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**ДИНАМИКА ИЗМЕНЕНИЯ ЛАНДШАФТОВ НА ТРЕХОЗЕРНОМ
ЛИЦЕНЗИННОМ УЧАСТКЕ**

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**LANDSCAPING AND ENVIRONMENTAL SUPPORT FOR THE
DEVELOPMENT OF THE TREKHOZERNOYE OIL FIELD**

Аннотация. Добыча нефти в Западной Сибири связана с интенсивным антропогенным воздействием на окружающую среду. В статье приведены данные об оценке комплексности воздействия на ландшафты Трехозерного лицензионного участка.

Ключевые слова: ландшафт, экология, нефтяное месторождение.

Abstract. In connection with the development of the oil and gas industry, there is the problem of the landscape and ecological environment. Anthropogenic impact on the natural environment adversely affects its condition. For the competent use of oil fields, it is necessary to analyze the landscape structure, functions, values and stability of natural systems.

Key words: landscape, ecology, oil field.

The Trekhozernoye is the oldest field in Western Siberia. Oil is at a late stage of development, and intensive oil production is depleted. There are lots of wells, well pads, oil and gas pipelines, power lines, and various industrial facilities. During oil and gas development, various landscapes can degrade especially high nature protection value landscapes. Landscape and ecological researches allow to reveal valuable natural complexes and not to involve them in economic activity [1].

The aim of the research is to study the landscape and ecological structure of the Trekhozernoye oil field and to definite some ways to optimize the use of natural resources. The main task is to carry out an environmental assessment of natural complexes with the establishment of the functions, values, stability of landscapes. The object of the research is the landscape-ecological structure and anthropogenic load on the Trekhozernoye oil field.

The functions of the natural systems in the area are diverse. One landscape can perform several functions simultaneously [2]. Landscape can perform a number of ecosystem resilience. Landscapes functions of the Trekhozernoye oil field are considered in Table 1. According to the table 1, the map-scheme of functions in the Trekhozernoye oil field is made (Fig. 1).

Table 1. Landscapes functions of the Trekhozernoye oil field.

Type of terrain	Environmental functions	Resource functions	Points
Floodplain	Biostational, landscape-stabilizing, water regulation, water protection	Hunting and fishing, berry and mushroom	4

Terraced-drained	Biostation, landscape-stabilizing	Hunting and fishing, berry and mushroom, wood-resource	2
Terraced-marsh	Biostation, landscape-stabilizing	Hunting and fishing	3
Slopes-terrace	Biostation, landscape-stabilizing	Hunting and fishing	2
Slope	Biostation, landscape-stabilizing	Berry and mushroom	2
Valley	Biostation, landscape-stabilizing	Berry and mushroom	2
Peaty depressions	Landscape-stabilizing, water-regulating	Berry and mushroom	2
Mineral islands	Biostation, landscape-stabilizing	Berry and mushroom	4

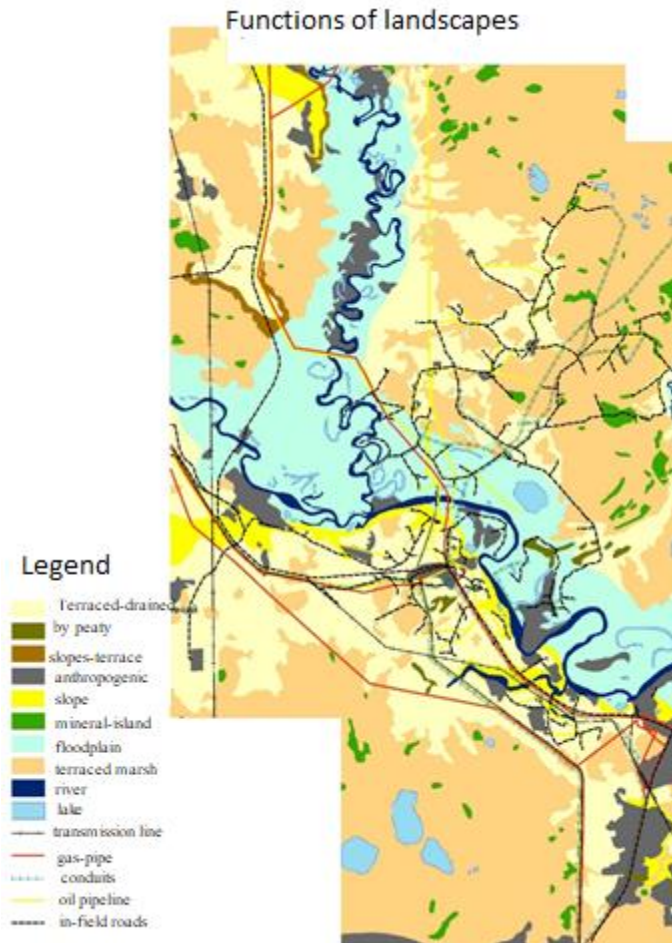


Figure 1. Map-scheme of landscapes functions of the Trekhozernoye oil field (compiled by the author).

The assessment of economic value takes into account the availability of wood resources, stocks of berry and mushroom resources, the availability of animal and fish resources. Vasily Kozin, the Professor of Tyumen State University, allows assessing the value in points from 1 to 4:

1 - low value (natural-territorial complex, which has lost its natural function and in need of reclamation);

2 - average value (natural-territorial complex of raised bogs and transitional mires podvolochisky forests with water protection and regulatory functions);

3 - high value (nature protection functions of the natural-territorial complex performing protective landscape-stabilizing function);

4 - very high (natural-territorial complex with biostation function of cedar forests and floodplain ecosystems) [2].

According to the classification, a map of the landscapes value in the Trekhozernoye oil field was created (Fig. 2).

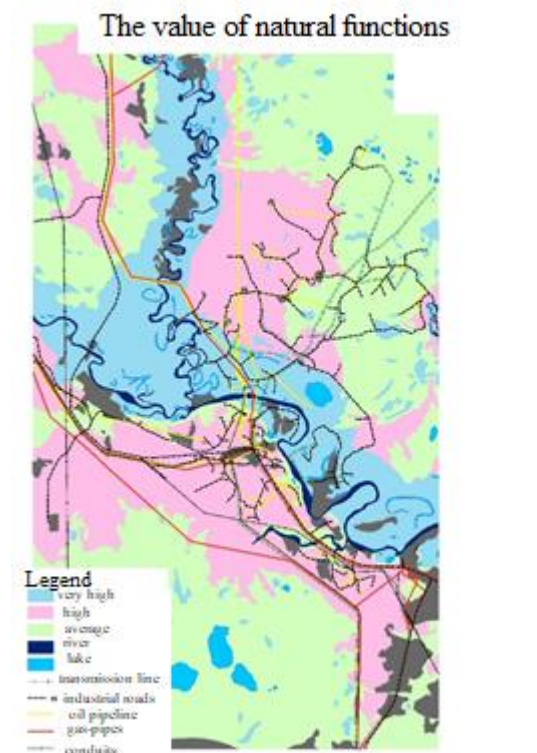


Figure 2. Map-diagram of the landscapes value in the Trekhozernoye oil field (compiled by the author).

Very high value landscapes include the floodplain, the mineral island and peaty depressions; high value landscapes are drained alluvial terrace and slope; middle value landscapes are terraced wetland and slope-alluvial terrace. According to the map, the most part of the area is occupied by landscapes of high value. The landscapes of the Trekhozernoye oil field are a subject of strong influence (mechanical disturbance, deforestation, oil spills, transfer of air pollution), which prevent the preservation of the structure of ecosystems, regardless of its natural properties [3]. The author has constructed a map-scheme of stability of the Trekhozernoye oil field (Fig. 3). Middle level of stability covers large areas. These landscapes include peaty depressions and alluvial terrace marsh. High level of stability is characteristic for slope-terrace, mineral-island, terrace drained and floodplain [4].

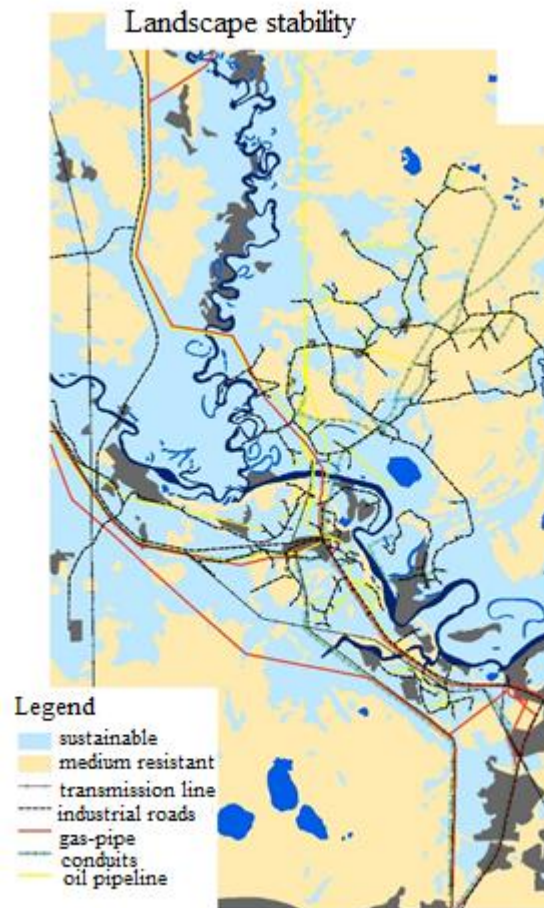


Figure 3. Map-diagram of the landscapes stability of the Trekhozernoeye oil field (compiled by the author).

Conclusion

The severe climate in the areas of oil and gas fields affecting the landscapes, unable to withstand anthropogenic loads without transformation of the landscape structure. Anthropogenic impact, impact on natural complexes represented by quarries, road, and oil spills. The greatest transformations are typical for the terraced type of terrain where the main production facilities are located.

Objects placing of oil and gas infrastructure is to take into account the properties of the landscape and ecological structure of the area, avoiding the natural complexes of high ecological value, performing important functions for landscapes with a low degree of stability. The results of the research can serve as an example of planning and design of oil and gas fields.

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