Annex 1

Further Resources

Emergencies

UNHCR (1982) Handbook for Emergencies Geneva, UNHCR.
Copies available from: Palais de Nations CH-1211 Geneva 10
Switzerland.

UNICEF (1986) Assisting in Emergencies: A Resource Handbook for UNICEF Field Staff, New York: UNICEF, 3 UN Plaza New York NY 10017 USA.

MSF (1992) Technicien Sanitaire en Situation Precaire, Paris.
Copies available from: 8, Rue Saint Sabin 75544 Paris Cedex 11 France.
Tel: +33 1 40 21 29 29
Fax: +33 1 48 06 68 68

OXFAM Emergency Water Supply Scheme for Emergencies (Set of Manuals)
Copies available from: OXFAM HOUSE Emergencies Department Public Health Team.
274, Banbury Road Oxford OX2 7DZ
Tel: +44 865 311311
Fax: +44 865 312600

Mears, Catherine and Chowdury, Sue (1994) Practical Health Guide No.9: Health Care for Refugees and Displaced People, Oxford: OXFAM.

Environmental Health

Cairncross, S and Feacham, R (1993) Environmental Health Engineering in the Tropics: An Introductory Text. 2nd Edn. Chichester, UK: J Wiley & Sons.

Water

General

Arlosoroff, S (1987) Community Water: The Handpump Option, Washington DC: World Bank, 1818 H Street NW Washington DC 20433 USA.

Davis, J. and Garvey, G. with Wood. M. (1993) Developing and Managing Community Water Supplies - Oxfam Development Guidelines No. 8, Oxford, UK: OXFAM.

IRC (International Reference Centre) (1987) Small Community Water Supplies: Technical Paper No.18. The Hague, The Netherlands: IRC - Water and Sanitation Centre, PO Box 93190 2059, Tel: +31 70 814911.

Jordan, T (1984) A Handbook of Gravity-Flow Water Systems, London: IT Publications.

Lloyd, B and Helmer, R (1991) Surveillance of Drinking Water Quality in Rural Areas, Harlow, UK: Longman Scientific and Technical.

Pickford, J: The Worth of Water; Technical Briefs on Health, Water and Sanitation. London: IT Publications.

UNHCR (1992) Water Manual for Refugee Situations, Geneva: UNHCR Programme and Technical Support Section.

World Health Organisation (1984): Guidelines for Drinking Water Quality : Vol. 2: Health Criteria and Other Supporting Information, Geneva: WHO.

World Health Organisation (1985) Guidelines for Drinking Water Quality Control for Small Community Supplies, Vol. 3, Geneva: WHO.

World Bank and UNDP have a very large range of technical, social and economic material written for the Water Decade. World Bank Washington DC USA.

Boreholes and Wells

Driscoll, F. G (1986) Groundwater and Wells. 2nd edn. St Paul, Minnesota: Johnson Filtration Systems Inc.

Rowles, R (1990) Drilling for Water: A Practical Manual, Cranfield, UK: Cranfield Institute of Technology Press, Bedford MK43 0AL UK.
Tel: +44 234 752727

Watt, S and Wood, W (1979) Hand Dug Wells; Their Construction, London: IT Publications.

Treatment

Smethurst, G (1988) Basic Water Treatment, London: Thomas Telford Ltd, Telford House 1 Heron Quay London E14 9XF.

Graham, N (1988) Slow Sand Filtration - Recent Developments in Water Treatment, Chichester, UK: Ellis Harwood Market Cross House Cooper Street Chichester West Sussex PO19 1EB UK.

Heber, G (1985) Simple Methods for Treatment of Drinking Water, Eschborn, Germany: GTZ (Deutsche Geschellschaft fur Technische Zusammensarbeit) PO Box 5180 6236 Eschborn Federal Republic of Germany Tel: + 6196 79-0.

IRC: Slow Sand Filtration for Community Water Supply - Planning, Design, Construction, Operation and Maintenance. Technical Paper No.24, The Hague, The Netherlands: IRC.

Smet, J and Visscher, J (eds) (1990) Pre-treatment Methods for Community Water Supply. An Overview of Techniques and Present Experience, The Hague, The Netherlands: IRC.

Schulz, C and Okun, D (1984) Surface Water Treatment for Communities in Developing Countries, London: IT Publications.

Wegelin, M Rural Water Supply Treatment. Section 4.5b in Information and Training for Low Cost Water Supply and Sanitation Series. Washington DC: UNDP/World Bank.

Sanitation

Esrey, S, et al: Health Benefits from Improvements in Water Supply and Sanitation WASH Technical Report No.66. Arlington, VA: Water and Sanitation for Health Project (WASH) 1611 Kent Street Room 1001 Arlington Virginia 22209-2111 USA Tel: +1 703 243 8200.

Franceys, R, Pickford, J and Reed, W (1992) A Guide to the Development of On-Site Sanitation, Geneva: WHO. Copies from WEDC (see below)

Morgan, P (1990) Rural Water Supplies and Sanitation - A Text from Zimbabwe's Blair Research Institute, Harare, Zimbabwe: Blair Research Laboratory, Ministry of Health.

OXFAM (1993) Core Information on Water and Sanitation in Emergency Situations - OXFAM Checklist, Oxford UK: OXFAM.

Cairncross, S (1988) Small Scale Sanitation, Ross Institute Bulletin No.8, London: Ross Institute of Tropical Hygiene London School of Hygiene and Tropical Medicine Keppel Street Gower Street London WC1E 7HT UK.

UNHCR (1994) Technical Approach: Environmental Sanitation, Geneva: UNHCR Programme and Technical Section.

Wagner, E and Lanoix, J (1958) Excreta Disposal for Rural Areas and Small Communities, WHO Monograph Series No. 39. Geneva: WHO.

WEDC (1993) Emergency Sanitation for Refugees. Technical Brief No.38 in Waterlines Vol. 12, No.2 October, London: IT Publications.

Hygiene Promotion

Boot, M and Cairncross, S (193) Actions Speak, The Study of Hygiene Behaviour in Water Supply and Sanitation Projects The Hague, The Netherlands: IRC and London: london School of Hygiene and Tropical Medicine.

Boot, M: Just Stir Gently: The Way to Mix Hygiene Education with Water Supply and Sanitation. Technical Paper No.29. The Hague, The Netherlands: IRC.

IRC (1988) Hygiene Education in Water Supply and Sanitation. Technical Paper No.27. The Hague: IRC.

Annex 2

Useful Contacts and Addresses

Eureka UK Limited
Rotation House 20 Mayday Road Thornton Heath Surrey CR7 7HL UK.
Tel: +44 181 665 0439
Company that manufactures small portable drilling rigs.

International Reference Centre
International Water and Sanitation Centre PO Box 93190 2059 AD The Hague The Netherlands. Tel: +31 70 814911
Produces technical and social papers related to water and sanitation. Preparing to run specific water and sanitation in emergency courses for MSF - Holland.

REDR (Register of Engineers for Disaster Relief)
The Director c/o Institute of Civil Engineers 1 Great George Street London SW1
Tel: +44 171 233 3116
Maintains a register of professional engineers available to work in emergencies for specialist and non-specialist NGOs. Offers expertise in needs assessment and runs training weekends for appropriate water and sanitation technologies in emergencies.

Water, Engineering and Development Centre (WEDC)
Loughborough University of Technology Leicestershire LE11 3TU UK
Tel: +44 1509 222390 or 222391
Runs a number of short courses for rural water supplies and sanitation. Has run courses for MSF specifically related to water and sanitation in emergencies.

Waterlines

Intermediate Technology Publications 103-105 Southampton Row London WC1B 4HH UK. Tel: +44 171 436 9761

Published quarterly, Waterlines is a journal concerned with appropriate technology developments for water and sanitation. IT Publications at the above address have an extensive booklist related to appropriate technologies.

Dialogue on Diarrhoea

AHRTAG - Farringdon Point 29-35 Farringdon Road London EC1M 3JB UK. Tel: +44 171 242 0606

Published quarterly, Dialogue is a newsletter aimed at a broad range of primary health care workers in developing countries. It is a forum for the exchange of information about the prevention and treatment of diarrhoeal diseases as well as providing educational advice on related health education.

Annex 3

Technical Guidelines

The UNHCR Handbook for Emergencies recommends a number of guidelines for refugee situations. It should be stressed that these are guidelines and not standards. They should be aimed for as a minimum.

Water

Quantity

Personal Consumption	15-20 litres/person/day
Health Centres	40-60 litres/patient/day
Feeding Centres	20-30 litres/patient/day

Quality

0-10	Faecal Coliforms/100ml	Reasonable
10-100	Faecal Coliforms/100ml	Polluted = Must Chlorinate
100-1000	Faecal Coliforms/100ml	Very Polluted
1000+	Faecal Coliforms/100ml	Grossly polluted

Access

* Distance to water point	100m maximum
Ratio of taps to users	1 tap/200-250 people

* This is a desirable distance. It has been shown that there is a reverse relationship between the distance people have to walk to collect water and the amount they use, i.e. the further away it is, the less they use. Many constraints will dictate just how far people have to walk. The rule should be to bring the

water as close as is feasible, affordable and practical. It should be remembered that, unless good drainage can be provided, bringing water close to people may cause standing water and potential breeding points for mosquitoes.

Sanitation

For design purposes sludge accumulation rates per year inside pit latrines can be taken as:

Waste retained in water where degradable anal cleaning materials are used	$0.04m^3$
Wastes retained in water where non-degradable anal cleansing materials are used	$0.06m^3$
Waste retained in dry conditions where degradeable anal cleansing materials are used	$0.06m^3$
Wastes retained in dry conditions where non-degradeable cleaning materials are used	$0.09m^3$

(From Franceys, Pickford and Reed, 1992; Wagner and Lanoix, 1958 in Annex 1)

These rates relate to slow accumulation. Experience from emergency conditions has shown that accumulation is very much more rapid. For design in these situations consider multiplying the accumulation rate by 150-200%.

Siting

Distance to latrines	50m maximum (ideally)
Distance from shelters	6m minimum

Distance from water source eg. spring, tubewell	30m minimum

Space

This is included more in reference to environmental health than specifically to water and sanitation

Sheltered accommodation	3.5 m^2/person floor space
Total space excluding provision for communal, agricultural and livestock.	30 m^2/person