones, namely Central and Eastern ones. The zone thickness is 300-500 m, decreasing to 75-100 m in the north. The zone dip is eastern at angles of 65-85°. It is represented by a layering of biotite and amphibole-biotite gneisses, largely migmatized ones to migmatites, with low-power bodies of leucocratic and pegmatoid granites and bodies of biotite-quartz-oligoclase metasomatites with a thickness of 2-6 m. The eastern ore-bearing zone tends to the submeridional Eastern fault and is traced from north to south for more than 5 km. The zone thickness is 450-500 m, decreasing to 100-150 m in the north. The zone dip is eastern at angles of 60 - 85 °. It is represented by a layering of largely migmatized gneisses of amphibole-biotite, biotite, amphibolites, biotite migmatites with low-power (up to 3-5 m) layers of leucocratic and pegmatoid granites and bodies of biotite-quartz metasomat oligoclase with a thickness of 1 to 30 m. Gold ore formation is localized mainly in the bodies of biotite-quartz-oligoclase (quartz-oligoclase-biotite, quartz-biotite-oligoclase) of metasomatites and places of manifestation of brittle deformations in them. Biotite-quartz-oligoclase metasomatites are formed by amphibole-containing species of rocks (gneisses and crystalline schist) in the process of siliceous-alkaline metasomatism during amphibole substitution by biotite and intensive quartzite formation in the central areas of quartz veins, in which 5-3 to 10-12%). The gold content in ore-bearing formations varies from the first g/t to 14.7 g/t. Ore formation belongs to the gold-quartz ubogosulfide type. Sulfides are presented by pyrite, pyrrhotite, chalcopryrite, pentlandite, marcasite and sphalerite. Pyrrhotite is a typical mineral of ore-bearing zones. Its amount varies from 0.9% to 55% in relation to the total content of ore minerals. There are two pyrrhotite modifications - hexagonal and monoclinic. There are several ore mineral associations, formation of which took place by successive replacement of minerals of earlier associations with later ones. From the earliest to the latest ones the following mineral associations are established: spinel-magnetite, ilmenite-hexapyrotin, chalcopryrite-I-pyrite-I, pyrite-II-chalcopryrite-II-clinopyrrhotite, marcasite-pyrite-III with hematite. A characteristic feature of ore mineralization is sphalerite constant presence, the amount of which varies from 0.9% to 30%, and the presence of ganite, its content is up to 5%. Molybdenite is found in essentially quartz areas of metasomatites, its content in some cases reaches up to 30% of ore minerals. Native gold, silver, bismuth and tellurides are associated with pyrite-II-chalcopryrite-II-clinopyrrhotite paragenesis. Native gold (up to 0.5 mm grain size) is most often observed in areas of quartzization with high sulfide content, where it develops through cracks in the quartz in association with pyrrhotite, pyrite, chalcopryrite. Gold is represented by large pieces (more than 0.05 mm) - 31% and small ones (0.05 mm - 0.01 mm) - about 69% fractions. According to the result comparison of amalgamation and assay analysis, free gold in the technological sample is more than 90%. Mining and geological conditions of the site determine the underground method of ore mining. According to previous hydrogeological studies, the flow rates of wells in the aquifer of the fractured zone of crystalline rocks vary from 0.005 to 0.54 l / s, specific flow rates - from 0.0001 to 0.2 l/s. The average values of water conductivity coefficients are 6.52 m2/day at an average specific flow rate of 0.0501 l/s.

Available geological information. “Kvitka” gold ores prospective field was discovered during gold prospection in the Savranske block from 1991 to 1998. During 1997-2005, greenfield exploration was performed within the Kvitkivska block determination of gold contingent resources of category P2. 25 inclined exploration and evaluation wells were drilled with a total volume of 8,859 m and 234 m. Geological-industrial type - "hydrothermal-metasomatic deposits in Proterozoic granite-gneiss complexes".

Resources/reserves assessment. The quantity of gold contingent resources of category P2 of Eastern and Central ore-bearing zones of the Kvitkivska block with “Kvitka” gold ores prospective field is 40,992 kg. Considering approximate spatial location within the Savranske ore field, the Kvitkivska block with “Kvitka” gold ores prospective field and Mayska gold ore block can be considered as a single investment project.

[Geological information package.](#)

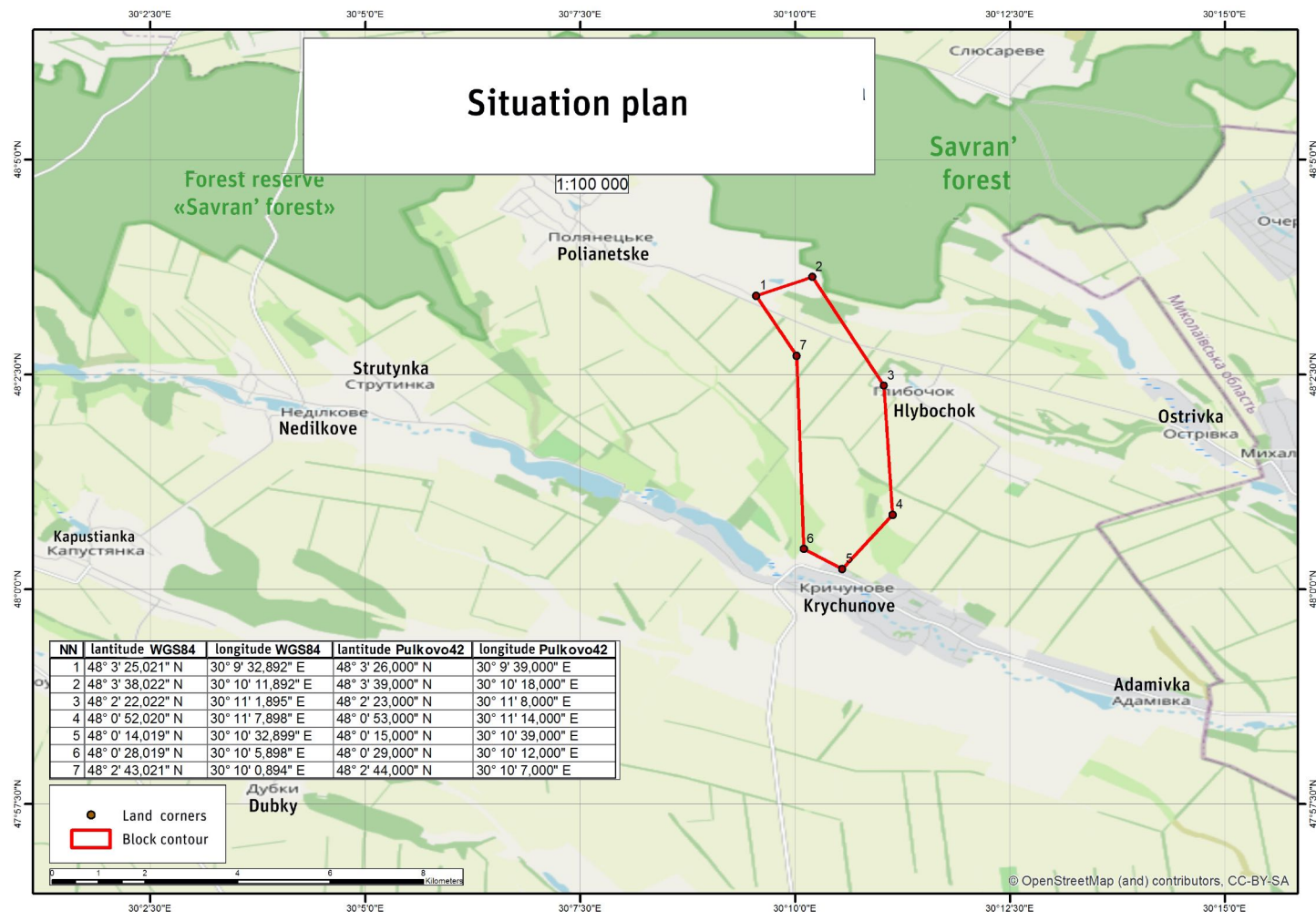
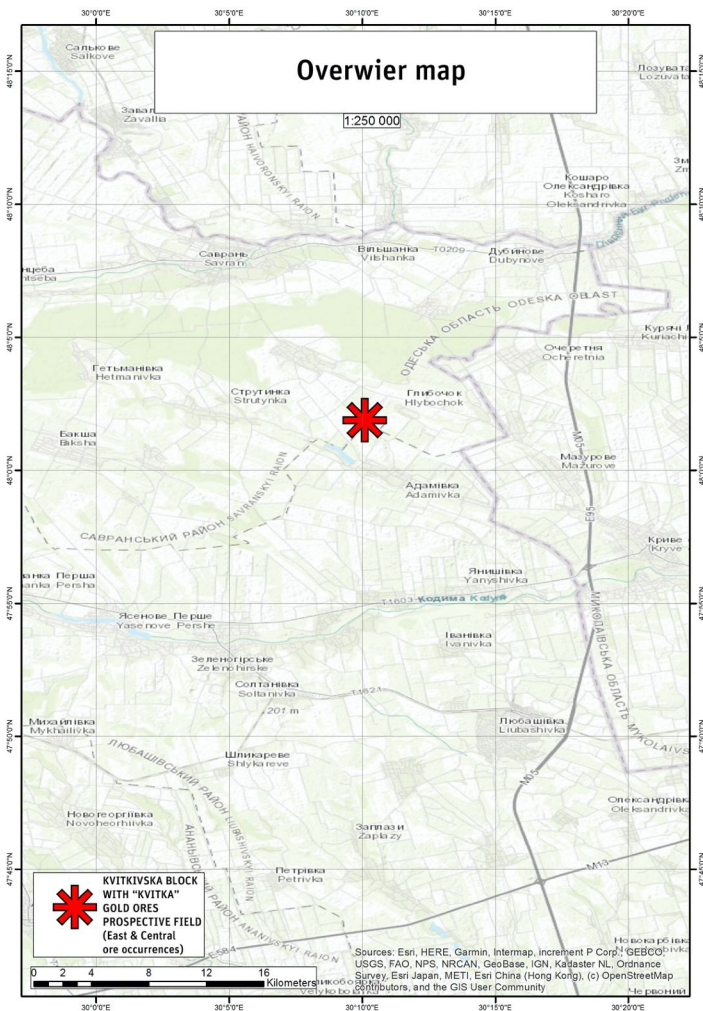
[Available geological reports in the geological funds of Kirovgeologiya SE](#)

http://geoinf.kiev.ua/wp/geologichni-zviti.php?rep=fnd_shifr&schifr=60399

Minimum work program. Provided by Mining terms Model agreements and defined in "Work Program" annex.

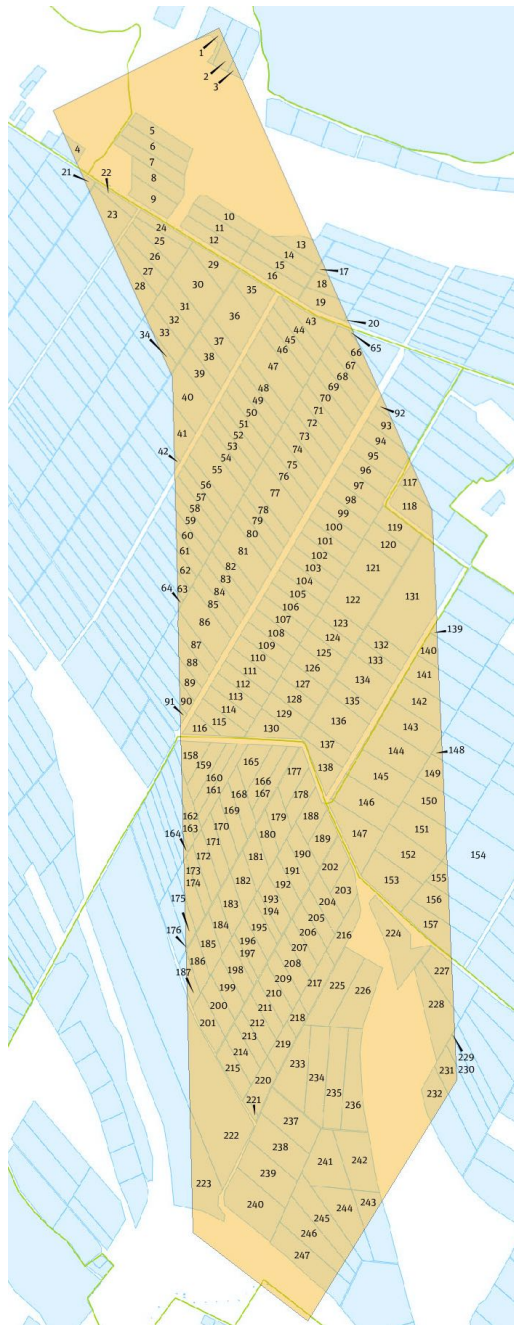
Model agreements are listed at the link: <https://www.geo.gov.ua/primirni-ugodi-pro-umovi-koristuvannya-nadrami/>

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List of cadastral numbers of land plots, within the contour of the deposit



1	5124383200:01:002:0169	77	5124383200:01:003:0293	152	5124383200:01:006:0149	229	5123382600:01:001:0152
2	5124383200:01:002:0171	78	5124383200:01:003:0294	153	5124383200:01:006:0151	230	5123382600:01:001:0153
3	5124383200:01:002:0170	79	5124383200:01:003:0295	154	5124383200:01:006:0004	231	5123382600:01:001:0213
4	5124383200:02:003:0033	80	5124383200:01:003:0296	155	5124383200:01:006:0147	232	5123382600:01:001:0176
5	5124383200:01:002:0001	81	5124383200:01:003:0297	156	5124383200:01:006:0146	233	5123382600:01:001:0027
6	5124383200:01:002:0082	82	5124383200:01:003:0298	157	5124383200:01:006:0178	234	5123382600:01:001:0025
7	5124383200:01:002:0083	83	5124383200:01:003:0299	158	5123382600:01:001:0235	235	5123382600:01:001:0105
8	5124383200:01:002:0103	84	5124383200:01:003:0456	159	5123382600:01:001:0187	236	5123382600:01:001:0031
9	5124383200:01:002:0104	85	5124383200:01:003:0456	160	5123382600:01:001:0238	237	5123382600:01:001:0026
10	5124383200:01:002:0002	86	5124383200:01:003:0301	161	5123382600:01:001:0110	238	5123382600:01:001:0023
11	5124383200:01:002:0003	87	5124383200:01:003:0302	162	5123382600:01:001:0111	239	5123382600:01:001:0023
12	5124383200:01:002:0004	88	5124383200:01:003:0303	163	5123382600:01:001:0191	240	5123382600:01:001:0271
13	5124383200:01:002:0008	89	5124383200:01:003:0304	164	5123382600:01:001:0190	241	5123382600:01:001:0030
14	5124383200:01:002:0007	90	5124383200:01:003:0305	165	5123382600:01:001:0293	242	5123382600:01:001:0032
15	5124383200:01:002:0006	91	5124383200:01:003:0306	166	5123382600:01:001:0189	243	5123382600:01:001:0033
16	5124383200:01:002:0005	92	5124383200:01:003:0332	167	5123382600:01:001:0206	244	5123382600:01:001:0024
17	5124383200:01:002:0011	93	5124383200:01:003:0331	168	5123382600:01:001:0234	245	5123382600:01:001:0018
18	5124383200:01:002:0012	94	5124383200:01:003:0330	169	5123382600:01:001:0294	246	5123382600:01:001:0022
19	5124383200:01:002:0013	95	5124383200:01:003:0329	170	5123382600:01:001:0264	247	5123382600:01:001:0021
20	5124383200:01:002:0014	96	5124383200:01:003:0328	171	5123382600:01:001:0217		
21	5124383200:01:003:0016	97	5124383200:01:003:0327	172	5123382600:01:001:0133		
22	5124383200:01:003:0045	98	5124383200:01:003:0326	173	5123382600:01:001:0135		
23	5124383200:01:003:0044	99	5124383200:01:003:0324	174	5123382600:01:001:0134		
24	5124383200:01:003:0046	100	5124383200:01:003:0325	175	5123382600:01:001:0275		
25	5124383200:01:003:0153	101	5124383200:01:003:0308	176	5123382600:01:001:0276		
26	5124383200:01:003:0154	102	5124383200:01:003:0309	177	5123382600:01:001:0277		
27	5124383200:01:003:0155	103	5124383200:01:003:0310	178	5123382600:01:001:0244		
28	5124383200:01:003:0156	104	5124383200:01:003:0311	179	5123382600:01:001:0194		
29	5124383200:01:003:0191	105	5124383200:01:003:0312	180	5123382600:01:001:0208		
30	5124383200:01:003:0190	106	5124383200:01:003:0313	181	5123382600:01:001:0193		
31	5124383200:01:003:0189	107	5124383200:01:003:0314	182	5123382600:01:001:0207		
32	5124383200:01:003:0188	108	5124383200:01:003:0315	183	5123382600:01:001:0218		
33	5124383200:01:003:0187	109	5124383200:01:003:0316	184	5123382600:01:001:0250		
34	5124383200:01:003:0186	110	5124383200:01:003:0317	185	5123382600:01:001:0252		
35	5124383200:01:003:0192	111	5124383200:01:003:0318	186	5123382600:01:001:0192		
36	5124383200:01:003:0193	112	5124383200:01:003:0319	187	5123382600:01:001:0288		
37	5124383200:01:003:0194	113	5124383200:01:003:0320	188	5123382600:01:001:0232		
38	5124383200:01:003:0195	114	5124383200:01:003:0321	189	5123382600:01:001:0233		
39	5124383200:01:003:0196	115	5124383200:01:003:0322	190	5123382600:01:001:0188		
40	5124383200:01:003:0197	116	5124383200:01:003:0323	191	5123382600:01:001:0216		
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45	5124383200:01:003:0279	121	5124383200:01:003:0346	196	5123382600:01:001:0246		
46	5124383200:01:003:0278	122	5124383200:01:003:0345	197	5123382600:01:001:0286		
47	5124383200:01:003:0277	123	5124383200:01:003:0344	198	5123382600:01:001:0287		
48	5124383200:01:003:0276	124	5124383200:01:003:0343	199	5123382600:01:001:0200		
49	5124383200:01:003:0275	125	5124383200:01:003:0342	200	5123382600:01:001:0186		
50	5124383200:01:003:0274	126	5124383200:01:003:0341	201	5123382600:01:001:0230		
51	5124383200:01:003:0273	127	5124383200:01:003:0340	202	5123382600:01:001:0145		
52	5124383200:01:003:0272	128	5124383200:01:003:0339	203	5123382600:01:001:0143		
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54	5124383200:01:003:0270	130	5124383200:01:003:0337	205	5123382600:01:001:0146		
55	5124383200:01:003:0269	131	5124383200:01:003:0349	206	5123382600:01:001:0149		
56	5124383200:01:003:0268	132	5124383200:01:003:0350	207	5123382600:01:001:0222		
57	5124383200:01:003:0267	133	5124383200:01:003:0351	208	5123382600:01:001:0211		
58	5124383200:01:003:0266	134	5124383200:01:003:0352	209	5123382600:01:001:0210		
59	5124383200:01:003:0265	135	5124383200:01:003:0353	210	5123382600:01:001:0226		
60	5124383200:01:003:0264	136	5124383200:01:003:0354	211	5123382600:01:001:0292		
61	5124383200:01:003:0263	137	5124383200:01:003:0355	212	5123382600:01:001:0205		
62	5124383200:01:003:0262	138	5124383200:01:003:0356	213	5123382600:01:001:0265		
63	5124383200:01:003:0261	139	5124383200:01:006:0213	214	5123382600:01:001:0228		
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70	5124383200:01:003:0458	146	5124383200:01:006:0150	221	5123382600:01:001:0289		
71	5124383200:01:003:0287	147	5124383200:01:006:0148	222	5123382600:01:001:0280		
72	5124383200:01:003:0288	148	5124383200:01:006:0008	223	5123382600:01:001:0290		
73	5124383200:01:003:0289	149	5124383200:01:006:0007	224	5123382600:01:001:0081		
74	5124383200:01:003:0290	150	5124383200:01:006:0006	225	5123382600:01:001:0029		
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76	5124383200:01:003:0292			227	5123382600:01:001:0202		
				228	5123382600:01:001:0178		

Information on land plots,
in particular by cadastral number,
can be obtained on the
Public Cadastral Map of Ukraine:
<https://cutt.ly/Fx0CuBg>

