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Useful contacts

IN THIS APPENDIX:

- Practitioners, Commercial, NGO and individual enthusiasts
- Equipment, suppliers
- Costs

The following is a list of some individuals, organisations and commercial companies that have experience and an interest either directly in sand-abstraction or in an allied aspect and are prepared to offer assistance in their particular field.

Practitioners

1. Dabane Trust has been developing small-scale sand-abstraction systems for some 15 years and has installed more than 100 mainly well-point systems in the remote rural areas of Zimbabwe. They are keen to promote and develop sand-abstraction systems and operate a cost recovery training programme for NGO staff in site identification and equipment installation. A 20 minute DVD 'Water from Sand Rivers' that demonstrates sand-abstraction technology and the work of the organization is available on request from Dabane Trust for US\$ 5.00 +P&P.

info@dabane.co.zw

www.dabane.co.uk

2. Erik Nissen-Petersen is a well-established water conservationist with considerable experience of water harvesting systems and the development of water catchment systems including sand-abstraction and sand dams in Kenya. He has produced a range of 8 handbooks which have recently been updated and include:
 - Water for rural communities
 - Water from rock outcrops

- Water from dry riverbeds
- Water from roads
- Water from roofs
- Water from small dams
- Water surveys and designs
- Water projects by rural builders

Each manual is available free and can be downloaded from his website. He operates a commercial company, ASAL Consultants Ltd, PO Box 739, Sarit, 00606, Nairobi, Kenya.

asal@wananchi.com

asalconsultants@yahoo.com

www.waterforaridland.com

3. Richard Cansdale of SWS Filtration has extensive knowledge and experience of well-point and infiltration gallery design and installation gained over some 30 years work in Nigeria, Ghana, Tanzania, Madagascar and the Bahamas – as well as the United Kingdom and other countries in Europe. He has also developed the Rower pump and a very effective small-scale well-point. He has recently developed an efficient and durable direct action handpump the Canzee pump and more recently the Can-Lift Multi-valve handpump, which are both suitable for use on sand-abstraction wells.

richard@swsfilt.co.uk

<http://www.swsfilt.co.uk/index.htm>

4. Vernon Gibberd has some 40 years experience of hafir construction in Botswana and South Africa and is particularly interested in intensive vegetable production, where the size of the irrigated vegetable beds is matched to the capacity of the hafir.

vgibberd@iafrica.com

5. WETT (The Sustainable Water Extraction Technology Trust) is interested in providing assistance to extend the use of sand-abstraction into areas where it has not formerly been used. It is involved in research into areas that might have a potential and is keen to make contact with individuals and organisations interested in establishing sand-abstraction or the development of alternate water supplies.

s.w.hussey@ecoweb.co.zw

mans-ce0@wpmail.paisley.ac.uk

6. RIIC (Rural Industries Innovation Centre), Kanye, Botswana, have experience in lateral slotting uPVC pipes for use as infiltration gallery piping. They have also experimented with well-points that incorporate non-return valves for installation in caisson abstraction systems and have installed several sand-abstraction systems in Eastern and Northern Botswana. A report entitled 'Sand River Water Abstraction Scheme' has been produced by Ephraim Kgwarae.
ekgwarae@ripco.co.bw
7. Fred Dungan manages a useful web site; An Inexpensive Do-It-Yourself Water Well. Whilst not drawing water from a sand river his experience of driving a well-point to a satisfactory depth into a sand/gravelbed in California may well be of interest and use to anyone about to try.
<http://www.fdungan.com/well.htm>
8. Geomeasure Services, Durban, South Africa have an interesting web site indicating that they have extensive experience in sand-abstraction and community water supply work.
info@geomeasuregroup.co.za
www.geomeasuregroup.co.za

Equipment suppliers

Commercial companies that manufacture well-points, some of which are particularly suitable for sand-abstraction use.

1. Boode manufacture a wide range of screens from large-scale infiltration galleries to small-scale well-points. Of particular interest is a small ceramic screen that is suitable for use in alluvium that is too fine for round aperture screens. Boode Water Well, Screen and Casing Systems, Zevnhuizen, Netherlands.
www.boode.com
2. Johnson Screens have extensive experience in well-screen technology and have produced a comprehensive book that covers all aspects of water drilling and screen development, (Groundwater and Wells: A comprehensive study of groundwater and the technologies used to locate, extract, treat and protect this resource, written by Fletcher G. Driscoll, Johnson Filtration Systems Inc., St. Paul, Minnesota 55112, USA, ISBN 0-9616456-0-1). The company markets stainless steel taper, wire wound, self-jetting well-points. It is probably more experienced in large-scale schemes and supplied the well-points to an irrigation scheme

in south west Zimbabwe that has a potential to irrigate 1,200ha from a sand-abstraction water source on the Save River.

www.johnsonscreens.com

3. Soloflo, South Africa market a tapering uPVC, radially slotted screen that has been used extensively in sand-abstraction installations in southern Africa.

info@soloflo.co.za

<http://www.soloflo.com/home.htm>

4. SWS Filtration manufacture and sell complete units, components and spares of well-points, infiltration galleries, Rower pumps and direct action pumps suitable for small-scale community water supplies.

richard@swsfilt.co.uk

5. Kaytech market a range of synthetic geotextiles with varying rates of thickness and permeability that are suitable for covering well-points with large diameter apertures or slots to make them more suitable for installation in very fine sediments.

<http://www.kaytech.co.za/>

A web search indicates that the following companies manufacture well-points

6. Big Eastern Wetlands

http://www.bigeastern.com/eotp/ep_mars.htm

7. Big Foot Manufacturing – Slotted PVC well-screens

<http://www.bigfootmfg.com/slotted;screens.html>

8. Chemdrex Chemicals – Water well-screens

<http://www.chemdrex.com.au/screens.htm>

9. Dean Bennett Supply Company – Well-screens

<http://www.deanbennett.com.sand-stopper-screens.htm>

10. Eijkelkamp

<http://www.barlofco.co.za/solutions/sols05.htm>

11. Roscoe Moss

http://www.roscoemoss.com/well_casing:screen.html

12. Con-slot

<http://www.carbisfiltration.co.uk/>

Dabane Trust pump costs

Simple suction pump to draw from a depth of 4 to 5 metres with no delivery head. The pump costs in the table below are those of the pump in its most basic form as described in Appendix 1 and shown in Figure 11.4. The pump can also be assembled in a more elaborate form that is more suitable for a clean water supply as shown in Figure 7.1. Foot valves and piston bodies can also be purchased from manufacturer/suppliers such as SWS Filtration.

Table A2.1. Cost of a Rower pump – made in Zimbabwe from locally available materials at US dollar prices (May 2007)						
		Materials	Unit of measure	Qty	Unit cost (US\$)	Total cost US\$
1	Pump body	Pump cylinder (63mm class 16 rigid uPVC pipe)	m	1.66	9.87	16.38
2		Connection to suction pipe (63mm VSP)	63mm	1	5.23	5.23
3	Foot valve	Foot valve (uPVC sheet; 1000x595x10mm)	m2	0.004	26.40	0.11
4		3mm x 10mm self tapping screw	each	1	0.11	0.11
5	Piston body	Piston body (uPVC sheet; 1000x595x10mm)	m2	0.016	26.40	0.42
6		Cup seals	each	4	0.98	3.92
7	Pump handle	Pump rod (10mm bright steel)	m	1.5	2.09	3.14
8		Pump rod handle (19mm furniture tube)	m	0.3	3.07	0.92
9		Hex nut	10mm	1	0.14	0.14
10		Nyloc nut	10mm	1	0.27	0.27
11		Flat washers	10mm	1	0.05	0.05
9	Fabrication materials	Solvent cement (500 mls)	each	0.08	1.60	0.13
10		Emery tape (medium)	roll	0.005	36.84	0.18
11		Hacksaw blades (18 tooth)	each	0.02	0.65	0.01
12		Hacksaw blades (24 tooth)	each	0.02	0.65	0.01
12	Production costs	Procurement costs	hrs	0.5	1.20	0.60
13		Manufacturing costs	hrs	6	2.27	13.62
14		Fitting materials and depreciation on Tools	% of materials	3.33%	22.99	<u>0.77</u>
Total						\$46.01

Note: 63mm VSP - a PVC fitting with a 2inch (50mm) male water pipe thread which is cemented to the pump body to connect to the supply pipe from the well-point.

Dabane Trust well-point costs

A simple well-point fabricated from 40mm class 10 uPVC pipe which can be either dug into river channel sediment in a shallow excavation or, where possible, driven to a depth of 3 to 5 metres. The well-point has a sacrificial tip with 'wings' to prevent it being extracted from the sediment when the driving tube is withdrawn. A representation of the well-point is shown in Figure 11.3. The spreadsheet used in the design of the well-point is shown in Appendix 1.

Table A2.2. Cost of a 40mm diameter round aperture well-point (May 2007)						
		Materials	Unit of measure	Qty	Unit cost (US\$)	Total cost US\$
1	Tube	Well-point tube (40mm class 10 rigid uPVC pipe)	m	0.5	2.84	1.42
2	Sacrificial tip	Galvanised steel water pipe (1.5" - 40mm)	m	0.15	22.47	3.37
3		Galvanised steel water pipe (2" - 50mm)	m	0.03	29.62	0.89
4		Flat bar (40 x 4.5mm)	m	0.40	17.37	6.95
5		Wire nail (150mm)	kg	0.02	6.81	0.14
6	Connection fittings	MIFP	40mm	1	5.17	5.17
7		Swage coupling (Polypipe adaptor)	40mm	1	3.53	3.53
8		Jubilee clip (50mm)	each	2	0.28	0.56
9	Fabrication materials	Solvent cement (500 mls)	each	0.04	1.60	0.06
10		Emery tape (medium)	roll	0.0025	36.84	0.09
11		Hacksaw blades (18 tooth)	each	0.04	0.65	0.03
12		Hacksaw blades (24 tooth)	each	0.04	0.65	0.03
13	Production costs	Procurement costs	hrs	0.5	1.20	0.60
14		Manufacturing costs	hrs	3.5	2.27	7.95
15		Fitting materials & depreciation on tools	% of materials	2.5%	30.78	<u>0.77</u>
Total						<u>\$31.55</u>

Note: 40mm MIFP - a PVC fitting with a female 1 1/2 inch (40mm) water pipe thread which is cemented to the well-point tube.
 40mm swage coupling - a plastic fitting which fits into the pipe thread of the MIFP and connects to 40mm LPDE (low density polyethylene) pipe.
 50mm jubilee clip - a fastener to ensure an airtight fit between the swage coupling and the LDPE pipe, (a 50mm clip is easier to fit on a 40mm pipe than a 40mm).
 Due to varying material and variable lengths, diameter and class of piping, costs of connecting pipes between the well-point and rower pump are not included.