SUSITNA HYDROELECTRIC PROJECT

FEDERAL ENERGY REGULATORY COMMISSION PROJECT No. 7114

RECORDS MANAGEMENT SYSTEM FILE REFERENCE REPORT

FINAL REPORT

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ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

RECORDS MANAGEMENT SYSTEM

FILE REFERENCE REPORT

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SUSITNA RECORDS MANAGEMENT SYSTEM

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SUSITNA RECORDS MANAGEMENT SYSTEM

BACKGROUND INFORMATION

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This file reference report is intended to provide insight into the studies and explorations that were conducted on the Susitna Hydroelectric Project and to provide practical details on the records management and retrieval system that has been established by the Alaska Power Authority. The Susitna Records Management System was established to protect and preserve the many records that were produced as a result of the State's investment in the project and to allow public access to these records. This report will provide information on how the records can be accessed and where the records are stored.

The Records Management System is primarily comprised of reports and data gathered during the three and one half years the Harza-Ebasco Joint Venture worked on the project, but efforts were made to include information in the system that was generated by state and federal agencies and independent contractors as early as 1948. Thus, while the vast majority of the information in the system represents data generated since early 1983, the system also includes a considerable amount of feasibility work performed by Acres American Inc. between the years 1980 and 1983, the U.S. Army Corps of Engineers between 1974 and 1980, and the U.S. Bureau of Reclamation prior to 1974.

The system contains considerable scientific and engineering data which has significant value to Alaska. In this regard, not only are the data available to the State if it decides to pursue the project in some form in the future, but the project itself significantly advanced the present day knowledge of the biologic, geologic, and hydrometerlogic setting of Southcentral Alaska.

The Susitna Project as currently envisioned would consist of two large dams located on the Susitna River in the uplands above Talkeetna. The project

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would include an 870 foot high earth fill dam known as Watana and a 635 thin-arch dam at Devil Canyon. In tandem, the dams would be capable of producing 7.3 billion kilowatt hours of hydropower. Power would be brought to Fairbanks, Anchorage, and south to Seward and Homer by way of a high voltage transmission system which has already been partially constructed.

This two dam scheme is relatively new concept for developing the Susitna river potential. It was first proposed by the U.S. Army Corps of Engineers in their report to Congress in 1976. The Alaska Power Authority adopted the concept after extensive investigations in the early 1980's. Investigations prior to those of the Corps of Engineers suggested other measures for harnessing the river's potential. Kaiser Engineers proposed a three dam scheme and a quasi private-state development in 1975. Even earlier, the U.S. Bureau of Reclamation proposed a four dam scheme to include dams at Devil Canyon, Watana, Vee, and Denali. This proposal was actually transmitted to Congress in 1961, but the Secretary of Interior recommended no further action pending the Crops of Engineers findings on the massive Rampart hydropower proposal which was under active investigation at the time. Even earlier, studies by the Bureau of Reclamation in the latter 1940's suggested as many as twelve dams be built throughout the entire Susitna drainage basin. This latter study was only reconnaissance level, but it lead to the more detailed studies and eventually, the four dam recommendation.

The level of effort that has been performed on Susitna over the years has generally been supportive of the present day two dam scheme. The Bureau of Reclamation proposal for four dams was prefeasibility as a whole, but the geotechnical investigations associated with the Devil Canyon project were of feasibility level. This included an extensive core drilling program at Devil Canyon, and preliminary field investigations at the Denali damsite. The Corps of Engineers investigations were at a prefeasibility level but they did conduct confirmation drilling at the Watana dam site as well as some additional drilling on the right abutment of the Devil Canyon dam site. The Corps of Engineers investigations were comprehensive in that the Corps

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reviewed all of the dam configurations previously proposed by Kaiser, the Bureau of Reclamation, and others and ultimately concluded that the Devil Canyon/Watana combination, constructed in two stages - Watana first followed by Devil Canyon, was the economically and environmentally superior project. The Kaiser studies must be considered reconnaissance in scope as no new field work was conducted at their proposed damsites.

The Alaska Power Authority established jurisdictions over the project and contracted with Acres American Inc. in January of 1980 to review the economic and environmental feasibility of the project and to prepare the Federal Energy Regulatory Commission license application. This phase of the project was accomplished over a three year period and was funded by a \$35 million appropriation from the Alaska Legislature. In order to insure objectivity, the Governor's Office was given the task of independently conducting an alternative energy assessment. Battelle Pacific Northwest Laboratories, Inc. was hired to perform this assessment and they concluded that the Corps of Engineers two- dam plan was indeed the superior alternative for satisfying the long term energy needs of the Railbelt area.

The Board of Directors of the Power Authority voted in the Spring of 1982 to pursue the FERC license to construct the project and hired the joint venture of Harza Engineering Company and Ebasco Services, Inc. (Harza-Ebasco) in January 1983 to initiate project design. A change in administration and a new Board of Directors for the Power Authority curtailed design activities as the world price of oil began to soften. A drop in oil price would decrease the State's revenue and hence its ability to finance the project. Concurrently, economic development in the State began to slow, as did the projected need- for-power forecasts. Thus, Harza-Ebasco was relegated the job of coordinating the overall licensing process while the State continued to review its financing options during this period of economic coalescence. Design was indefinately postponed.

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Since the State's ability to finance the project as originally proposed was becoming questionable, Harza-Ebasco investigated alternatives to reduce the large initial expenditure required for the two-stage, two-dam project. The result of this investigation was a recommendation to construct the two-dams in three-stages rather than two. By constructing the original first stage Watana Dam is two stages rather than one, the initial investment required for the project would be less. The remaining stages would be constructed after the initial stage was operational and producing revenues. The three stage project would be constructed as follows: stage 1 - Watana at approximately three-quarters total height, stage 2 - Devil Canyon at full height; and stage 3 - raising Watana to full height. The three stage concept was accepted by the Power Authority and a draft amendment to the FERC License was prepared and submitted to FERC and state and federal agencies.

The Power Authority had intended that the project construction would be financed through a combination of Revenue Bonds and State equity. However, as the price of oil dropped, surplus revenues needed for the State's equity contribution began to disappear. In February 1986 the Power Authority issued a finance plan that concluded that use of the earnings from the Permanent Fund was the only significant amount of money available to fund the State's portion of the project. By this time the State had expended approximately \$100 million during the project's licensing phase on exhaustive biologic, geophysical, hydrological, and economic investigations.

Based on the results of the finance plan, the Power Authority shifted its focus to the much more inexpensive Devil Canyon project as the first stage development of the two-dam scheme. Devil Canyon was found to be economically attractive as a stand-alone project and more environmentally benign than the larger Watana project. In addition, more than 75 percent of the data previously collected for the Watana project was directly applicable for use on the Devil Canyon project.

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Despite the fact that the project represented the best long range energy option for the railbelt, in April 1986 the Board of Directors of the Power Authority decided to terminate the project. In doing so, the Power Authority directed Harza-Ebasco to prepare the Susitna project records for archives in such a manner that the State's \$135 million investment would be preserved to the maximum extent possible. To this end Harza-Ebasco developed the Susitna Records Management System.

With the reutilization of the information available in the system, it is estimated that it would be possible to secure a FERC license for the construction of the Devil Canyon project within a 30 month time frame. In view of the current load demand projections, the much larger Watana project would take longer to license. In any event, the vast majority of the information collected by the State, in consonance with the work previously performed by the Corps of Engineers and the Bureau of Reclamation, can be directly applied to a renewed effort to construct the Susitna hydropower project. Once constructed, the project will provide a renewable source of energy for Alaska well into the next century.

OVERVIEW OF SUSITNA FILE MANAGEMENT SYSTEM

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The Susitna Records Management System is composed of a group of independent files having a common computerized tracking and retrieval system. The Records Management System was developed through an extension of the independent filing/tracking systems utilized during the last three active years of the Project. The decision to continue the use of and expand the independent filing systems, rather than develop one integrated subject based file system, was based on a combination of budget concerns, the uncertainty in the types and numbers of records to be accumulated, the staff familiarity with the existing systems, and the benefits of utilizing the three years of data input, in substantially unchanged form. Although the use of separate filing systems for the various components of the Records System makes the identification and retrieval of information more cumbersome, the substantial cost savings associated with the separate filing systems dictated their use. However, even though speed and convenience have been sacrificed for cost, the computerized tracking/retrieval system will permit access to all Susitna records, although each set of files will have to be retrieved separately.

The Susitna Records Management System was designed to preserve the data and reports generated during the Susitna investigations and make them accessible to the State of Alaska and other interested parties. The Records System is composed of three distinct parts:

1. Hard copy,

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- 2. Microfiche, and
- 3. Computer index.

First is the hard copy. These are the reports, raw data, reduced data, field notes, computer printouts, prints, drawings, photographs, computer disks and tapes, and other forms of information compiled during the course of the investigations. Much of this information is one of a kind data that would be costly to reproduce if lost or discarded. The hard copy includes virtually all of the data in its original or finalized form that was created during the course of the Susitna investigations. Some of these data, in the form of completed reports, have been distributed to appropriate interested agencies and individuals.

The second element of the Records System is a microfiche backup of much of the original hard copy. Conceivably, it would be possible to microfiche virtually all of the hard copy in the system and then discard the hardcopy all together. However, in the event that the state decides to reactivate the Susitna investigations or elements of them, it would be extremely difficult and expensive for engineers to search the voluminous microfiche records and attempt to recreate appropriate sections. As such, the Power Authority has decided to microfiche as much of the data as practical and to store the hardcopy in the University of Alaska, Fairbanks archives for an indefinite period. The microfiche can be used to recreate distinct elements of data as needed by the state or independent researchers, or the majority of the system could be recreated in the event that the original hardcopy is lost or discarded in the future. Since the state will discard all but one copy of the documents and data in the system, the microfiche backup will be the most appropriate source from which reproductions of individual documents or portions of data can be created for the general public or other interested parties.

The third element of the record system is the overall index and retrieval system. This can best be described as a computerized listing of all of the data and documents in the system. In general, the computerized listing identifies what is in the system and provides the keys necessary for location and retrieval. This is the element that gives order to the entire volume of information being preserved. Because of the shear magnitude of data and reports generated during the course of the Susitna project, a computerized index and retrieval system is manditory for efficient system use.

In summary, the system includes the original hardcopy, microfiche backup for much of the hardcopy, and a computerized system for data tracking and retrieval of information.

The records control system utilized for the project is based on a computer softwear program known as Rbase 5000. Rb5000 allows for input and storage of uniquely identifiable information not itemized or stored by specific subject matter. Subject matter, however, can be accessed by a keyword, title, or subject matter search. In fact this is the primary difference between the Susitna Records Management System and a traditional library-type system. A typical library generally segments records by subject matter or author. This procedure facilities the limited search capability of the library. With the speed of the personal computer however, data which has been stored randomly can be easily searched thereby simplifying the task of structurally setting up the system. That is, data can be input without

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1 . . regard to sequence; the computer, then can identify the data in the system and provide the necessary location information.

Several systems were considered before the Rb5000 program was selected. Of paramount concern was the fact that there was limited time and budget to effectively prepare a large quantity of records for archives. Concurrently, there was a need for a system that could manage massive amounts of records without a substantial amount of upfront sorting and, along the same line, to utilize as much of the existing document control system as possible. In order to develop a conventional system based on sequential listing of author and title, it would have been necessary to individually cross reference every single document that would be going into the system. It would have required a substantially larger staff than was budgeted. Rb5000 allowed for the random input of files, thereby saving countless man-hours of sorting and cataloging and also allowed substantial use of the three plus years of data input into the Harza-Ebasco document control system. The Rb5000 program allows searches by any number of criteria to create hardcopy inventories of like subjects. As such, the main advantage of the system is that it was economical to implement. The main disadvantaged is that the subject matter is scattered throughout the system rather than in distinct locations for easy perusal and retrieval. On the other hand, there is little need for a researcher to confine a search to one physical location. The nature of the Susitna project is such that subject matter is discussed throughout such a broad range of documents that it would be difficult to physically locate individual subject matter in distinct locations. Thus the Rb5000 system is ideally suited to the Susitna Records Management System. An attempt has been made, however, to segment categories of documents for easy reference. A listing of the categories and status of the information in each is contained in the following section of this report.

The computerized retrieval system lends itself to segmenting blocks of records by individual categories. It is possible for instance to print out the titles of all documents contained in the system sorted by either date,

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author, document number, or some combination of these variables. The print out could then be reviewed manually to locate desired information. A manual search is cumbersome and does not utilize the obvious advantage of the available computerized location and retrieval system. Its main advantages would be for individuals very familiar with the records system and for transmitting information to inquiring parties interested in a complete or specific listing of information in the system or system subset. Conversely, it may be desirable to produce copies of the titles of documents with very distinct subject constraints. As an example, the Power Authority may wish to make available a print out of information that would include all moose studies conducted by the Alaska Department of Fish and Game during 1985. The computer would search all document titles and keywords for moose, for the year in which the studies were conducted, and by the author. The output would be a subset of the entire record system, but it would be of specific interest to certain parties.

The Susitna Records Management System is designed for use on the IBM PC or compatible system. The user of the system needs only a basic knowledge of the DOS operating system and how to enter the basic commands to initiate the Rb5000 system. The Rb5000 system itself is user friendly and is easy to use. Step by step instructions are provided on the use of the system in later sections of this report.

Principal file categories, contents, and location

In order to facilitate the storage and retrieval process, the files contained in the Susitna Records Management System have been divided into seven categories. The categories are based on physically similar types of documents. These files categories are as follows:

Documents

Correspondence

Data/Information FERC Requests/Responses Photographs Maps/Drawings Report Originals

Appendix A contains a summary of the location and disposition of records in the system as well as a contact list for the repositories. The table indicates where the hardcopy is located for each of the seven file categories and where microfiche is located. It also indicates which agencies maintain the Rb5000 sofware and copies of the database files.

A brief description of the contents of the data in the seven file categories is as follows:

<u>Documents</u>. This file category contains books, bound reports, or other information bound in a report format. In some instances a piece of correspondence may have been cited as a reference in a report. In such cases the correspondence was bound in a hard cover and was processed as any other 'formal' report (of course, the piece of correspondence also would be contained in the correspondence file category). The materials contained in this category are either project reports (those developed directly from project related activities), reports used as references in various project reports, or general reference materials.

The main repository of this file is the orignial microfiche in the Juneau archives. The Power Authority library, however, contains a complete hard copy set as well as a microfiche set and the University of Alaska, Fairbanks contains a partially complete hard copy set. In addition, many of the documents contained in this file can be also be found in the various libraries throughout the state. All of the documents in this file (with the exception of standard hardbound reference texts) have been microfilmed.

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<u>Correspondence</u>. Included in this category are all letters, letter reports, or other forms of communication in which Harza-Ebasco was a party or was copied. This category has been totally microfilmed and the hardcopy destroyed. Microfiche copies of this information will be retained at the Power Authority library and the State Records Center in Juneau.

<u>Data/Information</u>. This file contains all raw data, reduced data, calculations, cost estimates, field log books, subcontractor correspondence, report backup, and all other forms of data. The data medium consists of magnetic tapes, floppy disks, computer printouts, hand written notes and logs, and basic engineers calculations. It is one of a kind information that is on loan from the Juneau Archives and is being stored at the University of Alaska, Fairbanks. Most of the information in this file has been microfilmed (magnetic storage media, photos, etc. were, of course, not possible to film).

FERC Requests/Responses. This file contains all of the FERC requests for supplemental information and the Power Authority's responses. This is a very important file in that it contains the outstanding FERC questions and draft responses that were pending when the project was terminated. This file has been totally microfilmed for retention at both the Power Authority library and the Juneau Records Center.

<u>Photographs</u>. This file contains aerial photography of the Susitna River and of the proposed transmission line routes. The hardcopy, is being stored at the University of Alaska, Fairbanks, on loan from the Juneau Archives, while the negatives are being stored in the climatically controlled vault of North Pacific Aerial Survey in Anchorage. The negatives generated for vegetative mapping are being stored by the U.S. Geological Survey (NICI).

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s **gen⊅ni**g. i i <u>Maps/Drawings</u>. This file contains all of the original drawings and mylars of engineering drawings and land ownership maps. The originals are stored at the University of Alaska, Fairbanks, on loan from the Juneau Archives. The original film is in the State Archives in Juneau. The Power Authority maintains the drawings on aperture cards.

<u>Report Originals</u>. This file includes the camera ready copy of project reports and distribution information. This file was not microfilmed. The hardcopy of this file is being retained at the Records Center in Juneau. In addition, the computer tapes and engineering drawing negatives are also retained at the Records Center.

All of the information included in the Records System is subdivided into one of these seven categories. This includes all of the Harza-Ebasco generated records as well as that of their subcontractors. To the extent that the information was readily available, the system also includes various categories of records from the Acres American, Inc. feasibility studies, and from previous studies by the U.S. Corps of Engineers and the U.S. Bureau of Reclamation.

The only Susitna related records that are not in the system are the Power Authority's correspondence files, and restricted archaeological documents. The file code index for the correspondence files may be input to the system at a later date. The archaeological information not in the system consists mostly of maps, reports on sites of historic significance, and artifacts. This information is restricted in accordance with Federal Law (Federal Archaeological Resources Protection Act 1979, Section 9A). Approval to access this information must be obtained from the Chief of the Office of History/Archaeology, Department of Natural Resources, Anchorage, Alaska.

Except as noted above, the Susitna records have been allocated to storage in one of three locations. Information intended for storage in Anchorage would

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be located in the Power Authority's library. In fact this is the main location from which interested parties can gain information on all aspects of the disposition and location of Susitna related information. In addition to the Power Authority library, soil and core samples will be stored in a Power Authority warehouse to be located in Eagle River.

Information stored in Fairbanks is housed in the Rasmuson Library at the University of Alaska under the Polar Regions Archive section. The primary file category stored in the Rasmuson Library is the Data/Information file. This file contains massive volumes of original data that it is hoped can contribute to the research and educational needs of the University system. Hard copies of a majority of the project reports were also sent to the University Library.

Records located in Juneau are stored in either the State Archives system or in the State Records Center as appropriate. Those records contained in the State Archives are available to the general public although the information cannot be removed from the premises. Information contained in the Records Center is not available to the general public, however, individual requests for access to the data can be made to the Power Authority for their consideration. Records stored in the State Records Center are contained in cardboard boxes for a specified shelf life. At the end of a specified number of years the records will be destroyed unless the Power Authority requests that the retention period be extended.

COMPUTER OPERATING SYSTEM

System Overview

As discussed in a previous section, the database program chosen for the Susitna Records Management System is Rbase 5000. This program runs on an IBM or IBM compatible personal computer and requires approximately 15 MB of

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disk space for the program and data associated with the Susitna Records Management System.

The Rbase 5000 program has a two-level hierachy structure comprised of: 1) Databases and 2) Tables. At the first level, the Susitna Records Management System has been divided into two databases: DOCCONA and DOCCONB. Database DOCCONA contains those records which are anticipated to be accessed or searched frequently, by a wide range of researchers. Database DOCCONB contains those records of limited general interest but of importance to the Power Authority. By dividing the records into these two databases, the Power Authority can more easily and economically distribute Susitna data of widespread interest to selected repository locations.

At the second level, the Susitna Records Management System is divided into several Tables under each database. As previously discussed, the files in the Records Management System were divided into seven categories. Each of the seven categories has a corresponding Table in one of the two databases. Actually, the correspondence category has five corresponding Tables - one for each year 1983 through 1987. The remaining categories have only one corresponding table each. The following are the tables associated with each of the databases:

DATABASE TABLE

DOCCONA

DOCLOG (Documents) DATA (Data/information) PHOTOS (Aerial Photographs) DWGS (Maps and Drawings)

DATABASE	TABLE
DOCCONB	CORLOG83 (1983 Correspondence)
	CORLOG84 (1984 Correspondence)
	CORLOG85 (1985 Correspondence)
	CORLOG86 (1986 Correspondence)
	CORLOG87 (1987 Correspondence)
	FERC (FERC Requests and Power Authority Responses)
	ORIGINL (Report Originals)
	ACRONYMS (Acronym listing)
	KEYWORDS (Keyword listing)

The Rbase 5000 program is a relational information management type program which stores information within a Table in defined columns and rows. This allows a researcher to sort or select data based on defined column and row constraints. The information retrieval command to define these constraints and select from a table is composed of four parts:

- 1. Select
- 2. From

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- 3. Sort (Optional)
- 4. Where (Optional)

The format for this command is as follows:

SELECT ____ FROM ____ SORTED BY ____ WHERE ____

The SELECT statement identifies which columns of data are desired. The FROM statement identifies which Table is being queried. The SORTED BY statement identifies the order in which the data are to appear. This statement is optional; if it is not used, the data will appear in the order it exists in the database. The WHERE statement identifies the specific data being requested. This statement is also optional; if it is not used, all of the data in the table will be selected. Specific uses of the information retrieval command will be discussed in detail in following sections.

The most cumbersome step in the process of developing an information retrieval command is formatting the SELECT statement. This is especially true when repetitive searches are required to isolate information. To eliminate the need to redefine the SELECT statement for each retrieval command, Rbase has a provision for developing a predefined SELECT statement. This predefined SELECT statement is called a REPORT and is permanently stored in the database. In addition to the advantage of having a predefined SELECT statement, the REPORT also permits a title, date, page numbering, and a paginated output. This provides a consistent format for presenting the results of a search or other inquiry. A listing of the REPORTS associated with each Table in the Susitna Records Management System is shown in Appendix B. The formats for these REPORTS are shown in Appendix C.

Database Searches - General

As discussed above, selecting and formating data is accomplished using an information retrieval command. To simplify access to the information in the Susitna Records Management System using this command, REPORTS have been set up which contain predefined SELECT statements. Although a REPORT will automatically provide the SELECT statement and format the output, it will not, in itself, identify specific data within a database table - this requires a WHERE statement. In a WHERE statement one or more columns are targeted and the search constraints defined. As an example:

WHERE DATE** EQUALS 870101

targets the column DATE** and limits the data selected to those rows where the date equals January 1, 1987.

Although there are a significant number of possible data request formats, the following WHERE statement target columns are anticipated to comprise the primary database queries.

TABLE

TARGET COLUMN

DOCLOG (Documents)

Author Title Keywords

DATA

Company Descript (Description) Keyword

CORLOG (Correspondence)

Author Recipien (Recipient) Subject Task (Sequence)

Descript (Description)

DRAWINGS

FERC

PHOTOS

Title

Reqdate (Request Date) Subject Keywords

ORIGINL (Report Originals) DCNO ** (Document Number)

Although these target columns will be the ones most commonly searched and are discussed in more detail in this report, the RBase 5000 program allows for substantial variability in search requests. It provides for this variability through the use of multiple WHERE statements. For example, the

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first search listed above (asking for a particular author from the Table DOCLOG) can be constrained further by adding a WHERE statement for the DATE** column narrowing the search to a particular year. Multiple WHERE statements will be discussed in more detail in later sections.

In summary, the following general command format is used for most searches:

PRINT (REPORT) SORTED BY WHERE

REPORT is a predefined SELECT statement for a particular Table and has a predefined output format (see Appendix C for the REPORT formats)

SORTED BY is an option. It is used to present the data in a specified order (eg. by number, title, author, date)

WHERE is also an option. It is used to limit the search to a specified data type and range (eg. date equals ____, author contains)

If no WHERE statement is used, all of the data in the associated Report Table will be selected and printed.

If no SORT statement is used, the data output will be in the order it appears in the computer file.

In defining the WHERE statement, one of two conditions will be used, "EQ" (equals) or "CONTAINS". When limiting a search by an integer column (eg. date, document number) the WHERE statement is defined using EQ. When limiting a search by a text column (eg. title, keyword) the WHERE statement is defined using CONTAINS. To determine whether the data in a column is an integer or text refer to the column listing for the specific Table being searched in Appendix D. When the CONTAINS statement is used, the computer will search for the selected string of characters. The string does not have to be a complete word or group of words. The computer will try to match the string whether a single letter or a complete sentence. For example, to search the document database for all reports which contain GEO in the title:

PRINT DOC2 SORTED BY DCNO** WHERE TITLE CONTAINS GEO

The results of this search would include all reports sorted by document number (SORTED BY DCNO**) which contain the characters GEO in the title column (WHERE TITLE CONTAINS GEO). The results of this search would include listings which contain geotechnical, geologic, geology, geometrical, geohydrology, etc.

The EQUALS statement is used with integers and the results of the search provide only those listings which match exactly. For example, to search the document database for all reports published in May 1985:

PRINT DOC2 SORTED BY DCNO** WHERE DATE** EQ 850500

The results of this search would list only those reports where the date equals 850500. If there were other reports which had dates of 850517, 850501, etc., the listings would not be selected because the dates do not equal 850500. Note the symbol "=" can also be used in place of EQ.

When conducting multiple WHERE statement searches, the WHERE statements are separated by an AND or an OR. With the AND separator, both WHERE statements must be satisfied for data selection while the OR separator selects data on either WHERE statement condition. For example, to search for all reports written in May 1985:

PRINT DOC2 SORTED BY DCNO** WHERE DATE** GT 850430 AND DATE** LT 850601

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The results of this search would include all reports sorted by document number (SORTED BY DCNO**) where the date is greater than (GT) April 30, 1985 and less than (LT) June 1, 1985 (WHERE DATE** GT 850430 AND DATE** LT 850601)

Searches are conducted by requesting information from any column in a specified Table. Each column has a name, type (integer or text) and field length. See Appendix D for column definitions.

Database Searches - System Commands

Details on how to conduct the "primary" searches previously listed are presented below. The command language to be entered into the computer is shown in ALL CAPS; any words or information in lower case characters or in initial caps only should not be entered into the computer. After a command is typed on the screen, a carriage return (<CR>) is used to initiate the command.

ENTER RBASE

- 1. Power up machine, monitor, and printer; Autoexec program will initiate operating system and menu program.
- At the Menu screen (C prompt) type in R5K <CR>
 The RBase logo and command line will appear.
- 3. To enter the RBase command mode type R <CR> You will now see an R prompt rather than a C prompt.

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- 4. To open either database DOCCONA or DOCCONB type in one of the following commands:
 - a. OPEN DOCCONA <CR>

b. OPEN DOCCONB <CR>

The system will indicate that the database exists. You are now in the selected database and ready for conducting information searches.

EXIT RBASE

When database inquiries are completed, use the following procedure to exit Rbase.

1. Type EXIT <CR>

This will take you back to the Rbase logo and command line.

2. Press the ESC key to return to the MENU. ALWAYS EXIT THE RBASE 5000 PROGRAM PRIOR TO TURNING THE COMPUTER OFF.

SEARCH FOR DOCUMENTS BY AUTHOR

The following procedure can be utilized to search the Table DOCLOG (documents) by the column AUTHOR. The Table DOCLOG is searched using the Report labelled DOC2. The data output format for DOC2 is shown in Appendix C.

1. Type OPEN DOCCONA <CR> (if not already open)

Type OUTPUT PRINTER <CR>

This will send the results of the search directly to the printer. To save the results of the search in a file for later analysis, type OUTPUT FILE.RBS <CR>, where FILE is any file name desired. To print the file, enter DOS and type PRINT FILE.RBS <CR>. When the file is no longer needed, enter DOS and type DEL FILE.RBS <CR> to remove the file.

3. Type PRINT DOC2 SORTED BY DCNO** WHERE AUTHOR CONTAINS XYZ <CR>

This search will result in a listing in document number order (SORTED BY DCNO**) of all reports within the Table written by the author XYZ (WHERE AUTHOR CONTAINS XYZ). If you are unsure of the correct spelling of the author, check the acronym listing in Appendix E to ensure proper entry. As an added guide to help locate data by author, a listing of the major contractors and subcontractors who participated in the Susitna Project and a keyword or two describing their area of work is included as Appendix F. If no sort clause is used, the author listing order will be as existing in the database.

Type OUTPUT SCREEN <CR>

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SEARCH FOR DOCUMENTS BY SUBJECT MATTER

TITLE. The following procedure can be utilized to search the Table DOCLOG (documents) by subject content in the column TITLE. The Table DOCLOG is searched using the Report labelled DOC2. The data output format for DOC2 is shown in Appendix C.

1. Type OPEN DOCCONA <CR> (if not already open)

2. Type OUTPUT PRINTER <CR>

This will send the results of the search directly to the printer. To save the results of the search in a file for later analysis, type OUTPUT FILE.RBS <CR>, where FILE is any file name desired. To print the file, enter DOS and type PRINT FILE.RBS <CR>. When the file is no longer needed, enter DOS and type DEL FILE.RBS <CR> to remove the file.

3. Type PRINT DOC2 SORTED BY DCNO** WHERE TITLE CONTAINS XYZ <CR>

This printout will result in a listing in document number order (SORTED BY DCNO**) of all reports in the Table which contain XYZ in the title (WHERE TITLE CONTAINS XYZ). For example, to obtain all reports which contain moose in the title:

Type PRINT DOC2 SORTED BY DCNO** WHERE TITLE CONTAINS MOOSE <CR>

If more than one word is used in the title search (eg. Devil Canyon) the search request must be placed in quotes. For example:

Type PRINT DOC2 SORTED BY DCNO** WHERE TITLE CONTAINS "DEVIL CANYON" <CR>

4. Type OUTPUT SCREEN <CR>

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KEYWORD. The following procedure can be utilized to search the Table DOCLOG (documents) by the column KEYWORDS. The table DOCLOG is searched using the Report labelled DOC2. The data output format for DOC2 is shown in Appendix C. A listing of keywords is shown in Appendix G.

- 1. Type OPEN DOCCONA <CR> (if not already open)
- 2. Type OUTPUT PRINTER <CR>

This will send the results of the search directly to the printer. To save the results of the search in a file for later analysis, type OUTPUT FILE.RBS <CR>, where FILE is any file name desired. To print the file, enter DOS and type PRINT FILE.RBS <CR>. When the file is no longer needed, enter DOS and type DEL FILE.RBS <CR> to remove the file.

3. Type PRINT DOC2 SORTED BY DCNO** WHERE KEYWORDS CONTAINS XYZ <CR>

This search will result in a listing in document number order (SORTED BY DCNO**) of all reports within the Table which contain the keyword XYZ (WHERE KEYWORDS CONTAINS XYZ). If you are unsure of the correct spelling of the keyword, check the keyword listing in Appendix G to ensure proper entry. If no sort clause is used, the keyword listing order will be as existing in the database.

4. Type OUTPUT SCREEN <CR>

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SEARCH FOR DOCUMENTS USING MULTIPLE WHERE STATEMENTS

<u>AND</u>. The following procedure can be utilized to search the Table DOCLOG (documents) by multiple subject requests (Multiple WHERE statements) using any column or combination of columns. The Table DOCLOG is searched using the Report labelled DOC2. The data output format for DOC2 is shown in Appendix C.

1. Type OPEN DOCCONA <CR> (if not already open)

2. Type OUTPUT PRINTER <CR>

This will send the results of the search directly to the printer. To save the results of the search in a file for later analysis, type OUTPUT FILE.RBS <CR>, where FILE is any file name desired. To print the file, enter DOS and type PRINT FILE.RBS <CR>. When the file is no longer needed, enter DOS and type DEL FILE.RBS <CR> to remove the file.

3. Type PRINT DOC2 SORTED BY DCNO** WHERE AUTHOR CONTAINS ABC AND TITLE CONTAINS XYZ <CR>

This search will result in a listing in document number order (SORTED BY DCNO**) of all reports within the Table written by the author ABC (WHERE AUTHOR CONTAINS ABC) and where the title contains XYZ (WHERE TITLE CONTAINS XYZ).

4. Type OUTPUT SCREEN <CR>

<u>OR</u>. The following procedure can be utilized to search the Table DOCLOG (documents) by multiple subject requests (Multiple WHERE statements) using any column or combination of columns. The Table DOCLOG is searched using the Report labelled DOC2. The data output form for DOC2 is shown in Appendix C.

-25-

1. Type OPEN DOCCONA <CR> (if not already open)

2. Type OUTPUT PRINTER <CR>

This will send the results of the search directly to the printer. To save the results of the search in a file for later analysis, type OUTPUT FILE.RBS <CR>, where FILE is any file name desired. To print the file, enter DOS and type PRINT FILE.RBS <CR>. When the file is no longer needed, enter DOS and type DEL FILE.RBS <CR> to remove the file (this is done while in DOS).

3. Type PRINT DOC2 SORTED BY DCNO** WHERE TITLE CONTAINS "UVW XYZ" OR TITLE CONTAINS ABC <CR>

This search will result in a listing in document number order (SORTED BY DCNO**) of all reports within the Table whose title contains UVW XYZ (TITLE CONTAINS "UVW XYZ") or ABC (TITLE CONTAINS ABC). If no sort clause is used, the title listing order will be as existing in the database.

4. Type OUTPUT SCREEN <CR>

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SEARCH FOR DATA BY SUBJECT MATTER

<u>COMPANY</u>. The following procedure can be utilized to search the Table DATA (information/data) by the column COMPANY. As an added guide to help locate data by company, a listing of major contractors and subcontractors who participated in the Susitna Project and a keyword or two describing their area of work is included as Appendix F. The Table DATA is searched using the Report labelled DATA2. The data output format for DATA2 is shown in Appendix C.

- 1. Type OPEN DOCCONA <CR> (if not already open)
- 2. Type OUTPUT PRINTER <CR>

This will send the results of the search directly to the printer. To save the results of the search in a file for later analysis, type OUTPUT FILE.RBS <CR>, where FILE is any file name desired. To print file, enter DOS and type PRINT FILE.RBS <CR>. When the file is no longer needed, enter DOS and type DEL FILE.RBS <CR> to remove the file.

3. Type PRINT DATA2 SORTED BY BOX-NO FILE-NO WHERE COMPANY CONTAINS XYZ <CR>

This search will result in a listing sorted by box number and subsorted by file number (SORTED BY BOX-NO FILE-NO) of the data within the Table which contain the company XYZ (WHERE COMPANY CONTAINS XYZ).

4. Type OUTPUT SCREEN <CR>

KEYWORD. The following procedure can be utilized to search the Table DATA (information/data) by the column KEYWORD. The Table DATA is searched using the Report labelled DATA2. The data output format for DATA2 is shown in Appendix C. A listing of keywords is shown in Appendix G.

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- 1. Type OPEN DOCCONA <CR> (if not already open)
- 2. Type OUTPUT PRINTER <CR>

This will send the results of the search directly to the printer. To save the results of the search in a file for later analysis, type OUTPUT FILE.RBS <CR> where FILE is any file name desired. To print the file, enter DOS and type PRINT FILE.RBS <CR>. When the file is no longer needed, enter DOS and type DEL FILE.RBS <CR> to remove the file.

3. Type PRINT DATA2 SORTED BY BOX-NO FILE-NO WHERE KEYWORD CONTAINS XYZ <CR>

This printout will result in a listing sorted by box number and subsorted by file number (SORTED BY BOX-NO FILE-NO) of all data in the Table which contain XYZ in the keywords (WHERE KEYWORD CONTAINS XYZ). For example, to obtain all data which contain borehole as a keyword:

Type PRINT DATA2 SORTED BY BOX-NO FILE-NO WHERE KEYWORD CONTAINS BOREHOLE <CR>

If more than one word is used in the keyword search (eg. "computer run") the search request is placed in quotes.

Type PRINT DATA2 SORTED BY BOX-NO FILE-NO WHERE KEYWORD CONTAINS "COMPUTER RUN" <CR>

4. Type OUTPUT SCREEN <CR>

SEARCH FOR DATA USING MULTIPLE WHERE STATEMENTS

<u>OR</u>. The following procedure can be utilized to search the Table DATA for subject matter that may appear in two separate columns (MULTIPLE WHERE CLAUSES). The Table DATA is searched using the Report labelled DATA2. The data output form for DATA2 is shown in Appendix C.

1. Type OPEN DOCCONA <CR> (if not already open)

2. Type OUTPUT PRINTER <CR>

This will send the results of the search directly to the printer. To save the results of the search in a file for later analysis, type OUTPUT FILE.RBS <CR> where FILE is any file name desired. To print a file, enter DOS and type PRINT FILE.RBS <CR>. When the file is no longer needed, enter DOS and type DEL FILE.RBS <CR> to remove the file.

3. Type PRINT DATA2 SORTED BY BOX-NO FILE-NO WHERE KEYWORD CONTAINS XYZ OR DESCRIPT CONTAINS XYZ <CR>

This printout will result in a listing sorted by box number and subsorted by file number (SORTED BY BOX-NO FILE-NO) of all data within the table which contain the keyword XYZ or contain XYZ in the description (WHERE KEYWORDS CONTAINS XYZ OR DESCRIPT CONTAINS XYZ). If you are unsure of the correct spelling of a keyword or description, check the keyword listing to ensure proper entry. If no sort clause is used, the listing order of the output will be as existing in the database.

4. Type OUTPUT SCREEN <CR>

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SEARCH FOR CORRESPONDENCE BY SUBJECT MATTER

The following procedure can be utilized to search the table CORLOG (correspondence) by the column SUBJECT. The Table CORLOG is searched using the Report labelled CORR (insert applicable year to be searched). The data output formats for CORR are shown in Appendix C.

1. Type OPEN DOCCONB <CR> (if not already open)

2. Type OUTPUT PRINTER <CR>

This will send the results of the search directly to the printer. To save the results of the search in a file for later analysis, type OUTPUT FILE.RBS <CR>, where FILE is any file name desired. To print the file, enter DOS and type PRINT FILE.RBS <CR>. When the file is no longer needed, enter DOS and type DEL FILE.RBS <CR> to remove the file.

3. Determine report to be used. Report options are:

REPORT

TABLE

CORR83	CORLOG83	Correspondence	log for	1983
CORR84	CORLOG84	Correspondence	log for	1984
CORR85	CORLOG85	Correspondence	log for	1985
CORR86	CORLOG86	Correspondence	log for	1986
CORR87	CORLOG87	Correspondence	log for	1987

4. Type PRINT CORR83 SORTED BY LTNO** WHERE SUBJECT CONTAINS XYZ <CR>

This search will result in a listing of correspondence for the year 1983 in letter number order (SORTED BY LTNO**) of all correspondence within the Table which contain the subject XYZ (WHERE SUBJECT CONTAINS

-30-

XYZ). If no sort clause is used, the subject listing order will be as existing in the database.

5. Type OUTPUT SCREEN <CR>

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SEARCH FOR CORRESPONDENCE BY AUTHOR

The following procedure can be utilized to search the Table CORLOG (correspondence) by the column AUTHOR. The Table CORLOG is searched using the Report labelled CORR (insert applicable year to be searched). The data output formats for CORR are shown in Appendix C.

1. Type OPEN DOCCONB <CR> (if not already open)

2. Type OUTPUT PRINTER <CR>

This will send the results of the search directly to the printer. To save the results of the search in a file for later analysis, type OUTPUT FILE.RBS <CR>, where FILE is any file name desired. To print the file, enter DOS and type PRINT FILE.RBS <CR>. When the file is no longer needed, enter DOS and type DEL FILE.RBS <CR> to remove the file.

3. Determine report to be used. Report options are:

REPORT

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TABLE

CORR83	CORLOG83	Correspondence	log	for	1983
CORR84	CORLOG84	Correspondence	log	for	1984
CORR85	CORLOG85	Correspondence	log	for	1985
CORR86	CORLOG86	Correspondence	log	for	1986
CORR87	CORLOG87	Correspondence	log	for	1987

4. Type PRINT CORR84 SORTED BY LTNO** WHERE AUTHOR CONTAINS XYZ <CR>

This printout will result in a listing of correspondence for the year 1984 in letter number order (SORTED BY LTNO**) where XYZ is the author (WHERE AUTHOR CONTAINS XYZ).

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For example, to obtain all correspondence from the year 1985 where the author is Ferguson:

Type PRINT CORR85 SORTED BY LTNO** WHERE AUTHOR CONTAINS FERGUSON <CR>

5. Type OUTPUT SCREEN <CR>

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SEARCH FOR CORRESPONDENCE BY MULTIPLE CLAUSE TASK SEQUENCE

The following procedure can be utilized to search the Table CORLOG (correspondence) by the columns TN, STN, ITN, and SIN (collectively referred to as the task sequence). The file code index shown in Appendix H identifies the task sequence numbers. Since the task sequence numbers in the file code index essentially identify subject categories, this search procedure is a subject search of the correspondence files. The Table CORLOG is searched using the Report labelled CORR____ (insert applicable year to be searched). The data output formats for CORR____ are shown in Appendix C.

1. Type OPEN DOCCONB <CR> (if not already open)

2. Type OUTPUT PRINTER <CR>

This will send the results of the search directly to the printer. to save the results of the search in a file for later analysis, type OUTPUT FILE.RBS <CR>, where FILE is any file name desired. To print the file, enter DOS and type PRINT FILE.RBS <CR>. When the file is no longer needed, enter DOS and type DEL FILE.RBS <CR> to remove the file.

3. Determine report to be used. Report options are:

REPORT TABLE

CORR83	CORLOG83
CORR84	CORLOG84
CORR85	CORLOG85
CORR86	CORLOG86
CORR87	CORLOG87

4. Type PRINT CORR83 SORTED BY LTNO** WHERE TN = _ AND STN = _ AND ITN = _ << CR>

This printout will result in a listing of correspondence for the year 1983 in letter number order (SORTED BY LTNO**) where the task sequence matches the order requested (WHERE TN = _____AND STN = ____AND ITN = ____). For example, to obtain all correspondence for the year 1985 for file code 2.3.6:

Type PRINT CORR85 SORTED BY LTNO** WHERE TN = 2 AND STN = 3 AND ITN = 6 <CR>

5. Type OUTPUT SCREEN <CR>

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APPENDIX A

SYSTEM STORAGE BY FILE

	Location								
	Anchorage	Jun	eau	Fairbanks					
File Contents	APA	ARCH	REC	UAF					
Documents									
Hardcopy	Х			X (part.)					
Microfilm	Х	Х		X					
Rb 5000	X	Х		Х					
Correspondence									
Hardcopy									
Microfilm	Х		х						
Rb5000	Х		Х						
Data/Information									
Hardcopy				x					
Microfilm	х	x							
Rb 5000	X	X	Ì	Х					
FERC Requests/Responses									
Hardcopy			x						
Microfilm	x		x						
Rb 5000	X		X						
Photographs									
Hardcopy				x					
Microfilm				**					
Rb5000	Х	Х		X					
Maps/Drawings									
Hardcopy				x					
Aperture Cards	x	X*							
Rb 5000	X	X		Х					
Report Originals									
Hardcopy			x						
Microfilm									
Rb 5000	Х		х						

Legend:

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APA: Alaska Power Authority

Arch: State Archives

Rec: State Records Center

Notes:

Photograph negatives stored at North Pacific Areal Survey Vegetative mapping negatives to be stored by U.S. Geological Survey (NICI)

* Juneau will have reel film for the maps and drawings

REPOSITORY CONTACT LIST

- State of Alaska, Department of Education Archives and Record Management 141 Willoughby Avenue Juneau, Alaska 99801
 - Records Analyst Contact: (907) 465-2276
 - Mail: P.O. Box C-0207 Juneau, Alaska 99811
- Alaska and Polar Regions Department 0 Elmer E. Rasmuson Library 310 Tanana Drive University of Alaska - Fairbanks Fairbanks, Alaska 99775-1005

Contact: Archivist (907) 474-7261

Alaska Power Authority 0 701 East Tudor Road P.O. Box 190869 Anchorage, Alaska 99519-0869

> Contact: Librarian (907) 561-7877

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APPENDIX B

LISTING OF REPORTS

DATABASE - DOCCONA

REPORT	TABLE	DESCRIPTION
DA T A1	DATA	Listing of Data/information files showing all columns associated with table DATA sorted by box number and file number*
DATA2	DATA	Listing of results from a data/information search showing all columns associated with table DATA sorted by box number and file number*
DOC1	DOCLOG	Document listing all columns associated with table DOCLOG sorted by document number or author
DOC2	DOCLOG	Listing of results of a document search sorted by document number or author
DWGS1	DWGS	Listing of drawing files (including maps) sorted by box number and drawing number, date, source, and title
PHOT01	PHOTOS	Listing of aerial photographs and slides sorted by box number and file number

* The structure of both DATA1 and DATA2 are identical, the only difference between the two reports is the title. DATA2 is used to present the results of a search. DATA1 is used for a formal printout of the entire table contents.

DATABASE - DOCCONB

REPORT	TABLE	DESCRIPTION
ACR01	ACRONYMS	Listing of all acronymn affiliations in either database sorted alphabetically
CORR83	CORLOG83	Listing of all project-related correspondence files during the year 1983 sorted by letter number
CORR84	CORLOG84	Listing of all project-related correspondence files during the year 1984 sorted by letter number

-1-

REPORT TABLE DESCRIPTION

CORR85 CORLOG85 Listing of all project-related correspondence files during the year 1985 sorted by letter number

- CORR86 CORLOG86 Listing of all project-related correspondence files during the year 1986 sorted by letter number
- CORR87 CORLOG87 Listing of all project-related correspondence files during the year 1987 sorted by letter number
- FERC1 FERCH Listing of all FERC requests/responses sorted by request date
- KEY KEYWORDS Listing of keyword file sorted alphabetically

ORIGINL1 ORIGINL Listing of report originals file available for reprinting showing document number, author, title and report date



APPENDIX C

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REPORT FORMATS

SUSITNA HYDROELECTRIC PROJECT DATA/INFORMATION FILES

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SUSITNA HYDROELECTRIC PROJECT RESULTS OF DATA/INFORMATION SEARCH

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SUSITNA HYDROELECTRIC PROJECT RESULTS OF DOCUMENT SEARCH

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DOCUMENT NUMBER	AUTHOR	TITLE	DATE	KEYWORDS

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SUSITNA HYDROELECTRIC PROJECT DRAWINGS FILES

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SUSITNA HYDROELECTRIC PROJECT AERIAL PHOTOGRAPH FILES

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DESCRIPTION

SUSITNA HYDROELECTRIC PROJECT ACRONYM AFFILIATIONS

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LTNO	TN	STN	ITN	SIN	DATELT	DTRECV	AUTHOR	ATHRAFFL	RECIPINT	RECPAFL	SUBJECT

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SUSITNA HYDROELECTRIC PROJECT KEYWORD FILE

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KEYWORDS

SUSITNA HYDROELECTRIC PROJECT REPORT ORIGINALS FILE

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NUMBER	AUTHOR	TITLE	DATE
DOCUMENT			REPORT



APPENDIX D

STRUCTURE OF REASE TABLES

DATABASE - DOCCONA (DOCUMENT CONTROL A)

1. Table - DOCLOG (Document Log)

Column Name		Туре		Length
1	DCNO**	INTEGER	1	value(s)
2	AUTHOR	TEXT	12	characters
3	TITLE	TEXT	150	characters
4	PUBLISHE	TEXT	12	characters
5	DATE**	INTEGER	1	value(s)
6	PAGES	INTEGER	1	<pre>value(s)</pre>
7	KEYWORDS	TEXT	60	characters
8	LOCATION	TEXT	60	characters
9	DISTRIBU	TEXT	60	characters
10	REFER	TEXT	60	characters
11	RESTRICT	TEXT	60	characters

2. Table - DATA

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Column Name	Type	Length		
1 BOX-NO	INTEGER	1 value(s)		
2 FILE-NO	INTEGER	1 value(s)		
3 COMPANY	TEXT	12 characters		
4 DESCRIPT	TEXT	180 characters		
5 KEYWORD	TEXT	72 characters		

3. Table - PHOTOS (Aerial Photographs & Slides)

Column Name	Туре	Length
1 BOX-NO	INTEGER	1 value(s)
2 FILE-NO	INTEGER	1 value(s)
3 DESCRIPT	TEXT	180 characters

4. Table - DWGS (Project Drawings)

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Column Name	Type	Length
1 BOX-NO	INTEGER	1 value(s)
2 DWG-NO	TEXT	12 characters
3 DATE**	INTEGER	1 value(s)
4 SOURCE	TEXT	36 characters
5 TITLE	TEXT	150 characters

DATABASE - DOCCON B (DOCUMENT CONTROL B)

1. Table - CORLOG83 (Correspondence 1983)

Co	olumn		
Name		Type	Length
1	LTNO**	INTEGER 1	value(s)
2	TN	INTEGER 1	value(s)
3	STN	INTEGER 1	value(s)
4	ITN	INTEGER 1	value(s)
5	SIN	INTEGER 1	value(s)
6	DATELT	INTEGER 1	value(s)
7	DTRECV	INTEGER 1	value(s)
8	AUTHOR	TEXT 12	characters
9	ATHRAFFL	TEXT 12	characters
10	RECIPIEN	TEXT 12	characters
11	RECPAFFL	TEXT 12	c haracters
12	SUBJECT	TEXT 120	characters

NOTE: Tables CORLOG84, CORLOG85, CORLOG86, and CORLOG87 are configured identical to CORLOG83

2. Table - ACRONYMS

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Column Name	Туре	Length
1 ACRONYM	TEXT	12 characters
2 DEFINE	TEXT	120 characters

3. Table - KEYWORDS

Column Name	Туре	Length
1 KEYWORD	TEXT 1	2 characters

4. Table - ORIGINL (Report Originals)

Column Name	Туре	Length		
1 DCNO**	INTEGER	l value(s)		
2 AUTHOR	TEXT	12 characters		
3 TITLE	TEXT	150 characters		
4 DATE**	INTEGER	1 value(s)		

5. Table - FERC (FERC Historical Data)

Column							
	Name	Туре		Length			
1	REQDATE	INTEGER	1	value(s)			
2	REQIDENT	TEXT	12	characters			
3	LTNO**	INTEGER	1	value(s)			
4	AUTHOR	TEXT	12	characters			
5	SUBJECT	TEXT	120	characters			
6	KEYWORDS	TEXT	60	characters			
7	RES-FERC	TEXT	18	characters			
8	NOTE-INV	TEXT	24	characters			
9	STATUS	TEXT	120	characters			

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ACRONYM LISTING

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ACRONYM	DEFINITION
A – T	ASHTON-TATE
ABR	ALASKA BIOLOGICAL RESEARCH
ACDP	ALASKA CONSUMER ADVOCACY PROGRAM
ACOHP	ADVISORY COUNCIL ON HISTORIC
ACCIN	PRESERVATION (NATIONAL)
ACRES	ACRES INTERNATIONAL CORPORATION
ACSPE	ALASKA CENTER FOR POLICY STUDIES
ACST	ALASKA COUNCIL ON SCIENCE & TECHNOLOGY
ACWRU	ALASKA COOPERATIVE WILDLIFE RESEARCH
ADF&G	ALASKA DEPARTMENT OF FISH AND GAME
ADH	ALASKA DEPARTMENT OF HIGHWAYS
ADN	ANCHORAGE DAILY NEWS
AEAI	APPLIED ECONOMICS ASSOCIATES. INC.
AEI	ALASKA ECONOMIC. INC.
AEIDC	ARCTIC ENVIRONMENTAL INFORMATION AND
	DATA CENTER
AFR	ACE-FEDERAL REPORTERS, INC.
AG	ARTIC GLASS
AGA	AMERICAN GAS ASSOCIATION
AGRA	ARCTIC GEOLOGICAL RESOURCE ASSOCIATION
AHRG	ALASKA HERITAGE RESEARCH GROUP, INC.
AHTNA	AHTNA DEVELOPMENT CORPORATION
AIM	APPLIED INFORMATION MANAGEMENT
AIRGUIDE	ALASKA AIR GUIDES
AIRLOG	AIR LOGISTICS OF ALASKA, INC.
AJC	ANCHORAGE JOURNAL OF COMMERCE
AKHEL	ALASKA HELICOPTERS. INC.
AKLIB	ALASKA STATE LIBRARY
ALASKARCTIC	ALASKA ARCTIC
ALM	ALASKA LAND MANAGERS
ALUC	ALASKA LAND USE COUNCIL
ANL	ARGONNE NATIONAL LABORATORY
ANRE	AGENCY OF NATURAL RESOURCES AND ENERGY
ANS	ARMY & NAVY SURPLUS
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AOCM	ALASKA OFFICE OF COASTAL MANAGEMENT
AOSERP	ALBERTA OIL SANDS ENVIRONMENTAL
	RESEARCH PROGRAM
AOU	AMERICAN ORNITHOLOGISTS' UNION
APA	ALASKA POWER AUTHORITY
APB	ALASKA PACIFIC BANCORPORATION
ARCTEC	ARCTEC ALASKA INCORPORATED
ARDC	ALASKA RESOURCE DEVELOPMENT COUNCIL

ACRONYM LISTING

DATE: 08/19/87 PAGE: 2

ACRONYM	DEFINITION
ARERC	ANCHORAGE REAL ESTATE RESEARCH
ARG&F	ARKANSAS GAME & FISH
ASCC	ALASKA SYSTEMS CO-ORDINATING COUNCIL
ASL	ALASKA STATE LEGISLATURE
AT	ANCHORAGE TIMES
AWL	AGE WEIGHT LENGTH
B&M	BURNS & MCDONNELL
B&T	BARLOW & TUSSING
BAH	BOOZ. ALLEN & HAMILTON
BAKER	MICHAEL BAKER JR., INC.
BATTELLE	BATTELLE PACIFIC NORTHWEST LABORATORIES
BCC	BELUGA COAL COMPANY
BCS	BOEING COMPUTER SERVICES
BEA	BUREAU OF ECONOMIC ANALYSIS
BECHTEL	BECHTEL CORPORATION, BECHTEL CIVIL &
	MINERALS, INC.
BECK	R.W. BECK & ASSOCIATES
BELL	MILO BELL
BERRY	THEODORE BERRY & ASSOCIATES
BHBP&A	BIRCH, HORTON, BITTNER, PESTINGER AND
	ANDERSON
BLM	BUREAU OF LAND MANAGEMENT
BLS	BUREAU OF LABOR STATISTICS
BOM	BUREAU OF MINES
BOR	BUREAU OF RECLAIMATION
BPA	BONNEVILLE POWER ADMINISTRATION
BRAUND	STEPHEN R. BRAUND & ASSOCIATES
C&C	CHAN AND CHAU
CA	COMMONWEALTH ASSOCIATES
CADG	COMPUTER-AIDED DESIGN GROUP
CAIN	CAIN SERVICE COMPANY
CAL/BREA	CAL-BREA GEOLOGICAL SERVICES
CALKINS	CALKINS/SHEN
CBJWC	COLDWELL BANKER/JACK WHITE CO.
CC	CAPTAIN COOK
CEA	CHUGACH ELECTRIC ASSOCIATION
CEC	CALIFORNIA ENERGY COMMISSION
CERS	CHUGIAK-EAGLE RIVER STAR (NEWSPAPER)
CF	CONSOLIDATED FREIGHTWAYS
CFMP	CUPPER FIRE MANAGEMENT PLAN
CI	URITERIUN, INC.
	COOK INLET AWUACULTURE ASSUCIATION
CIKI	COUR INLET REGION, INC.

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ACRONYM	DEFINITION
GTDT //// N	
CIRI/H&N	CIRI, HULMES AND NARVER
CIRI/PAI	CIRI, PLACER AMEX, INC.
CIRPT	COOK INLET REGIONAL PLANNING TEAM
CMJV	CIRI, MOOLIN JOINT VENTURE
COE	CORPS OF ENGINEERS
CP	COMMERCIAL PROPERTIES
CPUE	CATCH PER UNIT EFFORT
CRL	CANADIAN RESOURCE LIMITED
CRREL	COLD REGIONS RESEARCH AND ENGINEERING
	LABORATORY
CTF	COAL TASK FORCE
CWT	CODED WIRE TAG
	DRYDEN & LARIE
DEM	DAMES & MOORE
	DTAMOND ALASKA COAL COMPANY
DBM	DIVISION OF BUDGET AND MANAGEMENT
DCED	DEPARTMENT OF COMMERCE AND ECONOMIC
DCED	DEVELOPMENT
	DEPARTMENT OF COMMUNITY AND REGIONAL
DONA	AFFAIRS
DEC	DEPARTMENT OF ENVIRONMENTAL
	CONSERVATION
DEIS	DRAFT ENVIRONMENTAL IMPACT STATEMENT
DEKIN	A.A. DEKIN. JR.
DENALI	DENALT DRILLING. INC.
DEPD	DIVISION OF ENERGY AND POWER
52.5	DEVELOPMENT
DELIGAN	
DECOR.	DEDARTMENT OF FIGUERIEG AND OCEANS
Dru	CANADA
DTHAR	DIFT HABITAT
	DRAFT I TOENGE AMENDMENT
	DEDADTMENT OF NATURAL DECONDER
DNR	DEPARTMENT OF ACTICULTURE
DOAD	DEFARIMENT OF ADMINICEDATION
DUAD	DEPARTMENT OF ADMINISTRATION
	DEPARTMENT OF COMMERCE
DUE	DEPARTMENT OF ENERGY
DUI	DEPARTMENT OF THE INTERIOR
DUL	DIVISION OF LABOR
DOR	DEPARTMENT OF REVENUE
DOSP	STATE OF ALASKA DIVISION OF STRATEGIC
	PLANNING
DOT	DEPARTMENT OF TRANSPORTATION

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ACRONYM	DEFINITION
DOTRE	
DUIFF	DUDITO EACTITATES
הסשו	POBLIC FACILITIES
DOWL	DUWL ENGINEERS
DEDE	DIVISION OF POLICY DEVELOPMENT &
DFDF	FINANCE
DPDP	DIVISION OF POLICY DEVELOPMENT AND
	PLANNING
DRI	DATA RESOURCES INC.
DRI/RPA	DENVER RESEARCH INSTITUTE AND RESOURCE
	PLANNING ASSOCIATES
E&A	ERICKSON AND ASSOCIATES
EAI	ECOLOGICAL ANALYSIS
EBASCO	EBASCO SERVICES, INC.
EDAW	EDAW INC.
EDC	EXPLORATION DATA CONSULTANTS, INC.
EIA	ENERGY INFORMAION ADMINISTRATION
ENTRIX	ENTRIX, INC.
ENV	ENVIROSPHERE
EP	ENERGY PROBE
EPRI	ELECTRIC POWER RESEARCH INSTITUTE
ERB	EXTERNAL REVIEW BOARD
ERC	ENERGY RESOURCES COMPANY
ERDA	ENVIRONMENTAL RESEARCH & DEVELOPMENT
	ASSOCIATES
ERP	EXTERNAL REVIEW PANEL
ERT	ENVIRONMENTAL RESEARCH & TECHNOLOGY,
	INC.
ERTEC	EARTH TECHNOLOGY CORPORATION
ESRI	ENVIRONMENTAL SYSTEMS RESEARCH
	INSTITUTE DNUTDONNENTAL AND COCLAL CHOMENC
LODA	ENVIRUNMENTAL AND SUCIAL SYSTEMS
с. Г.J.T.A	ANALISIS LID R. WOODY TRIURY & ACCOCIATEC
EWIA	E. WUUDI IRIAEI & ABBUUIAIEB EAIDDANNG DENELODMENT AUTUODITN
FDA	FAIRDANNO DATLY NEWS MINED
FDAN	FAIRDANNS DAILI NEWS MINER
FFIG	FISH DISTRIBITION STUDI FINAL ENVIRONMENTAL IMPACT CTATEMENT
LEMY	FINEL ENVIRONMENTEL INFROM STATEMENT FEDERAL EMEDGENCY MANAGEMENT AGENCY
FFRC	FEDERAL ENERGY REGULATORY COMMISSION
FMAA	FRANK MODILIN AND ASSOCIATES
FMATS	FAIRBANKS METROPOLITAN AREA
	TRANSPORTATION STUDY
FMUS	FAIRBANKS MUNICIPAL UTILITY SYSTEM

ACRONYM LISTING

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ACRONYM	DEFINITION
FNCR	FATERANKS NORTH STAR BOUROUGH
FOA	FRANK OPTH AND ASSOCIATES
FOR	FRAME ORIG AND ASSOCIATES
FDCC	FEDERALION OF COMMUNITY COUNCIL
FPBC	FEDERAL FOWER CONMISSION STAFF
FKBC	HNIVEDETTY OF WACHINGTON
PDT	DAIVERSIII OF WASHINGION EIGUEDIEG DECEADOU BOADD OF GAMADA
FRONT	FISHERIES RESEARCH BUARD OF CANADA
FRON I	CENERAL ACCOUNTING OFFICE
GAU	GENERAL ACCOUNTING OFFICE
GAILS	CENEDAL ELECTRIC
GE CEC	GENERAL ELECTRIC
GEL	COPPON HAPPICON & ACCOCLATES
	GURDUN HARRISUN & ASSUCIAIES
GILBERI	GILBERI/COMMONWEALIH
GLGA	GREAT LAND GENERAL AGENCY
GU	GUSINK - USIEKKEMP GOLDGDDEK GUGITNA NATIND AGGOGIATION
GENA	GULDEREER SUSTINA NATIVE ASSUCTATION
65F	GRUSS STATE PRODUCT
GYEA	GULDEN VALLEY ELECTRIC ASSOCIATION
HAMBLIN	PAUL HAMBLIN
HARZA	HARZA ENGINEERING COMPANY
HCA	HART-CRUWSER & ASSUCIATES
HE	HARZA-EBASCO SUSITNA JOINT VENTURE
HENDRON	ALFRED J. HENDRON
HI	HOMESTEAD INSURANCE
HIBA	HOMESTEAD INSURANCE BROKERS OF ALASKA
HIGHLAKE	HIGHLAKE LODGE
HLA	HARDING-LAWSON AND ASSOCIATES
HNTB	HOWARD, NEEDLES, TAMMON & BERGENDOFF
HRA	HISTORICAL RESEARCH ASSOCIATES
HRI	HISTORICAL RESEARCH, INC.
HRPI	HUMAN RESOURCES PLANNING INSTITUTE
HRS	HYDRO RESEARCH SCIENCE
HYDEX	HYDEX CORPORATION
IECO	INTERNATIONAL ENGINEERING COMPANY, INC.
IEI	INTERSTATE EXPLORATION, INC.
IFE	INSTREAM FLOW ELEVATION
IFG	INSTREAM FIELD GUIDE
IFIM	INSTREAM FLOW INCREMENTAL METHODOLOGY
IFR	INSTREAM FIELD REPORT
IFRR	INSTREAM FLOW RELATIONSHIP REPORT
IIHR	IOWA INSTITUTE OF HYDRAULIC RESEARCH,
	UNIVERSITY OF IDWA
INF	INSTITUTE OF NORTHERN FORESTRY

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ACRONYM LISTING

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ACRONYM	DEFINITION		
TDD			
TCED	INIERNAL REVIEW BUARD		
ISER	INSTITUTE OF SUCTAL AND ECONUMIC		
тыр	KEDEAKUN Inctitute of water becearcy (university)		
IWK	OF ALACKA)		
то т	OF ALADRAY TONES AND TONES		
TANG	THVENTLE ANADOMONS HARTAT STTES		
IGC	TOHN GRAHAM COMPANY		
ITT	TAPANESE TRADE & INDUSTRY		
JAC	TACK WHITE COMPANY		
K2	K2 AVIATION INC		
KCM	KRAMER, CHIN AND MAYO		
KESSEL	B. KESSEL		
KREIG	R.A. KREIG AND ASSOCIATES		
LAI	LANDTECH-ALASKA. INC.		
LFSI	LANDFIELD SERVICES. INC.		
LGL	LGL ASSOCIATES		
LIBRA	LIBRA PROGRAMMING INC.		
LUPC	LAND USE PLANNING COUNCIL		
MAC	MANAGEMENT ANALYSIS COMPANY		
MATSU	MATANUSKA-SUSITNA BOROUGH		
MEA	MATANUSKA ELECTRIC ASSOCIATION		
MIT	MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
MJA	MUNDY, JARVIS & ASSOCIATES		
ML&P	ANCHORAGE MUNICIPAL LIGHT AND POWER		
	DEPARTMENT		
MMS	MINERALS MANAGEMENT SERVICE		
MOA	MUNICIPALITY OF ANCHORAGE		
MRC	MCLEAN RESEARCH CENTER		
MRI	MITSUBISHI RESEARCH INSTITUTE		
MSI	MANAGEMENT SERVICES INTERNATIONAL, INC.		
MSU	MISSISSIPPI STATE UNIVERSITY		
MWR	MOUNTAIN WEST RESEARCH, INC.		
NAEC	NORTHERN ALASKA ENVIRONMENTAL CENTER		
NAS	NATIONAL ACADEMY OF SCIENCES		
NASA	NATIONAL AERONAUTICS & SPACE		
	ADMINISTRATION		
NBA	NATIONAL BANK OF ALASKA		
NBER	NATIONAL BUREAU OF ECONOMIC RESEARCH,		
	ING.		
NCA	NATIONAL CUAL ASSUCIATION		
NEBC	NATIONAL ENERGY BOARD OF CANADA		
NERA	NATIONAL ECONOMIC RESEARCH ASSOCIATES,		

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ACRONYM	DEFINITION		
NERC	NORTH AMERICAN ELECTRIC RELIABILITY		
	COUNCIL		
NES	NORTHERN ENGINEERING SERVICES		
NMFS	NATIONAL MARINE FISHERIES SERVICE		
NUAA	NATIONAL UCEANIC AND ATMOSPHERIC		
NDDC	ADMINISTRATION		
NPPL	NURTHWEST FUWER FLANNING COUNCIL		
NPS	NATIONAL PARK SERVICE		
NRL	NUCLEAR REGULATORY COMMISSION		
NRUL	NATIONAL RESEARCH COUNCIL CANADA		
NRPL	NATIONAL RAILWAY PUBLICATION COMPANY		
NDF	NATIONAL SCIENCE FOUNDATION		
NILS	NATIONAL TECHNICAL INFORMATION SERVICE		
	OFFICE OF CONSERVATION COMMISSION		
	OPECON DEDADEMENT OF FIGH & WILDLIFF		
	OFFICE OF FEDERAL DEGICTER		
UF R D	OFFICE OF FEDERAL REGISIER		
	OPP OPCANTZATION		
	ORD URGANIZATION		
OTA	OFFICE OF TECHNOLOGY ACCECCENT		
	DIACED AMEY INC		
L VI	PLACER ANEL, INC. Doitcy analysis itmited		
PC	POLICI ANALISIS, LINILED		
FC PCC	PC COURCE		
PGEC	PLOTETC CAR & FIECTRIC CALTEORNIA		
DIDE	PACIFIC DAS & ELECTRIC, CALIFORNIA		
r 1 Kr	THE		
PTT	PENNY AND IENSON INC		
PMUT	PIPE MANUFACTURES OF ALASKA		
PMS	PTLISBURY, MADISON AND SUTRO		
PN&D	PERATROVICH, NOTTINGHAM & DRAGE, INC.		
PRA	PENINSULA RESOURC AREA		
PSD	PREVENTION OF SIGNIFICANT DETERIORATION		
PSDI	PROJECT SOFTWARE & DEVELOPMENT. INC.		
PW	PRINTER'S WORKSHOP		
R&M	R&M ASSOCIATES		
RBA	RAJ BHARGAVA ASSOCIATES		
RCI	RESOURCE CONSULTANTS, INC.		
RDC	RESOURCE DEVELOPMENT COUNCIL		
REAUME	REAUME CONSULTING		
RJHAB	RESIDENT JUVENILE HABITAT MODEL		
RME	ROCKY MT. ENERGY		
RPT	REPORT		

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ACRONYM LISTING

ACRONYM	DEFINITION	
RRCS	RENEWABLE RESOURCES CONSULTING SERVI LTD.	
RRFI	RAPTOR RESEARCH FOUNDATION, INC.	
RSI	REED STENHOUSE, INC.	
RTI	RESEARCH TRIANGLE INSTITUTE	
S&W	STONE & WEBSTER	
SA	SWEENEY ASSOCIATES	
SADAR	SADAR COMPANY, THE	
SCEC	SOUTHERN CALIFORNIA EDISON COMPANY	
SDGEC	SAN DIEGO GAS & ELECTRIC CALIFORNIA	
SEED	H. BOLTON SEED	
SFH	SELECTED FISH HABITAT	
SHCA	SHERMAN H. CLARK ASSOCIATES	
SHEN	SHEN	
SHPO	STATE HISTORIC PRESERVATION OFFICE	
SIR	SCIENTIFIC INFORMATION RETRIEVAL	
SNTEMP	STREAM TEMPERATURE MODEL	
SOA	STATE OF ALASKA	
SOWDOF	STATE OF WASHINGTON DEPT. OF FISHERIES	
SPDDAC	STATE PUBLICATIONS DISTRIBUTION AND	
	DATA ACCESS CENTER	
SRI	STANFORD RESEARCH INSTITUTE	
SSAC	SENATE STATE AFFAIRS COMMITTEE	
SSI	STATEWIDE SERVICES, INC.	
STEPHEN	STEPHEN LAKE LODGE	
тс	TRAVEL CENTER	
TCC	TANANA CHIEFS CONFERENCE	
TCSM	THE CHRISTIAN SCIENCE MONITOR	
TES	TERRESTRIAL ENVIRONMENTAL SPECIALISTS	
TR&CO	TOUCHE, ROSS & CO.	
TSS	TOTAL SUSPENDED SOLIDS	
TYONEK	TYONEK NATIVE ASSOCIATION	
UAA	UNIVERSITY OF ALASKA - ANCHORAGE	
UAF	UNIVERSITY OF ALASKA - FAIRBANKS	
UAFGI	UNIVERSITY OF ALASKA FAIRBANKS	
	GEOPHYSICAL INSTITUTE	
UAM	UNIVERSITY OF ALASKA - MUSEUM	
UAP	UNIVERSITY OF ALASKA - PALMER	
UCM	USIBELLI COAL MINE, INC.	
UOI	UNIVERSITY OF IOWA	
NON	UNIVERSITY OF MINNESOTA	
UOW	UNIVERSITY OF WASHINGTON	
USBC	US BUREAU OF CENSUS	
USC	US CONGRESS	

ACRONYM LISTING

ACRONYM	DEFINITION
USCG	US COAST GUARD
	US COMMITTEE OF LARGE DAMS
HEEWS	US ETCH AND WILDLIFE SERVICE
USGS	US GEOLOGICAL SURVEY
USWB	US WEATHER BUREAU
VS	VALLEY SUN
WANG	WANG WORD PROCESSING AND EQUIPMENT
WB	WORLD BANK
WCC	WOODWARD-CLYDE CONSULTANTS
WDCAFG	WORLD DATA CENTER A FOR GLACIOLOGY
WEIRCO	PAUL WEIR COMPANY
WELUT	WESTERN ENERGY AND LAND USE TEAM
WEPC	WISCONSIN ELECTRIC POWER COMPANY
WHARTON	WHARTON ECONOMETRIC FORECASTING
	ASSOCIATES
WSE	WATER SURFACE ELEVATION
WUA	WEIGHTED USABLE AREA
YUKON	YUKON OFFICE SUPPLY



APPENDIX F

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CONTRACTOR/SUBCONTRACTOR WORK AREAS

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ACRONYM	CONTRACTOR/SUBCONTRACTOR	MAJOR WORK AREA
ACRES	ACRES INTERNATIONAL CORPORATION	ENGINEERING, GEOLOGY
ADF&G	ADF&G GAME ALASKA DEPARTMENT OF FISH AND GAME (GAME)	WILDLIFE, GAME
ADF&G	ADF&G SUHYDRO ALASKA DEPARTMENT OF FISH AND GAME (SUHYDRO)	FISHERIES
AEIDC	ARCTIC ENVIRONMENTAL INFORMATION AND DATA CENTER	TEMPERATURE MODELING, PRELIMINARY IMPACT ASSESSMENT
BATTELLE	BATTELLE PACIFIC NORTHWEST LABORATORIES	APPLICATION & MAINTENANCE OF RED MODEL
CMJV	CIRI, MOOLIN JOINT VENTURE	CAMP LOGISTICS, PERMITTING
D&M	DAMES & MOORE	COAL PRICE FORECASTING
EDAW	EDAW INC.	LAND USE, RECREATION
ENTRIX	ENTRIX, INC.	FISHERIES IMPACT ASSESSMENT & MITIGATION PLANNING
FOA	FRANK ORTH & ASSOCIATES	SOCIO-ECONOMIC IMPACT
HCA	HART-CROWSER & ASSOCIATES	CULTURAL RESOURCES
HEMMING	HEMMING, JAMES E.	TERRESTRIAL WILDLIFE IMPACT
HRA	HISTORICAL RESEARCH ASSOCIATES	CULTURAL RESOURCES
ISER	INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH	APPLICATION & MAINTENANCE OF MAP MODEL
KESSEL	KESSEL, BRINA	NON-GAME WILDLIFE
KREIG	R.A. KREIG AND ASSOCIATES	VEGETATION MAPPING

ACRONYM	CONTRACTOR/SUBCONTRACTOR	MAJOR WORK AREA
LFSI	LAND FIELD SERVICES, INC.	LAND OWNERSHIP
LGL	LGL ASSOCIATES	TERRESTRIAL WILDLIFE
WEIRCO	PAUL WEIR COMPANY	COAL PRICING
R&M	R&M ASSOCIATES	HYDROLOGY, RIVER SURVEYING & METEOROLOGY
THOMP SON	THOMPSON, GAIL	CULTURAL RESOURCES
EWTA	E. WOODY TRIHEY & ASSOCIATES	GENERAL AQUATIC IMPACT ASSESSMENT, INSTREAM FLOW METHODOLOGY
SHCA	SHERMAN H. CLARK & ASSOCIATES	OIL PRICE FORECAST
ACWRU	UNIVERSITY OF ALASKA, ALASKA COOPERATIVE WILDLIFE RESEARCH UNIT	TERRESTRIAL WILDLIFE
UAM	UNIVERSITY OF ALASKA - MUSEUM	CULTURAL RESOURCES
UAP	UNIVERSITY OF ALASKA - PALMER	PLANT ECOLOGY
WHARTON	WHARTON ECONOMETRIC FORECASTING ASSOCIATES CONSULTANTS	OIL PRICE FORECAST
WCC	WOODWARD-CLYDE CONSULTANTS	IMPACT ASSESSMENT & MITIGATION PLANNING



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KEYWORDS

1980 1981 1982 1983 1984 1985 1986 ABUNDANCE ACCESS ACCESS PLAN ACCESS ROUTE ACREAGE ACRES ADF&G ADMIN ADULT AEIDC AERATION AERIAL AESTHETIC AGENCY AGENDA AGGRADATION AGREEMENT AGRICULTURE AHTNA AIR QUALITY AIRCRAFT AIRSTRIP ALEXANDER ALGAE ALLUVIAL ALTERNATIVE AMENDMENT AMMONIUM ANADROMOUS ANALYSES ANALYSIS ANCHORAGE APA APPLIANCE APPLICATION APPRAISAL AQUATIC

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KEYWORDS

AQUIFER AQUISITION ARCHAEOLOGY ARCHEOLOGY ARCHIVE ARCTIC AREA PLAN ARTICLES ARTIFACT ASSESSMENT ASSUMPTION ATHABASKAN ATTENUATION AUDIT AUFEIS AUTOMATIC AVAILABILITY AWL BACKUP BACKWATER BALANCE BALD EAGLE BAROMETRIC BASELINE BASELOAD BASIN BCS BEAR BEAR BOOK BEARBAIT BEAVER BEDLOAD BEHAVIOR BELL ISLAND BELUGA WHALE BENCHMARK BENTHIC BERING CISCO BERM BERRY BIG GAME BILLING BIOLOGY BIRCH BIRCH CREEK

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KEYWORDS

BIRDS BLACK BEAR BLM BLUELINE BOARD BONDS BOREAL BOREHOLE BORROW BOTANY BRADLEY BRANDING BREACH BREAKUP BROWN BEAR BROWNE BROWSE BUDGET BURBOT BURNING BUS BUSINESS CABIN CALCULATIONS CALIBRATION CAMP CANDIDATE CANTWELL CAR CARIBOU CATALOGUE CATCH CEA CENSUS CHAKACHAMNA CHANNEL CHART CHINOOK CHUGACH CHULITNA CHUM CIRCULAR CISCO CLARENCE CLIMATE

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KEYWORDS

CLIMATIC COAL COASTAL COFFERDAM COHO COLLECTION COLOR COLUMBIA COLUMN COMANCHE COMMENTS COMMERCIAL COMMODITY COMMUNITY COMPARISON COMPLIANCE COMPOSITION COMPUTATIONS COMPUTER COMPUTER RUN CONDUCTIVITY CONE VALVES CONFLUENCE CONSERVATION CONSTRUCTION CONSULTANTS CONSUMER CONSUMPTION CONTRACT CONVERSION COOK INLET COPIES CORE CORE LOGS CORE SAMPLES CORE SLIDES CORRIDORS COST COVER CPUE CRITERIA CULTURAL CURRENT CURRY CWT

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KEYWORDS

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______ DALL DALL SHEEP DAM DAMBREAK DATA DATA TAPE DATAPOD DE BUG DEADHORSE DEADMAN DEGRADATION DEIS DELTA ISLAND DEMAND DEMOGRAPHIC DENALI DEPENDENTS DEPHKA RIVER DEPLOYMENT DEPOSITION DEPTH DESHKA RIVER DESIGN DETAIL DEVELOPMENT DEVIL CANYON DICTIONARY DIESEL DIET DIGITIZATION DIHAB DISCHARGE DISKETTE DISPOSAL DISSOLVED DISTRIBUTION DIVERSION DLA DNR DOI DOLLY VARDEN DOWNSTREAM DP DRAFT DRAWDOWN

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KEYWORDS

DRIFT DRILLING DUST DYE DYRESM EAGLES EAGLES NEST EARTHQUAKE EASEMENTS ECOLOGY ECONOMETRIC ECONOMIC ECOSYSTEMS EFFICIENCY EGG EKLUTNA ELASTICITY ELECTRIC ELECTROFISH ELECTROSHOCK ELEVATION EMBRYO EMERGENCE EMERGENCY EMPLOYMENT ENDANGERED ENERGY ENGINEERING ENLARGEMENT ENVIRONMENT EPA EQUIPMENT ERB EROSION ERRATA ESCAPEMENT ESTIMATE ESTUARY ETHNOGRAPHY EULACHON EUPHOTIC EUTROPHIC EVALUATION EVAPORATION EXH A

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KEYWORDS

EXH B EXH C EXH D EXH E EXH F EXH G EXH H EXHIBITS EXPLORATION EXPORT FACILITIES FAIRBANKS FALCON FDS FEASIBILITY FECUNDITY FEIS FERC FERTILITY FERTILIZER FIELD FIELD DATA FIELD NOTES FIELD STUDY FIGURES FILLING FINANCIAL FINS FIRE FISCAL FISH FISHERIES FISHWHEEL FLATHORN FLOOD FLOOD PLAIN FLORA FLOW FLOW REGIME FLUCTUATION FMATS FMUS FOG CREEK FOOD FOOD HABITS

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KEYWORDS

FORAGES FORECAST FOREST FORMAT FORMS FOX FREEZEUP FREQUENCY FRESHWATER FUEL FUEL COSTS FUNDING FURBEARERS FUSE PLUGS GAGE GAGING ST GAME GAS GASH CREEK GEAR GENERATION GEOGRAPHIC GEOGRAPHY GEOHYDROLOGY GEOLOGY GEOPHYSICAL GEOTECHNICAL GEOTHERMAL GILL NET GLACIER GOAT GOLD CREEK GOOSE GOOSE CREEK GRAPHICS GRAPHS GRAVEL GRAVITY GRAYLING GRAYWACKE GRIZZLY BEAR GROUNDWATER GROUSE GROWTH GSP

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KEYWORDS

GUIDELINES GVEA HABITAT HALIBUT HARVEST HAZARDS HEALTH HEARINGS HEATSIM HEC-2 HEIGHT HELICOPTER HERB HERITAGE HIGHWAY HISTOGRAM HOMER HOOK HOUSEHOLD HOUSING HUNTING HYDRAULIC HYDRO HYDROELEC HYDROGEOLOGY HYDROGRAPH HYDROLAB HYDROLOGY IBM ICE ICECAL IFE IFG IFIM IFRR IMPACT IMPOUNDMENT IMPROVEMENT INCOME INCOME TAX INCUBATE INCUBATION INDEX INDIAN RIVER INDUSTRY

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KEYWORDS

INFLATION INFLOW INPUT INSPECTION INSTREAM INSTRUCTION INSURANCE INTAKES INTERGRAVEL INTERNAL INTERTIE INTERVIEW INVENTORY INVERTEBRATE INVESTIGATE INVOICE IRB ISSUES JAHS JAPANESE JOINTS JULY CREEK JURISDICTION JUVENILE KENAI KNIK KOSINA KWH LABOR LABOR COST LAKE LAND LAND USE LANDSCAPE LARSON LAKE LEASE LEGAL LEGEND LEGISLATION LEGISLATURE LIBRARY LICENSE LICHEN LICKS LIMNOLOGY

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KEYWORD LISTING

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KEYWORDS -----LINE LINEAR LITERATURE LNG LOAD LOAD FOLLOW LOCALE LOCATION LOG BOOK LOGGING LOGISTICS LOWER RIVER LYNX MAINSTEM MAINSTEM II MAINTENANCE MAMMALS MAN-MADE MANAGEMENT MANHOUR MANUAL MAP MODEL MAPPING MAPS MARINE MARKET MARKET VALUE MEASUREMENT METEOROLOGY METHODOLOGY MIDDLE RIVER

MARTEN MAT-SU MATERIALS MEA MEDICAL MEETINGS MEMOS METER METHOD MICROSCOPE MIGRANT MIGRATION MILE MILLING

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KEYWORD LISTING

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KEYWORDS _____ MINERAL MINIMUM MINING MINNOW TRAP MITIGATION MODEL MODELING MODIFICATION MONITOR MONTANA MONTHLY MOOSE MORITORIUM MORPHOLOGY MORTALITY MUSKRAT MYLAR NATIVES NATURAL NATURAL GAS NAVIGATION NEED/POWER NEGATIVES NESTS NEWSPAPER NITROGEN NMFS NON-GAME NORTH SLOPE NOTES NUIQSUT NUTRIENTS NUTRITION 0&M OBJECTIVE OBSERVATION OCS OGP MODEL OIL OPEN LEAD OPERATION ORGANIC OSHETNA OTOLITH OUTLINE

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KEYWORDS

OUTMIGRANT OUTMIGRATION OVERLAY OVERVIEW OWNERSHIP OXYGEN PARCEL PARTICLES PASSAGE PEAKING PEREGRINE PERIODICITY PERMAFROST PERMIT PETROLEUM PHASE II PHASE III PHENOLOGY PHONE LOG PHOSPHORUS PHOTOMOSAIC PHOTOS PHYSIOLOGY PINK PIPELINE PLAN PLANIMETRIC PLANKTON PLANTS PLATE PLATTING PLOT PMF PMP POACHING POLICY POLLUTION POPULATION PORTAGE POS POWER PRECIP PRESS PRICE PRIVATE

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KEYWORDS

PROCEDURES PROCESS PROCESSES PROCESSING PROFILE PROGRESS PROGRESS RPT PROJECTIONS PROPERTY PROPOSAL PSD PUBLIC PURCHASE PURCHASES QUADRANT QUALITY RABIDEUX RADIO RAIL RAILBELT RAILHEAD RAINBOW RAINFALL RAPTOR RATE RATING CURVE REACH REAL ESTATE REARING RECAPTURE RECLAMATION RECOMMEND RECON RECORDS RECREATION RECYCLE RED MODEL REDD REFERENCE REGIME REGIONAL REGRESSION REGULATIONS REHAB REINDEER

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RELEASE RELIABILITY RELICT RELOCATION REPORT REQUEST RESEARCH RESERVOIR RESIDENT RESIDENTIAL RESOURCES RESPONSE RESTRICTED RETENTION REVEGETATION REVENUE REVIEW RIGHT-OF-WAY RIMS RIPARIAN RISK RIVER RIVER MILE RJHAB ROAD ROLLY CREEK ROUTE RULE CURVE RUN OFF SAFETY SALINITY SALMON SAMPLE SANITATION SATURATION SCALE SCENARIO SCHEDULES SCHOOL SCOUR HOLE SEASONAL SEDIMENT SEEPAGE SEINING SEISMIC

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SENSITIVITY SERVICES SETTLEABLE SETTLEMENT SETTLING SFH SHADING SHADOW SHEEP SHERMAN SHOVEL TEST SIDE CHANNEL SIDE SLOUGH SIEVE SIGNIFICANCE SILT SITE SLIDES SLOPE SLOUGH SMALL GAME SMOLT SMOLT TRAP SNOW SNOWMOBILES SNTEMP SOCIAL SOCIO-ECON SOCKEYE SOIL SOLIDS SONAR SPAWNING SPECIES SPECS SPILLWAY SPRINGS SPRUCE STABILITY STAFF STAFF GAGE STAGE STANDPIPE STATISTICS STATUS

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THERMOGRAPH THERMOMETER TIDAL TIMBER TIMESHEET TOWNSHIP TOWNSITE TRADE TRAFFIC TRAINING TRANSECT TRANSFER TRANSLATION TRANSMISSION TRANSMITTAL TRANSPORT TRAP TRAPPER TRAPPERCREEK TRAPPING TREELINE TREES TRIBUTARY TRIP TROT LINE TROUT TSS TSUSENA TUNDRA TUNNEL TURBIDITY TYONE UNIT UPDATE UPPER RIVER UPSTREAM UPWELL USAGE USE USER MANUAL USFWS USGS UTILITIES UTILIZATION VALIDATION

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		6.2.8.1 Request for Application
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	6.2.9	OPEN
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	6 2 11	BOOK) Bogulatory Managarant Corrittae
	6.2.12	Legal Coursel
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6.7.3.4 Solid and Liquid Waste Management

- 6.7.3.5 Water Supply
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- 6.9 PERMITTING GENERAL

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6.9.8 Federal, Treasury - Alcohol, Tobacco and Firearms 6.9.9 BLM 6.9.10 Advisory Council on Historic Preservation 6.9.11 Bureau of Indian Affairs 6.9.12 NMF S 6.9.13 NPS USFWS 6.9.14 6.9.15 State, General & Forms 6.9.16 State, ADEC 6.9.16.1 Oil Spills 6.9.17 State, ADF&G 6.9.18 State, ADPS 6.9.19 State, ADNR - Land 6.9.20 State, ADNR - Water 6.9.21 State, ADPDP State, DOTPF 6.9.22 6.9.23 State, DOHSS State, Local, General 6.9.24 6.9.25 State, Native Corporations 6.9.25.1 CIRI 6.9.25.2 AHTNA 6.9.25.3 TYONEK 6.9.25.4 Chickaloon-Moose Creek 6.9.26 Local, Mat-Su Borough Local, Fairbanks - North Star Borough 6.9.27 6.9.28 Local, Municipality of Anchorage 6.9.29 Local, Transmission Line Routing 6.9.30 State, ADNR - Division of Parks 6.9.31 OMB, Division of Governmental Coordination 6.9.31.1 Alaska Coastal Management Program 6.9.32 Permit Status Reports

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6.11.2 Witness Selection

6.11.3 Testimony

6.11.3.1 Arthur Allen (CLOSED) 6.11.3.2 William Batt 6.11.3.3 Ed Carter

6.11.3.4	Sherman H. Clark	
6.11.3.5	Charles Debelius	
6.11.3.6	Scott Goldsmith	
6.11.3.7	Glenn E. Haringa	
6.11.3.8	John W. Hayden	
6.11.3.9	William Hutchinson	(CLOSED)
6.11.3.10	Robert Keegan	
6.11.3.11	Ned Lesnick	
6.11.3.12	Luis Levy	
6.11.3.13	Charles E. Mann	
6.11.3.14	Leo Polivka	(CLOSED)
6.11.3.15	Donald L. Schaible	
6.11.3.16	Ronald Schnorr	
6.11.3.17	Michael Scott	
6.11.3.18	Kenneth Sorensen	(CLOSED)
6.11.3.19	George Volland	
6.11.3.20	William W. Wade	
6.11.3.21	Klaus P. Rose	
6.11.3.22	Ellen Hall	
6.11.3.23	David Tillman	
6.11.3.24	Tony Merritt	

6.12 FERC ENVIRONMENTAL & DAM SAFETY HEARINGS

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6.14.3 ADEC

- 6.14.4 DOI USFWS
- 6.14.5 DOI NPS

6.14.6 DOC - NMFS

6.14.7 Northern Alaska Environmental Center

6.14.8 Program/Generic Activity

6.14.9 Miscellaneous

6.14.10 DOI - BLM

6.14.11 DOT/PF

6.14.12 Alaska Land Use Council

- 6.14.13 Interagency Review Group (IARG)
- 6.14.14 Steering Committee

6.14.15 Mat-Su Borough

6.14.16 Agency Consultation Meetings 6.14.16.1 Aquatic 6.14.16.2 Terrestrial

6.14.16.3 Social Sciences 6.14.17 USEPA 6.14.18 ADR & CA

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6.18.4.2 ADF&G 6.18.4.3 ADE C 6.18.4.4 ADC&RA 6.18.4.5 DOI 6.18.4.6 NPS 6.18.4.7 NMF S 6.18.4.8 BLM 6.18.4.9 FWS 6.18.4.10 Department of Labor 6.18.4.11 Matanuska-Susitna Borough 6.18.4.12 AHTNA 6.18.4.13 US EPA 6.18.4.14 State Historic Preservation Office 6.18.4.15 COE 6.18.4.16 OMB 6.18.4.17 FERC 6.18.4.18 Intervenors 6.18.4.19 DOT/PF 6.18.5 Workshop 6.18.5.1 Aquatic Workshop I (Flow Regime) 6.18.5.2 Aquatic Workshop II (FY85 Plan of Study) 6.18.5.3 Terrestrial Workshop I (FY85 Plan of Study) 6.18.5.4 Social Sciences Workshop I (FY85 Plan of Study) 6.18.5.5 Aquatic Workshop III (Temperature and Ice Studies) 6.18.5.6 Aquatic Workshop IV (PhysicalProcesses) 6.18.5.7 Terrestrial Workshop II Aquatic Workshop V (Water Quality) 6.18.5.8 6.18.5.9 Aquatic Workshop VI (Aquatic Habitat and Instream Flow) 6.18.5.10 Social Sciences Workshop II(Cultural Resources Program) 6.18.5.11 Aquatic Workshop VII 6.18.5.12 Terrestrial Workshop III 6.18.5.13 Social Science Workshop III 6.18.5.14 Cultural Resources (Predictive Models) 6.18.6 Issues List Matrix 6.18.7 Flow Regime 6.18.7.1 Correspondence 6.18.7.2 Meeting (November 20, 1984) 6.18.7.3 INSTREAM ICE 6.18.7.4 Instream Flow 6.18.7.5 Report 6.18.8 Settlement Meetings 6.18.8.1 February 22, 1985 6.18.8.2 March 11, 1985 March 22, 1985 6.18.8.3 6.18.8.4 April 5, 1985 6.18.8.5 April 22, 1985

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6.18.8.6 April 29, 1985 6.18.8.7 May 17, 1985 6.18.8.8 June 10, 1985

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8.1 WORKING GROUP MEETINGS

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- ANNUAL PLAN AND REPORT
- 8.3 PUBLIC INFORMATION GENERAL

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- 8.5 CITIZEN ADVISORY COMMITTEE
- 8.6 SITE TOURS

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8.7 RESPONDING TO COMMENTS

8.7.1 Comment Response - Transmission Line
8.7.2 Comment Response - Hydro
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- 8.8 LETTERS FROM CONCERNED GROUPS
- 8.9 PUBLIC SPEAKING OPPORTUNITIES

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9.2 CORRESPONDENCE

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12.1.2 Planning Criteria
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12.2 PHASE II - PREFEASIBILITY - LEVEL STUDY

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16.1.4 CIRI/MOOLIN (CMJV)

16.2 STATE AGENCIES

16.2.1 General
16.2.2 Alaska Department of Commerce and Economic Development (ADCED)
16.2.3 Alaska Department of Community and Regional Affairs (ADCRA)
16.2.4 Alaska Department of Environmental Conservation (ADEC)
16.2.5 Alaska Department of Fish and Game (ADF&G)

16.2.5 Alaska Department of Fish and Game (ADF&G) 16.2.6 Alaska Department of Natural Resources

(ADNR)

16.2.6.1 Camp Move

16.2.6.2 Drilling

16.2.7 Alaska Department of Public Safety (ADPS)

16.2.8 Alaska Department of Transportation and Public Facilities (DOT/PF)

16.2.8.1 Camp Move Temporary Use

16.2.9 Office of Management and Budget (OMB)

16.2.10 Alaska Railroad (ARR)

16.3 FEDERAL AGENCIES

16.3.1 General

16.3.2 Advisory Council on Historic Preservation (ACHP)

16.3.3	Alaska	Power	Admin:	istratio	on (APA)
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16.3.4 Bureau of Indian Affairs (BIA)

- 16.3.5 Bureau of Land Management (BLM) 16.3.5.1 Watana Camp Relocation 16.3.5.2 FY86 Drilling
- 16.3.6 Bureau of Mines (BOM)
- 16.3.7 Department of Defense Army

16.3.8 Department of Defense - Air Force

16.3.9 Department of Housing and Urban Development (HUD)

16.3.10 Department of Interior (DOI)

16.3.11 Department of Transportation (DOT)

16.3.12 Federal Aviation Administration (FAA)

16.3.13 Federal Emergency Management Agency

16.3.14 National Marine Fisheries Service (NMFS)

16.3.15 National Park Service (NPS)

16.3.16 U.S. Army Corps of Engineers (COE)

16.3.17 U.S. Coast Guard

16.3.18 U.S. Environmental Protection Agency(U.S.EPA) 16.3.19 U.S. Fish and Wildlife Service (USFWS)

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16.4.2 Municipality of Anchorage
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29.1.2	Budget
29.1.3	Tracking Forms

TASK 30 - DEVIL CANYON UPSTREAM STUDY

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30.2 PRELIMINARY SITE ASSESSMENT

30.3 EVALUATION OF POTENTIAL SITES

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30.3.2 Geotechnical
30.3.3 Seismic Refraction Surveys
30.3.4 Environmental Studies
30.3.5 Hydraulics/Hydrology
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30.3.7 Economic
30.3.8 Cost Development

30.4 LOGISTICS

30.4.1 Correspondence

30.5 PERMITS

30.5.1 Correspondence

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39.1.3 Time Sheets
39.1.4 Resumes
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39.2 SUBSISTANCE & LIFE SUPPORT IN THE FIELD

39.3 TRANSPORTATION

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39.3.2 Helicopter
39.3.3 Scheduling
39.3.4 POL
39.3.5 Records & Logs
39.3.6 Weather Report
39.3.7 Ground Transportation
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39.4 PROCUREMENT & EXPEDITING

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39.8.2 Watana Camp Relocation 39.8.2.1 Site Conditions 39.8.2.2 Cost Estimates 39.8.2.3 Correspondence (CMJV)
39.8.3 Interim Report
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40.2 SUBCONTRACTORS AND CONSULTANTS

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40.6 RAILBELT UTILITIES

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40.9 LOAD FORECASTS

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FINANCIAL ANALYSIS, FORECAST, MODEL CONTRACT

40.19.1 Correspondence 40.19.2 Draft Agreement

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TASK 41 - TRANSMISSION FACILITY SITING AND LICENSE

41.01 PROPOSAL PROCESS

41.1 WILLOW TO KNIK ARM (WEST)

41.1.1 Technical Adequacy 41.1.2 Agency Coordination 41.1.3 Public Participation 41.1.4 Environmental

41.2 HEALY TO ESTER (FAIRBANKS)

41.2.1 Technical Adequacy 41.2.2 Agency Coordination 41.2.3 Public Participation 41.2.4 Environmental

41.3 WATANA TO GOLD CREEK

41.3.1 Technical Adequacy 41.3.2 Agency Coordination 41.3.3 Public Participation 41.3.4 Environmental

- 41.4 KNIK ARM (WEST) TO ANCHORAGE
- 41.5 HEALY TO WILLOW
- 41.6 WILLOW TO KNIK ARM (EAST)
- 41.7 SUBSTATION SITE SELECTION
- 41.8 MANAGEMENT TRANSMISSION LINES
- 41.9 MANAGEMENT SUBSTATIONS

41.10 INFORMATION

41.10.1 Correspondence
41.10.2 Meetings
41.10.3 Investigation Memorandum
41.10.4 T-Line Routing through Military Property

41.11 VISUAL RESOURCE ASSESSMENT AND SUPPORT SERVICES

41.11.1 Correspondence
41.11.2 Proposals
41.11.3 Vegetation Mapping

41.12 REPORT

41.13 PROGRESS REPORT

41.14 SUBCONTRACTS

41.14.1 Commonwealth Associates (including Intertie) 41.14.2 Jones & Jones **6**37733

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- 41.15 BUDGET
- 41.16 ALTERNATIVE TRANSMISSION LINE ROUTING WILLOW TO ANCHORAGE THROUGH PALMER
- 41.17 LAND FIELD SERVICES
- 41.18 POWER SALES AGREEMENTS
- 41.19 O & M

41.19.1 O&M Agreements
41.19.2 O&M Plans
41.19.3 Emergency Action Plans
41.19.4 Inspection Plans

41.20 STAGE CONSTRUCTION

TASK 42 - HYDROLOGIC AND HYDRAULIC STUDIES

42.1.1 Correspondence 42.1.2 Schedule 42.1.3 Budget 42.1.4 Work Program 42.1.5 Consultants 42.1.6 Hyraulic Laboratory

42.2 HYDROLOGIC/HYDRAULIC MODELING

42.2.1 Reservoir Operation - RESOP 42.2.2 Reservoir Temperature/Ice/Sediment (DRYSEM) 42.2.3 Instream Hydraulic 42.2.4 Instream Temperature 42.2.5 Instream Ice 42.2.6 Sediment (General) 42.2.7 Slough Groundwater 42.4.8 Confluence Area Sediment Modeling - IIHR

- 42.3 PROBABLE MAXIMUM FLOOD SPILLWAY DESIGN FLOOD
- 42.4 FLOOD FREQUENCY ANALYSES CONSTRUCTION DIVERSION FLOOD

42.4.1 Studies

- 42.5 STREAMFLOW TIME SERIES GLACIAL MELT (Streamflow/Meteorologic Data Collection/Analysis)
- 42.6 GLACIAL STUDIES
- 42.7 REQUEST FOR INFORMATION

42.7.1 FERC 42.7.2 State and Federal Agencies 42.7.3 Write Chapter 2 of License

- 42.8 STATUS MEETING
- 42.9 STREAMFLOW FORECASTING

42.9.1 Glacial Studies 42.9.2 Hydex Corporation

42.10 CONE VALVES

TASK 45 - CONSTRUCTION MANAGEMENT

45.01 PROPOSAL PROCESS