SAG
SERVICIOS AMBIENTALES Y GEOGRÁFICOS S.A.

SPECIALIZED SERVICES

PHYSICAL DIMENSION

Components: geology, geotechnical, geomorphology, hydrogeology, underground hydraulics and risk management

SAG S.A. provides a stable team of professionals and specialist on several disciplines to provide a wide range of services related to the physical dimension

SAG S.A. physical team Key strengths:

In 22 years of experience:

- Characterizing the following aspects, lithological units, geological structure analysis, rocky massif, stratigraphic profile, geotechnical stability, and underground exploration.
- Geomechanic properties analysis, rock and soil mechanics.
- Hydraulic works design, mitigation and stabilization works.
- Experience on characterization of geomorphological units, morphodynamic processes, geological characterization for area of influence.
- Threat, vulnerability and risk analysis, design of contingency plans, formulation of risk management plans

Fourteen years of experience on evaluation and monitoring of erosive focal points.

Eight years of experience on permit application processes for exploration and groundwater concession titles.

Eight years of experience on microbiological and physicochemical groundwater monitoring, isotopes analysis for groundwater and piezometer network design.

Feature experience on

- Inventory and monitoring of erosive focal points and Geotechnical stability analysis.
- Design of civil works on bioengineering for erosion control and mass movement phenomena.
- App development to digitalize onsite data, monitoring y data processing.
- Environmental characterization on areas of influences, environmental impact assessment analysis for mining, infrastructure, and works projects.
- Hydrogeological monitoring network design.
- Multitemporal image analysis for morphodynamic processes.
- GDB formulation and assembly in accordance to ANLA (National Environmental Authority) requirements.

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GEOLOGY

- Identification and characterization of lithological units and surface formations.
- Regional and local geological structure analysis.
- Structural analysis on rocky massif




GEOTECHNICS

- Hydraulic designs for surface and subsurface runoff water management.
- Mitigation designs to stabilize unstable sites (civil Works and bioengineering).
- Identification of stratigraphique profiles and materials geomechanical parameters
- Rocky massif analysis
- Soil mechanics analysis
- Geotechnical stability analysis
- Underground exploration




GEOMORPHOLOGY AND MORPHODYNAMIC PROCESSES

- Identification and characterization of geomorphological units
- Morphodynamic processes identification and classification
- Geological characterization for area of influence

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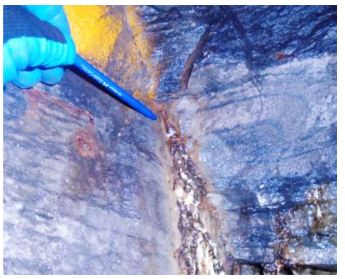


HYDROGEOLOGY

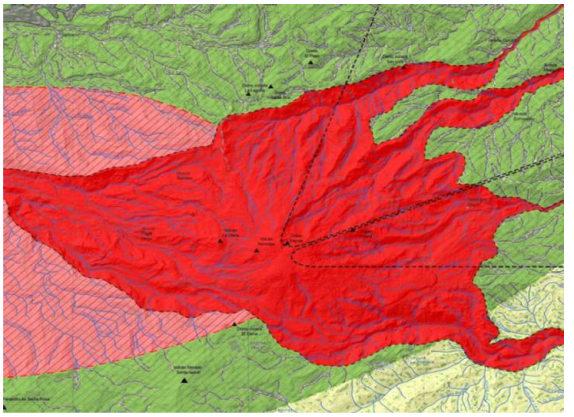
- Hydrogeological characterization of Environmental Impact Studies.
- Permit application processes for exploration and groundwater concession titles.
- Hydrogeological conceptual and numerical modeling
- Groundwater inventory processes.
- Hydro structural analysis on rock massif
- Applied geophysics to hydrogeological processes.
- Microbiological and physicochemical groundwater monitoring.
- Isotopes analysis for groundwater.
- Evaluation of potential acid mine drainage.
- Supervision of hydrogeological studies.
- Vulnerability analysis of aquifers to contamination




UNDERGROUND HYDRAULICS

- Performance and analysis of hydraulic test: deep well pumping and recovering.

- Supervision of deep well and piezometers construction process.
- Supervision during the performance of hydraulics test such as Lugeon and Lefranc.
- Deep well design.
- Piezometers network design.



RISK ASSESMENT

- Threat, vulnerability and risk analysis.
- Contingency plans.
- Formulation of risk management plans

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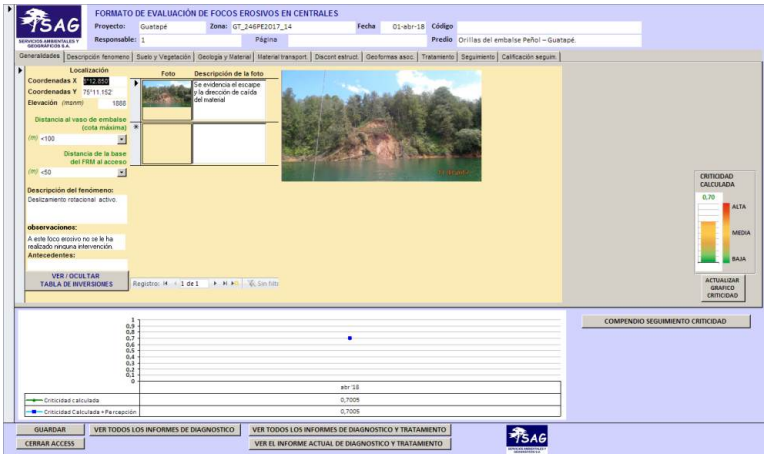
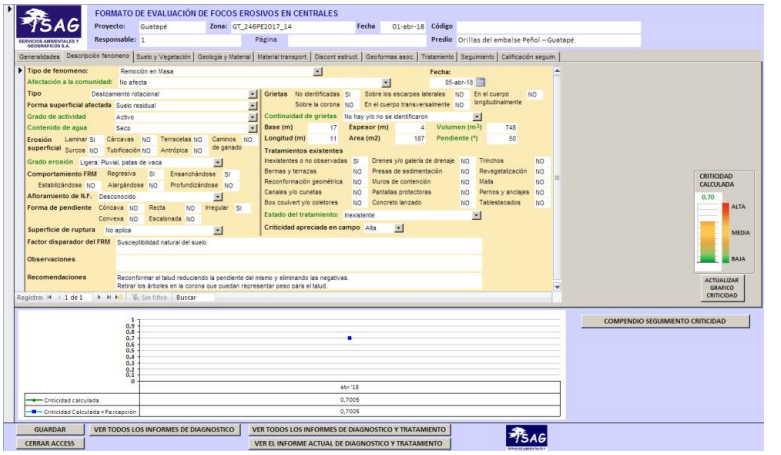
SPECIALIZED SERVICES

MONITORING AND RATING SYSTEM FOR MASS MOVEMENT PHENOMENA AND EROSIVE PROCESSES





This system was created to register in a detail manner mass movement events and erosive processes nearby reservoirs, tributary watersheds, complementary works of electrical projects and other kind of infrastructure, through qualification of events criticality according to geological risk parameters.

The system automatically calculates the criticality level according to a preset algorithm; in addition, the system also provides charts and graphs to present the data and produces automated reports or datasheets consistent with the desired project criteria.

HUMAN TALENT

SAG S.A. has a multidisciplinary team specialized on the physical dimension. The team includes: civil engineers, geology engineers, geologist, environmental engineers, sanitary engineers, chemical engineers, environmental control technicians and natural resources technicians.

SAG S.A. also has specialists on hydrogeology, environmental management, risk assessment, geographical information systems, environment and development, Eco hydrology, sustainability, geotechnics, slope stability, soil mechanics and foundations, urban and environmental processes, among others.

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