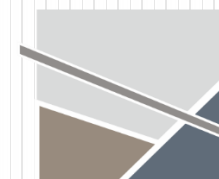


Construction of a plant for the production of alumina with a capacity of 1 million tons per year in the Auliekol district of the Kostanay region on the raw material base of the Kuktalskoye bauxite deposit

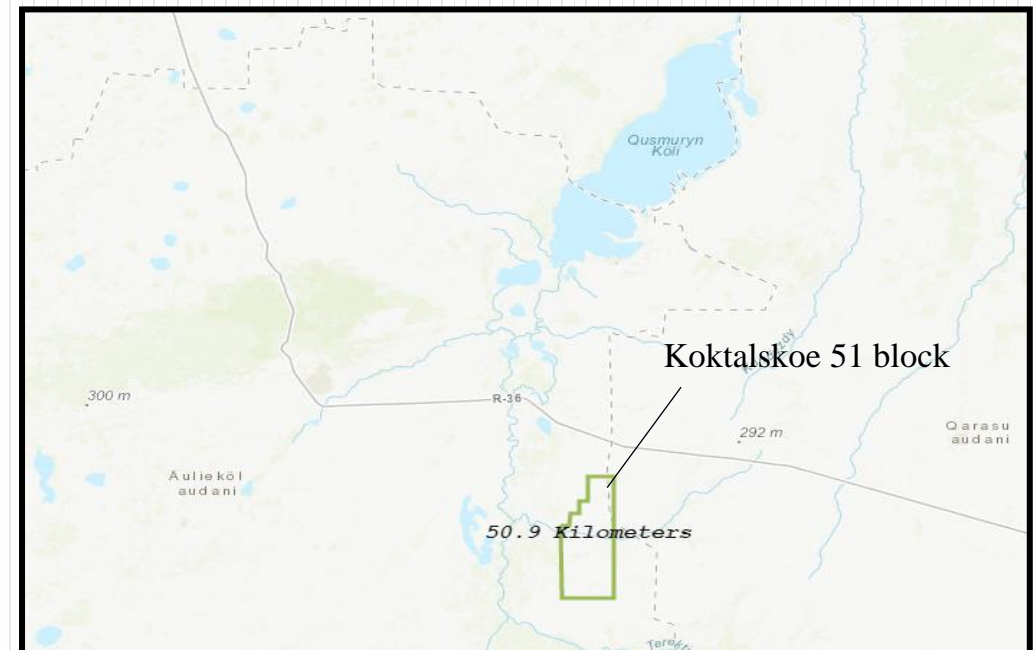


**TOO “Қағанат өнімдері”**

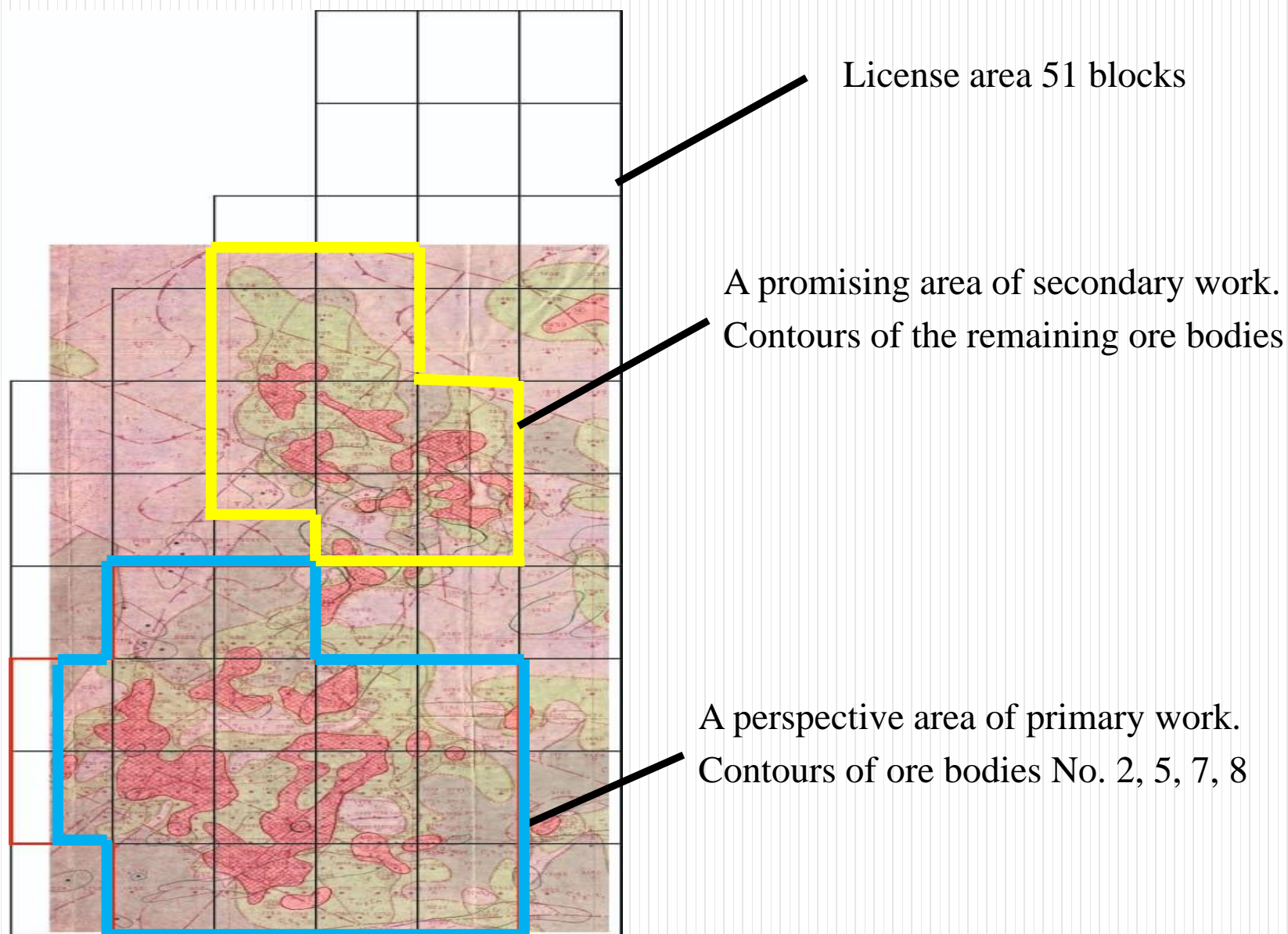


- The Koktalskoye field is located in the Auliekol district of the Kostanay region, 40 km south of the Kushmurun station;
- The nearest large settlements are the Kushmurun railway station and the regional centers of Karasu and Auliyekol;
- In the economy of the region, agriculture is of predominant importance. There are no large industrial enterprises.

- The international highway M-36 runs 5 km north of the proposed construction site and 10 km from the bauxite deposit;
- The main railway runs 15 km to the north. The railway connects the area under consideration with the industrial centers of the Urals and Kazakhstan;
- A 220 kV high-voltage power line runs 15 km to the north, with the ability to connect to power the planned plant and field.



# Geological map of the Kaktalskoe deposit



## Field characteristics

- The calculated bauxite reserves in the C2 category and the inferred resources in the P1 and P2 categories are taken in the following quantities: C2 - 140 million tons, P1 - 210 million tons, and P2 - 100 million tons. the total metallogenic potential of the Koktal group area is 450 million tons;;
- Currently, 48 bauxite deposits are known, mainly of laterite-sedimentary origin. The main bauxite reserves of the deposit are concentrated in ore bodies 2, 5, 21, and 8;
- The bauxite power in the wells ranges from one meter to 69.1 m, including rocky bauxite up to 30-40 m (ore bodies 2 and 5);
- The reserves of bauxite registered on the state balance sheet under category C2 are 44,888,000 tons.
- According to the subsoil use license, the area of exploration is 51 blocks (102 km<sup>2</sup>), on which there are 21 ore bodies with C2 category reserves. The most promising is the area consisting of 16 blocks (32 km<sup>2</sup>), where the main reserves of bauxite are located, calculated according to category C2.

# Qualitative characteristics of bauxite

- The study of the quality and technological properties of bauxites of the Koktalskoye deposit was carried out with the participation of specialists from VAMI (St. Petersburg) and the Complex experimental - methodical batch (КОМП) ПГО «Севказгеология».
- The result of the work carried out is to establish the proximity of the quality of bauxites of the Koktal and Naurzum deposits, where the main alumina mineral is gibbsite (30-60%). Other alumina-bearing bauxite minerals are represented by corundum, X-ray amorphous anhydrous alumina, boehmite, and the diaspora. Silica minerals are represented by kaolinite, dickite, and quartz. The content of kaolinite + dickite ranges from the first percent to 15-20%. Bauxites are characterized by high contents of oxide iron: hematite + goethite - 20-30%, magnetite - 1-3%. High content of titanium dioxide (4-4.5%) and phosphorus pentoxide (0.3-0.6%). Titanium-bearing minerals are represented by anatase and rutile; relict ilmenite grains are often present. The average  $\text{Al}_2\text{O}_3$  content is 40.7.
- The content of carbonates in bauxite ranges from fractions to 8-10% in sterilized varieties. Sulfur and Corg content usually amounts to 0.1-0.2%, gallium 40-60 g / t, vanadium 700-1000 g / t, chromium 400-700 g / t and more.

## Table of ore bodies

| № | Deposit | Ore bodies | Bauxite roof depth, m |       |         | Bauxite thickness by ore bodies, m |      |         | Bauxite reserves, category C2, mill. t. | Overburden volum, mill.m <sup>3</sup> | Strippig ratio, m <sup>3</sup> /t | Average content of main components, % |                                |                                |                  |                 | $\frac{Al_2O_3}{SiO_2}$ |
|---|---------|------------|-----------------------|-------|---------|------------------------------------|------|---------|---|---------------------------------------|-----------------------------------|---------------------------------------|--------------------------------|--------------------------------|------------------|-----------------|-------------------------|
|   |         |            | from                  | to    | average | from                               | to   | average |   |                                       |                                   | SiO <sub>2</sub>                      | Al <sub>2</sub> O <sub>3</sub> | Fe <sub>2</sub> O <sub>3</sub> | TiO <sub>2</sub> | CO <sub>2</sub> |                         |
| 1 | 2       | 3          | 4                     | 5     | 6       | 7                                  | 8    | 9       | 10                                      | 11                                    | 12                                | 13                                    | 14                             | 15                             | 16               | 17              | 18                      |
| 1 | Koktal  | 2          | 151,6                 | 178,5 | 165,6   | 0,6                                | 49,1 | 8,4     | 22,859                                  | 365,7                                 | 16                                | 7,98                                  | 38,22                          | 25,60                          | 4,34             | 1,76            | 4,79                    |
|   |         | 5          | 133,7                 | 168,9 | 152,3   | 0,8                                | 43,9 | 8,3     | 22,034                                  | 308,47                                | 14                                | 4,52                                  | 40,65                          | 26,93                          | 4,29             | 1,57            | 9,0                     |



# The advantage of Bayer Hydro Garnet technology

1. Reduced capital costs for plant construction by 25%;
2. Saving reagent consumption (soda ash by 90%);
3. Reducing the cost of conventional fuel by 35%;
4. Significant reduction (2-3 times) of harmful environmental emissions;
5. Possibility of producing, along with metallurgical alumina, rare metals - gallium and vanadium, environmentally friendly hydro-garnet sludge suitable for direct use in construction, as well as for cost-effective processing to obtain cast iron, cement, and titanium-containing slag.
  - The technology provides for the complete utilization of ash from a plant TPP to obtain alumina and silicate products.
  - It is proposed to produce alumina according to a modular scheme (500 thousand tons of alumina per year), which ensures an efficient launch of the plant, the possibility of a phased increase in capacity and adjustments in the volume of output.
  - With the full capacity of the plant for the production of basic products, 1 million tons of metallurgical alumina, there is a possibility of creating and producing, directly at the plant, additional products from the so-called associated and main production wastes. So, the annual output of related products can be :
    - - gallium metal– 16,0 tons;
    - - vanadium pentoxide– 413 tons;
    - - hydro-garnet sludge– 1,57 million tons, from which it turns out :
      - - cast iron – 378,0 thousand tons;
      - - cement 1 000,0 thousand tons;
      - - other (20,0 % titanium oxide) in the amount of 200.0 thousand tons.

# Investment project support

- In accordance with the Decree of the Akim of Kostanay region No. 91 dated March 3, 2020, "Kaganat Onimderi" LLP is a subject of industrial and innovative activity and is entitled to the following state support :
  - 1. Tax preferences :
    - 1) exemption from corporate income tax for 10 years;
    - 2) exemption from land tax for 10 years;
    - 3) exemption from property tax for 8 years.
  - 2. Exemption from payment of customs duties for 5 years.
  - 3. Investment subsidy for 3 years. Up to 30 percent of the cost of construction and installation work and the cost of purchasing equipment are reimbursed on a gratuitous and non-refundable basis.
  - 4. State in-kind grants. In-kind grants are provided in the form of land plots, structures, equipment, technology, measuring and control devices, vehicles. The maximum size of a state in-kind grant is up to 30 percent of the volume of investments in fixed assets.
  - 5. Construction of engineering and communication infrastructure.
  - 6. Provision of warranty obligations and loan guarantees.
  - 7. Lending through financial institutions.