NOVOSIBIRSK STATE UNIVERCITY OF ARCHITECTURE AND CIVIL ENGENEERING (SIBSTRIN)

UNESCO chair

Numerical simulation of the filtration process in soil arrays on landfills

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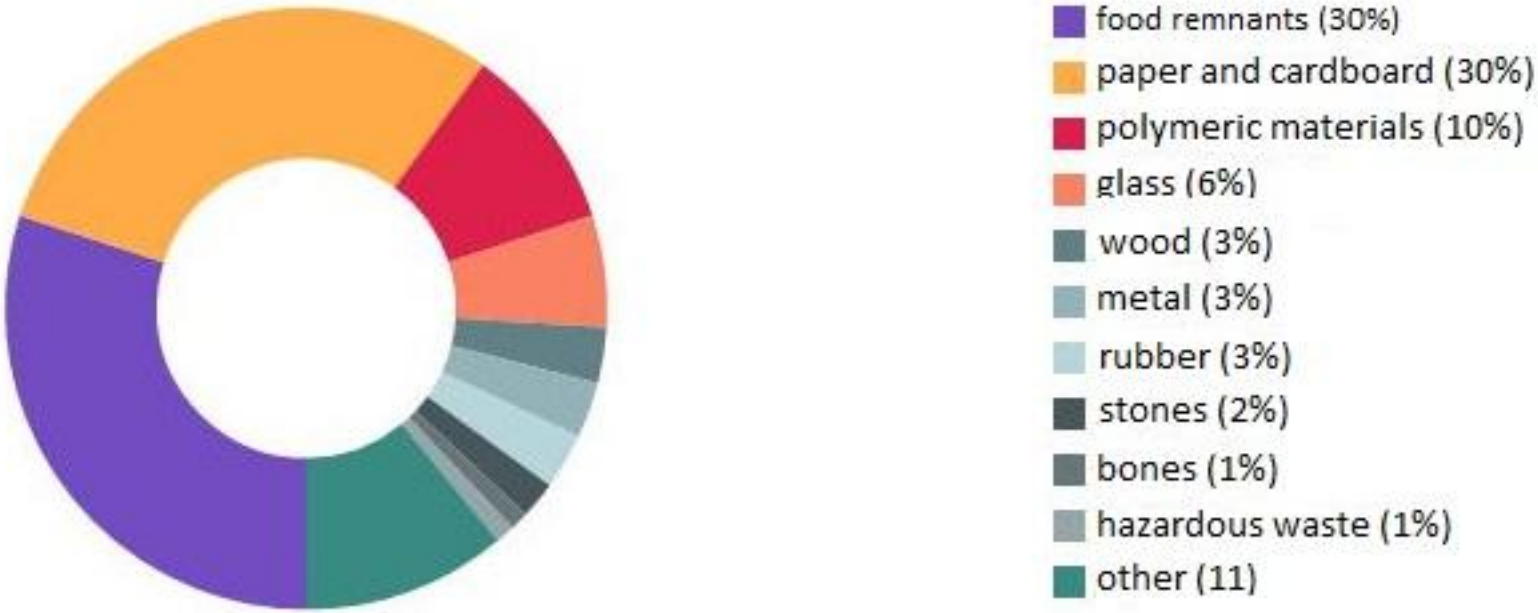
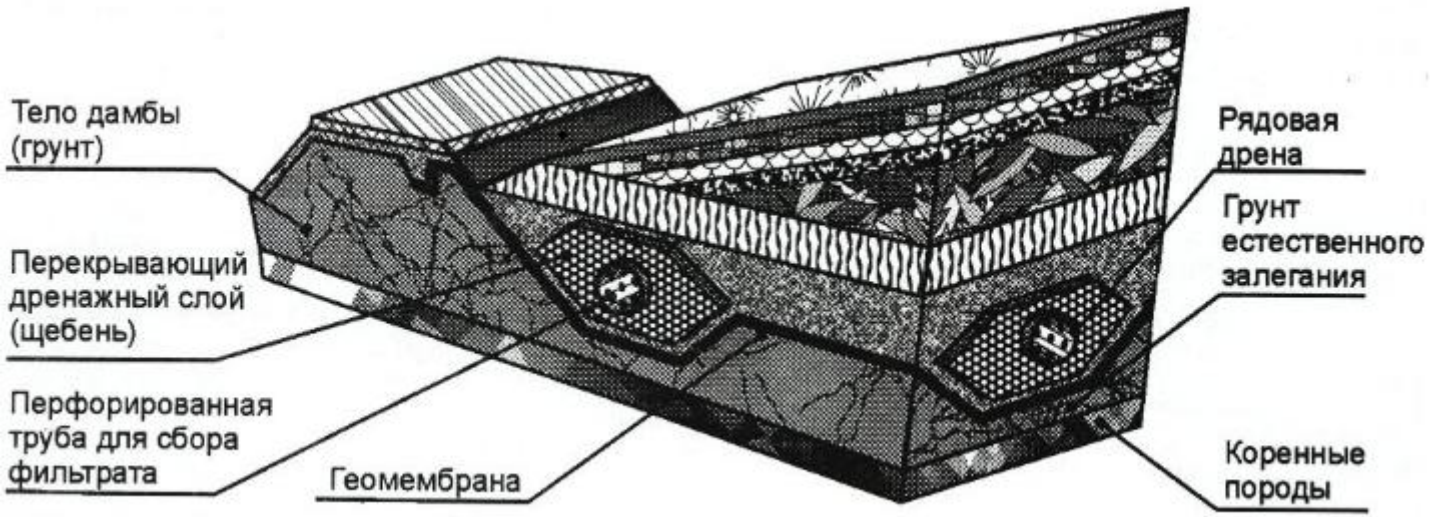
Aims and problems of the research

- Analysis of landfills structure
- Study of transfer mechanisms through porous media
- Numerical simulation of a liquid filtration process

Solid waste composition

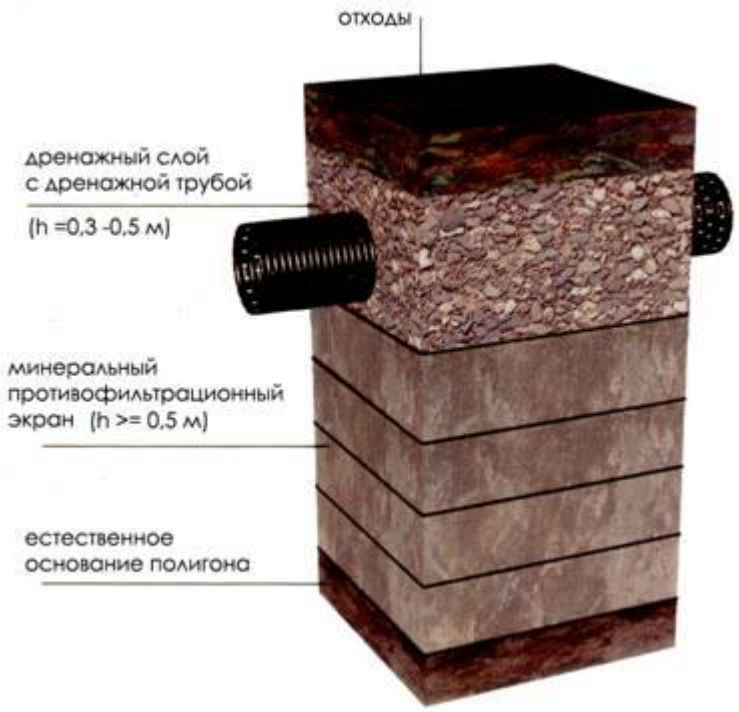


Structures of landfills



Preparing of landfill base

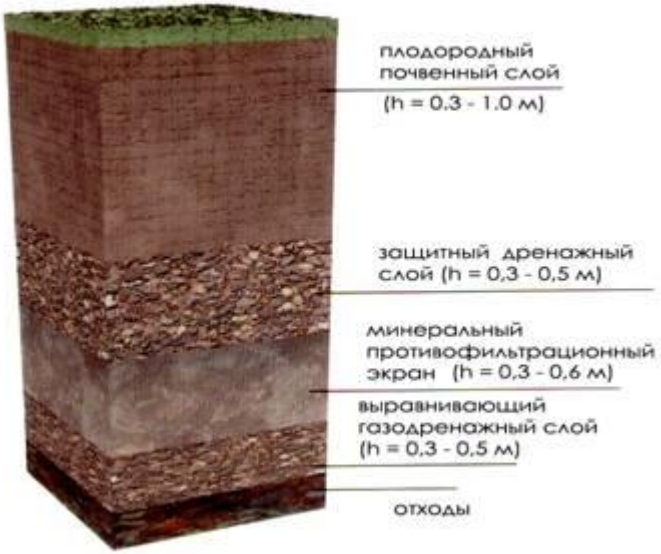
Mineral membrane design



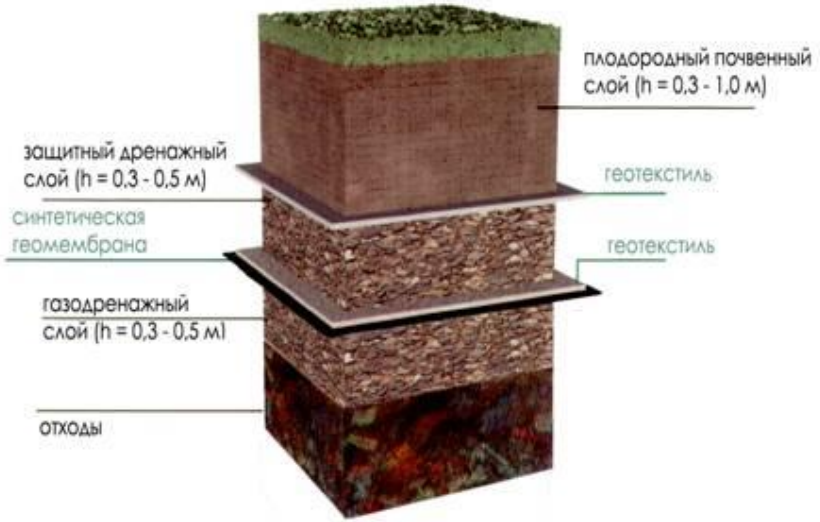
Synthetic membrane design

Final overlap of landfill

With mineral membrane



With synthetic membrane



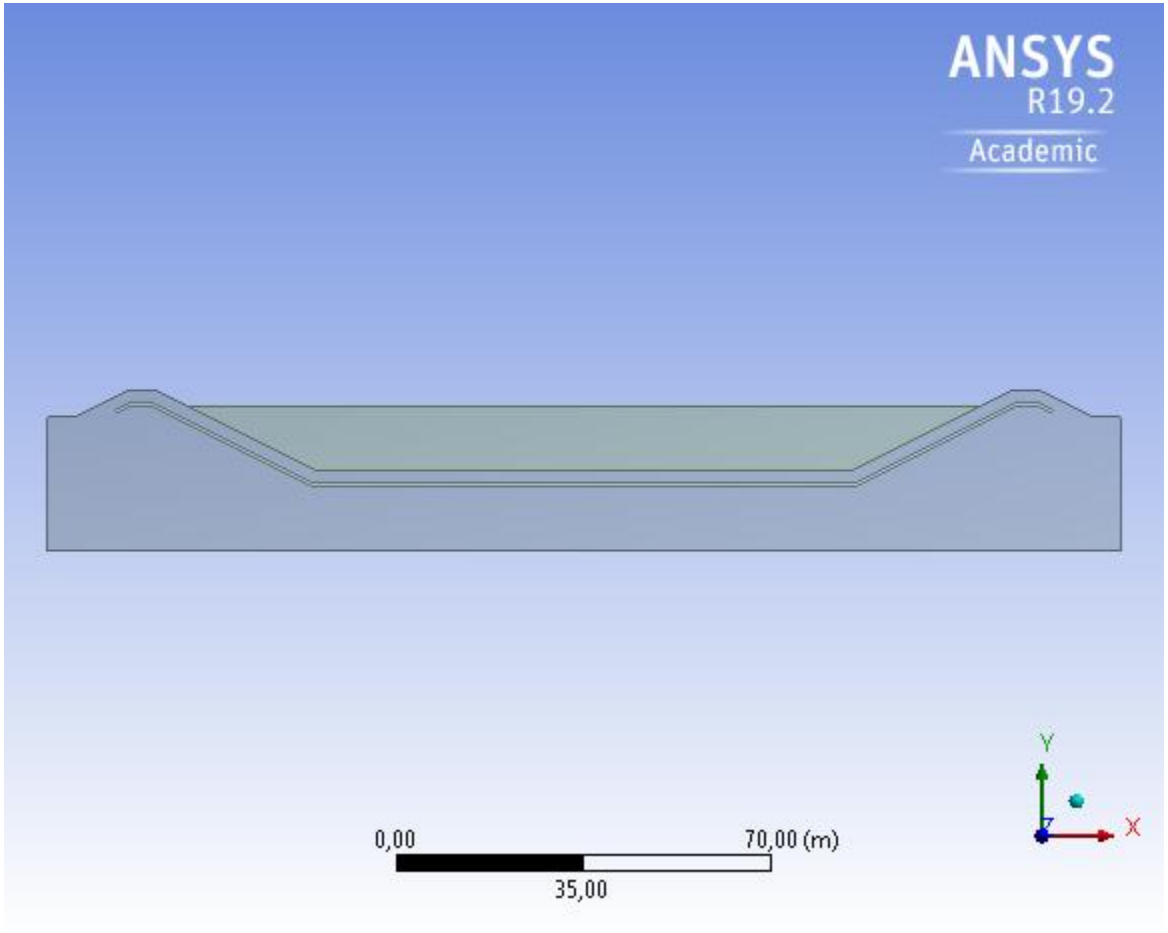
Description of the computational model

Transverse profile paramaters

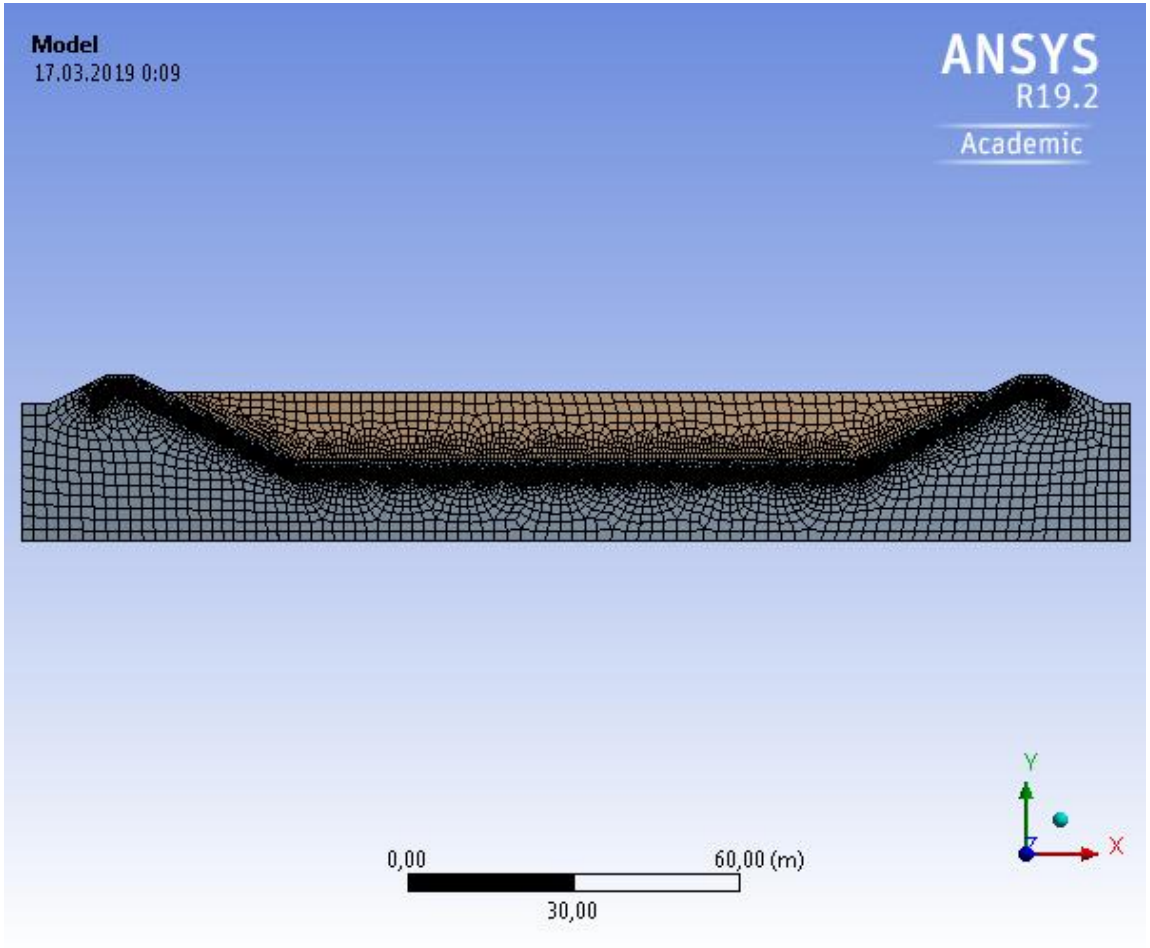
- Width of the excavation used for storing the soil: b = 100 m at the bottom
- Depth of excavation: h1 = 10 m
- Height of embankment: h2 = 5 m
- Laying of embankment slopes m = 2
- Bedrock is composed of loam (filtration coefficient k = 2·10^-5)
- Impervious membrane is made of clay. Screen thickness he = 0.5 m


ANSYS®

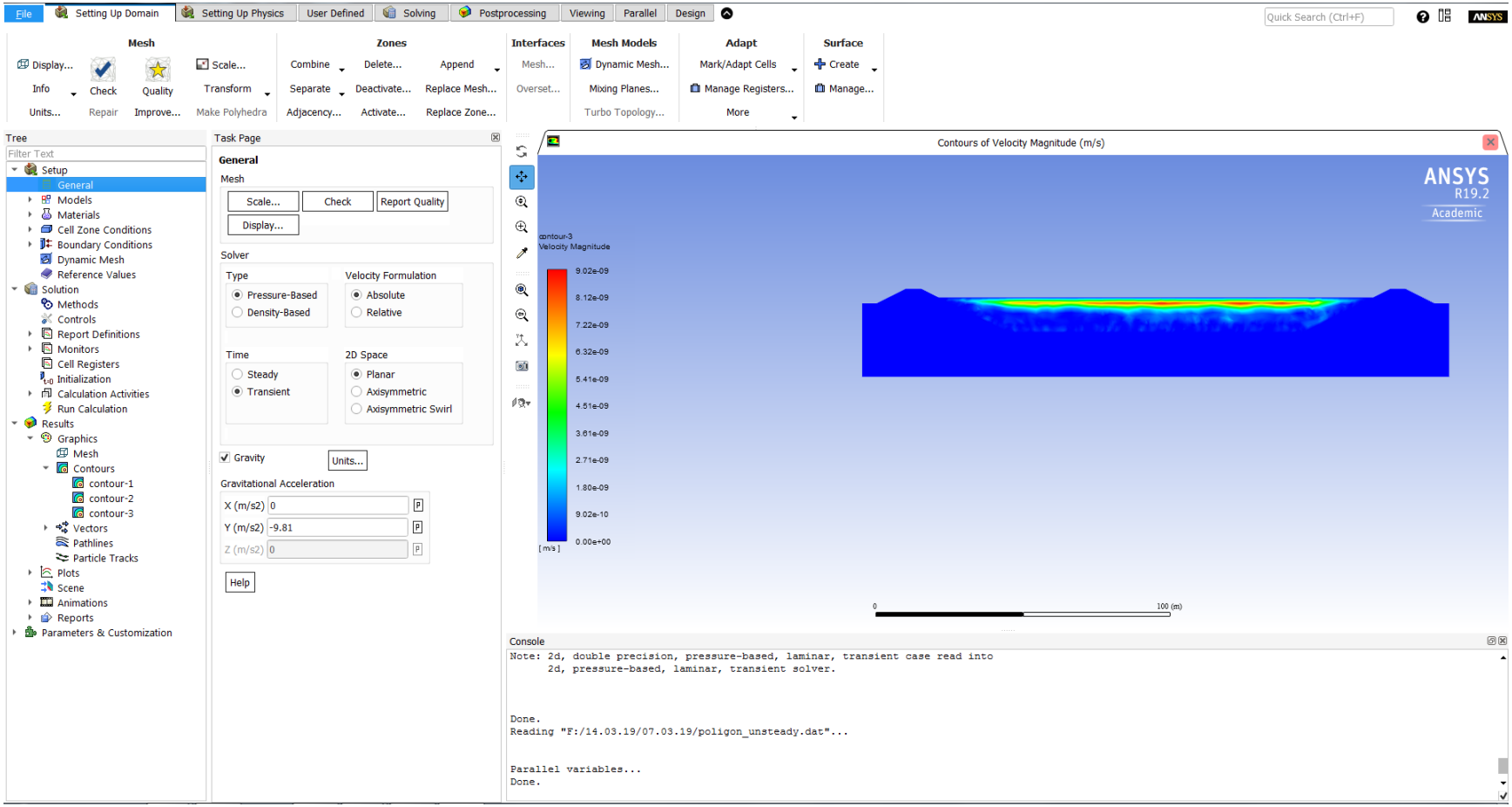
Geometry creation



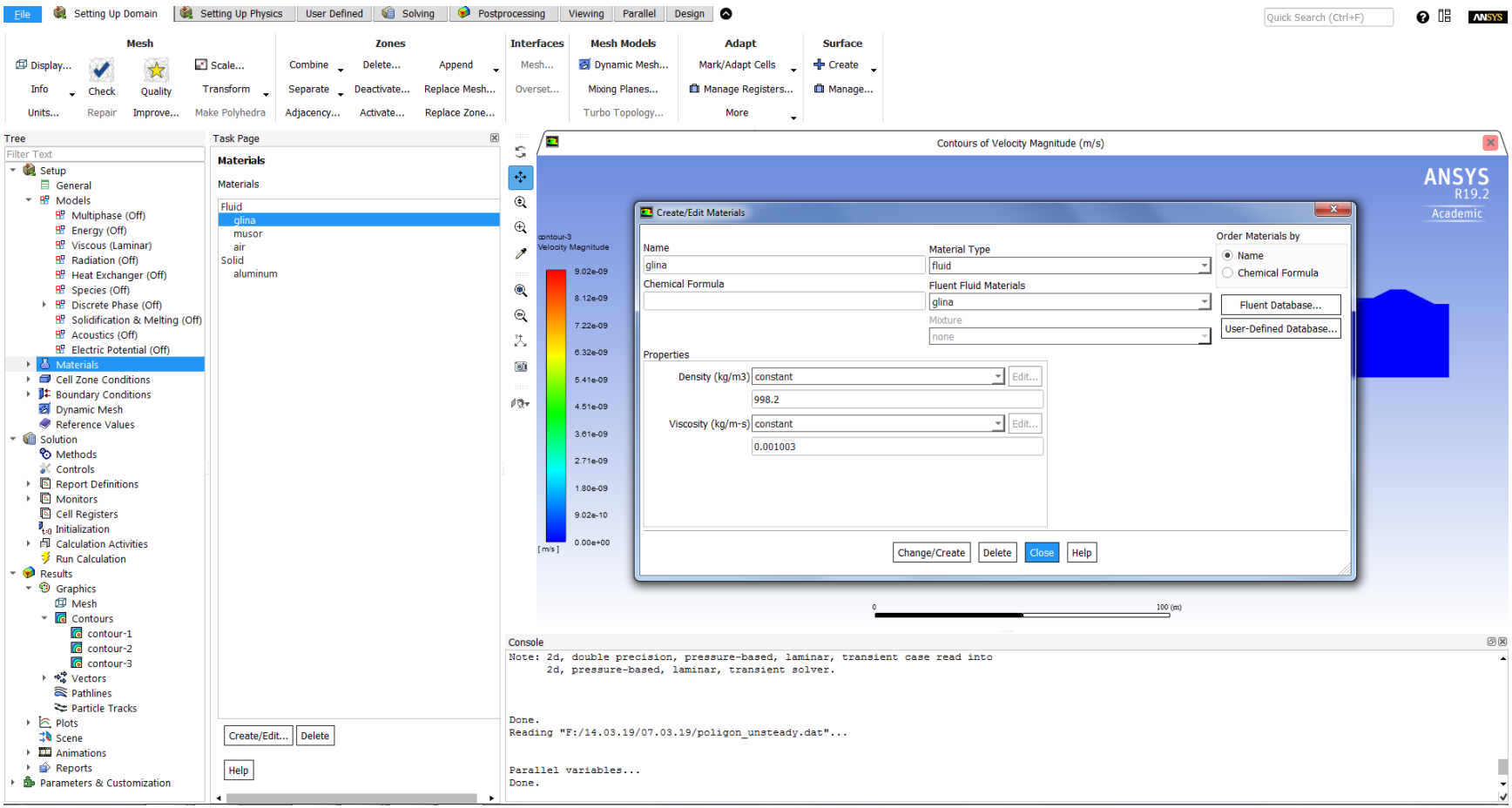
Generated mesh



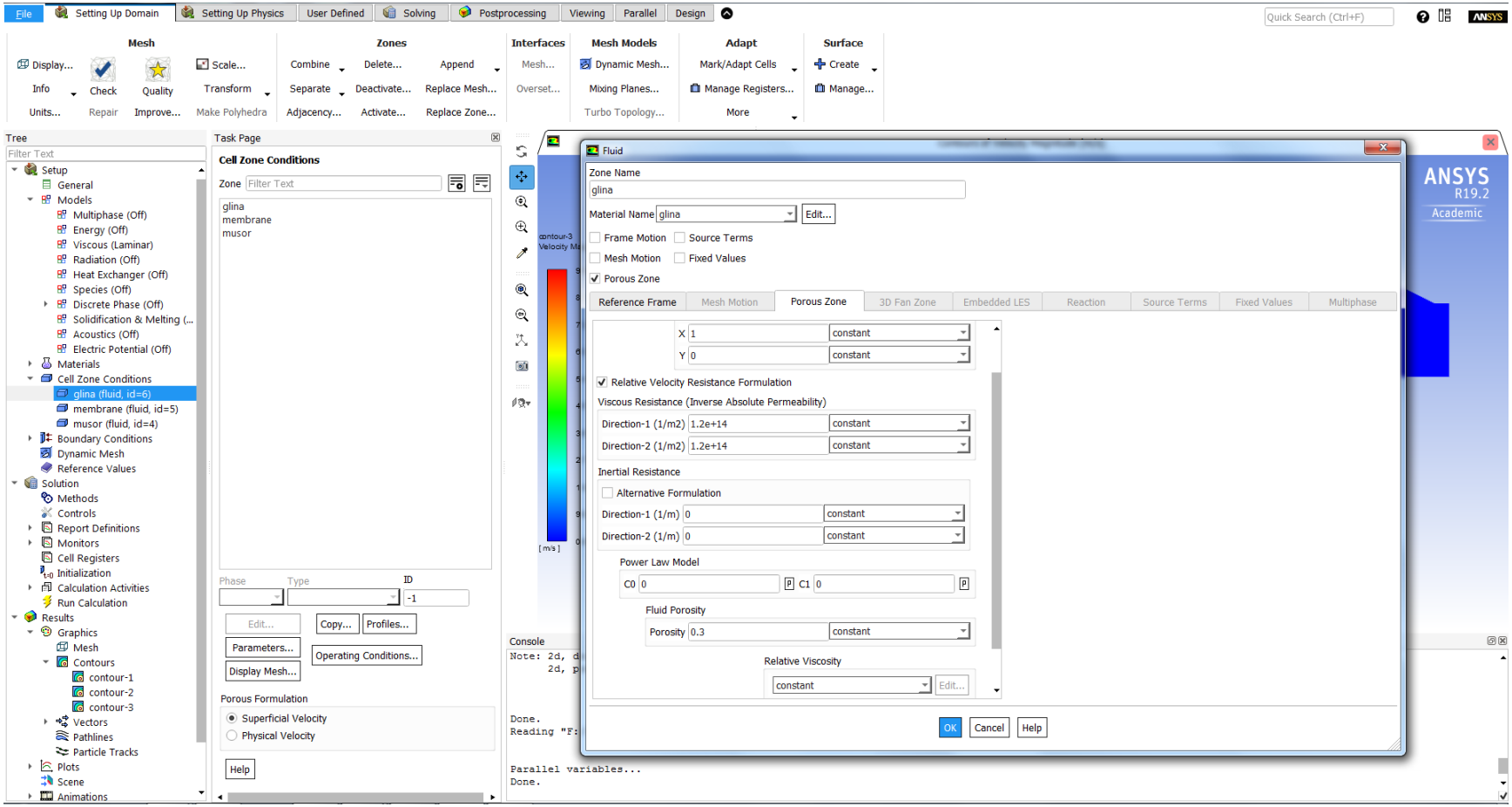
Model settings (General)



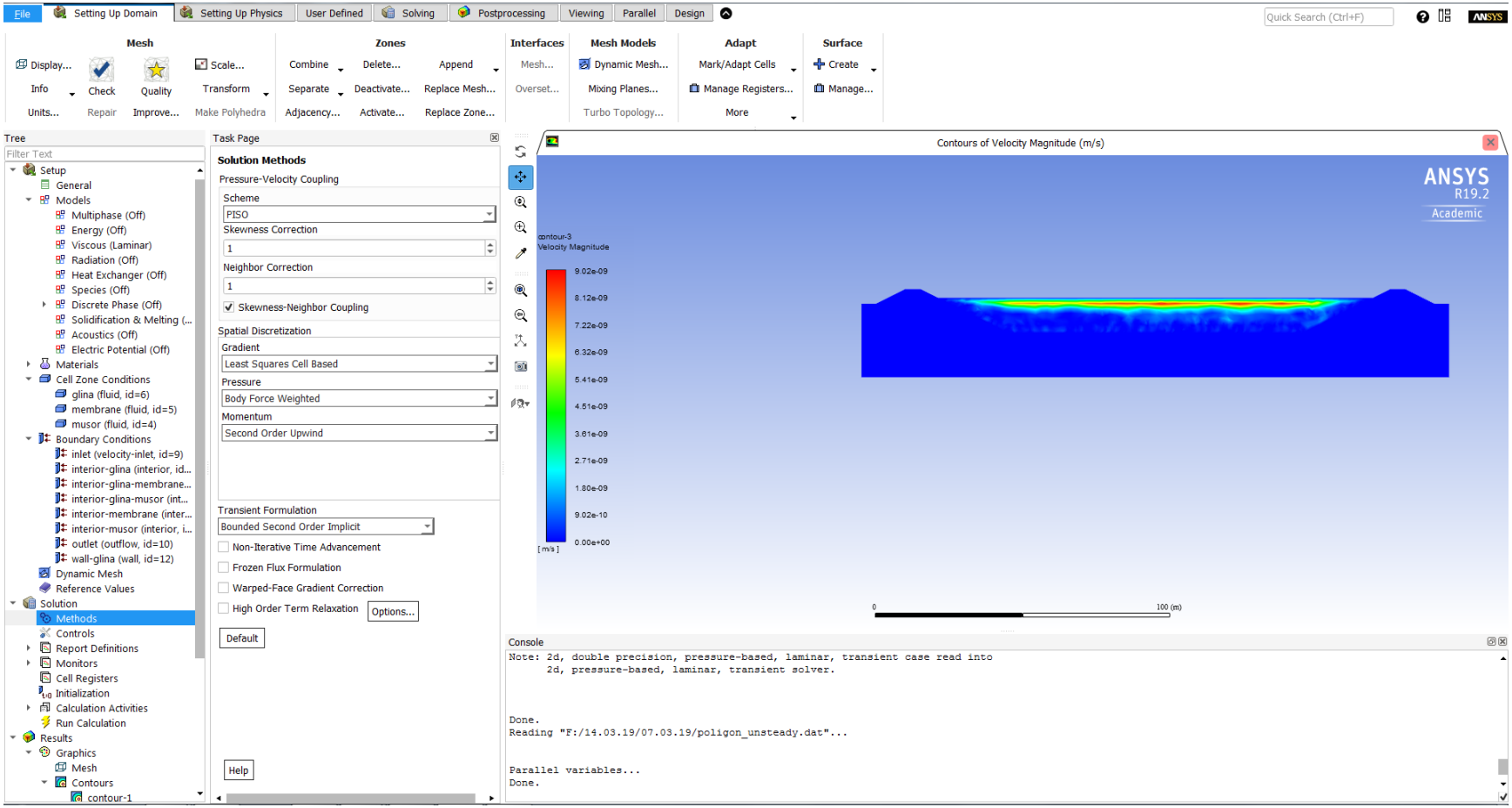
Selection of materials



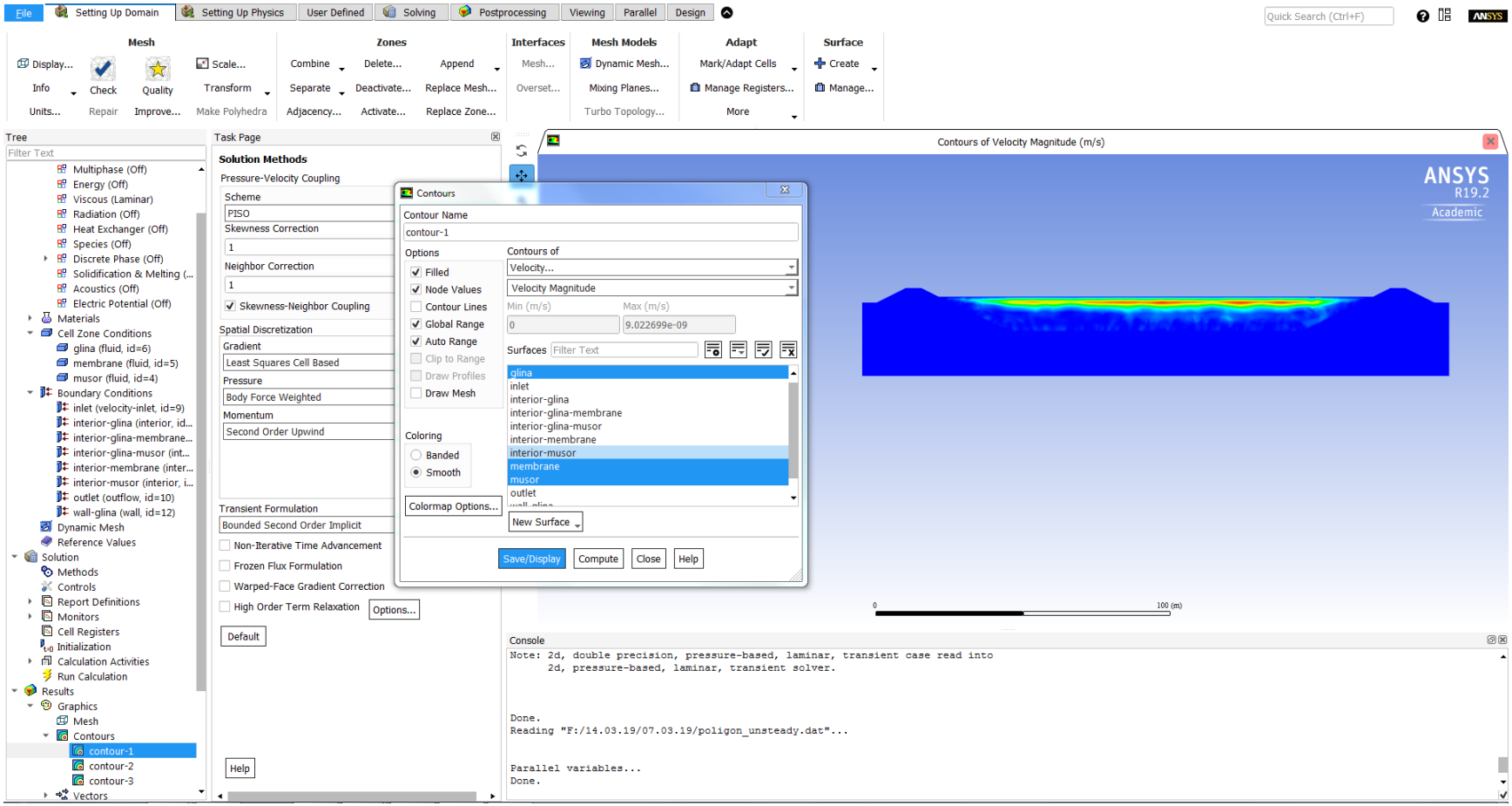
Assigning materials to model areas



Solver settings



Calculating results



Conclusion