URBAN GROUNDWATER PROFILE TOOL

Structure of Guidance

This document provides guidance for describing, in more detail, the groundwater resources situation in an urban area using a groundwater profile. Guidance consists of:

- recommendations for completing the Profile
- a checklist of tasks for preparing the Profile
- an outline structure for the Profile itself (provided as a generic outline).

Recommendations

What skills are needed to complete the Profile?
The individual, firm or institution that prepares the Profile should have:

a) a professional background in urban groundwater resources assessment and/or management;
b) an understanding of the range of information sources (individuals; institutions; reports; etc) available in the city and elsewhere; and
c) access to those individuals and sources. Often, the individual or team that completed the Questionnaire is best placed to complete the Profile as well.

How should the Profile be prepared?

The Profile will be based on data generated by the Questionnaire, but may also include other data from primary and secondary sources. Data sources should be stated.

The Profile may need to be completed in stages as information becomes available.

How does one get access to the information?

Gathering data to prepare the Profile will require access to a range of governmental and other organisations at local, regional and possibly national and international levels. This takes knowledge of information sources, appropriate contacts with the agencies where data are located, and patience.

Can the Profile be modified?

Yes. The list of contents is illustrative, not prescriptive. However, the basic structure and main headings should be retained.

Checklist

Table 1 provides an indication of the sort of tasks that need to be carried out to complete the Profile. It refers to the process, not the contents, of the Profile. Again, the list is illustrative.

Table 1 Task checklist for completion of Urban Groundwater Profile

	Activity	Completed?
1.	Translate the generic outline, if necessary	
2.	Obtain completed Questionnaire and accompanying material (maps; reports; diagrams; etc)	
3.	Identify additional data sources	
4.	Select the individual or team that will prepare the Profile	
5.	Contact the data sources and inform them of the purpose of the Profile and rapid groundwater assessment	
6.	Monitor the work of the Profile preparation team to identify and solve problems	
7.	Review first draft of profile to locate information gaps, errors and inconsistencies	
8.	Ensure missing data are collected and analysed, if possible, and have errors and inconsistencies corrected	
9.	Circulate draft of Profile to data providers to ensure that information is accurate and up to date	
10.	Print and mark the Profile available to interested parties (see Section 5 on stakeholder analysis)	

Outline for an Urban Groundwater Resources Profile.

1. Socio-economic Context

Population:

- size; growth; distribution; densities

Economic Structure:

- per capita income; principal economic activities - classification, output, employment

Municipal Services:

- water supply and waste disposal

Land Use, Ownership and Controls:

- categories; areas; ownership; controls

2. Groundwater Degradation Risk Assessment

Hydrogeological Setting:

- aquifer system; geology; parameters; recharge; recharge and discharge areas; monitoring data (type, availability, quality, uncertainties; interpretation)

State/Stage of Aquifer Development:

- overall urban water resources; groundwater abstraction (distribution, quantities, trends; water quality constraints; groundwater supplies (public piped; licensed private; unlicensed private))

Contaminant Load:

- wastewater disposal, treatment and reuse; arrangements for solid waste disposal

Groundwater Management and Institutional Arrangements:

- policy framework; institutional arrangements (functions, responsibilities, decision-making, coordination, status (government/non-government)); policy instruments (regulatory, economic, direct project investment); monitoring and enforcement of controls; information availability and use; public awareness

Summary Assessment of Groundwater Pollution Risk

Summarise and combine the information above to assess pollution risk. This should begin with an overall assessment of aquifer vulnerability (to pollution), contaminant loading 'hot spots' (normally a few key activities generate main risk to groundwater), groundwater development and management controls.

Information then needs to be combined, for example by superimposing source protection areas and contaminant load 'hot spots' on vulnerability maps. Then, summarise constraints on, and opportunities for, policy interventions to address main risks (e.g. what scope for land use controls, discharge monitoring, targeted effluent controls?)

3. Groundwater Degradation Impact Assessment

The importance of Groundwater:

- groundwater dependency (contribution to overall water budget, plus sectoral dependencies); importance of groundwater intensive activities to the urban economy (economic importance); supply-demand balance (present and projected); groundwater uses (especially dependence as a source of potable supply)

Competition and Conflict:

- evidence of conflicts between competing uses and users over quality and availability (e.g. domestic vs industrial)

Standards of Service and Efficiency:

- per capita water use (by area, income); coverage of piped system; dependence on private (own) wells and boreholes; incentives for private provision (inadequate coverage of piped supplies? cost? reliability? quality?)

Problem Symptoms:

- water shortages; rationing; dependence on private vendors; breakdowns; water-related health impacts; relocation of economic activities out of town; abandonment of public/private boreholes; rising costs of supply, distribution and treatment; drain on municipal/regional budgets

Costs and Affordability:

- availability, cost and affordability of alternative supplies

Summary Assessment of Groundwater Pollution Threat

Summarise and combine the information above to make an overall assessment of the threat groundwater pollution poses to social and economic systems and livelihoods.

It might be useful to categorise threats as follows: financial/economic; health; social; environmental; etc.

4. References

Provide a full list of references and data sources for the profile.