(case # 3880), and the control program (dmt1.sps). It would automatically return to the FOXPRO program after completing the reports.

**NOTE:** If the screen seemed to have hang-up the computer might only be waiting for the printer to become ready and online. If you do not want to print directly to the printer, press CONTROL-C to resume operation.

```
                                                    CASE  # 3880
INC 'dmt1.sps'
set include off.
```

If there is a problem with the data like there is no well that can be considered for the report year, the SPSS program would issue an error and it would not automatically return to the FOXPRO program. The following screen might be shown:

```
INC 'ndmt1.sps'
set include off.

ERROR      1, Text: /PTITLE=LEFT "DISTRI
INVALID COMMAND--Check spelling.  If it is intended as a continuation of a
previous line, the terminator must not be specified on the previous line.
If a DATA LIST is in error, in-line data can also cause this error.
```

To Quit SPSS and return to the FOXPRO the following steps should be done:

1. Select the FINISH command in the menu and press Enter.
2. Press F10.
3. Press Enter.

## REPORTS...

Aside from the reports explained above, all the other reports are printed using this option. The reports can be activated using the report option in the main menu and choosing the reports... option as shown below:

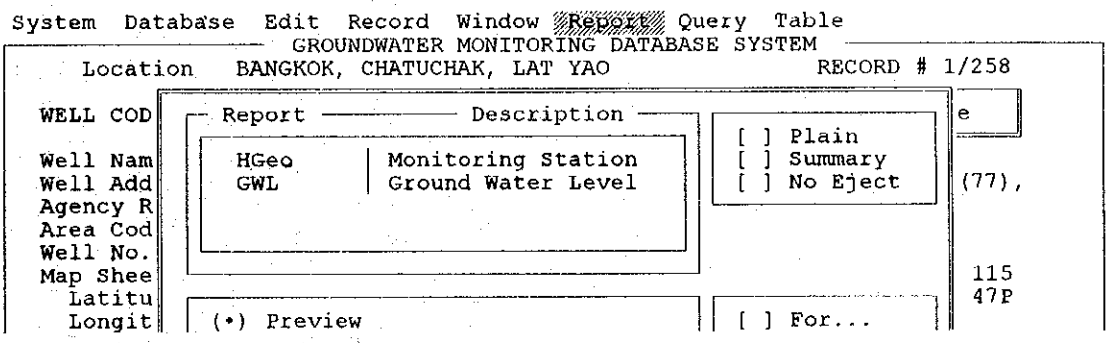
```
System  Database  Edit  Record  Window  Report  Query  Print
                GROUNDWATER DATABAS
      Location  BANGKOK, CHATUCHAK, LAT  Inventory Report          1/12896
                                         DMR registered wells
     WELL CODE  010101-1001   Type       NON-DMR registered wells  ve
                                         ALL registered wells
     Well Name  KONGSAKWATTANA PAPER CO  Report
       Aquifer  Nakhon Luang             Source of Well Data  DMR


 Well No., New  109-1417                 Old No.
 Well Address   225 SENA NIKHOM 2, PHAHON YOTHIN, LAT YAO, CHATUCHAK,
                BANGKOK
  OWNER         KONGSAKWATANA PAPER CONTAINER CO., LTD
  Address       225 SOI SENA NIKHOM 2, PHAHON YOTHIN RD., LAT YAO
                BANG KHEN, BANGKOK
  Ground Elev.      2.00    m MSL
  Map Sheet No  5136 IV            Base Map, X   72     Base Map, Y  130
      Latitude      °  '  "          Longitude      °  '  "
      UTM East   67210               UTM North  153045         Zone  47P
```

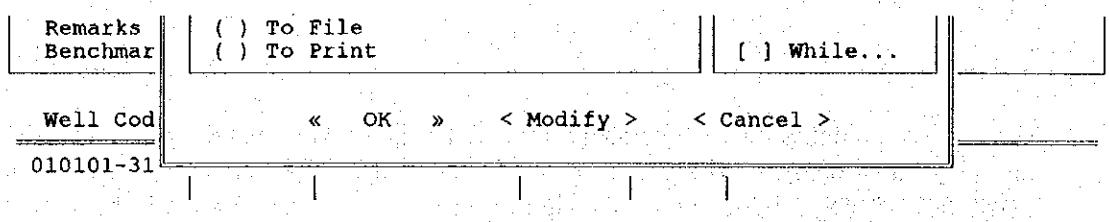
<Next> <Prev> <Top > <Bot > <Edit> <Add > <Find> <+Scn> <-Scn> <Goto> <Quit>

The reports available for each database are listed in the \GWS\DBFS\REPORTS.DBF and are listed below: The report name is the name of the report listed in the \GWS\REPORTS subdirectory. Contents gives a short description of the report. MODTYPE is used by each database to show only the reports available when the database's reports are listed. Supplemental reports can be added by adding the report name to this list and using the proper modtype.

| REPORT NAME | CONTENTS | MODTYPE |
|---|---|---|
| WaterUse | Water Use | winv |
| Disc | Non-DMR Discharge | ndmr |
| IEAT | IEAT Discharge | ndmr |
| Rain_M | Monthly Rainfall | met |
| Rain_Day | Number of rainy days | met |
| TMean_M | Mean Tempeature | met |
| TMin_M | Minimum Temperature | met |
| TMax_M | Maximum Temperature | met |
| Evap_M | Evapotranspiration | met |
| Humid_M | Humidity | met |
| Sun_M | Monthly Sun | met |
| Solar_M | Monthly Solar | met |
| Wind_M | Monthly Wind | met |
| HGeo | Monitoring Station | hgeo |
| GWL | Ground Water Level | hgeo |
| Compress | Soil Compression | land |
| PorePres | Pore Pressure | land |
| MDis | Monthly River Discharge | hlog |
| DDis | Daily River Discharge | hlog |
| MGage | Monthly River Gage | hlog |
| DGage | Daily River Gage | hlog |
| Litr | Literature Abstract | litr |

A sample list of available reports using the Groundwater monitoring database system as an example is shown below: Its shows there are two available reports, HGeo and GWL.






Printing options are similar to the standard command REPORT FORM of FOXPRO so please refer to the FOXPRO manual for an explanation on the use of this command.

## QUERY

The Query option in the main menu is the same RQBE option in the FOXPRO software. The query files are saved in the \GWS\QUERY subdirectory. Additional query files should be saved on this subdirectory to make queries integrated. RQBE is best explained in the FOXPRO manual.

## COMPLETE LISTS OF DATABASE STRUCTURES

Index Key: W_CODE
Structure for database: **\GWS\WINV\WELL.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | |
| 2 | W_CHANGWAT | Character | 2 | |
| 3 | W_AMPHOE | Character | 2 | |
| 4 | W_TAMBON | Character | 2 | |
| 5 | W_TYPE | Numeric | 1 | |
| 6 | W_NAME | Character | 60 | |
| 7 | W_STATUS | Numeric | 1 | |
| 8 | AQUI_NAME | Numeric | 1 | |
| 9 | DAT_SOURCE | Numeric | 1 | |
| 10 | DRILL_CODE | Character | 5 | |
| 11 | DRILLER | Character | 60 | |
| 12 | NEW_NO | Character | 12 | |
| 13 | OLD_NO | Character | 22 | |
| 14 | W_ADDR1 | Character | 60 | |
| 15 | W_ADDR2 | Character | 60 | |
| 16 | OWNER | Character | 60 | |
| 17 | OW_ADDR1 | Character | 60 | |
| 18 | OW_ADDR2 | Character | 60 | |
| 19 | ELEVATION | Numeric | 8 | 2 |
| 20 | MAP_NO | Character | 8 | |
| 21 | LAT_DEGR | Character | 3 | |
| 22 | LAT_MIN | Character | 2 | |
| 23 | LAT_SEC | Character | 2 | |
| 24 | LONG_DEGR | Character | 3 | |
| 25 | LONG_MIN | Character | 2 | |
| 26 | LONG_SEC | Character | 2 | |
| 27 | UTM_E | Numeric | 6 | |
| 28 | UTM_N | Numeric | 6 | |
| 29 | GZD | Character | 3 | |
| 30 | X | Numeric | 3 | |
| 31 | Y | Numeric | 3 | |
| 32 | START_MM | Character | 2 | |
| 33 | START_DD | Character | 2 | |
| 34 | START_YY | Character | 2 | |
| 35 | COMP_MM | Character | 2 | |
| 36 | COMP_DD | Character | 2 | |
| 37 | COMP_YY | Character | 2 | |
| 38 | DRILL_NO | Character | 12 | |
| 39 | ISSUE_MM | Character | 2 | |
| 40 | ISSUE_DD | Character | 2 | |
| 41 | ISSUE_YY | Character | 2 | |
| 42 | GWUSE_NO | Character | 12 | |
| 43 | GW_USE | Character | 2 | |
| 44 | VOL_PER | Numeric | 8 | 2 |
| 45 | VOL_ACT | Numeric | 8 | 2 |
| 46 | PISSUE_MM | Character | 2 | |
| 47 | PISSUE_DD | Character | 2 | |
| 48 | PISSUE_YY | Character | 4 | |
| 49 | EXPIRE_MM | Character | 2 | |
| 50 | EXPIRE_DD | Character | 2 | |

| | | | | |
|---|---|---|---|---|
| 51 | EXPIRE_YY | Character | 4 | |
| 52 | EXTEND_MM | Character | 2 | |
| 53 | EXTEND_DD | Character | 2 | |
| 54 | EXTEND_YY | Character | 4 | |
| 55 | METER | Character | 1 | |
| 56 | M_SIZE | Numeric | 4 | |
| 57 | HRS_DAY | Numeric | 5 | 2 |
| 58 | DAYS_WK | Numeric | 5 | 2 |
| 59 | WKS_YR | Numeric | 5 | 2 |
| 60 | D_DEPTH | Numeric | 7 | 2 |
| 61 | W_DEPTH | Numeric | 7 | 2 |
| 62 | DIA_TOP | Numeric | 4 | |
| 63 | DIA_BOTTOM | Numeric | 4 | |
| 64 | DIA_RISER | Numeric | 4 | |
| 65 | PTYPE | Numeric | 2 | |
| 66 | PBRAND | Character | 3 | |
| 67 | P_HP | Numeric | 7 | 2 |
| 68 | P_RC | Numeric | 7 | 2 |
| 69 | P_TDH | Numeric | 6 | 1 |
| 70 | P_SET | Numeric | 6 | 2 |
| 71 | MBRAND | Character | 3 | |
| 72 | M_HP | Numeric | 6 | 2 |
| 73 | C_TYPE | Numeric | 1 | |
| 74 | C_LENGTH | Numeric | 7 | 2 |
| 75 | S_LENGTH | Numeric | 6 | 2 |
| 76 | GR_SIZE | Character | 7 | |
| 77 | GRDEPTH_FR | Numeric | 7 | 2 |
| 78 | GRDEPTH_TO | Numeric | 7 | 2 |
| 79 | PIPE_LEN | Numeric | 7 | 2 |
| 80 | PIPE_DIA | Numeric | 4 | |
| 81 | PDEPTH_FR | Numeric | 7 | 2 |
| 82 | PDEPTH_TO | Numeric | 7 | 2 |
| 83 | ER_LOG | Character | 1 | |
| 84 | SP_LOG | Character | 1 | |
| 85 | GR_LOG | Character | 1 | |
| 86 | W_DEV | Numeric | 1 | |
| 87 | WDSTART_MM | Character | 2 | |
| 88 | WDSTART_DD | Character | 2 | |
| 89 | WDSTART_YY | Character | 2 | |
| 90 | WDCOMP_MM | Character | 2 | |
| 91 | WDCOMP_DD | Character | 2 | |
| 92 | WDCOMP_YY | Character | 2 | |
| 93 | WDURATION | Numeric | 6 | 2 |
| 94 | DISCHARGE | Numeric | 7 | 2 |
| 95 | PTEST_MM | Character | 2 | |
| 96 | PTEST_DD | Character | 2 | |
| 97 | PTEST_YY | Character | 2 | |
| 98 | PMPTYPE | Numeric | 2 | |
| 99 | PUMPCPCT | Numeric | 7 | 2 |
| 100 | PUMPSET | Numeric | 6 | 2 |
| 101 | SWL | Numeric | 6 | 2 |
| 102 | DRAWDOWN | Numeric | 6 | 2 |
| 103 | YLD | Numeric | 7 | 2 |
| 104 | SPCF_CPCTY | Numeric | 6 | 2 |
| 105 | FLOW | Numeric | 1 | |

| | | | | |
|---|---|---|---|---|
| 106 | DURATION | Numeric | 6 | 2 |
| 107 | PTEST_TYPE | Numeric | 1 | |
| 108 | TRANSMISS | Numeric | 8 | 2 |
| 109 | ST_COEFF | Numeric | 10 | 6 |
| 110 | CHECK | Character | 1 | |
| ** Total ** | | | 864 | |

Index Key: W_CODE
Structure for database: **\GWS\WINV\TQUAL.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | |
| 2 | METHOD | Numeric | 1 | |
| 3 | SAMPLE_MM | Character | 2 | |
| 4 | SAMPLE_DD | Character | 2 | |
| 5 | SAMPLE_YY | Character | 2 | |
| 6 | ANAL_MM | Character | 2 | |
| 7 | ANAL_DD | Character | 2 | |
| 8 | ANAL_YY | Character | 2 | |
| 9 | ARSENIC | Numeric | 7 | 2 |
| 10 | CYANIDE | Numeric | 7 | 2 |
| 11 | LEAD | Numeric | 7 | 2 |
| 12 | MERCURY | Numeric | 7 | 2 |
| 13 | CADMIUM | Numeric | 7 | 2 |
| 14 | SELENIUM | Numeric | 7 | 2 |
| 15 | CHROMIUM | Numeric | 7 | 2 |
| 16 | BARIUM | Numeric | 7 | 2 |
| 17 | SILVER | Numeric | 7 | 2 |
| 18 | PHENOLS | Numeric | 7 | 2 |
| 19 | BROMIDE | Numeric | 7 | 2 |
| 20 | IODIDE | Numeric | 7 | 2 |
| ** Total ** | | | 109 | |

Index Key: W_CODE
Structure for database: **\GWS\WINV\WQUAL.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | | |
| 2 | METHOD | Numeric | 1 | | |
| 3 | SAMPLE_MM | Character | 2 | | |
| 4 | SAMPLE_DD | Character | 2 | | |
| 5 | SAMPLE_YY | Character | 2 | | |
| 6 | ANAL_MM | Character | 2 | | |
| 7 | ANAL_DD | Character | 2 | | |
| 8 | ANAL_YY | Character | 2 | | |
| 9 | PH | Numeric | 5 | 2 | |
| 10 | SPCOND | Numeric | 8 | 2 | |
| 11 | TURBIDITY | Numeric | 5 | 2 | |
| 12 | COLOR | Numeric | 5 | | |
| 13 | ODOR | Numeric | 1 | | |
| 14 | TEMP | Numeric | 4 | 1 | |
| 15 | ALKALINITY | Numeric | 7 | 2 | |
| 16 | ACIDITY | Numeric | 7 | 2 | |
| 17 | RCHLORINE | Numeric | 7 | 2 | |
| 18 | CALCIUM | Numeric | 7 | 2 | |
| 19 | MAGNESIUM | Numeric | 7 | 2 | |
| 20 | SODIUM | Numeric | 7 | 2 | |

| | | | | |
|---|---|---|---|---|
| 21 | POTASSIUM | Numeric | 7 | 2 |
| 22 | DIS_IRON | Numeric | 7 | 2 |
| 23 | TOT_IRON | Numeric | 7 | 2 |
| 24 | MANGANESE | Numeric | 7 | 2 |
| 25 | COPPER | Numeric | 7 | 2 |
| 26 | ZINC | Numeric | 7 | 2 |
| 27 | CHLORIDE | Numeric | 7 | 2 |
| 28 | SULPHATE | Numeric | 7 | 2 |
| 29 | CARBONATE | Numeric | 7 | 2 |
| 30 | HCO_3 | Numeric | 7 | 2 |
| 31 | CO_2 | Numeric | 7 | 2 |
| 32 | NITRITE | Numeric | 7 | 2 |
| 33 | NITRATE | Numeric | 7 | 2 |
| 34 | FLOURIDE | Numeric | 7 | 2 |
| 35 | TSOLIDS | Numeric | 7 | 2 |
| 36 | THARDNESS | Numeric | 7 | 2 |
| 37 | NON_HARD | Numeric | 7 | 2 |
| ** Total ** | | | 214 | |

Index Key: W_CODE+STR(SINT_NO,2)
Structure for database: **\GWS\WINV\WSCRN.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | |
| 2 | SINT_NO | Numeric | 2 | |
| 3 | S_TYPE | Numeric | 1 | |
| 4 | S_DIA | Numeric | 4 | |
| 5 | S_NUMBER | Character | 2 | |
| 6 | S_OPEN | Numeric | 5 | 2 |
| 7 | SDEPTH_FR | Numeric | 6 | 2 |
| 8 | SDEPTH_TO | Numeric | 6 | 2 |
| ** Total ** | | | 38 | |

Index Key: W_CODE+STR(STR_NO,3)
Structure for database: **\GWS\WINV\WSTR.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | |
| 2 | STR_NO | Numeric | 3 | |
| 3 | DEPTH_FR | Numeric | 6 | 2 |
| 4 | DEPTH_TO | Numeric | 6 | 2 |
| 5 | TYPE | Character | 22 | |
| 6 | GRAIN | Character | 10 | |
| 7 | COLOR | Character | 10 | |
| ** Total ** | | | 69 | |

Index Key: W_CODE+STR(CINT_NO,2)
Structure for database: **\GWS\WINV\WCAS.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | |
| 2 | CINT_NO | Numeric | 2 | |
| 3 | C_DIA | Numeric | 4 | |
| 4 | CDEPTH_FR | Numeric | 6 | 2 |
| 5 | CDEPTH_TO | Numeric | 6 | 2 |
| ** Total ** | | | 30 | |

Index Key: W_CODE+STR(SLINT_NO,2)

Structure for database: **\GWS\WINV\WSEAL.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | |
| 2 | SLINT_NO | Numeric | 2 | |
| 3 | SLTYPE | Numeric | 1 | |
| 4 | SLDEPTH_FR | Numeric | 6 | 2 |
| 5 | SLDEPTH_TO | Numeric | 6 | 2 |
| ** Total ** | | | 27 | |

Index Key: W_CODE

Structure for database: **\GWS\NDMR\NDMR.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | |
| ** Total ** | | | 12 | |

Index Key: W_CODE+STR(YEAR,4)

Structure for database: **\GWS\NDMR\DISC.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | |
| 2 | YEAR | Numeric | 4 | |
| 3 | JAN | Numeric | 6 | |
| 4 | FEB | Numeric | 6 | |
| 5 | MAR | Numeric | 6 | |
| 6 | APR | Numeric | 6 | |
| 7 | MAY | Numeric | 6 | |
| 8 | JUN | Numeric | 6 | |
| 9 | JUL | Numeric | 6 | |
| 10 | AUG | Numeric | 6 | |
| 11 | SEP | Numeric | 6 | |
| 12 | OCT | Numeric | 6 | |
| 13 | NOV | Numeric | 6 | |
| 14 | DEC | Numeric | 6 | |
| 15 | ANNUAL | Numeric | 7 | |
| 16 | M_AVERAGE | Numeric | 6 | |
| 17 | D_AVERAGE | Numeric | 5 | |
| 18 | MONTHS | Numeric | 2 | |
| ** Total ** | | | 108 | |

Index Key: W_CODE

Structure for database: **\GWS\WHGEO\HGEO.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | |
| 2 | OBS_TYPE | Numeric | 1 | |
| 3 | BENCH_ELEV | Numeric | 7 | 2 |
| 4 | ACODE | Character | 12 | |
| 5 | STA_NO | Character | 12 | |
| 6 | AGENCY | Character | 30 | |
| 7 | REMARKS | Character | 30 | |
| ** Total ** | | | 104 | |

Index Key: W_CODE

Structure for database: **\GWS\WHGEO\GWL.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | |
| 2 | DATE | Date | 8 | |

```
    3  GW_LEVEL     Numeric         7       2
    4  GW_MSL       Numeric         7       2
    5  STATIC       Character       1
** Total **                       35

Index Key: W_CODE
Structure for database: \GWS\WHGEO\GWQUAL.DBF
Field  Field Name  Type        Width     Dec
    1  W_CODE      Character      11
    2  PARAMETER   Numeric         2
    3  CONCENT     Numeric        10       3
    4  DATE        Date            8
** Total **                       32

Index Key: DRILL_CODE
Structure for database: \GWS\DBFS\DRILLERS.DBF
Field  Field Name  Type        Width     Dec
    1  DRILL_CODE  Character       5
    2  DRILLER     Character      60
** Total **                       66

Index Key: P_CODE
Structure for database: \GWS\DBFS\PBRANDS.DBF
Field  Field Name  Type        Width     Dec
    1  P_CODE      Character       3
    2  BRAND       Character      30
** Total **                       34

Index Key: M_CODE
Structure for database: \GWS\DBFS\MBRANDS.DBF
Field  Field Name  Type        Width     Dec
    1  M_CODE      Character       3
    2  BRAND       Character      30
** Total **                       34

Index Key:
Structure for database: \GWS\DBFS\TYPE.DBF
Field  Field Name  Type        Width     Dec
    1  OPTION      Numeric         1
    2  DESCRIPT    Character      11
** Total **                       13

Index Key:
Structure for database: \GWS\DBFS\STATUS.DBF
Field  Field Name  Type        Width     Dec
    1  OPTION      Numeric         1
    2  POPUP       Character      16
    3  DESCRIPT    Character      12
** Total **                       30

Index Key:
Structure for database: \GWS\DBFS\PURPOSE.DBF
Field  Field Name  Type        Width     Dec
    1  OPTION      Character       2
```

```
    2  DESCRIPT    Character      60
** Total **                      63

Index Key:
Structure for database: \GWS\DBFS\CASING.DBF
Field  Field Name  Type       Width    Dec
    1  OPTION      Numeric        1
    2  POPUP       Character     33
    3  DESCRIPT    Character     29
** Total **                      64

Index Key:
Structure for database: \GWS\DBFS\DEVELOP.DBF
Field  Field Name  Type       Width    Dec
    1  OPTION      Numeric        1
    2  POPUP       Character     44
    3  DESCRIPT    Character     40
** Total **                      86

Index Key:
Structure for database: \GWS\DBFS\CHMETHOD.DBF
Field  Field Name  Type       Width    Dec
    1  OPTION      Numeric        1
    2  POPUP       Character     24
    3  DESCRIPT    Character     20
** Total **                      46

Index Key:
Structure for database: \GWS\DBFS\AQUIFER.DBF
Field  Field Name  Type       Width    Dec
    1  OPTION      Numeric        1
    2  POPUP       Character     17
    3  DESCRIPT    Character     13
    4  CODE        Character      2
    5  DEPTH_FROM  Numeric        3
    6  DEPTH_TO    Numeric        3
** Total **                      40

Index Key:
Structure for database: \GWS\DBFS\SOURCE.DBF
Field  Field Name  Type       Width    Dec
    1  OPTION      Numeric        1
    2  POPUP       Character     14
    3  DESCRIPT    Character     10
** Total **                      26

Index Key:
Structure for database: \GWS\DBFS\FLOW.DBF
Field  Field Name  Type       Width    Dec
    1  OPTION      Numeric        1
    2  POPUP       Character     17
    3  DESCRIPT    Character     13
** Total **                      32

Index Key:
```

Structure for database: **\GWS\DBFS\PUMPTEST.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | OPTION | Numeric | 1 | |
| 2 | POPUP | Character | 17 | |
| 3 | DESCRIPT | Character | 13 | |
| ** Total ** | | | 32 | |

Index Key:

Structure for database: **\GWS\DBFS\SCRNTYPE.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | OPTION | Numeric | 1 | |
| 2 | POPUP | Character | 30 | |
| 3 | DESCRIPT | Character | 25 | |
| ** Total ** | | | 57 | |

Index Key:

Structure for database: **\GWS\DBFS\SEALTYPE.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | OPTION | Numeric | 1 | |
| 2 | POPUP | Character | 25 | |
| 3 | DESCRIPT | Character | 20 | |
| ** Total ** | | | 47 | |

Index Key:

Structure for database: **\GWS\DBFS\PUMPTYPE.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | OPTION | Numeric | 2 | |
| 2 | DESCRIPT | Character | 20 | |
| ** Total ** | | | 23 | |

Index Key:

Structure for database: **\GWS\DBFS\ODOR.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | OPTION | Numeric | 1 | |
| 2 | DESCRIPT | Character | 20 | |
| ** Total ** | | | 22 | |

Index Key:

Structure for database: **\GWS\DBFS\LITHO.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | POPUP | Character | 24 | |
| 2 | OPTION | Character | 2 | |
| 3 | DESCRIPT | Character | 20 | |
| ** Total ** | | | 47 | |

Index Key:

Structure for database: **\GWS\DBFS\GRAIN.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | OPTION | Character | 2 | |
| 2 | POPUP | Character | 25 | |
| 3 | DESCRIPT | Character | 20 | |
| ** Total ** | | | 48 | |

Index Key:

Structure for database: **\GWS\DBFS\COLOR.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | OPTION | Character | 2 | |
| 2 | POPUP | Character | 25 | |
| 3 | DESCRIPT | Character | 20 | |
| ** Total ** | | | 48 | |

Index Key:
Structure for database: **\GWS\WHGEO\WIONS.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | PARAMETER | Numeric | 2 | |
| 2 | POPUP | Character | 28 | |
| 3 | PAR_NAME | Character | 23 | |
| ** Total ** | | | 54 | |

Index Key:
Structure for database: **\GWS\DBFS\HAGENCY.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | OPTION | Numeric | 1 | |
| 2 | DESCRIPT | Character | 13 | |
| ** Total ** | | | 15 | |

Index Key:
Structure for database: **\GWS\DBFS\VLIMIT.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | MM | Numeric | 3 | |
| 2 | CUMD | Numeric | 5 | |
| ** Total ** | | | 9 | |

Index Key:
Structure for database: **\GWS\DBFS\REPORTS.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | REPORTNAME | Character | 8 | |
| 2 | CONTENTS | Character | 25 | |
| 3 | MODTYPE | Character | 8 | |
| ** Total ** | | | 42 | |

Index Key: CHANG_CODE
Structure for database: **\GWS\DBFS\CHANGWAT.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | CHANG_CODE | Character | 2 | |
| 2 | CHANG_NAME | Character | 25 | |
| 3 | CODE_NAME | Character | 30 | |
| ** Total ** | | | 58 | |

Index Key: CHANG_CODE+AMPHO_CODE
Structure for database: **\GWS\DBFS\AMPHOE.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | CHANG_CODE | Character | 2 | |
| 2 | AMPHO_CODE | Character | 2 | |
| 3 | AMPHO_NAME | Character | 25 | |
| 4 | CODE_NAME | Character | 30 | |
| ** Total ** | | | 60 | |

Index Key: CHANG_CODE+AMPHO_CODE+TAMBO_CODE
Structure for database: **\GWS\DBFS\TAMBON.DBF**

| Field | Field Name | Type | Width | Dec |
|---|---|---|---|---|
| 1 | CHANG_CODE | Character | 2 | |
| 2 | AMPHO_CODE | Character | 2 | |
| 3 | TAMBO_CODE | Character | 2 | |
| 4 | TAMBO_NAME | Character | 30 | |
| 5 | CODE_NAME | Character | 35 | |
| ** Total ** | | | 72 | |

Index Key: W_CODE
Structure for database: **\GWS\NDMR\NDMR.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | | |
| ** Total ** | | | 12 | | |

Index Key: W_CODE+STR(YEAR,4)
Structure for database: **\GWS\NDMR\DISC.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | W_CODE | Character | 11 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 6 | | |
| 4 | FEB | Numeric | 6 | | |
| 5 | MAR | Numeric | 6 | | |
| 6 | APR | Numeric | 6 | | |
| 7 | MAY | Numeric | 6 | | |
| 8 | JUN | Numeric | 6 | | |
| 9 | JUL | Numeric | 6 | | |
| 10 | AUG | Numeric | 6 | | |
| 11 | SEP | Numeric | 6 | | |
| 12 | OCT | Numeric | 6 | | |
| 13 | NOV | Numeric | 6 | | |
| 14 | DEC | Numeric | 6 | | |
| 15 | ANNUAL | Numeric | 7 | | |
| 16 | M_AVERAGE | Numeric | 6 | | |
| 17 | D_AVERAGE | Numeric | 5 | | |
| 18 | MONTHS | Numeric | 2 | | |
| ** Total ** | | | 108 | | |

Index Key: FACNO
Structure for database: **\GWS\NDMR\IEAT.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | FACNO | Character | 12 | | |
| 2 | FACTYPE | Character | 30 | | |
| 3 | GW_USE | Character | 2 | | |
| 4 | YEAR | Numeric | 4 | | |
| 5 | JAN | Numeric | 6 | | |
| 6 | FEB | Numeric | 6 | | |
| 7 | MAR | Numeric | 6 | | |
| 8 | APR | Numeric | 6 | | |
| 9 | MAY | Numeric | 6 | | |
| 10 | JUN | Numeric | 6 | | |
| 11 | JUL | Numeric | 6 | | |

```
   12  AUG          Numeric         6
   13  SEP          Numeric         6
   14  OCT          Numeric         6
   15  NOV          Numeric         6
   16  DEC          Numeric         6
   17  TOTAL        Numeric         6
   18  AVERAGE      Numeric         6
** Total **                       133


Index Key: W_CODE
Structure for database: \GWS\WHGEO\HGEO.DBF
Field  Field Name  Type       Width    Dec    Index
    1  W_CODE      Character     11
    2  OBS_TYPE    Numeric        1
    3  BENCH_ELEV  Numeric        7      2
    4  ACODE       Character     12
    5  STA_NO      Character     12
    6  AGENCY      Character     30
    7  REMARKS     Character     30
** Total **                     104

Index Key: W_CODE
Structure for database: \GWS\WHGEO\GWL.DBF
Field  Field Name  Type       Width    Dec    Index
    1  W_CODE      Character     11
    2  DATE        Date           8
    3  GW_LEVEL    Numeric        7      2
    4  GW_MSL      Numeric        7      2
    5  STATIC      Character      1
** Total **                      35

Index Key: W_CODE
Structure for database: \GWS\WHGEO\GWQUAL.DBF
Field  Field Name  Type       Width    Dec    Index
    1  W_CODE      Character     11
    2  PARAMETER   Numeric        2
    3  CONCENT     Numeric       10      3
    4  DATE        Date           8
** Total **                      32

Index Key:
Structure for database: \GWS\WHGEO\WIONS.DBF
Field  Field Name  Type       Width    Dec    Index
    1  PARAMETER   Numeric        2
    2  POPUP       Character     28
    3  PAR_NAME    Character     23
** Total **                      54

Index Key:
Structure for database: \GWS\DBFS\REPORTS.DBF
Field  Field Name  Type       Width    Dec    Index
    1  REPORTNAME  Character      8
    2  CONTENTS    Character     25
    3  MODTYPE     Character      8
```

** Total **  42

Index Key: BM_CODE
Structure for database: **\GWS\WLAND\BENCHMRK.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | BM_CODE | Character | 6 | | |
| 2 | BM_TYPE | Numeric | 2 | | |
| 3 | SLOC_CC | Character | 2 | | |
| 4 | SLOC_AA | Character | 2 | | |
| 5 | SLOC_TT | Character | 2 | | |
| 6 | SLOC_DTL | Character | 120 | | |
| 7 | DEPTH | Numeric | 6 | 2 | |
| 8 | CR_ZONE | Character | 6 | | |
| 9 | MAP_NO | Character | 8 | | |
| 10 | LAT_DEGR | Character | 3 | | |
| 11 | LAT_MIN | Character | 2 | | |
| 12 | LAT_SEC | Character | 2 | | |
| 13 | LONG_DEGR | Character | 3 | | |
| 14 | LONG_MIN | Character | 2 | | |
| 15 | LONG_SEC | Character | 2 | | |
| 16 | UTM_E | Character | 5 | | |
| 17 | UTM_N | Character | 6 | | |
| 18 | GZD | Character | 3 | | |
| 19 | X | Character | 3 | | |
| 20 | Y | Character | 3 | | |
| 21 | FR_REC | Character | 4 | | |
| 22 | TO_REC | Character | 4 | | |
| 23 | REMARKS | Character | 45 | | |
| 24 | ELEVATION | Numeric | 8 | 2 | |
| 25 | BM_NO | Character | 7 | | |
| 26 | STA_NO | Character | 3 | | |
| 27 | B_AGENCY | Character | 3 | | |
| 28 | A_CODE | Character | 2 | | |
| 29 | A_STAT | Character | 1 | | |
| ** Total ** | | | 266 | | |

Index Key: BM_CODE
Structure for database: **\GWS\WLAND\BMELEV.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | BM_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | DATA | Numeric | 8 | 2 | |
| ** Total ** | | | 19 | | |

Index Key: BM_CODE
Structure for database: **\GWS\WLAND\COMPRESS.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | BM_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 6 | 2 | |
| 4 | FEB | Numeric | 6 | 2 | |
| 5 | MAR | Numeric | 6 | 2 | |
| 6 | APR | Numeric | 6 | 2 | |
| 7 | MAY | Numeric | 6 | 2 | |
| 8 | JUN | Numeric | 6 | 2 | |

```
    9  JUL          Numeric         6       2
   10  AUG          Numeric         6       2
   11  SEP          Numeric         6       2
   12  OCT          Numeric         6       2
   13  NOV          Numeric         6       2
   14  DEC          Numeric         6       2
   15  ANNUAL       Numeric         7       2
** Total **                        90
```

Index Key: BM_CODE
Structure for database: **\GWS\WLAND\POREPRES.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | BM_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 7 | 2 | |
| 4 | FEB | Numeric | 7 | 2 | |
| 5 | MAR | Numeric | 7 | 2 | |
| 6 | APR | Numeric | 7 | 2 | |
| 7 | MAY | Numeric | 7 | 2 | |
| 8 | JUN | Numeric | 7 | 2 | |
| 9 | JUL | Numeric | 7 | 2 | |
| 10 | AUG | Numeric | 7 | 2 | |
| 11 | SEP | Numeric | 7 | 2 | |
| 12 | OCT | Numeric | 7 | 2 | |
| 13 | NOV | Numeric | 7 | 2 | |
| 14 | DEC | Numeric | 7 | 2 | |
| 15 | ANNUAL | Numeric | 9 | 2 | |
| ** Total ** | | | 104 | | |

Index Key: BM_CODE
Structure for database: **\GWS\WLAND\SUBSIDE.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | BM_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | DATA | Numeric | 8 | 2 | |
| ** Total ** | | | 19 | | |

Index Key:
Structure for database: **\GWS\DBFS\BMTYPE.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | OPTION | Numeric | 2 | | |
| 2 | DESCRIPT | Character | 30 | | |
| ** Total ** | | | 33 | | |

Index Key: M_CODE
Structure for database: **\GWS\WMET\MSTATION.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | M_CODE | Character | 6 | | |
| 2 | OLD_CODE | Character | 6 | | |
| 3 | M_NAME | Character | 38 | | |
| 4 | M_AGENCY | Character | 10 | | |
| 5 | R_BASIN | Character | 20 | | |
| 6 | M_ELEV | Numeric | 6 | 1 | |
| 7 | MLAT_DEGR | Character | 3 | | |
| 8 | MLAT_MIN | Character | 2 | | |

| | | | | |
|---|---|---|---|---|
| 9 | MLAT_SEC | Character | 2 | |
| 10 | MLONG_DEGR | Character | 3 | |
| 11 | MLONG_MIN | Character | 2 | |
| 12 | MLONG_SEC | Character | 2 | |
| 13 | PERIOD | Character | 25 | |
| 14 | M_STATUS | Character | 11 | |
| 15 | M_TYPE | Character | 10 | |
| 16 | ANNUAL | Numeric | 6 | 1 |
| 17 | METHOD | Character | 10 | |
| ** Total ** | | | 163 | |

Index Key: M_CODE
Structure for database: **\GWS\WMET\RAIN_M.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | M_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 6 | 1 | |
| 4 | FEB | Numeric | 6 | 1 | |
| 5 | MAR | Numeric | 6 | 1 | |
| 6 | APR | Numeric | 6 | 1 | |
| 7 | MAY | Numeric | 6 | 1 | |
| 8 | JUN | Numeric | 6 | 1 | |
| 9 | JUL | Numeric | 6 | 1 | |
| 10 | AUG | Numeric | 6 | 1 | |
| 11 | SEP | Numeric | 6 | 1 | |
| 12 | OCT | Numeric | 6 | 1 | |
| 13 | NOV | Numeric | 6 | 1 | |
| 14 | DEC | Numeric | 6 | 1 | |
| 15 | ANNUAL | Numeric | 8 | 1 | |
| ** Total ** | | | 91 | | |

Index Key: M_CODE
Structure for database: **\GWS\WMET\RAIN_DAY.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | M_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 2 | | |
| 4 | FEB | Numeric | 2 | | |
| 5 | MAR | Numeric | 2 | | |
| 6 | APR | Numeric | 2 | | |
| 7 | MAY | Numeric | 2 | | |
| 8 | JUN | Numeric | 2 | | |
| 9 | JUL | Numeric | 2 | | |
| 10 | AUG | Numeric | 2 | | |
| 11 | SEP | Numeric | 2 | | |
| 12 | OCT | Numeric | 2 | | |
| 13 | NOV | Numeric | 2 | | |
| 14 | DEC | Numeric | 2 | | |
| 15 | ANNUAL | Numeric | 3 | | |
| ** Total ** | | | 38 | | |

Index Key: M_CODE
Structure for database: **\GWS\WMET\TMEAN_M.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | M_CODE | Character | 6 | | |

| | | | | | |
|---|---|---|---|---|---|
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 4 | 1 | |
| 4 | FEB | Numeric | 4 | 1 | |
| 5 | MAR | Numeric | 4 | 1 | |
| 6 | APR | Numeric | 4 | 1 | |
| 7 | MAY | Numeric | 4 | 1 | |
| 8 | JUN | Numeric | 4 | 1 | |
| 9 | JUL | Numeric | 4 | 1 | |
| 10 | AUG | Numeric | 4 | 1 | |
| 11 | SEP | Numeric | 4 | 1 | |
| 12 | OCT | Numeric | 4 | 1 | |
| 13 | NOV | Numeric | 4 | 1 | |
| 14 | DEC | Numeric | 4 | 1 | |
| 15 | ANNUAL | Numeric | 4 | 1 | |
| ** Total ** | | | 63 | | |

Index Key: M_CODE
Structure for database: **\GWS\WMET\TMIN_M.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | M_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 5 | 1 | |
| 4 | FEB | Numeric | 5 | 1 | |
| 5 | MAR | Numeric | 5 | 1 | |
| 6 | APR | Numeric | 5 | 1 | |
| 7 | MAY | Numeric | 5 | 1 | |
| 8 | JUN | Numeric | 5 | 1 | |
| 9 | JUL | Numeric | 5 | 1 | |
| 10 | AUG | Numeric | 5 | 1 | |
| 11 | SEP | Numeric | 5 | 1 | |
| 12 | OCT | Numeric | 5 | 1 | |
| 13 | NOV | Numeric | 5 | 1 | |
| 14 | DEC | Numeric | 5 | 1 | |
| 15 | ANNUAL | Numeric | 5 | 1 | |
| ** Total ** | | | 76 | | |

Index Key: M_CODE
Structure for database: **\GWS\WMET\TMAX_M.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | M_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 5 | 1 | |
| 4 | FEB | Numeric | 5 | 1 | |
| 5 | MAR | Numeric | 5 | 1 | |
| 6 | APR | Numeric | 5 | 1 | |
| 7 | MAY | Numeric | 5 | 1 | |
| 8 | JUN | Numeric | 5 | 1 | |
| 9 | JUL | Numeric | 5 | 1 | |
| 10 | AUG | Numeric | 5 | 1 | |
| 11 | SEP | Numeric | 5 | 1 | |
| 12 | OCT | Numeric | 5 | 1 | |
| 13 | NOV | Numeric | 5 | 1 | |
| 14 | DEC | Numeric | 5 | 1 | |
| 15 | ANNUAL | Numeric | 5 | 1 | |
| ** Total ** | | | 76 | | |

Index Key: M_CODE
Structure for database: **\GWS\WMET\EVAP_M.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | M_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 6 | 1 | |
| 4 | FEB | Numeric | 6 | 1 | |
| 5 | MAR | Numeric | 6 | 1 | |
| 6 | APR | Numeric | 6 | 1 | |
| 7 | MAY | Numeric | 6 | 1 | |
| 8 | JUN | Numeric | 6 | 1 | |
| 9 | JUL | Numeric | 6 | 1 | |
| 10 | AUG | Numeric | 6 | 1 | |
| 11 | SEP | Numeric | 6 | 1 | |
| 12 | OCT | Numeric | 6 | 1 | |
| 13 | NOV | Numeric | 6 | 1 | |
| 14 | DEC | Numeric | 6 | 1 | |
| 15 | ANNUAL | Numeric | 6 | 1 | |
| ** Total ** | | | 89 | | |

Index Key: M_CODE
Structure for database: **\GWS\WMET\HUMID_M.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | M_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 2 | | |
| 4 | FEB | Numeric | 2 | | |
| 5 | MAR | Numeric | 2 | | |
| 6 | APR | Numeric | 2 | | |
| 7 | MAY | Numeric | 2 | | |
| 8 | JUN | Numeric | 2 | | |
| 9 | JUL | Numeric | 2 | | |
| 10 | AUG | Numeric | 2 | | |
| 11 | SEP | Numeric | 2 | | |
| 12 | OCT | Numeric | 2 | | |
| 13 | NOV | Numeric | 2 | | |
| 14 | DEC | Numeric | 2 | | |
| 15 | ANNUAL | Numeric | 2 | | |
| ** Total ** | | | 37 | | |

Index Key: M_CODE
Structure for database: **\GWS\WMET\SUN_M.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | M_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 5 | 1 | |
| 4 | FEB | Numeric | 5 | 1 | |
| 5 | MAR | Numeric | 5 | 1 | |
| 6 | APR | Numeric | 5 | 1 | |
| 7 | MAY | Numeric | 5 | 1 | |
| 8 | JUN | Numeric | 5 | 1 | |
| 9 | JUL | Numeric | 5 | 1 | |
| 10 | AUG | Numeric | 5 | 1 | |
| 11 | SEP | Numeric | 5 | 1 | |
| 12 | OCT | Numeric | 5 | 1 | |

```
   13  NOV          Numeric         5       1
   14  DEC          Numeric         5       1
   15  ANNUAL       Numeric         7       1
** Total **                       78
```

Index Key: M_CODE
Structure for database: **\GWS\WMET\SOLAR_M.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | M_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 6 | 1 | |
| 4 | FEB | Numeric | 6 | 1 | |
| 5 | MAR | Numeric | 6 | 1 | |
| 6 | APR | Numeric | 6 | 1 | |
| 7 | MAY | Numeric | 6 | 1 | |
| 8 | JUN | Numeric | 6 | 1 | |
| 9 | JUL | Numeric | 6 | 1 | |
| 10 | AUG | Numeric | 6 | 1 | |
| 11 | SEP | Numeric | 6 | 1 | |
| 12 | OCT | Numeric | 6 | 1 | |
| 13 | NOV | Numeric | 6 | 1 | |
| 14 | DEC | Numeric | 6 | 1 | |
| 15 | ANNUAL | Numeric | 7 | 1 | |
| ** Total ** | | | 90 | | |

Index Key: M_CODE
Structure for database: **\GWS\WMET\WIND_M.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | M_CODE | Character | 6 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 4 | 1 | |
| 4 | FEB | Numeric | 4 | 1 | |
| 5 | MAR | Numeric | 4 | 1 | |
| 6 | APR | Numeric | 4 | 1 | |
| 7 | MAY | Numeric | 4 | 1 | |
| 8 | JUN | Numeric | 4 | 1 | |
| 9 | JUL | Numeric | 4 | 1 | |
| 10 | AUG | Numeric | 4 | 1 | |
| 11 | SEP | Numeric | 4 | 1 | |
| 12 | OCT | Numeric | 4 | 1 | |
| 13 | NOV | Numeric | 4 | 1 | |
| 14 | DEC | Numeric | 4 | 1 | |
| 15 | ANNUAL | Numeric | 4 | 1 | |
| ** Total ** | | | 63 | | |

Index Key:
Structure for database: **\GWS\DBFS\MAGENCY.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | OPTION | Numeric | 1 | | |
| 2 | DESCRIPT | Character | 13 | | |
| ** Total ** | | | 15 | | |

Index Key: H_CODE
Structure for database: **\GWS\WHLOG\HSTATION.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1 | H_CODE | Character | 8 | |
| 2 | H_RIVER | Character | 25 | |
| 3 | H_STREAM | Character | 25 | |
| 4 | H_LOCATION | Character | 35 | |
| 5 | AMPHOE | Character | 22 | |
| 6 | CHANGWAT | Character | 24 | |
| 7 | HLAT_DEGR | Character | 3 | |
| 8 | HLAT_MIN | Character | 2 | |
| 9 | HLAT_SEC | Character | 2 | |
| 10 | HLONG_DEGR | Character | 3 | |
| 11 | HLONG_MIN | Character | 2 | |
| 12 | HLONG_SEC | Character | 2 | |
| 13 | H_MAPNO | Character | 8 | |
| 14 | YR_RECORD | Character | 50 | |
| 15 | YR_RATING | Character | 50 | |
| 16 | YR_DATA | Character | 50 | |
| 17 | TEMP1 | Character | 10 | |
| 18 | TEMP2 | Character | 10 | |
| 19 | H_AGENCY | Numeric | 1 | |
| 20 | H_STAT | Numeric | 1 | |
| 21 | H_OBS | Numeric | 1 | |
| 22 | H_BASIN | Character | 19 | |
| 23 | H_DRAIN | Numeric | 8 | |
| 24 | H_ELEV | Numeric | 8 | 2 |
| ** Total ** | | | 370 | |

Index Key: H_CODE
Structure for database: **\GWS\WHLOG\RDIS_M.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | H_CODE | Character | 8 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | JAN | Numeric | 8 | 3 | |
| 4 | FEB | Numeric | 8 | 3 | |
| 5 | MAR | Numeric | 8 | 3 | |
| 6 | APR | Numeric | 8 | 3 | |
| 7 | MAY | Numeric | 8 | 3 | |
| 8 | JUN | Numeric | 8 | 3 | |
| 9 | JUL | Numeric | 8 | 3 | |
| 10 | AUG | Numeric | 8 | 3 | |
| 11 | SEP | Numeric | 8 | 3 | |
| 12 | OCT | Numeric | 8 | 3 | |
| 13 | NOV | Numeric | 8 | 3 | |
| 14 | DEC | Numeric | 8 | 3 | |
| 15 | ANNUAL | Numeric | 10 | 3 | |
| ** Total ** | | | 119 | | |

Index Key: H_CODE
Structure for database: **\GWS\WHLOG\RDIS_D.DBF**

| Field | Field Name | Type | Width | Dec | Index |
|---|---|---|---|---|---|
| 1 | H_CODE | Character | 8 | | |
| 2 | YEAR | Numeric | 4 | | |
| 3 | DAY | Numeric | 2 | | |
| 4 | JAN | Numeric | 8 | 3 | |
| 5 | FEB | Numeric | 8 | 3 | |
| 6 | MAR | Numeric | 8 | 3 | |

```
    7  APR          Numeric        8       3
    8  MAY          Numeric        8       3
    9  JUN          Numeric        8       3
   10  JUL          Numeric        8       3
   11  AUG          Numeric        8       3
   12  SEP          Numeric        8       3
   13  OCT          Numeric        8       3
   14  NOV          Numeric        8       3
   15  DEC          Numeric        8       3
   16  ANNUAL       Numeric       10       3
** Total **                       121
```

Index Key: H_CODE
Structure for database: **\GWS\WHLOG\MGAGE.DBF**

```
Field  Field Name  Type       Width    Dec    Index
    1  H_CODE     Character      8
    2  YEAR       Numeric        4
    3  JAN        Numeric        7       3
    4  FEB        Numeric        7       3
    5  MAR        Numeric        7       3
    6  APR        Numeric        7       3
    7  MAY        Numeric        7       3
    8  JUN        Numeric        7       3
    9  JUL        Numeric        7       3
   10  AUG        Numeric        7       3
   11  SEP        Numeric        7       3
   12  OCT        Numeric        7       3
   13  NOV        Numeric        7       3
   14  DEC        Numeric        7       3
   15  ANNUAL     Numeric        7       3
** Total **                      104
```

Index Key: H_CODE
Structure for database: **\GWS\WHLOG\GAGE_D.DBF**

```
Field  Field Name  Type       Width    Dec    Index
    1  H_CODE     Character      8
    2  YEAR       Numeric        4
    3  DAY        Numeric        2
    4  JAN        Numeric        7       3
    5  FEB        Numeric        7       3
    6  MAR        Numeric        7       3
    7  APR        Numeric        7       3
    8  MAY        Numeric        7       3
    9  JUN        Numeric        7       3
   10  JUL        Numeric        7       3
   11  AUG        Numeric        7       3
   12  SEP        Numeric        7       3
   13  OCT        Numeric        7       3
   14  NOV        Numeric        7       3
   15  DEC        Numeric        7       3
** Total **                       99
```

Index Key: LIT_CODE
Structure for database: **\GWS\WLITR\LITR.DBF**

```
Field  Field Name  Type       Width    Dec    Index
```

```
    1  LIT_CODE     Character       6
    2  LIT_NAME1    Character      50
    3  LIT_NAME2    Character      50
    4  AUTHOR1      Character      30
    5  AUTHOR2      Character      30
    6  AUTHOR3      Character      30
    7  SUBJ1        Character       3
    8  SUBJ2        Character       3
    9  SUBJ3        Character       3
   10  SUBJ4        Character       3
   11  SUBJ5        Character       3
   12  ABSTRACT     Memo           10
** Total **                       222

Index Key: S_CODE
Structure for database: \GWS\WLITR\SUBJ.DBF
Field  Field Name  Type       Width    Dec    Index
    1  S_CODE      Character      3
    2  SUBJECT     Character     50
** Total **                       54
```

ANNEX 1-1

Distribution of DMR-registered Wells
by changwat and aquifer

| CHANGWAT | 1992 | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | AQUIFER | | | | | | | | |
| | Bangkok | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | Phyathai | Thonburi | Pak Nam | |
| Bangkok | 36 | 125 | 576 | 187 | 1 | | 8 | 3 | 936 |
| Nonthaburi | 11 | 1 | 26 | 177 | 7 | | | | 222 |
| Pathum Thani | 1 | 26 | 372 | 207 | 69 | 4 | | 1 | 680 |
| Samut Prakan | 39 | 404 | 856 | 78 | 9 | 1 | | 13 | 1400 |
| Samut Sakhon | 1 | 73 | 274 | 291 | 6 | 2 | 5 | | 652 |
| Ayutthaya | 2 | 109 | 115 | 20 | 1 | | | 1 | 248 |
| TOTAL | 90 | 738 | 2219 | 960 | 93 | 7 | 13 | 18 | 4138 |

ANNEX 1-2.1

Distribution of DMR-Registered Wells in the Study Area
by changwat and aquifer

| CHANGWAT | 1992 AQUIFER | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | Bangkok | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | Phyathai | Thonburi | Pak Nam | |
| Bangkok | 36 | 125 | 576 | 187 | 1 | | 8 | 3 | 936 |
| Nonthaburi | 11 | 1 | 26 | 177 | 7 | | | | 222 |
| Pathum Thani | 1 | 26 | 372 | 207 | 69 | 4 | | 1 | 680 |
| Samut Prakan | 39 | 404 | 856 | 78 | 9 | 1 | | 13 | 1400 |
| Samut Sakhon | | 60 | 226 | 274 | 6 | 2 | 5 | | 573 |
| Ayutthaya | | 26 | 64 | 14 | | | | | 104 |
| TOTAL | 87 | 642 | 2120 | 937 | 92 | 7 | 13 | 17 | 3915 |

ANNEX 1-2.2
Distribution of DMR-Registered Wells in the Study Area
by changwat, aquifer and type of user

| CHANGWAT | 1992 | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | A Q U I F E R | | | | | | | | |
| | Bangkok | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | Phyathai | Thonburi | Pak Nam | |
| Bangkok | 36 | 125 | 576 | 187 | 1 | | 8 | 3 | 936 |
| Domestic | 13 | 41 | 278 | 96 | | | 3 | | 431 |
| Institution | | 8 | 32 | 23 | 1 | | | | 64 |
| Commercial | 3 | 21 | 78 | 22 | | | 2 | | 126 |
| Industrial | 20 | 55 | 188 | 46 | | | 3 | 3 | 315 |
| Nonthaburi | 11 | 1 | 26 | 177 | 7 | | | | 222 |
| Domestic | | | 13 | 82 | 1 | | | | 96 |
| Institution | | 1 | 1 | 6 | | | | | 8 |
| Commercial | | | 2 | 24 | 4 | | | | 30 |
| Industrial | 11 | | 10 | 65 | 2 | | | | 88 |
| Pathum Thani | 1 | 26 | 372 | 207 | 69 | 4 | | 1 | 680 |
| Domestic | | 6 | 177 | 68 | 6 | | | | 257 |
| Institution | | 3 | 20 | 6 | 2 | | | | 31 |
| Commercial | 1 | 1 | 57 | 31 | 13 | | | | 103 |
| Industrial | | 16 | 118 | 102 | 48 | 4 | | 1 | 289 |
| Samut Prakan | 39 | 404 | 856 | 78 | 9 | 1 | | 13 | 1400 |
| Domestic | 11 | 90 | 280 | 9 | | | | | 390 |
| Institution | | 6 | 11 | 1 | | | | 3 | 21 |
| Commercial | 2 | 30 | 75 | 3 | | | | | 110 |
| Industrial | 26 | 278 | 490 | 65 | 9 | 1 | | 10 | 879 |
| Samut Sakhon | | 60 | 226 | 274 | 6 | 2 | 5 | | 573 |
| Domestic | | 19 | 50 | 58 | | | 1 | | 128 |
| Institution | | 1 | 1 | 7 | | | | | 9 |
| Commercial | | 5 | 19 | 27 | | | 2 | | 53 |
| Industrial | | 35 | 156 | 182 | 6 | 2 | 2 | | 383 |
| Ayutthaya | | 26 | 64 | 14 | | | | | 104 |
| Domestic | | 8 | 24 | 4 | | | | | 36 |
| Institution | | 1 | 2 | 2 | | | | | 5 |
| Commercial | | 4 | 11 | 3 | | | | | 18 |
| Industrial | | 13 | 27 | 5 | | | | | 45 |
| TOTAL | 87 | 642 | 2120 | 937 | 92 | 7 | 13 | 17 | 3915 |
| Domestic | 24 | 164 | 822 | 317 | 7 | | 4 | | 1338 |
| Institution | | 20 | 67 | 45 | 3 | | | 3 | 138 |
| Commercial | 6 | 61 | 242 | 110 | 17 | | 4 | | 440 |
| Industrial | 57 | 397 | 989 | 465 | 65 | 7 | 5 | 14 | 1999 |

ANNEX 1-2.3

Distribution of DMR-Registered Wells based on years of issuance, expiration and extension of water rights

| | 1992 | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| expiration | EXPIRATION/EXTENSION | | | | | | | | | | | | | | | | | | |
| extension | 88 | 89 | | 90 | | 91 | | 92 | | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 2000 | 2001 | 2002 |
| | 92 | 92 | 93 | 92 | 93 | 92 | 93 | | 93 | | | | | | | | | | |
| ISSUANCE | | | | | | | | | | | | | | | | | | | |
| 78 | 55 | | | | | 17 | | | 1 | | | | | | | | | | |
| 79 | | 71 | 20 | | | 4 | | 2 | 19 | 1 | | | | | | | | | |
| 80 | | | | 9 | 11 | | 1 | | | 1 | | | | | | | | | |
| 81 | | | | | | 65 | 5 | | 2 | | | | | | | | | | |
| 82 | | | | | | | | 112 | 24 | | | | | | | | | | |
| 83 | | | | | | | | | | 295 | | | | | | | | | |
| 84 | | | | | | | | | | | 313 | | | | | | | | |
| 85 | | | | | | | | | | | | 259 | | | | | | | |
| 86 | | | | | | | | | | | | | 290 | | | | | | |
| 87 | | | | | | | | | | | | | | 228 | | | | | |
| 88 | | | | | | | | | | | | | | | 203 | | | | |
| 89 | | | | | | | | | | | | | | | | 353 | 1 | | |
| 90 | | | | | | | | | | | | | | | | | 375 | | |
| 91 | | | | | | | | | | | | | | | | | 1 | 739 | |
| 92 | | | | | | | | | | | | | | | | | | 2 | 433 |
| TOTAL | 55 | 71 | 20 | 9 | 11 | 86 | 6 | 114 | 46 | 297 | 313 | 259 | 290 | 228 | 203 | 353 | 377 | 741 | 433 |

(continued)

ANNEX 1-2.3 (continuation)

Distribution of DMR-Registered Wells based on years of issuance, expiration and extension of water rights

| | 1992 | TOTAL |
|---|---|---|
| expiration / extension | EXPIRATION/EXTENSION 2003 | |
| ISSUANCE | | |
| 78 | | 73 |
| 79 | | 117 |
| 80 | | 22 |
| 81 | | 72 |
| 82 | | 136 |
| 83 | | 295 |
| 84 | | 313 |
| 85 | | 259 |
| 86 | | 290 |
| 87 | | 228 |
| 88 | | 203 |
| 89 | | 354 |
| 90 | | 375 |
| 91 | | 740 |
| 92 | 3 | 438 |
| TOTAL | 3 | 3915 |

ANNEX 1-2.4

Distribution of DMR-Registered Wells in the Study Area
with valid data on volume permitted

| CHANGWAT | 1992 AQUIFER | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | Bangkok | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | Phyathai | Thonburi | Pak Nam | |
| Bangkok | 36 | 125 | 576 | 187 | 1 | | 8 | 3 | 936 |
| Domestic | 13 | 41 | 278 | 96 | | | 3 | | 431 |
| Institution | | 8 | 32 | 23 | 1 | | | | 64 |
| Commercial | 3 | 21 | 78 | 22 | | | 2 | | 126 |
| Industrial | 20 | 55 | 188 | 46 | | | 3 | 3 | 315 |
| Nonthaburi | 11 | 1 | 26 | 177 | 7 | | | | 222 |
| Domestic | | | 13 | 82 | 1 | | | | 96 |
| Institution | | 1 | 1 | 6 | | | | | 8 |
| Commercial | | | 2 | 24 | 4 | | | | 30 |
| Industrial | 11 | | 10 | 65 | 2 | | | | 88 |
| Pathum Thani | 1 | 26 | 372 | 207 | 69 | 4 | | 1 | 680 |
| Domestic | | 6 | 177 | 68 | 6 | | | | 257 |
| Institution | | 3 | 20 | 6 | 2 | | | | 31 |
| Commercial | 1 | 1 | 57 | 31 | 13 | | | | 103 |
| Industrial | | 16 | 118 | 102 | 48 | 4 | | 1 | 289 |
| Samut Prakan | 39 | 404 | 856 | 78 | 9 | 1 | | 13 | 1400 |
| Domestic | 11 | 90 | 280 | 9 | | | | | 390 |
| Institution | | 6 | 11 | 1 | | | | 3 | 21 |
| Commercial | 2 | 30 | 75 | 3 | | | | | 110 |
| Industrial | 26 | 278 | 490 | 65 | 9 | 1 | | 10 | 879 |
| Samut Sakhon | | 60 | 226 | 274 | 6 | 2 | 5 | | 573 |
| Domestic | | 19 | 50 | 58 | | | 1 | | 128 |
| Institution | | 1 | 1 | 7 | | | | | 9 |
| Commercial | | 5 | 19 | 27 | | | 2 | | 53 |
| Industrial | | 35 | 156 | 182 | 6 | 2 | 2 | | 383 |
| Ayutthaya | | 26 | 64 | 14 | | | | | 104 |
| Domestic | | 8 | 24 | 4 | | | | | 36 |
| Institution | | 1 | 2 | 2 | | | | | 5 |
| Commercial | | 4 | 11 | 3 | | | | | 18 |
| Industrial | | 13 | 27 | 5 | | | | | 45 |
| TOTAL | 87 | 642 | 2120 | 937 | 92 | 7 | 13 | 17 | 3915 |
| Domestic | 24 | 164 | 822 | 317 | 7 | | 4 | | 1338 |
| Institution | | 20 | 67 | 45 | 3 | | | 3 | 138 |
| Commercial | 6 | 61 | 242 | 110 | 17 | | 4 | | 440 |
| Industrial | 57 | 397 | 989 | 465 | 65 | 7 | 5 | 14 | 1999 |

ANNEX 1-3.1

Estimated Daily Groundwater Pumpage of DMR-Registered Wells in the Study Area
by type of user and changwat using volume permitted, in m3/day

| CHANGWAT | 1992 | | | | TOTAL |
|---|---|---|---|---|---|
| | TYPE OF USER | | | | |
| | Domestic | Institution | Commercial | Industrial | |
| Bangkok | 70194 | 26450 | 13274 | 77892 | 187810 |
| Nonthaburi | 18793 | 1672 | 2850 | 17208 | 40523 |
| Pathum Thani | 62694 | 9755 | 15078 | 149519 | 237046 |
| Samut Prakan | 32265 | 4430 | 9863 | 322003 | 368561 |
| Samut Sakhon | 15223 | 3515 | 5716 | 100333 | 124787 |
| Ayutthaya | 6195 | 864 | 1985 | 17795 | 26839 |
| TOTAL | 205364 | 46686 | 48766 | 684749 | 985565 |

ANNEX 1-3.2

Estimated Daily Groundwater Pumpage of DMR-Registered Wells in the Study Area
by aquifer and type of user using volume permitted, in m3/day

| AQUIFER | 1992 | | | | TOTAL |
|---|---|---|---|---|---|
| | TYPE OF USER | | | | |
| | Domestic | Institution | Commercial | Industrial | |
| A Q U I F E R | | | | | |
| Bangkok | 436 | . | 100 | 5247 | 5783 |
| Phra Pradaeng | 7971 | 1026 | 5692 | 83004 | 97693 |
| Nakhon Luang | 111577 | 17598 | 23484 | 304817 | 457476 |
| Nonthaburi | 83172 | 24322 | 17230 | 190273 | 314997 |
| Samkhok | 1558 | 540 | 1680 | 68298 | 72076 |
| Phyathai | . | . | . | 11385 | 11385 |
| Thonburi | 650 | . | 580 | 2575 | 3805 |
| Pak Nam | . | 3200 | . | 19150 | 22350 |
| TOTAL | 205364 | 46686 | 48766 | 684749 | 985565 |

ANNEX 1-3.3

Estimated Daily Groundwater Pumpage of DMR-Registered Wells in the Study Area
by changwat, type of user and aquifer using volume permitted, in m3/day

| CHANGWAT | 1992 AQUIFER | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | Bangkok | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | Phyathai | Thonburi | Pak Nam | |
| Bangkok | | | | | | | | | |
| Domestic | 296 | 4257 | 33084 | 32107 | . | . | 450 | . | 70194 |
| Institution | . | 455 | 8495 | 17300 | 200 | . | . | . | 26450 |
| Commercial | 38 | 1353 | 9108 | 2485 | . | . | 290 | . | 13274 |
| Industrial | 2569 | 2957 | 40797 | 24569 | . | . | 2300 | 4700 | 77892 |
| Nonthaburi | | | | | | | | | |
| Domestic | . | . | 1553 | 16440 | 800 | . | . | . | 18793 |
| Institution | . | 40 | 400 | 1232 | . | . | . | . | 1672 |
| Commercial | . | . | 98 | 2664 | 88 | . | . | . | 2850 |
| Industrial | 70 | . | 5230 | 11848 | 60 | . | . | . | 17208 |
| Pathum Thani | | | | | | | | | |
| Domestic | . | 318 | 40781 | 20837 | 758 | . | . | . | 62694 |
| Institution | . | 140 | 7245 | 2030 | 340 | . | . | . | 9755 |
| Commercial | 30 | 10 | 5862 | 7584 | 1592 | . | . | . | 15078 |
| Industrial | . | 1361 | 45521 | 54539 | 37178 | 9120 | . | 1800 | 149519 |
| Samut Prakan | | | | | | | | | |
| Domestic | 140 | 2503 | 26407 | 3215 | . | . | . | . | 32265 |
| Institution | . | 352 | 728 | 150 | . | . | . | 3200 | 4430 |
| Commercial | 32 | 3983 | 5773 | 75 | . | . | . | . | 9863 |
| Industrial | 2608 | 70695 | 163424 | 42566 | 28060 | 2000 | . | 12650 | 322003 |
| Samut Sakhon | | | | | | | | | |
| Domestic | . | 501 | 4711 | 9811 | . | . | 200 | . | 15223 |
| Institution | . | 25 | 30 | 3460 | . | . | . | . | 3515 |
| Commercial | . | 138 | 1251 | 4037 | . | . | 290 | . | 5716 |
| Industrial | . | 5864 | 39383 | 51546 | 3000 | 265 | 275 | . | 100333 |
| Ayutthaya | | | | | | | | | |
| Domestic | . | 392 | 5041 | 762 | . | . | . | . | 6195 |
| Institution | . | 14 | 700 | 150 | . | . | . | . | 864 |
| Commercial | . | 208 | 1392 | 385 | . | . | . | . | 1985 |
| Industrial | . | 2127 | 10463 | 5205 | . | . | . | . | 17795 |
| TOTAL | 5783 | 97693 | 457476 | 314997 | 72076 | 11385 | 3805 | 22350 | 985565 |

ANNEX 2-1

Distribution of Non-DMR Registered Wells
by changwat, agency and aquifer

| CHANGWAT | 1992 AQUIFER | | | | | TOTAL |
|---|---|---|---|---|---|---|
| | Bangkok | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | |
| Bangkok | | | | | | |
| MWA | | | | 4 | | 4 |
| IEAT | | | 12 | 2 | | 14 |
| Pathum Thani | | | | | | |
| PWA | | | | 16 | 4 | 20 |
| Samut Prakan | | | | | | |
| MWA | | | | 1 | | 1 |
| IEAT | | | 19 | 4 | | 23 |
| Samut Sakhon | | | | | | |
| PWA | | | 1 | 3 | | 4 |
| Ayutthaya | | | | | | |
| PWA | 2 | 7 | 8 | 1 | | 18 |
| Nakhon Pathum | | | | | | |
| PWA | | 4 | 8 | 6 | | 18 |
| TOTAL | 2 | 11 | 48 | 37 | 4 | 102 |

ANNEX 2-1 (continuation)

Distribution of Non-DMR Registered Wells in the Study Area
by changwat, agency and aquifer

| CHANGWAT | 1992 AQUIFER | | | | TOTAL |
|---|---|---|---|---|---|
| | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | |
| Bangkok | | | | | |
| MWA | | | 4 | | 4 |
| IEAT | | 12 | 2 | | 14 |
| Pathum Thani | | | | | |
| PWA | | | 16 | 4 | 20 |
| Samut Prakan | | | | | |
| MWA | | | 1 | | 1 |
| IEAT | | 19 | 4 | | 23 |
| Samut Sakhon | | | | | |
| PWA | | 1 | 3 | | 4 |
| Ayutthaya | | | | | |
| PWA | 1 | 3 | | | 4 |
| Nakhon Pathum | | | | | |
| PWA | 2 | 4 | 1 | | 7 |
| TOTAL | 3 | 39 | 31 | 4 | 77 |

ANNEX 2-2.1

Distribution of Non-DMR Registered Wells in the Study Area
by changwat, type of user, aquifer and agency

| CHANGWAT | 1992 | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|
| | AQUIFER | | | | | | | |
| | Phra Pradaeng | Nakhon Luang | | Nonthaburi | | | Samkhok | |
| | PWA | PWA | IEAT | MWA | PWA | IEAT | PWA | |
| Bangkok | | | 12 | 4 | | 2 | | 18 |
| Domestic | | | | 4 | | | | 4 |
| Industrial | | | 12 | | | 2 | | 14 |
| Pathum Thani | | | | | 16 | | 4 | 20 |
| Unknown | | | | | 4 | | | 4 |
| Domestic | | | | | 3 | | 3 | 6 |
| Institution | | | | | 8 | | 1 | 9 |
| Commercial | | | | | 1 | | | 1 |
| Samut Prakan | | | 19 | 1 | | 4 | | 24 |
| Domestic | | | | 1 | | | | 1 |
| Industrial | | | 19 | | | 4 | | 23 |
| Samut Sakhon | | 1 | | | 3 | | | 4 |
| Institution | | 1 | | | 3 | | | 4 |
| Ayutthaya | 1 | 3 | | | | | | 4 |
| Institution | 1 | 3 | | | | | | 4 |
| Nakhon Pathum | 2 | 4 | | | 1 | | | 7 |
| Unknown | 2 | 4 | | | 1 | | | 7 |
| TOTAL | 3 | 8 | 31 | 5 | 20 | 6 | 4 | 77 |
| Unknown | 2 | 4 | | | 5 | | | 11 |
| Domestic | | | | 5 | 3 | | 3 | 11 |
| Institution | 1 | 4 | | | 11 | | 1 | 17 |
| Commercial | | | | | 1 | | | 1 |
| Industrial | | | 31 | | | 6 | | 37 |

ANNEX 2-2.2

Distribution of Non-DMR Registered Wells in the Study Area
with valid data on volume permitted

| CHANGWAT | 1992 | | | | TOTAL |
|---|---|---|---|---|---|
| | A Q U I F E R | | | | |
| | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | |
| Bangkok | | | | | |
| MWA | | | 4 | | 4 |
| IEAT | | 12 | 2 | | 14 |
| Pathum Thani | | | | | |
| PWA | | | 16 | 4 | 20 |
| Samut Prakan | | | | | |
| MWA | | | 1 | | 1 |
| IEAT | | 19 | 4 | | 23 |
| Samut Sakhon | | | | | |
| PWA | | 1 | 3 | | 4 |
| Ayutthaya | | | | | |
| PWA | 1 | 3 | | | 4 |
| Nakhon Pathum | | | | | |
| PWA | 2 | 4 | 1 | | 7 |
| TOTAL | 3 | 39 | 31 | 4 | 77 |

ANNEX 2-3.1

Estimated Daily Groundwater Pumpage of Non-DMR Registered Wells in the Study Area by changwat and agency using volume permitted, in m3/day

| CHANGWAT | 1992 | | | TOTAL |
|---|---|---|---|---|
| | MWA | PWA | IEAT | |
| Bangkok | 17036 | . | 18338 | 35374 |
| Pathum Thani | . | 44971 | . | 44971 |
| Samut Prakan | 2872 | . | 40503 | 43375 |
| Samut Sakhon | . | 6630 | . | 6630 |
| Ayutthaya | . | 3707 | . | 3707 |
| Nakhon Pathum | . | 3452 | . | 3452 |
| TOTAL | 19908 | 58760 | 58841 | 137509 |

ANNEX 2-3.2

Estimated Daily Groundwater Pumpage of Non-DMR Registered Wells in the Study Area by aquifer and agency using volume permitted, in m3/day

| AQUIFER | 1992 MWA | 1992 PWA | 1992 IEAT | TOTAL |
|---|---|---|---|---|
| A Q U I F E R | | | | |
| Phra Pradaeng | . | 2061 | . | 2061 |
| Nakhon Luang | . | 5134 | 37003 | 42137 |
| Nonthaburi | 19908 | 41780 | 21838 | 83526 |
| Samkhok | . | 9785 | . | 9785 |
| TOTAL | 19908 | 58760 | 58841 | 137509 |

ANNEX 2-3.3

Estimated Daily Groundwater Pumpage of Non-DMR Registered Wells in the Study Area by changwat, agency and aquifer using volume permitted, in m3/day

| CHANGWAT | 1992 | | | | TOTAL |
|---|---|---|---|---|---|
| | A Q U I F E R | | | | |
| | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | |
| Bangkok | | | | | |
| MWA | . | . | 17036 | . | 17036 |
| IEAT | . | 15384 | 2954 | . | 18338 |
| Pathum Thani | | | | | |
| PWA | . | . | 35186 | 9785 | 44971 |
| Samut Prakan | | | | | |
| MWA | . | . | 2872 | . | 2872 |
| IEAT | . | 21619 | 18884 | . | 40503 |
| Samut Sakhon | | | | | |
| PWA | . | 1138 | 5492 | . | 6630 |
| Ayutthaya | | | | | |
| PWA | 956 | 2751 | . | . | 3707 |
| Nakhon Pathum | | | | | |
| PWA | 1105 | 1245 | 1102 | . | 3452 |
| TOTAL | 2061 | 42137 | 83526 | 9785 | 137509 |

ANNEX 3-1

Distribution of All Registered Wells
by changwat, agency and aquifer

| CHANGWAT | 1992 AQUIFER | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | Bangkok | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | Phyathai | Thonburi | Pak Nam | |
| Bangkok | | | | | | | | | |
| DMR | 36 | 125 | 576 | 187 | 1 | | 8 | 3 | 936 |
| MWA | | | | 4 | | | | | 4 |
| IEAT | | | 12 | 2 | | | | | 14 |
| Nonthaburi | | | | | | | | | |
| DMR | 11 | 1 | 26 | 177 | 7 | | | | 222 |
| Pathum Thani | | | | | | | | | |
| DMR | 1 | 26 | 372 | 207 | 69 | 4 | | 1 | 680 |
| PWA | | | | 16 | 4 | | | | 20 |
| Samut Prakan | | | | | | | | | |
| DMR | 39 | 404 | 856 | 78 | 9 | 1 | | 13 | 1400 |
| MWA | | | | 1 | | | | | 1 |
| IEAT | | | 19 | 4 | | | | | 23 |
| Samut Sakhon | | | | | | | | | |
| DMR | 1 | 73 | 274 | 291 | 6 | 2 | 5 | | 652 |
| PWA | | | 1 | 3 | | | | | 4 |
| Ayutthaya | | | | | | | | | |
| DMR | 2 | 109 | 115 | 20 | 1 | | | 1 | 248 |
| PWA | 2 | 7 | 8 | 1 | | | | | 18 |
| Nakhon Pathum | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PWA | | 4 | 8 | 6 | | | | | | 18 |
| TOTAL | 92 | 749 | 2267 | 997 | 97 | 7 | 13 | 18 | | 4240 |

ANNEX 3-2.1

Distribution of All Registered Wells in the Study Area
by changwat, agency and aquifer

| CHANGWAT | 1992 | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | A Q U I F E R | | | | | | | | |
| | Bangkok | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | Phyathai | Thonburi | Pak Nam | |
| Bangkok | | | | | | | | | |
| DMR | 36 | 125 | 576 | 187 | 1 | | 8 | 3 | 936 |
| MWA | | | | 4 | | | | | 4 |
| IEAT | | | 12 | 2 | | | | | 14 |
| Nonthaburi | | | | | | | | | |
| DMR | 11 | 1 | 26 | 177 | 7 | | | | 222 |
| Pathum Thani | | | | | | | | | |
| DMR | 1 | 26 | 372 | 207 | 69 | 4 | | 1 | 680 |
| PWA | | | | 16 | 4 | | | | 20 |
| Samut Prakan | | | | | | | | | |
| DMR | 39 | 404 | 856 | 78 | 9 | 1 | | 13 | 1400 |
| MWA | | | | 1 | | | | | 1 |
| IEAT | | | 19 | 4 | | | | | 23 |
| Samut Sakhon | | | | | | | | | |
| DMR | | 60 | 226 | 274 | 6 | 2 | 5 | | 573 |
| PWA | | | 1 | 3 | | | | | 4 |
| Ayutthaya | | | | | | | | | |
| DMR | | 26 | 64 | 14 | | | | | 104 |
| PWA | | 1 | 3 | | | | | | 4 |
| Nakhon Pathum | | | | | | | | | |
| PWA | | 2 | 4 | 1 | | | | | 7 |
| TOTAL | 87 | 645 | 2159 | 968 | 96 | 7 | 13 | 17 | 3992 |

ANNEX 3-2.2

Distribution of All Registered Wells in the Study Area
by changwat, aquifer, type of user and agency

| CHANGWAT | 1992 | | | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unknown | Domestic | | | Institution | | Commercial | | Industrial | | |
| | PWA | DMR | MWA | PWA | DMR | PWA | DMR | PWA | DMR | IEAT | |
| Bangkok | | 431 | 4 | | 64 | | 126 | | 315 | 14 | 954 |
| A Q U I F E R | | | | | | | | | | | |
| Bangkok | | 13 | | | | | 3 | | 20 | | 36 |
| Phra Pradaeng | | 41 | | | 8 | | 21 | | 55 | | 125 |
| Nakhon Luang | | 278 | | | 32 | | 78 | | 188 | 12 | 588 |
| Nonthaburi | | 96 | 4 | | 23 | | 22 | | 46 | 2 | 193 |
| Samkhok | | | | | 1 | | | | | | 1 |
| Thonburi | | 3 | | | | | 2 | | 3 | | 8 |
| Pak Nam | | | | | | | | | 3 | | 3 |
| Nonthaburi | | 96 | | | 8 | | 30 | | 88 | | 222 |
| A Q U I F E R | | | | | | | | | | | |
| Bangkok | | | | | | | | | 11 | | 11 |
| Phra Pradaeng | | | | | 1 | | | | | | 1 |
| Nakhon Luang | | 13 | | | 1 | | 2 | | 10 | | 26 |
| Nonthaburi | | 82 | | | 6 | | 24 | | 65 | | 177 |
| Samkhok | | 1 | | | | | 4 | | 2 | | 7 |
| Pathum Thani | 4 | 257 | | 6 | 31 | 9 | 103 | 1 | 289 | | 700 |
| A Q U I F E R | | | | | | | | | | | |
| Bangkok | | | | | | | 1 | | | | 1 |
| Phra Pradaeng | | 6 | | | 3 | | 1 | | 16 | | 26 |
| Nakhon Luang | | 177 | | | 20 | | 57 | | 118 | | 372 |
| Nonthaburi | 4 | 68 | | 3 | 6 | 8 | 31 | 1 | 102 | | 223 |
| Samkhok | | 6 | | 3 | 2 | 1 | 13 | | 48 | | 73 |
| Phyathai | | | | | | | | | 4 | | 4 |
| Pak Nam | | | | | | | | | 1 | | 1 |
| Samut Prakan | | 390 | 1 | | 21 | | 110 | | 879 | 23 | 1424 |
| A Q U I F E R | | | | | | | | | | | |
| Bangkok | | 11 | | | | | 2 | | 26 | | 39 |
| Phra Pradaeng | | 90 | | | 6 | | 30 | | 278 | | 404 |
| Nakhon Luang | | 280 | | | 11 | | 75 | | 490 | 19 | 875 |
| Nonthaburi | | 9 | 1 | | 1 | | 3 | | 65 | 4 | 83 |
| Samkhok | | | | | | | | | 9 | | 9 |
| Phyathai | | | | | | | | | 1 | | 1 |
| Pak Nam | | | | | 3 | | | | 10 | | 13 |
| Samut Sakhon | | 128 | | | 9 | 4 | 53 | | 383 | | 577 |
| A Q U I F E R | | | | | | | | | | | |
| Phra Pradaeng | | 19 | | | 1 | | 5 | | 35 | | 60 |
| Nakhon Luang | | 50 | | | 1 | 1 | 19 | | 156 | | 227 |
| Nonthaburi | | 58 | | | 7 | 3 | 27 | | 182 | | 277 |
| Samkhok | | | | | | | | | 6 | | 6 |
| Phyathai | | | | | | | | | 2 | | 2 |
| Thonburi | | 1 | | | | | 2 | | 2 | | 5 |
| Ayutthaya | | 36 | | | 5 | 4 | 18 | | 45 | | 108 |
| A Q U I F E R | | | | | | | | | | | |
| Phra Pradaeng | | 8 | | | 1 | 1 | 4 | | 13 | | 27 |

ANNEX 3-2.2 (continuation)

Distribution of All Registered Wells in the Study Area
by changwat, aquifer, type of user and agency

| CHANGWAT | 1992 | | | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unknown | Domestic | | | Institution | | Commercial | | Industrial | | |
| | PWA | DMR | MWA | PWA | DMR | PWA | DMR | PWA | DMR | IEAT | |
| Nakhon Luang | | 24 | | | 2 | 3 | 11 | | 27 | | 67 |
| Nonthaburi | | 4 | | | 2 | | 3 | | 5 | | 14 |
| Nakhon Pathum | 7 | | | | | | | | | | 7 |
| A Q U I F E R | | | | | | | | | | | |
| Phra Pradaeng | 2 | | | | | | | | | | 2 |
| Nakhon Luang | 4 | | | | | | | | | | 4 |
| Nonthaburi | 1 | | | | | | | | | | 1 |
| TOTAL | 11 | 1338 | 5 | 6 | 138 | 17 | 440 | 1 | 1999 | 37 | 3992 |
| A Q U I F E R | | | | | | | | | | | |
| Bangkok | | 24 | | | | | 6 | | 57 | | 87 |
| Phra Pradaeng | 2 | 164 | | | 20 | 1 | 61 | | 397 | | 645 |
| Nakhon Luang | 4 | 822 | | | 67 | 4 | 242 | | 989 | 31 | 2159 |
| Nonthaburi | 5 | 317 | 5 | 3 | 45 | 11 | 110 | 1 | 465 | 6 | 968 |
| Samkhok | | 7 | | 3 | 3 | 1 | 17 | | 65 | | 96 |
| Phyathai | | | | | | | | | 7 | | 7 |
| Thonburi | | 4 | | | | | 4 | | 5 | | 13 |
| Pak Nam | | | | | 3 | | | | 14 | | 17 |

ANNEX 3-2.3

Distribution of All Registered Wells in the Study Area
with valid data on volume permitted

| CHANGWAT | 1992 | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | AQUIFER | | | | | | | | |
| | Bangkok | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | Phyathai | Thonburi | Pak Nam | |
| Bangkok | | | | | | | | | |
| DMR | 36 | 125 | 576 | 187 | 1 | | 8 | 3 | 936 |
| MWA | | | | 4 | | | | | 4 |
| IEAT | | | 12 | 2 | | | | | 14 |
| Nonthaburi | | | | | | | | | |
| DMR | 11 | 1 | 26 | 177 | 7 | | | | 222 |
| Pathum Thani | | | | | | | | | |
| DMR | 1 | 26 | 372 | 207 | 69 | 4 | | 1 | 680 |
| PWA | | | | 16 | 4 | | | | 20 |
| Samut Prakan | | | | | | | | | |
| DMR | 39 | 404 | 856 | 78 | 9 | 1 | | 13 | 1400 |
| MWA | | | | 1 | | | | | 1 |
| IEAT | | | 19 | 4 | | | | | 23 |
| Samut Sakhon | | | | | | | | | |
| DMR | | 60 | 226 | 274 | 6 | 2 | 5 | | 573 |
| PWA | | | 1 | 3 | | | | | 4 |
| Ayutthaya | | | | | | | | | |
| DMR | | 26 | 64 | 14 | | | | | 104 |
| PWA | | 1 | 3 | | | | | | 4 |
| Nakhon Pathum | | | | | | | | | |
| PWA | | 2 | 4 | 1 | | | | | 7 |
| TOTAL | 87 | 645 | 2159 | 968 | 96 | 7 | 13 | 17 | 3992 |

ANNEX 3-3.1

Estimated Daily Groundwater Pumpage of All Registered Wells in the Study Area
by changwat and agency using volume permitted, in m3/day

| CHANGWAT | 1992 | | | | TOTAL |
|---|---|---|---|---|---|
| | DMR | MWA | PWA | IEAT | |
| Bangkok | 187810 | 17036 | . | 18338 | 223184 |
| Nonthaburi | 40523 | . | . | . | 40523 |
| Pathum Thani | 237046 | . | 44971 | . | 282017 |
| Samut Prakan | 368561 | 2872 | . | 40503 | 411936 |
| Samut Sakhon | 124787 | . | 6630 | . | 131417 |
| Ayutthaya | 26839 | . | 3707 | . | 30546 |
| Nakhon Pathum | . | . | 3452 | . | 3452 |
| TOTAL | 985565 | 19908 | 58760 | 58841 | 1123074 |

ANNEX 3-3.2

Estimated Daily Groundwater Pumpage of All Registered Wells in the Study Area
by aquifer and agency using volume permitted, in m3/day

| AQUIFER | 1992 DMR | 1992 MWA | 1992 PWA | 1992 IEAT | TOTAL |
|---|---|---|---|---|---|
| A Q U I F E R | | | | | |
| Bangkok | 5783 | . | . | . | 5783 |
| Phra Pradaeng | 97693 | . | 2061 | . | 99754 |
| Nakhon Luang | 457476 | . | 5134 | 37003 | 499613 |
| Nonthaburi | 314997 | 19908 | 41780 | 21838 | 398523 |
| Samkhok | 72076 | . | 9785 | . | 81861 |
| Phyathai | 11385 | . | . | . | 11385 |
| Thonburi | 3805 | . | . | . | 3805 |
| Pak Nam | 22350 | . | . | . | 22350 |
| TOTAL | 985565 | 19908 | 58760 | 58841 | 1123074 |

ANNEX 3-3.3

Estimated Daily Groundwater Pumpage of All Registered Wells in the Study Area
by changwat, agency and aquifer using volume permitted, in m3/day

| CHANGWAT | 1992 AQUIFER | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | Bangkok | Phra Pradaeng | Nakhon Luang | Nonthaburi | Samkhok | Phyathai | Thonburi | Pak Nam | |
| Bangkok | | | | | | | | | |
| DMR | 2903 | 9022 | 91484 | 76461 | 200 | . | 3040 | 4700 | 187810 |
| MWA | . | . | . | 17036 | . | . | . | . | 17036 |
| IEAT | . | . | 15384 | 2954 | . | . | . | . | 18338 |
| Nonthaburi | | | | | | | | | |
| DMR | 70 | 40 | 7281 | 32184 | 948 | . | . | . | 40523 |
| Pathum Thani | | | | | | | | | |
| DMR | 30 | 1829 | 99409 | 84990 | 39868 | 9120 | . | 1800 | 237046 |
| PWA | . | . | . | 35186 | 9785 | . | . | . | 44971 |
| Samut Prakan | | | | | | | | | |
| DMR | 2780 | 77533 | 196332 | 46006 | 28060 | 2000 | . | 15850 | 368561 |
| MWA | . | . | . | 2872 | . | . | . | . | 2872 |
| IEAT | . | . | 21619 | 18884 | . | . | . | . | 40503 |
| Samut Sakhon | | | | | | | | | |
| DMR | . | 6528 | 45375 | 68854 | 3000 | 265 | 765 | . | 124787 |
| PWA | . | . | 1138 | 5492 | . | . | . | . | 6630 |
| Ayutthaya | | | | | | | | | |
| DMR | . | 2741 | 17596 | 6502 | . | . | . | . | 26839 |
| PWA | . | 956 | 2751 | . | . | . | . | . | 3707 |
| Nakhon Pathum | | | | | | | | | |
| PWA | . | 1105 | 1245 | 1102 | . | . | . | . | 3452 |
| TOTAL | 5783 | 99754 | 499613 | 398523 | 81861 | 11385 | 3805 | 22350 | 1123074 |

ANNEX 3-3.4

Centers of Groundwater Pumpage of All Registered Wells in the Study Area by amphoe using volume permitted, in m3/day

| AMPHOE | 1992 | | No. of Wells |
|---|---|---|---|
| | Pumpage | Percent Share | |
| Phra Pradaeng | 132503 | 11.798 | 282 |
| Muang Samut Prakan | 123503 | 10.997 | 427 |
| Bang Phli | 122342 | 10.893 | 556 |
| Khlong Luang | 117569 | 10.468 | 259 |
| Muang Pathum Thani | 72608 | 6.465 | 156 |
| Muang Samut Sakhon | 66839 | 5.951 | 243 |
| Krathum Baen | 64578 | 5.750 | 334 |
| Thanyaburi | 42430 | 3.778 | 114 |
| Lam Luk Ka | 37155 | 3.308 | 105 |
| Min Buri | 32121 | 2.860 | 131 |
| Lat Krabang | 31706 | 2.823 | 98 |
| Don Muang | 28137 | 2.505 | 45 |
| Bang Pa-in | 23708 | 2.111 | 58 |
| Phra Samut Chedi | 22029 | 1.961 | 112 |
| Bung Kum | 19522 | 1.738 | 64 |
| Bang Kapi | 14255 | 1.269 | 47 |
| Taling Chan | 13282 | 1.183 | 70 |
| Pak Kret | 12955 | 1.154 | 53 |
| Bang Bo | 11559 | 1.029 | 47 |
| Khlong Toei | 11369 | 1.012 | 31 |
| Bang Su | 11330 | 1.009 | 12 |
| Lat Lum Kaeo | 10466 | .932 | 42 |
| Bang Khen | 9951 | .886 | 29 |
| Phra Khanong | 9201 | .819 | 61 |
| Nong Chok | 8932 | .795 | 64 |
| Bang Bua Thong | 8448 | .752 | 68 |
| Muang Nonthaburi | 7576 | .675 | 28 |
| Chatuchak | 6236 | .555 | 20 |
| Bang Yai | 6122 | .545 | 27 |
| Bang Khun Thian | 4894 | .436 | 73 |
| Sam Phran | 3452 | .307 | 7 |
| Bang Kruai | 3279 | .292 | 22 |
| Wang Noi | 3231 | .288 | 31 |
| Prawet | 2690 | .240 | 40 |

ANNEX 3-3.4 (continuation)

Centers of Groundwater Pumpage of All Registered Wells in the Study Area
by amphoe using volume permitted, in m3/day

| AMPHOE | 1992 | | No. of Wells |
|---|---|---|---|
| | Pumpage | Percent Share | |
| Lat Phrao | 2667 | .237 | 15 |
| Pom Prap Sattru Phai | 2400 | .214 | 3 |
| Sai Noi | 2143 | .191 | 24 |
| Dusit | 1960 | .175 | 4 |
| Huai Khwang | 1940 | .173 | 11 |
| Bang Sai | 1930 | .172 | 11 |
| Phasi Charoen | 1748 | .156 | 20 |
| Suan Luang | 1721 | .153 | 19 |
| Lat Bua Luang | 1677 | .149 | 8 |
| Sam Khok | 1368 | .122 | 18 |
| Pathum Wan | 1345 | .120 | 5 |
| Chom Thong | 1088 | .097 | 33 |
| Bang Kak | 990 | .088 | 6 |
| Yan Nawa | 836 | .074 | 8 |
| Nong Khaem | 816 | .073 | 9 |
| Rat Burana | 530 | .047 | 16 |
| Phaya Thai | 502 | .045 | 5 |
| Sathon | 460 | .041 | 7 |
| Nong Sua | 421 | .037 | 6 |
| Bang Phlat | 355 | .032 | 4 |
| Bangkok Noi | 100 | .009 | 1 |
| Ratchathewi | 70 | .006 | 2 |
| Bang Kho Laem | 30 | .003 | 1 |
| TOTAL | 1123074 | 100.000 | 3992 |

# WELL INVENTORY DATA

LOCATION : BANGKOK, CHATUCHAK, LAT YAO

WELL CODE : 010101-1004 Type : Private Status : Active
Well Name : GARMENT AND THREAD TEXTILE
Aquifer : Nakhon Luang Source of Well Data : DMR

Well No. New : 3204-0014 Old :
Well Address : 151 SENA NIKHOM 2, PHAHON YOTHIN, LAT YAO, CHATUCHAK, BANGKOK
OWNER : PHA HOM THAI INDUSTRY FACTORY CO., LTD.
Address : 151 SENA NIKHOM 2, PHAHON YOTHIN, LAD YAO CHATUCHAK, BANGKOK
Ground Elevation : 2.00 m MSL
Map Sheet No. : 5136 IV Base Map, X : 70 Base Map, Y : 129
Latitude : ° ' " Longitude : ° ' "
UTM East : 67085 UTM North : 152995 Zone : 47P

DRILLER : SO. SAING HATTHAKARN CO., LTD.
Drilling Started : 12/26/89 Completed : 01/21/90 (mm/dd/yy)
Permit No. : 1-40432-0014 Issuance : 01/27/89 (mm/dd/yy)
PURPOSE OF USE : INDUSTRIAL : Wearing apparels, garments
Permit No. : 1-51033-0095 Issuance : 10/08/1990 (mm/dd/yy)
Expiration : 10/07/2000 Extension : / / (mm/dd/yy)
Volume Permitted: 1500.00 m3/day Volume Used : m3/day
Metered? : Meter size : mm
OPERATION, Hrs/Day : Days/Week : Weeks/Year :

WELL DESIGN
Drilling Depth : 180.00 m Well Depth : 172.00 m
Casing Diameter, Top: 300 mm Bottom : 250 mm
Riser Pipe Diameter : 150 mm
Pump Type : Turbine Pump Brand :
Pump HP Rating : 60.00 Rated Capacity : m3/hr
Total Dynamic Head : m Pump Setting : 60.00 m
Motor Brand : Motor HP Rating :

WELL CASING SCHEDULE
Type of Casing : API 5L Standard Steel Total Length : 163.00 m

| Casing No. | Diameter (mm) | Depth (m) From | Depth (m) To | Casing No. | Diameter (mm) | Depth (m) From | Depth (m) To |
|---|---|---|---|---|---|---|---|
| 1 | 300 | 0.00 | 160.00 | | | | |
| 2 | 250 | 171.00 | 174.00 | | | | |

WELL SCREEN/SLOTTED PERFORATION SECTIONS
Total Length of Screens : 9.00 m

| Screen No. | Type | Diam. (mm) | Slot Size (mm) | Gauze No. | Depth (m) From | Depth (m) To |
|---|---|---|---|---|---|---|
| 1 | Continuous-Slot | 250 | | 40 | 162.00 | 171.00 |

# WELL INVENTORY DATA

LOCATION : BANGKOK, CHATUCHAK, LAT YAO

WELL CODE : 010101-1004 Type : Private Status : Active
Well Name : GARMENT AND THREAD TEXTILE
Aquifer : Nakhon Luang Source of Well Data : DMR

ANNULAR SEAL SECTIONS
Gravel Pack, Size of Gravel : mm Depth From: m To : 180.00 m

| Annular Seal Section No. | Type of Material | Depth (m) From | To |
|---|---|---|---|
| 1 | CLAY | 0.00 | 155.00 |

SAND COLLECTOR PIPE

| Pipe Length (m) | Pipe Diameter (mm) | Depth (m) From | To |
|---|---|---|---|
| | | | |

WELL DEVELOPMENT AND PUMPING TEST
Method : Air Developing by Surging and Pumping
Date Started : 01/22/90 Date Completed : 01/23/90 (mm/dd/yy)
Duration : 48.00 hours Well Discharge : 130.00 m3/hr

PUMPING TEST
Date : 01/24/90 Pump Type : Turbine
Pump Capacity : m3/hr Pump Setting : 60.00 m
Static Water Level: 37.50 m Drawdown : 8.23 m
Yield : 130.00 m3/hr Specific Capacity : 15.80 m3/hr/m
Flow Measurement : Flowmeter
Duration : 6.00 hours Type of Test : Step-Drawdown
Transmissivity : m2/day Storage Coefficient :

WATER QUALITY
Sampling Method :
Date of Sampling : / / Date of Analysis : 02/07/90 (mm/dd/yy)

PHYSICAL QUALITY
pH : 7.30 Specific Conductivity : 1270.00 micromhos/cm
Turbidity : 1.20 Color : 0 units
Odor :
Temperature : °C
Alkalinity : Acidity : mg/l, CaCO3
Residual Chlorine, mg/l :

CHEMICAL QUALITY (mg/l)

| | | | |
|---|---|---|---|
| Calcium, Ca | 97.00 | Magnesium, Mg | 32.00 |
| Sodium, Na | 117.00 | Potassium, K | 5.90 |
| Dissolved Iron, Fe | | Total Iron, Fe | 0.21 |
| Manganese, Mn | 0.01 | Copper, Cu | 0.00 |
| Zinc, Zn | 0.05 | Chloride, Cl | 266.00 |
| Sulphate, SO4 | 16.00 | Carbonate, CO3 | 0.00 |
| Bicarbonate, HCO3 | 265.00 | Carbon Dioxide, CO2 | 21.00 |
| Nitrite, NO2 | 0.02 | Nitrate, NO3 | 2.60 |
| Flouride, F | 0.10 | Total Solids | 850.00 |
| Total Hardness as CaCO3 | 372.00 | Noncarbonate Hardness | 155.00 |

TOXIC ELEMENTS (mg/l)

| | | | |
|---|---|---|---|
| Arsenic, As | | Cyanide, Cn | |
| Lead, Pb | | Mercury, Hg | |
| Cadmium, Cd | | Selenium, Se | |
| Chromium, Cr | | | |

TRACE ELEMENTS (mg/l)

| | | | |
|---|---|---|---|
| Barium, Ba | | Silver, Ag | |
| Phenols | | Bromide, Br | |
| Iodide, I | | | |

# WELL INVENTORY DATA

LOCATION : BANGKOK, CHATUCHAK, LAT YAO

WELL CODE : 010101-1004 Type : Private Status : Active
Well Name : GARMENT AND THREAD TEXTILE
Aquifer : Nakhon Luang Source of Well Data : DMR

WELL LOG RECORD
Available well logs
Electric Logging, Resistivity log :
Spontaneous Potential (SP) log :
Radiation Logging, Gamma-Ray log :

WELL LOG

| Stra-tum | Depth (m) From | To | Description of Stratum |
|---|---|---|---|
| 0 | 0.00 | 0.00 | Clay |
| 1 | 0.00 | 16.00 | Clay, Black |
| 2 | 16.00 | 21.00 | Clay, Brown |
| 3 | 21.00 | 35.00 | Sand, Fine, Brown |
| 4 | 35.00 | 39.00 | Clay, Gray |
| 5 | 39.00 | 50.00 | Sand, Fine, Brown |
| 6 | 50.00 | 56.00 | Clay, Light Brown |
| 7 | 56.00 | 58.00 | Sand, Fine, Gray |
| 8 | 58.00 | 75.00 | Clay, Brown |
| 9 | 75.00 | 82.00 | Sand, Coarse, Brown |
| 10 | 82.00 | 86.00 | Clay, Gray |
| 11 | 86.00 | 89.00 | Sand, Fine, Light Brown |
| 12 | 89.00 | 99.00 | Clay, Brown |
| 13 | 99.00 | 118.00 | Sand, Coarse, Dark Brown |
| 14 | 118.00 | 127.00 | Clay, Brown |
| 15 | 127.00 | 129.00 | Sand, Fine, Brown |
| 16 | 129.00 | 140.00 | Clay, Brown |
| 17 | 140.00 | 147.00 | Sand, Coarse, Dark Brown |
| 18 | 147.00 | 161.00 | Clay, Brown |
| 19 | 161.00 | 172.00 | Sand, Coarse, Brown |
| 20 | 172.00 | 180.00 | Clay, Brown |