



MINISTÉRIO DAS OBRAS PÚBLICAS, TRANSPORTES E COMUNICAÇÕES
Laboratório Nacional de Engenharia Civil, I.P.

**Departamento de Hidráulica e Ambiente
Núcleo de Águas Subterrâneas**

Proc. 0607/17/15488

ECOMANAGE

Integrated Ecological Coastal Zone Management System

Deliverable 2.7

Diagnosis of the Reference Situation and
Definition a Target Situation related to Groundwater
Aysén Fjord Estuary

Lisbon, May 2008

Study developed for the European Commission DG Research INCO-CT Programme under contract number INCO-CT-2004-003715

Study developed within the framework of LNEC Research Plan for 2005-2008, referring to the study "Prevenção da poluição e reabilitação da qualidade das águas subterrâneas"

**DIAGNOSIS OF THE REFERENCE SITUATION AND
DEFINITION A TARGET SITUATION RELATED TO GROUNDWATER
Deliverable 2.7 – Aysén Fjord Estuary**

The main objective of Deliverable 2.7 is to characterize the pressures originated in the drainage basin, transported mostly by rivers and by groundwater.

Due to the fact that the population of the Aysén Basin is sparse and the precipitation depth is generally high to very high, there has been no need – either for agricultural, industrial or urban purposes – for systematic investigation into the groundwater resources of the region. Thus there exists a veritable void in terms of data on groundwater dynamics in the Aysén basin.

The assessment of the importance of groundwater in the water cycle has been presented in Yarrow and Oliveira (2006) – Deliverables 2.6 & 2.8, where the baseflow component of the main rivers has been studied for two watersheds: Rio Claro and Coyhaique. It was found that baseflow was the major contributing component to streamflow. The same deliverables also present the current knowledge about the geology, soils, climate, and fluviometric regimes in the Aysén Basin.

Knowledge on land use has been presented by Delgado and Yarrow (2005) – Deliverable 1.4. The area, despite being considered in pristine conditions, has suffered during the XXth century several wildfires that covered about 31 % of the area. These wildfires have altered the water cycle in the region, with effects on the amount of water involved in the direct runoff and groundwater flow in the area that eventually flowed from the Aysén Basin to the Aysén fjord.

Due to the high precipitation, the surface water availability, the low importance that groundwater has in terms of supplying source to the human activities, which determines the scarcity of hydrogeological data, and the low human pressure in the Aysén Basin, this Deliverable had not come into more detailed developments.

Concerning the nitrogen loads from the Aysén Basin, one is referred to Yarrow and Chambel-Leitão (2008). In terms of methodological aspects concerning the inland water pressures, one is referred to Leitão et al. (2007) which constitutes Deliverable 2.7 of the Bahía Blanca case study area.

REFERENCES

Delgado L, Yarrow M. (2005) – "Deliverable 1.4 - Report on: Maps of land use and vegetation cover Aysén-Chile", 40 pp.

Leitão TE, Limbozzi F, Melo W, Oliveira MM, Carrica J, Albouy R (2007) – "Diagnosis of the Reference Situation and Definition a Target Situation related to Groundwater Bahía Blanca Estuary". Deliverable 2.7 of the EcoManage Project – LNEC, Report 237/2007-NAS, 69 pp.

Yarrow M, Chambel-Leitão P (2008) – "Estimation of Loads in the Aysén Basin of the Chilean Patagonia: SWAT model and HARP-NUT guidelines", *in Perspectives on Integrated Coastal Zone Management in South America*, Eds. Neves, Baretta and Mateus (Eds.), IST Press, 15 pp.

Yarrow M, Oliveira MM (2006) "ECOMANAGE - Integrated Ecological Coastal Zone Management System. Deliverables 2.6 & 2.8 - CHILE". LNEC, Relatório 379/2006 – NAS, Lisboa, 42 pp.

Lisboa, Laboratório Nacional de Engenharia Civil, May 2008

Manuel Mendes Oliveira