SOMALI DEMOCRATIC REPUBLIC

MINISTRY OF AGRICULTURE

*

NORTH - WEST REGION AGRICULTURAL DEVELOPMENT PROJECT

FEASIBILITY STUDY AND TECHNICAL ASSISTANCE

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TECHNICAL REPORT N° 4

(INTERIM REPORT)

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HYDROGEOLOGY

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R.310297 R4

SOGREAH
Consulting Engineers
GRENOBLE - FRANCE

March 1982

CATCHMENT AREA: SILIL

Inventory No	Date of reference point	Date of 1st measurement	Date	Water level (m)	Conductivity millimhos/cm	Height 1st measurement reference level
197	31/07/80	31/07/80	31/07/80	1.00	0.8	
			1/09/81	2.60	2.17	
202	1/08/80	1/08/80	1/08/80	3.50	1.0	
			30/10/80	3.45	0.8	
			1/09/81	2.90	1.13	
204	30/10/80	30/10/80	30/10/80	37.0	0.90	
			1/09/81	-	1.18	
249	1/09/80	1/09/80	1/09/80	> 50.0	3.80	
			29/10/80	> 50.0	4.50	

CATCHMENT AREA: DURDUR

Inventory No	Date of reference point	Date of 1st measurement	Date	Water level (m)	Conductivity millimhos/cm	Height 1st measurement reference level
12	14/10/80	24/06/80	24/06/80	4.2	0.8	0.8
			14/10/80	2.5	1.1	
14	14/10/80	24/06/80	24/06/80	7.6	0.6	4.2
			14/10/80	1.30	0.4	
			28/08/80	0.00	0.44	
15	14/10/80	24/06/80	24/06/80	7.0	0.5	2.6
			14/10/80	1.55	0.4	
			28/08/81	0.5	0.44	
18	24/06/80	24/06/80	24/06/80	5.3	0.6	
			14/10/80	4.55	0.6	
193	23/07/80	23/07/80	23/07/80	2.75	0.8	
			31/08/80	2.70	0.85	
			28/10/80	1.55	0.8	
			31/08/81	Collapsed		
193 (b)	31/08/81	31/08/81	31/08/81	0.00	1.75	
246	31/08/80	31/08/80	31/08/80	> 50.0	1.4	
			28/10/80	> 50.0	1.4	
247	31/08/80	31/08/80	31/08/80	3.40	0.8	
			28/10/80	3.50	0.8	
330	11/10/80	11/10/80	11/10/80	3.80	0.4	
			28/08/81	1.60	0.23	

CATCHMENT AREA: BIJI

Inventory No	Date of reference point	Date of 1st measurement	Date	Water level (m)	Conductivity millimhos/cm	Height 1st measurement reference level
64	7/07/80	7/07/80	7/07/80	2.50	0.40	
			18/09/80	2.60	0.40	
			4/11/80	1.90	0.30	
			26/07/81	3.90	0.4	
116	4/11/80	9/07/80	9/07/80	2.05	1.00	1.5
			4/11/80	0.30	0.60	
			26/07/81	1.20	1.60	
124	23/09/80	9/07/80	9/07/80	2.10	1.4	1.0
			23/09/80	0.75	1.4	
			4/11/80	0.55	1.2	
			26/07/81	1.20	4.83	
161	19/07/80	19/07/80	19/07/80	2.60	0.50	
			4/11/80	2.30	0.5	
			26/07/81	2.30	0.83	
166	20/07/80	20/07/80	20/07/80	2.80	0.80	
			2/09/80	2.80		
			4/11/80	2.0	0.70	
			26/07/81	2.20	.20	
167	2/09/80	20/07/80	20/07/80	3.10	1.00	
			2/09/80	1.90		
			4/11/80	1.80	1.00	
			7/07/81	1.30	1.4	

(continued)

Inventory No	Date of reference point	Date of 1st measurement	Date	Water level (m)	Conductivity millimhos/cm	Height 1st measurement reference level
175	23/07/80	22/07/80	22/07/80	3.00	1.10	
			2/09/80	2.50		
			4/11/80	2.70	.10	
			11/07/81	2.80	1.30	
214	20/10/80	19/08/80	19/08/80	19.20	4.90	18.0
			21/09/80	19.50	4.70	
			20/10/80	2.00	4.30	
			20/07/81	4.40	5.20	
217	20/10/80	24/08/80	24/08/80	7.40	4.40	5.5
			21/09/80	7.10	4.10	
			20/10/80	1.70	4.2	
			20/07/81	0.70	4.4	
220	20/10/80	24/08/80	24/08/80	12.30	3.60	8.5
			21/09/80	12.50	3.6	
			20/10/80	5.00	3.50	
			20/07/81	3.40	4.50	
264	23/09/80	20/09/80	20/09/80	6.30	0.50	
			20/10/80	6.00	0.60	
			20/07/81	5.20	0.65	
281	29/09/80	29/09/80	29/09/80	4.00	0.50	
			20/10/80	3.15	0.50	
			20/07/81	3.30	0.5	

(continued)

Inventory No	Date of reference point	Date of 1st measurement	Date	Water level (m)	Conductivity millimhos/cm	Height 1st measurement reference level
[illegible]	29/09/80	29/09/80	29/09/80	1.40	1.30	
			20/10/80	1.20	1.10	
319	6/10/80	6/10/80	6/10/80	9.15	4.60	
			28/07/81	8.7	2.90	
343	18/10/80	18/10/80	18/10/80	8.2	1.10	
345	18/10/80	18/10/80	18/10/80	2.30	1.40	
			19/07/81	6.85	1.80	
365	1/11/80	1/11/80	1/11/80	2.00	0.40	
			19/07/81	2.40	2.40	
			27/08/81	1.50	0.50	
398	3/11/80	3/11/80	3/11/80	2.00	1.00	
			20/07/81	3.10	1.57	
[illegible]	3/11/80	3/11/80	3/11/80	2.80	2.10	
[illegible]	4/11/80	4/11/80	4/11/80	1.20	2.30	

CATCHMENT AREA: WAHEEN

Inventory No	Date of reference point	Date of 1st measurement	Date	Water level (m)	Conductivity millimhos/cm	Height 1st measurement reference level
28	2/07/80	2/07/80	2/07/80	5.05	0.5	
			13/09/80	4.50	0.5	
			10/11/80	6.30	0.8	
			19/07/81	5.80	0.5	
40	2/07/80	2/07/80	2/07/80	3.60	0.8	
			13/09/80	4.00	0.9	
			10/11/80	Collapsed		
40 (b)	19/07/80	19/07/80	19/07/80	5.0	0.89	
41	2/07/80	2/07/80	2/07/80	2.9	0.4	
			13/09/80	2.3	0.5	
			10/11/80	Dry	-	
			19/07/81	4.0	2.3	
45	3/07/80	3/07/80	3/07/80	1.76	0.5	
			10/09/80	2.22	-	
			26/10/80	0.75	1.2	
			27/07/80	1.1	7.5	
56	26/10/80	[illegible]	6/07/80	4.05	0.3	1.0
			1/10/80	3.50	0.4	
			26/10/80	1.20	0.5	
			[illegible]/07/81	0.80	0.52	
64	26/10/80	[illegible]	6/07/80	3.80	0.4	2.0
			1/10/80	2.20	0.3	
			10/10/80	0.5	0.3	
			12/07/81	+ 0.05	0.35	

(continued)

Inventory No	Date of reference point	Date of 1st measurement	Date	Water level (m)	Conductivity millimhos/cm	Height 1st measurement reference level
152	26/10/80	15/07/80	15/07/80	2.60	1.4	1.5
			26/08/80	1.20	-	
			26/10/80	0.5	1.1	
			12/07/81	Collapsed		
221	26/10/80	26/08/80	26/08/80	4.10	2.3	0.6
			26/10/80	3.20	0.7	
			27/07/81	4.40	1.33	
228	26/08/80	26/08/80	26/08/80	2.50	0.4	
			26/10/80	2.50	0.4	
			27/07/81	2.10	0.85	

CONTENTS

1.2 INFORMATION COLLECTED ON EACH WATER POINT

1.2.1 HYDROGEOLOGICAL INFORMATION

The hydrogeological information collected during the inventory was the following:

- The depth of the water point expressed in metres;
- The depth of the dynamic or static level expressed in centimetres;
- The date on which the water level was measured (day, month, year);
- The year when the water point was created;
- The conductivity of the water in tenths of a millimhos/cm.

1.2.2 INFORMATION ON THE OPERATION OF THE WATER POINT

1.2.2.1 Characteristics of pumping operations

The following types of information were collected at each of the water points:

- The energy used to abstract the water, indicated by a figure:
  - 0: abandoned water point;
  - 1: human energy;
  - 2: animal energy;
  - 3: petrol pump;
  - 4: diesel pump;
  - 5: electric pump;
  - 6: solar energy.
- the power of the abstraction process expressed in horsepower;
- the year in which the first pump was brought into operation;
- the horsepower of the first pump;
- the instantaneous discharge in tenths of a litre per second.

1.2.2.2 Water point operation

The following are indicated for each of the water points:

. the number of hours' pumping per day during each of the four seasons;

. the number of days' pumping per month during each of the four seasons.

1.2.2.3 Use of pumped water

The following information is given for each of the water points:

. the area irrigated in qodi (1 qodi = 0.2 ha);

the four main types of crop cultivated in order of importance. These are indicated by means of a number:

- 1: Sorghum
- 2: Maize
- 3: Khat
- 4: Citrus
- 5: Papayas
- 6: Vegetables
- 7: Coffee
- 8: Fruit
- 9: Palms.

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Chapter 1

INVENTORY OF WATER POINTS

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An inventory of the water points in the North West Region was carried out between June and November 1980.

All the various water points were identified and classified in accordance with the characteristics shown on the survey sheets, and the information transferred to coding forms (cf. Appendix 1).

A survey sheet was allocated to each water point, enabling its characteristics to be easily identified.

1.1 LOCATION OF WATER POINTS

1.1.1 MAP LOCATION (Map 1)

Each water point was located by means of coordinates whose datum was fixed arbitrarily. The geographical coordinates of the datum 0 are the following:

- OY = 42° 32' E
- OX = 9° 20' 40" N

The coordinates of the water points are given in decametres, ranging from 0 to 28 000 along the x-axis and 0 to 23 000 along the y-axis. Altitude is given in decimetres.

A total of 414 water points were identified in the study area.

1.1.2 CLASSIFICATION OF WATER POINTS

A number was allocated to each water point; these range from 1 to 414 in chronological order of identification. The water points are classified according to three criteria:

1.1.2.1 Criterion 1: The catchment area

The zone was divided into four catchment areas:

- Catchment No. 1: the Silil basin;
- Catchment No. 2: the Durdur basin;
- Catchment No. 3: the Biji basin;
- Catchment No. 4: the Waheen basin.

1.1.2.2 Criterion 2: The type of aquifer tapped

The type of aquifer involved is shown by means of a two-figure number:

- 1 - Sandstone, psammite, basalt, granite } Definition of substratum
- 2 - Jurassic limestone
- 3 - Alluvial valley } Definition of hydrological situation
- 4 - Alluvial plain

1.1.2.3 Criterion 3: The type of water point

The type of water point is expressed by means of a single-figure number:

- 1 - Spring
- 2 - River
- 3 - Water hole
- 4 - Shallow well
- 5 - Borehole
- 6 - Dam, pond, lake.

Chapter 2

OBSERVATION NETWORK

In each of the four basins in the North West region, a number of the 414 water points inventoried was selected where checks were carried out on fluctuations in the water level.

2.1 LOCATION OF PILOT WELLS

As far as possible, the pilot wells were located in each of the hydrogeological units making up the catchment areas (cf. map 2).

See table No. 2.1(1) on the following page.

2.2 RESULTS OF OBSERVATIONS

At least two observations were made at each of the pilot wells, at intervals of no more than 13 months. At the more accessible and quickly selected wells, a maximum of four observations was made. All the various observations were made between June 1980 and September 1981.

The results are still too fragmentary for any interpretation of the fluctuations of the water table to be made, especially as the observations carried out in 1980 and 1981 were made during the same periods of the year (June to October 1980 and June to September 1981).

Observations of the network must be continued into 1982, particularly between the months of November 1981 and June 1982. An inspection programme has been prepared to this effect. The results of the observations are given in Appendix 2.

Table 2.1(1)

Basin	Nbr of pilot wells	Inventory No.	Location	Hydrogeological unit
SILIL	4	197	Upstream catchment area	Alluvial valley in crystalline formation
		202	Foot of the mountain range	Alluvial valley in crystalline formation
		204	Upper coastal plain	Alluvial valley surrounded by basalt flows
		249	Lower coastal plain	Alluvial valley in coastal plain
DURDUR	8	330	Upstream catchment area	Alluvial valley in crystalline formation Jurassic limestone nearby
		12-14 15-18	Mountain range	Valley in Jurassic limestone
		193	Upper coastal plain	Alluvial valley surrounded by Eocene outliers and a rise of the bedrock, with unconformable Jurassic limestone
		246	Middle coastal plain	
		247	Lower coastal plain	Seashore, dune area
BIJI	20	214 217 220 268 282 297 319	Upstream catchment area on the plateau	Alluvial valley in Nubian sandstone, with clayey-sand sides and some Eocene limestone concretions
		343 345 385 398 161	Upstream catchment area on the plateau	Alluvial valley in crystalline formations of the bedrock and basalt flows
		84 116 124 166 167 175 410 413	Beginning of the mountain range on the plateau	Alluvial valley in crystalline formations of the bedrock and basalt flows
WAHEEN	9	28 40 41	Upstream catchment area on the plateau	Alluvial valley in Nubian sandstone formations at foot of Eocene limestone plateaus of the Ogaden
		45 56 64 221 229	Upstream catchment area on the plateau	Alluvial valley in crystalline bedrock formations (gneiss, schist, psammites)
		152	Beginning of the mountain range on the plateau	Alluvial valley in basalt flows

Chapter 3

USE OF WATER

From the inventory of water points in the North West Region it was possible to evaluate the amount of water used to irrigate market garden crops. It is necessary to add to this the quantity of water consumed by livestock and for domestic use.

3.1 MARKET GARDEN CROPS

3.1.1 MARKET GARDEN CROPS IRRIGATED BY PUMPING

The inventory of water points and associated crops made it possible to draw up a precise list of irrigation water requirements and current irrigation potential in each of the catchment areas and each district.

Table 3.1(1) shows the volume of water which needs to be pumped for irrigation in each of the districts. The quantities were calculated on the basis of the figures provided by the agronomic survey (Technical Report No. 7, sections 2.8 to 2.10).

Vegetables were considered collectively, by calculating the equivalent water requirements for tomatoes over the whole year. In the case of maize, an average over four months of the year was used. The following quantities were obtained:

Citrus	7 500 m3/year/ha
Other fruits	7 500 m3/year/ha
Vegetables	12 000 m3/year/ha
Maize	4 500 m3/year/ha
Khat	7 000 m3/year/ha
Coffee	7 000 m3/year/ha

Table No. 3.1(2) gives the volumes of water made available by pumping and effective rainfall in each of the districts of the North West Region.

Table 3.1(1)

PUMPED IRRIGATION REQUIREMENTS: Kc x Etp-Pe

Basin	District	Location	Farm Nbr	Culture area (ha)	Citrus		Other fruits		Vegetables		Maize		Khat		Coffee		Total m3/year
					ha	m3/year	ha	m3/year	ha	m3/year	ha	m3/year	ha	m3/year	ha	m3/year	
BIJI	Gebiley	Arabsiyo	63	78.6	66.7	500 250	4.1	30 750	2.9	34 800	1.4	6 300	3.2	22 400	0.3	2 100	596 600
		Hulluuq	44	48.0	32.6	228 200	2.4	18 000	1.3	156 000	-	-	-	-	-	-	402 200
		El Genised	10	13.0	11.1	83 250	0.6	4 500	0.9	10 800	-	-	0.4	2 800	-	-	101 350
		Agamso	6	3.8	1.2	9 000	0.2	1 500	2.4	28 800	-	-	-	-	-	-	39 300
		Total (1)	124	143.4	111.6	820 700	7.3	54 750	19.2	230 400	1.4	6 300	3.6	25 200	0.3	2 100	1 139 450
	Hargeysa	Ged Deeble Tog.	18	38.2	21.6	183 600	10.0	85 000	3.3	42 900	-	-	3.3	26 400	-	-	337 900
		Horahaadley	57	91.0	55.0	467 500	12.0	102 000	7.6	98 800	-	-	13.2	105 600	3.2	25 600	799 500
		Dhalanya Dhuux	7	12.8	7.8	66 300	2.0	17 000	1.0	13 000	-	-	2.0	16 000	-	-	112 300
		Agabar	8	8.6	5.5	46 750	1.9	16 150	0.5	6 500	-	-	0.7	5 600	-	-	75 000
		Total (2)	90	150.6	89.9	764 150	25.9	220 150	12.4	161 200	-	-	19.2	153 600	3.2	25 600	1 324 700
		Total (1) + (2)	214	294.0	201.5	1 584 850	33.2	274 900	31.6	391 600	1.4	6 300	22.8	178 800	3.5	27 700	2 464 150
WAHEEN	Hargeysa	Hargeysa	75	46.0	11.0	82 500	20.0	150 000	15.0	180 000	-	-	-	-	-	-	412 500
		Xaraf	11	3.2	0.3	2 250	1.9	14 250	1.0	12 000	-	-	-	-	-	-	28 500
		Damka	1	16.0	-	-	16.0	120 000	-	-	-	-	-	-	-	-	120 000
		Awbarkhadle Sabaad	13	23.2	7.5	63 750	6.0	51 000	6.0	78 000	0.5	2 750	3.2	25 600	-	-	221 100
		Dararweyna	24	30.0	10.6	90 100	7.9	67 150	7.5	97 500	-	-	4.0	32 000	-	-	286 750
		Jaleelo	11	15.0	5.0	42 500	6.0	51 000	1.7	22 100	-	-	2.3	18 400	-	-	134 000
		Xunbaweyne	18	30.9	15.6	132 600	10.4	88 400	3.9	50 700	0.2	1 100	0.8	6 400	-	-	279 200
		Total (3)	153	164.2	50.0	413 700	68.2	541 800	35.1	440 300	0.7	3 850	10.3	82 400	-	-	1 482 050
DURDUR	Gebiley	Dichaley Ceel Berdal	12	13.4	8.0	60 000	0.7	5 250	1.0	12 000	0.5	2 250	3.0	22 500	0.2	1 400	103 400
		Ruqi	2	3.2	1.9	14 250	0.2	1 500	0.3	2 400	-	-	0.8	5 600	-	-	23 750
		Total (4)	14	16.6	9.9	74 250	0.9	6 750	1.2	14 400	0.5	2 250	3.8	28 100	0.2	1 400	127 150
SILIL	Boorama	Dhamuuq	14	17.6	7.0	45 500	9.2	59 800	1.3	14 300	0.1	350	-	-	-	-	119 950
		Total (5)	14	17.6	7.0	45 500	9.2	59 800	1.3	14 300	0.1	350	-	-	-	-	119 950
GRAND TOTAL (1) + (2) + (3) + (4) + (5)			385	492.4	268.4	2 118 300	111.5	889 250	69.2	860 600	2.7	12 750	36.9	289 300	3.7	29 100	4 193 300

Table 3.1(2)

PUMPED WATER AND RAIN WATER CONSUMPTION

Basin	District	Location	Total water point Nbr.	Diesel pump		Human energy		Anim. energy		Petrol pump		Electr. pump		Water supply		Number abandoned	Total pumping (m3/year)	Effective rainfall (m3/year)	Total water consumption (m3/year)
				WPN*	m3/year	WPN	m3/year	WPN	m3/year	WPN	m3/year	WPN	m3/year	Farm	m3/year				
BLII	Gebiley	Arabsiyo	70	3	31 104	3	2 592	0	-	59	371 952	0	-	-	-	5	405 648	235 800	641 448
		Hulluuq	46	1	5 184	0	-	0	-	42	1 235 872	0	-	-	-	3	241 056	144 000	385 056
		El Genised	12	1	7 776	2	5 832	0	-	9	77 760	0	-	-	-	0	91 368	39 000	130 368
		Agamso	6	0	-	0	-	0	-	6	38 880	0	-	-	-	0	38 880	11 400	50 280
		Total (1)	134	5	44 064	5	8 424	0	-	116	724 464	0	-	-	-	8	776 952	430 200	1 207 152
	Hargeysa	Ged Deeble Tog.	18	5	113 141	0	-	0	-	12	164 363	0	-	-	-	1	277 504	76 400	353 904
		Horahaadley	57	25	342 176	0	-	1	12 960	31	235 758	0	-	-	-	0	590 894	182 000	772 894
		Dhalanya Dhuux	7	6	83 430	0	-	0	-	1	9 720	0	-	-	-	0	93 150	38 400	131 550
		Agabar	9	0	-	0	-	0	-	8	84 888	0	-	-	-	1	84 888	17 200	102 088
		Total (2)	91	36	538 747	0	-	1	12 960	52	494 729	0	-	-	-	2	1 046 436	314 000	1 360 436
	Total (1) + (2)		225	41	582 811	5	8 424	1	12 960	168	1 219 193	0	-	-	-	10	1 823 388	744 200	2 567 588
WAHEEN	Hargeysa	Hargeysa												75	274 500	0	274 500	138 000	412 500
		Xaraf	11	0	-	0	-	10	8 618	1	8 424	0	-	-	-	0	17 042	9 600	26 642
		Damka	1	1	129 600	0	-	0	-	0	-	0	-	-	-	0	129 600	48 000	177 600
		Awbarkhadle Sabaad	14	1	18 144	2	2 000	0	-	10	109 771	0	-	-	-	1	129 915	46 400	176 315
		Dararweyna	23	19	181 375	0	-	0	-	4	24 883	0	-	-	-	0	206 258	60 000	266 258
		Jaleelo	11	6	51 840	1	1 296	0	-	4	25 920	0	-	-	-	0	79 056	30 000	109 056
		Xunbaweyne	18	9	87 156	4	3 240	0	-	5	88 128	0	-	-	-	0	178 524	61 800	240 324
		Total (3)	78	36	468 115	7	6 536	10	8 618	24	257 126	0	-	-	-	1	1 014 895	393 800	1 408 695
DURDUR	Gebiley	Dichaley Ceel Berdal	15	11	124 486	2	390	0	-	0	-	1	6 156	-	-	1	131 032	40 200	171 232
		Ruqi	2	2	56 592	0	-	0	-	0	-	0	-	-	-	0	56 592	9 600	66 192
		Total (4)	17	13	181 078	2	390	0	-	0	-	1	6 156	-	-	1	187 624	49 800	237 424
SILIL	Boorama	Dhamuuq	14	5	50 544	1	648	0	-	7	44 064	0	-	-	-	1	95 256	70 400	165 656
		Total (5)	14	5	50 544	1	648	0	-	7	44 064	0	-	-	-	1	95 256	70 400	165 656
GRAND TOTAL (1) + (2) + (3) + (4) + (5)			334	95	1 282 548	15	15 998	11	21 578	199	1 520 383	1	6 156	75	274 500	13	3 121 163	1 258 200	4 379 363

* WPN = Water point number.

The potential for irrigation by pumping which these figures show does not take into account mechanical failures or fuel shortages which may occur. The potential represents the irrigation capacity which is at present available for the vegetable crops. This capacity depends on the means used for pumping, on the hydraulic characteristics of the type of tapping facility, and on the effective rainfall available in each of the districts.

All these various results are shown in map 3 and a comparative representation between irrigation requirements and potential is given in diagram 3.1(1). This diagram distinguishes between four categories of market garden crops depending on the quantity of irrigation.

3.1.1.1 Crops suffering from permanent lack of irrigation

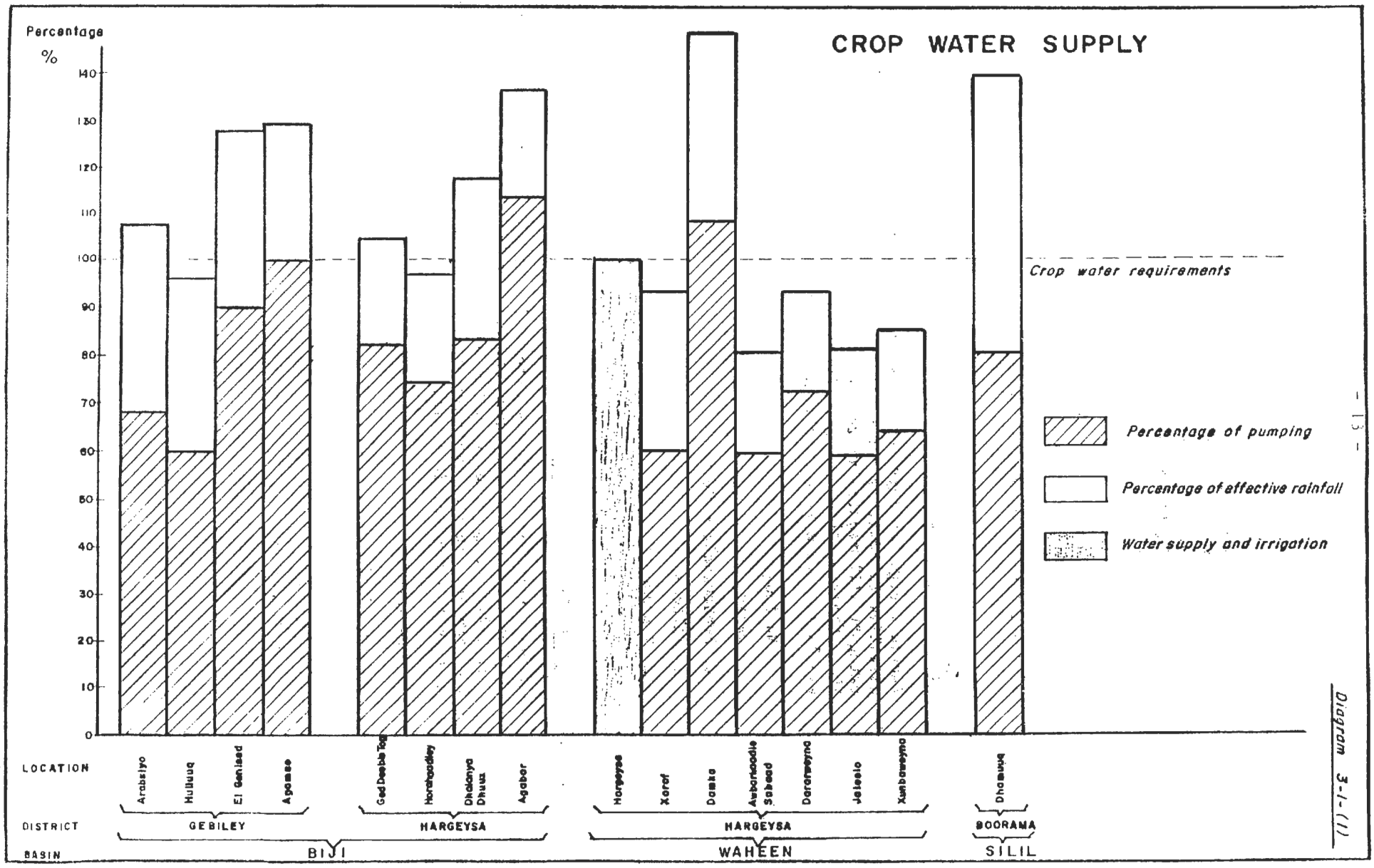
Pumped irrigation represents less than 70% of the requirements and effective rainfall is not sufficient to make up the difference. This category will require improvement in the tapping procedures and probably the definition of cropping patterns adapted to the quantities of water available. Crops in this category are found at:

- Hulluuq
- Xaraf
- Awbarkaadle - Sabaad
- Jaleelo
- Xunbaweyna

3.1.1.2 Crops suffering from seasonal lack of irrigation

Pumped irrigation represents between 70% and 90% of the requirements and the additional supply from effective rainfall is sufficient to meet 120% of requirements at the most. The most urgent improvements will concern the irrigation procedures and the cropping patterns. Crops in this category are found at:

- Arabsiyo
- Dararweyna
- Geed Deeble (togga)
- Dhamuuq
- Horahaadley
- Dhalanya Dhuux



SOGREAH - GRENOBLE

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Diagram 3-1-(1)

3.1.1.3 Crops suffering from accidental lack of irrigation

These are the crops whose requirements are more than 90% satisfied by pumping, and the additional supply provided by effective rainfall brings this up to more than 120%. Improvements could be made to the irrigation procedures and definition of cropping patterns. In certain cases, it may be possible to envisage extending the irrigation areas. Crops in this category are to be found at:

El Genised

Agamso

3.1.1.4 Crops suffering only occasionally from drought

The requirements of these crops are more than satisfied by pumping. Improvements will concern the irrigation procedures used and the definition of cropping patterns adapted to the large amount of water available. An increase may be envisaged in the areas cultivated in the event of sufficient soil being available. Crops in this category are to be found at:

. Agabar

. Damka

3.1.2 MARKET-GARDEN CROPS IRRIGATED BY FLOOD SPREADING

Table 3.1(3) gives the water requirements of the market garden crops irrigated by flood spreading. It is difficult to assess the irrigation potential of flood spreading given the random nature of floods. However, the market garden crops concerned are almost all situated along toggas where there is permanent surface flow (togga Durdur).

It is assumed that in the case of these crops the potentially available water is at least equal to requirements and that the improvements to be made will concern the diversion procedures and improvement of the irrigation network, and an appropriate definition of cropping patterns.

3.2 STOCK-BREEDING

It is very difficult to assess the requirements of livestock, as continuous herd movement from one region to another and even more from one catchment area to another modifies the animal density from one season to another.

Table 3.1(3)

SPATE IRRIGATION REQUIREMENTS: Kc x Etp - Pe

Basin	District	Location	Farm Nb	Culture area (ha)	Citrus		Other fruits		Vegetables		Cereals		Khat		Total (m3/year)
					ha	m3/year	ha	m3/year	ha	m3/year	ha	m3/year	ha	m3/year	
SILIL	Boorama	Saylac	1	7.5	1	7 500	0.5	3 750	0.5	6 000	5	27 500	-	-	44 750
		Total (1)	1	7.5	1	7 500	0.5	3 750	0.5	6 000	5	27 500	-	-	44 750
DURDUR	Gebiley	Ruqi	(20)	40.0	2	15 000	0.5	3 750	2.5	30 000	18	81 000	17	119 000	248 750
		Ceel Berdaale	3	149.0	4	30 000	-	-	-	-	110	495 000	34	238 000	763 000
		Qabri Baxar	1	66.0	8	60 000	3.0	22 500	-	-	45	202 500	-	-	285 000
		Total (2)	24	255.0	14	105 000	3.5	26 250	2.5	30 000	173	778 500	51	357 000	1 296 750
GRAND TOTAL (1) + (2)			25	262.5	15	112 500	4.0	30 000	3.0	36 000	178	806 000	51	357 000	1 341 500

For example, according to Resources, Management and Research (RMR, September 1981), between the months of April and October 1981, the following variations were observed in the density of livestock in the North West Province:

- Increase of 65% in sheep;
- Increase of 54% in goats;
- Increase of 28% in camels;
- Increase of 10% in cattle.

In order to assess the consumption of water by livestock, the results of the surveys carried out for the NWRADP were used. These values must be considered as orders of magnitude and only indicative of the annual water consumption by livestock.

Table 3.2(1)

	Sheep (10^3 m3/year)	Goats (10^3 m3/year)	Camels (10^3 m3/year)	Cattle (10^3 m3/year)	Total (10^3 m3/year)
Waheen	180	210	270	100	760
Biji	200	230	290	110	830
Durdur	200	230	290	110	830
Silil	130	150	185	70	535
TOTAL	710	820	1 035	390	2 955

3.3 HUMAN CONSUMPTION

Water consumption by the region's inhabitants was evaluated from the population data contained in the report on Population and Organisation of Agriculture (Technical Report No. 9).

In order to estimate consumption, the following groups were considered together:

Nomadic population:

This includes pastoralists, urbanised pastoralists and farmer-pastoralists whose daily consumption amounts to 5 l/inhabitant, with some of their daily liquid requirement being met by milk from the herds and flocks. It is estimated that this group spends 6 months per year in the region;

. Semi-settled population:

  This includes urban farmer-pastoralists and farmers whose daily requirements amount to 15 l/inhabitant;

. Urban population: whose daily requirements amount to 20 l/inhabitant.

In addition, the proportion of inhabitants living in each district of each catchment area was also estimated. The results of these calculations are given in the following tables.

Table 3.3(1)

URBAN CONSUMPTION			
Catchment area	Town	Population in thousands	Consumption (10^3 m3/year)
WAHEEN	Hargeysa	300	400
BIJI	Hargeysa		1 700
	Gebiley	10	72
DURDUR	Boorama	10	72
Total		320	2 244

Table 3.3(2)

CONSUMPTION BY SEMI-SETTLED INHABITANTS				
Catchment area	Distribution by district	Population in thousands		Consumption (m3/year)
WAHEEN	20% Hargeysa 40% Berbera	6.2 12.8	19.0	102 600
BIJI	80% Hargeysa 100% Gebiley	25.7 3.2	28.9	156 060
DURDUR	100% Boorama 100% Lughaye	17.5 0.6	18.1	97 740
SILIL	100% Saylac	1.6		8 640
Total		67.6		365 040

Table 3.3(3)

CONSUMPTION BY NOMADS		
Catchment area	Population in thousands	Consumption (m3/year)
WAHEEN	20	18 000
BIJI	15	13 500
DURDUR	27	24 300
SILIL	17	15 300
Total	79	71 100

Appendix 1

- STANDARD SURVEY SHEET
- INVENTORY OF WATER POINTS

MINISTRY OF AGRICULTURE

SOMALI DEMOCRATIC REPUBLIC

North-West Region
Development Project

WELL DATA

Study area : _____ Well number [1 4]

Inventory by : SOGREAH _____ Date _____

Location : _____ Town _____

Coordinates : X [5 9] km Y [10 14] km Owner : _____

Well type : _____ Use : _____ Total depth [15 17] m

Drilled by : _____ Method of drilling : _____ Date of drilling _____

Aquifer [18]

Reference point Description

Elevation m _____ Above ground level

Altitude m [19 23] m

Static water level :

Date [24 29], [30 33] m below RP, altitude _____

Date _____, _____ m below RP, altitude _____

Date _____, _____ m below RP, altitude _____

Dynamic water level .

Date _____, _____ m below RP,

Date _____, _____ m below RP,

Motor : _____ Kind [34] HP _____ [35 36] Made by : _____

Pump : _____ Kind _____ Diameter _____ Made by : _____

Duration of Pumping : Spring [37] Day/month Hour/day : [39]

Summer [41] Day/month Hour/day . [43]

Autumn [45] Day/month Hour/day [47]

Winter [49] Day/month Hour/day [51]

Discharge [53 55] Litre second

Energy consumption [56] [57] Litre of oil/hour

[56] [57] kwh/hour

Energy consumption [58] Spring

Litre/month [60] Summer

kwh/month [62] Autumn

[64] Winter

Date of installation of first pump

Irrigated area [66 67] ha

Power [68 69]

Kind of crops [72] [73] [74] [75] S S A W

Water quality

Date of sampling : _____ [76 78] millimhos/cm at 25° C

_____ _____ millimhos/cm at 25° C

_____ _____ millimhos/cm at 25° C

Remarks

Geological section	
Depth (m)	Formations

Water analyses (ppm)			
Date of sampling			
Formation			
Depth			
Na			
Ca			
Mg			
SO_4			
Cl			
HCO_3			
T.D.S.			
E.C. (mmhos/cm)			
pH			

TEST DATA

Date : Surveyor :

Kind of test :

Pumping duration hours Discharge : l/s

Start of pumping date time

End of pumping date : time

Observations	Start		End		Duration in hours	Results		
	Date	Time	Date	Time		Transmissibility (m2/s)	Permeability (m/s)	Storage coefficient
Drawdown								
Recovery								

Casing, Screen .....

.....

.....

Remarks : .....

.....

.....

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BORDEREAU DE PERFORATION

ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL (m)	ENERGY	POWER	DAY / MONTH	HOUR / DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
2	3	2	4	0,0,0,1	1,0,2,6,0	0,5,2,7,0	1,4,7,8,0	0	1,0	S	2	3,0,6,8,0	0,0,9,8	1,5,0							0,0	7,7,0
2	3	2	4	0,0,0,2	1,0,2,5,0	0,5,2,7,0	1,4,7,8,0	0	1,0	S	2	3,0,6,8,0	0,0,8	0,0,4	0	3,0,3,0	0,3,0,3,0	0,5,0	3,0,5,0	3	0,3,0	6,0	0,3	0,0,4	4,3,6,5	0,0	7,6,0
2	3	2	4	0,0,0,3	1,0,2,3,0	0,5,2,8,0	1,4,7,8,0	0	1,0	S	2	3,0,6,8,0	0,0,8	0,0,7	0	3,0,3,0	3,0,3,0,3,0	0,5,0	3,0,5,0	4	0,2,0	6,0	0,3	0,0,4	4,3,6,5	0,0	7,6,0
2	3	2	4	0,0,0,4	1,0,2,5,0	0,5,2,6,0	1,4,7,8,0	0	1,0	S	2	3,0,6,8,0	0,0,7	5,0,4	0	3,0,3,0	3,0,3,0,3,0	0,4,0	4,0,4,0	4	0,4,0	6,0	0,3	0,0,4	4,3,6,5	0,0	7,6,0
2	3	2	4	0,0,0,5	1,0,3,1,0	0,5,1,8,0	1,4,8,5,0	0	1,0	S	2	3,0,6,8,0	0,0,7	0,0,1	0	0,3,0,3	0,3,0,3,0,3,0	0,1,0	1,0,1,0	1	0,0,1	0,0	0,0	0,0,0	0,0,0,0	0,0	7,6,5
2	3	1	4	0,0,0,6	1,0,1,3,0	0,4,7,2,0	1,5,0,9,0	0	1,0	S	2	3,0,6,8,0	0,0,7	5,0,1	0	0,3,0,3	0,3,0,3,0,3,0	0,2,0	2,0,2,0	2	0,0,1	0,0	0,0	0,0,0	0,0,0,0		7,7,0
2	3	2	4	0,0,0,7	1,0,3,1,0	0,5,2,5,0	1,4,4,0,0	0	1,0	S	2	3,0,6,8,0	0,0,9	4,0,4	0	3,3,0,3	0,3,0,3,0,3,0	0,2,0	4,0,2,0	4	0,3,0	7,2	0,3	0,0,4	4,6,4,6	0,1	4,7,2
2	3	3	3	0,0,0,8	1,0,5,9,0	0,5,9,8,0	1,3,7,6,0	0	0,3	S	2	3,0,6,8,0	0,0,1	0,0,4	0	3,3,0,3	0,3,0,3,0,3,0	0,3,0	3,0,3,0,6		0,7,0	6,3	0,5	1,2	4,3,6,2	0,0	3,6,3
2	3	2	5	0,0,0,9	1,0,2,6,0	0,6,4,2,0	1,1,6,3,0	0	5,0	D	2	3,0,6,8,0	0,4,0	0,0,5	3	2,3,0,3	0,3,0,3,0,3,0	0,6,0	3,0,4,0	6	0,2,0	6,7	2,0	0,3	4,4,4,4	0,0	3,6,7
2	3	2	4	0,0,1,0	0,9,9,6,0	0,6,6,9,0	1,1,2,0,0,0	0	0,8	D	2	4,0,6,8,0	0,0,6	6,0,4	0	4,3,0,3	0,3,0,3,0,3,0	0,1,0	3,0,1,0	3	0,6,0	7,6	0,4	0,6	6,4,2,3	0,0	4,7,6
2	3	3	4	0,0,1,1	0,9,9,8,0	0,6,6,9,0	1,1,2,0,0,0	0	0,8	S	2	4,0,6,8,0	0,0,6	2,0,4	0	4,3,0,3	0,3,0,3,0,3,0	0,1,0	3,0,1,0	3	0,5,0	7,5	0,4	0,6	6,4,2,3		7,5
2	3	3	4	0,0,1,2	1,1,3,6,0	0,6,0,2,0	1,2,7,9,2,0	0	0,5	S	2	4,0,6,8,0	0,0,2	5,0,4	0	4,3,0,3	0,3,0,3,0,3,0	0,1,0	5,0,1,0	5	0,5,0	7,4	0,4	1,0	4,6,4,6	0,0	8,7,4
2	3	3	2	0,0,1,3	1,1,3,2,0	0,6,0,5,0	1,2,7,8,0								4	0,4,2,0	2,0,2,0,2,0	0,3,0	3,0,3,0	3	0,5,0	7,7	0,4	0,4	3,3,3,3	0,1	0
2	3	2	4	0,0,1,4	0,9,8,9,0	0,6,6,6,0	1,1,2,1,8,0	0	0,9	S	1	4,1,0,8,0	0,0,1	3,0,4	0	4,3,0,3	0,3,0,3,0,3,0	0,2,0	1,0,2,0	2	0,3,0	7,6	0,4	0,5	4,6,2,3	0,0	6,7,6
2	3	2	4	0,0,1,5	0,9,8,7,0	0,6,6,3,0	1,1,2,2,4,0	0	0,8	S	1	4,1,0,8,0	0,0,1	5,5,4	0	4,3,0,3	0,3,0,3,0,3,0	0,2,0	4,0,2,0	4	0,4,7	7,2	0,4	0,6	4,3,6,2	0,0	5,7,0
2	3	1	0	0,0,1,6	0,9,8,2,0	0,6,8,9,0	1,1,0,0,0								4	0,4,3,0	3,0,3,0,3,0	0,4,0	3,0,4,0	3	0,3,0	8,0	0,4	0,4	2,3,6,4	0,0	5
2	3	2	2	0,0,1,7	0,9,8,1,0	0,7,0,2,0	1,0,9,0,0								4	0,7,3,0	3,0,3,0,3,0	0,4,0	6,0,4,0	6	1,1,0	7,0	0,4	1,2	3,2,5,4		
2	3	2	4	0,0,1,8	0,9,3,1,0	0,7,2,5,0	1,0,5,0,0,0	0	0,6	S	1	4,1,0,8,0	0,0,4	5,5,1	0	0,3,0,3	0,3,0,3,0,3,0	0,1,0	1,0,1,0	1	0,0,5			0,2	6,6,6,6	0,0	6,7,9
2	3	1	1	0,0,1,9	1,2,0,2,0	0,5,3,5,0	1,4,0,0,0								1	3,0,3,0	3,0,3,0,3,0	0,1,0	1,0,1,0	1	0,0,1			0,0			0,0	3
4	3	3	0	0,0,2,0	2,5,3,0,0	0,9,0,5,0	0,4,5,8,0,0	0	1,5	S	3	0,0,6,8,0	0,0,0	9,6,1		3,0,3,0	3,0,3,0,3,0	0,1,0	1,0,1,0	1	0,0,1			0,0			0,0	5
4	3	3	1	0,0,2,1	2,5,0,0,0	0,8,2,0,0	0,5,6,0,0								0								0,0			1,0	5
4	3	3	1	0,0,2,2	2,4,6,8,0	0,7,5,2,0	0,7,0,0,0								0								0,0			0,3	1
4	3	3	1	0,0,2,3	2,4,5,9,0	0,7,2,8,0	0,7,4,0,0								1								0,0			0,2	0

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ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL (m)	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	FIRST PUMP	POWER	AREATED AREA	CPOPS	CONDUCTIVITY	DATE OF DRILLING
1	4	8	12	16	20	24	28	32	36		40	44	48	52	56	60	64	68	72	76	80
4	33	1	0024	23580	06630	07880					1							00		026	
4	33	3	0025	21930	05660	09320	001	S	30,06,80	0,0,0,0,0	1							00		007	
4	33	3	0026	21160	04330	11260	001	S	30,06,80	0,0,0,0,0	1							00		005	
4	33	3	0027	20030	03820	10880	001	S	30,06,80	0,0,0,0,0	1							00		005	
4	33	4	0028	16080	02190	13000	007	S	02,07,80	0,0,5,0,5	2		30,30,30,30	0,1,0,1,0,1,0,0,4				01	65	65,005	75
4	33	4	0029	16060	02210	13000	008	S	02,07,80	0,0,5,9,0	2		30,30,30,30	0,2,0,2,0,2,0,2,0,5	60	04		01	65	65,005	40
4	33	4	0030	16060	02210	13000	008	S	02,07,80	0,0,5,4,0	2		30,30,30,30	0,2,0,2,0,2,0,2,0,3				01	65	65,005	50
4	33	4	0031	16070	02180	13000	005	S	02,07,80	0,0,3,9,0	2		30,30,30,30	0,3,0,2,0,3,0,2,0,2				01	65	65,005	75
4	33	4	0032	16040	02170	13000	008	S	02,07,80	0,0,6,9,0	2		30,30,30,30	0,2,0,2,0,2,0,2,0,3				01	65	65,005	70
4	33	4	0033	16030	02200	13000	007	D	02,07,80	0,0,5,2,0	3	01	30,30,30,30	0,2,0,3,0,2,0,3,0,2	76	04	02	64	56	004	68
4	33	4	0034	16010	02160	13000	006	S	02,07,80	0,0,4,8,5	2		30,30,30,30	0,2,0,1,0,2,0,1,0,5				01	65	65,005	50
4	33	4	0035	15970	02160	13000	005	S	02,07,80	0,0,3,1,0	2		30,30,30,30	0,2,0,2,0,2,0,2,0,3				01	65	65,004	60
4	33	4	0036	15940	02180	13000	007	S	02,07,80	0,0,5,6,0	2		30,30,30,30	0,1,0,1,0,1,0,0,5				01	65	65,006	55
4	33	4	0037	15920	02140	13000	007	S	02,07,80	0,0,5,4,0	2		30,30,30,30	0,3,0,3,0,3,0,0,3				01	65	65,005	60
4	33	4	0038	15880	02140	13000	006	S	02,07,80	0,0,5,4,0	2		30,30,30,30	0,2,0,2,0,2,0,2,0,4				01	65	65,005	72
4	33	3	0039	15440	01980	13300	002	S	02,07,80	0,0,1,3,0	1							00		003	
4	33	4	0040	15210	01880	13390	004	S	02,07,80	0,0,3,6,0	1							00		005	80
4	33	4	0041	14750	01820	13750	004	S	02,07,80	0,0,2,9,0	1							00		004	00
4	33	6	0042	17770	02450	12050					4	06	30,30,30,30	0,3,0,3,0,4,0,0	40,0	76	06	80	56	62,004	76
4	33	3	0043	17930	02580	11926	003	S	03,07,80	0,0,2,1,5	3	01	00,00	30,30,0,0,0,0,4,0,4	020	79	01	06	66	66,006	79
4	31	1	0044	19380	03690	10770					1							00		023	
4	33	4	0045	19430	03740	10600	003	S	03,07,80	0,0,1,7,6	3	01	30,30	30,30,0,3,0,2,0,2,0	78	01		06	56	23,005	74
4	33	4	0046	19550	03530	10810	006	S	03,07,80	0,0,5,2,0	3	01	30,30	30,30,0,3,0,2,0,3,0	77	01		12	45	66,006	76

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Service Ordinateurs

BORDEREAU DE PERFORATION

	ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL (m)	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
	1	2	4	5	12	16	20	24	28	32	36	40		44	48	52	56	60	64	68	72	76
	4	3	3	4	0,0,4,7	1,9,6,0,0	0,3,4,9,0	1,0,8,1,0	0,0,4,5	S	0,3,0,7,8,0	0,0,3,5,0	4	0,6	3,0,3,0,3,0,3,0	0,4,0	3,0,4,0,3	0,4,0,7,6	0,6,0,7	4,3,6,5	0,1	7,6
	4	3	3	4	0,0,4,8	1,9,6,3,0	0,3,4,5,0	1,0,8,3,0	0,0,0,5	S	0,3,0,7,8,0	0,0,4,2,0	3	0,1	3,0,3,0,3,0,3,0	0,4,0	2,0,4,0,2	0,2,0,7,8	0,1,0,9	5,3,6,5	0,0,7	7,8
	4	3	3	4	0,0,4,9	1,9,5,8,0	0,3,5,6,0	1,0,7,7,0	0,0,0,3	S	0,3,0,7,8,0	0,0,0,8,0	3	0,1	3,0,3,0,3,0,3,0	0,2,0	3,0,2,0,3	0,2,0,7,6	0,1,1,0	8,4,6,5	0,0,4	7,5
	4	3	3	4	0,0,5,0	1,9,5,1,0	0,3,5,8,0	1,0,7,8,0					5	0,2	3,0,3,0,3,0,3,0	0,2,0	3,0,2,0,3	0,3,0,7,6	0,2,0,6	6,5,6,5	0,0,5	7,6
	4	3	3	4	0,0,5,1	1,9,4,7,0	0,4,0,0,0	1,0,5,0,0	0,0,0,6	S	0,3,0,7,8,0	0,0,5,2,5	3	0,3	3,0,3,0,3,0,3,0	0,4,0,4	0,4,0,4	0,5,0,7,5	0,3,2,0	6,4,5,3	0,0,5	7,5
	4	3	3	4	0,0,5,2	1,9,4,9,6	0,4,0,8,0	1,0,4,5,0	0,0,0,5	S	0,3,0,7,8,0	0,0,4,2,5	3	0,1	3,0,3,0,3,0,3,0	0,2,0	3,0,2,0,3	0,2,6,7,5	0,1,0,8	5,8,4,6	0,0,4	7,0
	4	3	3	4	0,0,5,3	1,9,4,8,0	0,4,0,6,0	1,0,4,7,0	0,0,0,6	S	0,3,0,7,8,0	0,0,0,3,9,5	3	0,3	3,0,3,0,3,0,3,0	0,4,0,4	0,4,0,4	0,2,8,7,6	0,1,0,6	6,4,5,3	0,0,6	6,8
	4	3	3	4	0,0,5,4	1,9,4,7,0	0,4,0,3,0	1,0,4,9,0	0,0,0,5	S	0,3,0,7,8,0	0,0,4,2,0	3	0,2	3,0,3,0,3,0,3,0	0,6,0	4,0,6,0,4	0,3,0,7,5	0,2,1,2	4,6,5,8	0,0,4	6,0
	4	3	3	4	0,0,5,5	2,0,0,6,0	0,3,8,1,0	1,0,9,5,0	0,0,0,3	S	0,3,0,7,8,0	0,0,2,1,5	3	0,3	3,0,3,0,3,0,3,0	0,3,0	2,0,3,0,2	0,2,8,7,9	0,3,0,4	6,5,6,5	0,0,4	7,9
	4	3	3	4	0,0,5,6	1,8,3,9,0	0,3,9,4,0	1,0,8,2,5	0,0,0,5	S	0,1,1,0,8,0	0,0,3,5,0	4	0,3	3,0,3,0,3,0,3,0	0,1,0	1,0,1,0,1	0,2,7,7,9	0,3,0,1	4,6,8,6	0,0,3	5,5
	4	3	3	4	0,0,5,7	1,8,4,2,0	0,3,9,1,0	1,0,8,4,0	0,0,0,5	S	0,6,0,7,8,0	0,0,4,0,9	4	0,5	3,0,3,0,3,0,3,0	0,2,0	1,0,2,0,1	0,4,2,7,9	0,5,0,2	6,3,4,8	0,0,8	7,9
	4	3	3	4	0,0,5,8	1,8,3,2,0	0,3,8,3,0	1,0,9,5,0	0,0,6	S	0,6,0,7,8,0	0,0,5,2,0	4	0,5	3,0,3,0,3,0,3,0	0,1,0	1,0,1,0,1	0,4,5,7,9	0,5,0,1	6,4,8,6	0,0,6	7,9
	4	3	3	4	0,0,5,9	1,8,4,6,0	0,3,9,7,0	1,0,7,6,5	0,0,4	S	0,6,0,7,8,0	0,0,3,4,0	4	0,5	3,0,3,0,3,0,3,0	0,4,0	2,0,4,0,2	0,4,0,7,9	0,5,0,3	6,4,8,6	0,0,8	7,5
	4	3	3	4	0,0,6,0	1,8,4,5,0	0,4,0,4,0	1,0,7,2,0	0,0,4,5	S	0,6,0,7,8,0	0,0,2,9,0	4	0,5	3,0,3,0,3,0,3,0	0,2,0	1,0,2,0,1	0,4,3,7,0	0,3,0,6	8,6,4,6	0,0,4	5,6
	4	3	3	4	0,0,6,1	1,8,4,4,0	0,4,0,3,0	1,0,7,3,0	0,0,4	S	0,6,0,7,8,0	0,0,3,1,0	4	0,5	3,0,3,0,3,0,3,0	0,1,0	1,0,2,0,2	0,4,0,7,9	0,5,0,4	6,8,4,2	0,0,4	7,5
	4	3	3	4	0,0,6,2	1,8,4,3,0	0,4,0,1,0	1,0,7,4,0	0,0,0,5	S	0,6,0,7,8,0	0,0,3,0,4	3	0,3	3,0,3,0,3,0,3,0	0,4,0	1,0,4,0,1	0,2,8,7,9	0,3,0,6	8,6,4,5	0,0,5	7,4
	4	3	3	4	0,0,6,3	1,8,4,6,0	0,4,0,1,0	1,0,7,2,5	0,0,6	S	0,6,0,7,8,0	0,0,4,0,0	3	0,3	3,0,3,0,3,0,3,0	0,3,0	1,0,3,0,1	0,3,0,7,8	0,3,0,4	6,8,4,5	0,0,4	6,6
	4	3	3	4	0,0,6,4	1,8,4,8,0	0,4,0,4,0	1,0,6,9,5	0,0,5	S	1,0,1,0,8,0	0,0,0,5,0	4	0,6	3,0,3,0,3,0,3,0	0,3,0	3,0,3,0,3	0,5,2,7,5	0,6,0,5	6,8,4,5	0,0,4	6,6
	4	3	3	4	0,0,6,5	1,8,5,3,0	0,4,1,4,0	1,0,5,9,0	0,0,5	S	0,6,0,7,8,0	0,0,4,5,0	4	0,4	3,0,3,0,3,0,3,0	0,2,0	1,0,2,0,1	0,3,7,6,8	0,4,0,5	4,7,3,8	0,0,4	6,8
	4	3	3	1	0,0,6,6	1,8,5,4,0	0,4,1,6,0	1,0,5,8,0	0,0,6	S	0,6,0,7,8,0	0,0,4,9,0	4	0,4	3,0,3,0,3,0,3,0	0,2,0	2,0,2,0,2	0,4,0,6,8	0,4,0,5	4,6,8,5	0,0,5	6,5
	4	3	3	4	0,0,6,7	1,8,5,3,0	0,4,0,9,0	1,0,6,2,0	0,0,6	S	0,6,0,7,8,0	0,0,3,9,0	4	0,5	3,0,3,0,3,0,3,0	0,2,0	1,0,2,0,1	0,5,0,6,5	0,5,0,4	6,8,4,3	0,0,5	6,4
	4	3	3	4	0,0,6,8	1,8,5,3,0	0,4,1,2,0	1,0,6,1,0	0,0,6	D	0,6,0,7,8,0	0,0,4,8,5	3	0,3	3,0,3,0,3,0,3,0	0,1,0	1,0,2,0,2	0,2,8,6,8	0,3,0,4	8,4,6,5	0,0,6	6,0
	4	3	3	4	0,0,6,9	1,8,5,8,0	0,4,1,8,0	1,0,5,4,0	0,0,4	S	0,6,0,7,8,0	0,0,2,9,0	4	0,5	3,0,3,0,3,0,3,0	0,2,0	3,0,2,0,3	0,4,0,6,9	0,3,0,5	8,6,4,5	0,0,3	6,9

— SOGREAH —
Service Ordinateurs

BORDEREAU DE PERFORATION

ZONE	AQUIFER TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL (m)	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
1	4	5	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
4	3	3	4	0,0	7	0	1,8	5	4,0	4	1,9	0	1,0	5	5,0	0	0,6	S	0	1	1,0	8	0	0	3	0	0	4	0	4	0	3	0	3	0	3	0	0	1	0	1	0	1	0	1	0	5	2	7	0	0	3	0	8	6	6	8	4	0	0	4	7	0
4	3	3	4	0	0	7	1	1,8	5	6,0	4	2,1	0	1,0	5	2,0	0	0,4	S	0	6	0	7	8	0	0	0	3	8	0	3	0	3	0	3	0	3	0	0	0	1	0	1	0	1	0	1	0	2	0	7	7	0	3	0	2	4	4	4	4	0	1	5	7	7
4	3	3	4	0	0	7	2	1,8	5	8,0	4	1,9	0	1,0	5	2,0	0	0,5	S	0	6	0	7	8	0	0	0	3	9	0	4	0	5	3	0	3	0	3	0	3	0	0	2	0	1	0	2	0	1	0	4	0	7	4	0	4	0	6	8	4	6	8	0	0	5	7	0
4	3	3	4	0	0	7	3	1,8	5	9,0	4	2,0	0	1,0	5	1,0	0	0,5	D	0	6	0	7	8	0	0	0	4	3	0	4	0	5	3	0	3	0	3	0	3	0	0	2	0	2	0	3	0	3	0	3	8	6	8	0	5	0	6	8	4	6	8	0	0	5	6	0
4	3	3	4	0	0	7	4	1,8	6	1,0	4	2,1	0	1,0	4	9,5	0	0,5	S	0	6	0	7	8	0	0	0	3	8	0	4	0	5	3	0	3	0	3	0	3	0	0	2	0	1	0	1	0	2	0	3	0	7	3	0	3	0	2	8	4	6	8	0	0	6	6	6
4	3	3	4	0	0	7	5	1,8	6	2,0	4	2,2	0	1,0	4	8,5	0	0,5	S	0	1	1	0	8	0	0	0	2	7	0	4	0	5	3	0	3	0	3	0	3	0	0	1	0	1	0	3	0	3	0	3	7	8	0	5	0	2	8	4	6	8	0	0	7	6	6
3	3	3	4	0	0	7	6	1,6	4	3,0	0	5,5	5	0,0	1	0	1	6,0	0	0	6	S	0	7	0	7	8	0	0	0	5	1	0	3	0	2	3	0	3	0	3	0	3	0	0	3	0	2	0	3	0	2	0	2	0	7	4	0	4	0	8	4	3	6	5	0	0	7	7	3
3	3	3	4	0	0	7	7	1,6	4	5,0	0	5,5	3	0,0	1	0	1	7,0	0	0	8	S	0	7	0	7	8	0	0	0	6	4	5	4	0	5	3	0	3	0	3	0	3	0	0	4	0	2	0	4	0	2	0	4	0	7	0	4	0	5	4	8	5	6	0	0	7	7	0
3	3	3	4	0	0	7	8	1,6	4	7,0	0	5,5	2	0,0	1	0	2	0,0	0	0	8	S	0	7	0	7	8	0	0	0	7	5	5	3	0	3	0	3	0	3	0	3	0	0	3	0	1	0	2	0	1	0	2	2	7	4	0	3	1	2	5	4	6	5	0	1	5	7	0
3	3	3	4	0	0	7	9	1,6	4	5,0	0	5,5	0	0,0	1	0	2	0,0	0	0	8	D	0	7	0	7	8	0	0	0	7	1	0	3	0	2	3	0	3	0	3	0	3	0	0	1	0	1	0	1	0	2	3	7	9	0	2	0	2	5	6	4	5	0	0	6	7	9
3	3	3	4	0	0	8	0	1,6	4	4,0	0	5,4	7	0,0	1	0	2	2,0	0	0	9	S	0	7	0	7	8	0	0	0	6	5	0	4	0	4	3	0	3	0	3	0	3	0	0	1	0	1	0	1	0	2	0	2	0	7	4	0	2	0	4	5	6	3	0	0	5	7	3
3	3	3	4	0	0	8	1	1,6	4	4,0	0	5,4	0	1,0	2	4,0	0	0,8	D	0	7	0	7	8	0	0	0	7	4	0	3	0	2	3	0	3	0	3	0	3	0	0	3	0	1	0	1	0	4	0	3	0	7	7	0	2	0	5	4	6	5	3	0	0	4	7	7
3	3	3	3	0	0	8	2	1,6	4	6,0	0	5,5	6	0,0	1	0	1	1,5	0	0	2	S	0	7	0	7	8	0	0	0	1	1	0	3	0	2	3	0	3	0	3	0	3	0	0	3	0	3	0	3	0	2	0	2	0	7	9	0	2	0	7	4	5	6	3	0	0	4	7	9
3	3	3	4	0	0	8	3	1,6	4	6,0	0	5,5	8	0,0	1	0	1	3,0	0	0	4	S	0	7	0	7	8	0	0	0	3	0	0	3	0	2	3	0	3	0	3	0	3	0	0	2	0	2	0	2	0	4	0	2	0	7	3	0	2	0	4	4	3	5	6	0	0	5	7	0
3	3	3	4	0	0	8	4	1,6	4	3,0	0	5,5	8	0,0	1	0	1	2,5	0	0	4	S	0	7	0	7	8	0	0	0	2	5	0	4	0	4	0	5	3	0	3	0	3	0	3	0	0	2	0	2	0	5	0	2	0	4	0	6	8	0	5	0	6	4	8	6	3	0	0	4	6	5
3	3	3	4	0	0	8	5	1,6	4	5,0	0	5,6	1	0,0	1	0	1	1,0	0	0	4	S	0	7	0	7	8	0	0	0	3	2	0	4	0	5	3	0	3	0	3	0	3	0	3	0	0	2	0	2	0	2	0	4	0	3	0	7	2	0	6	1	0	4	3	5	6	0	0	5	7	5
3	3	3	4	0	0	8	6	1,6	4	5,0	0	5,6	2	0,0	1	0	1,0	0	0	0	5	D	0	7	0	7	8	0	0	0	4	2	0	3	0	3	3	0	3	0	3	0	3	0	0	2	0	2	0	3	0	1	0	2	5	7	5	0	3	0	6	4	3	6	5	0	0	6	7	0
3	3	3	4	0	0	8	7	1,6	4	4,0	0	5,6	4	0,0	1	0	0,8	0	0	0	4	D	0	7	0	7	8	0	0	0	3	6	0	4	0	5	3	0	3	0	3	0	3	0	0	2	0	2	0	1	0	4	0	4	0	7	5	0	5	0	1	2	4	3	5	6	0	0	5	7	4
3	3	3	4	0	0	8	8	1,6	4	3,0	0	5,6	6	0,0	1	0	0,6	0	0	0	4	S	0	7	0	7	8	0	0	0	3	4	0	4	0	5	3	0	3	0	3	0	3	0	0	2	0	2	0	2	0	3	0	3	0	7	5	0	5	0	1	0	4	3	5	6	0	0	6	7	0
3	3	3	4	0	0	8	9	1,6	4	2,0	0	5,7	0	1,0	0	0,4	0	0,4	D	0	8	0	7	8	0	0	0	2	9	0	4	0	5	3	0	3	0	3	0	3	0	0	2	0	3	0	3	0	2	0	4	5	6	7	0	2	0	1	5	4	3	5	6	0	0	6	6	7
3	3	3	4	0	0	9	0	1,6	4	1,0	0	5,6	9	0,1	0	0,4	0	0,5	S	0	8	0	7	8	0	0	0	2	7	4	4	0	5	3	0	3	0	3	0	3	0	0	3	0	3	0	3	0	3	0	4	0	6	8	0	3	0	1	0	4	5	3	6	0	0	6	6	4
3	3	3	4	0	0	9	1	1,6	4	1,0	0	5,7	0	0,1	0	0,3	0	0,4	D	0	8	0	7	8	0	0	0	3	1	0	4	0	6	3	0	3	0	3	0	3	0	0	2	0	3	0	3	0	3	0	3	0	5	6	7	0	0	4	1	2	4	3	5	6	0	0	5	7	0
3	3	3	4	0	0	9	2	1,6	4	1,0	0	5,7	1	0,1	0	0,2	0	0,3	S	0	8	0	7	8	0	0	1	9	0	4	0	3	0	3	0	3	0	3	0	3	0	0	3	0	2	0	2	0	1	0	3	0	9	6	0	3	1	2	3	4	8	7	0	0	4	7	6

— SOGREAH —
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BORDEREAU DE PERFORATION

ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL (m)	ENERGY	POWER	DAY / MONTH	HOUR / DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
3	3	3	4	0,0,9,3	1,6,4,0,0	0,5,7,2,0	1,0,0,1,0,0	0,3	D	0,8,0,7,8,0	0,0,2,2,5	3,0	3	3,0,3,0,3,0,3,0	0,2,0,2	0,2,0,2	0,2,5	7,6	0,3	1,6	7,3	4,6	0,0,5	7,6
3	3	3	4	0,0,9,4	1,6,3,9,0	0,5,7,3,0	1,0,0,,0,5,0	0,3	S	0,8,0,7,8,0	0,0,0,9,0	3,0	3	3,0,3,0,3,0,3,0	0,1,0,2	0,3,0,2	0,2,0	7,2	0,3	0,8	4,3	7,6	0,1	6,6,0
3	3	3	3	0,0,9,5	1,6,3,9,0	0,5,7,4,0	1,0,0,,0,5,0	0,1	S	0,8,0,7,8,0	0,0,0,8,0	3,0	3	3,0,3,0,3,0,3,0	0,2,0,1	0,2,0,1	0,2,0	7,4	0,3	1,0	5,4	3,6	0,1	6,7,0
3	3	3	3	0,0,9,6	1,6,3,7,0	0,5,7,5,0	1,0,0,,0,5,0	0,2	S	0,8,0,7,8,0	0,0,0,8,5	4,0	3	3,0,3,0,3,0,3,0	0,3,0,1	0,3,0,1	0,2,0	7,5	0,4	1,2	6,4	3,8	0,1	7,0
3	3	3	4	0,0,9,7	1,6,3,8,0	0,5,7,4,0	1,0,0,,0,0,0	0,2	D	0,8,0,7,8,0	0,0,1,2,0	4,0	6	3,0,3,0,3,0,3,0	0,3,0,3	0,2,0,2	0,4,8	7,2	0,3	0,8	4,3	8,6	0,1	4,7,2
3	3	3	4	0,0,9,8	1,6,3,7,0	0,5,7,2,0	1,0,0,,1,0,0	0,3	S	0,8,0,7,8,0	0,0,1,2,0	4,0	6	3,0,3,0,3,0,3,0	0,2,0,2	0,2,0,2	0,4,0	7,2	0,3	0,6	6,8	3,4	0,2	4,7,2
3	3	3	4	0,0,9,9	1,6,3,7,0	0,5,7,0,0	1,0,0,,2,0,0	0,2	S	0,8,0,7,8,0	0,0,0,7,0	4,0	6	3,0,3,0,3,0,3,0	0,1,0,1	0,1,0,1	0,4,0	8,0	0,6	0,8	4,3	8,6	0,2	5,8,0
3	3	3	4	0,1,0,0	1,6,3,5,0	0,5,5,0,0	1,0,2,,2,0,0	0,8	S	0,8,0,7,8,0	0,0,6,9,0	4,0	6	3,0,3,0,3,0,3,0	0,2,0,2	0,2,0,2	0,5,0	7,9	0,6	1,0	4,3	6,8	0,0,5	7,9
3	3	3	4	0,1,0,1	1,6,3,6,0	0,5,5,3,0	1,0,2,0,5,0	0,7	S	0,8,0,7,8,0	0,0,5,6,0	4,0	6	3,0,3,0,3,0,3,0	0,3,0,3	0,3,0,2	0,4,0	7,9	0,6	1,0	8,4	6,3	0,0,5	7,8
3	3	3	4	0,1,0,2	1,6,3,8,0	0,5,5,3,0	1,0,1,9,5,0	0,5	S	0,8,0,7,8,0	0,0,4,0,0	3,0	2	3,0,3,0,3,0,3,0	0,1,0,1	0,1,0,1	0,4,0	6,8	0,2	0,2	5,5	5,5	0,0,3	6,5
3	3	3	4	0,1,0,3	1,6,3,9,0	0,5,5,4,0	1,0,1,8,0,0	0,4	S	0,8,0,7,8,0	0,0,3,1,0	4,0	5	3,0,3,0,3,0,3,0	0,3,0,3	0,3,0,1	0,4,0	7,9	0,5	0,6	5,4	8,3	0,0,4	7,9
3	3	3	4	0,1,0,4	1,6,3,8,0	0,5,5,6,0	1,0,1,6,5,0	0,5	S	0,8,0,7,8,0	0,0,4,2,0	4,0	5	3,0,3,0,3,0,3,0	0,3,0,2	0,3,0,3	0,4,0	7,9	0,5	1,0	4,8	6,3	0,0,3	7,5
3	3	3	4	0,1,0,5	1,6,3,9,0	0,5,5,8,0	1,0,1,4,5,0	0,5	D	0,8,0,7,8,0	0,0,4,0,0	3,0	3	3,0,3,0,3,0,3,0	0,2,0,1	0,2,0,1	0,2,0	7,3	0,3	0,4	4,8	3,6	0,0,3	7,3
3	3	3	4	0,1,0,6	1,6,4,0,0	0,5,6,2,0	1,0,1,1,0,0	0,3	S	0,8,0,7,8,0	0,0,2,3,0	3,0	3	3,0,3,0,3,0,3,0	0,2,0,1	0,2,0,1	0,2,0	7,7	0,3	0,3	4,3	6,8	0,0,5	7,0
3	3	3	4	0,1,0,7	1,6,3,9,0	0,5,6,4,0	1,0,0,8,0,0	0,5	S	0,8,0,7,8,0	0,0,2,9,0	4,0	7	3,0,3,0,3,0,3,0	0,4,0,4	0,4,0,4	0,4,0	7,7	0,7	1,5	4,8	5,6	0,0,5	6,8
3	3	3	4	0,1,0,8	1,6,3,8,0	0,5,6,7,0	1,0,0,6,0,0	0,5	D	0,8,0,7,8,0	0,0,3,6,0	4,0	7	3,0,3,0,3,0,3,0	0,4,0,2	0,6,0,1	0,4,5	7,8	0,7	1,8	4,3	8,6	0,0,5	7,0
3	3	3	4	0,1,0,9	1,6,4,2,0	0,5,6,1,0	1,0,1,4,0,0	0,4	S	0,8,0,7,8,0	0,0,3,1,0	3,0	3	3,0,3,0,3,0,3,0	0,2,0,1	0,1,0,1	0,2,0	7,7	0,3	0,3	4,5	6,3	0,0,5	7,0
3	3	3	3	0,1,1,0	1,6,5,6,0	0,5,5,7,9,0	1,0,0,4,0,0	0,5	S	0,8,0,7,8,0	0,0,3,9,0	3,0	2	3,0,3,0,3,0,3,0	0,3,0,2	0,3,0,1	0,2,0	7,9	0,2	0,8	4,6	8,3	0,0,7	7,9
3	3	1	4	0,1,1,1	1,6,4,5,0	0,5,8,2,0	1,0,0,0,0,0	0,6	D	0,8,0,7,8,0	0,0,5,5,0	4,0	5	3,0,3,0,3,0,3,0	0,3,0,3	0,3,0,2	0,4,0	7,6	0,4	0,6	4,6	3,8	0,2,0	7,5
3	3	1	4	0,1,1,2	1,6,4,4,0	0,5,8,3,0	0,9,9,8,0,0	0,6	S	0,8,0,7,8,0	0,0,4,2,0	3,0	4	3,0,3,0,3,0,3,0	0,2,0,1	0,2,0,1	0,3,0	7,9	0,4	0,3	5,4	6,5	0,1,1	7,9
3	3	3	4	0,1,1,3	1,6,4,1,0	0,5,8,6,0	0,9,9,4,0,0	0,3	D	0,8,0,7,8,0	0,0,2,1,0	2,0	3	3,0,3,0,3,0,3,0	0,3,0,3	0,3,0,1	0,4,0	7,2	0,3	0,8	4,3	6,5	0,0,8	7,2
3	3	3	4	0,1,1,4	1,6,3,9,0	0,5,8,6,0	0,9,9,3,0,0	0,2	S	0,8,0,7,8,0	0,0,1,1,0	4,0	5	3,0,3,0,3,0,3,0	0,4,0,2	0,4,0,2	0,5,0	7,4	0,5	1,5	3,4	5,6	0,1,2	7,0
3	3	3	4	0,1,1,5	1,6,3,7,0	0,5,8,6,0	0,9,9,2,0,0	0,3	S	0,9,0,7,8,0	0,0,1,8,0	3,0	5	3,0,3,0,3,0,3,0	0,2,0,2	0,2,0,4	0,4,0	7,2	0,4	0,8	3,5	4,6	0,0,7	7,2

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BORDEREAU DE PERFORATION

ZONE	AQUIFER	STAGE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL (m)	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
3	3	3	4 0 1 1 6	1 6 3 8 0	0 5 9 0 0	0 9 9 0 5	0 0 4	S	0 9 0 7 8	0 0 2 0 5	3	0 3	3 0 3 0 3 0	0 2 0 2 0 2 0 2	0 2 0	7 0	9 3	0 0	4 8	6 4	0 0 6	7 0
3	3	3	4 0 1 1 7	1 6 3 6 0	0 5 9 0 0	0 9 9 1 0	0 0 4	D	0 9 0 7 8	0 0 2 9 5	3	0 3	3 0 3 0 3 0 3 0	0 3 0 3 0 3 0 1	0 2 5	7 0	0 3	0 5	4 8	6 3	0 0 9	1 0
3	3	3	4 0 1 1 8	1 6 3 3 0	0 5 8 8 0	0 9 9 0 0	0 0 6	D	0 9 0 7 8	0 0 3 6 0	4	0 5	3 0 3 0 3 0 3 0	0 2 0 2 0 2 0 2	0 6 0	7 8	0 3	1 0	4 8	6 3	0 2 0	7 4
3	3	3	4 0 1 1 9	1 6 3 2 0	0 5 8 8 0	0 9 8 9 5	0 0 2	D	0 9 0 7 8	0 0 0 0 9 5	3	0 3	3 0 3 0 3 0 3 0	0 2 0 2 0 2 0 1	0 3 0	7 8	0 3	0 4	8 4	6 3	0 2 5	7 5
3	3	3	4 0 1 2 0	1 6 3 0 0	0 5 8 8 0	0 9 8 8 5	0 0 3	D	0 9 0 7 8	0 0 2 1 0	3	0 4	3 0 3 0 3 0 3 0	0 2 0 2 0 4 0 1	0 3 6	7 3	0 3	0 6	8 4	6 4	0 1 3	7 3
3	3	3	4 0 1 2 1	1 6 2 9 0	0 5 8 7 0	0 9 8 7 5	0 0 2	D	0 9 0 7 8	0 0 0 4 0	3	0 3	3 0 3 0 3 0 3 0	0 2 0 1 0 2 0 1	0 3 6	7 9	0 3	0 4	4 8	6 3	0 1 3	7 6
3	3	3	4 0 1 2 2	1 6 2 8 0	0 5 8 7 0	0 9 8 7 0	0 0 2	D	0 9 0 7 8	0 0 0 5 0	4	0 7	3 0 3 0 3 0 3 0	0 4 0 2 0 4 0 2	0 8 0	7 8	0 7	0 8	4 6	8 4	0 2 0	7 8
3	3	3	4 0 1 2 3	1 6 2 7 0	0 5 9 0 0	0 9 8 7 0	0 0 4	S	0 9 0 7 8	0 0 2 4 0	3	0 3	3 0 3 0 3 0 3 0	0 2 0 2 0 2 0 2	0 2 0	7 4	0 5	0 4	4 6	8 4	0 1 6	7 0
3	3	1	4 0 1 2 4	1 6 2 6 0	0 5 9 0 0	0 9 8 5 5	0 0 5	S	0 9 0 7 8	0 0 0 2 1 0	3	0 3	3 0 3 0 3 0 3 0	0 6 0 6 0 5 0 5	0 3 0	7 1	0 3	1 0	4 6	3 8	0 1 4	7 0
3	3	1	4 0 1 2 5	1 6 2 5 0	0 5 9 0 0	0 9 8 5 5	0 0 6	S	0 9 0 7 8	0 0 0 2 9 0	4	0 5	3 0 3 0 3 0 3 0	0 2 0 2 0 2 0 2	0 4 0	6 9	0 3	1 0	4 6	6 3	0 1 5	6 8
3	3	3	4 0 1 2 6	1 6 2 3 0	0 5 9 0 0	0 9 8 5 0	0 0 5	S	0 9 0 7 8	0 0 0 1 8 0	3	0 3	3 0 3 0 3 0 3 0	0 4 0 2 0 4 0 2	0 2 0	7 5	0 3	0 4	4 8	6 3	0 1 0	6 5
3	3	3	4 0 1 2 7	1 6 2 1 0	0 5 9 1 0	0 9 8 3 5	0 0 4	S	0 9 0 7 8	0 0 0 2 2 5	3	0 3	3 0 3 0 3 0 3 0	0 2 0 2 0 4 0 2	0 2 0	6 8	0 3	0 4	4 8	6 3	0 1 0	6 5
3	3	3	4 0 1 2 8	1 6 1 9 0	0 5 9 2 0	0 9 8 3 0	0 0 2	D	0 9 0 7 8	0 0 0 0 9 5	3	0 3	3 0 3 0 3 0 3 0	0 1 0 1 0 6 0 1	0 2 5	6 9	0 3	0 4	4 8	6 3	0 0 6	6 8
3	3	3	4 0 1 2 9	1 6 1 8 0	0 5 9 3 0	0 9 8 2 0	0 0 2	S	0 9 0 7 8	0 0 0 8 0	3	0 3	3 0 3 0 3 0 3 0	0 2 0 2 0 2 0 2	0 3 2	7 1	0 3	0 4	3 4	6 3	0 1 0	7 0
3	3	3	4 0 1 3 0	1 6 1 6 0	0 5 9 5 0	0 9 8 1 0	0 0 3	S	0 9 0 7 8	0 0 0 0 6 0	3	0 3	3 0 3 0 3 0 3 0	0 3 0 3 0 1 0 1	0 3 0	7 8	0 3	0 5	4 6	8 3	0 6 0	7 5
3	3	3	4 0 1 3 1	1 6 1 4 0	0 5 8 8 0	0 9 8 3 0	0 0 3	D	0 9 0 7 8	0 0 0 2 0 0	3	0 3	3 0 3 0 3 0 3 0	0 2 0 2 0 2 0 2	0 2 0	7 2	0 3	0 3	4 8	6 3	0 7 0	7 2
4	1	1	1 0 1 3 2	1 8 2 6 0	0 7 5 2 0	0 8 6 0 0					1				0 0 5			0 0			0 2 3	
3	3	3	3 0 1 3 3	1 6 9 7 0	1 0 3 2 0	0 2 3 2 0	0 0 3	S	1 2 0 7 8 0	0 0 2 8 0	1							0 0			0 2 3	
3	4	4	2 0 1 3 4	1 6 2 0 0	0 9 8 0 0	0 3 1 5 0					0							0 0			0 0 6	
3	4	4	3 0 1 3 5	1 8 2 4 0	1 2 6 9 0	0 0 0 3 3	0 0 2	S	1 2 0 7 8 0	0 0 1 9 5	1							0 0			0 0 8	
3	4	4	4 0 1 3 6	1 8 8 9 0	1 2 0 1 0	0 0 0 5 0	0 0 3	S	1 3 0 7 8 0	0 0 2 0 7	1							0 0			0 1 4	
3	4	4	4 0 1 3 7	1 8 9 7 0	1 1 9 8 0	0 0 0 5 0	0 0 5	S	1 0 0 9 8 0	0 0 2 7 0	4	0 6	3 0 3 0 3 0 3 0	0 6 0 5 0 6 0 5	0 3 0	7 9	0 5	1 0	9 9	9 9	0 3 6	7 4
3	4	4	4 0 1 3 8	1 1 9 7 0	1 1 9 4 0	0 0 0 5 0	0 0 4	D	1 3 0 7 8 0	0 0 2 3 0	4	0 5	3 0 3 0 3 0 3 0	0 4 0 4 0 4 0 4	0 5 0	7 5	0 5	1 0	9 9	9 9	0 1 9	7 4

— SOGREAH —
Service Ordinateurs

BORDEREAU DE PERFORATION

	ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL	ENERGY	POWER	DAY / MONTH	HOUR / DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
	1	3	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
	3	44	4	0139	19000	11920	00050	003	D	30780	00275	4	05	30303030	04040404	055	79	05	10	9999	027	74
	3	44	4	0140	19040	11940	00040	004	S	30780	00350	4	05	30303030	03030303	040	75	05	10	9996	022	74
	4	44	4	0141	20600	11430	00950	003	S	30780	00145	4	07	30303030	04040404	050	70	04	10	9999	109	70
	4	44	4	0142	20540	11470	00040	002	S	30780	00165	4	06	30303030	04040404	050	68	04	10	9999	073	70
	4	33	1	0143	22080	06920	08230					1							00		010	
	4	33	4	0144	18900	04540	10060	002	S	50780	00120	4	05	30303030	04020402	030	70	04	06	5463	060	
	4	31	4	0145	18931	04510	10070	004	S	50780	00190	4	07	30303030	04040404	010	68	05	15	5463	050	60
	4	33	4	0146	18890	04580	10100	008	S	50780	00745	4	05	30303030	02030305	030	75	04	04	5556	040	14
	4	33	4	0147	19110	05030	09565	005	S	50780	00430	4	05	30303030	03020302	030	79	05	08	5426	015	79
	4	33	4	0148	19160	05020	09530	005	D	50780	00415	4	05	30303030	03020301	030	73	04	15	5846	016	73
	4	33	4	0149	19170	05000	09541	004	D	50780	00325	4	05	30303030	03020301	040	78	05	06	5436	012	78
	4	33	4	0150	19160	05040	09525	003	S	50780	00270	4	05	30303030	03010301	030	77	04	05	8563	012	76
	4	33	4	0151	19140	05040	09535	005	S	50780	00400	4	05	30303030	03010301	030	76	04	06	4563	011	74
	4	31	4	0152	19200	05250	09400	005	S	50780	00260	4	04	30303030	02010201	040	75	04	08	4563	014	70
	4	33	4	0153	19160	05150	09460	005	S	50780	00370	4	05	30303030	04030403	040	74	03	15	4586	010	73
	4	33	4	0154	19140	05080	09510	002	S	50780	00120	1							00		050	80
	3	33	4	0155	15690	04900	10710	004	S	90780	00280	4	12	20202020	01010101	030	72	12	02	4365	050	70
	3	33	4	0156	15670	04870	10720	003	S	90780	00260	4	10	30303030	03030303	040	74	10	15	4465	050	70
	3	33	4	0157	15640	04910	10710	006	S	90780	00410	4	08	30303030	03030303	050	74	08	08	4343	011	74
	3	33	4	0158	15630	04890	10720	005	S	90780	00320	4	07	30303030	05040504	040	76	07	15	4365	006	76
	3	33	4	0159	15680	04830	10740	006	D	90780	00410	4	03	30303030	03030304	035	76	03	10	6435	007	76
	3	33	4	0160	15680	04830	10740	004	D	90780	00290	4	06	30303030	01010202	040	74	06	08	4563	006	72
	3	33	4	0161	15660	04810	10800	005	S	90780	00260	3	03	30303030	03020302	030	78	03	06	6534	005	78

SDGREAH
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BORDEREAU DE PERFORATION

ZONE	AQUIFER TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
1	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
3	3	1	5	0162	15720	04410	10900	060			0						00			61
3	3	3	3	0163	16050	03920	11380	001	S	190780	0006	01					00		004	
3	3	4	0	164	14920	06530	09000	004	S	200780	0028	03	03	2020	2020	2020	0101	0101	0300	80	03	01	66	66	008	79
3	3	3	1	0165	14810	06490	09180					1							500						007	
3	3	3	4	0166	14780	06490	09184	006	S	041180	0020	03	03	3030	3030	3030	0201	0201	0300	76	03	05	45	64	007	75
3	3	3	4	0167	15000	06480	09032	005	S	041180	0020	03	03	3030	3030	3030	0404	0404	0300	75	03	06	45	63	011	075
3	3	3	4	0168	14970	06440	09020	004	S	200780	0024	03	03	3030	3030	3030	0303	0303	0300	74	03	08	54	63	012	77
3	3	3	3	0169	15060	06320	09190	001	S	200780	0020	03	04	3030	3030	3030	0201	0201	0400	75	04	10	45	63	006	79
3	3	3	3	0170	14950	06320	09200	001	S	200780	0003	01					00		020							
3	3	3	4	0171	14860	06370	09180	005	S	200780	0035	03	03	3030	3030	3030	0502	0502	0200	77	04	02	45	68	016	77
3	3	3	4	0172	15550	06330	09400					0					00									
3	3	1	1	0173	15230	06480	09080					1					00		007							
3	3	3	4	0174	15010	06270	09190	004	S	220780	0031	03	03	3030	3030	3030	0303	0303	0300	79	03	06	44	56	013	74
3	3	3	4	0175	15070	06230	09220	004	S	220780	0030	03	03	3030	3030	3030	0404	0404	0404	76	03	05	55	54	011	76
3	3	3	4	0176	15250	06579	09570	001	S	220780	0006	03	03	3030	3030	3030	0402	0402	0300	78	03	04	54	63	012	67
3	3	3	4	0177	15280	06571	09600	004	D	220780	0029	03	02	3030	3030	3030	0402	0402	0200	79	02	10	54	36	014	78
3	3	3	4	0178	15230	06574	09600	005	D	220780	0034	03	03	3030	3030	3030	0402	0402	0300	77	03	08	45	63	013	76
3	3	3	4	0179	15240	06571	09600	005	S	220780	0030	03	04	3030	3030	3030	0202	0202	0200	77	04	12	45	63	012	76
3	3	3	4	0180	15260	06569	09610	005	D	220780	0039	04	05	3030	3030	3030	0202	0203	0300	75	05	12	45	63	015	74
3	3	3	4	0181	15290	06563	09650	002	D	220780	0012	04	06	3030	3030	3030	0303	0303	0600	79	06	12	54	66	007	79
3	3	3	4	0182	15270	06557	09680	002	D	220780	0010	03	03	3030	3030	3030	0304	0304	0406	79	03	15	65	43	008	79
3	3	3	4	0183	15300	06536	09950	004	D	220780	0025	03	03	3030	3030	3030	0402	0402	0300	78	03	06	54	36	005	78
3	3	3	4	0184	15520	06528	10170	003	S	220780	0021	04	05	3030	3030	3030	0303	0305	0300	76	05	12	45	63	006	76

SOGREAH
Service Ordinateurs

BORDEREAU DE PERFORATION

ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
3	3	3	4	0185	15530	05270	10180	0004	1	220780	00290	3	0303	0303	0030	1030	1	025	78	03	06	4563	007	77
3	3	3	4	0186	15540	05250	10190	0002	1	220780	00180	3	0303	0303	0606	2060	4	030	79	03	06	4563	007	78
3	3	3	4	0187	15540	05220	10200	0003	1	220780	00160	3	0303	0303	0303	0303	3	030	77	03	06	4632	010	77
3	3	3	4	0188	15560	05200	10220	0004	1	220780	00195	3	0303	0303	0404	0404	1	030	78	03	10	4563	008	76
3	3	3	4	0189	15490	05270	10170	0002	1	220780	00120	3	0303	0303	0606	0404	4	040	74	06	12	4563	014	74
3	3	3	4	0190	15500	05240	10180	0002	2	220780	00110	3	0430	3030	0202	0404	4	054	77	04	08	4563	013	77
3	3	3	4	0191	15510	05230	10190	0003	2	220780	00130	4	0105	3030	0404	0404	4	077	75	05	12	5436	007	75
3	3	3	4	0192	15520	05210	10200	0002	1	220780	00180	4	0505	3030	0402	0402	2	040	77	04	15	5436	008	74
2	3	3	3	0193	13970	11120	08000	0003	1	230780	00275	1									00		008	
2	3	3	3	0194	12730	10150	04200	0001	1	250780	00100	1									00		006	
2	3	3	3	0195	13650	07670	10270	0001	1	250780	00030	1									00		013	
1	3	3	1	0196	04560	10590	11400					1											012	
1	3	3	3	0197	03370	10830		0025	3	107880	00010	1											008	
1	3	3	2	0198	03570	12440	07700					1											012	
1	3	3	2	0199	03070	12130						1											025	
1	3	3	3	0200	03070	11980	08400	0001	5	010880	00030	1											009	
1	3	3	2	0201	03230	12080	08250														20		006	
1	3	3	4	0202	03910	12950		0045	5	010880	00330	1											010	
1	3	3	3	0203	04050	13350		0015	5	010880	00030	1											010	
1	4	4	5	0204	05890	14170	04570	0055	5	301080	03700	4	0630	3030	0202	0202	2	020	64	06	00	0000	009	64
1	4	4	3	0205	09850	13970	02420	0055	5	030880	00405	1											008	
1	3	3	3	0206	10020	11700	05500	0006	5	030880	00540	1											019	
4	4	4	3	0207	20160	11510	00030	0002	5	070880	00125	1											050	

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ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL	ENERGY	POWER	DAY / MONTH	HOUR / DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTI VITY	DATE OF DRILLING
1	4	4	3	02,08	2,05,80	1,13,80	000,70	002	S	1,08,80	00,14,0	1								054	
1	4	4	3	02,09	22,27,0	11,34,0	000,33	003	S	11,08,80	00,24,0	1								068	
1	4	3	3	02,10																033	
1	4	4	3	02,11	24,33,0	11,74,0	000,80	002	S	13,08,80	00,13,5	1									
1	3	3	4	02,12	14,86,0	03,93,0	1,25,000	004	S	19,08,80	00,21,0	2								007	
1	3	3	3	02,13	14,28,0	03,67,0	13,20,00	01	S	19,08,80	00,04,0	1								002	
1	3	3	4	02,14	13,65,0	03,63,0	13,32,0	022	S	19,08,80	01,92,2	0								049	
1	3	3	4	02,15	13,67,0	03,62,0	13,40,0	009	S	20,08,80	00,75,5	0								006	
1	3	1	4	02,16	13,30,6	03,63,8	13,66,0	009	S	24,08,80	00,74,9	4	04	30,30,30,3	04,04,04,04	01,07	0	04	10	44	66		70
1	3	1	4	02,17	13,30,1	03,63,8	13,61,5	009	S	20,10,80	00,17,0	3	03	30,30,30,30	03,03,03,03	03,07	0	03	12	44	66	04,2	70
1	3	3	4	02,18	13,33,6	03,63,6	13,54,5	005	S	24,08,80	00,29,0	0								017	
1	3	3	4	02,19	13,33,4	03,63,8	13,58,0	006	S	24,08,80	00,11,4	3	03	30,30,30,30	20,20,20,20	02,07	0	03	10	44	66	01,8	70
1	3	1	4	02,20	13,25,0	03,67,1	13,68,5	015	S	20,10,80	00,50,0	3	03	25,25,25,25	30,30,30,30	02,07	3	03	10	44	36	03,6	73
4	3	3	4	02,21	18,97,0	05,52,0	09,52,0	006	S	26,08,80	00,32,0	3	03	30,30,30,30	20,20,20,20	02,07	9	03	04	56	56	00,7	80
4	3	3	4	02,22	18,83,5	05,50,9	09,71,0	004	S	26,08,80	00,37,0	1		30,30,30,3	,01,01,01,01	01,0			02	56	56	00,7	79
4	3	3	4	02,23	18,78,0	05,08,5	09,78,0	005	S	26,08,80	00,42,0	1		30,30,30,3	01,01,01,01	01,0			02	66	66		79
4	3	3	4	02,24	18,91,5	05,25,0	09,57,0	005	S	26,08,80	00,43,0	3	03	30,30,30,30	20,20,20,20	14,0	8	03	14	66	58	00,7	80
4	3	3	4	02,25	19,00,0	05,26,0	09,50,5	004	S	26,08,80	00,37,0	3	01	30,30,30,30	20,20,20,20	06,0	7	01	15	45	36	00,6	77
4	3	3	4	02,26	19,21,0	05,05,5	09,55,5	003	S	26,08,80	00,19,0	3	08	30,30,30,30	20,20,20,20	06,0	7	08	10	56	36	00,6	77
4	3	3	4	02,27	19,21,0	05,02,0	09,55,0	004	S	26,08,80	00,21,0	3	03	30,30,30,30	03,03,03,03	04,0	8	03	16	84	66	00,5	80
4	3	3	4	02,28	19,21,0	04,99,5	09,61,0	004	S	26,08,80	00,25,0	4	07	30,30,30,30	20,20,20,20	03,0	7	07	15	84	56	00,4	70
4	3	3	4	02,29	19,25,0	04,88,5	09,64,0	005	S	26,08,80	00,03,2	0	07	30,30,30,30	02,02,02,02	03,0	7	07	05	54	66	00,5	79
4	3	3	4	02,30	19,25,5	04,85,5	09,67,0	004	S	26,08,80	00,38,5	1		30,30,30,30	01,01,01,01	00,5			01	66	66	00,3	75

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ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL	ENERGY	POWER	DAY / MONTH	HOUR / DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
1		4	4 — 8	12	16	20	24	28 — 32		36		40	44 — 48	52 — 56	60				68		
4	3	1	4 0 2 3 1	1 9 2 4 0	0 4 7 8 5	0 9 7 2 0	0 0 7 5	S	2 6 0 8 8 0	0 0 6 1 0	4	0 7	3 0 3 0 3 0 3 0	0 1 0 1 0 1 0 1	0 2 0	7 7	0 7	0 2	5 8 4 6	0 4 2	7 7
4	3	3	4 0 2 3 2	1 9 2 4 5	0 4 7 6 5	0 9 7 3 5	0 0 6	S	2 7 0 8 8 0	0 0 5 9 0 1			3 0 3 0 3 0	1 2 0 2 0 2 0 2	0 0 5	-	-	0 4	4 5 6 3	0 0 5	7 9
4	3	3	4 0 2 3 3	1 9 2 5 5	0 4 7 2 0	0 9 7 6 0	0 0 7 5	S	2 7 0 8 8 0	0 0 6 5 0	3	0 4	3 0 3 0 3 0	2 0 2 0 2 0 2	0 2 0	7 7	0 4	0 5	5 4 6 6	0 0 4	7 7
4	3	3	4 0 2 3 4	1 9 2 5 5	0 4 7 4 0	0 9 7 5 0	0 0 6 7	S	2 7 0 8 8 0	0 0 5 5 0	4	0 5	3 0 3 0 3 0	2 0 2 0 4 0 4	0 3 0	8 0	0 5	0 5	4 5 3 6	0 0 5	8 0
4	3	3	4 0 2 3 5	1 9 2 5 5	0 4 7 0 0	0 9 7 8 0	0 0 7 5	S	2 7 0 8 8 0	0 0 6 2 0	3	0 3	3 0 3 0 3 0	2 0 2 0 2 0 2	0 2 0	7 7	0 5	0 5	5 5 6 3	0 0 5	7 1
4	3	3	4 0 2 3 6	1 9 2 4 5	0 4 6 8 0	0 9 8 0 0	0 0 7 5	S	2 7 0 8 8 0	0 0 5 0 0	3	0 3	3 0 3 0 3 0	0 3 0 3 0 3 0 3	0 2 0	9 8	0 3	0 6	6 4 5 3	0 0 5	7 5
4	3	3	4 0 2 3 7	1 9 2 5 0	0 0 2 6 3 5	0 9 8 3 0	0 0 4	S	2 7 0 8 8 0	0 0 2 8 0	4	0 5	3 0 3 0 3 0	2 0 2 0 2 0 2	0 2 0	7 8	0 5	0 5	[illegible]	0 0 6	7 8
4	3	3	4 0 2 3 8	1 9 2 8 5	0 4 6 0 0	0 9 8 5 0	0 0 5 5	S	2 7 0 8 8 0	0 0 4 0 0	4	0 3	3 0 3 0 3 0 3	0 3 0 3 0 4 0 4	0 2 0	8 0	0 3	0 6	5 4 5 4	0 1 4	7 7
4	3	3	4 0 2 3 9	1 9 2 5 0	0 4 5 7 5	0 9 8 6 0	0 0 6 5	S	2 7 0 8 8 0	0 0 3 8 0	4	0 3	3 0 3 0 3 0 3 0	0 4 0 4 0 4 0 4	0 2 0	7 9	0 3	1 2	5 6 5 6	0 0 5	7 3
4	3	3	4 0 2 4 0	1 9 2 1 5	0 4 5 9 5	0 9 8 6 0	0 0 5 5	S	2 7 0 8 8 0	0 0 4 0 0	4	0 5	3 0 3 0 3 0 3 0	0 5 0 5 0 5 0 5	0 2 0	7 1	0 3	1 3	5 4 6 3	0 0 6	7 2
4	3	3	4 0 2 4 1	1 9 1 8 5	0 4 5 1 0	0 9 9 2 0	0 0 6 5	S	2 7 0 8 8 0	0 0 5 5 0	3	0 3	3 0 3 0 3 0 3 0	0 3 0 3 0 3 0 3	0 2 0	7 9	0 3	1 0	5 1 6 6	0 0 4	7 9
4	3	3	4 0 2 4 2	1 9 2 4 5	0 4 3 8 0	1 0 0 5 0	0 0 4 5	S	2 7 0 8 8 0	0 0 3 0 0	3	0 3	3 0 3 0 3 0 3 0	0 2 0 2 0 2 0 2	0 2 0	8 0	0 3	0 6	4 6 5 3	0 0 4	7 3
2	1	1	4 0 2 4 3	1 3 1 8 0	1 0 5 7 0	0 3 8 0 0									0 8 0				9 4 6 8	0 1 1	
2	3	3	2 0 2 4 4	1 3 1 5 0	1 0 5 0 0	0 3 8 0 0														0 0 7	
2	1	1	2 0 2 4 5	1 3 2 1 5	1 0 8 2 5	0 3 3 8 0														0 1 8	
2	4	4	5 0 2 4 6	1 4 4 4 0	1 3 3 3 0	0 0 8 6 0	0 0 8 5	S	2 8 1 0 8 0	0 0 7 0 0	5		3 0 3 0 3 0 3 0	0 1 0 1 0 1 0 1	0 3 0					0 1 4	6 0
2	4	4	4 0 2 4 7	1 5 4 3 5	1 4 7 2 5	0 0 0 5 0	0 0 4	S	3 1 0 8 8 0	0 0 3 5 0	1									0 0 8	
1	4	4	5 0 2 4 8	1 1 5 7 5	1 5 5 1 5	0 0 8 6 0	0 9 8	S	2 9 1 0 8 0	0 0 6 6 4	0	4	3 0 3 0 3 0 3 0	0 1 0 1 0 1 0 1						0 3 8	7 4
1	4	4	5 0 2 4 9	0 9 9 9 0	1 8 1 0 5	0 0 7 8 0	0 8 9	S	2 9 1 0 8 0	0 0 7 0 0	4	3	3 0 3 0 3 0 3 0	0 6 0 6 0 6 0 6	0 2 0	7 5	3 4			0 5 0	7 4
1	4	4	5 0 2 5 0		1 6 7 1 0	0 2 0 1 0	1 6 5	S	2 9 1 0 8 0	1 4 0 0 0	4	3	3 0 3 0 3 0 3 0	0 1 0 1 0 1 0 1	0 2 0	7 5	3 4			0 1 4	7 5
4	3	3	4 0 2 5 1	1 9 7 3 0	0 3 3 9 0	1 0 8 9 0	0 0 5	S	1 4 0 9 8 0	0 0 0 1 2 0	3	0 2	3 0 3 0 3 0 3 0	0 6 0 6 0 6 0 6	0 2 0	7 7	0 2	1 0	4 5 8 6	0 0 2	7 7
3	3	3	4 0 2 5 2	1 6 2 3 0	0 4 6 1 0	1 0 9 0 0	0 2 6	S	1 6 0 9 8 0	0 2 5 0 0	0									0 0 5	7 9
3	3	3	4 0 2 5 3	1 6 2 3 5	0 4 5 4 5	1 0 9 8 0															

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BORDEREAU DE PERFORATION

ZONE	AQUIFER TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	ENGINE
3	3	4	02564	16190	04700	10800	023	5	160980	022000									01	379
3	3	4	02555	16095	04775	10780	023	5	160980	022000									01	380
3	3	4	02556	16120	04760	10780	022	5	160980	021000	3	30303030	03030303	0,20	79	03	07	54	36	01	2	78
3	3	4	02557	15800	06120	09580	004	0	170980	003056		30303030	08080808	0,10	80					01	1	80
3	3	1	02558	13354	03625	13540	006	5	200980	003030	3	30303030	02020202	0,20	70	04	05	44	66	00	6	70
3	3	1	02559	13344	03623	13550	008	5	200980	004500	3	30303030	02020202	0,20	75	03	08	43	62	01	5	75
3	3	1	02560	13351	03611	13550	008	5	200980	003800	3	30303030	01010101	0,20	60	03	10	48	66	00	6	60
3	3	1	02561	13343	03605	13560	007	5	200980	004500	3	30303030	02020202	0,20	75	03	06	48	64	00	5	70
2	3	1	02562	13334	03600	13570	009	5	200980	005000	3	30303030	02020202	0,20	73	03	08	45	66	00	5	73
3	3	1	02563	13321	03558	13640	010	5	200980	006500	3	30303030	01010101	0,20	68	03	04	43	56	00	5	67
3	3	1	02564	13309	03564	13620	010	5	200980	005000	3	30303030	01010101	0,20	72	03	04	54	66	00	4	72
3	3	1	02565	13314	03571	13600	009	5	200980	006001		30303030	01010101	0,05			02	68	68	00	6	
3	3	1	02566	13318	03578	13590	009	5	200980	006600	3	30303030	01010202	0,20	71	03	05	46	58	00	5	70
3	3	1	02567	13323	03576	13600	010	5	200980	006300	3	30303030	02020202	0,20	73	03	04	48	66	00	5	70
3	3	1	02568	13321	03581	13590	010	5	200980	006301		30303030	02020202	0,05			04	45	66	00	6	
3	3	1	02569	13331	03569	13600	013	5	210980	006500	3	30303030	02020202	0,20	70	03	10	46	46	01	5	70
2	3	1	02570	13329	03558	13610	017	5	210980	010400	3	30303030	02020202	0,20	80	03	05	48	26	01	5	80
3	3	1	02571	13334	03556	13600	015	5	210980	010500	3	30303030	02020202	0,20	77	03	06	46	62	01	0	55
3	3	1	02572	13336	03550	13600	015	5	210980	011000	3	30303030	01010101	0,20	79	03	04	46	46	01	7	60
3	3	1	02573	13349	03564	13600	015	5	210980	010800	3	30303030	02020202	0,20	70	03	04	45	66	00	5	70
3	3	1	02574	13349	03569	13600	012	5	210980	008000	3	30303030	03030303	0,20	70	03	08	31	62	00	4	64
3	3	1	02575	13348	03575	13600	011	5	210980	007500	3	30303030	03030303	0,20	60	03	05	48	63	00	7	60
3	3	1	02576	13345	03580	13600	008	5	210980	006500	3	30303030	02020202	0,20	77	04	04	46	52	00	3	70

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ZONE	AQUIFER TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
3	3	4	0300	13411	0371	8	13485	004	S	02	10	80	0024	0	3	03030	3030	0101	1101	040	60	03	05	84	68	019	60
3	3	1	4	0301	13411	3	0377	26	13470	005	S	02	10	80	0036	0	3	03	03030	3030	0303	020	72	03	04	84	62	017	72
3	3	1	4	0302	13411	3	0373	6	13460	006	S	02	10	80	0035	0	3	03	03030	3030	0303	020	70	03	05	46	54	026	70
3	3	1	4	0303	13411	4	0374	8	13410	004	S	02	10	80	0026	0	3	03	03030	3030	0202	020	70	03	05	46	86	013	70
3	3	1	4	0304	13420	3	0378	0	13380	007	S	02	10	80	0056	0	3	03	03030	3030	0202	020	79	03	04	56	45	009	79
3	3	1	4	0305	13391	0	0375	6	13420	003	S	02	10	80	0021	0	3	03	03030	3030	0404	020	62	04	10	84	84	065	42
3	3	3	4	0306	13382	0	0373	3	13445	002	S	02	10	80	0013	0	3	03	03030	3030	0404	020	78	03	06	84	64	009	78
3	3	3	4	0307	13379	0	0372	6	13455	002	S	02	10	80	0013	0	3	03	03030	3030	0202	020	79	03	03	48	62	009	79
3	3	1	4	0308	13326	0	0354	7	13390	013	S	02	10	80	0105	0	3	03	03030	3030	0303	020	15	03	05	45	64	008	75
3	3	1	4	0309	13276	0	0356	6	13670	012	S	02	10	80	0088	0	3	03	03030	3030	0202	020	60	02	05	45	64	006	59
3	3	1	4	0310	13273	0	0356	2	13650	009	S	02	10	80	0074	0	3	03	03030	3030	0202	020	63	01	05	45	64	006	48
3	3	1	4	0311	13281	0	0355	9	13640	014	S	06	10	80	0091	4	0	3	03030	3030	0303	020	73	03	12	45	34	010	73
3	3	1	4	0312	13266	0	0352	3	13745	015	S	06	10	80	0120	0	3	03	03030	3030	0404	020	64	03	27	48	64	014	64
3	3	1	4	0313	13256	0	0352	9	13740	014	S	06	10	80	0107	0	3	03	03030	3030	0202	020	60	02	07	46	54	008	60
3	3	1	4	0314	13252	8	0354	6	13720	012	S	06	10	80	0095	0	3	03	03030	3030	0303	020	70	03	12	43	68	008	70
3	3	1	4	0315	13246	0	0355	0	13700	012	S	06	10	80	0085	0	3	03	03030	3030	0202	020	68	03	04	44	68	006	68
3	3	1	4	0316	13256	0	0355	8	13680	010	S	06	10	80	0075	0	3	03	03030	3030	0303	020	68	03	05	48	62	007	68
3	3	1	4	0317	13197	0	0350	4	13760	015	S	06	10	80	0105	0	3	03	03030	3030	0202	020	70	03	04	46	24	010	70
3	3	1	4	0318	13196	0	0352	1	13760	014	S	06	10	80	0090	0	3	03	03030	3030	0202	020	78	03	05	46	24	014	78
3	3	1	4	0319	13195	0	0352	4	13785	013	S	06	10	80	0091	5	0											046	77
3	3	1	4	0320	13205	0	0356	9	13740	013	S	06	10	80	0092	0	3	03	03030	3030	0101	020	70	03	05	46	83	013	70
3	3	1	4	0321	13213	0	0354	4	13720	013	S	07	10	80	0106	0	3	03	03030	3030	0101	020	70	03	10	48	48	009	63
3	3	1	4	0322	13209	0	0353	4	13740	012	S	07	10	80	0100	0	3	03	03030	3030	0303	020	60	03	20	46	23	006	60

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	ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
	2	31	4	0277	133556	035884	13600	010	S	2109800	0060	0	304	30303030	02022022	020	78	04	04	46	003	76
	3	31	4	0278	133506	035886	13600	011	S	2109800	0068	0	303	30303030	02022022	020	74	03	04	46	006	67
	4	31	5	0279	18200		11730	031	S	0104800	2700	0	43									62
	4	334	4	0280	18285	027995	11720	003	S	2709800	0020	0	0								004	80
	4	334	4	0281	18315	028775	11740	005	S	2709800	0040	0	1						01	58	00	79
	4	31	4	0282	133711	036533	13630	005	S	2909800	0030	0	1								005	
	3	31	4	0283	133694	036591	13520	004	S	2909800	0030	0	303	30303030	01 01 03 03	020	79	03	03	46	006	40
	3	31	4	0284	133799	036522	13550	005	S	2909800	0030	0	0								007	41
	3	31	4	0285	133886	036491	13570	009	S	2909800	0050	0	303	30303030	02020202	020	70	03	04	45	011	70
	3	31	4	0286	133996	036441	13590	009	S	2909800	0072	0	304	30303030	03030303	020	65	03	07	45	009	59
	3	31	4	0287	133990	036555	13570	006	S	2909800	0036	0	304	30303030	03030303	020	58	02	08	45	012	58
	3	334	4	0288	133881	036605	13550	004	S	2909800	0025	0	304	30303030	03030303	020	57	03	05	46	014	57
	3	334	4	0289	133688	036655	13520	004	S	2909800	0025	0	303	30303030	02020202	020	80	03	08	88	016	80
	3	334	4	0290	133733	036691	13510	004	S	2909800	0024	0	303	30303030	02020202	040	70	03	10	84	015	70
	3	314	4	0291	133799	036616	13530	006	S	2909800	0046	0	303	30303030	02020202	020	60	03	02	45	010	60
	3	334	4	0292	133883	036741	13525	004	S	2909800	0027	0	303	30303030	03030303	020	65	03	03	45	018	65
	3	334	4	0293	133961	036691	13550	008	S	2909800	0051	0	303	30303030	04040505	020	70	03	06	85	021	70
	3	334	4	0294	133888	036799	13530	004	S	2909800	0020	0	303	30303030	03030404	020	65	03	03	84	015	61
	3	334	4	0295	133790	036833	13500	004	S	2909800	0020	0	303	30303030	02020202	020	60	03	07	84	021	60
	3	334	4	0296	134005	036877	13540	004	S	2909800	0025	0	303	30303030	03030303	020	68	02	10	84	019	43
	3	334	4	0297	133993	036944	13495	003	S	2010800	0012	0	0								011	63
	4	334	4	0298	186955	043450	10380	008	S	0110800	0040	0	403	30303030	01 01 01 01	020	79	03	04	53	011	79
	3	334	4	0299	134090	037080	13500	003	S	0210800	0018	0	0								031	60

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SOGREAH
Service Ordinateurs

BORDEREAU DE PERFORATION

ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
3	11	4	0346	13,060	0,369	13,787	0,08	S	1,10,80	0,02	50	3	30,30	30,30	0,30	3,03	3	020	74	03	04	66	64	0,04	79
3	33	4	0347	13,025	0,371	13,790	0,03	S	1,10,80	0,01	80	3	30,30	30,30	0,20	3,02	3	020	80	03	03	66	66	0,06	80
3	33	4	0348	13,080	0,374	13,720	0,02	S	1,10,80	0,01	30	3	30,30	30,30	0,10	0,20	2	020	80	03	02	66	66	0,06	80
3	11	4	0349	13,075	0,372	13,735	0,05	S	1,10,80	0,02	80	3	30,30	30,30	0,10	1,03	3	020	73	03	03	64	54	0,06	73
3	33	4	0350	13,090	0,377	13,690	0,02	S	1,10,80	0,00	80	3	30,30	30,30	0,30	3,03	3	020	77	03	04	68	44	0,04	77
3	31	4	0351	13,120	0,387	13,612	0,04	S	1,10,80	0,02	60	3	30,30	30,30	0,03	3,03	1	020	75	03	02	64	46	0,05	74
3	31	4	0352	13,688	0,365	13,360	0,13	S	2,10,80	0,07	30	3	30,30	30,30	0,30	3,03	3	020	75	03	03	64	54	0,05	75
3	31	4	0353	13,691	0,366	13,285	0,13	S	2,10,80	0,02	20	3	30,30	30,30	0,20	2,02	2	020	69	03	05	46	84	0,06	69
3	31	4	0354	13,700	0,364	13,330	0,12	S	2,10,80	0,03	20	3	30,30	30,30	0,10	1,01	1	020	79	03	01	66	66	0,10	79
3	31	4	0355	13,693	0,376	13,360	0,10	S	2,10,80	0,07	50	3	30,30	30,30	0,30	3,03	3	020	74	03	10	46	66	0,04	74
3	31	4	0356	13,691	0,387	13,350	0,10	S	2,10,80	0,07	10	3	30,30	30,30	0,70	7,07	7	020	70	03	10	46	54	0,06	70
3	31	4	0357	13,675	0,372	13,310	0,09	S	2,10,80	0,05	00	3	30,30	30,30	0,03	3,03	3	020	75	03	07	48	68	0,11	61
3	31	4	0358	13,673	0,378	13,280	0,05	S	2,10,80	0,02	40	3	30,30	30,30	0,60	6,06	6	020	70	03	15	64	08	0,06	70
3	31	4	0359	13,668	0,374	13,265	0,04	S	2,10,80	0,01	20	3	30,30	30,30	0,30	3,04	4	020	64	03	15	84	64	0,05	50
3	31	4	0360	13,666	0,375	13,260	0,04	S	2,10,80	0,01	50	3	30,30	30,30	0,30	3,03	3	020	70	03	04	68	68	0,08	70
3	31	4	0361	13,666	0,376	13,250	0,05	S	2,10,80	0,01	30	3	30,30	30,30	0,30	3,03	3	020	70	03	06	68	44	0,06	70
3	31	4	0362	13,666	0,376	13,285	0,10	S	2,10,80	0,05	80	3	30,30	30,30	0,20	2,02	2	020	65	03	08	46	46	0,04	65
3	31	4	0363	13,674	0,378	13,235	0,05	S	2,10,80	0,02	00	3	30,30	30,30	0,30	3,05	3	020	70	03	10	46	46	0,02	70
3	31	4	0364	13,678	0,378	13,220	0,04	S	2,10,80	0,01	20	3	30,30	30,30	0,20	2,02	2	020			04	64	64	0,06	
3	31	4	0365	13,681	0,379	13,210	0,04	S	2,10,80	0,02	00	3	30,30	30,30	0,10	1,01	1	020	70	03	02	66	66	0,03	70
3	31	4	0366	13,693	0,384	13,175	0,08	S	2,10,80	0,01	40	3	30,30	30,30	0,30	3,03	3	026	65	03	08	46	84	0,19	65
3	31	4	0367	13,691	0,382	13,200	0,05	S	2,10,80	0,02	70	3	30,30	30,30	0,10	1,01	1	020	75	03	02	66	66	0,07	75
3	31	4	0368	13,691	0,381	13,190	0,06	S	2,10,80	0,01	80	3	30,30	30,30	0,10	1,01	1	020	76	03	02	64	64	0,10	76

— SOGREAH —
Service Ordinateurs

BORDEREAU DE PERFORATION

ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	FIRST PUMP	POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
2	3	1	4	0323	13205	03541	13730	013	S	07,10,80	007	50	3	03	30303	03030	01 0	10 1	0	020	64	03	06	45	64	006	64
2	3	1	4	0324	13285	03583	13645	020	S	07,10,80	016	50	4	04	30303	03030	02 0	20 2	0	020	77	04	03	64	54	008	77
2	3	1	4	0325	13363	03726	13500	008	S	07,10,80	001	40	3	03	30303	03030	02 0	20 2	0	020	74	03	10	43	43	006	174
2	1	1	4	0326	07335	06665	13750	002	S	1	1,10,80	000	20	4	46	30303	03030	07 0	7 0	7 0	7	050			00			012	40
2	3	3	4	0327	07640	06570	13860	007	S	1	1,10,80	000	35	0	30	30303	03030	03 0	3 0	4 0	4	020	71	03	06	84	52	004	71
2	3	3	4	0328	07610	06575	13850	006	S	1	1,10,80	003	20	3	03	30303	03030	01 0	1 0	1 0	1	020	78	03	03	45	46	004	78
2	3	3	4	0329	07625	06630	13810	006	S	1	1,10,80	002	70	4	04	30303	03030	03 0	3 0	3 0	3	030	70	03	10	84	64	004	60
2	3	3	4	0330	07625	06650	13800	006	S	1	1,10,80	003	80	1		30303	03030	01 0	1 0	1 0	1	005			04	84	62	004	66
2	3	3	4	0331	07600	06650	13750	006	S	1	1,10,80	003	70	4	04	30303	03030	06 0	6 0	6 0	6	020	75	03	16	84	64	004	75
2	3	3	4	0332	07595	06660	13730	006	S	1	1,10,80	003	80	4	04	30303	03030	03 0	3 0	3 0	3	020	55	03	10	84	64	005	55
2	3	3	4	0333	07590	06675	13715	006	S	1	1,10,80	004	50	3	03	30303	03030	02 0	2 0	2 0	2	020	60	04	06	84	56	006	60
2	3	3	4	0334	07580	06685	13700	006	S	1	1,10,80	003	800															005	60
2	3	3	4	0335	07560	06695	13690	006	S	1	1,10,80	004	20	3	03	30303	03030	03 0	3 0	5 0	5	020	73	03	05	84	65	005	73
2	3	3	4	0336	07560	06710	13670	007	S	1	1,10,80	006	20	4	03	30303	03030	01 0	1 0	1 0	1	020	60	03	05	84	65	006	60
2	3	3	4	0337	07540	06700	13690	008	S	1	1,10,80	006	80	3	03	30303	03030	01 0	1 0	1 0	1	020	74	03	05	84	65	007	74
2	3	3	4	0338	07545	06680	13700	008	S	1	1,10,80	006	00	4	04	30303	03030	04 0	4 0	6 0	6	020	73	04	05	84	64	013	73
2	3	3	4	0339	07545	06725	13670	009	S	1	1,10,80	006	30	3	03	30303	03030	02 0	2 0	2 0	2	030	79	03	02	44	66	007	67
2	3	3	4	0340	07555	06740	13640	005	S	1	1,10,80	004	00	3	03	30303	03030	02 0	2 0	3 0	3	020	78	03	03	68	46	006	60
2	3	1	1	0341	08980	06645	13000																					005	
2	3	1	1	0342	08915	07740	10100															060						006	
3	1	1	5	0343	12040	04060	14280	020	S	18,10,80	008	20	5		30303	03030	12 1	21 2	1	2	012	66						011	66
3	1	1	4	0344	12055	04060	14244	009	S	18,10,80	002	60	4	03	30303	03030	03 1	21 2	0	3	020	79	03					010	79
3	1	1	4	0345	12130	04060	14400	013	S	18,10,80	002	30	1															014	45

— SOGREAH —
Service Ordinateurs

BORDEREAU DE PERFORATION

ZONE	AQUIFER	TYPE	NUMBER	X	Y	Z	DEPTH	LEVEL	DATE	LEVEL	ENERGY	POWER	DAY/MONTH	HOUR/DAY	DISCHARGE	UNIT	TER	MEA SEA	PS			
3	3	1	4	0369	13691	03809	132100	06	S	23108	0	00240	3	0303030303	0001	0001	020	65	03	03	46	
3	3	1	4	0370	13694	03803	132150	05	S	23108	0	00270	3	0303030303	0101	0101	020	60	03	05	46	00	1	60
3	3	1	4	0371	13695	03796	132250	06	S	23108	0	00410	3	0303030303	0101	0101	020	73	03	01	64	64	01	73
3	3	1	4	0372	13695	03786	132350	04	S	23108	0	00290	3	0303030303	0101	0101	020	78	03	06	46	46	00	78
3	3	1	4	0373	13695	03775	132450	11	S	23108	0	00300	3	0303030303	0303	0303	020	64	03	10	46	46	00	64
3	3	1	4	0374	13689	03773	132550	07	S	23108	0	00300	3	0303030303	0101	0101	020	68	03	07	46	46	01	58
3	3	1	4	0375	13685	03765	132550	05	S	23108	0	00160	3	0303030303	0002	0202	020	65	03	04	68	44	00	65
3	3	3	4	0376	13683	03758	132700	05	S	23108	0	00250	3	0303030303	0102	0201	020	76	03	03	46	46	00	57
4	3	1	4	0377	13685	03749	132700	07	S	23108	0	00240	3	0303030303	0102	0201	020	58	03	04	68	44	00	65
3	3	1	4	0378	13696	03738	132800	05	S	23108	0	00180	3	0303030303	0002	0202	020	78	03	02	66	66	00	78
3	3	1	4	0379	13703	03706	133300	08	S	23108	0	00600	3	0303030303	0102	0201	020	70	03	02	65	44	00	70
3	3	1	4	0380	13708	03716	133000	11	S	23108	0	00230	3	0303030303	0202	0202	020	64	03	07	48	64	01	65
4	1	1	1	0381	19660	06275	088000						1				100					03		
2	1	1	1	0382	09355	04125	165000						1				010					08		
3	3	1	4	0383	12920	04251	135750	07	S	01118	0	00380	3	0303030303	0202	0202	020	80	03	02	56	56	00	80
3	3	1	4	0384	12890	04261	136050	11	S	01118	0	00630	3	0303030303	0202	0202	020	76	03	05	64	54	00	76
3	3	1	4	0385	12961	04253	135350	06	S	01118	0	00201	1	3030303030	0101	0101	005			02	45	45	01	73
3	1	1	1	0386	12978	04270	135100						1				040					00	5	
3	3	1	4	0387	12919	04250	135600	07	S	01118	0	00505	0	3030303030	0404	0404	020	75	03	10	54	63	01	75
3	3	1	4	0388	13004	04248	135300	06	S	01118	0	00405	0	3030303030	0404	0404	020	75	03	06	45	65	01	75
3	3	3	2	0389	12984	04258	135000						4	0303030303	0303	0303	020	73	03	06	56	65	00	5
3	3	3	2	0390	13001	04255	134750						3	0303030303	0404	0404	020	77	03	10	45	65	00	
3	3	1	4	0391	13004	04276	134700	03	S	01118	0	00160	3	0303030303	0404	0404	020	62	03	10	45	65	00	52

SOGREAH
Service Ordinateurs

BORDEREAU DE PERFORATION

ZONE	AQUIFER	TYPE	NUMBER	X (dam)	Y (dam)	Z (dm)	DEPTH	LEVEL	DATE	LEVEL	ENERGY	HP POWER	DAY / MONTH	HOUR / DAY	DISCHARGE 1/10	FIRST PUMP	HP POWER	IRRIGATED AREA	CROPS	CONDUCTIVITY	DATE OF DRILLING
3	3	3	4 0392	13053	042 95	13455	003	S	01 1 1 80	0 0 1 6 0		30	3 0 3 0 3 0 3 0	0 4 0 4 0 4 0 4	020	73	03	04	4	64	0008 73
3	3	3	4 0393	13058	043 05	13450	003	S	01 1 1 80	0 0 2 0 0		30	3 0 3 0 3 0 3 0	0 3 0 3 0 3 0 3	020	73	03	03	46	54	0002 73
3	3	1	4 0394	13066	043 19	13445	004	S	01 1 1 80	0 0 2 6 0		30	3 0 3 0 3 0 3 0	0 3 0 3 0 3 0 3	020	68	03	04	46	46	0021 68
0	1	5	0395			14950	113	S	02 1 1 80	1 0 7 0 0		40	8 3 0 3 0 3 0 3 0	2 0 2 0 2 0 2 0	050						0021 56
0	1	5	0396			14570	146	S	02 1 1 80	1 4 0 0 0		44	3 3 0 3 0 3 0 3 0	2 0 0 1 0 1 2 0	040						0024 61
0	1	5	0397			14290	192	S	02 1 1 80	1 6 8 0 0		43	4 3 0 3 0 3 0 3 0	2 4 0 1 0 1 2 4	040						0027 46
3	1	1	4 0398	13735	039 94	13070	005	S	03 1 1 80	0 0 2 0 0		30	3 3 0 3 0 3 0 3	0 4 0 4 0 4 0 4	020	72	03	10	46	46	0010 67
3	3	1	4 0399	13739	040 03	13050	005	S	03 1 1 80	0 0 1 5 0		40	3 3 0 3 0 3 0 3	0 2 0 2 0 2 0 2	020	74	03	05	84	64	0006 69
3	3	1	4 0400	13748	040 06	13060	005	S	03 1 1 80	0 0 2 3 0		30	3 0 3 0 3 0 3 0	0 2 0 2 0 2 0 2	040	65	03	08	84	64	0009 50
3	3	1	4 0401	13756	040 20	13045	006	S	03 1 1 80	0 0 2 4 0		30	3 3 0 3 0 3 0 3	0 2 0 2 0 2 0 2	020	68	03	04	48	64	0006 68
3	3	1	4 0402	13768	040 24	13035	004	S	03 1 1 80	0 0 2 0 0		0									0007 64
3	3	1	4 0403	13773	040 25	13015	005	S	03 1 1 80	0 0 0 4 0		30	3 3 0 3 0 3 0 3	0 2 0 2 0 2 0 2	020	72	03	06	46	84	0008 55
3	3	1	4 0404	13789	040 43	13010	004	S	03 1 1 80	0 0 2 4 0		30	3 3 0 3 0 3 0 3	0 4 0 1 0 1 0 4	020	73	03	05	68	44	0010 45
3	3	1	4 0405	13798	040 46	12991	005	S	03 1 1 80	0 0 1 2 0		30	3 3 0 3 0 3 0 3	0 1 0 1 0 1 0 1	020	62	03	03	48	64	0006 55
3	3	1	4 0406	13803	040 54	13000	004	S	03 1 1 80	0 0 2 4 0		30	3 3 0 3 0 3 0 3	0 2 0 2 0 2 0 2	020	75	03	04	84	64	0008 55
3	3	1	4 0407	13809	040 59	12995	004	S	03 1 1 80	0 0 2 6 0		30	3 3 0 3 0 3 0 3	0 2 0 2 0 2 0 2	020	80	03	03	48	64	0007 55
3	3	1	4 0408	13815	041 08	12990	003	S	03 1 1 80	0 0 2 0 0		30	3 3 0 3 0 3 0 3	0 1 0 1 0 1 0 1	020	77	03	03	64	64	0001 55
3	3	1	4 0409	13816	041 07	12985	005	S	03 1 1 80	0 0 3 2 0		30	3 3 0 3 0 3 0 3	0 1 0 1 0 1 0 1	020	75	03	05	46	46	0118 55
3	3	1	4 0410	13833	041 08	12980	005	S	03 1 1 80	0 0 2 8 0		30	3 3 0 3 0 3 0 3	0 1 0 1 0 1 0 1	020	80	03	04	68	44	0021 55
3	3	1	4 0411	13848	041 08	12970	004	S	03 1 1 80	0 0 2 7 0		30	3 3 0 3 0 3 0 3	0 1 0 1 0 1 0 1	020	77	03	03	64	44	0021 77
3	3	1	4 0412			13065	003	S	03 1 1 80	0 0 1 4 0		30	3 3 0 3 0 3 0 3	0 2 0 2 0 2 0 2	020	78	03	06	66	66	0066 78
3	3	1	4 0413	16385	058 15	09950	006	S	04 1 1 80	0 0 1 2 0		30	3 3 0 3 0 3 0 3	0 6 0 6 0 6 0 6	020	70	03	15	46	44	0023 70
3	3	3	4 0414	16610	056 45	10200	10	S	04 1 1 80	0 0 0 6 3 0		0									0014 80

Appendix 2

OBSERVATION OF PILOT WELLS


SOMALIA WATER & LAND INFORMATION PROJECT
FAO
FIAT PANIS