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UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

USGS-OFR--83-438

TI84 900999

WASHINGTON STATE

basic data for thermal springs and wells

as recorded in GEOTHERM

By

James D. Bliss

U. S. Geological Survey

Open-File Report 83-438

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Menlo Park, California

July 1983

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INTRODUCTION

GEO THERM, a computerized information system now off-line, was used to maintain data on the geology, geochemistry and hydrology of geothermal sites primarily within the United States. The system was proposed at the First Geothermal Implementation Conference in New Zealand in 1974 (Swanson, 1977) and was active until 1983. The primary mission was to provide a broad informational framework for the Geothermal Research Program (Duffield and Guffanti, 1981). GEO THERM was used to support national geothermal assessments--in 1978 (Muffler, 1979) and 1982 (Reed, 1983). It was however a public system and provided data to both public and private sectors. A detailed discussion on databases in GEO THERM and a general scheme of how the information system operated can be found in Bliss and Rapport (1983).

This report on Washington is one of a series intended to preserve the data collected for GEO THERM and make the data available to the public. States with significant geochemical data for geothermal fluids will be covered in individual reports such as this. A report will also be issued to cover miscellaneous data collected for sites in the central and eastern United States. The data presented in this series is also available as a data file on the internationally-available General Electric Mark III service, a timeshare network. Those interested in accessing that system should contact the Energy Resource Center, University of Oklahoma, Norman, Oklahoma 73070. It is anticipated that a portion of the data will also be available on magnetic tape from the National Technical Information Service, U. S. Department of Commerce, Springfield, VA 22161. It will not be available until after the completion of the open-file series.

GEO THERM INDEXES

Three computer-generated indexes are found in appendices A, B, and C of this report. The indexes give one line summaries of each GEO THERM record describing the chemistry of geothermal springs and wells in the sample file for Washington. Each index is sorted by different variables to assist the user in locating geothermal records describing specific sites.

Appendix A (p. 38-40) is sorted by county name and the name of the source. Also given are latitude, longitude (both in decimal minutes), township, range, section, GEO THERM record identifier, and temperature (°C). In conducting a search of Appendix A, site names are quite useful for locating springs or wells for which a specific name is commonly used, but sites which do not have specific names are more difficult to locate. It is suggested that site titles which begin with words such as warm, hot, unnamed, pumped, well, or spring be checked. Descriptive text found as part of the site name and the site coordinates should be used to assist in determining location.

Appendix B (p. 40-41) is sorted by county, township, range, and section. Also given are name of source, GEOTHERM record identifier, and temperature (°C). Records missing items used for sorting will be listed first.

Appendix C (p. 42-44) is first sorted into one-degree blocks by latitude, and longitude, and then by name of source. Adjacent one-degree blocks which are published as a 1:250,000 map are combined under the appropriate map name. Also given are GEOTHERM record identifier, and temperature (°C). Records missing items used for sorting will be listed first. Numbers with a blank in the same position as zero will be given first.

GEOTHERM SAMPLE FILE

GEOTHERM sample file contains 78 records for Washington (Table 1). Records may be present which are duplicates for the same analyses. A record may contain data on location, sample description, analysis type (water, condensate, or gas), collection condition, flow rates, and the chemical and physical properties of the fluid. Stable and radioactive isotopic data are occasionally available. Some records may contain only location and temperature. When sufficient chemical data was available, the charge balance (percentage of difference in anion- and cation-milliequivalents) was computed and added to the record. Many of the numeric fields in the sample file can be directly qualified. The qualifier code precedes the number when appropriate. The codes and their meaning are given in Table 1.

Each thermal spring or well is usually represented by several records. This may document temporal changes in the geothermal fluids. Judgement on what constituted acceptable data was extremely complicated and the primary attempt was to insure that each GEOTHERM record faithfully reproduced the published data. On occasion, glaring inconsistencies or data clearly of poor quality were excluded. Regrettably, no database can be constructed or supported without the introduction of errors. The user, therefore, is advised to check with the published literature whenever possible. Users should carefully and critically evaluate the records they use.

This compilation should contain all of the chemical data for geothermal fluids in Washington available as of December, 1981. However, no claim is made for completeness, and published sources have probably been missed. About 68% of the records in this list contains information which was unpublished at the time of data entry. A critically evaluated and corrected list of over 2000 records for the United States was extracted from the sample file and issued as a reference document for the national low temperature geothermal resource assessment (Reed and others, 1983). This, along with a list of geothermal springs by Berry, and other (1980) may be helpful to some users.

GEO THERM BIBLIOGRAPHY

A bibliography is given in Appendix D (p. 45). The abbreviated form of the reference (called code) is identified as the record source in the full record list and is used to sort the entries in this appendix. Codes with a leading "*" identify records based on information which was unpublished at the time the record was prepared.

ACKNOWLEDGEMENTS

Contributions and support to GEOTHERM have been made by many in both federal and state agencies. This includes the U.S. Department of Energy (and associated contractors), and U.S. National Oceanic and Atmospheric Administration. Data-entry forms for most sites in Washington were prepared by the staff of the U.S. Geological Survey.

REFERENCES CITED

- Berry, G. W., Grim, P. J., and Ikelman, J. A., 1980, Thermal springs list for the United States: National Oceanic and Atmospheric Administration, Key to Geophysical Records Document No. 12, 59 p.
- Bliss, J. D., and Rapport, Amy, 1983, GEOTHERM: the U.S. Geological Survey geothermal information system: Computers & Geosciences, v. 9, no. 1, p. 35-39.
- Duffield, W. A., and Guffanti, Marianne, 1981, The geothermal research program of the U.S. Geological Survey: U.S. Geological Survey Open-File Report 81-564, 108 p.
- Muffler, L. J. P., ed., 1979, Assessment of geothermal resources of the United States--1978: U.S. Geological Survey Circular 790, 163 p.
- Reed, M. J., ed., 1983, Assessment of low-temperature geothermal resources of the United States--1982: U.S. Geological Survey Circular 892.
- Reed, M. J., Mariner, R. H., Brook, C. A., and Sorey, M. L., 1983, Selected data for low-temperature (less than 90°C) geothermal systems in the United States; reference data for U.S. Geological Survey Circular 892: U.S. Geological Survey Open-File Report 83-250, 129 p.
- Swanson, J. R., 1977, GEOTHERM data file: Geothermal Resources Council Transactions, v. 1, p. 285.

TABLE 1

State of Washington: computer-generated listing of records describing geothermal-fluid samples. [A few records may be for cold springs or wells--this was to provide ground-water references for some studies.]

ORGANIZATION: Records are sorted by county and then by the name of the spring or well. Order is the same in Appendix A.

UTM: The UTM Easting label was omitted. The UTM Easting figure will be given directly below the the Northing label.

QUALIFICATION CODES: All numeric attributes may be qualified. The codes and their meaning:

L = less than

G = greater than

E = estimated

T = trace (no numeric value reported)

N = not detected (not followed by number)

Q = qualified (other data in qualification field)

R = midpoint of range (actual range in qualification field)

REFERENCE: An expanded citation of the reference is found in Appendix D. The abbreviated form used in this table is called "CODE" in the appendix. Unpublished sources are preceded with "**".

RECORD 00001

GEOTHERM FILE ID: 0001303

GEOTHERM SAMPLE FILE

NAME OF SAMPLE SOURCE... OLYMPIC HOT SPRING

WATERING NUMBER..... 03.

LOCATION

COUNTRY..... UNITED STATES TOWNSHIP-RANGE 29N 008E 28 NW

STATE..... WASHINGTON 06MI W

COUNTY..... CLALLAM

GEOLOGIC PROVINCE..

MAP REFERENCE..... MT CARRIE 1:24000

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... 48.

DISCHARGE..... E 500. L/MIN

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00002

GEOTHERM FILE ID: 0000765

GEOTHERM SAMPLE FILE

NAME OF SAMPLE SOURCE... OLYMPIC HOT SPRINGS

LOCATION

COUNTRY..... UNITED STATES

STATE..... WASHINGTON

COUNTY..... CLALLAM

GEOLOGIC PROVINCE..

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 47.0

WATER ANALYSIS

PH..... 7.5

ANALYSIS

H..... F.....

CA..... 1.4

CL..... 0.74

CO..... K..... 1.3

REFERENCE AND IDENTIFICATION

COMPILED BY..... RENNER, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... WHITE AND WILLIAMS, 1975; CAMPBELL AND OTHERS, 1970

RECORD 00003

GEOTHERM FILE ID: 0000041

GEOTHERM SAMPLE FILE

NAME OF SAMPLE SOURCE... OLYMPIC HOT SPRINGS

LOCATION

COUNTRY..... UNITED STATES

STATE..... WASHINGTON

COUNTY..... CLALLAM

GEOLOGIC PROVINCE.. JB

MAP REFERENCE..... MOUNT CARRIE 7.5'

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1977/6/20

COORDINATES

LAT/LONG... 47-58.6 N 123-40.9 W

UTM ZONE... 10

NORTHING... 5314272.

448758.

ISOTOPES (U/001)

NA... 78. S102. 80.

TEMPERATURE (C)..... 48.5
 DISCHARGE..... L/MIN
 OTHER SAMPLE INFORMATION.. SULFIDE AS H2S = 14 MG/L

WATER ANALYSIS

PH..... 9.50
 SPECIFIC CONDUCTANCE..... 340.
 CHARGE IMBALANCE (% DIFF)... 4.3

ANALYSIS IN MG/L

AL....		CR.....		MG... L 0.05	
H..... 0.82		F..... 1.2		NA... 72.	SI02. 66.
HE....		FE(TOT)...		NU... 5.	S04.. 5.
CA.... 0.9		HC03.... 175.			
CL.... 11.					
CO....		K..... 1.1			

ISOTOPES (0/001)

REFERENCE AND IDENTIFICATION

COMPILED BY..... MARINER, R. H.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... MARINER AND OTHERS, 1982

RECORD 00004

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0000763

NAME OF SAMPLE SOURCE... SOL DUC HOT SPRING
 LOCATION TOWNSHIP-RANGE

COORDINATES

LAT/LONG... 47-58.10 N 123-52.10 W
 UTM ZONE... +10
 NORTHING... 5312927.
 435185.

COUNTRY..... UNITED STATES
 STATE..... WASHINGTON
 COUNTY..... CLALLAM
 GEOLOGIC PROVINCE..

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 50.0

WATER ANALYSIS

PH..... 7.5

ANALYSIS

H.....		F.....		NA... 84.	SI02. 120.
CA.... 1.6					
CL.... 1.7					
CO....		K..... 1.6			

ISOTOPES (0/001)

REFERENCE AND IDENTIFICATION

COMPILED BY..... RENNER, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... WHITE AND WILLIAMS, 1975; CAMPBELL AND OTHERS, 1970

RECORD 00005

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001304

NAME OF SAMPLE SOURCE... SOL DUC HOT SPRINGS
 WADING NUMBER..... 02.

LOCATION TOWNSHIP-RANGE

COORDINATES

UTM ZONE... +10
 NORTHING... 5312900.
 435700.

COUNTRY..... UNITED STATES 29N 00YE J2 N4
 STATE..... WASHINGTON 58M1 W
 COUNTY..... CLALLAM
 GEOLOGIC PROVINCE..

MAP REFERENCE..... BOGACHIEL PEAK 1:24000

OTHER LOCALITY INFORMATION: SOUTHERN MOST CISTERN

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/04/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

SAMPLE NUMBER..... SUC-1
 POINT OF COLLECTION.. CISTERN NO. 1
 TEMPERATURE (C)..... 40.0
 DISCHARGE..... 170. L/MIN
 OTHER SAMPLE INFORMATION.. CISTERN NO. 1 IS FED BY FOUR SOURCES: 20 GPM AT 48.0 C, 20 GPM - AT 41.0 C, 5 GPM AT 31.5 C, AND 2 GPM FROM CISTERN NO. 2.

WATER ANALYSIS

PH..... 9.2 AT(C) 40.
 SPECIFIC CONDUCTANCE..... 345.

ANALYSIS IN MG/L

AG....	CO3....	LI...	0.1		
AL....	CR....	MG...	0.1		
B....	F.....	NA...		SI02.	64.
BR....					
CA....					
CL....	19.	1.....	0.01		
CO....		K.....	1.		

ISOTOPES (U/001)

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00006

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0000040

NAME OF SAMPLE SOURCE... SUL DUC HOT SPRINGS

LOCATION

TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 29N 009W 32 NW
 STATE..... WASHINGTON BSM WILLAMETTE
 COUNTY..... CLALLAM
 GEOLOGIC PROVINCE.. 3B
 MAP REFERENCE..... BOGACHIEL PEAK 7.5

LAT/LONG... 47-58.1 N 123-51.8 W

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1977/07/20

TEMPERATURE (C)..... 51.

DISCHARGE..... L/MIN

OTHER SAMPLE INFORMATION.. SULFIDE AS H2S = 10 MG/L

WATER ANALYSIS

PH..... 9.46

SPECIFIC CONDUCTANCE..... 370.

CHARGE IMBALANCE (% DIFF)... 6.8

ANALYSIS IN MG/L

AL....	CR.....	MG...	L 0.05		
B....	1.4	F.....	1.7	NA...	80.
BR....		FE(TOT).		SI02.	60.
CA....	9.8	HCO3....	181.	SO4..	7.
CL....	21.				
CO....		K.....	1.0		

ISOTOPES (U/001)

REFERENCE AND IDENTIFICATION

COMPILED BY..... MARINER, R. H.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... MARINER AND OTHERS, 1982

RECORD 00007

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001305

NAME OF SAMPLE SOURCE... SOL DUC HOT SPRINGS
 HARPING NUMBER..... 02.

LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE COORDINATES
 STATE..... WASHINGTON 29N 009W 32 NW
 COUNTY..... CLALLAM 8&M W
 GEOLOGIC PROVINCE..
 MAP REFERENCE..... BOGACHIEL PEAK 1124000
 OTHER LOCALITY INFORMATION: THE MIDDLE CISTERN

SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... 1979/04/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... SDA-1
 POINT OF COLLECTION.. CISTERN NO. 2
 TEMPERATURE (C)..... 34.
 DISCHARGE..... 113. L/MIN

OTHER SAMPLE INFORMATION.. CISTERN NO. 2 IS FED BY TWO SOURCES: EACH SOURCE CONTRIBUTES 15. GPM AT 48. C

WATER ANALYSIS
 PH..... 9.2
 SPECIFIC CONDUCTANCE..... 355.
 ANALYSIS IN MG/L
 AG.... CO3..... LI... 0.1
 AL.... CR..... MG... 0.1
 H.... F..... NA... SI02. 64.
 MN.... 0.2
 CA.... 3.0
 CL.... 20. I..... 0.01
 CO.... K..... 1.0

REFERENCE AND IDENTIFICATION
 COMPILED BY..... LIEH, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00008

 GEOTHERM SAMPLE FILE
 NAME OF SAMPLE SOURCE... SOL DUC HOT SPRINGS
 HARPING NUMBER..... 02.
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE COORDINATES
 STATE..... WASHINGTON 29N 009W 32 NW
 COUNTY..... CLALLAM 8&M W
 GEOLOGIC PROVINCE..
 MAP REFERENCE..... BOGACHIEL PEAK 1124000
 OTHER LOCALITY INFORMATION: CISTERN IS UNDER BASEMENT FLOOR IN LODGE

SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... 1979/04/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... SDD-1
 POINT OF COLLECTION.. CISTERN NO. 4
 TEMPERATURE (C)..... 40.
 DISCHARGE..... 76. L/MIN

OTHER SAMPLE INFORMATION.. SOURCE FLUID MAY BE COMPOSED OF BOTH SEEPAGE FROM BELOW AND ALSO FROM OTHER CISTERNS.

WATER ANALYSIS
 PH..... 9.2
 SPECIFIC CONDUCTANCE..... 305.
 ANALYSIS IN MG/L
 AG.... CO3..... LI... 0.1
 ISOTOPES (Q/001)

AL.... CR..... MG... 0.1
 H.... F..... NA... S102. 58.

HR.... 0.2
 CA.... 2.0
 CL.... 18. I..... 0.01
 CO.... K..... 1.0

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00009

GEOTHERM SAMPLE FILE

NAME OF SAMPLE SOURCE... SOL DUC HOT SPRINGS

GEOTHERM FILE 101 0001306

WATER NUMBER..... 02.

LOCATION

COUNTRY..... UNITED STATES TOWNSHIP-RANGE 29N 009W 32 NW
 STATE..... WASHINGTON 8&M W
 COUNTY..... CLALLAM

COORDINATES

UTM ZONE... +10
 NORTHING... 5312900.
 435700.

GEOLOGIC PROVINCE..

MAP REFERENCE..... BOGACHIEL PEAK 1124000

OTHER LOCALITY INFORMATION: NORTHERN MOST CISTERN

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/04/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

SAMPLE NUMBER..... SDA-1

POINT OF COLLECTION.. CISTERN NO. 3

TEMPERATURE (C)..... 50.

DISCHARGE..... 151. L/MIN

WATER ANALYSIS

PH..... 9.2

SPECIFIC CONDUCTANCE..... 342.

ANALYSIS IN MG/L

AG.... CO3.... LI... 0.1
 AL.... CR..... MG... 0.1
 H.... F..... NA... S102. 65.

ISOTOPES 10/001

HR.... 0.2
 CA.... 1.0
 CL.... 18. I..... 0.01
 CO.... K..... 1.0

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00010

GEOTHERM SAMPLE FILE

NAME OF SAMPLE SOURCE... GREEN RIVER SODA SPRINGS

GEOTHERM FILE 101 0001308

LOCATION

COUNTRY..... UNITED STATES TOWNSHIP-RANGE 10N 004E 02 NE
 STATE..... WASHINGTON 8&M W
 COUNTY..... COWLITZ

COORDINATES

UTM ZONE... +10
 NORTHING... 5136200.
 556550.

GEOLOGIC PROVINCE..

MAP REFERENCE..... ELK ROCK 1162500

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 TEMPERATURE (C)..... R 27.5
 QUALIFICATION FIELD..... RANGE 25. C TO 30. C
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00011

GEOTHERM SAMPLE FILE
 NAME OF SAMPLE SOURCE... NEWSKAH MINERAL SPRINGS
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE COORDINATES
 STATE..... WASHINGTON 16N 009W 09 LAT/LONG... 46-50. N 123-48. W
 COUNTY..... GRAYS HARBOR B&M: W
 MAP REFERENCE..... ABERDEEN 1124000
 SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... NSA-1
 TEMPERATURE (C)..... 17.5
 DISCHARGE..... E 400. L/MIN
 WATER ANALYSIS
 SPECIFIC CONDUCTANCE..... 380.
 ANALYSIS IN MG/L
 AG.... CO3.... LI... 0.01 ISOTOPES (0/001)
 AL.... CR.... MG... 0.6
 H.... F.... NA... 76. S102. 51.
 CA.... 4.
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00012

GEOTHERM SAMPLE FILE
 NAME OF SAMPLE SOURCE... NEWSKAH MINERAL SPRINGS
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE COORDINATES
 STATE..... WASHINGTON 16N 009W 09 LAT/LONG... 46-50. N 123-48. W
 COUNTY..... GRAYS HARBOR B&M: W
 MAP REFERENCE..... ABERDEEN 1124000
 SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... NSA-1
 TEMPERATURE (C)..... 19.0
 DISCHARGE..... E 400. L/MIN
 WATER ANALYSIS
 SPECIFIC CONDUCTANCE..... 390.
 ANALYSIS IN MG/L
 AG.... CO3.... LI... 0.01 ISOTOPES (0/001)
 AL.... CR.... MG... 1.7
 H.... F.... NA... 82. S102. 52.
 CA.... 5.
 REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00013

GEOTHERM SAMPLE FILE

NAME OF SAMPLE SOURCE... GOLDMEYER HOT SPRINGS
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE
 STATE..... WASHINGTON 23N 011E 15 NE
 COUNTY..... KING B&M: WILLAMETTE
 GEOLOGIC PROVINCE.. 39
 MAP REFERENCE..... SNOQUALIMIE PASS 151

GEOTHERM FILE ID: 0000046

COORDINATES

LAT/LONG... 47-29.0 N 121-23.1 W

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1980/08/04
 TEMPERATURE (C)..... 50.
 DISCHARGE..... L/MIN
 OTHER SAMPLE INFORMATION.. SULFIDE AS H₂S = 0.6

WATER ANALYSIS

PH..... 8.48
 SPECIFIC CONDUCTANCE..... 642.
 CHARGE IMBALANCE (% DIFF)... 5.0

ANALYSIS IN MG/L

AL.....	CR.....	MG...	0.04		
B..... L 1.	F.....	NA...	125.	SI02.	56.
BE.....	FE(TOT)...	NU...		SO4..	49.
CA..... 6.3	HCO ₃		61.		
CL..... 130.					
CO.....	K.....		3.0		

ISOTOPES (0/00)

REFERENCE AND IDENTIFICATION

COMPILED BY..... MARINER, R. H.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... MARINER AND OTHERS, 1982

RECORD 00014

GEOTHERM SAMPLE FILE

NAME OF SAMPLE SOURCE... GOLDMEYER HOT SPRINGS
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE
 STATE..... WASHINGTON 23N 011E 14 NW
 COUNTY..... KING B&M: W
 GEOLOGIC PROVINCE..
 MAP REFERENCE..... SNOQUALIMIE PASS 1162500

GEOTHERM FILE ID: 0001310

COORDINATES

UTM ZONE... +10
 NORTHING... 5260240.
 621290.

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 TEMPERATURE (C)..... E 51.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00015

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001313

NAME OF SAMPLE SOURCE... LESTER HOT SPRINGS

LOCATION

COUNTRY..... UNITED STATES TOWNSHIP-RANGE

STATE..... WASHINGTON 20N 010E 21

COUNTY..... KING B&M: W

GEOLOGIC PROVINCE..

MAP REFERENCE..... GREEN WATER 1162500

COORDINATES

UTM ZONE... +10

NORTHING... 5229000.
610000.

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/08/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

SAMPLE NUMBER..... LSF-1

TEMPERATURE (C)..... 45.

WATER ANALYSIS

ANALYSIS IN MG/L

AG.... CO3..... LI... 0.33

AL.... CR..... MG... 0.2

H.... F..... NA... 112. SI02. 66.

CA.... 8.

CL.... 200.

CO.... K..... 3.

ISOTOPIES (0/001)

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KORUSEC, M. A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00016

GEOTHERM SAMPLE FILE

GEOTHERM FILE 101 0001312

NAME OF SAMPLE SOURCE... LESTER HOT SPRINGS

LOCATION

COUNTRY..... UNITED STATES TOWNSHIP-RANGE

STATE..... WASHINGTON 20N 010E 21

COUNTY..... KING B&M: W

GEOLOGIC PROVINCE..

MAP REFERENCE..... GREEN WATER 1162500

COORDINATES

UTM ZONE... +10

NORTHING... 5229000.
610000.

OTHER LOCALITY INFORMATION: WEST OF MAIN AREA, FAR SIDE OF CREEK DRAINAGE, 3 METERS ABOVE RIVER

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/08/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

SAMPLE NUMBER..... LSE-1

TEMPERATURE (C)..... 45.

DISCHARGE..... 38. L/MIN

PERTINENT LITHOLOGY..... FLOWING FROM BEDROCK FRACTURES

WATER ANALYSIS

ANALYSIS IN MG/L

AG.... CO3..... LI... 0.33

AL.... CR..... MG... 0.1

H.... F..... NA... 98. SI02. 67.

CA.... 12.

CL.... 200.

CO.... K..... 2.

ISOTOPIES (0/001)

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00017

GEOOTHERM SAMPLE FILE

GEOOTHERM FILE ID: 0001311

NAME OF SAMPLE SOURCE... LESTER HOT SPRINGS

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 20N 010E 21

STATE..... WASHINGTON 86M: W

COUNTY..... KING

UTM ZONE... +10

NORTHING... 5229000.

GEOLOGIC PROVINCE..

610000.

MAP REFERENCE..... GREEN WATER 1162500

OTHER LOCALITY INFORMATION: SPRING IN SMALL CAVE ON HILLSIDE ABOVE NORTH BANK OF RIVER JUST BELOW THE ROAD

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/08/00 KURUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

SAMPLE NUMBER..... LSA-1

POINT OF COLLECTION.. MAIN SPRING

TEMPERATURE (C)..... 48.4

DISCHARGE..... 20. L/MIN

OTHER SAMPLE INFORMATION.. TOTAL DISCHARGE AT LESTER HOT SPRINGS IS ESTIMATED TO BE 200. L/MIN.

WATER ANALYSIS

SPECIFIC CONDUCTANCE..... 520.

ANALYSIS IN MG/L

ISOTOPES (0/00)

AG.... COJ.... LI... 0.35

AL.... CR.... MG... 0.1

R.... F.... NA... 104. SI02. 67.

RE.... FE(TOT). NB... 504.. 30.

CA.... 1.

CL.... 215.

CO.... R..... 3.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KURUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00018

GEOOTHERM SAMPLE FILE

GEOOTHERM FILE ID: 0000042

NAME OF SAMPLE SOURCE... LESTER HOT SPRINGS

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 20N 010E 21

STATE..... WASHINGTON 86M: WILLAMETTE

COUNTY..... KING

GEOLOGIC PROVINCE.. 39

MAP REFERENCE..... GREENWATER 151

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1980/07/30

TEMPERATURE (C)..... 46.5

DISCHARGE..... L/MIN

OTHER SAMPLE INFORMATION.. SULFIDE AS H2S = 5.7

WATER ANALYSIS

PH..... 9.19

SPECIFIC CONDUCTANCE..... 543.

CHARGE IMBALANCE (% DIFF)... 3.4

ANALYSIS IN MG/L

ISOTOPES (0/00)

AL.... CR.... MG... 0.03

R.... L 1. F..... 1.6 NA... 105. SI02. 61.

RE.... FE(TOT). NB... S04.. 19.
 CA.... 5.3 HCO3.... 61.
 CL.... 115.
 CO.... K..... 2.0

REFERENCE AND IDENTIFICATION

COMPILED BY..... MARINER, R. H.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... MARINER AND OTHERS, 1982

RECORD 00019

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0000043

NAME OF SAMPLE SOURCE... SCENIC HOT SPRINGS

LOCATION

TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 26N 013E 33 NW
 STATE..... WASHINGTON B&M WILLAMETTE
 COUNTY..... KING
 GEOLOGIC PROVINCE.. 39

LAT/LONG... 47-42.4 N 121-08.5 W

MAP REFERENCE..... SCENIC 7.5'

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1980/08/01
 TEMPERATURE (C)..... 47.

DISCHARGE..... L/MIN

OTHER SAMPLE INFORMATION.. SULFIDE AS H2S = 1.3

WATER ANALYSIS

PH..... 9.14
 SPECIFIC CONDUCTANCE..... 235.
 CHARGE IMBALANCE (% DIFF)... 4.3

ANALYSIS IN MG/L

ISOTOPES 10/001

AL....	CR.....	MG...	0.02		
H.... L 1.	F.....	NA...	49.	SI02.	44.
HE....	FE(TOT).	NB...		S04..	13.
CA.... 2.1	HCO3....		75.		
CL.... 22.					
CO....	K.....		0.64		

REFERENCE AND IDENTIFICATION

COMPILED BY..... MARINER, R. H.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... MARINER AND OTHERS, 1982

RECORD 00020

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001314

NAME OF SAMPLE SOURCE... SCENIC HOT SPRINGS

WATER NUMBER..... 07.

LOCATION

TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 26N 013E 32 NE
 STATE..... WASHINGTON B&M
 COUNTY..... KING
 MAP REFERENCE..... SCENIC 1124000

LAT/LONG... 47-42.42 N 121-09.30 W

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KURUSEC, M.A. WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 TEMPERATURE (C)..... 50.

DISCHARGE..... 110. L/MIN

WATER ANALYSIS

SPECIFIC CONDUCTANCE..... 2350.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES; BERRY AND OTHERS, 1980

RECORD 00021

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001315

NAME OF SAMPLE SOURCE... FISH HATCH WARM SPRING

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 06N 013E 04 SE OF NE
 STATE..... WASHINGTON 8&M W
 COUNTY..... KLICKITAT
 GEOLOGIC PROVINCE..

UTM ZONE... +10
 NORTHING... 5099900.
 641000.

MAP REFERENCE..... OUTLET FALLS 1124000

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... 24.

DISCHARGE..... 15. L/MIN

WATER ANALYSIS

SPECIFIC CONDUCTANCE..... 1660.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00022

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0000074

NAME OF SAMPLE SOURCE... FISH HATCHERY WARM SPRING

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES
 STATE..... WASHINGTON
 COUNTY..... KLICKITAT
 GEOLOGIC PROVINCE.. 39

LAT/LONG... 46-02.5 N 121-10.9 W

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 24.

REFERENCE AND IDENTIFICATION

COMPILED BY..... R. MAKINER
 REFERENCE..... BERRY, 1980

RECORD 00023

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0000048

NAME OF SAMPLE SOURCE... KLICKITAT MINERAL SPRING

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES
 STATE..... WASHINGTON
 COUNTY..... KLICKITAT
 GEOLOGIC PROVINCE.. 39

LAT/LONG... 45-49.3 N 121-08.0 W

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 27.

REFERENCE AND IDENTIFICATION

COMPILED BY..... R. MAKINER
 REFERENCE..... BERRY, 1980

RECORD 00024

GEOOTHERM SAMPLE FILE

GEOOTHERM FILE 101 0001316

NAME OF SAMPLE SOURCE... KLUICKITAT MINERAL SPRING

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 04N 013E 23, 24

LAT/LONG... 45-49.26 N 121-07.98 W

STATE..... WASHINGTON 8&M1 W

COUNTY..... KLUICKITAT

MAP REFERENCE..... KLUICKITAT 1:62500

OTHER LOCALITY INFORMATION: LOCATION VAGUE

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... E 27.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... KORUSEC, WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES; BERRY AND OTHERS, 1980

RECORD 00025

GEOOTHERM SAMPLE FILE

GEOOTHERM FILE 101 0000771

NAME OF SAMPLE SOURCE... OHANAPECOSH HOT SPRINGS

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES

LAT/LONG... 46-44.20 N 121-33.60 W

STATE..... WASHINGTON

UTM ZONE... 10

COUNTY..... LEWIS

NORTHING... 5176690.

GEOLOGIC PROVINCE...

610016.

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 40.0

WATER ANALYSIS

PH..... 7.0

ANALYSIS

ISOTOPIES (U/001)

AG.... CO3....

LI... 3.3

AL.... CR....

MG... 7.5

H.... F....

NA... 981. 5102. 80.

CA.... 85.

CL.... 809.

CU.... K.... 51.

REFERENCE AND IDENTIFICATION

COMPILED BY..... RENNER, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... WHITE AND WILLIAMS, 1975; CAMPBELL AND OTHERS, 1970

RECORD 00026

GEOOTHERM SAMPLE FILE

GEOOTHERM FILE 101 0001318

NAME OF SAMPLE SOURCE... OHANAPECOSH HOT SPRINGS

WARNING NUMBER..... 11

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 14N 010E 04 NW

LAT/LONG... 46-44.20 N 121-33.60 W

STATE..... WASHINGTON 8&M1 W

UTM ZONE... 10

COUNTY..... LEWIS

NORTHING... 5177100.

GEOLOGIC PROVINCE...

610000.

MAP REFERENCE..... PACKWOOD 1:62500

OTHER LOCALITY INFORMATION: EAST SIDE OF OHANAPECOSH RIVER

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/08/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... OHA-1
 POINT OF COLLECTION.. EAST OF NATURE TRAIL, FIRST SPRINGS WHEN FOLLOWING THE NATURE TRAIL IN A COUNTER CLOCKWISE
 DIRECTION
 TEMPERATURE (C)..... 39.5
 DISCHARGE..... 20. L/MIN
 OTHER SAMPLE INFORMATION.. TOTAL FLOW 100.-120. L/MIN (ESTIMATED)

WATER ANALYSIS

SPECIFIC CONDUCTANCE..... 4400.

ANALYSIS IN MG/L

AG.....	CO3.....	LI...	2.8		
AL.....	CR.....	MG...	5.1		
H.....	F.....	NA...	895.	SI02.	106.
HE.....	FE(10T).	NB...		S04..	175.
CA..... 68.					
CL..... 1010.					
CO.....	K..... 47.				

ISOTOPES (0/001)

QUALIFICATION FIELD..... RANGE 5.-10. GPM

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00027

GEO THERM SAMPLE FILE

GEO THERM FILE ID: 0001320

NAME OF SAMPLE SOURCE... OHANAPECOSH HOT SPRINGS

WARNING NUMBER..... 11

LOCATIONTOWNSHIP-RANGECOORDINATES

COUNTRY..... UNITED STATES	14N 010E 04 NW	LAT/LONG... 46-44.20 N 121-33.60 W
STATE..... WASHINGTON	86M1 W	UTM ZONE... +10
COUNTY..... LEWIS		NORTHING... 5177100.
GEOLOGIC PROVINCE..		610000.
MAP REFERENCE..... PACKWOOD 1162500		

OTHER LOCALITY INFORMATION: JUST NORTH OF SAMPLE OHB-1 LOCATION

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/08/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... OHC-1
 POINT OF COLLECTION.. POOL ONE METER WIDE
 TEMPERATURE (C)..... 43.6
 DISCHARGE..... 11. L/MIN

WATER ANALYSISANALYSIS IN MG/L

AG.....	CO3.....	LI...	2.8		
AL.....	CR.....	MG...	4.9		
H.....	F.....	NA...	825.	SI02.	108.
CA..... 64.					
CL..... 987.					
CO.....	K..... 44.				

ISOTOPES (0/001)REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00028

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001319

NAME OF SAMPLE SOURCE... OHANAPECOSH HOT SPRINGS

WATING NUMBER..... 11

LOCATION

TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 14N 010E 04 NW

STATE..... WASHINGTON 86M1 W

COUNTY..... LEWIS

GEOLOGIC PROVINCE..

MAP REFERENCE..... PACKWOOD 1162500

LAT/LONG... 46-44.20 N 121-33.60 W

UTM ZONE... +10

NORTHING... 5177100.

610000.

OTHER LOCALITY INFORMATION: IMMEDIATELY NORTH ALONG PATH FROM FIRST SPRINGS(SAMPLE OMA-1)

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/08/00 KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

SAMPLE NUMBER..... OMA-1

POINT OF COLLECTION.. POOL MEASURING TWO TO THREE METERS ACROSS

TEMPERATURE (C)..... 45.6

DISCHARGE..... 2140. L/MIN

WATER ANALYSIS

SPECIFIC CONDUCTANCE..... 4500.

ANALYSIS IN MG/L

ISOTOPIES (0/001)

AG..... CO3.....

LI... 2.8

AL..... CR.....

MG... 4.9

H..... F.....

NA... 889.

S102. 107.

CA..... 65.

CL..... 1000.

CO..... K..... 47.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00029

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001323

NAME OF SAMPLE SOURCE... OHANAPECOSH HOT SPRINGS

WATING NUMBER..... 11

LOCATION

TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 14N 010E 04 NW

STATE..... WASHINGTON 86M1 W

COUNTY..... LEWIS

GEOLOGIC PROVINCE..

MAP REFERENCE..... PACKWOOD 1162500

LAT/LONG... 46-44.20 N 121-33.60 W

UTM ZONE... +10

NORTHING... 5177100.

610000.

OTHER LOCALITY INFORMATION: 250. METERS FROM OTHER SPRINGS, ON THE FAR NW CORNER OF THE CAMPGROUND

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/08/00 KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

SAMPLE NUMBER..... OMA-1

POINT OF COLLECTION.. POOL, 1/2 METER WIDE.

TEMPERATURE (C)..... 30.6

OTHER SAMPLE INFORMATION.. SEVERAL OLD TUFAS SURROUND THE AREA

WATER ANALYSIS

ANALYSIS IN MG/L

ISOTOPIES (0/001)

AG..... CO3.....

LI... 2.8

AL..... CR.....

MG... 5.5

H..... F.....

NA... 870.

S102. 98.

CA.... 69.
CL.... 978.

CO.... K..... 46.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00030

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001322

NAME OF SAMPLE SOURCE... OHANAPECOSH HOT SPRINGS

WARNING NUMBER..... 11

LOCATION

COUNTRY..... UNITED STATES 14N 010E 04 NW
STATE..... WASHINGTON 86M: W

COUNTY..... LEWIS

GEOLOGIC PROVINCE..

MAP REFERENCE..... PACKWOOD 1162500

OTHER LOCALITY INFORMATION: WEST OF MAIN SPRING AREA, NEAR TOP OF LARGE TUFA TERRACE

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/08/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

SAMPLE NUMBER..... OHC-1

POINT OF COLLECTION.. CRUSTED-OVER PIPE

TEMPERATURE (C)..... 47.8

DISCHARGE..... 25. L/MIN

DEPOSITS OR ALTERATION.... TUFA TERRACE

WATER ANALYSIS

ANALYSIS IN MG/L

AG.... CO3..... LI... 2.8

AL.... CR..... MG... 895.

H.... F..... NA... S102. 106.

HE.... FE(TOT).. NB... S04.. 175.

CA.... 58.

CL.... 1050.

CO.... K..... 48.

QUALIFICATION FIELD..... RANGE 5.- 8. GPM

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00031

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001321

NAME OF SAMPLE SOURCE... OHANAPECOSH HOT SPRINGS

WARNING NUMBER..... 11

LOCATION

COUNTRY..... UNITED STATES 14N 010E 04 NW
STATE..... WASHINGTON 86M: W

COUNTY..... LEWIS

GEOLOGIC PROVINCE..

MAP REFERENCE..... PACKWOOD 1162500

OTHER LOCALITY INFORMATION: EIGHT METERS NORTH OF SAMPLE OHC-1 LOCATION

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/08/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

SAMPLE NUMBER..... OHM-1
 POINT OF COLLECTION.. POOL
 TEMPERATURE (C)..... 50.1
 DISCHARGE..... 68. L/MIN

WATER ANALYSIS

SPECIFIC CONDUCTANCE..... 4650.

ANALYSIS IN MG/L

AG....	CO3....	LI...	2.8		
AL....	CR....	MG...	4.9		
B....	F....	NA...	895.	SI02.	107.
BE....	FE(TOT).	NB...		SO4..	165.
CA....	64.				
CL....	1030.				
CO....	K.....	50.			

ISOTOPES (0/00)

QUALIFICATION FIELD..... RANGE 15.-20.GPM

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00032

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001324

NAME OF SAMPLE SOURCE... PACKWOOD HOT SPRING

LOCATION..... TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 13N 009E 32
 STATE..... WASHINGTON 88M1 W
 COUNTY..... LEWIS

LAT/LONG... 46-34.50 N 121-42.36 W

MAP REFERENCE..... PACKWOOD 1162500

OTHER LOCALITY INFORMATION: LOCATION APPROXIMATE

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... 53.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KOROSEC, WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES; BERRY AND OTHERS, 1980

RECORD 00033

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0000060

NAME OF SAMPLE SOURCE... PACKWOOD HOT SPRING

LOCATION..... TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES
 STATE..... WASHINGTON
 COUNTY..... LEWIS

LAT/LONG... 46-34.5 N 121-42.4 W

GEOLOGIC PROVINCE... 39

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 34.

REFERENCE AND IDENTIFICATION

COMPILED BY..... R. MARINER
 REFERENCE..... BERRY AND OTHERS, 1980

RECORD 00034

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0000761

NAME OF SAMPLE SOURCE... SUMMIT CREEK MINERAL SPRINGS (SODA SPRINGS)
 WARNING NUMBER..... 06
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE COORDINATES
 STATE..... WASHINGTON 007E LAT/LONG... 46-42.20 N 121-29.00 W
 COUNTY..... LEWIS UTM ZONE... +10
 GEOLOGIC PROVINCE... NORTHING... 5173096.
 MAP REFERENCE..... BREITENHUSH HOT SPRINGS 1162500, CANYON CITY 11250000
 SAMPLE DESCRIPTION AND CONDITIONS
 TEMPERATURE (C)..... 13.0
 WATER ANALYSIS
 PH..... 6.0
 ANALYSIS
 AG..... CO3..... LI... 5.9 ISOTOPE 10/001
 AL..... CR..... MG... 88.
 AS..... CS..... NN... DEL 0(18) OF 504..... -2.67
 H..... F..... NA... 1790. SI02. 170.
 CA..... 278.
 CL..... 1552.
 CO..... K..... 87.
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... RENNER, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... WHITE AND WILLIAMS, 1975; CAMPBELL AND OTHERS, 1970

RECORD 00035

 GEOTHERM SAMPLE FILE GEOTHERM FILE ID: 0001325
 NAME OF SAMPLE SOURCE... HOT LAKE
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE COORDINATES
 STATE..... WASHINGTON 40N 027E 18 NE LAT/LONG... 48-58.44 N 119-28.50 W
 COUNTY..... OKANOGAN B&M: W
 MAP REFERENCE..... OROVILLE NW 1124000
 SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 TEMPERATURE (C)..... R 45.
 QUALIFICATION FIELD..... RANGE 40. TO 50. C
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... KUROSEC, WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES; BERRY AND OTHERS, 1980

RECORD 00036

 GEOTHERM SAMPLE FILE GEOTHERM FILE ID: 0001326
 NAME OF SAMPLE SOURCE... POISON LAKE
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE COORDINATES
 STATE..... WASHINGTON 39N 027E 05 SE LAT/LONG... 48-54.36 N 119-27.30 W
 COUNTY..... OKANOGAN B&M: W
 MAP REFERENCE..... OROVILLE 1162500
 SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 TEMPERATURE (C)..... R 45.
 QUALIFICATION FIELD..... RANGE 40. TO 50. C

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES; BERRY AND OTHERS, 1980

RECORD 00037

GEOTHERM SAMPLE FILE

GEOTHERM FILE 101 0000759

NAME OF SAMPLE SOURCE... LONGMIRE

LOCATION

TOWNSHIP=RANGE

COORDINATES

COUNTRY..... UNITED STATES

LAT/LONG... 46-45.10 N 121-48.70 W

STATE..... WASHINGTON

UTM ZONE... +10

COUNTY..... PIERCE

NORTHING... 5178036.

GEOLOGIC PROVINCE..

590764.

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 21.0

WATER ANALYSIS

PH..... 6.0

ANALYSIS

ISOTOPES 10Z001

AG....

CO3....

LI... 1.8

AL....

CR.....

MG... 151.

H....

F.....

NA... 402. S102. 170.

CA... 298.

CL... 615.

CO....

K..... 37.

REFERENCE AND IDENTIFICATION

COMPILED BY..... RENNER, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... WHITE AND WILLIAMS, 1975; CAMPBELL AND OTHERS, 1970

RECORD 00038

GEOTHERM SAMPLE FILE

GEOTHERM FILE 101 0000172

NAME OF SAMPLE SOURCE... LONGMIRE MINERAL SPRING

LOCATION

TOWNSHIP=RANGE

COORDINATES

COUNTRY..... UNITED STATES

LAT/LONG... 46-45. N 121-45.5 W

STATE..... WASHINGTON

COUNTY..... PIERCE

GEOLOGIC PROVINCE.. 39

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1977/5/24 MARINER, R. AND EVANS, W.

SAMPLE NUMBER..... C0113RM/7

TEMPERATURE (C)..... 19.

WATER ANALYSIS

DATE/ANALYST..... 1977/12 BARNES GROUP

PH..... 6.35

SPECIFIC CONDUCTANCE..... 4920.

ALKALITY..... 2700.

AS HCO3

CHARGE BALANCE (% DIFF)... 0.5

ANALYSIS IN MG/L

ISOTOPES 10Z001

AG....

CO3....

LI... 2.2

AL....

CR.....

MG... 170.

AS....

CS..... L 0.1

MN... 2.0

AU....

CU..... L 0.01

H.... 3.7

F..... 0.46

NA... 580. S102. 125.

FE....

FE(101). 11.

NB... S04.. 41.

HR....	2.8	GE.....		NI... L	0.04
CA....	540.	HCO3....	2700.		
CA+MG.		MG..... L	0.0001	PB... L	0.05
CO.... L	0.01	H2S.... L	1.		
CL....	810.	I..... L	0.1		
CO.... L	0.02	K.....	46.	RB... 0.1	ZN... 0.03

GAS ANALYSIS

DATE/ANALYST..... 1977/12 BARNES GROUP

ANALYSIS IN VOL %

AR... L	0.02		
CH4.. L	0.005		
C2H6. L	0.05	N2... 0.09	
CO2.. 98.34		O2... 0.04	
H2... L	0.01		
HE.... L	0.02		

ISOTOPES 100701

REFERENCE AND IDENTIFICATION

COMPILED BY..... MARINER, R.
 COMPILER AFFILIATION... U. S. GEOLOGICAL SURVEY
 REFERENCE..... *MARINER, R., USGS, MENLO PARK

RECORD 00039

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001333

NAME OF SAMPLE SOURCE... LONGMIRE MINERAL SPRINGS

LOCATION

TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 15N 008E 29 SE
 STATE..... WASHINGTON 8&M1 W
 COUNTY..... PIERCE
 GEOLOGIC PROVINCE..

UTM ZONE... +10
 NORTHING... 5178000.
 590700.

MAP REFERENCE..... MT RAINIER WEST 1124000

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/07/00 KORUSEC, M.A. WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... LMG-1
 POINT OF COLLECTION.. EASTERN EDGE OF IRON TERRACE
 TEMPERATURE (C)..... 22.0

MAJOR ANALYSIS

ANALYSIS IN MG/L

AG....		CO3.....		LI... 2.1	
B....		F.....		NA... 555.	SI02. 102.
HR....	5.4				
CA....	500.				
CL....	446.	I..... 0.03			
CO....		K..... 43.			

ISOTOPES 102001

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00040

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001332

NAME OF SAMPLE SOURCE... LONGMIRE MINERAL SPRINGS

LOCATION

TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 15N 008E 29 SE
 STATE..... WASHINGTON 8&M1 W
 COUNTY..... PIERCE

UTM ZONE... +10
 NORTHING... 5178000.

GEOLOGIC PROVINCE... MT RAINIER WEST 1:24000
 MAP REFERENCE..... MT RAINIER WEST 1:24000
 SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... 1979/07/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... LMF-1
 POINT OF COLLECTION.. MEDICINE SPRING (POOL)
 TEMPERATURE (C)..... 19.1
 PERTINENT LITHOLOGY..... ALLOVIUM COVERED EOCENE VOLCANICS WITH DIABASE AND BASALT INTRUSIVES OF OLIGIOCENE TO
 MIOCENE AGE
 WATER ANALYSIS
 P..... 6.6
 SPECIFIC CONDUCTANCE..... 6000.
 ANALYSIS IN MG/L
 AG..... CO3..... LI... 2.1
 AL..... CR..... MG... 153.
 H..... F..... NA... 568. SI02. 128.
 BR... 5.4
 CA... 520.
 CL... 919. I..... 0.04
 CO... K..... 44.
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00041

GEOTHERM FILE 101 0001331

GEOTHERMAL SOURCE FILE
 NAME OF SAMPLE SOURCE... LONGMIRE MINERAL SPRINGS
 LOCATION
 COUNTRY..... UNITED STATES
 STATE..... WASHINGTON
 COUNTY..... PIERCE
 GEOLOGIC PROVINCE...
 MAP REFERENCE..... MT RAINIER WEST 1:24000
 OTHER LOCALITY INFORMATION: BELOW PATH ACROSS FROM CABIN, NEAR BASE OF A LARGE FIR TREE
 SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... 1979/07/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... LMF-1
 POINT OF COLLECTION.. LITTLE IRON MINE SPRING
 TEMPERATURE (C)..... 11.9
 DISCHARGE..... 5.7 L/MIN
 WATER ANALYSIS
 ANALYSIS IN MG/L
 AG..... CO3..... LI... 0.8
 AL..... CR..... MG... 63.
 H..... F..... NA... 184. SI02. 98.
 BR... 1.8
 CA... 262.
 CL... 324. I..... 0.02
 CO... K..... 19.
 QUALIFICATION FIELD..... RANGE 1 TO 2 GPM
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00042

GEOCHEM-SAMPLE-FILE

GEOTHERM FILE ID: 0001330

NAME OF SAMPLE SOURCE... LONGMIRE MINERAL SPRINGS

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 15N 008E 29 SE

STATE..... WASHINGTON 08M: W

COUNTY..... PIERCE

GEOLOGIC PROVINCE..

UTM ZONE... +10

NORTHING... 5178000.

590700.

MAP REFERENCE..... MT RAINIER WEST 1:24000

OTHER LOCALITY INFORMATION: AT STONE CISTERN NEAR OLD LOG CABIN

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/07/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

SAMPLE NUMBER..... LMD-1

POINT OF COLLECTION.. IRON MIKE SPRING

TEMPERATURE (C)..... 11.2

DISCHARGE..... 0.15 L/MIN

WATER ANALYSIS

PH..... 5.8

SPECIFIC CONDUCTANCE..... 1920.

ANALYSIS IN MG/L

ISOTOPES 10/001

AG....	CO3....	LI...	0.3		
AL....	CR....	MG...	42.		
BA....	F.....	NA...	72.	SI02.	82.
BR....	0.7				
CA....	210.				
CL....	112.	I.....	0.01		
CO....		K.....	10.		

QUALIFICATION FIELD..... FLOW REPORTED AS "A FEW GALLONS PER MINUTE"

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEN, RANDY, J.

COMPILED AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00043

GEOCHEM-SAMPLE-FILE

GEOTHERM FILE ID: 0001329

NAME OF SAMPLE SOURCE... LONGMIRE MINERAL SPRINGS

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 15N 008E 29 SE

STATE..... WASHINGTON 08M: W

COUNTY..... PIERCE

GEOLOGIC PROVINCE..

UTM ZONE... +10

NORTHING... 5178000.

590700.

MAP REFERENCE..... MT RAINIER WEST 1:24000

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/07/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

SAMPLE NUMBER..... LMC-1

POINT OF COLLECTION.. MARSH SPRING (RIM SPRING)

TEMPERATURE (C)..... 25.1

WATER ANALYSIS

PH..... 6.2

SPECIFIC CONDUCTANCE..... 6550.

ANALYSIS IN MG/L

ISOTOPES 10/001

AG....	CO3....	LI...	2.4		
BA....	F.....	NA...	645.	SI02.	141.

HR.... 6.2
 CA.... 582.
 CL.... 1294. I..... 0.04
 CO.... K..... 51.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00044

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001328

NAME OF SAMPLE SOURCE... LONGMIRE MINERAL SPRINGS

LOCATION
 COUNTRY..... UNITED STATES 15N 008E 29 SE
 STATE..... WASHINGTON 84M: W
 COUNTY..... PIERCE
 GEOLOGIC PROVINCE..

COORDINATES

UTM ZONE... +10
 NORTHING... 5178000.
 590700.

MAP REFERENCE..... MT RAINIER WEST 1124000

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/07/00 KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... LMA-1
 TEMPERATURE (C)..... 13.3

WATER ANALYSIS

PH..... 5.2
 SPECIFIC CONDUCTANCE..... 600.

ANALYSIS IN MG/L

AG....	CO3....	LI....	0.1		
AL....	CR....	MG....	15.		
H....	F....	NA....	50.	SiO2.	31.
HE....	FE(TOT).	NB....		SO4..	5.

ISOTOPES (0/001)

HR.... 0.4
 CA.... 43.
 CL.... 63. I..... 0.01
 CO.... K..... 4.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00045

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001327

NAME OF SAMPLE SOURCE... LONGMIRE MINERAL SPRINGS

LOCATION
 COUNTRY..... UNITED STATES 15N 008E 29 SE
 STATE..... WASHINGTON 84M: W
 COUNTY..... PIERCE
 GEOLOGIC PROVINCE..

COORDINATES

UTM ZONE... +10
 NORTHING... 5178000.
 590700.

MAP REFERENCE..... MT RAINIER WEST 1124000

OTHER LOCALITY INFORMATION: LOCATED IN THE MEADOW NORTH OF STATE HWY 706, ACROSS FROM THE NATIONAL PARK HEADQUARTERS

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/07/00 KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... LMA-1
 POINT OF COLLECTION.. POST SPRING
 TEMPERATURE (C)..... 22.

PERTINENT LITHOLOGY..... ALLUVIUM COVERED EOCENE VOLCANICS WITH DIABASE AND BASALT INTRUSIVES OF OLIGOCENE TO MIOCENE AGE.

OTHER SAMPLE INFORMATION.. ESTIMATED TOTAL FLOW IS 250. L/MIN.

WATER ANALYSIS

PH..... 8.0
SPECIFIC CONDUCTANCE..... 5400.

ANALYSIS IN MG/L

AG....	CO3....	LI...	1.9		
AL....	CR....	MG...	150.		
CL....	F.....	NA...	508.	SI02.	112.
FE....	FE(TOT).	NB...		S04..	40.
HR....					
CA....					
CL....	870.				
CO....					
	I.....	0.05			
	K.....	43.			

ISOTOPES (0/00)

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00046

GEOTERM SAMPLE FILE

GEOTERM FILE ID# 0001334

NAME OF SAMPLE SOURCE... MT. RAINIER FUMARoles

LOCATION..... TOWNSHIP=RANGE

COORDINATES

COUNTRY..... UNITED STATES 16N 008E 23

STATE..... WASHINGTON 86M1 W

COUNTY..... PIERCE

MAP REFERENCE..... MT RAINIER WEST 1124000

LAT/LONG... 46-51.12 N 121-45.48 W

OTHER LOCALITY INFORMATION: LOCATION APPROXIMATE

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... R 62.

QUALIFICATION FIELD,.... RANGE 52. TO 72. C

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E. BERRY 1980

RECORD 00047

GEOTERM SAMPLE FILE

GEOTERM FILE ID# 0000047

NAME OF SAMPLE SOURCE... BONNEVILLE HOT SPRINGS

LOCATION..... TOWNSHIP=RANGE

COORDINATES

COUNTRY..... UNITED STATES 02N 007E 39 NW

STATE..... WASHINGTON 86M1 WILLAMETTE

COUNTY..... SKAMANIA

GEOLOGIC PROVINCE.. 39

MAP REFERENCE..... BONNEVILLE DAM 15'

LAT/LONG... 45-39.4 N 121-57.5 W

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1980/08/08

TEMPERATURE (C)..... 36.

DISCHARGE..... L/MIN

OTHER SAMPLE INFORMATION.. SULFIDE AS H2S = 0.5 MG/L

WATER ANALYSIS

PH..... 9.54

CHARGE BALANCE (A DIFF)... 6.0

ANALYSIS IN MG/L

ISOTOPES (0/00)

AL....		CR.....		MG...	0.03		
H.....	2.0	F.....	0.06	NA...	145.	SI02.	46.
HF.....		FE(TOT).		NB...		S04..	80.
CA....	31.	HC03....	39.				
CL....	180.						
CO....		K.....	0.9				

REFERENCE AND IDENTIFICATION

COMPILED BY..... MARINER, R. H.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... MARINER AND OTHERS, 1982

RECORD 00048

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001336

NAME OF SAMPLE SOURCE... BONNEVILLE HOT SPRINGS (MOFFETT'S HOT SPRINGS)

WARRING NUMBER..... 16

LOCATION

TOWNSHIP-RANGE

COORDINATES

COUNTRY.....	UNITED STATES	UTM ZONE...	+10
STATE.....	WASHINGTON	NORTHING...	5056170.
COUNTY.....	SKAMANIA		
GEOLOGIC PROVINCE..			581070.
MAP REFERENCE.....	BONNEVILLE DAM 1124000		

OTHER LOCALITY INFORMATION: ALONG GREENLEAF CREEK NE OF THE TOWN OF NORTH BONNEVILLE RESORT

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1979/00/00 KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... BVA-2
 POINT OF COLLECTION.. SPIGOT NEAR WELL HEAD
 TEMPERATURE (C)..... 36.2
 WELL DEPTH (M)..... E R.
 DISCHARGE..... 76. L/MIN

PERTINENT LITHOLOGY..... SITE LOCATED IN AREA OF RECENT LANDSLIDE CONSISTING OF YAKIMA BASALT AND EAGLE CREEK
 FORMATION (MIOCENE VOLCANIC, CONGLOMERATE, SEDIMENTARY) WHICH OVERLIE ONANAPECUSH FORMATION (EOCENE VOLCANICS).

WATER ANALYSIS

PH..... 8.2
 SPECIFIC CONDUCTANCE..... 805.

ANALYSIS IN MG/L

ISOTOPES (0/00)

AG....		CO3....		LI...	0.2		
AL....		CR.....		MG...	0.5		
H.....		F.....		NA...	160.	SI02.	50.
HF.....		FE(TOT).		NB...		S04..	8.
HR....	1.2						
CA....	31.						
CL....	196.	I.....	0.01				
CO....		K.....	1.				

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00049

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001335

NAME OF SAMPLE SOURCE... BONNEVILLE HOT SPRINGS (MOFFETT'S HOT SPRINGS)

WARRING NUMBER..... 16

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TOWNSHIP=RANGE COORDINATES

COUNTRY..... UNITED STATES
 STATE..... WASHINGTON
 COUNTY..... SKAMANIA
 GEOLOGIC PROVINCE.. 39
 SAMPLE DESCRIPTION AND CONDITIONS
 TEMPERATURE (C)..... 50.
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... R. MARINER
 REFERENCE..... BERRY AND OTHERS, 1980

LAT/LONG... 45-42.1 N 121-43.7 W

RECORD 00052

GEO THERM SAMPLE FILE

GEO THERM FILE 101 0000061

NAME OF SAMPLE SOURCE... ORR CREEK WARM SPRING
 LOCATION TOWNSHIP-RANGE
 COUNTRY..... UNITED STATES
 STATE..... WASHINGTON
 COUNTY..... SKAMANIA
 GEOLOGIC PROVINCE.. 39
 SAMPLE DESCRIPTION AND CONDITIONS
 TEMPERATURE (C)..... 22.
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... R. MARINER
 REFERENCE..... BERRY AND OTHERS, 1980

COORDINATES

LAT/LONG... 46-20.7 N 121-36.0 W

RECORD 00053

GEO THERM SAMPLE FILE

GEO THERM FILE 101 0001338

NAME OF SAMPLE SOURCE... ORR CREEK WARM SPRINGS
 LOCATION TOWNSHIP-RANGE
 COUNTRY..... UNITED STATES 10N 010E 19 NE
 STATE..... WASHINGTON 84M1 W
 COUNTY..... SKAMANIA
 MAP REFERENCE..... GREEN MTN 1:24000
 OTHER LOCALITY INFORMATION: FAR WEST SIDE OF CLEAR CUT, ABOUT HALF WAY DOWN CLEARED SLOPE
 SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... 1979/00/00 KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... OCA-1
 TEMPERATURE (C)..... 21.7
 DISCHARGE..... 95. L/MIN

COORDINATES

LAT/LONG... 46-20.70 N 121-36.00 W

WATER ANALYSIS

SPECIFIC CONDUCTANCE..... 175.
 ANALYSIS IN MG/L

ISOTOPES (0/001

AG....	CO3....	LI....	0.01		
AL....	CH....	MG....	0.1		
H....	F....	NA....		SI02..	29.
HE....	FE(TOT).	NB....		S04..	1.
CA....					
CL....					
CO....					
	K.....		9.		

QUALIFICATION FIELD..... RANGE 20. TO 30. GPM

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E. BERRY 1980

RECORD 00054

GEO THERM SAMPLE FILE

GEO THERM FILE ID: 0000049

NAME OF SAMPLE SOURCE... ROCK CREEK HOT SPRING
LOCATION TOWNSHIP=RANGE

COORDINATES

LAT/LONG... 45-43.4 N 121-55.6 W

COUNTRY..... UNITED STATES
STATE..... WASHINGTON
COUNTY..... SKAMANIA
GEOLOGIC PROVINCE.. 39

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 7 24.

REFERENCE AND IDENTIFICATION

COMPILED BY..... R. MARINER

REFERENCE..... BERRY AND OTHERS, 1980

RECORD 00055

GEO THERM SAMPLE FILE

GEO THERM FILE ID: 0001339

NAME OF SAMPLE SOURCE... ROCK CREEK HOT SPRINGS

LOCATION TOWNSHIP=RANGE

COORDINATES

COUNTRY..... UNITED STATES 03N 007E 27 NE
STATE..... WASHINGTON B&M W
COUNTY..... SKAMANIA
GEOLOGIC PROVINCE..UTM ZONE... +10
NORTHING... 5063400.
583570.

MAP REFERENCE..... BONNEVILLE DAM 1124000

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... E 20.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00056

GEO THERM SAMPLE FILE

GEO THERM FILE ID: 0001340

NAME OF SAMPLE SOURCE... SHIPERD HOT SPRINGS

LOCATION TOWNSHIP=RANGE

COORDINATES

COUNTRY..... UNITED STATES 03N 008E 21 SE
STATE..... WASHINGTON B&M W
COUNTY..... SKAMANIA
GEOLOGIC PROVINCE..UTM ZONE... +10
NORTHING... 5064535.
593725.

MAP REFERENCE..... CARSON 1124000

OTHER LOCALITY INFORMATION: ON THE NE SIDE OF THE RIVER

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... R 47.5

QUALIFICATION FIELD..... RANGE IS 45. TO 50. C

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00057

GEOTHERM FILE 101 0001341

GEOTHERM SAMPLE FILE

NAME OF SAMPLE SOURCE... ST. MARTIN HOT SPRING
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE
 STATE..... WASHINGTON 03N 008E 21 SE
 COUNTY..... SKAMANIA B&M: W
 GEOLOGIC PROVINCE..
 MAP REFERENCE..... CARSON 1:24000

COORDINATES

UTM ZONE... +10
 NORTHING... 5064450.
 593600.

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 SAMPLE NUMBER..... SMA-1
 TEMPERATURE (C)..... 0 32.

WATER ANALYSIS

SPECIFIC CONDUCTANCE..... 2350.

ANALYSIS IN MG/L

AG.....	CO3.....	LI...	0.3		
AL.....	CH.....	MG...	0.5		
H.....	F.....	NA...	360.	\$102.	57.
HR.....	4.5				
CA.....	73.				
CL.....	756.	I.....	0.02		
CO.....		K.....	5.		

ISOTOPES (0/001)

QUALIFICATION FIELD..... MAXIMUM TEMPERATURE IS 49. C

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00058

GEOTHERM FILE 101 0000039

GEOTHERM SAMPLE FILE

NAME OF SAMPLE SOURCE... ST. MARTIN'S HOT SPRINGS
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE
 STATE..... WASHINGTON 03N 008E 21 SE
 COUNTY..... SKAMANIA B&M: WILLAMETTE
 GEOLOGIC PROVINCE.. 39
 MAP REFERENCE..... BONNEVILLE DAM 15'

COORDINATES

LAT/LONG... 45-43.7 N 121-48.0 W

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1977/07/26
 TEMPERATURE (C)..... 48.
 DISCHARGE..... L/MIN

WATER ANALYSIS

PH..... 8.54
 SPECIFIC CONDUCTANCE..... 2330.
 CHARGE IMBALANCE (% DIFF)... 2.6

ANALYSIS IN MG/L

AL.....	CH.....	MG...	0.3		
H.....	2.9	F.....	0.74	SI02.	48.
HE.....		FE(TOT).		S04..	16.
CA.....	76.	HCO3....	19.		
CL.....	690.				
CO.....		K.....	6.4		

ISOTOPES (0/001)

REFERENCE AND IDENTIFICATION

COMPILED BY..... MARINER, R. H.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... MARINER AND OTHERS, 1982

RECORD 00059

GEO THERM SAMPLE FILE

GEO THERM FILE ID: 0000755

NAME OF SAMPLE SOURCE... GAMMA HOT SPRING

LOCATION TOWNSHIP-RANGE

COUNTRY..... UNITED STATES
 STATE..... WASHINGTON
 COUNTY..... SNOHOMISH
 GEOLOGIC PROVINCE..

COORDINATES

LAT/LONG... 48-10.00 N 121-02.00 W
 UTM ZONE... +10
 NORTHING... 5336476.
 646233.

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 60.0

WATER ANALYSIS

PH..... 7.9

ANALYSIS

H..... F..... NA... 491. SI02. 150.
 CA... 47. CO... K..... 77.

ISOLAPES (0/00)REFERENCE AND IDENTIFICATION

COMPILED BY..... RENNER, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... WHITE AND WILLIAMS, 1975; TABOR AND CROWDER, 1969

RECORD 00060

GEO THERM SAMPLE FILE

GEO THERM FILE ID: 0001342

NAME OF SAMPLE SOURCE... GAMMA HOT SPRINGS

LOCATION TOWNSHIP-RANGE

COUNTRY..... UNITED STATES 31N 013E 24 SE
 STATE..... WASHINGTON B&M W
 COUNTY..... SNOHOMISH
 GEOLOGIC PROVINCE..

COORDINATES

UTM ZONE... +10
 NORTHING... 5334820.
 644100.

MAP REFERENCE..... GLACIER PEAK 1162500SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... E 60.

DISCHARGE..... E 15. L/MIN

WATER ANALYSIS

SPECIFIC CONDUCTANCE..... 2800.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00061

GEO THERM SAMPLE FILE

GEO THERM FILE ID: 0000769

NAME OF SAMPLE SOURCE... GARLAND HOT SPRINGS (SAN JUAN HOT SPRINGS)

LOCATION TOWNSHIP-RANGE

COUNTRY..... UNITED STATES
 STATE..... WASHINGTON
 COUNTY..... SNOHOMISH

COORDINATES

LAT/LONG... 47-20.50 N 121-53.40 W
 UTM ZONE... +10
 NORTHING... 5243512.

583851.

GEOLOGIC PROVINCE..

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 21.0

WATER ANALYSIS

PH..... 6.0

ANALYSIS

AG.... CO3.....

AL.... CR.....

H.... F.....

CA.... 336.

CL.... 2671.

CO.... K..... 130.

LI...

7.5

MG...

75.

NA...

1592.

SI02.

120.

ISOTOPES (0/001)

REFERENCE AND IDENTIFICATION

COMPILED BY..... RENNER, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... WHITE AND WILLIAMS, 1975; CAMPBELL AND OTHERS, 1970

RECORD 00062

GEOTHERM SAMPLE FILE

NAME OF SAMPLE SOURCE... GARLAND MINERAL SPRINGS

GEOTHERM FILE ID: 0001343

LOCATION

TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 28N 011E 25 NW

STATE..... WASHINGTON 8&M1 W

COUNTY..... SNOHOMISH

GEOLOGIC PROVINCE..

UTM ZONE... 10

NORTHING... 5305120.

623980.

MAP REFERENCE..... BLANCA LAKE 1124000

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KURUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... E 29.

DISCHARGE..... E 100. L/MIN

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KURUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00063

GEOTHERM SAMPLE FILE

NAME OF SAMPLE SOURCE... GARLAND MINERAL SPRINGS

GEOTHERM FILE ID: 0000173

LOCATION

TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 28N 011E 25 NE

STATE..... WASHINGTON

COUNTY..... SNOHOMISH

GEOLOGIC PROVINCE..

LAT/LONG... 47-53. N 121-21. W

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1977/07/23 MAHNER, R. AND EVANS, W.

SAMPLE NUMBER..... 053RM77

TEMPERATURE (C)..... 29.

WATER ANALYSIS

DATE/ANALYST..... 1977/12 BARNES GROUP

PH..... 6.46

SPECIFIC CONDUCTANCE..... 12900.

ALKALINITY..... 2600. AS HCO3

CHARGE IMBALANCE (% DIFF)... 4.0

ANALYSIS IN MG/L

ISOTOPES (0/001)

AG....		CO3.....	LI...	9.4		
AL....		CR.....	MG...	87.		
AS....		CS..... 0.2	MN...	0.92		
AU....		CU..... L 0.01				
H..... 64.		F..... 1.6	NA...	2500.	SI02.	145.
HE.....		FE(TOT) 5.4	NB...		S04..	160.
HR.... 7.5		GE.....	NI... L 0.04			
CA.... 390.		HC03... 2600.				
CA+MG.		HG..... L 0.0001	PB... L 0.05			
CD.... 0.01		H2S..... L 1.				
CL.... 3600.		I..... 0.8				
CO.... L 0.02		K..... 200.	RB... 0.47	ZN...	0.02	

GAS ANALYSIS

DATE/ANALYST..... 1977/12 BARNES GROUP

ANALYSIS IN VOL %

AR... L 0.02			
CH4.. L 0.005			
C2H6. 0.05		N2...	0.25
CO2.. 99.30		O2...	0.1
H2... 0.01			
HE... 0.02			

ISOTOPES (00/00)

REFERENCE AND IDENTIFICATION

COMPILED BY..... MARINER, R.
 COMPILER AFFILIATION... U. S. GEOLOGICAL SURVEY
 REFERENCE..... MARINER, R., USGS, MENLO PARK

RECORD 00064

GEO THERM SAMPLE FILE

GEO THERM FILE ID: 0000171

NAME OF SAMPLE SOURCE... KENNEDY HOT SPRINGS

LOCATION

TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES JUN 012E 01 NE
 STATE..... WASHINGTON
 COUNTY..... SNOHOMISH
 GEOLOGIC PROVINCE.. 39

LAT/LONG... 48-07. N 121-12. W

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... 1977/07/22 MARINER, R. AND EVANS, W.
 SAMPLE NUMBER..... GT52RM77
 TEMPERATURE (C)..... 35.

WATER ANALYSIS

DATE/ANALYST..... 1977/12 BARNES GROUP
 PH..... 6.27
 SPECIFIC CONDUCTANCE..... 4080.
 ALKALINITY..... 1660. AS HC03
 CHARGE IMBALANCE (8 DIFF).... 0.1

ANALYSIS IN MG/L

ISOTOPES (00/00)

AG....		CO3.....	LI...	3.5		
AL....		CR.....	MG...	48.		
AS....		CS..... 0.15	MN...	0.4		
AU....		CU..... L 0.01				
H..... 7.3		F..... 1.2	NA...	670.	SI02.	175.
HE.....		FE(TOT) 3.0	NB...		S04..	2.
HR.... 1.8		GE.....	NI... L 0.02			
CA.... 190.		HC03... 1660.				
CA+MG.		HG..... 0.0015	PB... L 0.05			
CD.... L 0.005		H2S..... L 1.				

CL.... 625. I.... L 0.1
CO.... L 0.02 K..... 72. HB... 0.32 ZN... 0.35

GAS ANALYSIS

DATE/ANALYST.... 1977/12 BARNES GROUP

ANALYSIS IN VOL %

ISOIOPES (00/01)

AR... L 0.02

CH4... 0.13

C2H6... L 0.05

N2... 0.36

CO2... 99.18

O2... 0.08

H2... L 0.01

HE... L 0.02

REFERENCE AND IDENTIFICATION

COMPILED BY..... MARINER, R.

COMPILER AFFILIATION... U. S. GEOLOGICAL SURVEY

REFERENCE..... *MARINER, R., USGS, MENLO PARK

RECORD 00065

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0000757

NAME OF SAMPLE SOURCE... KENNEDY

LOCATION

TOWNSHIP-RANGECOORDINATES

COUNTRY..... UNITED STATES

LAT/LONG... 48-07.10 N 121-11.70 W

STATE..... WASHINGTON

UTM ZONE... +10

COUNTY..... SNOHOMISH

NORTHING... 5330809.

GEOLOGIC PROVINCE..

634339.

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 30.0

WATER ANALYSIS

PH..... 7.7

ANALYSIS

ISOIOPES (02/001)

AG....

CO3....

LI... 3.7

AL....

CR....

MG... 60.

H....

F....

NA... 655.

S102. 136.

CA... 37.

CO....

K..... 64.

REFERENCE AND IDENTIFICATION

COMPILED BY..... RENNER, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... WHITE AND WILLIAMS, 1975; TABOR AND CROWDER, 1969

RECORD 00066

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001344

NAME OF SAMPLE SOURCE... KENNEDY HOT SPRINGS

LOCATION

TOWNSHIP-RANGECOORDINATES

COUNTRY..... UNITED STATES

30N 012E 01 NE

STATE..... WASHINGTON

B&M: W

COUNTY..... SNOHOMISH

UTM ZONE... +10

GEOLOGIC PROVINCE..

NORTHING... 5330850.

MAP REFERENCE..... GLACIER PEAK 1162500

634440.

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR.....

KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... E 38.

DISCHARGE..... E 60. L/MIN

WATER ANALYSIS

SPECIFIC CONDUCTANCE..... 3400.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00067

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001345

NAME OF SAMPLE SOURCE... SULPHUR CREEK HOT SPRING
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE
 STATE..... WASHINGTON 32N 013E 19 NE
 COUNTY..... SNOHOMISH B&M W
 GEOLOGIC PROVINCE..

COORDINATES

UTM ZONE... +10
 NORTHING... 5346000.
 635075.

MAP REFERENCE..... DOWNEY MIN 1:24000

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... E 37.

DISCHARGE..... E 10. L/MIN

OTHER SAMPLE INFORMATION.. FLOWING FROM BEDROCK FRACTURES

WATER ANALYSIS

SPECIFIC CONDUCTANCE..... 500.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KORUSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00068

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0000767

NAME OF SAMPLE SOURCE... SULPHUR CREEK HOT SPRINGS
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE
 STATE..... WASHINGTON
 COUNTY..... SNOHOMISH
 GEOLOGIC PROVINCE..

COORDINATES

LAT/LONG... 48-15.30 N 121-10.80 W
 UTM ZONE... +10
 NORTHING... 5346025.
 635095.

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 30.0

WATER ANALYSIS

PH..... 7.8

ANALYSIS

H..... F..... NA... 103. SI02. 75.
 CA... 1.0 CO... K... 1.7

ISOLINES 10/2001

REFERENCE AND IDENTIFICATION

COMPILED BY..... RENNER, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... WHITE AND WILLIAMS, 1975 TABOR AND CROWDER, 1969

RECORD 00069

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0000170

NAME OF SAMPLE SOURCE... SULPHUR HOT SPRING
 LOCATION
 COUNTRY..... UNITED STATES TOWNSHIP-RANGE
 STATE..... WASHINGTON

COORDINATES

LAT/LONG... 48-15.5 N 121-10.5 W

COUNTY..... SNOHOMISH
 GEOLOGIC PROVINCE.. 39
 SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... 1977/07/22 MARINER, R. AND EVANS, W.
 SAMPLE NUMBER..... G151HM77
 TEMPERATURE (C)..... 37.

WATER ANALYSIS

DATE/ANALYST..... 1977/12 BARNES GROUP

PH..... 9.35

SPECIFIC CONDUCTANCE..... 509.

ALKALINITY..... 154. AS HCO3

CHARGE BALANCE (% DIFF)... 2.2

ANALYSIS IN MG/L

ISOTOPES (0/001)

AG....	CO3.....	LI... 0.14		
AL....	CR.....	MG... L 0.05		
AS....	CS..... L 0.1	MN... L 0.01		
AU....	CU..... L 0.01			
H.... 0.55	F..... 3.9	NA... 100.	SI02. 76.	
HE....	FE(TOT). L 0.02	NB... 0.48	S04.. 21.	
BI....	GA.....	NH4... L 0.02		
BR....	GE.....			
CA.... 1.2	HCO3..... 154.			
CA+MG.	MG..... 0.0004	PB... L 0.05		
CD.... L 0.005	M2S..... 15.			
CL.... SI.				
CO.... L 0.02	K..... 1.9	RH... L 0.02	ZN... 0.005	

GAS ANALYSIS

DATE/ANALYST..... 1977/12 BARNES GROUP

ANALYSIS IN VOL %

ISOTOPES (00/01)

AR... 1.3		
CH4.. 0.28		
C2H6. L 0.05	N2... 96.67	
CO2.. L 0.01	O2... L 0.02	
H2... L 0.01		
HF... 0.03		

REFERENCE AND IDENTIFICATION

COMPILED BY..... MARINER, R.
 COMPILED AFFILIATION... U. S. GEOLOGICAL SURVEY
 REFERENCE..... MARINER, R., USGS, MENLO PARK

RECORD 00070

GEO THERM SAMPLE FILE

GEO THERM FILE 101 0000058

NAME OF SAMPLE SOURCE... WARM SPRINGS CANYON

LOCATION..... TOWNSHIP-RANGE

COORDINATES

LAT/LONG... 46-01.4 N 118 46.3 W

COUNTRY..... UNITED STATES

STATE..... WASHINGTON

COUNTY..... WALLA WALLA

GEOLOGIC PROVINCE.. 40

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 22.

REFERENCE AND IDENTIFICATION

COMPILED BY..... R. MARINER

REFERENCE..... BERRY AND OTHERS, 1980

RECORD 00071

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001346

NAME OF SAMPLE SOURCE... WARM SPRINGS CANYON WARM SPRING

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 06N 03E 02 SE

STATE..... WASHINGTON 8&M: W

COUNTY..... WALLA WALLA

GEOLOGIC PROVINCE..

UTM ZONE... +10

NORTHING... 5098000.

362950.

MAP REFERENCE..... ZANGAR JUNCTION 1:24000.

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTION..... KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

TEMPERATURE (C)..... 22.

REFERENCE AND IDENTIFICATION

COMPILED BY..... LIEB, RANDY, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... *KUROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00072

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0000753

NAME OF SAMPLE SOURCE... BAKER HOT SPRING

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES

STATE..... WASHINGTON

COUNTY..... WHATCOM

GEOLOGIC PROVINCE..

LAT/LONG... 48-45.90 N 121-40.20 W

UTM ZONE... +10

NORTHING... 5401967.

597738.

SAMPLE DESCRIPTION AND CONDITIONS

TEMPERATURE (C)..... 42.0

WATER ANALYSIS

P.H..... 8.0

ANALYSIS

AG.... CO3....

H.... F.....

CA.... 1.9

CL.... 108.

CO.... K..... 10.

LI... 0.4

NA... 165. SI02. 140.

ISOTOPES (0.001

REFERENCE AND IDENTIFICATION

COMPILED BY..... RENNER, J.

COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY

REFERENCE..... WHITE AND WILLIAMS, 1975; CAMPBELL AND OTHERS, 1970

RECORD 00073

GEOTHERM SAMPLE FILE

GEOTHERM FILE ID: 0001300

NAME OF SAMPLE SOURCE... BAKER HOT SPRINGS (MOROVITZ HOT SPRINGS)

WARNING NUMBER..... 01.

LOCATION TOWNSHIP-RANGE

COORDINATES

COUNTRY..... UNITED STATES 38N 00E 20 SW

STATE..... WASHINGTON 8&M: W

COUNTY..... WHATCOM

GEOLOGIC PROVINCE..

UTM ZONE... +10

NORTHING... 5401740.

597760.

MAP REFERENCE..... MTSHIKSAN 1:62500

OTHER LOCALITY INFORMATION: LOCATED ON A HILLSIDE IN THE SWIFT CREEK VALLEY NEAR MOROVITZ CREEK

SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 POINT OF COLLECTION.. POOL
 TEMPERATURE (C)..... 42.
 DISCHARGE..... 38. L/MIN
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

RECORD 00074

 GEOTHERM SAMPLE FILE
 NAME OF SAMPLE SOURCE... NOKR FUMAROLE FIELD
 LOCATION
 COUNTRY..... UNITED STATES 38N 008E 17 NW OF NW COORDINATES
 STATE..... WASHINGTON 88N: W LAT/LONG... 48-47.34 N 121-48.24 W
 COUNTY..... WHATCOM
 MAP REFERENCE..... MT BAKER 1162500
 OTHER LOCALITY INFORMATION: LOCATION VAGUE
 SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 TEMPERATURE (C)..... 90.
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KOROSEC, WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES; BERRY AND OTHERS, 1980

RECORD 00075

 GEOTHERM SAMPLE FILE
 NAME OF SAMPLE SOURCE... SHERMAN CRATER FUMAROLAS
 LOCATION
 COUNTRY..... UNITED STATES 38N 008E 19 SW OF NE COORDINATES
 STATE..... WASHINGTON 88N: W LAT/LONG... 48-48.20 N 121-48.78 W
 COUNTY..... WHATCOM
 OTHER LOCALITY INFORMATION: LOCATION APPROXIMATE
 SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 TEMPERATURE (C)..... R 110.
 QUALIFICATION FIELD..... RANGE 90 C TO 130 C
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KOROSEC, WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES; BERRY AND OTHERS, 1980

RECORD 00076

 GEOTHERM SAMPLE FILE
 NAME OF SAMPLE SOURCE... MT. ADAMS FUMAROLAS
 LOCATION
 COUNTRY..... UNITED STATES 08N 010E 01 COORDINATES
 STATE..... WASHINGTON 88N: W LAT/LONG... 46-12.12 N 121-29.52 W
 COUNTY..... YAKIMA
 MAP REFERENCE..... MT ADAMS EAST 1124000
 OTHER LOCALITY INFORMATION: LOCATION VAGUE
 SAMPLE DESCRIPTION AND CONDITIONS

DATE/COLLECTOR..... KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 TEMPERATURE (C)..... E 50.
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KOROSEC, WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES; BERRY AND OTHERS, 1980

RECORD 00077

 GEOTHERM SAMPLE FILE
 NAME OF SAMPLE SOURCE... SIMCOE SODA SPRING
 LOCATION
 COUNTRY..... UNITED STATES
 STATE..... WASHINGTON
 COUNTY..... YAKIMA
 GEOLOGIC PROVINCE.. 39
 TOWNSHIP-RANGE
 COORDINATES
 LAT/LONG... 46-27.1 N 120-57.4 W
 SAMPLE DESCRIPTION AND CONDITIONS
 TEMPERATURE (C)..... 32.
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... R. MARINER
 REFERENCE..... BERRY AND OTHERS, 1980

RECORD 00078

 GEOTHERM SAMPLE FILE
 NAME OF SAMPLE SOURCE... SIMCOE SODA SPRINGS
 WELP NUMBER..... 12.
 LOCATION
 COUNTRY..... UNITED STATES
 STATE..... WASHINGTON
 COUNTY..... YAKIMA
 GEOLOGIC PROVINCE..
 TOWNSHIP-RANGE
 COORDINATES
 UTM ZONE... +10
 NORTHING... 5146040.
 656850.
 MAP REFERENCE..... YESNOWIT CANYON 1:24000.
 SAMPLE DESCRIPTION AND CONDITIONS
 DATE/COLLECTOR..... KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
 TEMPERATURE (C)..... E 29.
 REFERENCE AND IDENTIFICATION
 COMPILED BY..... LIEB, RANDY, J.
 COMPILER AFFILIATION... U.S. GEOLOGICAL SURVEY
 REFERENCE..... *KOROSEC, M.A., WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES, FOR D.O.E.

APPENDIX A

Index to GEOTHERM'S sample file for the state of Washington. This computer generated appendix contains some truncated fields. The index is sorted by county and name of the source. TNS - township, RNG range, Sect. - section, I.D. - GEOTHERM record identifier, Temp. - temperature °C (see Table 1 for explanation of alphabetic qualifiers preceeding temperature.)

County	Name of Source	Latitude	Longitude	TNS	RNG	Sect.	I.D.	Temp.
CLALLAM	OLYMPIC HOT SPRING			29N	008E	28	0001303	48.
CLALLAM	OLYMPIC HOT SPRINGS	47-58.90 N	123-41.20 W				0000765	47.0
CLALLAM	OLYMPIC HOT SPRINGS	47-58.6 N	123-40.9 W				0000041	48.5
CLALLAM	SOL DUC HOT SPRING	47-58.10 N	123-52.10 W				0000763	50.0
CLALLAM	SOL DUC HOT SPRINGS			29N	009E	32	0001304	40.0
CLALLAM	SOL DUC HOT SPRINGS	47-58.1 N	123-51.8 W	29N	009W	32	0000040	51.
CLALLAM	SOL DUC HOT SPRINGS			29N	009W	32	0001305	34.
CLALLAM	SOL DUC HOT SPRINGS			29N	009W	32	0001307	46.
CLALLAM	SOL DUC HOT SPRINGS			29N	009W	32	0001306	50.
COWLITZ	GREEN RIVER SODA SPRINGS			10N	004E	02	0001308 R	27.5
GRAYS HARBOR	NEWSKAH MINERAL SPRINGS	46-50. N	123-48. W	16N	009W	09	0001309	17.5
GRAYS HARBOR	NEWSKAH MINERAL SPRINGS	46-50. N	123-48. W	16N	009W	09	0001317	19.0
KING	GOLDMEYER HOT SPRINGS	47-29.0 N	121-23.1 W	23N	011E	15	0000046	50.
KING	GOLDMEYER HOT SPRINGS			23N	011E	14	0001310 E	53.
KING	LESTER HOT SPRINGS			20N	010E	21	0001313	45.
KING	LESTER HOT SPRINGS			20N	010E	21	0001312	45.
KING	LESTER HOT SPRINGS			20N	010E	21	0001311	48.4
KING	LESTER HOT SPRINGS	47-12.5 N	121-32.2 W	20N	010E	21	0000042	46.5
KING	SCENIC HOT SPRINGS	47-42.4 N	121-08.5 W	26N	013E	33	0000043	47.
KING	SCENIC HOT SPRINGS	47-42.42 N	121-09.30 W	26N	013E	32	0001314	50.
Klickitat	FISH HATCH WARM SPRING			06N	013E	04	0001315	24.
Klickitat	FISH HATCHERY WARM SPRING	46-02.5 N	121-10.9 W				0000074	24.
Klickitat	Klickitat Mineral Spring	45-49.3 N	121-08.0 W				0000048	27.
Klickitat	Klickitat Mineral Spring	45-49.26 N	121-07.98 W	04N	013E	23,	0001316 E	27.
LEWIS	OHANAPECOSH HOT SPRINGS	46-44.20 N	121-33.60 W				0000771	40.0
LEWIS	OHANAPECOSH HOT SPRINGS	46-44.20 N	121-33.60 W	14N	010E	04	0001318	39.5
LEWIS	OHANAPECOSH HOT SPRINGS	46-44.20 N	121-33.60 W	14N	010E	04	0001320	43.6
LEWIS	OHANAPECOSH HOT SPRINGS	46-44.20 N	121-33.60 W	14N	010E	04	0001319	45.6
LEWIS	OHANAPECOSH HOT SPRINGS	46-44.20 N	121-33.60 W	14N	010E	04	0001323	30.6
LEWIS	OHANAPECOSH HOT SPRINGS	46-44.20 N	121-33.60 W	14N	010E	04	0001322	47.8
LEWIS	OHANAPECOSH HOT SPRINGS	46-44.20 N	121-33.60 W	14N	010E	04	0001321	50.1
LEWIS	PACKWOOD HOT SPRING	46-34.50 N	121-42.36 W	13N	009E	32	0001324 E	38.
LEWIS	PACKWOOD HOT SPRING	46-34.5 N	121-42.4 W				0000060	38.
LEWIS	SUMMIT CREEK MINERAL SPRINGS (SODA SPRINGS)	46-42.20 N	121-29.00 W		007E		0000761	13.0
OKANOGAN	HOT LAKE	48-58.44 N	119-28.50 W	40N	027E	18	0001325 R	45.
OKANOGAN	POISON LAKE	48-54.36 N	119-27.30 W	39N	027E	05	0001326 R	45.
PIERCE	LONGMIRE	46-45.10 N	121-48.70 W				0000759	21.0
PIERCE	LONGMIRE MINERAL SPRING	46-45. N	121-45.5 W				0000172	19.
PIERCE	LONGMIRE MINERAL SPRINGS			15N	008E	29	0001333	22.0
PIERCE	LONGMIRE MINERAL SPRINGS			15N	008E	29	0001332	19.1
PIERCE	LONGMIRE MINERAL SPRINGS			15N	008E	29	0001331	11.0
PIERCE	LONGMIRE MINERAL SPRINGS			15N	008E	29	0001330	11.2
PIERCE	LONGMIRE MINERAL SPRINGS			15N	008E	29	0001329	25.1
PIERCE	LONGMIRE MINERAL SPRINGS			15N	008E	29	0001328	13.3
PIERCE	LONGMIRE MINERAL SPRINGS			15N	008E	29	0001327	22.

PIERCE	MT. RAINIER FUMARoles	46-51.12 N 121-45.48 W	16N 008E	23	0001334 R	62.
SKAMANIA	BONNEVILLE HOT SPRINGS	45-39.4 N 121-57.5 W	02N 007E	39	0000047	36.
SKAMANIA	BONNEVILLE HOT SPRINGS (MOFFETT'S HOT SPRINGS)		02N 007E	16	0001336	36.2
SKAMANIA	BONNEVILLE HOT SPRINGS (MOFFETT'S HOT SPRINGS)		02N 007E	16	0001335	29.2
SKAMANIA	COLLINS HOT SPRINGS		03N 009E	31	0001337 E	45.
SKAMANIA	COLLINS HOT SPRINGS	45-42.1 N 121-43.7 W			0000057	50.
SKAMANIA	ORR CREEK WARM SPRING	46-20.7 N 121-36.0 W			0000061	22.
SKAMANIA	ORR CREEK WARM SPRINGS	46-20.70 N 121-36.00 W	10N 010E	19	0001338	21.7
SKAMANIA	ROCK CREEK HOT SPRING	45-43.4 N 121-55.6 W			0000049	24.
SKAMANIA	ROCK CREEK HOT SPRINGS		03N 007E	27	0001339 E	20.
SKAMANIA	SHIPERD HOT SPRINGS		03N 008E	21	0001340 R	47.5
SKAMANIA	ST. MARTIN HOT SPRING		03N 008E	21	0001341 Q	32.
SKAMANIA	ST. MARTIN'S HOT SPRINGS	45-43.7 N 121-48.0 W	03N 008E	21	0000039	48.
SNOHOMISH	GAMMA HOT SPRING	48-10.00 N 121-02.00 W			0000755	60.0
SNOHOMISH	GAMMA HOT SPRINGS		31N 013E	24	0001342 E	60.
SNOHOMISH	GARLAND HOT SPRINGS (SAN JUAN HOT SPRINGS)	47-20.50 N 121-53.40 W			0000769	21.0
SNOHOMISH	GARLAND MINERAL SPRINGS		28N 011E	25	0001343 E	29.
SNOHOMISH	GARLAND MINERAL SPRINGS	47-53. N 121-21. W	28N 011E	25	0000173	29.
SNOHOMISH	KENNEY HOT SPRINGS	48-07. N 121-12. W	30N 012E	01	0000171	35.
SNOHOMISH	KENNEDY	48-07.10 N 121-11.70 W			0000757	30.0
SNOHOMISH	KENNEDY HOT SPRINGS		30N 012E	01	0001344 E	38.
SNOHOMISH	SULPHUR CREEK HOT SPRING		32N 013E	19	0001345 E	37.
SNOHOMISH	SULPHUR CREEK HOT SPRINGS	48-15.30 N 121-10.80 W			0000767	30.0
SNOHOMISH	SULPHUR HOT SPRING	48-15.5 N 121-10.5 W			0000170	37.
WALLA WALLA	WARM SPRINGS CANYON	46-01.4 N 118 46.3 W			0000058	22.
WALLA WALLA	WARM SPRINGS CANYON WARM SPRING		06N 032E	02	0001346 E	22.
WHATCOM	BAKER HOT SPRING	48-45.90 N 121-40.20 W			0000753	42.0
WHATCOM	BAKER HOT SPRINGS (MOROVITZ HOT SPRINGS)		38N 009E	20	0001300	42.
WHATCOM	DORR FUMAROLE FIELD	48-47.34 N 121-48.24 W	38N 008E	17	0001301	90.
WHATCOM	SHERMAN CRATER FUMARoles	48-48.20 N 121-48.78 W	38N 008E	19	0001302 R	110.
YAKIMA	MT. ADAMS FUMARoles	46-12.12 N 121-29.52 W	08N 010E	01	0001347 E	50.
YAKIMA	SIMCOE SODA SPRING	46-27.1 N 120-57.4 W			0000059	32.
YAKIMA	SIMCOE SODA SPRINGS		11N 015E	09	0001348 E	20.

APPENDIX B

Index to GEOTHERM sample file for the state of Washington sorted by county, township (TNS), range (RNG), and section (Sect.) Also given are the name of source, GEOTHERM record identifier (I.D.), and temperature (Temp. °C). See Table 1 for explanation of alphabetic qualifiers proceeding temperature.

<u>County</u>	<u>TNS</u>	<u>RNG</u>	<u>Sect.</u>	<u>Name of Source</u>	<u>I.D.</u>	<u>Temp.</u>
CLALLAM				OLYMPIC HOT SPRINGS	0000765	47.0
CLALLAM				SOL DUC HOT SPRING	0000763	50.0
CLALLAM				OLYMPIC HOT SPRINGS	0000041	48.5
CLALLAM	29N	008E	28	OLYMPIC HOT SPRING	0001303	48.
CLALLAM	29N	009E	32	SOL DUC HOT SPRINGS	0001304	40.0
CLALLAM	29N	009W	32	SOL DUC HOT SPRINGS	0000040	51.
CLALLAM	29N	009W	32	SOL DUC HOT SPRINGS	0001305	34.
CLALLAM	29N	009W	32	SOL DUC HOT SPRINGS	0001307	46.
CLALLAM	29N	009W	32	SOL DUC HOT SPRINGS	0001306	50.
COWLITZ	10N	004E	02	GREEN RIVER SODA SPRINGS	0001308	R 27.5
GRAYS HARBOR	16N	009W	09	NEWSKAH MINERAL SPRINGS	0001309	17.5
GRAYS HARBOR	16N	009W	09	NEWSKAH MINERAL SPRINGS	0001317	19.0
KING	20N	010E	21	LESTER HOT SPRINGS	0000042	46.5
KING	20N	010E	21	LESTER HOT SPRINGS	0001313	45.
KING	20N	010E	21	LESTER HOT SPRINGS	0001312	45.
KING	20N	010E	21	LESTER HOT SPRINGS	0001311	48.4
KING	23N	011E	14	GOLDMEYER HOT SPRINGS	0001310	E 53.
KING	23N	011E	15	GOLDMEYER HOT SPRINGS	0000046	50.
KING	26N	013E	32	SCENIC HOT SPRINGS	0001314	50.
KING	26N	013E	33	SCENIC HOT SPRINGS	0000043	47.
KLICKITAT				FISH HATCHERY WARM SPRING	0000074	24.
KLICKITAT				KLICKITAT MINERAL SPRING	0000048	27.
KLICKITAT	04N	013E	23,	KLICKITAT MINERAL SPRING	0001316	E 27.
KLICKITAT	06N	013E	04	FISH HATCH WARM SPRING	0001315	24.
LEWIS				OHANAPECOSH HOT SPRINGS	0000771	40.0
LEWIS				PACKWOOD HOT SPRING	0000060	38.
LEWIS	?	007E		SUMMIT CREEK MINERAL SPRINGS (SODA SPRINGS)	0000761	13.0
LEWIS	13N	009E	32	PACKWOOD HOT SPRING	0001324	E 38.
LEWIS	14N	010E	04	OHANAPECOSH HOT SPRINGS	0001323	30.6
LEWIS	14N	010E	04	OHANAPECOSH HOT SPRINGS	0001322	47.8
LEWIS	14N	010E	04	OHANAPECOSH HOT SPRINGS	0001321	50.1
LEWIS	14N	010E	04	OHANAPECOSH HOT SPRINGS	0001318	39.5
LEWIS	14N	010E	04	OHANAPECOSH HOT SPRINGS	0001320	43.6
LEWIS	14N	010E	04	OHANAPECOSH HOT SPRINGS	0001319	45.6
OKANOGAN	39N	027E	05	POISON LAKE	0001326	R 45.
OKANOGAN	40N	027E	18	HOT LAKE	0001325	R 45.
PIERCE				LONGMIRE	0000759	21.0
PIERCE				LONGMIRE MINERAL SPRING	0000172	19.
PIERCE	15N	008E	29	LONGMIRE MINERAL SPRINGS	0001333	22.0
PIERCE	15N	008E	29	LONGMIRE MINERAL SPRINGS	0001332	19.1
PIERCE	15N	008E	29	LONGMIRE MINERAL SPRINGS	0001331	11.0
PIERCE	15N	008E	29	LONGMIRE MINERAL SPRINGS	0001330	11.2
PIERCE	15N	008E	29	LONGMIRE MINERAL SPRINGS	0001329	25.1
PIERCE	15N	008E	29	LONGMIRE MINERAL SPRINGS	0001328	13.3
PIERCE	15N	008E	29	LONGMIRE MINERAL SPRINGS	0001327	22.

PIERCE	16N 008E	23	MT. RAINIER FUMARoles	0001334 R 62.
SKAMANIA			ORR CREEK WARM SPRING	0000061 22.
SKAMANIA			COLLINS HOT SPRINGS	0000057 50.
SKAMANIA			ROCK CREEK HOT SPRING	0000049 ? 24.
SKAMANIA	02N 007E	16	BONNEVILLE HOT SPRINGS (MOFFETT'S HOT SPRINGS)	0001336 36.2
SKAMANIA	02N 007E	16	BONNEVILLE HOT SPRINGS (MOFFETT'S HOT SPRINGS)	0001335 29.2
SKAMANIA	02N 007E	39	BONNEVILLE HOT SPRINGS	0000047 36.
SKAMANIA	03N 007E	27	ROCK CREEK HOT SPRINGS	0001339 E 20.
SKAMANIA	03N 008E	21	ST. MARTIN HOT SPRING	0001341 Q 32.
SKAMANIA	03N 008E	21	SHIPERD HOT SPRINGS	0001340 R 47.5
SKAMANIA	03N 008E	21	ST. MARTIN'S HOT SPRINGS	0000039 48.
SKAMANIA	03N 009E	31	COLLINS HOT SPRINGS	0001337 E 45.
SKAMANIA	10N 010E	19	ORR CREEK WARM SPRINGS	0001338 21.7
SNOHOMISH			SULPHUR HOT SPRING	0000170 37.
SNOHOMISH			KENNEDY	0000757 30.0
SNOHOMISH			GAMMA HOT SPRING	0000755 60.0
SNOHOMISH			GARLAND HOT SPRINGS (SAN JUAN HOT SPRINGS)	0000769 21.0
SNOHOMISH			SULPHUR CREEK HOT SPRINGS	0000767 30.0
SNOHOMISH	28N 011E	25	GARLAND MINERAL SPRINGS	0000173 29.
SNOHOMISH	28N 011E	25	GARLAND MINERAL SPRINGS	0001343 E 29.
SNOHOMISH	30N 012E	01	KENNDY HOT SPRINGS	0000171 35.
SNOHOMISH	30N 012E	01	KENNEDY HOT SPRINGS	0001344 E 38.
SNOHOMISH	31N 013E	24	GAMMA HOT SPRINGS	0001342 E 60.
SNOHOMISH	32N 013E	19	SULPHUR CREEK HOT SPRING	0001345 E 37.
WALLA WALLA			WARM SPRINGS CANYON	0000058 22.
WALLA WALLA	06N 032E	02	WARM SPRINGS CANYON WARM SPRING	0001346 E 22.
WHATCOM			BAKER HOT SPRING	0000753 42.0
WHATCOM	38N 008E	17	DORR FUMAROLE FIELD	0001301 90.
WHATCOM	38N 008E	19	SHERMAN CRATER FUMARoles	0001302 R 110.
WHATCOM	38N 009E	20	BAKER HOT SPRINGS (MOROVITZ HOT SPRINGS)	0001300 42.
YAKIMA			SIMCOE SODA SPRING	0000059 32.
YAKIMA	08N 010E	01	MT. ADAMS FUMARoles	0001347 E 50.
YAKIMA	11N 015E	09	SIMCOE SODA SPRINGS	0001348 E 20.

APPENDIX C

Index to GEOTHERM sample file for the state of Washington sorted into one-degree blocks by latitude and longitude. Records are sorted by name of source within each one-degree block. Adjacent one-degree blocks which are published as a 1:250,000 map are combined under the appropriate map name. See Table 1 for explanation of alphabetic qualifiers proceeding temperature. I.D. - GEOTHERM record identifier. Temp. - Temperature °C.

<u>Latitude</u>	<u>Longitude</u>	<u>Name of Source</u>	<u>County</u>	<u>I.D.</u>	<u>Temp.</u>
COORDINATES NOT GIVEN					
		BAKER HOT SPRINGS (MOROVITZ HOT SPRINGS)	WHATCOM	0001300	42.
		BONNEVILLE HOT SPRINGS (MOFFETT'S HOT SPRINGS)	SKAMANIA	0001336	36.2
		BONNEVILLE HOT SPRINGS (MOFFETT'S HOT SPRINGS)	SKAMANIA	0001335	29.2
		COLLINS HOT SPRINGS	SKAMANIA	0001337	E 45.
		FISH HATCH WARM SPRING	KLICKITAT	0001315	24.
		GAMMA HOT SPRINGS	SNOHOMISH	0001342	E 60.
		GARLAND MINERAL SPRINGS	SNOHOMISH	0001343	E 29.
		GOLDMEYER HOT SPRINGS	KING	0001310	E 53.
		GREEN RIVER SODA SPRINGS	COWLITZ	0001308	R 27.5
		KENNEDY HOT SPRINGS	SNOHOMISH	0001344	E 38.
		LESTER HOT SPRINGS	KING	0001313	45.
		LESTER HOT SPRINGS	KING	0001312	45.
		LESTER HOT SPRINGS	KING	0001311	48.4
		LONGMIRE MINERAL SPRINGS	PIERCE	0001333	22.0
		LONGMIRE MINERAL SPRINGS	PIERCE	0001332	19.1
		LONGMIRE MINERAL SPRINGS	PIERCE	0001331	11.0
		LONGMIRE MINERAL SPRINGS	PIERCE	0001330	11.2
		LONGMIRE MINERAL SPRINGS	PIERCE	0001329	25.1
		LONGMIRE MINERAL SPRINGS	PIERCE	0001328	13.3
		LONGMIRE MINERAL SPRINGS	PIERCE	0001327	22.
		OLYMPIC HOT SPRING	CLALLAM	0001303	48.
		ROCK CREEK HOT SPRINGS	SKAMANIA	0001339	E 20.
		SHIPERO HOT SPRINGS	SKAMANIA	0001340	R 47.5
		SIMCOE SODA SPRINGS	YAKIMA	0001348	E 20.
		SOL DUC HOT SPRINGS	CLALLAM	0001304	40.0
		SOL DUC HOT SPRINGS	CLALLAM	0001307	46.
		SOL DUC HOT SPRINGS	CLALLAM	0001306	50.
		SOL DUC HOT SPRINGS	CLALLAM	0001305	34.
		ST. MARTIN HOT SPRING	SKAMANIA	0001341	Q 32.
		SULPHUR CREEK HOT SPRING	SNOHOMISH	0001345	E 37.
		WARM SPRINGS CANYON WARM SPRING	WALLA WALLA	0001346	E 22.

THE DALLS 1:250,000

45-39.4	N 121-57.5	W BONNEVILLE HOT SPRINGS	SKAMANIA	0000047	36.
45-42.1	N 121-43.7	W COLLINS HOT SPRINGS	SKAMANIA	0000057	50.
45-49.26	N 121-07.98	W KLICKITAT MINERAL SPRING	KLICKITAT	0001316	E 27.
45-49.3	N 121-08.0	W KLICKITAT MINERAL SPRING	KLICKITAT	0000048	27.
45-43.4	N 121-55.6	W ROCK CREEK HOT SPRING	SKAMANIA	0000049	? 24.

WALLA WALLA 1:250,000

46-01.4 N 118 46.3 W WARM SPRINGS CANYON

WALLA WALLA 0000058 22.

YAKIMA 1:250,000

46-27.1 N 120-57.4 W SIMCOE SODA SPRING
 46-02.5 N 121-10.9 W FISH HATCHERY WARM SPRING
 46-45.10 N 121-48.70 W LONGMIRE
 46-45. N 121-45.5 W LONGMIRE MINERAL SPRING
 46-12.12 N 121-29.52 W MT. ADAMS FUMARoles
 46-51.12 N 121-45.48 W MT. RAINIER FUMARoles
 46-44.20 N 121-33.60 W OHANAPECOSH HOT SPRINGS
 46-44.20 N 121-33.60 W OHANAPECOSH HOT SPRINGS
 46-44.20 N 121-33.60 W OHANAPECOSH HOT SPRINGS
 46-44.20 N 121-33.60 W OHANAPECOSH HOT SPRINGS
 46-44.20 N 121-33.60 W OHANAPECOSH HOT SPRINGS
 46-44.20 N 121-33.60 W OHANAPECOSH HOT SPRINGS
 46-44.20 N 121-33.60 W OHANAPECOSH HOT SPRINGS
 46-20.7 N 121-36.0 W ORR CREEK WARM SPRING
 46-20.70 N 121-36.00 W ORR CREEK WARM SPRINGS
 46-34.5 N 121-42.4 W PACKWOOD HOT SPRING
 46-34.50 N 121-42.36 W PACKWOOD HOT SPRING
 46-42.20 N 121-29.00 W SUMMIT CREEK MINERAL SPRINGS (SODA SPRINGS)

YAKIMA 0000059 32.
 KLIKITAT 0000074 24.
 PIERCE 0000759 21.0
 PIERCE 0000172 19.
 YAKIMA 0001347 E 50.
 PIERCE 0001334 R 62.
 LEWIS 0000771 40.0
 LEWIS 0001323 30.6
 LEWIS 0001322 47.8
 LEWIS 0001321 50.1
 LEWIS 0001320 43.6
 LEWIS 0001319 45.6
 LEWIS 0001318 39.5
 SKAMANIA 0000061 22.
 SKAMANIA 0001338 21.7
 LEWIS 0000060 38.
 LEWIS 0001324 E 38.
 LEWIS 0000761 13.0

HOQUIAM 1:250,000

46-50. N 123-48. W NEWSKAL MINERAL SPRINGS
 46-50. N 123-48. W NEWSKAL MINERAL SPRINGS

GRAYS HARBOR 0001317 19.0
 GRAYS HARBOR 0001309 17.5

WENACHEE 1:250,000

47-20.50 N 121-53.40 W GARLAND HOT SPRINGS (SAN JUAN HOT SPRINGS)
 47-53. N 121-21. W GARLAND MINERAL SPRINGS
 47-29.0 N 121-23.1 W GOLDMEYER HOT SPRINGS
 47-12.5 N 121-32.2 W LESTER HOT SPRINGS
 47-42.4 N 121-08.5 W SCENIC HOT SPRINGS
 47-42.42 N 121-09.30 W SCENIC HOT SPRINGS

SNOHOMISH 0000769 21.0
 SNOHOMISH 0000173 29.
 KING 0000046 50.
 KING 0000042 46.5
 KING 0000043 47.
 KING 0001314 50.

SEATTLE 1:250,000

47-58.90 N 123-41.20 W OLYMPIC HOT SPRINGS
 47-58.6 N 123-40.9 W OLYMPIC HOT SPRINGS
 47-58.10 N 123-52.10 W SOL DUC HOT SPRING
 47-58.1 N 123-51.8 W SOL DUC HOT SPRINGS

CLALLAM 0000765 47.0
 CLALLAM 0000041 48.5
 CLALLAM 0000763 50.0
 CLALLAM 0000040 51.

OKANOGAN 1:250,000

48-58.44 N 119-28.50 W HOT LAKE
 48-54.36 N 119-27.30 W POISON LAKE

OKANOGAN 0001325 R 45.
 OKANOGAN 0001326 R 45.

CONCRETE 1:250,000

48-45.90 N 121-40.20 W BAKER HOT SPRING

WHATCOM 0000753 42.0

48-47.34 N 121-48.24 W DORR FUMAROLE FIELD
48-10.00 N 121-02.00 W GAMMA HOT SPRING
48-07. N 121-12. W KENNEDY HOT SPRINGS
48-07.10 N 121-11.70 W KENNEDY
48-48.20 N 121-48.78 W SIHERMAN CRATER FUMAROLAS
48-15.30 N 121-10.80 W SULPHUR CREEK HOT SPRINGS
48-15.5 N 121-10.5 W SULPHUR HOT SPRING

WHATCOM	0001301	90.
SNOHOMISH	0000755	60.0
SNOHOMISH	0000171	35.
SNOHOMISH	0000757	30.0
WHATCOM	0001302	R 110.
SNOHOMISH	0000767	30.0
SNOHOMISH	0000170	37.

APPENDIX D

Sources for the records in the GEOTHERM sample file for Washington. Each reference is preceded by its abbreviated form (called CODE) used in the sample file (Table 1). Entries in this computer-generated appendix are sorted by CODE.

CODE = BERRY AND OTHERS, 1980

BERRY, G. W., GRIM, P. J., AND IKELMAN, J. A., 1980, THERMAL SPRINGS LIST FOR THE UNITED STATES: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, KEY TO GEOPHYSICAL RECORDS DOCUMENTATION NO. 12, 59 P.

CODE = CAMPBELL AND OTHERS, 1970

CAMPBELL, K. V., MIERS, J. H., NICHOLS, B. M., OLIPHANT, JERRELYN, PYTLAK, SHIRLEY, RACE, R. W., SHAW, G. H., AND GRESENS, R. L., 1970, A SURVEY OF THERMAL SPRINGS IN WASHINGTON STATE: NORTHWEST SCIENCE, V. 44, NO. 1, P. 1-11.

CODE = MARINER AND OTHERS, 1982

MARINER, R. H., PRESSER, T. S., AND EVANS, W. C., 1982, CHEMICAL AND ISOTOPIC COMPOSITION OF WATER FROM THERMAL AND MINERAL SPRINGS OF WASHINGTON: U. S. GEOLOGICAL SURVEY OPEN-FILE REPORT 82-98, 18 P.

CODE = TABOR AND CROWDER, 1969

TABOR, R. W., AND CROWDER, D F., 1969, ON BATHOLITHS AND VOLCANOES--INTRUSION AND ERUPTION OF LATE CENOZOIC MAGMAS IN THE GLACIER PEAK AREA, NORTH CASCADES, WASHINGTON: U.S. GEOLOGICAL SURVEY PROFESSIONAL PAPER 604, 67 P.

CODE = WHITE AND WILLIAMS, 1975

WHITE, D. E., AND WILLIAMS, D. L., ED., 1975, ASSESSMENT OF GEOTHERMAL RESOURCES OF THE UNITED STATES - 1975: U.S. GEOLOGICAL SURVEY CIRCULAR 726, 155 P.