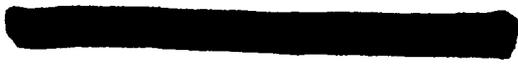


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THE MARKET FOR
GEOGRAPHIC INFORMATION:
A MARKET SEGMENTATION
AND CHARACTERISTICS
ANALYSIS

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By
William S. Piper
The University of Southern Mississippi
and
Mark W. Mick
Commercial Remote Sensing Program Office
Stennis Space Center
Mississippi

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**UNDERSTANDING THE MARKET FOR GEOGRAPHIC
INFORMATION: A MARKET SEGMENTATION
AND CHARACTERISTICS ANALYSIS**

COMMERCIAL REMOTE SENSING PROGRAM OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN C. STENNIS SPACE CENTER
MISSISSIPPI

October 26, 1994

Executive Summary

The identification and characterization of market segments is the most important finding of this research. This identification represents a change in the previously held functional views of the market. The previous divisions of the market by industry perspective or some other non-market characteristics as shown in the original clusters of this study do not fit the classical definition of market segments. In any division of the market into market segments, a specific need-fulfilling product should be obvious and identifiable. The organization of industries into clusters as introduced initially did not represent market segments and was abandoned. The new identification is based on the benefits sought by firms for specific information needed in management decision making.

Firms known to be geographic information users were asked to participate in a marketing research investigation to identify and define the desired characteristics and benefits of geographic information products and to aid in better understanding the product/market relationship. Research found the market for geographic information products may be divided into four product-specific information market segments. Benefits sought by customers and the customers' need for specific attributes in their geographic information products provided the basis for identifying market segments. The characteristics employed to segment the market were the purpose of the investigation (main benefits) and the actual features of the investigation (specific benefits). The investigation revealed four distinct market segments by the general type of information product needed (e.g., multi-spectral or panchromatic). The other dimension is represented by the scope of geographic coverage or expanse (i.e., a specific spatial expanse). These elements combined to define a unique product/market relationship based on available technology.

The market share division among the segments is relatively equal with shares ranging in size from 22 to 28 percent of the market. The two larger market segments represent 27 and 28 percent of market, while the smaller segments represent 22 and 23 percent. The largest market segment, representing 28 percent of the market demand, requires a panchromatic information product that is site- to area-specific in geographic coverage. Firms in this segment appear to require small, visible object identification (e.g., buildings, roads, and markers). These market share divisions were derived from current demand for geographic information as indicated by firms responding to the survey questionnaire.

The other large market segment demands a multi-spectral information product with a broad regional expanse of geographic coverage. The specific demand seems to be for a low- to medium-resolution, multi-spectral, information product affording a wide range of geographic coverage.

The smallest market segment, with 22 percent of the total demand, requires a higher-resolution, multi-spectral, geographic information product. The demand in this segment is for a high-resolution multi-spectral information product with a site-specific geographic coverage.

A third segment representing 23 percent of the market centers on an implied need for elevation and contour information products. The geographic information to meet their requirements shows a critical need for site-specific coverage, which may expand to a larger area, but not to a complete region.

A unique set of features and attributes defines the demand in each market segment that can be satisfied by a single type of information product. The geographic requisites of most firms appear to be very diverse. The diversity of needs calls for more than one product, as most needs cannot be satisfied by any single information product. An inability to fulfill all the needs of most firms may result with products developed for only one market segment. A firm or firms in an industry may have requirements that cannot be met by products developed for a single segments needs.

For example, a trend analysis indicated a 150 percent increase from current demand in the number of firms anticipating a greater or increasing need for thermal data or information in the future. In the same analysis, respondents indicated an increasing future demand for both soil and water monitoring information. The expected increases in soil and water monitoring information as indicated by the survey are approximately 30 and 40 percent, respectively.

General Information

The two primary methods used in collecting geographic data or information are traditional maps and field sampling. Together they represent approximately 75 percent of the expenditure by firms for geographic data or information products. Although satellite imagery was a selection category, it represented only 3 percent of the average firm's expenditures and 14 percent of the responses indicating its use.

The delivery time question demonstrated an increase of one third in the number of firms desiring information in less than 7 days. Overall there was a notable increase in the proportions of firms selecting an ideal delivery time much shorter than the current expected delivery schedules.

Generally all firms expressed a desire for improvements in data accuracy, timeliness, cost, and ease of use. Accuracy of data was the most frequently chosen improvement; cost was second, and timeliness tied for third with ease of use.

Respondents maintained a willingness to incur additional expense to obtain more current geographic information. When firms within industries were evaluated individually, more than 75 percent of the firms within the environmental and utility industries said they were willing to incur additional expense for more current data.

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UNDERSTANDING THE MARKET FOR GEOGRAPHIC INFORMATION: A USER NEEDS APPROACH

1.0 INTRODUCTION

The market for geographic information is beginning to require increasingly larger quantities of data and a greater variety of information products supplied in a more timely and consistent manner. Additionally, the market place is recognizing the benefits, attributes, and applications of geographic information products developed through remote sensing technology. Geographic information applications can be categorized into three managerial decision areas: competitive decision formulation, internal situation analysis, and demonstration of regulatory compliance. The applications of remote sensing technology as a data collection method can aid in investigating geographic problems and situations. Information products may assist decision makers in generating more effective judgments. The advantages of products developed from remote sensing technology over traditional methods of data collection have precipitated the cultivation of commercial information products using this relatively new technology. NASA Headquarters' Office of Advanced Concepts and Technology in Washington, DC, and the Commercial Remote Sensing Program Office (CRSPO) at the John C. Stennis Space Center, MS, are now championing this approach to gathering geographic data.

1.1 POLICY CHANGE

An end to the cold war has prompted a change in policy by the U.S. government, mainly through the Department of Defense, toward remote sensing data collection and sales by commercial organizations. Particularly sensitive to release have been the higher spatial resolution data that are more desirable for some commercial applications. Policy changes allowing private firms to obtain high-resolution data have created opportunities for these firms to open new markets desiring this information. Firms recognizing the opportunities are designing and developing products based on the newly available higher-resolution data. Care should be taken by marketers and related firms to understand the needs, desires, and the size of both domestic and international markets when designing and developing these highly technical and innovative high-resolution products. In the past some firms have designed and developed their products, utilizing substantial technical skill and innovation, unfortunately, this did not include a basic understanding of the needs, desires, or market potential of either the domestic or international markets.

As a result, current applications, potential uses, and the emerging market needs for new higher-resolution geographic information are beginning to materialize. Commercialization of higher-resolution, government-developed or sponsored advanced technology with new and improved products is appearing regularly.

Aerospace firms and other geographic data collectors using remote sensing technology, intermediaries who design and develop information products, and value-added retailers/vendors are constantly reassessing the geographic information market in hopes of identifying needs that can be satisfied by existing products. A constant problem for these firms is determining and understanding the needs of the new and emerging markets and the specific geographic information products required to satisfy a growing demand. The various product uses are so diverse and the products are so specific in the delivered information benefits that one product often will not meet all of a buyer's geographic information needs.

Several confounding factors limit the commercialization of data, obtained through remote sensing technology, into market viable information products. First, a mass market for geographic information products apparently does not exist. Instead, many market segments or niche markets are demanding products to fit their specific needs. Second, market segments and niche markets need to be identified so sellers can understand, design, and produce products to satisfy target market needs. Third, core markets for information products are so diverse and the need so narrow that even large international firms and governments seek specific geographic information. Finally, product markets necessitate in-depth investigations to determine the benefits desired by firms within each market segment or niche and the products which will best satisfy those needs.

For many firms the need for geographic information is so diverse it is impossible for one type of product to fill the information gap. Many different products may be required to satisfy a firm's entire need for geographic information. Some products may have multiple uses or be applicable to more than one problem or business situation within a firm. Information products provide a permanent record of current conditions and may be used and compared in a change analysis. These records are demonstrable proof of chronological conditions and may represent a record of change for regulation compliance or other conditions of physical change in geography.

A fuller understanding of the actual market may be gained through a broad-base investigation to develop a fuller understanding of market segmentation and market demand. Such research would foster greater appreciation for and comprehension of the multiplicity of buyers' needs. These diverse needs for geographic information products require a broad market analysis to investigate and focus more thoroughly on the end-user product/market needs. The consumer analysis uncovers opportunities to satisfy customer product needs.

Marketing research designed to contribute a better understanding of the market needs and demands for geographic information would assist data and information providers, intermediaries, and retailers/vendors in developing need-satisfying products. Innovative products could be designed and developed to comply with customer specifications. The information product could incorporate attributes to provide the benefits customers demand and require to meet their needs. The research would help sellers recognize and understand the current requirements and future expectations of the market. Addressing the needs and desires

of the buyers, along with producing products to satisfy those needs, would stimulate the market and expand demand by increasing the supply of desired products.

1.2 GOVERNMENT'S ROLE

The Clinton Administration and NASA have recognized the tremendous potential in both the domestic and international markets for geographic information products developed through remote sensing technology. The application of this technology through commercialization evidences an increased emphasis and momentum in the expanding information superhighway paradigm. As a means to building an alliance between government and business, NASA has engendered and held a National Workshop. The workshop focused on the market needs, technology applications, and policy issues associated with expanding the commercial use of remote sensing technology in the acquisition of data and the design, development, and marketing of geographic information products.

The workshop was developed to communicate new market information, to suggest product applications, and to champion a discussion of the issues restricting data acquisition, manipulation, and use at all levels of the geographic information market. People typifying firms at all levels of the product/market believed to have an interest in any portion of the geographic information market were invited to participate in the workshop. The intent of this NASA-sponsored workshop was to facilitate a better understanding of the market for remote sensing products and to encourage investment by firms in this leading-edge technology.

Through the CRSPO, NASA has researched a limited geographic information user market to acquire and disseminate market information in an attempt to encourage U.S. industry investment and commitment to the market application of remote sensing technology to geographic information situations. The aim of this research is to foster product development, to stimulate market acceptance and growth, and to aid firms in pursuing international leadership in the development of geographic information markets and products through remote sensing technology. Designed as a forum to discuss and share market information, technical applications, and policy issues, the resulting workshop evolved into a day-long market information session, supplemented by a marketing research study. The marketing research focused on the geographic information users' product needs and a segmentation of the market. The segmentation portion of the presentation included an identification of specific geographic information product types to satisfy end-users' requirements.

A decision by the Clinton Administration, the Department of Defense, and NASA to release advanced technology for private sector commercial application has been the genesis for the development and presentation of this workshop. The intention of the workshop was to foster a synergy by combining government-developed market information and technology with private industry needs through the sharing of ideas, concepts, and market information. More importantly, for the first time potential data suppliers, hardware/software vendors and value added retailers with a limited user (customer) base all convened to discuss a common situation. The intention of the workshop was to foster a better understanding of end-user

needs and to precipitate a dynamic discussion between all parties. The discussions revolved around the geographic information products needed to meet the current and future commercial demand for marketplace information.

2.0 METHODOLOGY

This section describes the techniques and methods used to define the problem, describe the study objective, and identify data collection and analyzing techniques. The methodology defines the direction of the study and establishes the ground rules. The methodology section is divided into four parts: an identification of the problem, the description of the objectives, the sampling plan, and the data handling procedures.

2.1 PROBLEM DEFINITION

To facilitate the National Workshop, a marketing research study was designed, developed, and implemented to produce and deliver a market-related product needs assessment, characteristics identification, and a market segment information analysis.

The primary mission of the project was twofold: 1) to investigate a limited geographic information end-users' market to determine product needs, and 2) to identify market segments (see Appendix A). The research intelligence reported here is a result of the market investigation. The results constitute the basis for the information presented here and the marketing component of the National Workshop. The next phase involved the assembly of a marketing committee to make decisions and to guide the research. The marketing committee consisted of Mark W. Mick, NASA project manager; Timothy Alexander, Space Development Services; William Schick and Robert Morris, KPMG Peat Marwick; and William S. Piper, The University of Southern Mississippi.

The main goal of this workshop component was to improve assessment of the data and information needs of the marketplace for geographic information products (see Appendix B). The CRSPO at Stennis Space Center in Mississippi primarily directed and performed the research. David P. Brannon, CRSPO Chief, envisioned, initiated, and guided the National Workshop. Mark W. Mick, a project manager for NASA and the CRSPO, developed, directed, and implemented the workshop program, while Dr. William S. Piper of the University of Southern Mississippi designed, coordinated, and analyzed the marketing research component.

2.2 MAIN OBJECTIVE

The main objective of this study is to profile the current and future geographic information needs for domestic end-user markets in terms of technical and economic outcomes. Meeting this objective will result from determining the following research objectives:

1. Both current and future commercial uses for geographic information.
2. Current methods used in collecting geographic information.
3. Frequency of geographic information purchase for each method.
4. Time required to collect geographic information from specification of need to receipt of data.
5. Yearly expenditure by firms for various sources of geographic information.
6. Ideal time lapse in collecting geographic information from specification of need to receipt of data.
7. Medium used when receiving geographic information.
8. Source used for gathering geographic information.
9. Driving force behind decisions to purchase geographic information.
10. Purpose of geographic information investigations.
11. Major features of geographic information investigations.
12. Respondents' perceptions of the most important improvements that could be made to geographic information.
13. Respondent firms' willingness to spend additional revenue to obtain more timely geographic information.
14. Future requirements for geographic information.
15. Demographic data from the responding firms.

2.3 RESEARCH DESIGN

A research design is the plan for collecting, processing, and analyzing data and for reporting the information (see Appendix A). It is also the process followed in transforming market data into usable information in addressing the defined problem or situation.

For this study, the scope of market needs for geographic information and the available secondary research suggested an exploratory research approach would be appropriate (see Appendix C). The rationale behind selecting the exploratory research approach is based on a general lack of good information to serve as a supporting basis in developing and testing research hypotheses. Stronger secondary support information would have allowed the researcher to pursue a more definitive study of objectives, hypotheses, and questions. Very little applicable market intelligence, raw data, or secondary information was found to support a predictive or descriptive study. The sparse current research leaves too many unanswered questions to be of practical value. A lack of rigor necessary to provide a sound basis for the extension and support of a more predictive study was apparent. To overcome this problem the research team (see Appendix A) decided on an exploratory research approach.

2.3.1 Sampling Plan

The sampling plan employed outlines the steps and procedures to be followed in selecting the sampling units for this research project. The plan describes the units to be selected for investigation and inclusion in this project and the subsequent sample of firms for the mail, telephone, and personal interview process. The procedure also provides the rationale for the

sample selection process and plan. The sampling plan includes the techniques for determining these factors: sampling frame, sample characteristics, sample selection, and sample size. The data plan outlined the data handling as follows: the data needs, data sources, data collection methods, data processing, and data analysis. Results of the above process are described in detail in the following section.

2.3.1.1 Sampling Frame

The sampling frame encompasses the compiled list of firms in markets and market segments as assembled by the research group. The sampling lists constitute firms from all spectra of the identified market having current commercial demands and uses for remote sensing data and information products. The compiled list contained a total of 15 markets and 42 industries. A manageable study size and research parsimony dictated the rationale for devising a study comprised of a smaller number of markets and industries, with the final number being reduced to 4 markets and 10 industries for this study (see Appendix P).

2.3.1.2 Sample Characteristics

Several characteristics were identified as preference criteria for the choice of sample market industries from the mega-market and the selection of firms from within the industries. A mega-market is defined as all firms needing geographic information but whose productive activities may be mutually exclusive of other firms in the business environment. The preference criteria establishes a sound and supportable basis for selecting firms to represent specific industries for investigation.

A primary criteria for market selection was for each market to be representative of one structure as defined from the task environment for geographic information. The task structure environments were identified as infrastructure management/mapping, land resource management, environmental assessment, and education/entertainment as listed in Figure 1. The other criteria deemed important and relevant in choosing the firms to be included in the sample are geographic dispersion, demographic characteristics (such as size), and diversity of product needs. Product use characteristics, such as quantity and frequency of use, were also considerations in selecting the sample.

It is evident the listed criteria could not all be applied to the firms in every market or industry, although these criteria did serve as guidelines. These industry characteristics and criteria across the markets would be a desirable attribute for generalizing the results and the subsequent information dissemination.

Three market characteristics provided the criterion for selection of firms for inclusion in the final personal interview sample. The selected firms represent new and emerging markets, operate in a high-growth market, or are leaders in their fields or viewed as high-impact in their respective business areas. All three of the criteria were not necessary for sample selection, yet the selected firms were expected to meet one or more of these criteria.

FIGURE 1. ORIGINAL MARKET SEGMENTS

-
- **INFRASTRUCTURE MANAGEMENT/MAPPING** - The identification of land attributes, characteristics, and phenomena; land mapping and evaluation; natural disaster analysis; and integration of information to intelligent vehicles/highway systems.
 - **LAND RESOURCE MANAGEMENT** - The identification, monitoring, and control of renewable and nonrenewable resources; crop monitoring and evaluation; mineral exploration.
 - **ENVIRONMENTAL ASSESSMENT** - Monitoring and assessment of ecosystem supporting intervention, abatement, and remediation; superfund sites; ground, air, and water hazard detection; and pollution detection.
 - **EDUCATION/ENTERTAINMENT** - The identification, monitoring, and analysis/evaluation of worldwide change; event analysis through geographic and political changes and futuristic adaptations of geographic information to "Virtual Reality" applications.
-

Source: Original data CRSP/NASA 1993

The selection of a group of firms to represent a highly regulated market was a desirable characteristic and supported the notion of regulation being a primary demand driver for many firms and industries. This may add weight to the expectation that regulations are dominant and may provide more insight into what appears to be a regulation-driven business, with regulation expected to be an important driving force in the expansion of demand for geographic information.

2.3.1.3 Sample Selection

Three different data collection methods were used in this study. Three mutually exclusive samples were selected from the sampling frame and comprised the units for each method of data collection. The three different data sampling methods were mail survey, telephone interview, and personal interview. The personal interview data collection concentrated on gathering information from the original four market segments: infrastructure, land resource, environmental, and education/entertainment. Firms were chosen from the primary sampling frame as representatives of the mega-market for the analysis of geographic information data and products.

2.3.1.3.1 Personal Interviews

Research data obtained from a sample of firms through the personal interview process utilized firms in the "transportation business" for the infrastructure environment, environmental engineering firms for the "Environmental Assessment" industry (which also represents the regulated industries), Agricultural and Forestry firms for the "Land Resource Management" industry, and "Public Information" for media/education.

Mr. Timothy Alexander of Space Development Services and Dr. William S. Piper of The University of Southern Mississippi conducted personal interviews for environmental engineering firms, representing the environmental assessment task environment. Personal interviews for the other three original segments and the mail and telephone data collections were assigned to KPMG Peat Marwick, functioning as data collectors for this study. NASA provided the leadership in all personal interviews by either performing or participating in the data collection. Data collected by Peat Marwick were transmitted to Mark W. Mick and William S. Piper at the CRSPO for review, analysis, and interpretation.

2.3.1.3.2 Telephone and Mail Interviews

The telephone interviews and the mail surveys were broader-based investigations representing ten industries. The mutually exclusive samples were drawn as equally as practical from each defined industry. The basic criteria for inclusion in the final sample were applied equitably to both the telephone interviews and mail survey samples.

2.3.1.4 Sample Size

The marketing committee determined a sample of approximately 20 personal interviews would be performed from the four original segments. This sample was expected to provide a sufficient database for generating in-depth information concerning the existing and potential use of geographic information.

The two additional sampling frames of geographic information users were provided from the mutually exclusive sample selected for this study. A sample of 100 firms was assembled for the telephone interview portion of the study. A third sample of 500 firms known to be geographic information users was employed for the mail survey.

2.3.2 Data Plan

The data plan represents the implementation of the sampling plan. The actual steps are identified in this section (see Appendix D).

2.3.2.1 Data Assignments

Each firm selected for a personal interview and investigation was assigned to a group of people responsible for contacting firms, conducting the interview, and gathering data. Each group was charged with performing the entire data collection process. The specific firms to be interviewed were chosen from the larger list of candidate firms and represented a portion of the sample from that industry. The telephone interviews and mail survey data collection tasks were assigned to KPMG Peat Marwick (See Appendix E).

2.3.2.2 Data Sources

Ten industries designated as representative of the four original market segments were considered important to the study (Figure 2). Four of the ten industries were selected to be part of a personal interview process to effect an in-depth analysis. The sample of firms within each industry was chosen and key personnel within each firm were identified, contacted, and invited to become respondents for the study.

2.3.2.3 Data Collection Instrument

The 15 research objectives provided the basis for a questionnaire containing 21 questions (see Appendices G, H, and K). One or more questions addressed each objective. Data collected offered the required information to address each objective. Both open-end and multiple-choice questions facilitated the exploratory nature of the study and investigated the issues outlined by the objectives. The design of similar instruments facilitated the telephone interviews and mail surveys. Furthermore, creating a system for data collection and data management enhanced the survey effort (see Appendix L).

2.3.3 Data Needs

The data required for this study were collected from firms in specific industries, and particular issues were addressed as expressed in the objectives. Each research objective specified information that was translated into a question or questions. The questions were formulated to contribute all or a portion of the data deemed necessary to provide an answer to the objective.

2.3.3.1 Data Collection Method

Three methods of data collection were used to give more breadth to the exploratory study. A questionnaire containing the 21 questions was mailed to the sample of 500 with a relatively similar number being mailed to firms in each industry. Telephone interviews were conducted using the same questions for a sample of 100 firms with approximately the same number from each industry. The telephone and mail surveys concentrated on all 10 industries, including the 4 industries subject to the in-depth personal interview data collection methods.

FIGURE 2. CLUSTERS AND SEGMENTS FOR SAMPLING FRAME

MARKET CLUSTERS Market Segments	RESOURCE MANAGEMENT	INFRASTRUCTURE MANAGEMENT	ENVIRONMENTAL MANAGEMENT	PUBLIC INFORMATION SERVICES
AGRICULTURE	X		X	
Crops	X		X	
FORESTRY	X		X	
Logging	X		X	
NON-RENEWABLE EXTRACTION	X		X	
Oil, Natural Gas, Minerals	X	X	X	
TRANSPORTATION	X	X	X	X
Rail, Road, Fleet Management, Pipeline Management	X	X	X	X
REAL ESTATE	X	X	X	
Sales, Development, Land Use Planning		X	X	
UTILITIES		X	X	
Telecommunications, Power, Water		X	X	
ENVIRONMENT		X	X	
Regulated Industries, Environmental Service Groups		X	X	
EDUCATION/TRAINING				X
Simulation Techniques, Universities	X			X
MEDIA/ENTERTAINMENT				X
Major Television Networks and Print Media			X	X
Cinema, Video Entertainment, Advertising			X	X
EMERGENCY SERVICES			X	X
Insurance, Disaster Relief		X	X	X

Source: Original data CRSP/NASA 1993. The list of firms representing the above industries was compiled by KPMG Peat Marwick.

2.3.3.2 Data Collection

A representative sample of 500 firms from all 10 industries received questionnaires containing the 21 items. The mailing also contained a self-addressed stamped envelope to encourage respondents to return the instruments. The Washington office of KPMG Peat Marwick conducted the data collection. A separate sample of 100 was used for the telephone interviews, which were performed by Peat Marwick over a 30-day time period. NASA's CRSPO at the Stennis Space Center in Mississippi received the completed data collection instruments (questionnaires) for recording, analysis, and interpretation. A series of summary tables and charts gleaned and reported information from the data. This report also offers further interpretation of information presented at the National Workshop.

Some telephone questionnaires evidenced incomplete data and inconsistent answers, resulting in the respondents' being re-interviewed by the staff of Sverdrup Technology, Inc., a NASA contractor assigned to the Commercial Remote Sensing Program. Approximately half of the telephone interviews required a re-interview to correct and complete the nonsampling errors and incomplete sections.

Personal interviews conducted at the respondents' sites facilitated access to records and personnel. NASA personnel from the CRSPO at the Stennis Space Center in Mississippi supervised the personal interview data collection.

2.3.3.3 Data Processing

All data collection instruments were reviewed for completeness and qualification as part of the data analysis function. This action finalized the data collection and verified a large enough sample to meet minimum statistical requirements. Upon completion of all questionnaires, the data were coded and entered into a spreadsheet data base. A data summary statistical package calculated summary statistics. The Sverdrup Technology, Inc. staff, using a similar statistical package and a Lotus program, produced graphs, charts, and tables.

2.3.3.4 Data Analysis

Review of all questionnaires for completeness occurred before analysis. Dr. William Piper, a professor of marketing and statistics at the University of Southern Mississippi, analyzed the data, calculating and displaying summary statistics in tables. Placing the data in categories and the information in tables, graphs, and charts resulted in new data being converted to a more usable form. Lotus 1-2-3 and Wings created tabular and graphical materials. The Wings program provided the summary statistics in tabular form and some graphics while the Lotus package produced some of the graphs and charts.

Identification of geographic information needs and trends of the market resulted from an analysis. A complete analysis and interpretation of the data follows this methodology section.

A statistical technique known as cross tabulation was utilized on a portion of the data to identify market segments and to develop a taxonomy of the market. A summary and analysis reports the remainder of the research data.

2.3.3.5 Sampling and Data Collection Results

A total of 18 personal in-depth interviews constitute the sample of 20 firms typifying the 4 original market segments.

The sample of 100 firms netted 80 completed telephone interviews. Another sample of 500 mail questionnaires netted 97 returns, resulting in 195 completed data collection instruments. These numbers represent almost a 20 percent rate of return from the mailing and better than 30 percent return overall. By comparison, two recent mail-based studies by GIS World, Inc. resulted in 11 and 14 percent rates of return.¹ Conventional statistical technique requirements suggest a minimum of 100 data points for normal results, because lower sample sizes often result in skewed results.

3.0 ANALYSIS AND RESULTS

This section provides the analysis and results in two parts. The first part describes the important findings and the results of the cross-tabulation process. The second part reports the overall and grouped data in summary form and in tables and charts.

3.1 IMPORTANT FINDINGS

An important outcome emanating from this research is the identification of market segments based on customer requirements for geographic information. A market segment is a group of buyers (firms) having a common need that can be satisfied by similar products. Producers of similar products promote the benefits of their offering to firms with common needs. To narrow the focus of the marketing effort, firms having common product needs are identified and grouped into segments. To compile information for identification of market segments, two questions on the survey were cross-tabulated. The cross-tabulation technique produced the relational information needed to isolate and identify the market segments.

The first question, number 11 on the survey (see Appendix H), asked respondents to identify the purposes of their geographic information investigations. A list of relevant investigative purposes for geographic information was compiled and incorporated into the multiple-choice question. Respondents had the option of selecting one or more purposes for collecting geographic information. Providing the option of selecting more than one purpose ensured adequate coverage of the scope of investigation.

¹Bryan, Nora Sherwood, "A Profile of GIS Users," 1994 International GIS Sourcebook, p. 577.

A second question, number 12 on the survey, asked respondents to identify the specific features of their geographic investigations. A list of features was again compiled and made part of the multiple-choice question. More than one feature selection from the list was available to the respondents in an attempt to capture all of the important data-requirement features.

A cross-tabulation analysis of the two questions produced the basic data for identification and interpretation of demand density. The variables from the questions were placed in a logical order based on what appeared to be the most appropriate combinations of needs related to the purpose and features of the investigation. The results were groupings of customers' demands around specific product needs or requirements. The highly correlated demand areas produced a heavy grouping of firms or a cluster configuration representing the density of demand for analysis and the basis for market segmentation. The density of demand around a product characteristic was later identified as a segment. Figure 3 shows a template with the two questions along the axes and the results of the cross-tabulation correlation analysis.

The number of firms responding to each cell in the template analysis, represents the density of demand for each variable combination, as shown in Figure 4. The density of demand is the correlation of common needs congregating around the characteristics of a desired product benefit.

3.1.1 Market Segment Cross Tabulations

Four distinct groups can be identified in the cross-tabulation matrix. The grouping of cells represents demand in configurations that identify a need that can be satisfied by a type of product. Next came recognition of groups as "market segments" as they conform to the widely accepted definition of market segments. The analysis depicted in Figure 5 shows the unique characteristics of each market segment. Each of the segments requires a different type of geographic information product response as delineated by the differences in defining characteristics for each demand.

Each action taken in response to the demand should result in a product to satisfy a different market segment for geographic information. As Figure 5 shows, each market segment falls into one discrete information type and a broadly defined geographic expanse resulting from each of the segment's having a unique product demand.

The type of information is defined as a broad product category resulting from information obtained from panchromatic, elevation and contour, and spectral techniques of data collection. The geographic expanse is defined broadly by the area of interest. The site-specific coverage might be a municipal landfill or similar small geographic area. The area coverage may be a city or town in size and a region could include areas as large as a state or watershed. The definitions allow for a broad interpretation as no specific linear dimensions were applied.

MARKET SURVEY INSTRUMENT -

CROSS - TAB TEMPLATE



National Aeronautics
and Space Administration

Stennis Space Center

What is the purpose of your firms investigation
when collecting Geographic Information?
(Question 11)

	Thermal Differences	Soil Monitor	Water Monitor	Land Cover	Land Attribute	Urban Demographics	Mineral Exploration
Vegetation							
Water							
Habitat							
Effluent							
Thermal Gradient							
Land Elevation Contour							
Mineral							
Right of Way							
Buildings							
Transportation Networks							

What are the major
features of your firms
investigation?
(Question 12)

Figure 3

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MARKET SURVEY INSTRUMENT - CROSS - TAB ANALYSIS



National Aeronautics
and Space Administration

Stennis Space Center

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APPLICATIONS

	Thermal Differences	Soil Monitor	Water Monitor	Land Cover	Land Attribute	Urban Demographics	Mineral Exploration
Vegetation		15	29	52	41	20	2
Water	8	23	12	27	40	22	
Habitat			4	33	31	20	4
Effluent	4	6	8				
Thermal Gradient	4	5					
Land Elevation Contour		12	14	36	49	31	14
Mineral				2			19
Right of Way				19	17	17	
Buildings					39	44	
Transport Networks					39	33	

FEATURES

NUMBER OF FIRMS RESPONDING

Source: Original data, CRSP-NASA 1993

Figure 4

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MARKET SEGMENT - CHARACTERIZATION

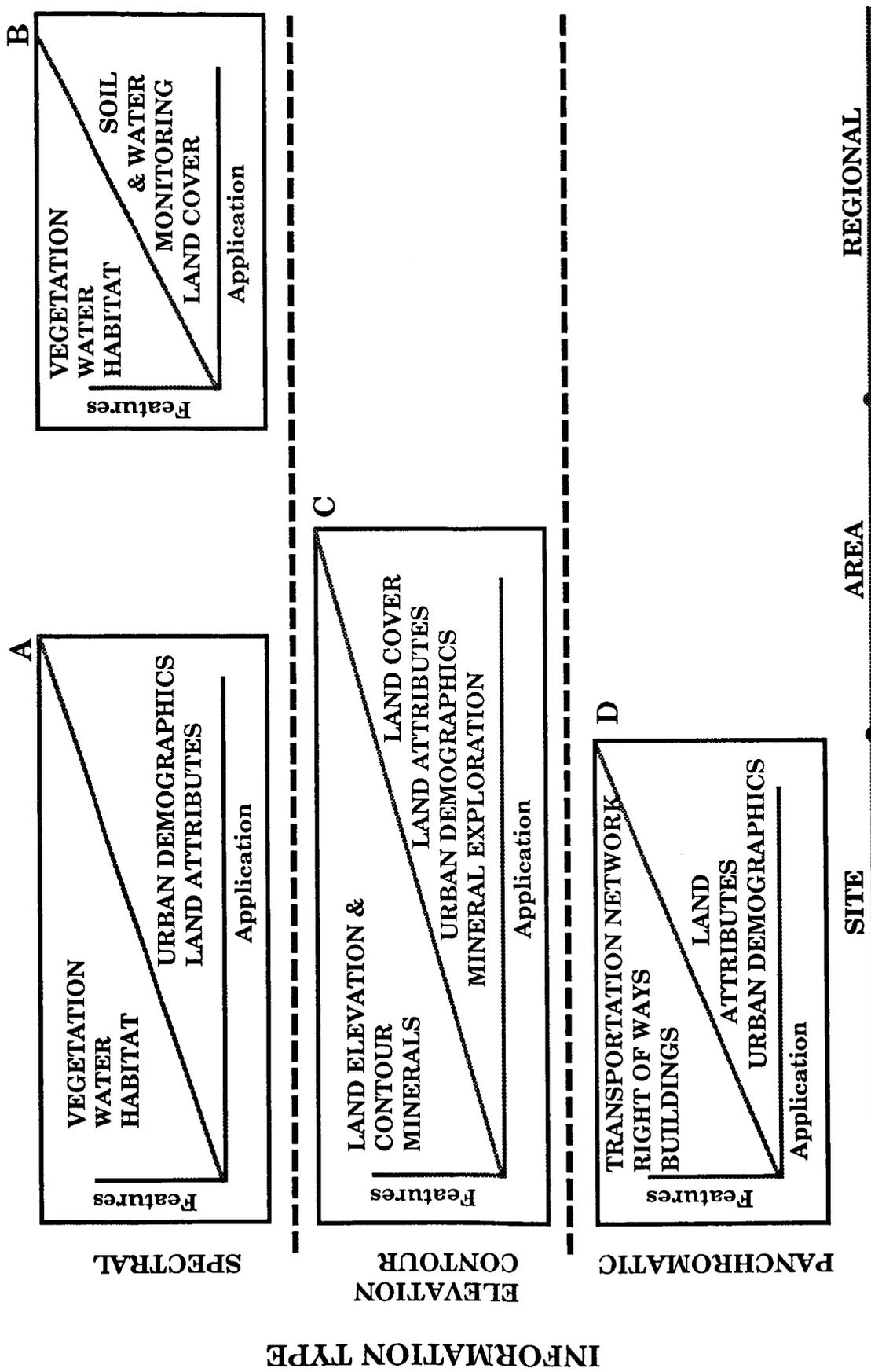


Figure 5

The product needs of the firms in each industry combine to define the market segments naturally (see Figure 5). The segments are more particularly defined by the type of information required and the extent of geographic coverage demanded. These characteristics, when synthesized, define the specifications to satisfy a broad demand. Firms selecting needs from a list of purposes and features establish the set of criteria resulting in the identification of a broad product need.

3.1.2 Market Segment Distribution

The market segment distribution (Figure 6) suggests the relative size of each market segment based on responses from the cross-tabulation analysis of industries. The sizes and shapes of the segment boxes represent an estimate of the extent of geographic coverage rather than market segment proportions.

3.1.3 Segment Analysis

A division of the market for geographic information into four groups, referred to as clusters, established the basic sampling frame for this study's data collection. Firms within the industry clusters were identified based on this division of the market by industry perspective and convenience. This division was referred to as market segmentation (see Appendix O or FIGURE 1). A subsequent analysis of the data showed an alignment of market segments different from the original clusters. These new or redefined segments and their characteristics are described in this section.

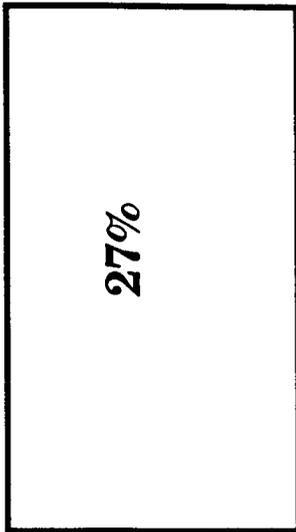
Segment D is the largest market segment with an approximate market share of 28 percent. The demand in this market segment may be satisfied by site-specific panchromatic information products. The product decision is implied by information gained from the demand density analysis (see Figure 4). The demand analysis shows geographic information characteristics that can be satisfied by a variety of products that deliver the specific buyer-identified information.

Segment B, with approximately 27 percent of the market, is for all practical purposes equal in market share to Segment D. This market segment may be satisfied by a variety of spectral information products that cover a region rather than the area or site-specific geographic extent of the other segments. This is the only market segment requiring regional coverage.

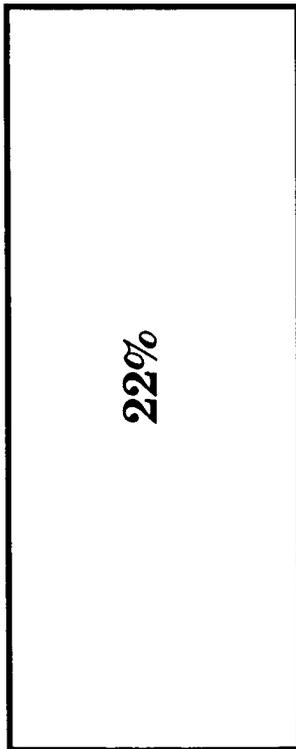
Market segments A and C are approximately the same size with approximate market shares of 22 and 23 percent market shares, respectively. Segment A requires a spectral product on a site-specific to an area-wide extent of coverage. Segment A has the same information type requirement as Segment B but a narrower extent of coverage.

MARKET SEGMENT - DISTRIBUTION

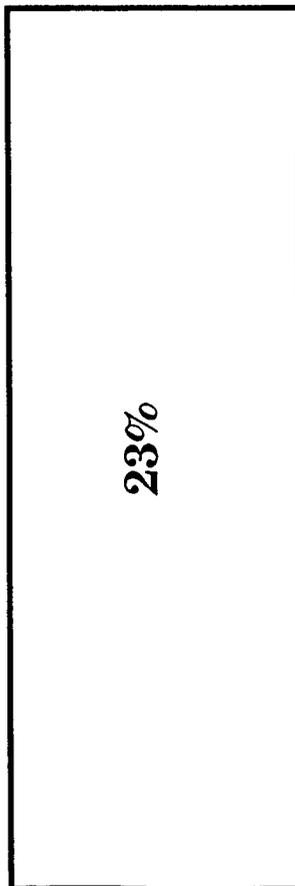
B



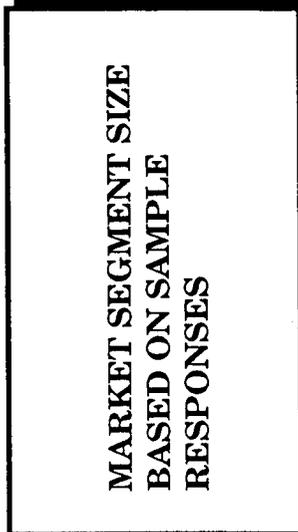
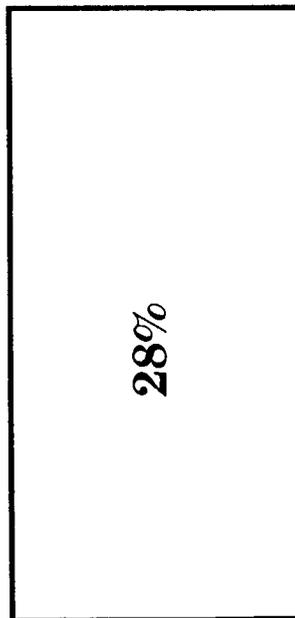
A



C



D



INFORMATION TYPE

SPECTRAL

ELEVATION
CONTOUR

PANCHROMATIC

SITE

AREA

REGIONAL

GEOGRAPHIC COVERAGE

Figure 6

Market Segment C utilizes a variety of elevation and contour information products. The extent of coverage seems to be broader than the other segments because the demand density in the analysis covered the entire extent of the geographic expanse. There may be some limitation on the ability of current technology to collect elevation and contour geographic data effectively.

3.1.4 Market Segment by Industry

The market segment-industry information depicted in Figure 7 shows the industries found to have demand in some (if not all) market segments. The percentages in each box reflect the proportion of each industry's total demand in that segment. The percentages in each segment do not total 100 percent. The projected box at the bottom right of Figure 7 illustrates the 10 industries and market segment proportion. The proportions for each industry totals to 100 percent in the projected box, but the totals within each market segment represent the industry total demand that appears in that segment.

3.1.5 Market Segments Redefined

The industries being considered in this study have been realigned in the segments shown in Figure 8. Reading across the table for each industry, the boxes with check marks denote the segment demand by the firms in that industry. An additional market demand for thermal information is also shown in Figure 8. The niche demand is identified as a market where a smaller number of firms have been found to require "thermal information" that appears to be important to some applications. Four industries in this study indicate a lower density of demand for thermal information. The matrix now identifies market segments rather than an industry function or how the industry views the market.

The segments can be identified by the type of product(s) that satisfy customer needs. There is a new alignment of industries that reflects the common product needs of the firms in each industry. The table also shows the variety of products required by firms in some industries.

3.1.6 Summary

The identification of different market segments is an important finding of this research. This identification exemplifies a change from previously held views of the market. A former division of the market by industry perspective or non-market characteristics as was shown in the original clusters of this study (see Appendix O) does not fit the classical definition of market segments. In any division of a market into market segments, a specific need-fulfilling product should be obvious and identifiable. Market segments should also be internally homogeneous but heterogeneous when compared to other segments. The organization of industries into clusters as introduced initially does not portray market segments and was abandoned. The new identification is based on the benefits sought by firms for specific information needed in management decision making.

MARKET SEGMENT - INDUSTRY

B

AGRICULTURE	92%
EDUCATION	24%
ENVIRONMENT	34%
EXPLORATION	9%
FORESTRY	39%
UTILITIES	13%

A

AGRICULTURE	8%
EDUCATION	36%
ENVIRONMENT	26%
FORESTRY	41%
UTILITIES	29%

INFORMATION TYPE

C

EDUCATION	26%
ENVIRONMENT	24%
EXPLORATION	91%
FORESTRY	20%
REAL ESTATE	53%
UTILITIES	12%

ELEVATION
CONTOUR

D

EDUCATION	14%
EMERG. SERVICES	100%
ENVIRONMENT	16%
MEDIA	100%
REAL ESTATE	47%
TRANSPORT	100%
UTILITIES	46%

PANCHROMATIC

INDUSTRIES	SEGMENT	PERCENT TOTAL
AGRICULTURE	A B	100
EDUCATION	A B C D	100
EMERG SERVICES	D	100
ENVIRONMENT	A B C D	100
EXPLORATION	B C	100
FORESTRY	A B C	100
MEDIA	D	100
REAL ESTATE	C D	100
TRANSPORT	D	100
UTILITIES	A B C D	100

SITE

AREA

REGIONAL

GEOGRAPHIC COVERAGE

Figure 7

MARKET SEGMENTS - REDEFINED



National Aeronautics
and Space Administration

Stennis Space Center

MARKET SEGMENT INDUSTRIES	HIGH RESOLUTION SPECTRAL	MID-LOW RESOLUTION SPECTRAL	ELEVATION CONTOUR	HIGH RESOLUTION PANCHROMATIC	THERMAL
	AGRICULTURE	✓	✓	✓	✓
EDUCATION	✓	✓	✓	✓	
EMERGENCY SERVICES				✓	
ENVIRONMENT	✓	✓	✓	✓	✓
EXPLORATION			✓		✓
FORESTRY	✓	✓	✓		
MEDIA				✓	
REAL ESTATE			✓	✓	✓
TRANSPORTATION				✓	
UTILITIES	✓	✓	✓	✓	

Figure 8

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Earlier analysis discovered four market segments typifying the requirements for geographic information products. To identify candidate firms, the analysis used a traditional "benefits sought" segmentation scheme that was extended to include specific industries. The analysis defined particular end-user requirements, benefits, and other characteristics as necessary to identify and isolate market segments. The market segment requirements were translated into broad product categories that fulfilled a portion of end-user demand. Within each grouping or market segment a specific type of product could be found and offered to satisfy demand.

Two of the four delivered market segments require multi-spectral data; one panchromatic data; and one contour and elevation data. Demand for this product also includes the area or extent of geographic coverage. Combining extent of coverage and singular product needs has created a unique product requirement. Therefore, a unique product offering satisfying a singular demand characterizes each market segment. Furthermore, the partitioned data for the entire sample enabled projection of the portion of industries residing within each segment. By measuring demand per firm rather than overall, the analysts was able to estimate segment size and market share.

In addition to the market segments, the investigation identified a market niche for thermal geographic information. This niche is smaller in demand and number of industries represented but is projected by the respondents as having an increasing demand and being anticipated to represent increasing requirements. The original market scheme was then redefined to represent the market's needs and requirements more fairly based on the benefits sought by the end-user firms.

The following section describes the information obtained to characterize the entire sample. The information described is general as it covers the overall market rather than a single segment.

3.2 GENERAL FINDINGS

The analysts compiled all data for the quantifiable questions as summary statistics. The tables depict the results in a straightforward manner to aid in better understanding the respondents' needs (also see Appendix A). Approaching an analysis of the data through summary statistics with a minimum of data manipulation or relationship comparisons allows a more direct comprehension of the responses and a fuller understanding for the extent of demand. An analysis of the responses included all questions analyzed for the workshop presentation. This section provides the general findings and reports the data without statistical analysis. The questions are reproduced here from the survey to aid in understanding, analysis, and discussion. The results for most questions are displayed in tables to facilitate an easy understanding and co-analysis of the data (see charts and tables in Appendix M). Results of the analysis are reported for each question individually; comments and inferences are included for additional perspective.

3.2.1 Questions 1 and 2

QUESTION 1

What is the nature and scope of your enterprise; i.e., what products and/or services characterize your business?

QUESTION 2

How do your business efforts relate to geographic information?

The first two items on the questionnaire were designed as a lead-in for the personal interviews and qualifying questions for the telephone and mail surveys. The results aided in determining whether the responding firms currently use or have a need for geographic information. The lead-in questions became ice breakers for the personal interviews and often derived answers to questions that would have been asked later in the questionnaire. If the firms did not use geographic information, the data from the questionnaire was not included in the data base. An analysis of the 195 mail-returned questionnaires and telephone and personal interview documents showed 11 data collection forms had answers of "no" to questions 1 and/or 2 or were otherwise disqualified and 5 were blank and eliminated from further consideration. A total of 179 completed questionnaires remained in the pool for further analysis.

The remaining question analysis requires a prefatory explanation before presenting and discussing the data and results. Most of the questions allowed for and received multiple responses. Each multiple-answer question could have been rewritten as five or more single-answer questions. The exploratory nature of the study and the high number of question combinations that would be required dictated this more parsimonious approach to data collection.

One objective of the study was to determine general trends, not to provide definitive answers. Almost all firms represented in the study indicate they use more than one data collection method to meet their geographic information needs. Question 3 provided five response categories, and subsequent questions frequently asked respondents to relate their answers back to the categories in this question when selecting responses. The rationale was to correlate answers based on method of data collection.

3.2.2 Question 3

What method or methods does your firm currently use to acquire geographic information?

This question sought to gather data on the frequency of use of the primary data collection methods identified as important to firms requiring geographic information. The question

received 478 responses from 165 respondents. The far left column in Table 1 lists the primary data collection methods, while the column to the right provides the number of firms selecting this method. The third column shows the proportion of firms in the study making this selection, and the final column depicts the percent based on all responses.

The results in Table 1 illustrate that 81 percent of the firms use aerial photography and maps as a source of geographic information, and almost 77 percent use field sampling. These three data collection methods appear to be the primary means firms use to meet their geographic information needs. Only 41 percent of the respondents said they use satellite imagery to collect geographic data. Obvious inferences from these results are that most firms use more than one method of data collection, and satellite imagery is not a frequently chosen or primary method of data collection. The three primary or most frequently used data collection methods are aerial photography, maps, and field sampling. The response categories provided as part of the question appear to represent the primary sources of geographic information with only 15 firms (about 9 percent) choosing the other category.

The data in column four of Table 2 shows that almost 84 percent of the firms use two or fewer methods of data collection, and almost 23 percent of the firms use all four methods. The cumulative percentage column shows 100 percent of the responding firms use at least one method of data collection and almost 60 percent use at least three methods. Inferences suggest firms utilize different methods for different types of data collection and use more than one method in support of other data collection methods.

TABLE 1. COLLECTION METHODS

Methods for Data Collection	Number of Firms	Percentage of Firms	% of Total Responses
Aerial Photography	134	81.0	28.0
Satellite	69	41.0	14.4
Maps	133	81.0	27.8
Field Sampling	127	76.6	26.6
Other	15	8.4	3.1
Total	478		100.0

Source: Original data CRSP/NASA 1993

TABLE 2. NUMBER OF DATA COLLECTION METHODS USED

Methods Used	Number of Firms	Percentage	Cumulative Response
1	29	16.5	100.0
2	42	23.9	83.5
3	64	36.4	59.6
4+	41	23.3	23.2

Source: Original data CRSP/NASA 1993

3.2.3 Question 4

How frequently is the geographic information in #3 acquired (in days)?

The question asked the respondents to cite the frequency of their geographic information purchases in days for each method chosen in question number three. More than 53 percent of those responding to this question said they purchased geographic information approximately once a week (52 times per year). Table 3 illustrates the purchase frequency of the firms in the sample, and the data represent 370 responses from 144 respondents. Peak purchase frequencies appear at once a week, about once a month, and periods greater than twice a year with these times have been chosen by more than 65 percent of the respondents. These three time periods represent the most frequently chosen delivery periods and are spikes in the data. Firms appearing to be heavy users require geographic information more frequently, such as once a month, while the light users may purchase data twice a year. An analysis of delivery times by data collection method shows frequency of order differences between firms in the same industry.

3.2.3.1 Aerial Photography

The peak demand period for aerial photography is the greater than 180 days response. This response category has a greater than 30 percent response rate. Aerial photography has the greatest response in the less than four times a year selection with almost 50 percent of the firms indicating they use aerial photography in periods of less than 90 days. Aerial photography appears to be used less frequently as a means of geographic data collection with approximately 16 percent of the respondents using the technique and less than 38 percent utilizing it in a 30-day period.

TABLE 3. FREQUENCY OF PURCHASE

Method of Data Collection	Number of Days								TOTAL
	<7	7-14	15-21	22-30	31-60	61-90	91-180	>180	
Aerial photo	15	7	3	10	8	6	16	28	93
Satellite	2	4	2	11	6	7	8	8	48
Maps	16	9	6	23	4	10	7	12	87
Field Sample	31	8	4	8	6	6	9	13	85
Other	13	6	4	11	4	2	7	10	57
Total	77	34	19	63	28	31	47	71	370
# Firms with no response = 35									

Source: Original data CRSP/NASA 1993

3.2.3.2 Satellite Imagery

Approximately 81 percent of the 48 firms made use of satellite data for geographic decisions order between 2 and 12 times per year, while nearly 13 percent of the total responses were to order satellite imagery. The peak period for satellite orders is between 3 and 4 weeks with almost 23 percent of the demand.

3.2.3.3 Maps

Almost 70 percent of the firms using maps place orders between the periods of 30 and 60 days to 52 times a year or once a week, with at least one-third of the firms choosing satellite data order 12 times per year (once a month).

3.2.3.4 Field Sampling

More than 36 percent of the firms order field sampling in the less than 7 days period. The purchase frequency of less than 7 days is the peak period of requiring geographic data using a field sampling method. Of the firms utilizing field sampling, almost 50 percent order between 12 and 52 times per year. Although aerial photography was selected by a larger percentage of firms than the other data collection methods, the frequency of ordering field sampling is

greater. Based on the results of this question, both field sampling and maps appear to be the primary methods for collecting geographic data.

3.2.4 Question 5

What is the delay (in days) from specification of needs in #3 to receipt of geographic information?

This question asks respondents the time to delivery from specification of need to receipt of product for each method of data collection chosen in question 3. Approximately 30 percent of the firms indicated reception of geographic data in less than 7 days, while another 30 percent received data in 21-45 days. About 25 percent indicated a delivery time of between 1 and 3 weeks (7-20 days). Almost 15 percent stated delivery time greater than 45 days as can be determined from the five data columns in Table 4 (see Appendix K for calculations).

TABLE 4. DELIVERY TIME

	Number of Days					Total Firms	Average Days
	<7	7-20	21-45	46-60	>60		
Aerial Photography	15	19	23	8	8	73	33
Satellite	4	9	18	1	2	34	37
Maps	23	15	11	3	2	54	14
Field Sampling	20	12	12	5	3	52	21
Other	13	6	11	1	3	34	24
Total	75	61	75	18	18	247	
No Response - 73 firms							

Source: Original data CRSP/NASA 1993

Satellite imagery had the longest time to delivery with more than one-half of the responses (85 percent) falling below 45 days. Maps seemed to have the shortest median delivery time with less than 7 days between specification and delivery. The median average for the delivery of field sampling was about 10 days. The "other" category, which was undefined, represented almost 14 percent of the total responses to this question.

3.2.5 Question 6

*What are your estimated yearly expenses for each category checked in question #3?
Enter 0 if not applicable.*

Question 6 asked for expenditure estimates for each data collection method selected in Question 3. The average expenditure for each firm in purchasing geographic information amounts to \$346,000 per year. Firms spend the most on field sampling (approximately \$264,000 per year). Satellite imagery has the lowest average firm expenditure of \$32,000 per year. Expenditures appear to be frequent but lower in monetary value. More than one-half of the firms using aerial photography spend less than \$6,000 per year for this type of geographic information. The greatest response for satellite imagery is also the \$6,000 or less category. The largest category for field sampling is the greater than \$50,000 category representing more than one-third of all firms' geographic information expenses. Table 5 presents the expenditures by method of data collection for responding firms.

TABLE 5. EXPENDITURES FOR DATA

	Dollars (\$1000)						Avg. \$K	Total Expenditure
	<6	6-20	21-50	>50	Total			
Aerial Photography	43	18	8	10	79	47	3,713,	
Satellite	17	7	9	6	39	32	1,248,	
Maps	49	8	7	9	73	167	12,191,	
Field Sampling	7	18	16	21	62	264	16,368,	
Other	10	7	6	8	31	160	4,960,	
Total	126	58	46	54	284			
No Response - 68 firms								

Source: Original data CRSP/NASA 1993

The less than \$6,000 category is the largest overall category selection receiving more than 44 percent of the responses. Only 111 firms (62 percent) of the sample answered this question. Questions of this nature often receive a low response.

3.2.6 Question 7

What frequency of information acquisition would be ideal for your firm in each category checked in question #3?

Question 7 is a follow-up to the time to delivery question (#5) and asks what the respondent would consider to be the ideal delivery time. The number of firms indicating they would like data delivered more quickly increased by 67 percent. The overall trend of the data is toward a shorter delivery time than is currently offered. A comparison of Tables 4 and 6 supports the observed difference in demand. Table 6 illustrates the data in tabular form.

TABLE 6. IDEAL DATA DELIVERY TIME

	Number of Days					Totals	Ave. Days
	<7	7-20	21-45	46-60	>60		
Aerial Photographs	21	16	8	0	25	70	228
Satellite	13	12	7	0	5	37	71
Maps	33	8	10	0	13	64	53
Field Sampling	32	6	9	1	9	57	207
Other	21	8	4	0	8	41	45
Total	120	50	38	1	60	269	
No Response - 85 firms							

Source: Original data CRSP/NASA 1993

More than 44 percent of the responses chose the less than 7 days category as the most ideal time of delivery. The current time to delivery had 120 responses in the less than 7 days category. Ideal delivery times for data were shorter for all data collection methods. When viewed graphically (APPENDIX FIGURE A18), a definite trend toward quicker time to receipt of geographic data can be seen. The largest increase in demand for a shorter delivery time occurs for satellite imagery. This shift in buyer intentions may indicate a better acceptance of satellite image data as a source of geographic information if quicker time to delivery can be offered. The important information gained from this question is the perceived desire by respondents for a quicker delivery time of data and a potential shift toward satellite imagery if data can be delivered more quickly.

3.2.7 Question 15

In what forms does your firm acquire spatial information?

Question 15 was inserted here to continue the flow of information on delivery of the product in specific forms. Question 15 queries participants as to the form in which their firms receive geographic information. The four response categories to this question were hardcopy, electronic, computer medium, and other. The fourth choice, other, included a blank space for a write-in response. The category selections were broad and generic rather than specifically defined. More than 53 percent of the responses chose hardcopy reports. Although hardcopy was the most frequently chosen category, the respondents in the personal interview sessions said they convert all collected data to a digital form, shortly after receipt, for easier manipulation and interpretation of data.

Almost 14 percent of the respondents chose electronic methods while 30 percent selected the computer medium. Only 8 respondents, representing 3 percent of the total, chose the other category. The low percentage of other category selections may indicate the three broad categories encompassed the major forms in which data are received. Table 7 illustrates the responses to this question.

TABLE 7. FORMS OF GEOGRAPHIC INFORMATION

Form Data Received	Number of Firms	Response Percentage	% of Total Responses
HC - Hardcopy	143	79.9	53.2
EC - Electronic	37	20.7	13.8
CM - Computer Medium	81	45.3	30.1
OTHER	8	4.5	3.0
Total	269		100.0
Other selections: Wire services, Hardcopy, C/D ROM, and Digitized			

Source: Original data CRSP/NASA 1993

As stated above, comments from the personal interviews indicated hardcopy data are converted to computer medium shortly after being received. It is inferred from this information and Question 4 results that a large portion of the geographic information used by firms is from aerial photography, field sampling, and/or maps. These data forms do not normally come in a computer-medium form and must be converted for manipulation and

analysis. The results point out the potential for computer-friendly data sets of geographic information and suggest a market opportunity to fulfill an need expressed by buyers.

The number of firms with multiple responses to the different forms of data collection is shown in Table 8. More than 54 percent of the responses show they use only one form of data delivery. Twenty-three percent of the responses show two forms of information are currently being received. Almost 16 percent of the firms use all three forms of data.

TABLE 8. NUMBER OF FORMS USED

Number of Forms Selected	# Firms	Percent*
1 form of GI	97	54.2
2 forms of GI	42	23.5
3 forms of GI	28	15.6
No response	11	6.1

Source: Original data CRSP/NASA 1993

3.2.8 Question 9

What is the source of geographic information for each category checked in question #3? Indicate by matching the source of data to the current method(s) employed.

The questionnaire asked respondents to identify their firm's source or sources of geographic information from among three offered selections and one other category. Almost 40 percent of the respondents indicated their firms used outside services as the primary data source. Less than 34 percent of the responses maintained they "collect data ourselves" and another 28 percent chose "use government sources." The "other" category was not selected as an alternative by any respondents in the study. The lack of a single other response may indicate the inclusive nature of the three selection categories. The customers' needs appear to be met with these sources. A further analysis of the data reveals more than 30 percent of the respondents use all three sources of data collection, and 66 percent utilized two or more sources.

3.2.9 Question 10

What are the key reasons your firm acquires geographic information?

Determining what factors drive demand for geographic information and subsequently establishing the need for specific information products was the focus of Question 10. Why firms purchase geographic information is a basic economic and marketing question helping sellers better understand buyer motives and the problems they hope to solve with a product. Buyer motivation establishes the benefit to be satisfied by the product attributes. This question asked for the primary outside influence that develops the motivation to be satisfied through the purchase of a geographic information product. The respondents had four categories from which to choose: regulatory requirements, capital investments, internal operations procedures, and support for client's plans. None of the selection terms was defined or explained to the respondents prior to their choice of an answer.

The category most often selected as a primary reason for buying geographic information was internal operations' procedures, with almost 35 percent of the responses in that choice category. More than 24 percent of the responses selected the choice to meet regulatory requirements. Support client plans and capital investments garnered 24 and 12 percent of the responses, respectively.

This question allowed multiple responses. When analyzed on the basis of responses to percent of firms, more than 61 percent of the firms chose internal operations' procedures, and almost 44 percent of the firms chose regulatory requirements. Support client plans and capital investments were at 42 and 22 percent of the firms.

The other category for this question finds that 5 percent of the firms use geographic information for research and teaching. A further analysis of the data points out that 52 percent of the firms cited two or more reasons for collecting geographic information, and 16 percent chose three or more reasons.

3.2.10 Question 11

For what purpose(s) does your firm use geographic information?

___ *Land cover classifications*₁₀₈ ___ *Thermal differences*₁₀₉

___ *Urban/demographic changes*₁₁₀ ___ *Water monitoring*₁₁₁

___ *Soil monitoring*₁₁₂ ___ *Land attributes*₁₁₃

___ *Minerals exploitation*₁₁₄ ___ *Other* _____

_____115

Question 11 was analyzed and discussed in the section identified as important findings. The earlier analysis cross-tabulated this question and Question 12. This question addressed the customer market needs based on the benefits buyers look for and expect to receive from a product. The question was correlated through a cross-tabs analysis with a similar question on the features of a geographic investigation and a second comparison with anticipated future need.

The complete question is shown here along with the answer selections. The significance of this question was to gather information on the main purpose for a firm's geographic investigations. Seven categories, along with an other choice, provided room for a write-in response. This question allowed for multiple responses as reflected in the percentages shown in Table 9.

The most frequently cited purpose for gathering geographic data was the acquisition of land attributes information. This alternative was selected by more than 57% of the respondents. Land cover classification was the second most frequently cited reason with almost 51% of the respondents selecting this choice. The results of this question are more valuable through the comparison analyses performed and reported earlier than the general analysis. The outcome of this question serve a definite purpose by identifying geographic characteristics looked for by the responding firms.

TABLE 9. PURPOSE OF INVESTIGATION

Purpose	Number of Firms	Percentage	% of Total Responses
Land Cover Classification	91	50.8	22.2
Thermal Differences	11	6.1	2.7
Urban Demographic changes	67	37.4	16.3
Water Monitoring	40	22.3	9.8
Soil Monitoring	50	27.9	12.2
Land Attributes	102	57.0	24.9
Minerals Exploration	24	13.4	5.9
Other	14	7.8	3.4
No response	11	6.1	2.7
Total	410		100.0

Source: Original data CRSP/NASA 1993

An analysis of the multiple response frequencies indicates that 31 percent of the respondents chose only one purpose for their investigation. Another 31 percent cited two or more purposes and almost 6 percent found that five purposes existed. The analysis portrayed in Table 10 presents the number of firms responding to each selection and the response percentage as a portion of the total number of firms. Almost 69 percent of the firms chose two or more purposes. This evidence pinpoints the many needs for geographic information by responding firms. The proportions in Figure 5 also delineate the many different purposes and how they relate to each market segment.

TABLE 10. NUMBER OF PURPOSES CHOSEN

Number of Purposes	Number of Firms	Percentage*
1	56	31.3
2	55	30.7
3	26	14.5
4	14	7.8
5	10	5.6
6	5	2.8
7	2	1.1
No response	11	6.1
Total	179	100.0
Source: Original data CRSP/NASA 1993		

3.2.11 Question 12

What are the major features derived from geographic information?

___ *Habitats*₁₁₆ ___ *Buildings*₁₁₇ ___ *Vegetation*₁₁₈

___ *Transportation networks*₁₁₉ ___ *Water*₁₂₀

___ *Right of Ways*₁₂₁ ___ *Minerals*₁₂₂ ___ *Effluents*₁₂₃

___ *Thermal gradients*₁₂₄ ___ *land elevation or contour*₁₂₅

The question investigates the specific geographic information features the respondent firms were seeking in their investigation. This was the follow-up to Question 11 that probed to gain a better understanding of geographic information investigation details. The question probed the features within the investigation. Question 12 was combined with Question 11 in a cross-tabulation analysis and formed the basis for a market segmentation. The question and response categories were reproduced to aid question understanding and the analysis.

An examination of the data in Table 11 presents a configuration with three columns of data next to each feature: the number of firms choosing each feature, the percentage of total responses for each feature, and the proportion of all firms choosing each selection. This question probed a little deeper into the buyers' purchasing reasons to better understand the benefits buyers are looking for or anticipating when purchasing geographic data.

TABLE 11. MAJOR FEATURES DERIVED FROM GI

Features	Number of Firms	Percentage	% of Total Responses
Habitats	52	29.1	10.7
Buildings	58	32.4	12.0
Vegetation	66	36.9	13.6
Transportation Networks	55	30.7	11.4
Water	56	31.3	11.6
Right of Way	45	25.1	9.3
Minerals	22	12.3	4.5
Effluents	13	7.3	2.7
Thermal Gradients	8	4.5	1.7
Land Elevation or Contour	73	40.8	15.1
Other (Soil Testing)	12	6.7	2.5
No response	24	13.4	5.0
Total	484		100.0

Source: Original data CRSP/NASA 1993

A review of the data indicates land elevation or contour as the most frequently chosen feature of the geographic investigations with almost 41 percent of the responses. There were 5 other

categories, each representing almost 30 percent or more of the responses to this question. These 5 categories are habitat, buildings, vegetation, transportation networks, and water monitoring. The other category stands for less than 3 percent of the responses, and the no category comprised 5 percent of the total responses. Almost 75 percent of the firms chose more than one feature in their investigation, and more than 50 percent chose more than two features as shown in Table 12 below.

TABLE 12. NUMBER OF FEATURES CHOSEN

Number of Features	Number of Firms	Percentage
1	46	25.7
2	39	21.8
3	23	12.8
4	17	9.5
5	12	6.7
6 - 10	20	11.2
No response	22	12.3
Total	179	100.0

Source: Original data CRSP/NASA 1993

3.2.12 Question 14

What would you consider to be the most important improvements to the geographic information you now acquire? Check and rank all that apply.

A ___ *Spatial resolution*₁₂₇ B ___ *Timeliness*₁₂₈

D ___ *Cost*₁₃₀ C ___ *Geo. location*₁₂₉ E ___ *Ease of use*₁₃₁

F ___ *Clarity of image*₁₃₂ G ___ *Other* _____

133

Question 14 sought to discover what geographic information improvements are most crucial to firms. The improvement most frequently named by the respondents was spatial resolution or image fidelity with more than 66 percent of the firms selecting this option. Image fidelity is a combination of spatial resolution and clarity of image chosen by more than 80 percent of

the respondents. The second most frequently preferred improvement was cost, chosen by more than 59 percent of the responding firms. Timeliness and ease of use were third and fourth with 45 and 37 percent of the responses. Almost 17 percent of the responses were represented in the other category. The write-in selections were more specific than the improvements provided in this selection. Improvements in data were desired by most firms as indicated in the following analysis of the multiple choice responses.

This multiple-response question cited almost 65 percent of the firms choosing three or more desired improvements. Of these firms, 26 percent chose three improvements. With almost 85 percent of the firms opting for two or more improvements, the firms surveyed are suggesting there are many areas for improving geographic information attributes and characteristics which will provide an opportunity for building a competitive advantage through benefit segmenting.

3.2.13 Question 14a

If more than one answer above is checked, please rank your responses with 1 being the most important and 7 the least.

The second part of this question asked respondents to rank their selections in order of importance. Respondents recorded their answer on a scale from 1 (for most important) to 7 (for least important), with the number of responses for each improvement being recorded and weighted. A reverse-order weighing system was used where a number one selection receives a weight factor of seven and a number seven selection receives a weight factor of one. An analysis of the question using the weighing factor shows spatial resolution, cost, timeliness, and ease of use ranked in this order, respectively. More than 15 percent of the responses were in the other category indicating improvements other than those used for this analysis.

3.2.14 Question 8

Do you think your firm is willing to incur additional expense to obtain more up-to-date geographic information?

The intention of this question was to determine if the respondents thought their firms would be willing to expend resources to obtain more up-to-date geographic information. More than 59 percent responded positively to this question. The answer to this question appears to indicate a desire on the part of buyers to spend more money to gain up-to-date data or information. A competitive advantage may be gained by developing products with more up-to-date improvements as a benefit to the buyer. A competitive advantage could be gained by being the first in the market with an improvement that identifies the firm as a leader in some categories important to the buyer. Question 8 better fit the flow of information at this point.

3.2.15 Question 17

Will your firm have a need for any of the following geographic information investigations in the future?

Question 17 was a follow-up question with a listing of options identical to question 11 but was designed to solicit a response concerning future needs for geographic data and information. Table 13 provides the percentage of responses for each application of geographic information. Land cover classification was the most frequently chosen future application with 60 percent of the responses. Land attributes was second with 56 percent. The greatest change in future needs appears to be for thermal differences, because the demand for thermal difference increased from 7 percent of the respondents in Question 11 for current information to 18 percent in Question 18 on future needs (see Appendix K for calculations).

The multiple response aspect of the question concludes that more than 74 percent of the respondents chose two or more categories for future needs. More than 52 percent chose three or more categories.

TABLE 13. FUTURE NEEDS

Application	% of Firms Responding	% of Total Responses
Thermal differences	18	21
Soil monitoring	41	13
Water monitoring	36	6
Land cover	60	6
Land attributes	56	15
Urban demographics	44	15
Mineral exploration	17	20
Other	14	4
Total		100

Source: Original data CRSP/NASA 1993

3.2.16 Question 19

Annual revenue (in millions) <\$1__16__₁₅₃ \$1-20__38__₁₅₄

\$21-50__7__₁₅₅ \$51-100__18__₁₅₆ >\$100__88__₁₅₇

The number of responses to each category has been entered into the question. When categories are combined, the statistics show that 32 percent of the responses are in the less than \$20 million per year category. The \$20 to \$100 million category contains approximately 15 percent of the responses. The remaining 53 percent of the responses falls into the greater than \$100 million per year choice, consequently, skewing the outcome of this question toward the high end of the scale.

3.2.17 Question 20

Current number of employees _____₁₅₈₋₁₆₂

There was a fairly even distribution in the answer to this question on the number of employees. Approximately 29 percent of the respondents indicated less than 100 employees. About 34 percent said between 100 and 1000 people were employed, and the remaining 37 percent said they have more than 1000 employees.

3.2.18 Summary

This section has provided more general market information on what firms require from geographic information. A large portion of the information was related to the method used to collect data. By collecting data for each method used, the analysis concentrated on user needs for products developed by each method. The most frequently used methods of data collection consists of aerial photography, maps, and field sampling. A further analysis showed that maps and field sampling were the most frequently used methods, and delivery time from request to receipt was shorter. Firms maintain a higher level of expenditure for maps and field sampling, suggesting maps and field sampling are the primary methods of data collection.

An ideal time of delivery question posted a significant increase in the number and percentage of firms desiring all forms of data be delivered with a shorter time between request and receipt. Several questions were designed to gather general information about the form, source, and reason for data collection. The more specific benefits questions provided more specific information on user needs. Based on this information, product types were identified. The information allows interested firms to further investigate the specific needs of the segment and identify a product need of buyers. The broad product types identified in this study do not specify products to meet market needs (see Appendix A for additional charts and figures).

4.0 CONCLUSIONS

The requirements by firms for geographic information are too diverse to be satisfied by a single, geographic information product. Firms may require different products to satisfy different geographic information needs. Firms in several industries indicate needs in two or more segments and some firms in all four segments. Each segment requires a products with different information characteristics and in some cases different technology applications.

Competitive advantage may be gained by firms concentrating on providing more specialized services in one or more areas as outlined in the report. Firms might offer a product with more precision or quicker delivery times. Competitive advantage is gained when a firm offers a differential product, especially if the uniqueness of the product can be sustained. The study has identified several key areas where competitive advantage could be gained and sustained if competitors fail to respond quickly to a changing geographic environment.

5.0 FUTURE PROSPECTS

The prospects for a healthy geographic information industry supported by remote sensing technology appear to be good. The demand for geographic information products is high, with much of the demand being driven by federal and state regulations affecting many industries. The environmental monitoring firms in particular will experience an increasing demand for their services and the information products they can provide. The market for geographic information products derived from remotely sensed data is in its infancy and is expected to grow at an increasingly rapid rate.

The information in this report could provide a basis for developing a competitive advantage. To develop a competitive advantage, firms must design and produce a product or products that satisfy a specific end-user need not met by other products. The study was performed on an experimental basis and further analysis is indicated. Firms using this information should view the results with the basis of the study in mind. Decisions to use the information contained in this study should be made carefully after further analysis and use of this report as a starting point to identifying market segments and overall market information.

6.0 GLOSSARY

Cross tabulation: Method of presenting and comparing data on two or more variables to discover relationships.

Exploratory research: A design providing researchers with ideas and insights about a broad and relatively vague problem.

Firm: A privately owned organization that serves its customers in order to earn a profit.

Focus group interview: A form of survey research in which a moderator (a highly trained interviewer) meets with eight to twelve participants and leads them through a discussion on a given topic to develop hypotheses about an existing or potential product or marketing problem that might lead to more specific marketing research projects.

Industry: A group of firms offering products that are close substitutes for each other.

Intermediary: A person or firm in a marketing channel, such as a wholesaler or retailer, that operates between the producer and the final buyer of a product (also called a reseller or middleman).

Market: A set of individuals or organizations that desire a product and are willing and able to buy it.

Marketing: The process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services to create exchanges that satisfy individual and organizational objectives.

Marketing database: A collection of interrelated data about an organization's individual prospects and customers that is intended to satisfy the organization's marketing information requirements.

Marketing strategy: A broad plan of action for using an organization's resources to meet its marketing objectives.

Market niche: An area of unfulfilled need in a market that is smaller than a segment and often requires a customized product.

Market segmentation: A process of identifying smaller markets (groups of people or organizations) that exist within a larger market.

Primary data: Facts and figures that are newly collected for the project.

Secondary data: Published data from outside the firm or organization.

Target market: One or more specific groups of potential consumers toward which an organization directs its marketing program.

Technology: The knowledge to do new or old tasks in a better way.

APPENDIX A
WORKSHOP VIEWGRAPHS

COMMERCIAL REMOTE SENSING WORKSHOP



National Aeronautics
and Space Administration

Stennis Space Center

Purpose

Provide the opportunity for discussion among the end user market, spatial technology / data providers and NASA to:

- ✓ Identify market requirements for spatial information products and data;
- ✓ Review available technologies responsive to information requirements.
- ✓ Discuss current policy issues.
- ✓ Provide input to NASA's investment strategy for stimulating commercial markets and in supporting technology development to improve commercial products and services

Figure A9

MARKET STUDY TEAM



National Aeronautics
and Space Administration

Stennis Space Center

Timothy Alexander	Space Development Services
William Piper	Coastal Consultants, Inc. / USM
Robert Morris	KPMG Peat Marwick
Ronald Birk	Sverdrup Technology, Inc.
Mark Mick	NASA, Commercial Remote Sensing Program

Figure A10

MARKET INVESTIGATION GOALS



National Aeronautics
and Space Administration

Stennis Space Center

- ✓ Provide insight to market segment's needs
- ✓ Identify characteristics of addressable markets
- ✓ Show market survey process

Figure A11

MARKET INVESTIGATION PROCESS



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and Space Administration

Stennis Space Center

- ✓ Define Boundaries
- ✓ Develop Design
- ✓ Collect Data
- ✓ Analyze Data
- ✓ Report Results

Figure A12

MARKET INVESTIGATION BOUNDARIES



National Aeronautics
and Space Administration

Stennis Space Center

✓ **Scope - Gather market information on selected U.S. Industries known to be users of geographic information**

✓ **Objective**

- **Identify Geographic Information Uses**
- **Define market segment product needs**
- **Determine market segment configuration**
- **Derive market characteristics**

Figure A13

MARKET INVESTIGATION DESIGN



National Aeronautics
and Space Administration

Stennis Space Center

✓ APPROACH - Exploratory market investigations

- ✓ **SAMPLE SIZE -** 500 mail questionnaires - 100 returned
- 100 telephone interview - 80 complete
- personal interview - 17 complete

Total 197 $\frac{18}{179}$ yields
Non-user of geographic information 18/179 usable questionnaires

✓ SAMPLE DEMOGRAPHICS

Gross Revenues		Employment	
\$ 0-20M	32%	<100	29%
20-100M	15%	100-1000	34%
>100M	53%	>1000	37%

Figure A14



National Aeronautics
and Space Administration

MARKET SEGMENTS - INITIAL

Stennis Space Center

MARKET SEGMENT INDUSTRIES	MANAGEMENT			
	RESOURCE	INFRASTRUCTURE	ENVIRONMENTAL	PUBLIC INFORMATION SERVICES
AGRICULTURE	✓		✓	
EDUCATION				✓
EMERGENCY SERVICES			✓	✓
ENVIRONMENT		✓	✓	
EXPLORATION	✓	✓	✓	
FORESTRY	✓		✓	
MEDIA				✓
REAL ESTATE	✓	✓	✓	
TRANSPORTATION	✓	✓	✓	✓
UTILITIES		✓	✓	

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Figure A15

MM2/14/94-8

GEOGRAPHIC DATA SOURCES



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and Space Administration

Stennis Space Center

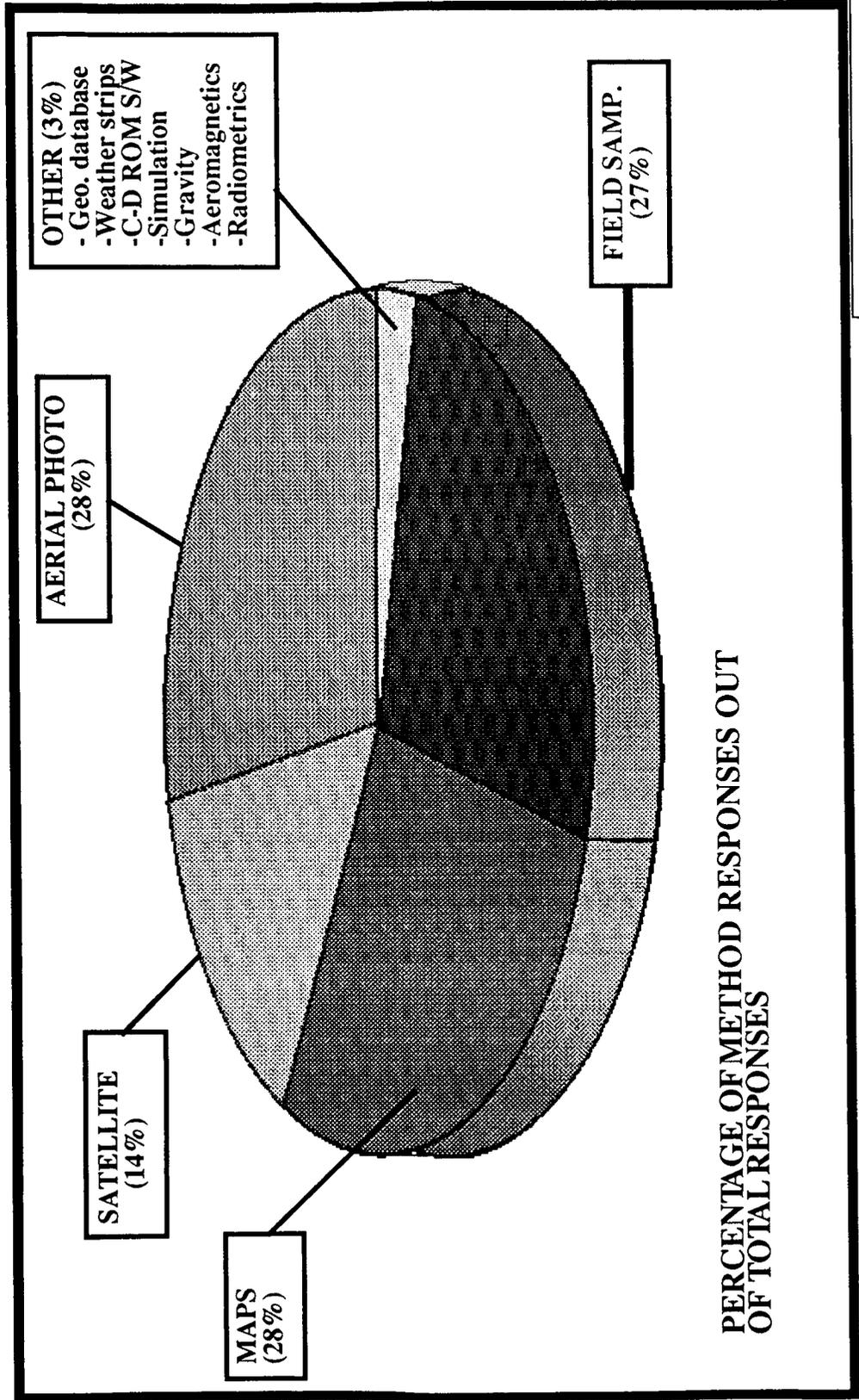


Figure A16

AVERAGE SAMPLE EXPENDITURES FOR GEOGRAPHIC INFORMATION

\$K/YEAR



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DATA SOURCE n = 111	AVERAGE EXPENDITURES	% TOTAL
AERIAL PHOTOGRAPHY	33	9
SATELLITE	11	3
MAPS	110	32
FIELD SAMPLING	147	43
OTHER	45	13
TOTAL AVERAGE EXPENDITURE PER FIRM	346	100

Source: Original data, CRSP-NASA 1993

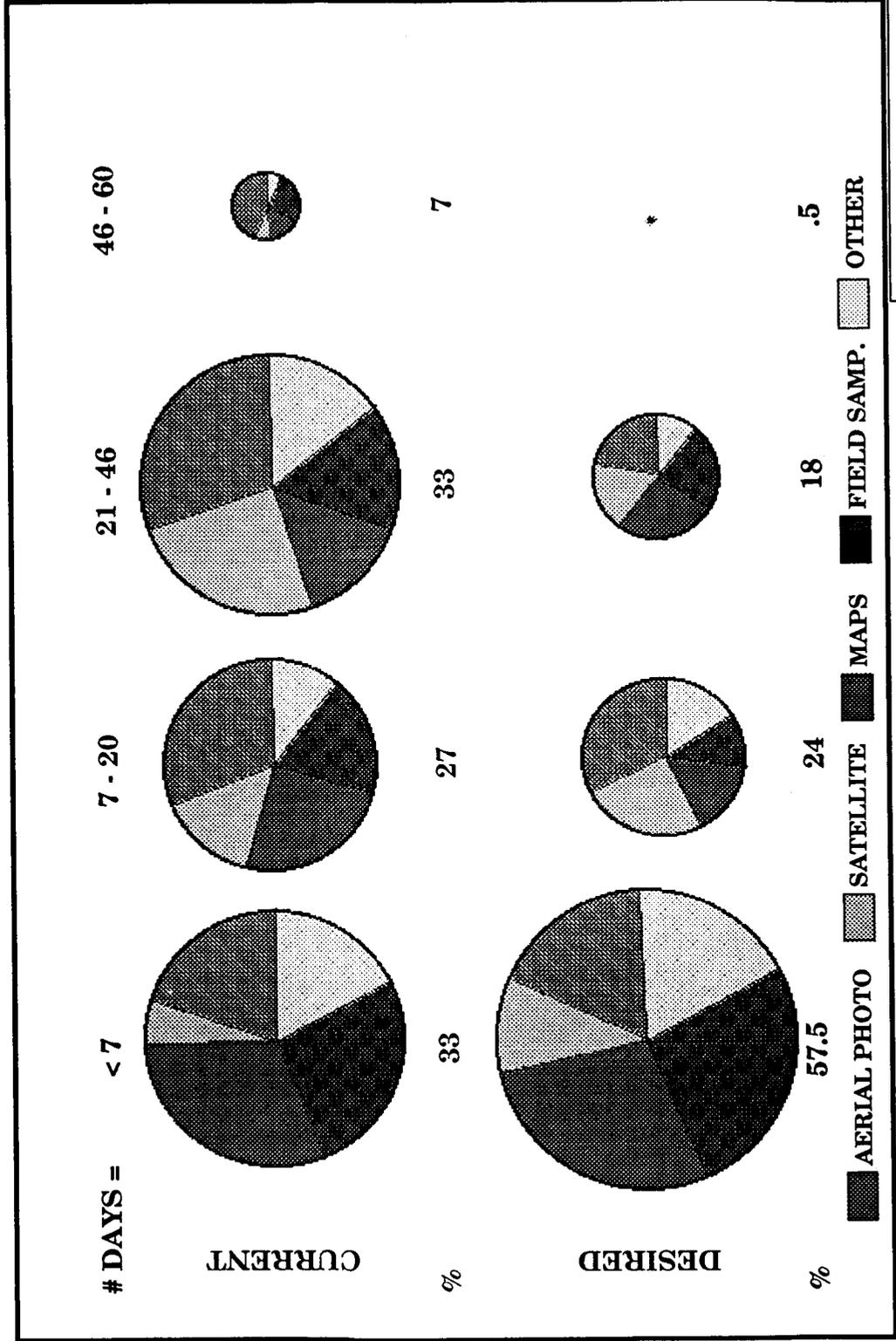
Figure A17

DATA DELIVERY - CURRENT & DESIRED



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Source: Original data, CRSP-NASA 1993

Figure A18

MM2/1494-19

DESIRED DATA IMPROVEMENT - SELECTED INDUSTRIES



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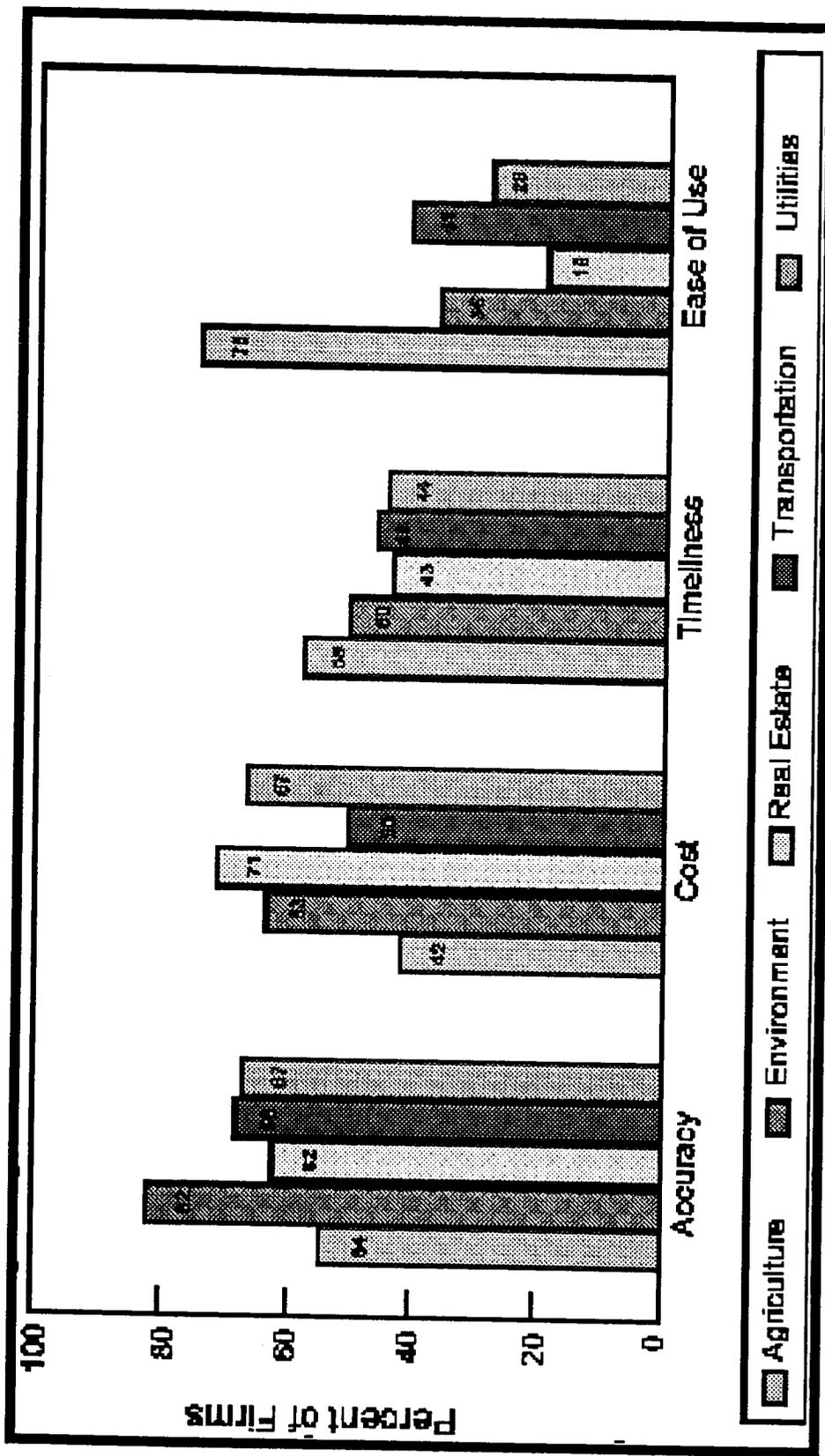


Figure A19

Source: Original data, CRSP-NASA 1993



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WILLINGNESS TO PAY

Stennis Space Center

Do you think your firm is willing to incur additional expense to obtain more current geographic information?

Selected Industries

	% YES
AGRICULTURE	67
ENVIRONMENT	75
REAL ESTATE	47
TRANSPORTATION	41
UTILITIES	75

Source: Original data, CRSP-NASA 1993

Figure A20

MM2/14/94-21

MARKET TRENDS



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and Space Administration

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Comparison of current and future applications for Geographic Information

Application	Current Needs	Future Needs	% Growth
Thermal Differences	7	18	150.0
Soil Monitoring	32	41	30.0
Water Monitoring	26	36	40.0
Land Cover	59	60	1.0
Land Attributes	66	56	(15.0)
Urban Demographics	43	44	2.0
Mineral Exploration	16	17	6.0
Other	10	14	40.0

% Firms Responding

Figure A21

Source: Original data, CRSP-NASA 1993

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INVESTIGATION CONCLUSION

- ✓ The Geographic Information market segments break along four well defined Information Type / Geographics Coverage requirements.
- ✓ Geographic Information requirements for the market are too diverse to be satisfied by one source.
- ✓ Estimates of addressable markets should be made within the context of Information Type and Geographic Coverage. (Market Segmentation)
- ✓ All geographic information users desire improved delivery times for data and information.
- ✓ Some geographic information users desire and are willing to pay for improved information.

Comment

This investigation sets the stage for in-depth market surveys by identifying market segments that firms can further investigate within the context of their product offerings

Figure A22

MARKET SEGMENTATION - SUMMARY



National Aeronautics
and Space Administration

Stennis Space Center

- ✓ Used a traditional segmentation scheme to identify candidate industries (sample)
- ✓ Defined specific user needs characteristic and criteria to identify market needs
- ✓ Translate needs into market requirements
- ✓ Those needs were then placed into groupings or segments that may be satisfied by a specific product

Figure A23

APPENDIX B
OUTLINE FOR MARKET INFORMATION COLLECTION

OUTLINE FOR MARKET INFORMATION COLLECTION

Purpose: To validate in-house perception of information requirements for firms within each market segment

To develop additional information requirements for underdeveloped and emerging firms in each market segment

Procedure: Develop data requirements, collect data, and analyze results

Product: A document describing the information requirements of firms within each segment. Data from the document may be used to develop new information products and expand the specifications of existing information products.

Scope of Project: Identify segments within each of the selected markets

Select representative firms from each of the market segments

Develop information requirements for each market segment

Assemble in-house knowledge base by segment

Estimate the dollar value of the currently known information requirements

Determine information requirements

Develop the interview process

Develop questionnaire

Determine data collection contact method

Collect data from each of the markets

Analyze data separately for each market

Results: A document detailing the current and perceived future needs of each market

Result will be combined in a package for dissemination to the conference group

APPENDIX C

SCOPE OF PROJECT

SCOPE OF PROJECT

Identify segments within each of the selected markets

1. Resource Management
 - agriculture
 - forestry
 - fisheries
 - land-cover
 - non-renewable

2. Infrastructure Planning / Management
 - transportation
 - demographics
 - cultural resources
 - service sector
 - commercial/industrial

3. Environmental Management / Monitoring
 - natural resources
 - chemical
 - hazardous material management
 - government
 - manufacturing
 - utilities

4. Entertainment/Education
 - motion pictures
 - advertising
 - simulation techniques
 - academia

APPENDIX D

MARKET INFORMATION DOCUMENT DEFINITIONS

MARKET INFORMATION DOCUMENT DEFINITIONS

Information Requirements Document

This document should define the purpose and identify the scope of the analysis. An accurate definition of the research problem is the first step in solving any problem. What needs to be found out and why? The analysis may require data from the entire market for remote sensing information products, the individual markets, or the segments within each market. The market description (population or universe) to be measured has a significant impact on the sample size, the type of questions, and the method of data collection.

Data Requirements Document

The data requirements document describes what data should be collected during the project. This includes specifying the domain and latitude of the questions representing the specific variables addressed by the objectives and questions. The domain specifies what information is needed and the data sources. The latitude details the depth of each inquiry and the method of questioning (i.e., temporal, spectral, spatial, economic).

RESEARCH DESIGN

Interview Report Document

This document establishes the basis for the interview by comparing the advantages and disadvantages of each method. The results will be the identification of the most appropriate and effective method of data collection. The document also establishes the overall objective of the study. The objectives document flows directly from the report document.

Interview Objectives Document

This document establishes the individual and specific objectives of the study. Objectives are independent and focus on the need for information that contributes to solving the defined problem or situation.

Interview Questions

This document delineates the questions for the pre-test. The questions flow directly from the objectives document. One or more questions will be constructed from each objective. The questions are designed to acquire information that will either wholly or in part support inferences about each objective.

Data Collection Plan

The data collection plan outlines the various steps necessary for acquiring the usable data. Data sources are identified that may contribute the quantity and quality of data for this study. The plan discusses the data collection process including sample selection, pre-test, data collection, data entry, and data analysis.

Sampling Plan

The sampling plan discusses the total universe of interest, the sample size, the sample frame, the method used for choosing the sample, and the rationale behind each choice.

Data Analysis Document

This document describes the methods for coding data, the selection of a data manipulation technique, and the data analysis criteria.

Advance Interview Packet Contents Document

This document describes the information to be included in the advance packet. The packet will include a list of information that will be discussed at the interview, the reason for the interview, a set of instructions for interview preparation, and a cover letter.

Interview Guidelines Document

This document contains a set of instructions for the interviewer. The guidelines will aid the interviewer in conducting the interview and help in the reduction of interviewer bias.

Questionnaire For Interview

This document contains the data collection instrument that contains the questions for retrieving the needed information. The document will contain the dichotomous and open-ended questions for the study. This document flows directly from the objectives.

Interview Process Document

This instrument will discuss the procedure for contacting sample selected firms, establishing the appropriate contacts, and determining the interview time and location.

Data Results Document

This document depicts the raw data in its original form, discusses the potential methods of data reduction and analysis, and describes the chosen data reduction process and data analysis

technique. The depiction of results is discussed in terms of the development of tables and the best means for exposition of results.

Market Research Document

This final document compiles all required activities, results, and conclusions from the survey. This document is the culmination of the entire effort of the study.

SYNTHESIS INFORMATION

- Outline for data analysis and synthesis
- Objectives for data analysis and synthesis
- Results of profile analysis document
- Technology requirements document
- Technology inventory document
- Synthesis information package

ADMINISTRATION

- Company inventory catalog
- Mailing list
- Correspondence list
- Presentation catalog
- Flow chart marketing → synthesis
- Reporting document

APPENDIX E
INTERVIEW GUIDELINES

INTERVIEW GUIDELINES

A personal interview is a conversation with a purpose. The success of the conversation and the generalizability of the results are in direct proportion to the quality of the responses elicited and the ability of the interviewer to remain neutral.

The interviewer provides information and explanation in preparation for the question-and-answer portion of the interview. The objective is to obtain quality responses to the specific questions contained in the questionnaire. The interviewer should explain that the interview process is a question-and-answer session that is best facilitated if the questions are asked and responded to in formatted sequence. Adherence to the format of the questionnaire would be greatly appreciated. Finally, suggest that any questions the respondent or other team members have will be addressed after the session has been completed.

The respondents may ask questions to clarify the interviewer's question or in an attempt to provide higher-quality answers. The interviewer should restrict the clarification to repeating the question and/or reading the potential multiple choice responses following many of the questions. If the respondent does not understand the question after one or two additional attempts, the interviewer should move on to the next question or set of questions.

The main part of the personal interview survey consists of questions and answers. Treat and ask all questions as if they are open-ended, and then record results using a multiple choice answer selection and/or the open-ended space provided after each question.

The way questions are asked and the wording of the questions have a direct effect on the quality of answers and the survey results. It is important for the questions to be asked as written and responses to be recorded as stated by the respondent. All other team members should refrain from adding to the interview process. The non-questioning team members should refrain from any talk until the entire questionnaire has been completed. The team leader will indicate the appropriate time for follow-up questions or comments.

It is important that each respondent be exposed to the same question experience and that the recording of the answer be the same so that differences in answers can be interpreted as reflecting differences between respondents rather than differences in the process of obtaining answers.

The answers elicited from the respondents should be theirs alone and recorded as they portray a situation. The categories listed on the questionnaire are intended to aid the interviewer in the recording process. The multiple choice responses should not be read as part of the question but be used as an easy check-off answer for the interviewer. The response categories may be used as a clarification tool only if the respondent does not understand the question.

The challenge of an interview is to have respondents answer questions accurately and fully and to minimize the effects of the interviewer or the interview process. The value of this survey will be its generalizability, which is dependent on the standardization of the data.

SUMMARY OF GUIDELINES

1. Read questions as written. If the question is not understood, reread the question and/or read the response categories to the respondent.
2. Explore inadequate answers in an indirect way (do not influence the respondent's answer). Ask him/her to repeat, clarify, and/or expand upon his/her answer. Do not say "Do you mean answer #7?"
3. Record answers as accurately as possible. The answer should reflect the respondent's statements.
4. The interviewer should be neutral and non-judgmental and should refrain from portraying any personal bias to the respondent. No personal feelings, values, or preferences should be communicated verbally or non-verbally to the respondent. Neither positive nor negative feedback should be communicated with respect to the question or the respondent's specific answer content.

APPENDIX F
QUESTIONNAIRE COVER LETTERS

JA30

< date >

< name >
< address >

Dear < last name > :

NASA is currently researching the development of tools and techniques that will satisfy the information needs of various industries. Through observation and monitoring systems, outside observable information is captured for study and analysis. For example, monitoring systems can be used to conduct environmental assessments, analyze land use, as well as support Geographical Information Systems (GIS) and mapping systems.

Working with industry, NASA hopes to improve the capabilities of earth monitoring systems in order to make the service more widely available, more efficient, and more cost effective. We hope you will take the time to fill out the enclosed questionnaire: your responses to our questions will assist us in charting the course for the development of new systems which will help you to better meet your future business requirements in the most effective manner.

The results of the survey will be analyzed and disseminated in aggregate, so individual responses will remain confidential. We will use the survey information in a national workshop scheduled for March to encourage companies to develop the monitoring infrastructure required by industry.

If you are unable to fill out the questionnaire, please pass it along to someone in your organization who will be able to assist. Please return the following questionnaire as soon as possible in the enclosed self addressed, stamped envelope, or fax responses to Shawna Sharp at (202) 293-5437.

If you have any question please feel free to contact Mr. Mark Mick, Project Manager, at (601) 688-1814 or Shawna Sharp at (202) 467-5237.

Sincerely,

David P. Brannon, Program Manager
Commercial Remote Sensing Program Office

< name >
< address >

Dear < last name > :

Your firm's needs for geographical information may be served better in the future, by helping us to understand how this information is currently used to accomplish your business goals. We appreciate your help through, a personal interview on September 23, 1993 in the morning, to develop our knowledge of how your firm acquires and uses geographic information. Your responses and many other companies' responses to our questions will assist in charting the course for the development of a new space based geographic information source.

The main topics for the interview discussions will focus on:

- What is your firm's current source for geographic information,
- How often does your firm acquire this needed information, and
- If you can share with us, the approximate cost per year your firm spends on this type of information

The results of the survey will be analyzed and disseminated in aggregate, so individual responses will remain confidential. We will use the survey information in a national workshop to encourage commercial entities to develop the infrastructure required to gather and deliver earth observation information.

The consulting firms of KPMG Peat Marwick and Space Development Services, Inc. are assisting NASA in this effort. Your cooperation with representatives from these firms working on NASA's behalf is appreciated.

If you have any questions, please contact Mr. Mark W. Mick, Project Manager, at telephone (601) 688-1814. Thank you in advance for taking the time to assist in this effort.

Sincerely,

David P. Brannon, Program Manager
Commercial Remote Sensing Program Office

APPENDIX G
MAIL SURVEY QUESTIONNAIRE

MAIL SURVEY QUESTIONNAIRE

NASA is interested in determining your information needs in order to help the commercial sector to develop new space based geographic information and monitoring systems. Observation and monitoring can simply be described as the ability to capture outdoors information of interest to your firm. Such information might include determining soil moisture content, identifying potential drilling spots for non-renewable resources, locating roads and highways, mapping strategic locations for new telephone cables, or measuring the amount of heat lost by a building. Thank you for your time with the questionnaire.

1. What is the nature and scope of your enterprise i.e. what products and/or services characterize your business.

_____ 1-2

2. How do your business efforts relate to geographic information

_____ 3-4

3. What method or methods does your firm currently use to acquire geographic information

- A ___ Aerial photography₅ B ___ Satellite₆
 C ___ Maps₇ D ___ Field sampling₈
 E ___ Geo. data bases₉ F ___ Other _____₁₀

Questions 4 through 8 all refer back to question #3

4. How frequently is the geographic information in #3 acquired (in days)

- A _____₁₁₋₁₄ B _____₁₅₋₁₈ C _____₁₉₋₂₂
 D _____₂₃₋₂₆ E _____₂₇₋₃₀ F _____₃₁₋₃₄

5. What is the delay (in days) from specification of needs in #3 to receipt of geographic information

- A _____₃₅₋₃₇ B _____₃₈₋₄₀ C _____₄₁₋₄₃
 D _____₄₄₋₄₆ E _____₄₇₋₄₉ F _____₅₀₋₅₂

6. What are your estimated yearly expenses for each category checked in question #3 enter 0 if not applicable

- A _____₅₃₋₅₅ B _____₅₆₋₅₈ C _____₅₉₋₆₁
 D _____₆₂₋₆₅ E _____₆₆₋₆₈ F _____₆₉₋₇₁

7. What frequency of information acquisition would be ideal for your firm in each category checked in question #3

- A _____₇₂₋₇₄ B _____₇₅₋₇₇ C _____₇₈₋₈₀
 D _____₈₁₋₈₃ E _____₈₄₋₈₆ F _____₈₇₋₈₉

8. In which of the following areas is outdated information a problem

- A ___ Aerial photography₉₀ B ___ Satellite₉₁ C ___ Maps₉₂ D ___ Field sampling₉₃
E ___ Geo. data bases₉₄ F ___ Other _____₉₅

8a. Do you think your firm is willing to incur additional expense to obtain more up to date geographic information
___ yes ___ no

8a. How valuable is more up to date information to your firm
___ Very ___ Somewhat ___ slightly ___ not much

9. What is the source of geographic information for each category checked in question #3 indicate by matching the source of data to the current method(s) employed

1. Self collected 2. Outside services 3. Government sources 4. Other

A ___ B ___ C ___ D ___ E ___ F ___

10. What are the key reasons your firm acquires geographic information

- ___ Regulatory requirements ___ Capital investments ___ Internal applications
___ Support client requirements ___ Other _____

10.a If your answer above is regulatory requirements, what are the key regulations that drive your need for geographic information

10.b What are the internal applications supported by geographic information

11. For what purpose(s) does your firm use geographic information

- ___ Land cover classifications ___ Thermal differences ___ Urban/demographic changes
___ Water monitoring ___ Soil monitoring ___ Land attributes
___ Minerals exploitation ___ Other _____

12. What are the major features derived from geographic information

- ___ Habitats ___ Buildings ___ Vegetation ___ Transportation networks ___ Water
___ Right of Ways ___ Minerals ___ Effluents ___ Thermal gradients
___ land elevation or contour

13. What are the two most important questions or problems you are trying to solve by applying geographic information in #9
-
- 13.a What is important about the features under investigation
-
14. What would you consider to be the most important improvements to the geographic information you now acquire, check and rank all that apply
- A ___ Spatial resolution B ___ Timeliness D ___ Cost
- C ___ Geo. location E ___ Ease of use F ___ Clarity of image
- G ___ Other _____
- 14a. If more than one answer above is checked, please rank your responses with 1 being the most important and 7 the least
- A ___ B ___ C ___ D ___ E ___ F ___ G ___
- 14b. Why are the improvements checked important to your firm
-
15. In what forms does your firm acquire spatial information
- ___ Hard copy ___ modem ___ Computer discs/tapes
- ___ Other _____
16. What geographic information is difficult or impossible to obtain now which is highly valuable
-
-
- 16a. Why is this information so valuable to your firm
-
17. Will your firm have a need for any of the following geographic information investigations in the future
- ___ Land cover classifications ___ Thermal differences ___ Urban/demographic changes
- ___ Water monitoring ___ Soil monitoring ___ Land attributes
- ___ Minerals exploitation ___ Other _____
18. What geographic information do you consider important that you can not now obtain or purchase
-

19. Annual revenue (in millions) <\$1____ \$1-20____ \$21-50____ \$51-100____ >\$100____
20. Current number of employees _____

APPENDIX H
TELEPHONE INTERVIEW QUESTIONNAIRE

TELEPHONE SURVEY QUESTIONNAIRE

PLEASE ASK THESE QUESTIONS IN THE FOLLOWING SEQUENCE MAKING SURE TO ALLOW THE RESPONDENT AMPLE TIME TO ANSWER EACH ITEM BEFORE ADVANCING TO THE NEXT. BE NATURAL AND RELAXED DURING THE TELEPHONE INTERVIEW.

1. What is the nature and scope of your enterprise i.e. what products and/or services characterize your business.
_____1-2
2. How do your business efforts relate to geographic information
_____3-4
3. What method or methods does your firm currently use to acquire geographic information
A ___ Aerial photography₅ B ___ Satellite₆
C ___ Maps₇ D ___ Field sampling₈
E ___ Geo. data bases₉ F ___ Other _____₁₀

Questions 4 through 8 all refer back to question #3

4. How frequently is the geographic information in #3 acquired (in days)
A _____₁₁₋₁₄ B _____₁₅₋₁₈ C _____₁₉₋₂₂
D _____₂₃₋₂₆ E _____₂₇₋₃₀ F _____₃₁₋₃₄
5. What is the delay (in days) from specification of needs in #3 to receipt of geographic information
A _____₃₅₋₃₇ B _____₃₈₋₄₀ C _____₄₁₋₄₃
D _____₄₄₋₄₆ E _____₄₇₋₄₉ F _____₅₀₋₅₂
6. What are your estimated yearly expenses for each category checked in question #3 enter 0 if not applicable
A _____₅₃₋₅₅ B _____₅₆₋₅₈ C _____₅₉₋₆₁
D _____₆₂₋₆₅ E _____₆₆₋₆₈ F _____₆₉₋₇₁
7. What frequency of information acquisition would be ideal for your firm in each category checked in question #3
A _____₇₂₋₇₄ B _____₇₅₋₇₇ C _____₇₈₋₈₀
D _____₈₁₋₈₃ E _____₈₄₋₈₆ F _____₈₇₋₈₉

8. In which of the following areas is outdated information a problem

A ___ Aerial photography⁹⁰ B ___ Satellite⁹¹ C ___ Maps⁹² D ___ Field sampling⁹³
 E ___ Geo. data bases⁹⁴ F ___ Other _____⁹⁵

8a. Do you think your firm is willing to incur additional expense to obtain more up to date geographic information
 ___yes ___no

8a. How valuable is more up to date information to your firm
 ___Very ___Somewhat ___slightly ___not much

9. What is the source of geographic information for each category checked in question #3 indicate by matching the source of data to the current method(s) employed

1. Self collected 2. Outside services 3. Government sources 4. Other

A ___ B ___ C ___ D ___ E ___ F ___

10. What are the key reasons your firm acquires geographic information

___Regulatory requirements ___Capital investments ___Internal applications
 ___Support client requirements ___Other _____

10.a If your answer above is regulatory requirements, what are the key regulations that drive your need for geographic information

10.b What are the internal applications supported by geographic information

11. For what purpose(s) does your firm use geographic information

___Land cover classifications ___Thermal differences ___Urban/demographic changes
 ___Water monitoring ___Soil monitoring ___Land attributes
 ___Minerals exploitation ___Other _____

12. What are the major features derived from geographic information

___Habitats ___Buildings ___Vegetation ___Transportation networks ___Water
 ___Right of Ways ___Minerals ___Effluents ___Thermal gradients
 ___land elevation or contour

13. What are the two most important questions or problems you are trying to solve by applying geographic information in #9
-
- 13.a What is important about the features under investigation
-
14. What would you consider to be the most important improvements to the geographic information you now acquire, check and rank all that apply
- A ___ Spatial resolution B ___ Timeliness D ___ Cost
- C ___ Geo. location E ___ Ease of use F ___ Clarity of image
- G ___ Other _____
- 14a. If more than one answer above is checked, please rank your responses with 1 being the most important and 7 the least
- A ___ B ___ C ___ D ___ E ___ F ___ G ___
- 14b. Why are the improvements checked important to your firm
-
15. In what forms does your firm acquire spatial information
- ___ Hard copy ___ modem ___ Computer discs/tapes
- ___ Other _____
16. What geographic information is difficult or impossible to obtain now which is highly valuable
-
-
- 16a. Why is this information so valuable to your firm
-
17. Will your firm have a need for any of the following geographic information investigations in the future
- ___ Land cover classifications ___ Thermal differences ___ Urban/demographic changes
- ___ Water monitoring ___ Soil monitoring ___ Land attributes
- ___ Minerals exploitation ___ Other _____
18. What geographic information do you consider important that you can not now obtain or purchase
-

19. Annual revenue (in millions) <\$1____ \$1-20____ \$21-50____ \$51-100____ >\$100____
20. Current number of employees _____

Before leaving the interview topic be sure all of your questions have been answered and ask for comments from the respondent.

When the questionnaire has been completed, thank your respondent(s) for his/her cooperation in compile this data for NASA and state how helpful the information will be for both them and us to better understanding the end user firms needs.

APPENDIX I
PERSONAL INTERVIEW QUESTIONNAIRE

PERSONAL INTERVIEW SURVEY QUESTIONNAIRE

PLEASE ASK THESE QUESTIONS IN THE FOLLOWING SEQUENCE MAKING SURE TO ALLOW THE RESPONDENT(S) AMPLE TIME TO ANSWER EACH QUESTION BEFORE ADVANCING TO THE NEXT ITEM. TRY TO BE NATURAL AND RELAXED DURING THE INTERVIEW AND AID THE RESPONDENT TO DO THE SAME.

1. What is the nature and scope of your enterprise i.e. what products and/or services characterize your business.
_____1-2
2. How do your business efforts relate to geographic information
_____3-4
3. What method or methods does your firm currently use to acquire geographic information
 A ___ Aerial photography₅ B ___ Satellite₆
 C ___ Maps₇ D ___ Field sampling₈
 E ___ Geo. data bases₉ F ___ Other _____₁₀

Questions 4 through 8 all refer back to question #3

4. How frequently is the geographic information in #3 acquired (in days)
 A _____11-14 B _____15-18 C _____19-22
 D _____23-26 E _____27-30 F _____31-34
5. What is the delay (in days) from specification of needs in #3 to receipt of geographic information
 A _____35-37 B _____38-40 C _____41-43
 D _____44-46 E _____47-49 F _____50-52
6. What are your estimated yearly expenses for each category checked in question #3 enter 0 if not applicable
 A _____53-55 B _____56-58 C _____59-61
 D _____62-65 E _____68-68 F _____69-71
7. What frequency of information acquisition would be ideal for your firm in each category checked in question #3
 A _____72-74 B _____75-77 C _____78-80
 D _____81-83 E _____84-86 F _____87-89

8. In which of the following areas is outdated information a problem

- A ___ Aerial photography₉₀ B ___ Satellite₉₁ C ___ Maps₉₂ D ___ Field sampling₉₃
E ___ Geo. data bases₉₄ F ___ Other _____₉₅

8a. Do you think your firm is willing to incur additional expense to obtain more up to date geographic information
___yes ___no

8a. How valuable is more up to date information to your firm
___Very ___Somewhat ___slightly ___not much

9. What is the source of geographic information for each category checked in question #3 indicate by matching the source of data to the current method(s) employed

1. Self collected 2. Outside services 3. Government sources 4. Other

A ___ B ___ C ___ D ___ E ___ F ___

10. What are the key reasons your firm acquires geographic information

- ___Regulatory requirements ___Capital investments ___Internal applications
___Support client requirements ___Other _____

10.a If your answer above is regulatory requirements, what are the key regulations that drive your need for geographic information

10.b What are the internal applications supported by geographic information

11. For what purpose(s) does your firm use geographic information

- ___Land cover classifications ___Thermal differences ___Urban/demographic changes
___Water monitoring ___Soil monitoring ___Land attributes
___Minerals exploitation ___Other _____

12. What are the major features derived from geographic information

- ___Habitats ___Buildings ___Vegetation ___Transportation networks ___Water
___Right of Ways ___Minerals ___Effluents ___Thermal gradients
___land elevation or contour

13. What are the two most important questions or problems you are trying to solve by applying geographic information in #9

13.a What is important about the features under investigation

14. What would you consider to be the most important improvements to the geographic information you now acquire, check and rank all that apply

A ___ Spatial resolution B ___ Timeliness D ___ Cost

C ___ Geo. location E ___ Ease of use F ___ Clarity of image

G ___ Other _____

14a. If more than one answer above is checked, please rank your responses with 1 being the most important and 7 the least

A ___ B ___ C ___ D ___ E ___ F ___ G ___

14b. Why are the improvements checked important to your firm

15. In what forms does your firm acquire spatial information

___ Hard copy ___ modem ___ Computer discs/tapes

___ Other _____

16. What geographic information is difficult or impossible to obtain now which is highly valuable

16a. Why is this information so valuable to your firm

17. Will your firm have a need for any of the following geographic information investigations in the future

___ Land cover classifications ___ Thermal differences ___ Urban/demographic changes

___ Water monitoring ___ Soil monitoring ___ Land attributes

___ Minerals exploitation ___ Other _____

18. What geographic information do you consider important that you can not now obtain or purchase

19. Annual revenue (in millions) <\$1____ \$1-20____ \$21-50____ \$51-100____ >\$100____
20. Current number of employees _____

Before leaving the interview topic be sure all of your questions have been answered and ask for comments and acceptance from the respondent(s).

When the questionnaire has been completed, thank your respondent(s) for his/her/their cooperation in compiling this data for NASA and state how helpful the information will be for both them and us to aid in better understanding the end user firms needs.

APPENDIX J
MAIL SURVEY SEGMENT STATEMENTS

SEGMENT STATEMENTS FOR MAIL SURVEY

1. Agriculture: Such information might include determining soil moisture content, determining crop yield, or identifying crop stress. Commodities brokers may use this information to make decisions on buying or selling futures for agricultural products.
2. Forestry: Such information might include monitoring timber volume, assessing the effects of logging, or identifying the easiest access to areas for logging.
3. Non-Renewable Extraction: Such information might include identifying potential drilling sites for non-renewable resources, validating existing topographic maps, or monitoring for spills at the drill site.
4. Transportation: Such information might include mapping or updating public transportation routes, or re-routing information for ships based on ocean currents.
5. Real Estate/Development: Such information might include conducting optimal site investigations for construction, tracking demographic trends, or mapping a residential area for a real estate computer service.
6. Utilities: Such information might include mapping strategic locations for new phone cables, or monitoring gas lines for leaks.
7. Environment: Such information might include studying the effects of deforestation, identifying wetlands for protection, or monitoring the emission of pollutants into soil and water from industry.
8. Education/Training: Such information might include capturing earth information for display in text books or classroom lectures, or simulation programs for flight training.
9. Media/Entertainment: Such information might include providing coverage for breaking news stores, showing changes over a period of time for a historical news piece, or simulation, or real image base for adventure films.
10. Emergency Services: Such information might include providing insurance agents and relief teams planning to re-build with information for an area stricken by disaster.

APPENDIX K
CALCULATIONS

Comparison of Current and Future Needs for GI

Investigation	Current Needs	Future Needs	Percent Difference
Land Cover	58.7	60.0	1.3
Thermal Differences	7.1	17.8	10.6
Urban Demographics	43.2	44.2	1.-
Water Monitoring	25.8	36.4	10.6
Soil Monitoring	32.3	41.4	9.1
Land Attributes	65.8	55.7	-10.1
Mineral Exploration	15.5	17.1	1.6
Other	9.7	13.6	3.9
<hr/>			
% Change in Demand			28%

Source: Original Data 1993

Calculation for Questions 5 and 7

x	f	fx	x	f	fx
75	3	225	120	3	360
61	14	854	50	14	700
75	33	2475	38	33	1254
18	53	<u>958</u>	1	53	<u>53</u>
229		4512	209		2367

$$4512/229 = 19.7 = M$$

Mean = 19.7

Median = 166

Bi-Mode = 3 and 33

$$2367/209 = 11.32 = M$$

Mean = 11.32

Median = 6

Mode = 3

Source: Original Data 1993

APPENDIX L
DATA MANAGEMENT

PROTOCOL FOR RESPONDING TO
REQUESTS FOR ACCESS TO DATA BASE

1. All requests for access to the data base from U.S. companies should be honored.
2. The person or firm requesting access to the data should be notified that it is necessary for the requester to furnish a blank magnetic disk (5 ¼" or 3 ½") and a self-addressed return packet before the request can be honored.
3. Upon receipt of the appropriate disk and envelope, the data should be copied from the hard disk archive to the supplied disk.
4. A form cover letter should accompany the disk explaining the content of the disk and listing file names. The letter should also state the technique for locating, accessing, retrieving, and manipulating the data or the method for accessing specific pieces of information.

Data Management

Personal Interviews

When the pertinent data and information has been collected, the questionnaire is finalized, and the team debriefing has been completed, the results should be transmitted to Shawna Sharp of KPMG Peat Marwick in Washington, DC. The questionnaires will be gathered and tallied along with accompanying notes. The questionnaires and accompanied notes will be copied and mailed to Mark Mick at the Stennis Space Center. The segment interview completed by the NASA Group will be copied and mailed to Shawna Sharp. The copied will be transmitted to Mark Mick for additional data analysis. Each personal and telephone interview data collection instrument should be accompanied by a cover sheet as identified below.

Telephone Interviews

The questionnaires from the telephone interviews will be copied along with the notes and a cover sheet for each. The questionnaire copies and notes should be mailed to Mark Mick in packages of reasonable sizes.

Mail returns

Completed questionnaires from the mail out efforts should be copied and mailed to Mark Mick in packages of reasonable size and on a timely basis. The three sets of questionnaires will establish the primary data basis for developing the National Workshop presentation.

Sampling lists

The KPMG Peat Marwick group will provide Mark Mick with the sampling lists for all three groups in the data collection effort (i.e. all firms receiving a mail questionnaire or being either part of the telephone or personal interview groups). The lists along with the returned questionnaire and data collection instruments will provide a double check of the collection system and aid in the data analysis. The leader of the environmental management segment will provide Peat Marwick with a list of those firms being interviewed as a cross check.

Cover Sheet

A cover sheet should accompany each data collection instrument from both the telephone and personal interviews. The cover sheet should include: the date, name of interviewed firm, names of individuals being interviewed and the positions within the firm, and the interview team member names.

Cover Sheet

Date

Interviewed Firm _____

Interviewees _____

Interview Team _____ Leader

DATA STORAGE

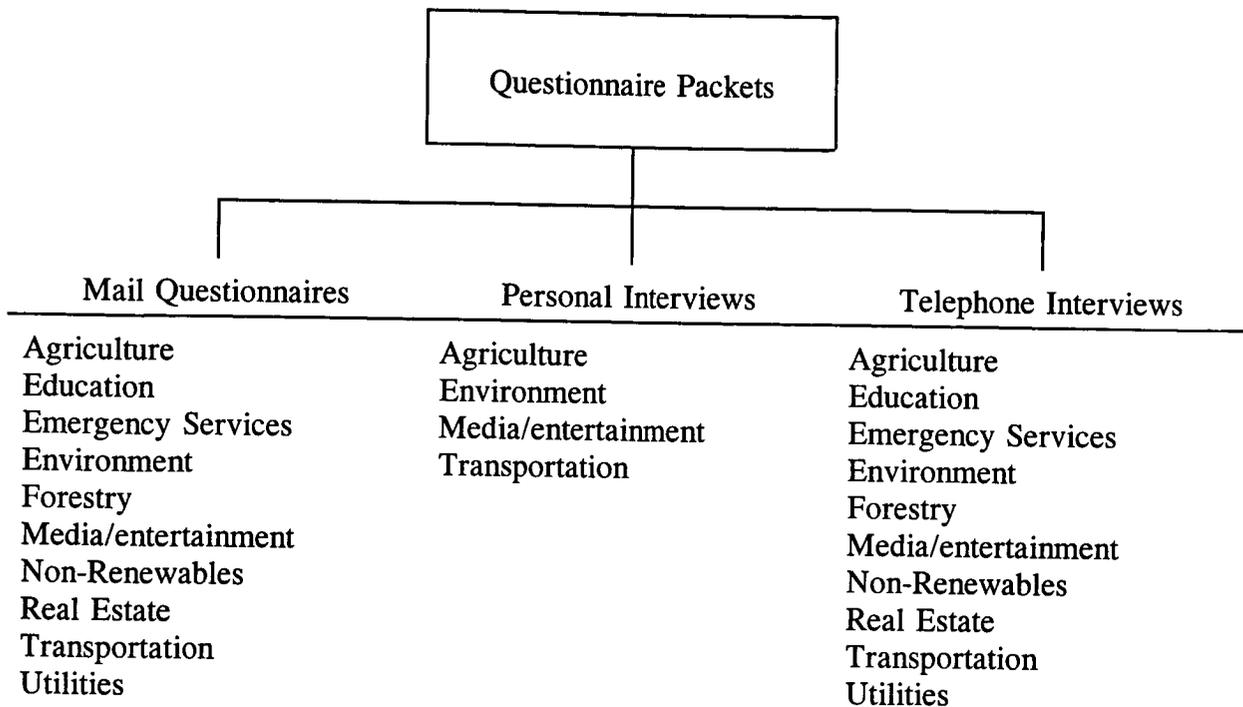
Hard Copy File System

The questionnaires used in this study are Data Collection Instruments and will be referred to as DCIs in this document. The instruments should be stored for easy access and retrieval. When DCI packets are received, the DCIs for each interview should be divided into one of three file groups based on data collection method: Personal interview, telephone interview, or mail questionnaires. The DCIs should be further sub-divided into segments as identified in the flow of data diagram below.

Each DCI should be filed first by mode of data collection, then by segment, and finally alphabetically by firm name. The personal interview questionnaire should be divided into the four interview segments of Agriculture, Environment, Media/Entertainment, and Transportation. The telephone DCIs and mail questionnaires should be divided and filed alphabetically into the 10 segments following the diagram below.

Subsequent filing of all DCIs should follow this protocol. Information can be readily obtained from the hard copy file system by type of collection method (group) or by segment. Alphabetical selection can be made by referring to the firm segment first.

FLOW OF DATA



The DCIs should be filed alphabetically by firm in one of the above segments.

Magnetic Disk File System

The data collected from the questionnaires will be stored on a magnetic disk. The data may then be easily accessed by uploading the files to another system or by converting the file configuration to another use if necessary. The details of the data, pertinent data manipulation information, and the configuration if the data in the files will be co-stored in a WordPerfect-format file on the same disk. The configuration of the data in magnetic storage should follow the same procedure as the hard-copy method outlined above.

APPENDIX M

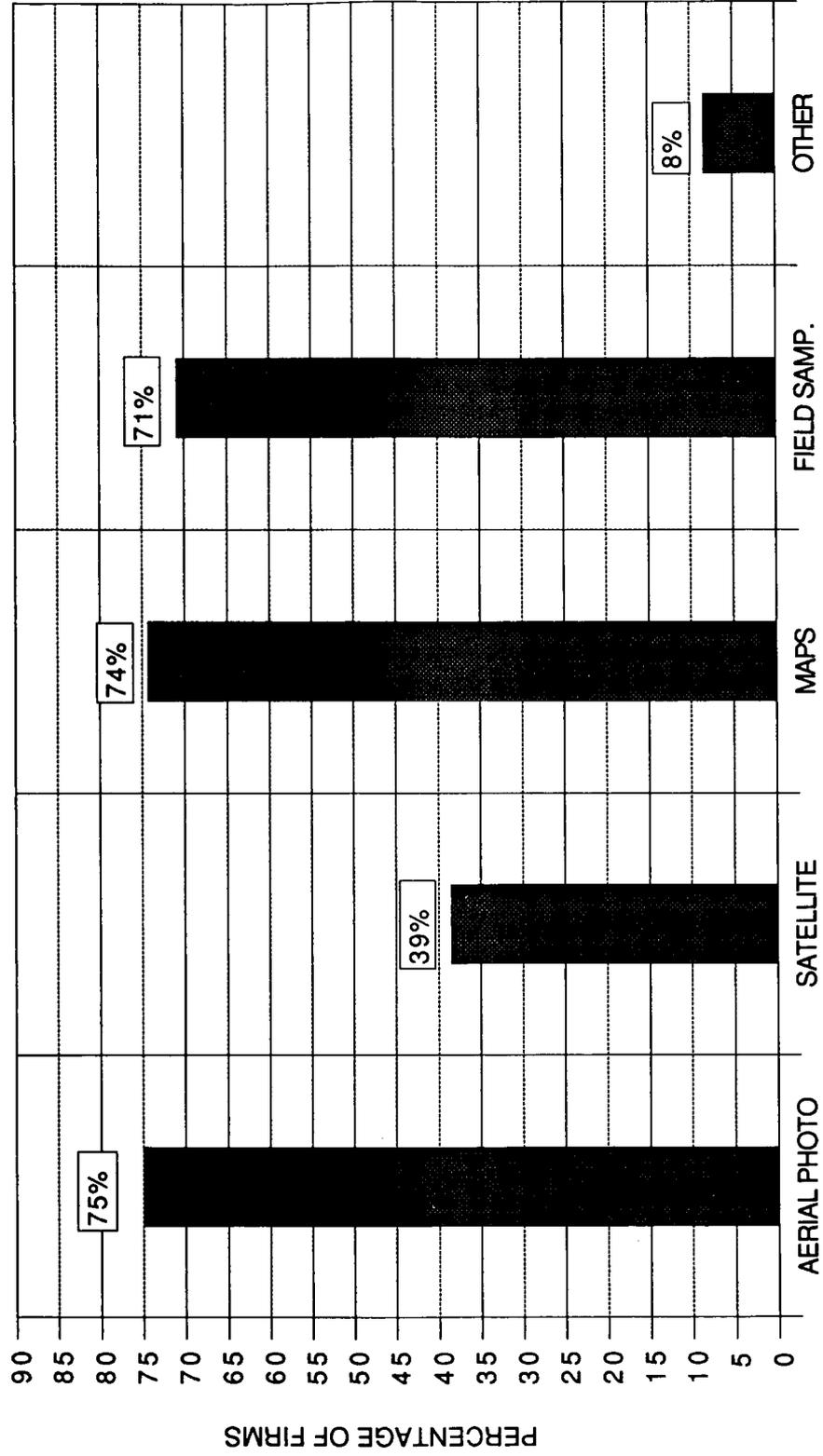
**SUMMARY OF AGGREGATE & SEGMENT
GEOGRAPHIC INFORMATION NEEDS AND CHARTS**

SUMMARY OF AGGREGATE & SEGMENT GEOGRAPHIC INFORMATION NEEDS

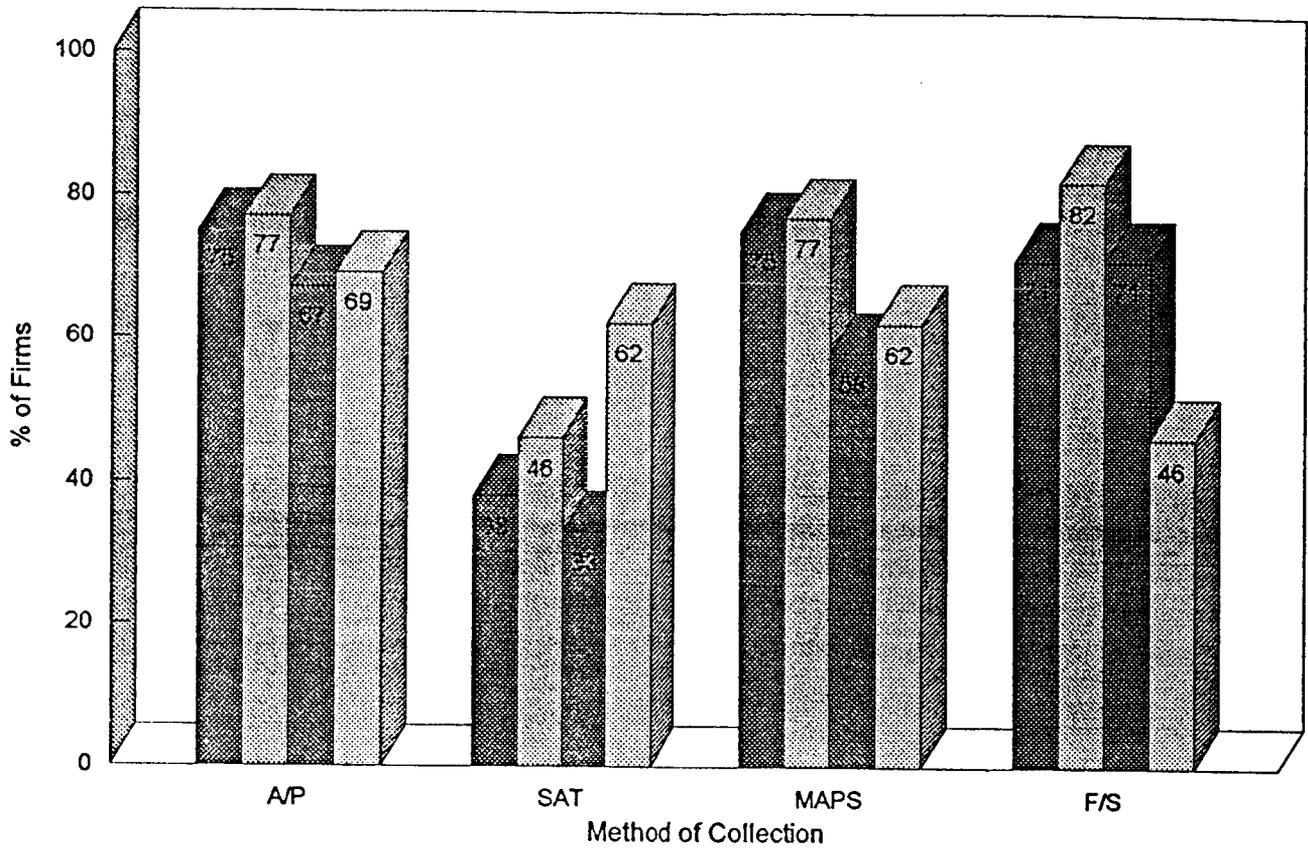
SEGMENTS	PURCHASE FREQUENCY (TIMES PER YEAR)	CURRENT DELIVERY (DAYS)	IDEAL DELIVERY (DAYS)	AVERAGE EXPENDITURE (K-YEAR)	PURCHASE REASON	PURPOSE OF INVESTIGATION	FEATURES OF INVESTIGATION	IMPROVEMENTS ORDER	WILLINGNESS TO PAY INCREASE	ANNUAL REVENUE	EMPLOYEE%
AGGREGATE	14	19	11	A/P 47 SAT 32 MAPS 167 F/S 264				ACCURACY TIMELINESS COST	59%	53% > 100 MIL	<100 = 29% <1000 = 32% >1000 = 39%
ENVIRONMENT	26	21	6	A/P 123 SAT 21 MAPS 78 F/S 498	SUPPORT CLIENTS REGULATORY	LAND COVER URBAN DEMO WATER MONITORING SOIL MONITORING LAND ATTRIBUTES	HABITAT BUILDINGS VEGETATION WATER LAND CONTOUR	ACCURACY TIMELINESS COST	75%	52% > 100 MIL	<100 = 22% <1000 = 36% >1000 = 42%
AGRICULTURE	14	7	5	A/P 65 SAT 8 MAPS 2 F/S 60	INTERNAL OPERATIONS	LAND COVER SOIL MONITORING	VEGETATION	ACCURACY TIMELINESS COST	67%	56% > 100 MIL	<100 = 30% <1000 = 35% >1000 = 35%
MEDIA	19	7	1	A/P 25 SAT 100 MAPS 4 F/S 15	SUPPORT CLIENTS	LAND COVER URBAN DEMO	BUILDINGS TRANSPORTATIO NETWORKS HABITAT	ACCURACY TIMELINESS COST	89%	86% > 100 MIL	<100 = 25% <1000 = 25% >1000 = 50%
TRANSPORTATIO	12	7	7	A/P 128 SAT 0 MAPS 53 F/S 1505	INTERNAL OPERATION REGULATORY	URBAN DEMO CHARACTERISTIC LAND ATTRIBUTES	RIGHT OF WAYS TRANSPORTATIO NETWORK LAND CONTOUR	ACCURACY TIMELINESS COST	47%	60% > 100 MIL	<100 = 5% <1000 = 42% >1000 = 53%

Legend:
A/P = Aerial Photography
SAT = Satellite
MAPS = Maps
F/S = Field Sampling

PERCENTAGE OF FIRMS USING COLLECTION METHOD (QUESTION #3)

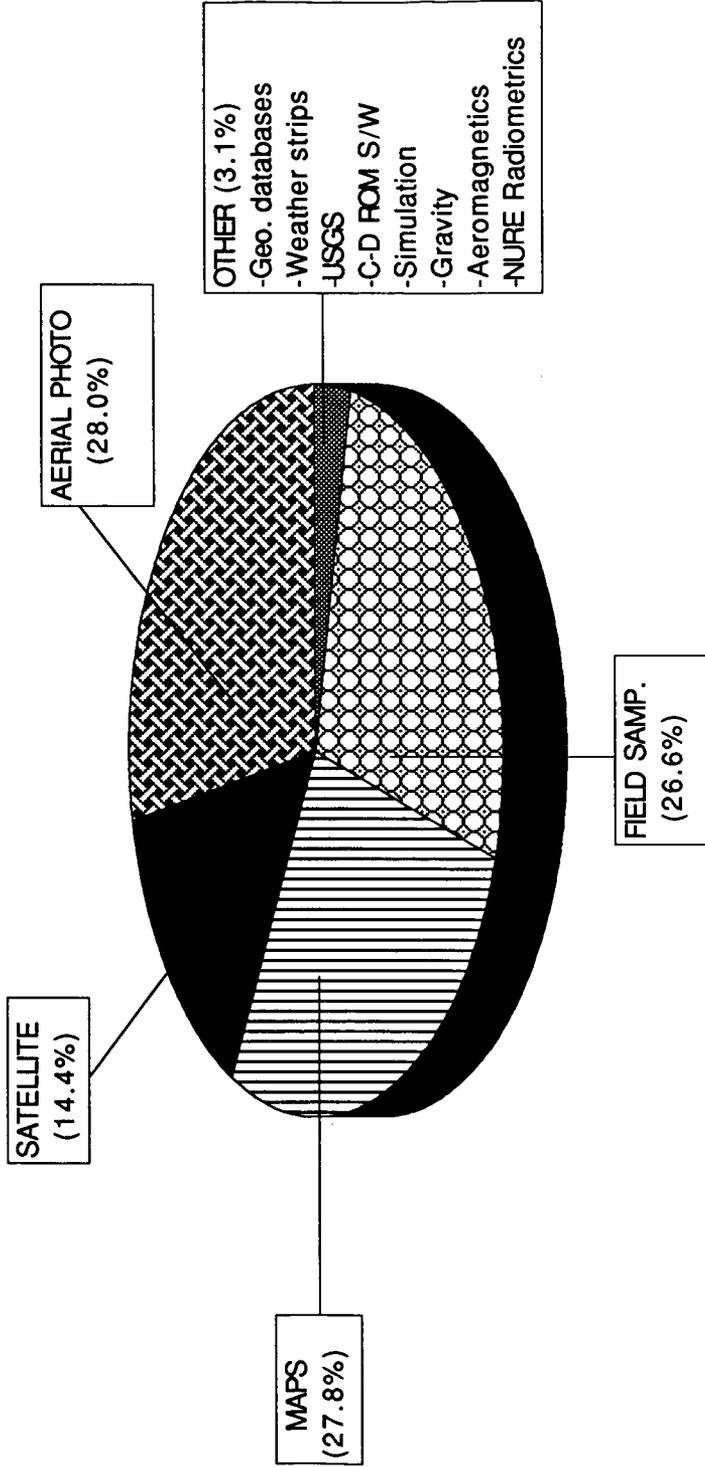


Collection Method by Segment



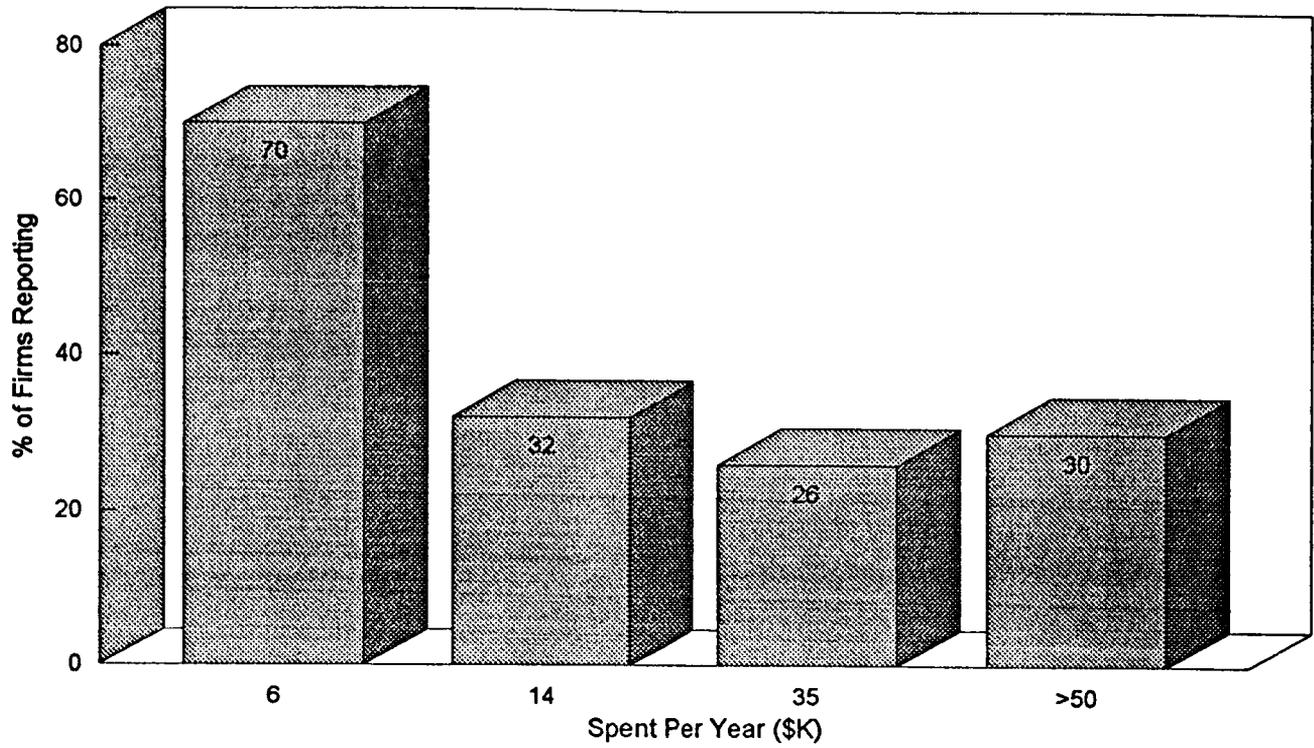
Source: Original Data, CRSP-NASA, 1993

GEOGRAPHIC INFORMATION COLLECTION METHODS - (QUESTION #3)



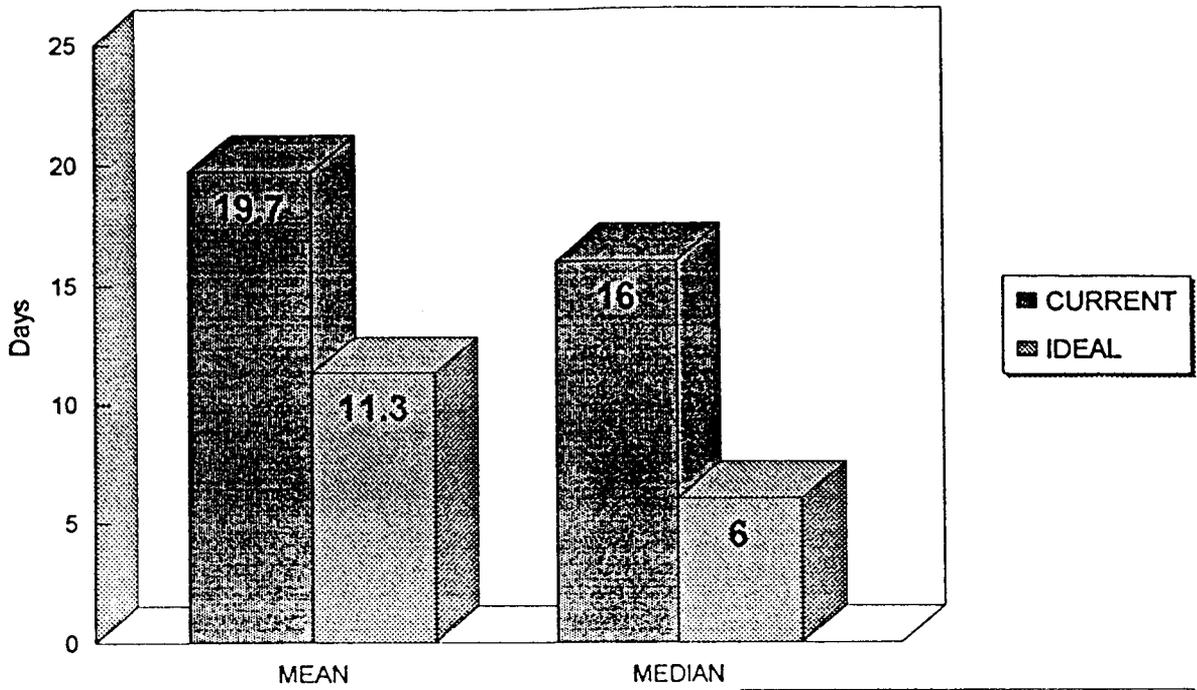
PERCENTAGE OF METHOD RESPONSES OUT OF TOTAL RESPONSES

Geographic Information Expenditures



Source: Original data, CRSP-NASA, 1993

Current and Ideal Delivery Time



Source: Original data, CRSP-NASA, 1993

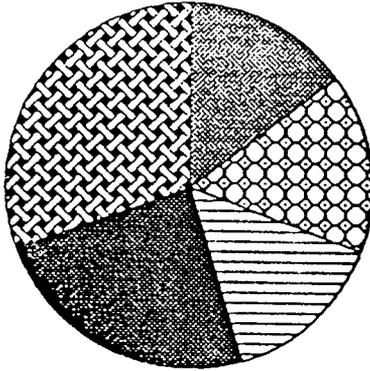
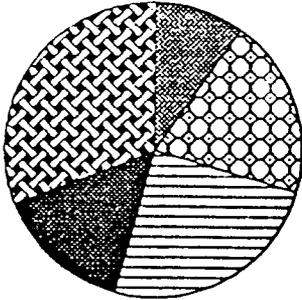
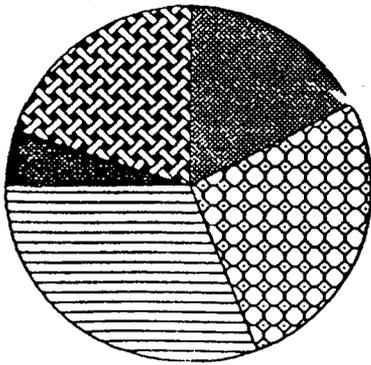
GEOGRAPHIC INFORMATION DELIVERY TIMES (QUESTION #5)

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21-45

46-60

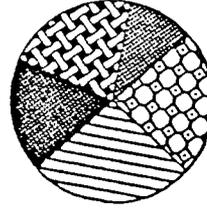
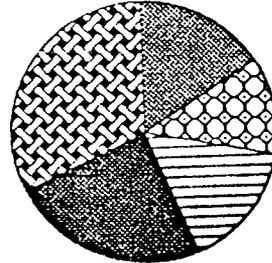
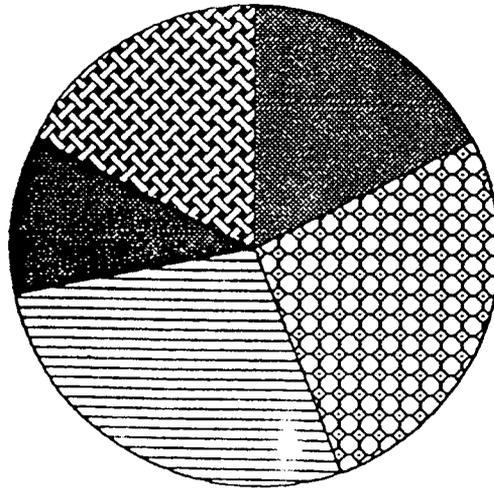


Z = 33

27

33

7.1



Z = 57.5

24.

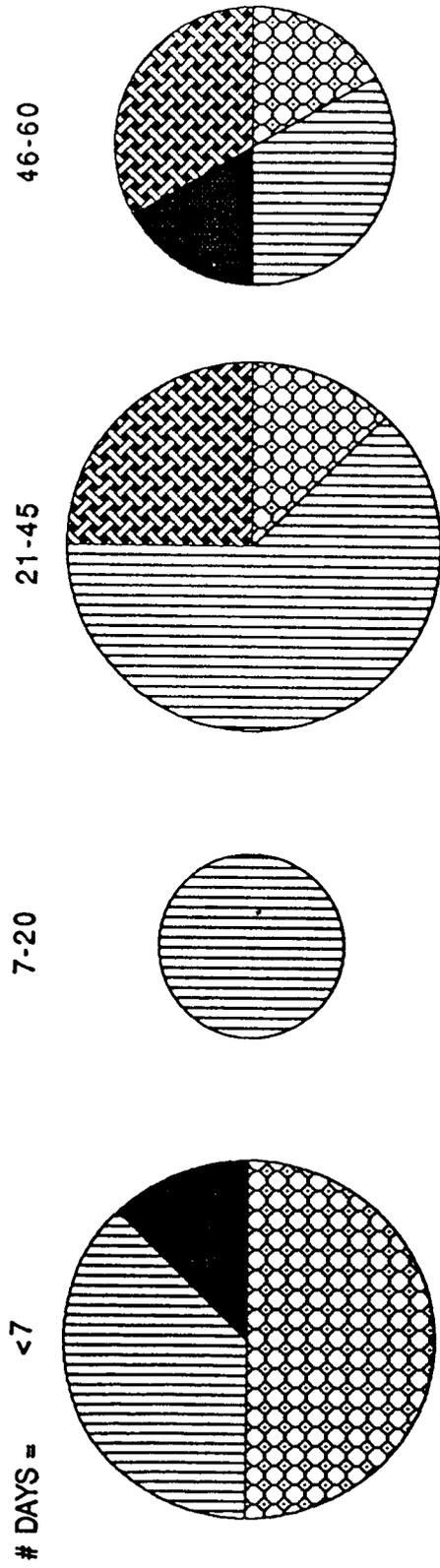
18

1/2.

GEOGRAPHIC INFORMATION IDEAL COLLECT TIMES (QUESTION #7)

- ☒ AERIAL PHOTO
- SATELLITE
- MAPS
- ☒ FIELD SAMP.
- OTHER

GEOGRAPHIC INFORMATION DELIVERY TIMES (QUESTION #5) - AERIAL PHOTO



NR = 8 4 8 6

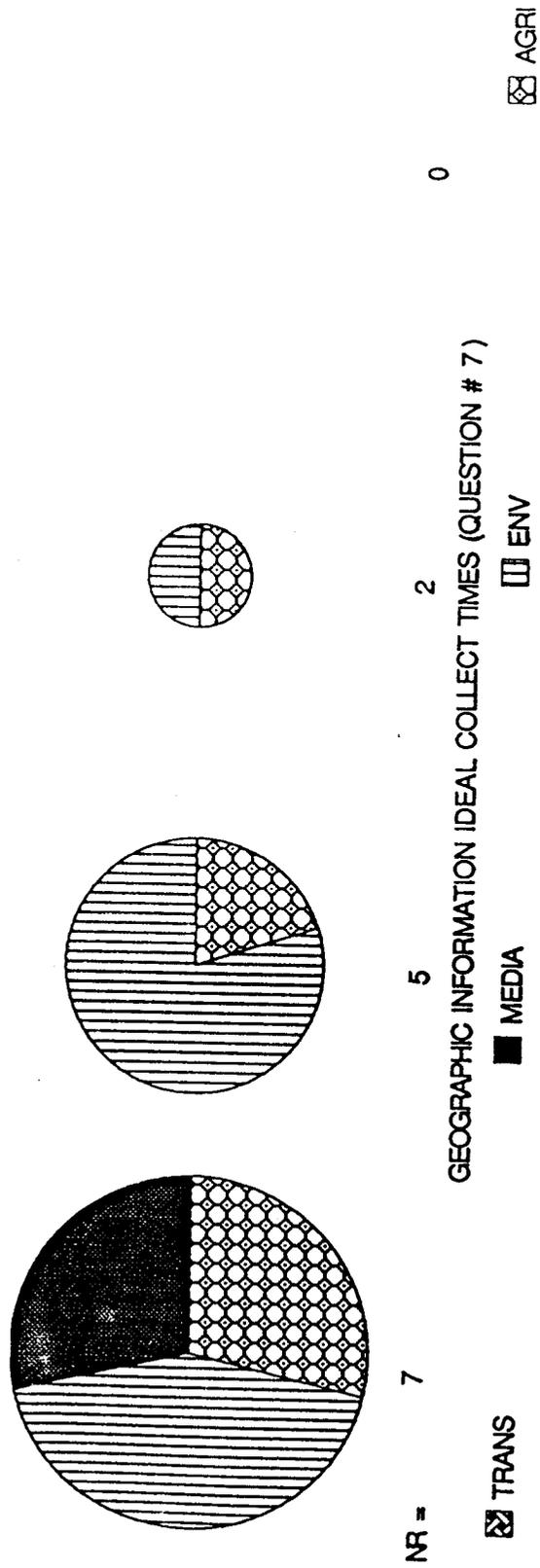
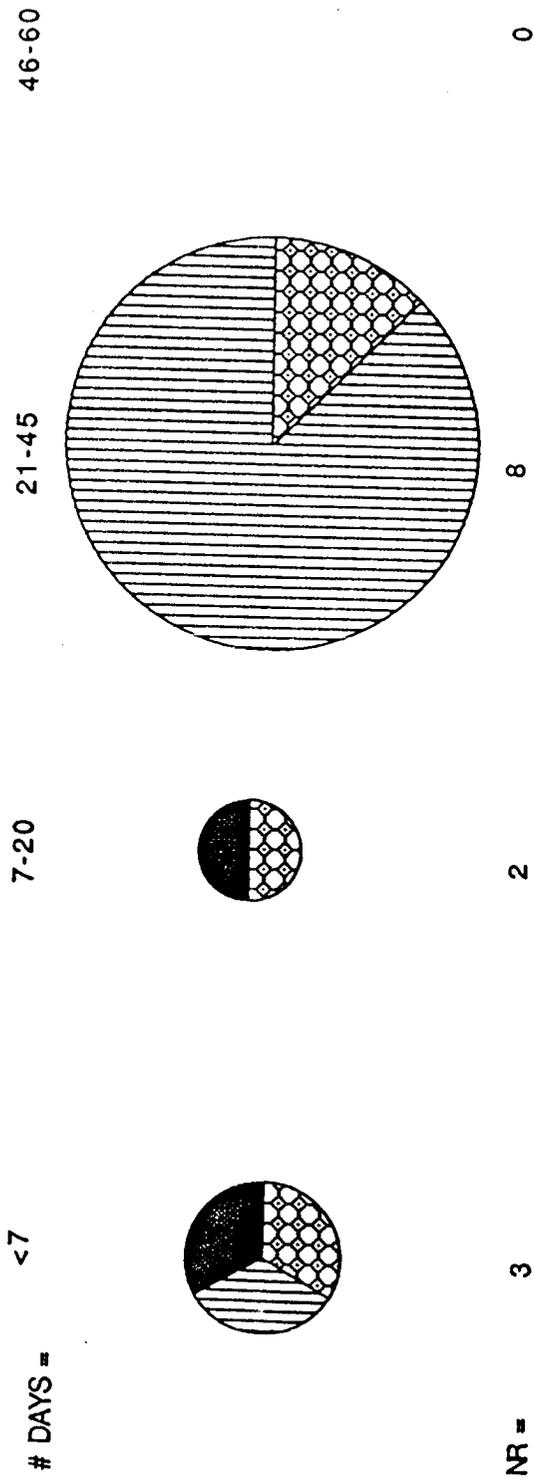


GEOGRAPHIC INFORMATION IDEAL COLLECT TIMES (QUESTION # 7)

NR = 10 4 3 0

TRANS
 MEDIA
 AGRI

GEOGRAPHIC INFORMATION DELIVERY TIMES (QUESTION #5) - SATELLITE



GEOGRAPHIC INFORMATION IDEAL COLLECT TIMES (QUESTION # 7)

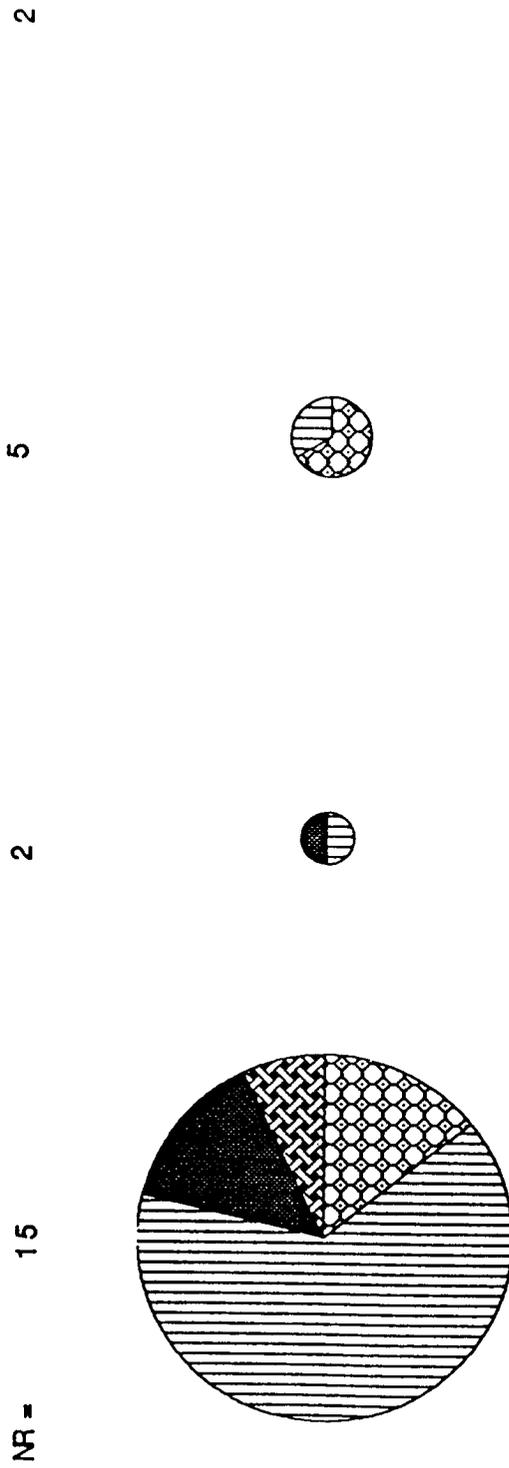
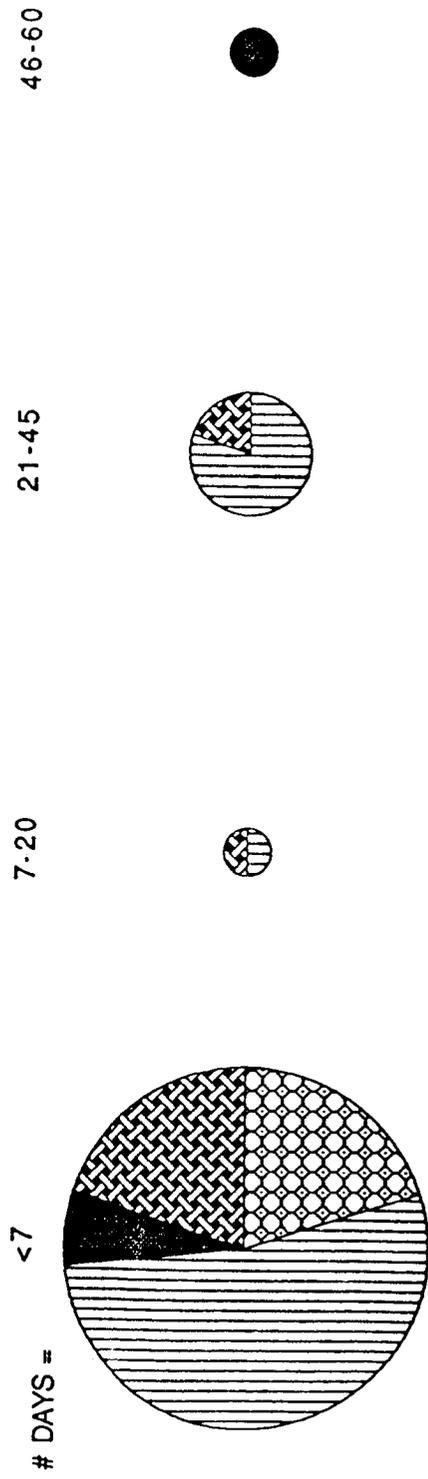
TRANS

MEDIA

AGRI

Source: Original data CRSP-NASA 1993

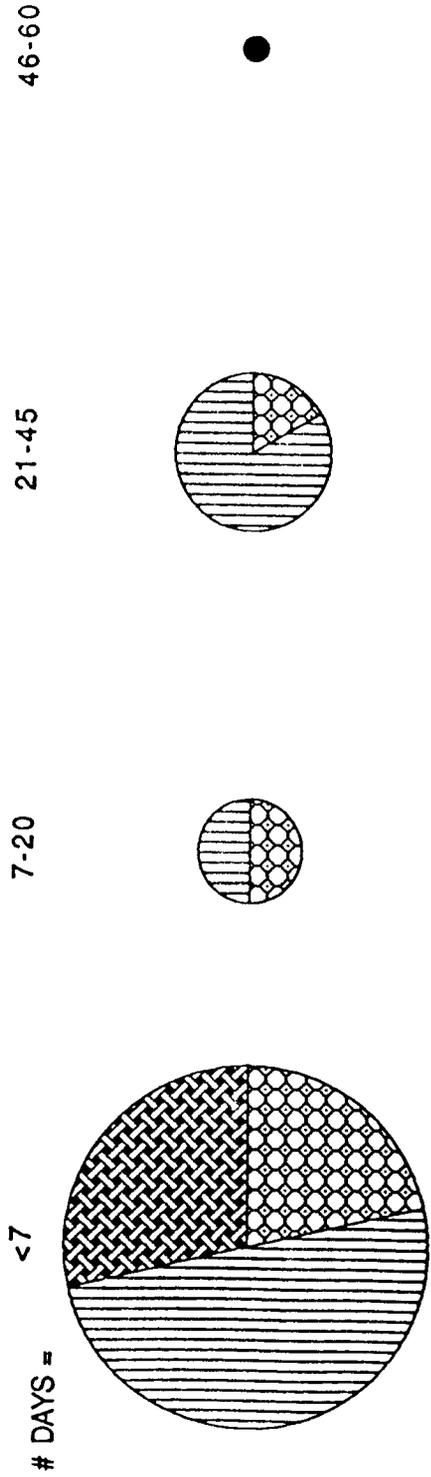
GEOGRAPHIC INFORMATION DELIVERY TIMES (QUESTION #5) - MAPS



TRANS MEDIA ENV AGRI

GEOGRAPHIC INFORMATION IDEAL COLLECT TIMES (QUESTION # 7)

GEOGRAPHIC INFORMATION DELIVERY TIMES (QUESTION #5) - FIELD SAMP



AGRI

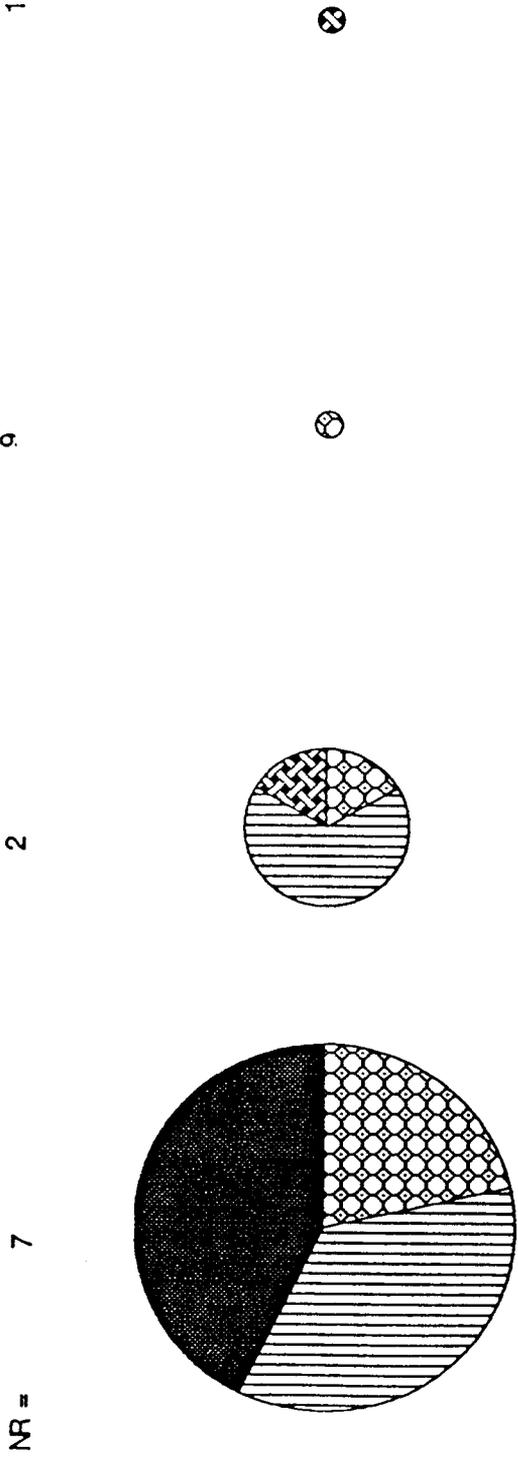
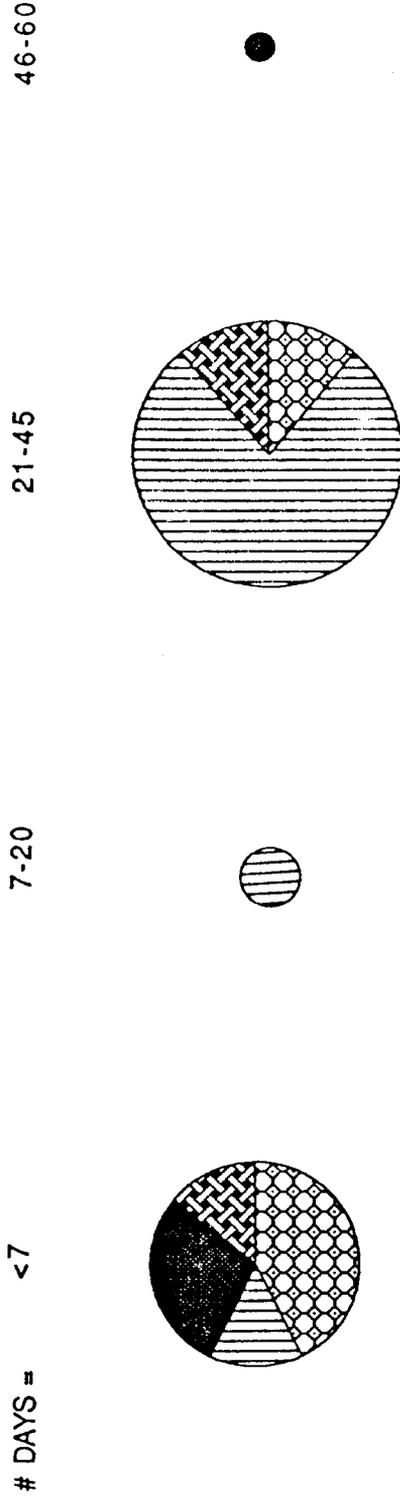
ENV

MEDIA

TRANS

Source: Original data CRSP-NASA 1993

GEOGRAPHIC INFORMATION DELIVERY TIMES (QUESTION #5) - OTHER

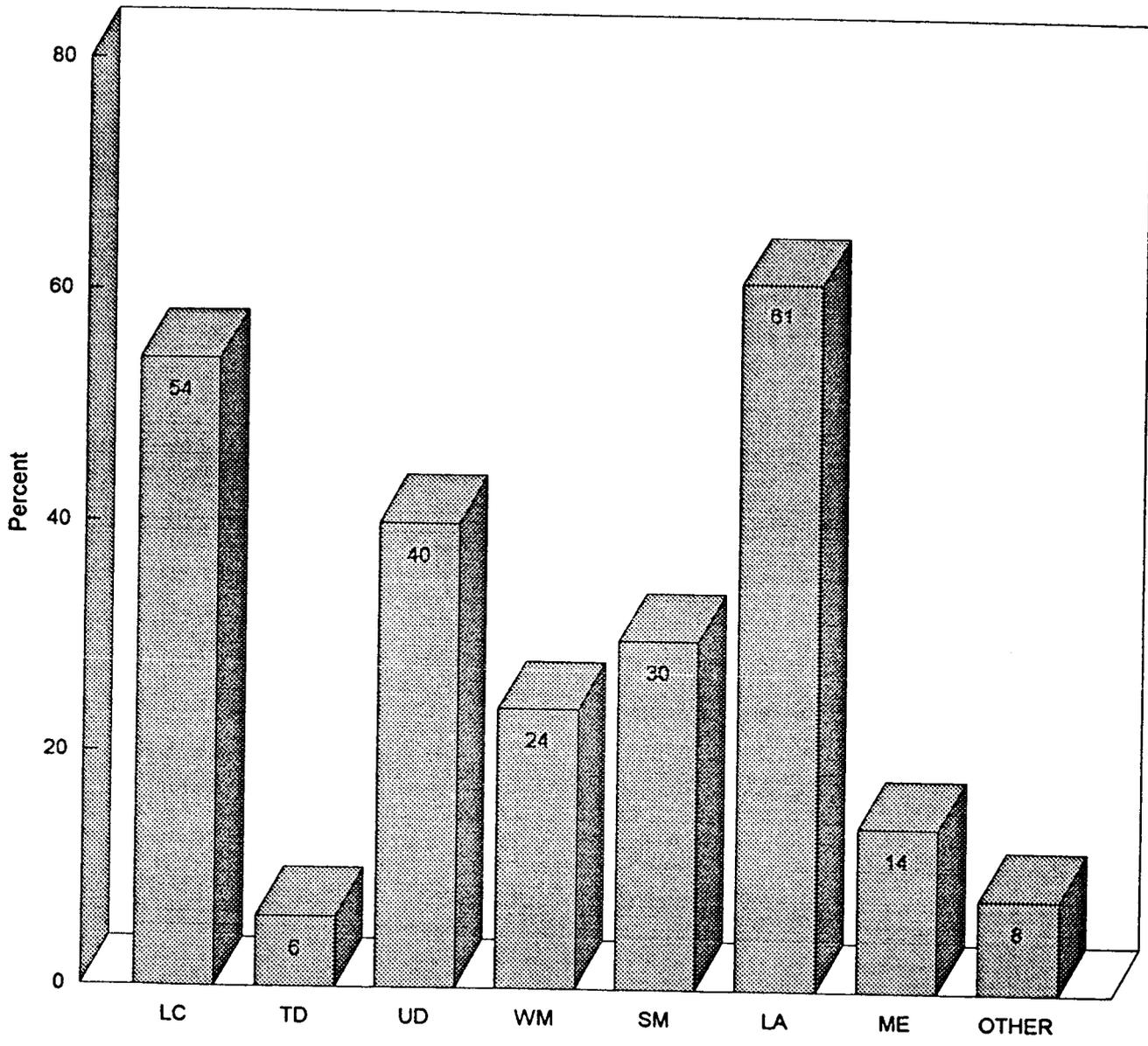


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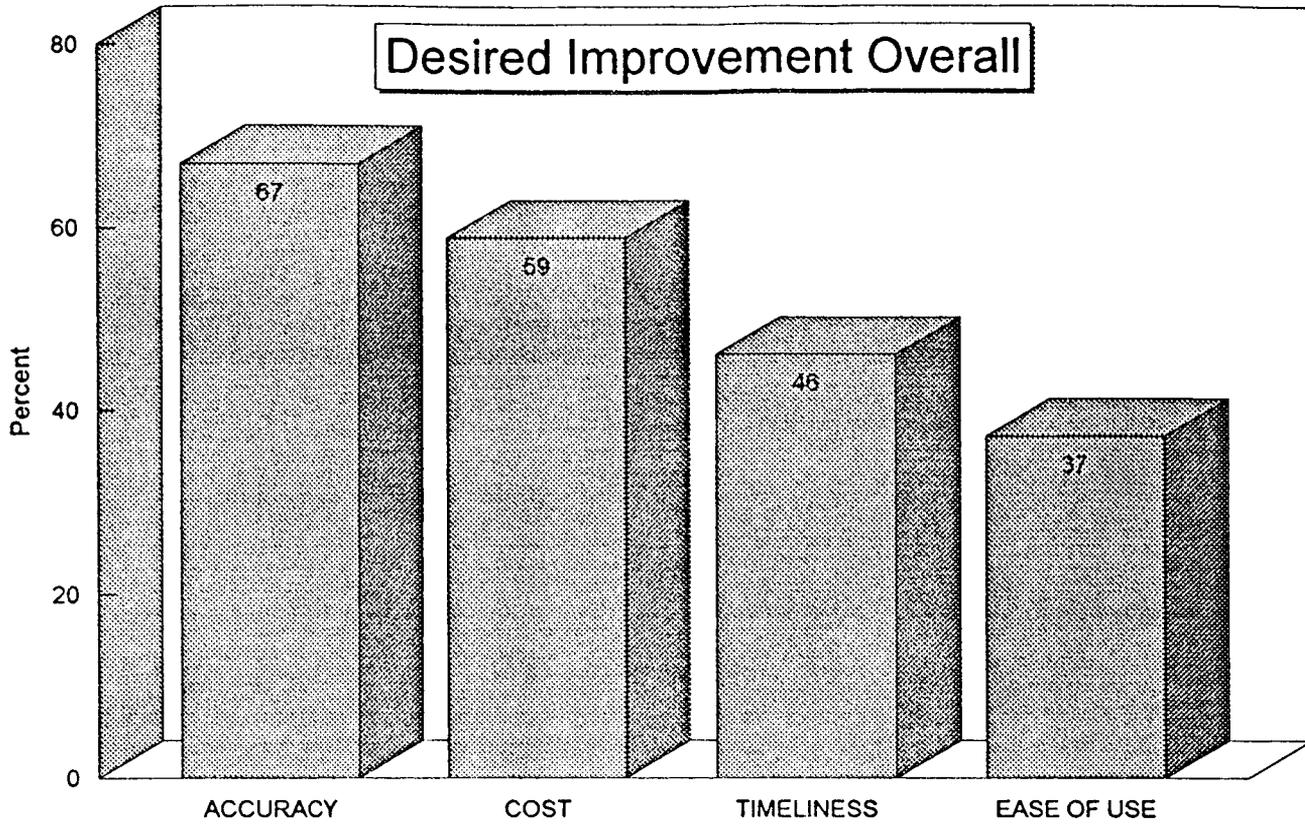
TRANS
 MEDIA
 ENV
 AGRI

Purpose of Investigation



Source: Original data, CRSP-NASA, 1993

Desired Improvement Overall



Source: Original data, CRSP-NASA, 1993

APPENDIX N

**COMMERCIAL REMOTE SENSING NATIONAL WORKSHOP
FOCUS SESSION CHAIRPERSONS**



National Aeronautics
and Space Administration

FOCUS SESSION CHAIRPERSONS

Stennis Space Center

Environmental Management	Jacqueline Crenca, CH2M Hill
Infrastructure Management	Carleton Jones, Bechtel
Public Information Services	Fred Corle, Sun Microsystems
Resource Management	Jon Arvik, Monsanto

APPENDIX O
INDUSTRY SOURCE SAMPLING FRAME

Market Clusters Market Segments	RESOURCE MANAGEMENT	INFRASTRUCTURE MANAGEMENT	ENVIRONMENTAL MANAGEMENT	PUBLIC INFORMATION SERVICES
AGRICULTURE	✓		✓	
Livestock	✓			
Crops	✓		✓	
Landscape/Horticultural Services	✓		✓	
FORESTRY	✓			
Logging	✓		✓	
Rain Forest Management (Food/Medicine Location)	✓		✓	
NON-RENEWABLE EXTRACTION	✓		✓	
Oil	✓		✓	
Natural Gas	✓	✓	✓	
Minerals	✓		✓	
WATER RESOURCES	✓		✓	
Fisheries	✓		✓	
Source Location	✓		✓	
TRANSPORTATION	✓	✓	✓	✓
Air	✓	✓	✓	
Rail	✓	✓	✓	
Road	✓	✓	✓	
Water	✓	✓	✓	✓
COMMUNITY PLANNING AND DEVELOPMENT		✓	✓	
Urban		✓	✓	
Rural		✓	✓	
Suburban		✓	✓	
Industrial		✓	✓	
SERVICE SECTOR		✓	✓	
Insurance		✓	✓	
Investment		✓	✓	
Real Estate		✓	✓	
Legal		✓	✓	
UTILITIES		✓	✓	
Telecommunications		✓	✓	
Water		✓	✓	
Power		✓	✓	
Waste Management		✓	✓	
REGULATORS			✓	✓
Government Agencies			✓	✓
Private Environmental Groups			✓	✓
REGULATEES			✓	
Private Industry			✓	
Government Agencies			✓	
ENVIRONMENTAL SERVICES			✓	
Environmental Engineering/Consultants Firms			✓	
Quick Response Groups (for environmental clean-ups etc.)			✓	
EDUCATION TRAINING				✓
Simulation Techniques				✓
Physical/Earth Sciences			✓	✓
Technology Awareness				✓
NEWS MEDIA			✓	✓
Major Television Networks			✓	✓
Print Media			✓	✓
Weather Channels			✓	✓
ENTERTAINMENT/MASS MARKETS				✓
Advertising				✓
Video Entertainment				✓
Photography				✓
EMERGENCY SERVICES				✓
Disaster Relief				✓

Market Clusters	RESOURCE MANAGEMENT	INFRASTRUCTURE MANAGEMENT	ENVIRONMENTAL MANAGEMENT	PUBLIC INFORMATION SERVICES
Market Segments				
AGRICULTURE	X		X	
(Crops)	X		X	
FORESTRY	X		X	
(Logging)	X		X	
NON-RENEWABLE EXTRACTION	X		X	
(Oil, Natural Gas, Minerals)	X	X	X	
TRANSPORTATION	X	X	X	X
(Rail, Road, Fleet Management, Pipeline Management)	X	X	X	X
REAL ESTATE	X	X	X	
(Sales, Development, Land Use Planning)		X	X	
UTILITIES		X	X	
(Telecommunications, Power, Water)		X	X	
ENVIRONMENT		X	X	
(Regulated Industries, Environmental Service Groups)		X	X	
EDUCATION/TRAINING				X
(Simulation Techniques, Universities)	X			X
MEDIA/ENTERTAINMENT				X
(Major Television Networks and Print Media)			X	X
Cinema, Video Entertainment, Advertising)			X	X
EMERGENCY SERVICES			X	X
(Insurance, Disaster Relief)		X	X	X

APPENDIX P
SAMPLING FRAMES

Interviewlist

Subsection	Company	Address	Phone
Development			
Construction	Fluor	3333 Michelson Dr, Irvine, CA 92720	714-975-5000
Construction	McDermott Intl	1010 Common St, New Orleans, LA 70112	504-587-5400
Construction	Jacobs Engineering Grp	251 South Lake Ave, Pasadena Calif ZIP?	818-449-2171
Construction	Ryland	PO Box 4000, Columbia MD 21044	410-715-7000
Construction	APAN Corp	PO Box 311 Owings Mill MD 21117	410-363-7836
Construction	US Home Corp	PO Box 2863, Houston TX 77252	713-877-2311
Construction	Lewis Homes of California	PO Box 670, Upland CA 91785	909-985-0971
Construction	Hovarian Enterprises Inc	Po Box 500, Red Bank NJ 07701	908-747-7800
Construction	Bechtel Corp	50 Beale St, San Francisco CA 94105	415-768-1234
Construction	Brown and Root Inc	PO Box 3, Houston TX 77001	713-676-3011
Construction	Philipp Holzmann USA	6060 St Albans St, Charlotte NC 28287	704-533-3668
Construction	HBE Corp	11330 Olive St Rd, St Louis MO 36141	314-567-9000
Construction	JE Merit Constructors Inc	PO Box 80257, Baton Rouge LA 70898	504-769-7750
Construction	McCarthy Building Cos	1341 N Rock Hill Rd, St Louis MO 63124	314-968-3300
Con/Real Estate	SAE America Group Inc	7200 Wisconsin Ave, Bethesda MD 20814	301-907-0211
Con/Real Estate	Fletcher Pacific Construction Company	707 Richards St, Honolulu HI 96813	808-521-7861
Con/Real Estate	Pardee Construction Co	10880 Wilshire Blvd, Los Angeles CA 90024	310-475-3525
Con/Real Estate	Crow Construction	1 Penn Plz, New York NY	212-594-0860
Con/Real Estate	Post Properties Inc	3350 Cuberland Cir, Atlanta GA 30339	404-850-4400
Con/Real Estate	Drees Co	211 Grandview Dr, Fort Mitchell KY 41017	606-341-0355
Con/Real Estate	AG Spanos Construction Inc	PO Box 7126, Stockton CA 95207	209-478-7954
Con/Real Estate	Amurcon Corpo	26555 Evergreen, Southfield MI 48076	313-352-0202
Con/Real Estate	Colson and Colson Construction Co	2741 12th St SE, Salem OR 97302	503-370-7070
Con/Real Estate	Harkins Builders Inc	12301 Old Columbia, Silver Spring MD 20904	301-622-9000
Con/Real Estate	Sordoni Enterprises Inc	45 Owen St, Wiles-Barre PA 18704	717-287-3161
Con/Real Estate	Liberty Construction Corp	28388 Franklin Rd, Soubfield MI 48034	313-356-4060
Con/Real Estate	Walton Construction Inc	15365 W 95th St., Lenexa KS 66219	913-492-3232
Con/Real Estate	New Plan Realty Trust	1120 Avenue of the Americas, NY NY 10036	212-869-3000
Con/Real Estate	Clayton Homes	4726 Airport Hwy, Louisville, TN 37777	615-970-7200
Con/Real Estate	Centex	3333 Lee Pkwy, Dallas, TX 75219	214-559-6500
Con/Real Estate	Rouse	10275 Little Patuxent Pkwy, Columbia MD 21044	410-992-6000
Con/Real Estate	PHM	33 Bloomfield Pkwy, Bloomfield Hills MI 48304	313-647-2750
Con/Real Estate	Weingarten Realty	2600 Citadel Plaza Dr, Houston TX 77008	713-866-6000
		4000 Riverchase Lane, Bethesda MD 20814	301-657-3360

Interviewlist

Subsection	Company	Address	Phone
Subdividers and Deve	NVR LP	7601 Lewinsville Rd, McLean VA 22102	703-761-2000
Subdividers and Deve	Galesi Group	Rotterdam Industrial, Schenectady NY 12306	518-356-4445
Subdividers and Deve	Paragon Group	7557 Rambler Rd, Dallas TX 75231	214-891-2000
Subdividers and Deve	Anvan Development Corp	1901 S Myers Rd, Oak Brook Terrace IL 60181	708-932-5700
Subdividers and Deve	Ernest W Hahn Incv	4350 La Jolla Village, San Diego CA 92122	619-546-1001
Subdividers and Deve	Melvin Simon and Associates Inc	PO Box 7033, Indianapolis IN 46207	317-636-1600
Heavy Construction	Zum Industries Inc	1 Zum PL, Eric PA 16514	814-452-2111
Heavy Construction	MW Kellogg Co	3 Greenway Plz, Houston TX 77046	713-960-2000
Highway and Street C	Kiewit Construction Group Inc	1000 Kiewit Plz, Omaha NE 68131	402-342-2052
Highway and Street C	APAC Inc	3340 Peachtree Rd NE, Atlanta GA 30326	404-261-2610
Highway and Street C	Granite Construction Inc	PO Box 50085, Watsonville CA 95077	408-724-1011
Highway and Street C	Rogers Group Inc	PO Box 25250, Nashville TN 37202	713-676-3011
Real Estate	Weichert Realtors Inc	1625 Rte 10 E, Morris Plains NJ 07960	201-267-7777
Real Estate	Allen Tate Company	6618 Fairview Rd, Charlotte NC 28210	704-365-6910
Real Estate	Prudential California Realty	9595 Wilshie Blvd, Beverly Hills CA 90212	310-271-5001
Real Estate	Moore and Co	390 Grant St, Denver CO 80203	303-778-6600
Real Estate	CB Commerical Real Estate Group Inc	533 Fremont Ave, Los Angeles CA 90071	213-613-3242
Real Estate	Cardinal Industries	2255 Kimberly Parkway, Columbus OH 43232	614-755-6400
Real Estate	Grubb and Ellis Co	1 Montgomery St, San Fran CA 94104	415-956-1990
Real Estate	Shannon and Luchs Co	901 15th St NW, Washington DC 20005	202-326-1000
Real Estate	Balcor Co	4849 Golf Rd, Skokie IL 60077	708-677-2900

Interviewlist

Subsection	Company	Address	Phone
Utilities			
Telecommunication	American Telephone & Telegraph		
Telecommunication	Bell South	1155 Peachtree St NE, Atlanta GA 30367	404-249-2000
Telecommunication	US West	7800 East Orchard Rd, Englewood CO 80111	303-793-6500
Telecommunication	Bell Atlantic	1717 Arch St, Philadelphia PA 19103	215-963-6000
Telecommunication	Southwestern Bell	One Bell Center, St. Louis MO 63101	314-235-9800
Telecommunication	Ameritech	30 South Wacker	312-750-5000
Telecommunication	GTE	One Stamford Forum, Stamford CT 06094	203-965-2000
Telecommunication	NYNEX	335 Madison Ave, New York NY 10017	212-370-7400
Telecommunication	Pacific Telesis Group	130 Kennedy St, San Francisco CA 94108	415-394-3000
Telecommunication	ALL TEL	One Allied Dr, Little Rock AR 72202	501-661-8000
Telecommunication	CENTEL	8725 Higgins Rd, Chicago IL 60631	312-399-2500
Telecommunication	Southern New England Telecoms	227 Church St, New Haven CT 06506	203-771-5200
Telecommunication	Rochester Telephone	180 South Clinton Ave, Rochester NY 14646	716-777-1000
Telecommunication	Cincinnati Bell	201 East Fourth St, Cincinnati OH 45209	513-841-8100
Utilities	Secorp	2244 Walnut Grove Ave, Rosemead CA 91770	818-302-1212
Utilities	Consolidated Edison on NY	Four Irving Place, New York NY 10003	212-460-4600
Utilities	Public Service Enterprise	PO Box 1171, Newark NJ 07101	201-430-7000
Utilities	Dominion Resources	901 East Byrd St, Richmond VA 23219	804-775-5700
Utilities	FPL Group	700 Universe Blvd, Juno Beach FL 33408	407-964-4600
Utilities	Rochester G&E	89 East Ave, Rochester NY 14649	716-546-2700
Utilities	American Electric power	One Riverside Plaza, Columbus OH 43215	614-223-1000
Utilities	Pacific Gas and Electric	77 Beale St, San Francisco CA 94177	415-973-7000
Utilities	Southern	64 Perimeter Central East, Atlanta GA 30346	404-393-0650
Utilities	Duke Power	422 South Church St, Charlotte NC 28242	704-594-0887
Water	Washington Water Power	East 1411 Mission Ave, Spokane Washington 99202	509-489-0500
Water	Texas Utilities	2001 Bryan Tower, Dallas TX 75201	214-812-4600
Power	Energy Corp	PO Box 61000, New Orleans LA 70161	504-529-5262
Power	American Electric Power	1 Riverside Plz, Columbus OH 43215	614-233-1000
Utilities	Kansas City Power	1201 Walnut, Kansas City MO 64106	816-556-2200
Power	Pacific Corp	700 NE Multnomah, Portland OR 97232	503-731-2000
Utilities	Houston Industries Inc	PO Box 4567, Houston TX 77210	713-629-3000
Utilities	Georgia Power Co	333 Piedmont Ave NE, Atlanta GA ZIP??	404-526-6526
Utilities	Pennsylvania Power and Light Co	2 N 9th St, Allentown PA 18101	215-770-5151
			610-546-6111

Interviewlist

Subsection	Company	Address	Phone
Power	Bonneville Power Admin		
Water Supply	Salt River Valley Water Users Association	PO Box 52025, Phoenix, AZ 85072	602-236-2500
Water Supply	American Water Works Company Inc	PO Box 1770, Voorhees NJ 08043	609-346-8200
Water Supply	United Water Resources Inc	200 Old Hook Rd, Harrington Park NJ 07640	201-784-9434
Water Supply	Pennsylvania-American Water Co	800 Hersheypark Dr, Hershey PA 17033	717-533-5000
Water Supply	General Waterworks Corp	2000 First State Blvd, Wilmington DE 19804	302-633-5918
Water Supply	California Water Service	1720 N 1st Street, San Jose CA 95112	408-453-8414
Water Supply	Topeka Group Inc	30 W Superior St, Duluth MN 55802	218-722-2614
Water Supply	Consumers Water Co	3 Canal Plz, Portland ME 04101	202-773-6438
Water, Sewer & Utility	HB Zachary Co	PO Box 21130, San Antonio TX 78221	210-922-1213
Water, Sewer & Utility	Fru-Con Construction Corp	PO Box 100, Ballwin MO 63022	314-391-6700
Water, Sewer & Utility	Murphy Brothers Inc	3150 5th Ave, East Moline IL 61244	309-752-1227
Water, Sewer & Utility	Offshore Pipelines	5718 Westheimer Rd, Houston TX 77057	713-952-1000
Water, Sewer & Utility	Burnup and Sims Inc	1 N University Dr, Fort Lauderdale FL 33324	305-587-4512
Oil and Natural Gas	Prima Energy	Denver CO	303-297-2100

Interviewist

Subsection	Company	Address	Phone
Media			
Television Networks	Turner Broadcasting System	100 International Blvd, Atlanta, GA 30303	404-827-1500
Television Networks	Capital Cities -ABC	77 West 66th, NY NY 10023	212-456-7777
Television Networks	Viacom	1515 Broadway, New York NY 10036	212-258-6000
Television Networks	Comcast	124 Market St, Philadelphia PA 19107	215-665-1700
Television Networks	CBS	51 West 52nd St, New York NY 10019	212-975-4321
Television Networks	BHC Communication	600 Madison Avenue, New York NY 10022	212-421-0200
Television Networks	Gaylord Entertainment	2802 Opryland Dr, Nashville TN 37214	615-871-6776
Television Networks	Multimedia	305 South Main St, Greenville SC 29602	803-298-4373
Television Networks	Cablevision systems	One Media Crossways, Woodbury NY 11797	516-364-8450
Television Networks	Chris-Craft industries	600 Madison Avenue, New York NY 10022	212-421-0200
Television Networks	Home Box Office Inc	1100 Ave of the Americas, New York NY 10036	212-512-1000
Television Networks	SCI Holdings Inc	1 Media Crossways, Woodbury NY 11797	516-364-8450
Television Networks	BET Holdings	Washington DC	202-337-5260
Television Networks	Incl. Family Entertainment	Virginia Beach, VA	804-523-7301
Print Media	Gannett -USA Today	1100 Wilson Blvd, Arlington VA 22234	703-284-6000
Print Media	The Washington Post	1150 15th St NW, Washington DC 20071	202-334-4600
Print Media	Cox Enterprises	PO Box 105357, Atlanta GA 30348	404-843-5000
Print Media	Hearst Corp	959 8th Ave, New York NY 10019	212-649-2000
Print Media	Chicago Tribune	435 N Michigan Ave, Chicago IL 60611	312-222-3232
Print Media	Advance Publications Inc	950 Fingerboard Rd, Staten Island NY 10035	718-981-1234
Print Media	Media General Inc	PO Box 85333, Richmond VA 23293	804-649-6000
Publishing	Time Warner Inc	75 Rockefeller Plaza, New York NY 10019	212-484-8000
Publishing	Dun & Bradstreet	299 Park Ave, New York NY 10171	212-593-6800
Publishing	Times Mirror	220 West First St, Los Angeles CA 90012	213-237-3700
Publishing	Tribune	435 North Michigan Ave, Chicago IL 60611	312-229-9100
Publishing	Knight-Ridder	One Herald Plaza, Miami FL 33132	305-376-3800
Publishing	McGraw-Hill	1221 Avenue of the Americas, New York NY 10020	212-512-2000
Publishing	New York Times	229 West 43rd Street, New York NY 10036	212-556-1234
Publishing	E.W. Scripps	1105 N Market St, Wilmington DE 19801	302-478-4141
Publishing	Marvel Entertainment Group	387 Park Ave South, New York NY 10016	212-696-0808
Motion Picture	Sony	9 W 57th St, New York NY 10019	212-371-5800
Motion Picture	Walt Disney	500 South Buena Vista St, Burbank CA 91521	
Motion Picture	Warner Bros., Inc	4000 Warner Blvd, Burbank CA 91505	818-954-6000

610 999 1000

610 999 1000

Interviewlist

Subsection	Company	Address	Phone
Motion Picture	Pathe Communications Corp.	10000 W Washington, Culver City CA 90232	310-280-6000
Motion Picture	MGM-Pathe Communications Corp.	450 N Roxbury Dr, Beverly Hills CA 90210	310-281-4000
Motion Picture	Fox Inc.	P.O. Box 900, Beverly Hills CA 90213	310-277-2211
Motion Picture	Lucasfilm Ltd.	P.O. Box 2009, San Rafael CA 94912	415-662-1800
Motion Picture	Orion Pictures Corp	1325 Ave of the Americas, New York NY 10019	212-956-3800
Motion Picture	Twentieth Century Fox	10201 W Pico Blvd, Los Angeles CA 90064	310-277-2211
Motion Picture	Paramount	15 Columbus Circle, NY NY 10023	212-373-8000
Motion Picture	Spelling Entertainment	5700 Wilshire Blvd, Los Angeles CA 90036	213-965-5888
Motion Picture	Samuel Goldwyn		
Video Games	Nintendo		206-882-2040
Video Games	Sega		
Advertising	Sacchi & Sacchi		212-463-2000
Advertising	Leo Burnett		312-220-5959
Advertising	R.R. Donnelley & Sons	77 West Wacker Dr., Chicago, IL 60601	312-326-8000
Advertising	Interpublic Group	1271 Ave of the Americas, New York NY 10020	212-399-8000
Advertising	Omnicom Group	437 Madison Ave Ave, New York NY 10022	212-415-3600
Advertising	Valassis Communications	36111 Schoolcraft Rd, Livonia MI 48150	31-359-1300
Advertising	Banta	225 Main St, Menasha WI 54952	41-472-2777
Mapping	Rand McNally	Chicago	
Mapping	Ujumap		
Mapping	AAA	Orlando	
Mapping	Etak	San Francisco	
Mapping	Roadnet	Baltimore	
Simulation Technique	Grunman	1111 Stewart Ave, Bethpage NY 11714	516-575-0574
Simulation Technique	Delex Systems		
Simulation Technique	Integral Systems		
Simulation Software	Silicon Graphics		
Simulation Software	Broderbund Software		
Simulation	3DO		
Simulation Software	Microsoft		
Simulation Software			
Academia	Discovery Channel		301-986-1999
Academia	University of Arkansas		
Academia	University of Arizona		

Interviewlist

Subsection	Company	Address	Phone
Academia	Ohio State University		
Academia	Montana State University		
Academia	Mississippi State University		
Academia	Indiana State University		
Academia	Univ of Southern Mississippi		
Academia	Univ of Colorado		303-492-5136
Technology Awareness	Apple		415-399-9244

Interviewlist

Subsection	Company	Address	Phone
Insurance			
Insurance	GEICO	5260 Western Ave Chevy Chase MD 20815	301-986-3000
Insurance	Aetna	151 Farmington Ave, Hartford CT 06156	203-273-0123
Insurance	State Farm Mutual Fire & Casualty	1 State Farm Plaza, Bloomington IL 61710	309-766-2311
Insurance	Allstate Insurance Co	Allstate Plz, Northbrook IL 60062	708-402-5000
Insurance	Lowe's Corp	667 Madison Ave, New York NY 10021	212-545-2000
Insurance	American General Corp	PO Box 3247, Houston TX 77253	713-522-1111
Insurance	CNA Financial Corp	CNA Plz, Chicago IL 60685	312-822-5000
Insurance	Nationwide Mutual Insurance	1 Nationwide Plz, Columbus OH 43216	614-249-7111
Insurance	Liberty Mutual Insurance Group	The American Rd, Dearborn MI 48121	313-322-3000
Insurance	Berkshire Hathway Inc	1440 Kiewit Plz, Omaha NE 68131	402-346-1400
Insurance	USF and G Corp	100 Light St, Baltimore, MD 21202	410-547-3000
Insurance	American Financial	1 E 4th St, Cincinnati OH 45202	513-579-2121
Insurance	Employers Reinsurance Corp	PO Box 2991, Overland Park KS 66201	913-676-5200
Insurance	Reliance Group Holdings Inc	55 E 52nd St, New York, NY 10055	212-909-1100
Insurance	St Paul Fire & Marine Insurance	385 Washington St, St Paul MN 55102	612-221-7911
Insurance	General Reinsurance Corp	PO Box 10350, Stamford CT 06904	203-328-5000
Insurance	Fireman's Fund Insurance Cos	777 San Marin Dr, Novato CA 94998	415-899-2000
Insurance	United States States Fidelity and Guaranty	PO Box 1138, Baltimore MD 21203	410-547-3000
Insurance	Crum and Forester Inc	211 Mount Airy Rd, Basking Ridge NJ 07920	908-204-3500
Insurance	Mutual of Omaha	Mutual of Omaha Plz, Omaha NE 68175	402-342-7600
Insurance	Farmers Insurance Exchange	PO Box 2478 Terminal, Los Angeles CA 90051	213-932-3200
Insurance	Federal Insurance Co	PO Box 1615, Warren NJ 07061	908-580-2000
Insurance	Royal Group Inc	PO Box 1000, Charlotte NC 28201	704-522-2000
Insurance	American International Group	70 Pine St, New York NY 10270	212-770-7000
Insurance	General RE	PO Box 10351, Stamford CT 06904	203-328-5000
Insurance	Chubb	PO Box 1615, Warren NJ 07061	908-580-2000
Insurance	Torchmark	2001 Third Ave South, Birmingham AL 35233	205-324-4200
Insurance	SAFECO Corp	SAFECO Plaza, Seattle WA 98185	206-545-5000
Insurance	CIGNA	1650 Market St, Philadelphia PA 19192	215-761-1000
Insurance	Unum	2211 Congress St, Portland ME 04122	207-770-2211
Insurance	Capital Holding	400 West Market St, Louisville KY 40202	502-560-2000
Insurance	Lincoln National	1300 South Clinton St, Fort Wayne IN 46802	219-455-2000
Insurance	AON	123 North Wacker Dr, Chicago IL 60606	312-701-3000

Interviewlist

Subsection	Company	Address	Phone
Insurance	Cincinnati Financial	6200 South Gilmore Rd, Fairfield OH 45014	513-870-2000
Insurance	AFLAC	1932 Wyoming Rd, Columbus GA 3199	706-323-3431
Insurance	MBIA	113 King St, Armonk NY 10504	914-273-4545
Insurance	Equitable	787 Seventh Ave, New York, NY 10019	212-554-1234
Insurance	Jefferson-Pilot	100 North Greene St, Greensboro NC 27401	919-691-3000
Insurance	Progressive	6000 Parkland Blvd, Mayfield Heights OH 44124	216-464-8000
Insurance	Unirun	One East wacker Dr, Chicago IL 60601	312-661-4600
Insurance	Conseco	11825 North Pennsylvania St, Carmel IN 46032	317-573-6100
Insurance	MGIC Investment	270 East Kilbourn Ave, Milwaukee, WI 53202	414-347-6480
Insurance	AMBAC	One State Plaza New York NY 10004	212-668-0340
Insurance	American National Insurance	One Moody Plaza, Galveston TX 77550	409-763-4661
Insurance	20th Century Industries	6301 Owensmouth Ave, Woodland Hills CA 91367	818-704-3400
Insurance	Kemper	Rte 22, Long Grove IL 60049	708-540-2000
Insurance	Continental Corp	180 Maiden Ln, New York NY 10038	212-440-3980
Insurance	Old Republic International	307 Michigan Ave, Chicago IL 60601	312-346-8100
Disaster Relief orgs.	Triconex		
Disaster Relief orgs.	American Red Cross		202-737-8300
Disaster Relief orgs.	FEMA		
Environment			
Legal	Shaw Pittman		202-663-8000
Legal	Akin Gump Strauss Hauer and Feld	1333 New Hampshire Ave, Washington DC 20036	202-887-4000
Legal	Skadden Arps Slate Meagher and Flom	919 3rd Ave, New York NY 1002	212-371-6000
Legal	Baker and McKenzie	1 Prudential Plaza, Chicago IL	312-861-8800
Legal	Jones Day Reavis and Pogue	901 Lakeside Ave, Cleveland OH 44114	216-586-3939
Legal	Sidley and Austin	11st National Pla, Chicago IL 60603	312-853-7000
Legal	Gibson Dunn and Crucher	333 Grand Ave, Los Angeles CA 90071	213-229-7000
Legal	Cleary Goutib Steen and Hamilton	1 Liberty Plaza, New York NY 10006	212-225-2000
Legal	Shearman and Sterling	599 Lexington Ave, new York NY 10022	212-848-4000
Regulated Industries	DuPont	1007 Market St, Wilmington, De, 19898	302-774-1000
Regulated Industries	DOW Chemical	2030 Dow Center, Midland, MI, 48674	517-636-1000
Regulated Industries	AT&T	New York	
Regulated Industries	Church & Dwight	Princeton, NJ	
Regulated Industries	Clorox	Oakland	
Regulated Industries	CIBA-GEIGY	Ardstley, New York	

Interviewist

Subsection	Company	Address	Phone
Regulated Industries	S.C. Johnson & Son	Racine, Wisc.	
Regulated Industries	Minnesota Mining & MFG	St Paul	
Regulated Industries	Nalco Chemical	Naperville, Ill	
Regulated Industries	Poloroid	Cambridge Mass	
Regulated Industries	American Cyanamid	Wayne, NJ	
Regulated Industries	E.I. Du Pont De Nemours	Wilmington	
Regulated Industries	General Electric	Fairfield	
Regulated Industries	Maxxam	Houston	
Regulated Industries	Monsanto	St. Louis	
Regulated Industries	USX	Pittsburg	
Govt. Agencies	EPA		202-260-2090
Private Groups	GreenPeace		202-462-1177
Private Groups	Save the Bay	Annapolis	DC
Policy	Resources for the Future (RFF)		Penn
Envir. Eng./ Consult.	Roy Westin		202-833-6556
Envir. Eng./ Consult.	MEB		So. California
Envir. Eng./ Consult.	Ground Water Technology		
Envir. Eng./ Consult.	Ducks Unlimited		
Envir. Eng./ Consult.	World Wildlife Fund		
Envir. Eng./ Consult.	Strom Turnond Institute	Clemson	903-656-4700
Envir. Eng./ Consult.	Marine Spill Corp Response		
Waste Management	Waste Management Inc	Atlanta	213-321-3412
Waste Management	Republic Waste Industries	Tulsa	404-431-7140
Waste Management	Matrix Service	Warren, Ohio	918-838-8822
Waste Management	American Waste Services	Canal Winchester OH	216-856-8800
Waste Management	Mid America Waste Systems	3001 Butterfield Rd, Oakbrook IL 60521	614-833-9155
Pollution Control	Chemical Waste	3003 Butterfield Rd, Oakbrook IL 60521	708-218-1500
Pollution Control	Browning-Ferris Industries	757 North Eldridge, Houston TX 77079	708-572-8800
Pollution Control	Calgon Carbon	400 Calgon Carbon Dr, Robinson Twp PA	713-870-8100
Envir. Eng./ Consult.	Environmental Services & Permitting Inc	US Hwy #441, Alachua FL 32615	412-787-6700
Envir. Eng./ Consult.	Russell & Axon Inc	1620 Mason Ave Daytona Beach FL 32117	904-462-4334
Envir. Eng./ Consult.	Earthwatch Waste Systems Inc	800 Fairway Dr, Deerfield Beach Fl 33441	904-274-4620
Envir. Eng./ Consult.	L.M.C Environmental Inc	2640 Emerald Way N, Deerfield Beach FL 33442	305-480-2959
		2640 Emerald Way N, Deerfield Beach FL 33442	305-782-0155

Interviewlist

Subsection	Company	Address	Phone
Envir. Eng./ Consult.	H2O Environmental Inc	6555 NW 9th Ave Ste 214, Ft Lauderdale FL 33309	305-938-4437
Envir. Eng./ Consult.	Cherokee Groundwater Consultants Inc	5884 Steerling Rd, Hollywood FL 33021	305-985-6000
Envir. Eng./ Consult.	Environmental Services Inc	8711 Perimeter Park Blvd, Jacksonville FL 32216	904-645-9900
Envir. Eng./ Consult.	GWL/EMCON Southeast Inc	8021 Phillips Hwy Ste 12, Jacksonville FL 32256	904-636-9360
Envir. Eng./ Consult.	Environmental Hazard Consulting Group	1 Penn Square, Lancaster PA 17602	717-393-8861
Envir. Eng./ Consult.	Terran Corp	3085 Woodman Dr Ste 200, Dayton OH 45420	513-298-4808
Envir. Eng./ Consult.	Flansen Kns A CO	30545 SE 84th St, Preston WA 98050	206-222-7746
Envir. Eng./ Consult.	Roberts Co Inc	PO Box 2711, Carmel CA 93921	408-625-1614
Envir. Eng./ Consult.	Network Environmental Systems Inc	113407 Folsom Blvd, Folsom CA 95630	916-985-3639
Envir. Eng./ Consult.	Ethco Environmental Systems Inc	3255 Monier Circle Ste C, Rancho Cordova CA 95742	916-852-8192
Envir. Eng./ Consult.	PAR Environmental Services Inc	2116 T St, Sacramento CA 95816	916-739-8356
Envir. Eng./ Consult.	Regional Environmental Consultants	7460 Mission Valley Rd, San Diego CA 92108	619-542-1611
Envir. Eng./ Consult.	Delisle Associates Limited Inc	3651 Vanriek Dr, Kalamazoo MI 49002	616-373-4500
Envir. Eng./ Consult.	Mac Neil Environmental Inc	755 Cliff Rd E, Burnsville MN 55337	612-559-3452
Envir. Eng./ Consult.	Liesch Bruce A & Associates Inc	13400 15th Ave N Ste A, Minneapolis, MN 55441	612-559-1423
Envir. Eng./ Consult.	RTP Environmental Associates Inc	239 US Hwy 22, Dumellen, NJ 08812	908-968-9600
Envir. Eng./ Consult.	Cummings Environmental Inc	2 N 2nd St Ste 1300, San Jose CA 95113	408-947-7400
Envir. Eng./ Consult.	Environmental Strategies Corp	1191 Freedom Dr, Reston VA 22090	703-709-6500
Envir. Eng./ Consult.	Tenerex Corp	303 Laurel Dr, Friendwood TX 77546	713-482-5801
Envir. Eng./ Consult.	Veltmann Corp	4000 N Big Springs St, Midland TX 79705	915-683-1874
Envir. Eng./ Consult.	Spatco Inc	4800 N Graham St, Charlotte NC 28269	704-596-4373
Envir. Eng./ Consult.	Tetra Tech	Pasadena CA	818-449-6400

Interviewlist

Subsection	Company	Address	Phone
Agriculture			
Farming	Pratt Farms, Inc.	1356 South, 3000 West, Aberdeen ID 83210	208-397-4698
Farming	AgriNorthwest	P.O. Box 2308, Tri-Cities WA 99302	509-735-6461
Farming	CROPIX	PO Box A, Irrigon OR 97844	503-481-2811
Farming	Sherril Farms Inc	5001 E Washington St, Phoenix AZ 85304	602-275-5402
Farming	Worthington Farms, Inc	Rte 1, Greenville NC 27834	919-756-3827
Farming	Telles Ranch Inc.	PO Box 35, Firebaugh CA 93622	209-659-2036
Farming	DM Camp and Sons	PO Box 80007, Bakersfield CA 93303	805-399-5511
Farming	Bell Farms Inc	Rte 1, Pantego NC 27860	919-935-5311
Farming	JC Watson Company Inc	PO Box 300, Parma ID 83660	208-722-5141
Farming	Gilkey Farms Inc	PO Box 426, Corcoran CA 93212	209-992-2136
Farming	Western Empires	Rte 2, Irrigon OR 97844	503-481-2061
Farming	Stone Land Co	PO Box 146, Stratford CA 93266	209-947-3185
Farming	Huntisinger Farm	PO Box 360, Eau Claire WI 54702	715-832-9739
Food Industry	Agway		
Food Industry	Del Monte Foods		
Food Industry	Farmland Industries		
Food Industry	General Mills	PO Box 1113 Minneapolis MN 55440	612-540-2311
Food Industry	Kelloggs	One Kellogg Square, Battle Creek MI 49016	616-961-2000
Vegetables/Melons	Bud of California	PO Box 1759, Salinas CA 93902	408-422-8871
Vegetables/Melons	Harris Farms Inc	Rte 1 Box 420, Coalinga CA 93210	209-884-2435
Vegetables/Melons	Mike Yurosek and Son Inc	PO Box 1352, Oxnard CA, 93032	805-845-3764
Potatoes	Agri-Empire	PO Box 490, San Jacinto CA 92581	909-654-7311
Potatoes	Eastern Oregon Farming	PO Box A, Irrigon OR 97844	503-481-2811
Potatoes	King Pak Farm	PO Box 6, Edison CA 93200	805-845-9468
Tobacco	OJ Thrall Inc	145 Thrall Rd, Windsor CT 06095	203-688-3315
Crops/Com	Agnetics	PO Box 151, Naperville IL 60566	708-355-1054
Crops/Com	Pioneer Hi-Bred International	400 Locust St, Des Moines IA 50309	515-245-3500
Crops/Wheat	Central Washington Grain Growers Inc	Ash & Baker Sts, Waterville WA 98858	509-745-8551
Crops/Wheat	McShares Inc	PO Box 1460, Salina KS 67402	913-825-2181
Crops/Wheat	Schenk Farms	RR 7, Vincennes IN 47591	812-882-4640
Crops/Grains	Continental Grain Co	277 Park Ave, New York NY 10172	212-207-5100
Crops/Grains	ADM - Growmark Inc	PO Box 1470, Decatur IL 62525	217-424-5900
Crops/Grains	Cargill Inc	PO Box 9300, Minneapolis MN 55440	612-475-7575
Crops/Grains	Bunge Corp	11720 Borman Dr, St Louis MO 63146	314-872-3030

Interviewlist

Subsection	Company	Address	Phone
Crops/Soybeans	Greenfield Seed Co	Rte 1, Harrisburg AR 72432	501-578-2424
Crops/Soybeans	Della and Pine Land Co	PO Box 157, Scott MS 38772	601-742-3351
Crops/Soybeans	Gaddis Industries	PO Box 427, Forest MS 39074	601-469-4231
Crops/Cotton	Ritter E. & Co	106 Frisco St, Marked Tree AR 72365	501-358-2200
Crops/Cotton	JG Boswell Co	333 S Hope St, Los Angeles CA 90071	213-485-1717
Crops/Cotton	Salyer American Corp	PO Box 488, Corcoran CA 93212	209-992-2131
Crops/Sugarcane	Alexander & Baldwin	PO Box 266, Punene HI 96784	808-877-0081
Crops/Sugarcane	Amfac Inc	900 N Michigan Ave, Chicago IL 60601	312-440-4800
Crops/Sugarcane	A & B Hawaii	PO Box 3440, Honolulu HI 96801	808-525-6611
Crops/Citrus Fruit	Lykes Bros Inc	PO Box 1690, Tampa FL 33601	813-223-3981
Crops/Citrus Fruit	Becker Holding Corp	PO Box 1240, Fort Pierce FL 34954	407-461-1180
Crops/Citrus Fruit	Orange Co Inc	PO Box 2158, Bartow FL 33830	813-533-0551
Crops/Tree Fruits	MJB Farming	PO Box 937, Delano CA 93216	805-725-1175
Crops/Tree Fruits	Symms Fruit Ranch Inc	14068 Sunny Slope Rd, Caldwell ID 83605	208-459-4821
Crops/Tree Fruits	Wells and Wade Fruit Company	PO Box 259, Wenatchee WA 98801	509-662-8601
Crops/Grapes	Chalone Wine Group Ltd	301 Howard St, San Francisco CA 94105	415-546-7755
Crops/Grapes	Oak Ridge Vineyards	6100 E Hwy 12, Lodi, CA 95241	209-369-4768
Crops/Grapes	Rodney Strong Vineyards	PO Box 368, Windsor CA 95315	707-433-6511
Crops/Grapes	Robert Mondavi Winery	VISIT	
Investment	Goldman Sachs	85 Broad St, New York NY 10004	212-902-1000
Investment	Morgan Stanley	1251 Avenue of the Americas, NY NY, 10020	212-703-4000
Investment	Merril Lynch	250 Vasey St, NY NY 10281	212-449-1000
Investment	Charles Schwab	101 Montgomery St, San Francisco, CA, 94104	415-627-7000
I/Commodity Brokers	Metropolitan Mortgage & Securities Co Inc	W 929 Sprague Ave, Spokane WA 99204	509-838-3111
I/Commodity Brokers	Diversified Industries	101 S Hanley Rd, Clayton MO 63105	314-862-8200
I/Commodity Brokers	Berger & Co	1050 Sansome St, San Francisco CA 94111	415-956-6100
I/Commodity Brokers	Farmers Commodities Corp	PO Box 4887, Des Moines IA 50306	515-223-3788
I/Commodity Brokers	Lind-Waldock & Co	1030 W Van Buren, Chicago IL 60606	312-413-6000
I/Commodity Brokers	Jack Carl-312 Futures Inc	200 W Adams St, Chicago IL 60606	312-407-5700
I/Commodity Brokers	Siegel Trading Company Inc	549 W Randolph St, Chicago IL 60606	312-236-6789
I/Commodity Brokers	First Options of Chicago Inc	440 S La Salle St, Chicago IL 60605	312-923-5200

Interviewlist

Subsection	Company	Address	Phone
Forestry			
Forestry Services	U.S. Forest Service - Timber Management	201 14th St, SW, Auditors Bldg, 3rd Flr SW Wing	202-205-0893
Forestry Services	Alabama Forestry Association		205-265-8733
Forestry Services	California Department of Forestry		916-444-6592
Forestry Services	Crosby Land and Resources	PO Box 460, Picaune MS 39466	601-798-4821
Forestry Services	Georgia Timberlands Inc	PO Drawer G, Macon GA 31202	912-788-4660
Forestry Services	Drennen Forestry Services	PO Drawer 226, Hayden AL 35079	205-352-9512
Forestry Services	Barringer and Associates	PO Bos 446, Sweet Home OR 97386	503-367-2111
Forestry Services	T & G Aviation Inc	22000 S Price Rd, Chandler AZ 85248	602-821-5188
Timber Tracts	Longview Fiber Col	PO Bos 639, Longview WA 98632	206-425-1550
Timber Tracts	Rayonier Timberlands	1177 Sumner St, Stamford CT 06094	203-221-7234
Timber Tracts	Roy O Martin Lumber Company	PO Box 1110, Alexandria LA 71309	318-448-0405
Timber Tracts	Harrison Group	PO Box 8186, Greenville SC 29602	803-271-3808
Timber Tracts	Hampton Resources	9400 SW Barens Rd, Portland OR 97225	503-297-7691
Timber Tracts	Yule Tree Farms	12704 Ehlen NE, Aurora, Or 97002	503-678-2101
Logging	RLC Industries Co	PO Box 1088, Roseburg OR 970470	503-679-3311
Logging	Plum Creek Timber Co	999 3rd Ave, Seattle WA 98104	206-467-3600
Logging	Pacific Lumber Co	5847 San Felipe, Houston TX 77057	713-975-7600
Logging	Klukwan Forest Products Inc	PO Box 34659, Juneau AK 99803	907-789-7104
Logging	Harwood Products	PO Box 224, Branscompb CA 95417	707-984-6181
Logging	Inland Orange	PO Box 250, Orange TX 77630	409-746-2441
Logging	Upchurch Inc	PO Box Drawer 1607, Walterboro SC 29488	803-538-3829
Logging	Collins Pine Co	PO Box 807, Kane PA 16735	814-837-6941
Logging	Ceader Gap Forest Products Inc	RR 4, Center TX 75935	409-598-9145
Logging	Allen and Gibbons Logging Inc	PO Box 754, Canyonville OR 97417	503-839-4590
Lumber	Weyerhaeuser	Mail Stop CH5F Tacoma WA, 98477	206-924-2345
Lumber	Georgia Pacific	133 Peachtree ST NE, Atlanta, GA 30303	404-521-1400
Lumber	Louisiana-Pacific	111 SW fifth Ave, Portland OR 97204	503-221-0800
Lumber	Willamette Industries	1300 SW fifth Ave, Portland, OR 97201	503-227-5581
Lumber	Bosie Cascade	1111 West Jefferson ST, Boise ID 83702	208-384-6161
Lumber	Wimer Logging Company Inc	600 Goldfish Farm Rd, Albany OR 97321	503-928-8585
Lumber	Canal Wood Corp	PO Box 308, Chester SC 29706	803-385-3133
Lumber	Tumwater Lumber Co	PO Box 4158, Tumwater WA 98501	206-352-1548
Lumber	Midwest Walnut Co	PO Box 97, Council Bluffs IA 51502	712-325-9191
Lumber	Moneold Lumber Company Inc	Rte 1, Elkins WV 26241	304-636-2081

Interviewlist

Subsection	Company	Address	Phone
Lumber	Starfire Lumber Co	PO Box 547, Courage Grove OR 97424	503-942-0168
Lumber	Rocky Creek Logging Co	PO Box 68, Chapman AL 36015	205-376-2258
Lumber	JJ Morgan Inc	PO Box D, New Meadows ID 83654	208-347-2222
Lumber	B and S Logging Inc	1110 Laughlin Rd, Prineville OR 97754	503-447-3175
Lumber	LLoyd Logging Inc	PO Box 218, Twisp WA 98856	509-997-2441
Lumber	M Nygaard Logging Co	PO Box 100, Warrenton OR 97146	503-861-3305
Lumber	SURCO Log Inc	PO Box 1057, Springfield OR 97478	503-746-3213
Lumber	Papac Logging Inc	PO Box 149, Montesano WA 98563	206-249-4175
Lumber	Roesler Timber Company Inc	PO Box B, Startup WA 98293	206-793-0101
Lumber	Talmo Inc	PO Box 492, Gig Harbor WA 98335	206-858-8444
Lumber	Barclay Contractors	PO Box 40, Sisters OR 97759	503-549-3666
Lumber	Hopkes Logging Company Inc	PO Box 279, Tillamook OR 97141	503-842-2491
Lumber	Carl Schroeder Forestry	Rte 1, Wausaukee WI 54177	715-856-5541
Lumber	Cascade Timber Company Inc	PO Box 940, Klamath Falls OR 97601	503-822-3143
Paper	International Paper Co.	Two Manhattanville Rd Purchase NY 10577	914-397-1500
Paper	Kimberly-Clarke	545 E. John Carpenter Fwy, Irving, TX 75062	214-830-1200
Paper	Union Camp	1600 Valley Rd, Wayne NJ 07470	201-628-2000
Paper	Badger Paper Mills		
Paper	Scott Paper	Scott Plaza, Philadelphia PA 19113	215-522-5000

Interviewlist

Subsection	Company	Address	Phone
Exploration			
Oil/Petroleum	Amoco Corp	200 E Randolph Dr., Chicago IL 60601	312-856-6111
Oil/Petroleum	Exxon USA	PO Box 2180, Houston TX 77252	713-656-3636
Oil/Petroleum	Mobil Oil	3225 Gallows Rd, Fairfax VA 22037	703-846-3000
Oil/Petroleum	Sun Company Inc	1801 Market St Philadelphia PA 19103	215-977-3000
Oil/Petroleum	BP Exploration	200 Public Sq. Cleveland OH 44114	216-586-4141
Oil/Petroleum	Occidental Petroleum	10889 Wilshire Blvd, Los Angeles CA 90024	310-208-8800
Oil/Petroleum	Atlantic Richfield	PO Box 2819, Dallas TX 75221	214-880-2500
Oil/Petroleum	Unocoal Corp	PO Box 7600, Los Angeles CA 90051	213-977-6577
Oil/Petroleum	Phillips Petroleum	1500 Plaza Office Bldg., Bartlesville OK 74004	918-661-6600
Oil/Petroleum	Texaco Exploration and Production	1111 Bagby, Houston TX 77002	713-752-6000
Oil/Petroleum	Total Petroleum Inc	999 18th St, Denver CO 80202	303-291-2000
Oil/Petroleum	Burlington Resources	999 3rd Avenue, Seattle WA 98104	206-467-3838
Oil/Petroleum	USX-Corp	600 Grant St, Pittsburgh PA 15219	412-433-1121
Natural Gas	Amoco Production Co	200 East Randolph Dr. Chicago IL 60601	312-856-6111
Natural Gas	Anadarko	17001 Northchase Dr, Houston TX 77060	713-875-1101
Oil & Gas Explorn	Phillips Petroleum Co	6-A1 Phillips Bldg, Bartlesville OK 74004	918-661-6600
Oil & Gas Explorn	FINA Inc	8350 N Sentral Expwy, Dallas TX 75206	214-750-2400
Oil & Gas Explorn	FINA Oil and Chemical Co	PO Box 2159, Dallas TX 75221	214-750-2400
Oil & Gas Explorn	Anschuitz Corp	555 17th St, Denver Colo, 80202	303-298-1000
Oil & Gas Explorn	Arkla Inc	PO Box 21734, Shreveport LA 71101	318-429-2700
Oil & Gas Explorn	Oryx Energy Co	13155 Noel Rd, Dallas TX 75240	214-715-3777
Oil & Gas Explorn	Louisiana Land and Exploration Co	PO Box 60350, New Orleans LA 70160	504-566-6500
Oil & Gas Explorn	Vista Chemical	900 Threadneedle, Houston TX 77224	713-588-3000
Oil & Gas Explorn	Mitchell Energy Corp	PO Box 4000, The Woodlands TX 77387	713-377-5500
Oil & Gas Explorn	Citizens Corp	530 Atlantic Ave, Boston MA 02210	617-338-6300
Oil & Gas Explorn	Edisto Resources Corp	2121 San Jacinto St., Dallas TX 75201	214-880-0243
Oil & Gas Explorn	Torch Oil and Gas	1221 Lamar, Houston TX 77010	713-650-1246
Oil & Gas Explorn	Coastal Oil and Gas	9 Greenway Plz, Houston TX 77046	713-877-1400
Oil & Gas Explorn	Parker and Parsley Petroleum	303 W. Wall Suite 101, Midland TX 79701	915-683-4768
Iron Ores	Cleveland-Cliffs Inc	1100 Superior Ave, Cleveland OH 44114	216-694-5700
Iron Ores	Inland Steel Mining Co	30 W Monroe St, Chicago IL 60603	312-346-0300
Iron Ores	Cyprus Northshore drilling	10 Outer Dr, Silver Bay MN 55614	218-226-4125
Steel	NUCOR	200 Rexford Rd, Charlotte NC 28211	704-366-7000
Steel	Bethlehem Steel	1170 Eighth Ave, Bethlehem PA 18016	215-694-2424

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Subsection	Company	Address	Phone
Steel	Worthington Industries	1205 Dearborn Dr, Columbus OH 43085	614-438-3210
Minerals/Copper	Freeport-McMoran Copper & Gold	One East First St, Reno NV 89501	504-582-1640
Minerals/Copper	Phelps Dodge Corp	2600 N Central Ave, Phoenix AZ 85004	602-234-8100
Minerals/Copper	Asarco Inc	180 Maiden Ln, New York New York 10038	212-510-2000
Minerals/Copper	Kennecott Corp	10 S. Temple St, Salt Lake City, UT 84133	801-322-7000
Minerals/Copper	Magma Copper Co	7400 N Oracle Rd Tucson AZ 85704	801-322-7000
Lead & Zinc Ores	Doe Run Co	11885 Lackland Rd, St Louis MO 63146	314-991-7100
Lead & Zinc Ores	Resurrection Mining Co	1700 Lincoln St, Denver CO 80203	303-863-7414
Lead & Zinc Ores	Pigment and Chemical Inc	PO Box 280998, Memphis TN 38168	901-353-7999
Gold Ores	Nerco Inc	500 NE Multnomah St, Ste 1500 Portland OR 97232	503-731-6600
Gold Ores	Homestake Mining Co	650 California St, San Francisco CA 94108	415-981-8150
Gold Ores	Pegasus Gold Inc	N9 Post St, Spokane WA 99201	509-624-4653
Gold Ores	FMC Gold Company	5011 Meadowood Way, Reno NV 89502	702-827-3777
Gold Ores	AMAX Gold Inc	350 Indiana St, Golden Co 80401	303-231-0444
Silver Ores	Hecla Mining Co	6500 Mineral Dr, Coeur D'Alene ID 83814	208-769-4100
Silver Ores	Coeur D'Alene Mines Corp	PO Box 1, Coeur D'Alene ID 83814	208-667-3511

Subsection	Company	Address 1	Address 2	Interview #	Phone	Title	Name
Agriculture	ConAgra	1050 Sanone St, Suite 400	San Francisco CA 94111		415-956-6100	Western Division Manager	Mr Kevin Lavin
Farming	Pratt Farms, Inc.	1356 South, 3000 West	Aberdeen ID 83210		208-397-4698		Mr Larry Elliot
Farming	AgriNorthwest	P.O. Box 2308	Tri-Cities WA 99302		509-735-6461	Director of Agronomy	Mr Robert Thorton
Farming	Sherril Farms Inc	5001 E Washington St	Phoenix AZ 85304		602-275-3402	Vice President	Mr George Stevenson
Farming	Worthington Farms, Inc	Rte 1	Greenville NC 27834		919-756-3827	President	Mr Chester Worthington
Farming	Telles Ranch Inc.	PO Box 35	Firebaugh CA 93622		209-659-2036	Vice President	Mr Richard Telles
Farming	DM Camp and Sons	PO Box 80007	Bakersfield CA 93303		805-399-3511	Agronomist	Mr Michael Grimes
Farming	Bell Farms Inc	Rte 1	Panico NC 27860		919-935-5311	Dir. of Systems	Ms Arlene Jobe
Farming	IJC Watson Company Inc	PO Box 300	Parma ID 83660		208-722-5141	Fieldman	Mr Jim Bailey
Farming	Gilkey Farms Inc	PO Box 426	Corcoran CA 93212		209-992-2136	Vice President	Mr Kurt Grikey
Farming	Western Empires	PO Box 146	Imperial OR 97844		503-481-2061	Corporate Secretary	Ms Karen Hirano
Farming	Stone Land Co	PO Box 360	Stratford CA 93366		209-947-3185	Vice President	Mr Bill Stone
Farming	Hunzinger Farm	PO Box 360	Eau Claire WI 54702		715-832-9739	Vice President	Mr Darryl Nelson
Food Industry	Agway	181 Park Ave	W. Springfield, MA 01089		413-737-2566	Region Mgr. - Crops	Mr. Ellis Addison
Food Industry	Del Monte Foods	PO Box 193575	San Francisco, CA 94119-3575		1-800-543-3090	Dir. of Operations	Colleague
Food Industry	Farmland Industries	3315 N. Oak Trafficway	Kansas City, MO		816-459-6000	Vice President of Environment. & Safety	Ms. Tracy Mack
Food Industry	General Mills	PO Box 1113	Minneapolis MN 55440		612-540-2311		Mr. Barry Wegener
Food Industry	Kelloggs	One Kellogg Square	Battle Creek MI 49016		616-961-2000	EVP of Operations	Mr. Mike Teale
Vegetables/Melons	Bad of California	PO Box 1759	Salinas CA 93902		408-422-8871	Vice President of Operations	Mr. Mitch Secondo
Vegetables/Melons	Harris Farms Inc	Rte 1 Box 420	Cooling CA 93210		209-884-2435	Chief of Staff	Mr. Erick Johnson
Vegetables/Melons	Mike Yurosek and Son Inc	PO Box 1352	Oxnard CA, 93032		805-845-3764	Fresh Plant Mgr.	Mr. Man Garcia
Potatoes	Agri-Empire	PO Box 490	San Jacinto CA 92581		909-654-7311	President	Mr. Larry Minor
Potatoes	Eastern Oregon Farming/CROPIX	PO Box A	Imigton OR 97844		503-481-2811	President	Mr. Frank Lamb
Potatoes	King Pak Farm	PO Box 6	Edison CA 93200		805-845-9468	Owner	Mr. Chuck Kushman
Tobacco	OJ Thrall Inc	145 Thrall Rd	Windsor CT 06095		203-688-3315	President	Mr. Joseph Thrall
Crops/Corn	Agnetics	PO Box 151	Naperville IL 60566		708-355-1054	CEO	Mr. John Case
Crops/Corn	Pioneer Hi-Bred International	400 Locust St	Des Moines IA 50309		515-245-3500	Director of Operations	Mr. Steve Huber
Crops/Wheat	Central Washington Grain Growers	1 Ash & Baker Sts	Wauverville WA 98858		509-745-8551	General Manager	Mr. Bart Allen
Crops/Wheat	McShares Inc	PO Box 1460	Salina KS 67402		913-825-2181	President	Mr. Jim Allan
Crops/Wheat	Schenk Farms	RR 7	Vincennes IN 47591		812-882-4640	Owner	Mr Roy Schenk
Crops/Grains	Continental Grain Co	277 Park Ave	New York NY 10172		212-207-5100		Mr Dan Decker
Crops/Grains	ADM - Groomark Inc	PO Box 1470	Decatur IL 62525		217-424-5900	Superintendent of County Elevators	Mr. Mark Kolkhurst
Crops/Grains	Bunge Corp.	11730 Borman Dr	St Louis MO 63146		314-872-7030	Attorney	Mr. Gieske
Crops/Soybeans	Delta and Pine Land Co	PO Box 157	Scott MS 38772		601-742-3351	Vice President of Operations	Mr. Randy Dismuke
Crops/Soybeans	Gaddis Industries	PO Box 427	Forest MS 39074		601-469-4231	President	Mr. Mike Gaddis
Crops/Cotton	Ritter E. & Co	106 Frisco St	Marked Tree AR 72365		501-358-2200	Director of Operations	Mr. Charles Glover
Crops/Cotton	JG Boswell Co	333 S Hope St	Los Angeles CA 90071		213-485-1717	Director of Operations	Colleague
Crops/Cotton	Salyer American Corp.	PO Box 488	Corcoran CA 93212		209-992-2131	Director of Operations	Mr. Bill Lemley
Crops/Sugarcane	Alexander & Baldwin	PO Box 366	Chicago IL 60674		808-877-0081	General Manager	Mr. Richard Cameron
Crops/Sugarcane	Amifac Inc	900 N Michigan Ave	Chicago IL 606011		312-440-4800	Director of Operations	Ms Laura Collins
Crops/Sugarcane	A & B Hawaii	PO Box 3440	Honolulu HI 96801		808-525-6611	President	Mr. John Couch
Crops/Citrus Fruit	Lyles Bros. Inc	PO Box 1690	Tampa FL 33601		813-223-3981	Dir. Corporate Compliance	Mr. Hunt
Crops/Citrus Fruit	Becker Holding Corp.	PO Box 1240	Fort Pierce FL 34954		407-461-1180	Vice President - Groves	Mr. Peter McClure
Crops/Citrus Fruit	Orange Co Inc	PO Box 2158	Barrow FL 33830		813-533-0551	Vice President - Groves	Mr. Jerry Newlin
Crops/Tree Fruits	MJB Farming	PO Box 937	Delano CA 93216		805-725-1175	Vice President - Groves	Mr. Darrell Kennedy
Crops/Tree Fruits	Symms Fruit Ranch Inc	14068 Sunny Slope Rd	Caldwell ID 83605		208-459-4821	President	Mr. Richard Symms
Crops/Tree Fruits	Wells and Wade Fruit Company	PO Box 259	Wenatchee WA 98801		509-662-8601		Mr Ted Alway
Crops/Grapes	Vino Farms	PO Box 368	Windsor CA 95315		707-433-8241	Director of Operations	Mr. Roy Davis
Investment	Goldman Sachs	85 Broad St	New York NY 10004		212-902-1000	Co-head of Investment (National Gas, Oil)	Mr. Bill Keely
Investment	Morgan Stanley	1251 Avenue of the Americas	New York NY 10020		212-703-4000	International Principal/Energy	Mr. Paul Mlotok
Investment	Merrill Lynch	250 Vasey St	New York NY 10281		212-449-1000	Director, Global Funds Equity Research	Mr Andrew Melnick
Investment	Charles Schwab	101 Montgomery St	San Francisco CA 94104		415-627-7000	Executive Vice President Marketing	Ms Elizabeth Sawi

Subsection	Company	Address 1	Address 2	Phone	Title	Name
I/Commodity Brokers	Farmers Commodities Corp	PO Box 4887	Den Moines IA 50106	515-223-3788	Office Manager	Mr. David Simulat
I/Commodity Brokers	Lind, Waldox & Co	1030 W Van Buren	Chicago IL 60606	312-413-6000		Mr. Harrett LeWald
I/Commodity Brokers	Siegel Trading Company Inc	118 N. Clinton St, 2nd Flr.	Chicago IL 60661	312-236-6789	Director of Research	Mr. Allan Seimenchuk
I/Commodity Brokers	Futures Magazine	219 Parkade, Box 6	Cedar Falls, IA 50613	312-977-0999		Ms. Christine Beane

Subsection	Company	Address 1	Address 2	Interviewist	Phone	Title	Name
Forestry	U.S. Forest Service - Timber Management	201 14th St. SW, Auditors Bldg.	Washington DC 20005		202-205-0893	Director	Mr. Dave Hessel
Forestry Services	Alabama Forestry Association	55 Alabama St	Montgomery, AL 36104		205-265-8733	Forest Reserve Coordinator	Mr. Rick Oates
Forestry Services	California Forestry Association	13111 St. Ste. 100	Sacramento, CA 95814		916-444-6592	Vice President Private	Mr. Gil Murray
Forestry Services	California Forestry Association	13111 St. Ste. 100	Sacramento, CA 95814		916-444-6592	Vice President Public	Mr. Jim Craine
Forestry Services	Georgia Timberlands Inc	PO Drawer G	Macon GA 31202		912-788-4660	Production Vice President	Mr. Earl Holland
Forestry Services	Drexler Forestry Services	PO Drawer 226	Hayden AL 35079		205-352-9512	Office Manager	Ms. Jane Ellison
Forestry Services	Barnager and Associates	PO Box 446	Sweet Home OR 97386		503-367-2111	President	Mr. Larry Blum
Timber Tracts	Longview Fiber Co	PO Box 639	Longview WA 98632		206-425-1550	Vice President/Mill Manager	Mr. Ward Smith
Timber Tracts	Roy O Maria Lumber Company	PO Box 1110	Alexandria LA 71309		318-448-0405	Forest Manager	Mr. W. F. Wieger
Timber Tracts	Harrison Group	PO Box 8186	Greenville SC 29602		803-271-3808	General Manager	Mr. James Crawford
Timber Tracts	Hampton Resources	9400 SW Barents Rd	Portland OR 97225		503-297-7691		Kim
Timber Tracts	Yule Tree Farms	12704 Ehlen Road NE	Aurora, OR 97002		503-678-2101	Forester	Colleague
Logging	RLC Industries Co	PO Box 1088	Roseburg OR 970470		503-679-3311	Forester	Mr. Leonard Gondek
Logging	Plum Creek Timber Co	999 3rd Ave	Seattle WA 98104		206-467-3600	Manager	Ms. Kelly Lange
Logging	Pacific Lumber Co	5847 San Felipe	Houston TX 77057		713-975-7600	Vice President	Mr. Paul Schwartz
Logging	Klukwan Forest Products Inc	PO Box 34659	Juneau AK 99803		907-789-7104	Vice President	Mr. William Thomas
Logging	Hurwood Products	PO Box 224	Branscomb CA 95417		707-984-6181	President	Mr. Arthur H. Harwood Jr
Logging	Upchurch Inc	PO Box Drawer 1607	Walterboro SC 29488		803-538-3829		J.B.
Logging	Collins Pulp Co	PO Box 807	Kane PA 16735		814-837-6941	Vice President	Mr. Lawrence Potts Jr.
Logging	Allen and Gibbons Logging Inc	PO Box 754	Canyonville OR 97417		503-839-4590	Attn: Sherr	
Lumber	Weyerhaeuser	Mail Stop CH5F	Tacoma WA, 98477		206-924-2345	Executive, Vice President of Timberlands	Mr. Charles Bingham
Lumber	Georgia Pacific	133 Peachtree ST NE	Atlanta, GA 30303		404-521-4000	Group V.P. Forest Resources	Mr. John F. Rasor
Lumber	Louisiana-Pacific	North 21075 Hwy 95	Albion ID 83801		208-772-6033	Logging Superintendent	Mr. Rick Gibbon
Lumber	Willamette Industries	1300 SW Fifth Ave	Portland, OR 97201		503-227-5581	President	Mr. Gary Mauffei
Lumber	Boise Cascade	1111 West Jefferson ST	Boise ID 83702		208-384-6161	Vice President	Mr. David Monthland
Lumber	Canal Wood Corp.	PO Box 308	Chester SC 29706		803-385-3133	President	Mr. Donald Wunber
Lumber	Turnwater Lumber Co	PO Box 4158	Turnwater WA 98501		206-332-1548	Executive Vice President	Mr. E.R. Menchinger
Lumber	Midwest Walnut Co	PO Box 97	Council Bluffs IA 51502		712-325-9191	President	Mr. Bruce Engel
Lumber	Mongold Lumber Company Inc	Rte 1	Elkins WV 26241		304-636-2081	Forester	Mr. Glenn Sheehab
Lumber	Starfire Lumber Co	PO Box 547	Cottage Grove OR 97424		503-942-0168	Vice President	Mr. Greg Chase
Lumber	Union Camp Corp	PO Box 191	Chapman AL 36015		205-376-9707	Forest Supervisor	Mr. Gary Brocton
Lumber	M Nygaard Logging Co	PO Box 100	Warrenton OR 97146		503-861-3305	Forester	Mike O'Bryan
Lumber	Papac Logging Inc	PO Box 149	Montesano WA 98563		206-249-4175	Attn: Forester	Colleague
Lumber	Roesler Timber Company Inc	PO Box B	Startup WA 98293		206-793-0101	Controller	Mr. Nick Sanders
Lumber	Talpo Inc	PO Box 492	Gig Harbor WA 98335		206-858-8444	President	Mr. James O Tallman
Lumber	Hopkes Logging Company Inc	PO Box 279	Tillamook OR 97141		503-842-2491	President	Mr. Marvin Hopkes
Lumber	Carl Schroeder Forestry	Rte 1	Wausaukee WI 54177		715-856-5864	Forester	Mr. Mark Huemphre
Paper	International Paper Co.	Two Manhattanville Rd	Purchase NY 10577		914-397-1500	Vice President	Mr. Stephen Kaye
Paper	Kimberly-Clarke	545 E. John Carpenter Fwy	Irving, TX 75062		214-830-1200	Executive Vice President	Mr. James Groszklaus
Paper	Union Camp	1600 Valley Rd	Wayne NJ 07470		201-628-2000	Senior Vice President	Mr. Russell W. Boekenheide
Paper	Badger Paper Mills	PO Box 149	Peshigo WI 54157		715-582-4551	President and COO	Mr. Bruce Skoronick
Paper	Scott Paper	Scott Plaza	Philadelphia PA 19113		215-522-5000	Senior Vice President	Mr. Paul Schreyer

Subsection	Company	Address	Address	Interview List	Phone	Title	Name
Exploration	Amoco Corp.	200 E Randolph Drive	Houston TX 77252		713-556-2000	Vice President/GM Fibers	Mr. Linn H. Matthews
Oil/Petroleum	Exxon USA	PO Box 2180	Houston TX 77252		713-656-3636		Mr. Mike Johnson
Oil/Petroleum	Mobil Oil	3225 Gallows Rd	Fairfax VA 22037		703-846-3000	Vice President Producing Operations	Mr. Walter Piontek
Oil/Petroleum	Sun Company Inc	1801 Market St	Philadelphia PA 19103		215-977-3000	Vice President Operations	Mr. Harwood Roe
Oil/Petroleum	BP Exploration	PO Box 4587	Houston TX 77210-4587		713-560-8500	Attn.: Exploration Manager	Colleague
Oil/Petroleum	Occidental Petroleum	PO Box 12021	Bakersville, CA 93389-2021		805-321-6000	Attn.: Exploration Manager	Colleague
Oil/Petroleum	ARCO	2300 W Plano Pkwy	Plano TX 75075		214-754-3000	Exploration Operations Manager	Mr. David Nickson
Oil/Petroleum	Texaco Exploration and Production	1111 Bagby	Houston TX 77002		713-752-6000	Vice President of Gas	Mr. T. M. Matthews
Oil/Petroleum	Meridian Oil	400 N Sam Houston E Suite 120	Houston TX 77060		713-878-3700	Supervisor	Mr. Butch Wilson
Oil/Petroleum	Marathon Oil	PO Box 3128	Houston TX 77253		713-629-6600	Division Manager	Mr. Tim Lindsey
Natural Gas	Amoco Production Co	200 East Randolph Dr.	Chicago IL 60601		312-856-6111	Vice President of Production	Colleague
Natural Gas	Anadarko	17001 Northchase Dr	Houston TX 77060		713-875-1101	Manager of Gulf Exploration	Mr. Ken Nadlin
Oil & Gas Explora	Phillips Petroleum Co	6-A1 Phillips Bldg	Bartlesville OK 74004		918-661-6600	Vice President	Mr. Colin Wilkinson
Oil & Gas Explora	FDNA Inc	8350 N Central Expwy	Dallas TX 75206		214-750-2400	Vice Persistent EMP	Mr. Nick Smoak
Oil & Gas Explora	Anschutz Corp.	555 17th St	Denver Colo. 80202		303-298-1000	Manager	Mr. Bill Miller
Oil & Gas Explora	Segal Mid South	1001 Fanain Suite 1700	Houston TX 77002		318-429-2700	Vice President Exploration	Mr. Jim Blankenship
Oil & Gas Explora	Oryx Energy Co	13155 Noel Rd	Dallas TX 75240		214-715-3777	Director of Investor Relations	Mr. John O'Keefe
Oil & Gas Explora	Louisiana Land and Exploration Co	PO Box 60350	New Orleans LA 70160		504-566-6500	Exploration Manager	Mr. Kevin McMichael
Oil & Gas Explora	Mitchell Energy Corp.	PO Box 4000	The Woodlands TX 77387		713-377-5500	Vice President of Coast Region	Mr. Tom Fiorino
Oil & Gas Explora	Edisto Resources Corp.	2121 San Jacinto St.	Dallas TX 75201		214-880-0243	Vice President Engineering	Mr. Steve Daniel
Oil & Gas Explora	Torch Oil and Gas	1221 Larnar	Houston TX 77010		713-650-1246	Geologist	Mr. Bruce Elijah
Oil & Gas Explora	Coastal Oil and Gas	9 Greenway Plz	Houston TX 77046		713-877-1400	Manager International Exploration	Mr. Marvin Ginzle
Oil & Gas Explora	Parker and Parsley Petroleum	303 W. Wall Suite 101	Midland TX 79701		915-683-4768	Vice President	Mr. Dave Chroback
Oil & Gas Explora	Apache Corp.	200 Post Oak Blvd	Houston TX 77556		713-296-6000	Vice President of Business Development	Mr. James Bauman
Oil & Gas Explora	CNG Producing Co	1450 Poydys St	New Orleans LA 70112			President	Mr. David Hunt
Oil & Gas Explora	OXY USA Inc	PO Box 300	Tulsa OK 74102		918-561-2211	Vice President and Finance Officer	Mr. CP Marlow
Oil & Gas Explora	Diamond Shamrock Offshore Partner	717 N Harwood St	Dallas TX 75201		214-953-2000	President	Mr. Steven G Crowell
Oil & Gas Explora	Matrix Service Co	10701 E Ute St	Tulsa OK 74116		918-838-8822	Vice President Operations	Mr. Martin Runchart
Oil & Gas Explora	Plains Resources Inc	1600 Smith St	Houston TX 77002		713-596-2000	Vice President Operations	Mr. Herbert P. Schroeder
Oil & Gas Explora	Presidio Exploration Inc	5613 DTC Pkwy	Englewood CO 80111		303-773-0100	CEO	Mr. George P Girard Jr
Oil & Gas Explora	Pacific Enterprises Oil Co	1700 Pacific Ave	Dallas TX 75201		214-953-2000	Senior Vice President and CFO	Mr. Lloyd Lewin
Oil & Gas Explora	Nomoco Oil and Gas Co	PO Box 1150	Jackson MI 49201		517-787-9011	CEO and President	Mr. Richard Burgess
Oil & Gas Explora	Clintco Gas Systems Inc	PO Box 14981	Columbus OH 43214		614-888-9588	CEO and Chairman of the Board	Mr. Jerry Jordan
Oil & Gas Explora	Diamond M-Odeco Drilling Inc	PO Box 4558	Houston TX 77210		713-493-5300	President	Mr. Robert E. Rose
Oil & Gas Explora	Wexpro	PO Box 11070	Salt Lake City UT 84147		801-530-2600	Chief Executive Officer	Mr. Gary Nordloh
Oil & Gas Explora	Lawton Oil Co	101 N Huntington St	Sulphur LA 70663		318-527-5221	President	Mr. Jack Lawton
Oil & Gas Explora	Marshall Exploration Inc	2615 E End Blvd	Marshall TX 75670		214-938-6641	President	Mr. Steve Carlyle
Oil & Gas Explora	Tide West Oil	PO Box 272	Holdenville OK 74848		405-379-5417	President and Chairman of the Board	Mr. Douglas Plot
Iron Ores	Inland Steel Mining Co	PO Box 1	Virginia MN 55792		218-749-5910	Manager	Mr. Larry Lehman
Minerals/Copper	Freeport-McMoran Copper & Gold	One East First St	Reno NV 89501		504-582-1752	Vice President Exploration - Metals	Mr. Steve Van Non
Minerals/Copper	Phelps Dodge Corp.	2600 N Central Ave	Phoenix AZ 85004		602-234-8100	Vice President Exploration - Metals	Mr. John A. L. Lawrence
Minerals/Copper	Asarco Inc	180 Maiden Ln	New York New York 10038		212-510-2000	Vice President Exploration	Mr. Gerald Van Voorhis
Minerals/Copper	Kennecott Corp.	10 S. Temple St	Salt Lake City, UT 84133		801-322-7000	Vice President Exploration	Mr. Thomas C. Patton
Lead & Zinc Ores	Doe Run Co	11885 Lackland Rd	St Louis MO 63146		314-991-7100	Manager of Exploration and Geology	Mr. Joe Wagner
Lead & Zinc Ores	Reurrection Mining Co	1700 Lincoln St	Denver CO 80203		303-863-7414	Vice President Exploration	Dr. Audrey Pavred
Gold Ores	Homestake Mining Co	650 California St	San Francisco CA 94108		415-981-8150	Vice President Exploration	Mr. Anthony Ranson
Gold Ores	Pegasus Gold Inc	N9 Post St	Spokane WA 99201		509-624-4653	Vice President Exploration	Mr. Allan Park
Gold Ores	PMC Gold Company	999 18th Street	Denver CO 80202		702-827-3777	Vice President Exploration	Mr. James Kelly
Gold Ores	AMAX Gold Inc	350 Indiana St	Golden CO 80401		303-231-0444	Vice President Exploration	Mr. Neil Muncaster
Silver Ores	Hecia Mining Co	6500 Mineral Dr	Coeur D'Alene ID 83814		208-769-4100	Vice President Metal Mining	Mr. Ralph Noyes
Silver Ores	Coeur D'Alene Mines Corp	PO Box 1	Coeur D'Alene ID 83814		208-667-3511	Manager of Exploration	Mr. Ralph Green

Subsection	Company	Address	Address?	Interviewist	Phone	Title	Name
Transportation	Union Pacific	Eight and Eaton Ave	Bethlehem, PA 18018		215-861-3300	Vice President Field Operation	Mr. Michael F. Kelly
Freight/Rail	Burlington Northern Inc	777 Main St	Fort Worth TX 76102		817-878-2000	Roadmaster	Colleague
Freight/Rail	CSX Transportation	500 Water St	Jacksonville FL 32202		904-359-3100	Vice President Operations	Mr. Earl Currie
Freight/Rail	Rio Grande Industries Inc	1 Market Plz	San Francisco CA 94105		415-541-1000	Vice President Operation	Mr. Roland Berry
Freight/Rail	Santa Fe Pacific Corp.	1700 E Golf Rd	Schaumburg IL 60173		708-995-6000	Vice President Maintenance	Mr. Mike Franke
Freight/Rail	Chicago & Northwestern Transportation	1 North Western Cir.	Chicago IL 60606		312-559-7000	Vice President Engineering	Mr. D. E. Waller
Freight/Rail	Long Island Rail Road	Jamaica Station	Jamaica NY 11435		718-990-7400	Chief Engineer	Mr. Steve LaRocco
Passenger/Rail	Amtrak	30th 7 Market Sts. 4th Flr South	Philadelphia PA 19104		800-872-7245	Vice President-Engineering	Mr. Peter Cannito
Passenger/Rail	CP Rail System	105 S 5th St	Minneapolis MN 55402		612-347-8000	Deputy Engineer	Mr. Bob Pearson
Passenger/Rail	Illinois Central Railroad Co	233 N Michigan Ave	Chicago IL 60601		312-819-7500	Vice President Engineering	Mr. Dave Kelly
Passenger/Rail	Florida East Coast Railway	PO Box 1048	St Augustine FL 32084		904-829-3421	Chief Engineer	Mr. C.R. Lynch
Passenger/Rail	Montana Rail Link Inc	PO Box 8779	Missoula MT 59807		406-231-2500	Chief Engineer	Mr. Richard Keller
Passenger/Rail	Wisconsin Central Transportation Co	PO Box 5062	Rosemont IL 60017		708-318-4600	Chief Engineer	Mr. Greg Guibne
Freight/Road	Roadway Services	PO Box 88	Akron OH 44309		216-384-8184	Vice President Operations	Mr. Jim Staley
Freight/Road	Yellow Freight	PO Box 7270	Overland Park KS 66207		913-345-3000	Division Manager	Mr. Richard J. Wright Jr.
Freight/Road	Consolidated Freightways Inc	175 Linfield	Menlo Park, CA 94025		415-326-1700	Operations Coordinator	Mr. John Richards
Freight/Road	Scurlock Permian Corp.	PO Box 4648	Houston TX 77210		713-646-4100	Senior Vice President	Mr. Luarep Hill
Freight/Road	Leaseway Holdings Inc	3700 Park E Dr	Cleveland OH 44122		216-765-5500	Marketing Manager	Ms. Karen Keiser
Freight/Road	Roadnet	2311 York Road	Timonium, MD 21093		410-560-4121		Mr. Mike Jakob
Freight/Road	Overnite Transport Co	PO Box 1216	Richmond VA 23209		804-231-8000	Senior Vice President	Mr. Paul Haxon
Freight/Road	Arkansas Best Corp.	PO Box 48	Fort Smith AR 72902		501-785-6000	Vice President Operation	Mr. West Kemp
Freight/Road	UniGroup Inc	1 United Drive	Featon MO 63206		314-326-3100	Vice President Domestic Operations	Mr. Pat Larch
Freight/Road	Mayflower Group Inc	9998 N Michigan Rd	Carmel IN 46032		317-875-1469	Director of Marketing	Mr. Raymond Emerick
Freight/Water	Alexander & Baldwin	PO Box 3440	Honolulu HI 96801		808-525-6611	General Manager	Mr. Ralph Paterson
Freight/Water	GATX	120 South Riverside Plaza	Chicago IL 60606		312-621-6200	CEO	Mr. John Bouch
Freight/Water	Overseas Shipholding Group	1114 Ave of the Americas	New York, NY 10036		212-869-1222	President	Mr. George Blake
Freight/Water	Sea-Land Service Inc	379 Thornall St	Edison NJ 08837		908-558-6000	General Manager Fleet Operations - Austral	Colleague
Freight/Water	Chevron Shipping Co	555 Market St	San Francisco CA 94105		415-894-3232	Manager of Fleet Operations	Colleague
Freight/Water	Atlantic Richfield Co	300 OceanGate	Long Beach CA 90802		310-590-4400	Manager of Fleet Operation	Mr. Frank Lee
Freight/Water	Midland Enterprises Inc	1400 580 Bldg.	Cincinnati OH 45202		513-721-4000	Manager of Fleets	Mr. Mike Monahan
Freight/Water	Totem Resources Corp.	PO Box 24908	Seattle WA 98124		206-628-4343	Equipment Control Manager	Mr. Ralph Lundstro
Freight/Water	OMI Corp.	90 Park Ave	New York NY 10016		212-986-1960	Manager Fleet Operations	Colleague
Freight/Water	Farell Lines	1 Whitehall St	New York NY		212-440-4200	Manager of Fleet Operations	Mr. James Madden
Freight/Water	Marine Transport Lines	150 Meadowland Pkwy	Secaucus NJ 07096		201-330-0200	Fleet Manager	Mr. Richard Micaris
Freight/Water	Atlantic Container Lines	50 Crawford Rd	South Plainfield NJ 07080		908-668-5400	Senior Vice President of Marine Operations	Mr. Conrad DeZego
Freight/Water	Leevac Corp.	PO Box 2528	Morgan City LA 70381		504-384-8000	Fleet Manager	Mr. Denis Taylor
Crude Pipelines	Coscol Petroleum Corp.	9 Greenway Plz	Houston TX 77046		713-877-1400	Director of Technical Services	Mr. Art Wilson
Crude Pipelines	Exxon Pipeline	800 Bell Street	Houston TX 77001		713-656-3636	Operations Manager	Ms. Sue Cummings
Crude Pipelines	Mobil Pipeline Company Inc	PO Box 900	Dallas TX 75221		214-658-2111	Mechanical Maintenance and Construction	Mr. W. H. Allison
Crude Pipelines	Mapco Transportation Inc	1800 S Baltimore Ave	Tulsa OK 74119		918-581-1800	Manager Operations Control	Mr. Sid Ruetter
Crude Pipelines	Amoco Pipeline Co	1 Mid-America Plz	Oak Brook Terrace IL 60181		708-990-3700	President	Mr. David Lemmon
Crude Pipelines	Shell Pipeline Corp.	PO Box 2648	Houston TX 77242		713-241-6161	Operations Manager	Mr. Frank T. Lee
Refined Pipelines	Buckeye Pipeline Company LP	PO Box 368	Emmaus PA 18049		215-820-8300	Engineer	Mr. Kevin Hagar
Refined Pipelines	Lakehead Pipeline Co Inc	PO Box 789	Superior WI 54880		715-394-1400	Executive Vice President	Mr. Leonard Middleton
Refined Pipelines	Colonial Pipeline Co	PO Box 18855	Atlanta GA 30326		404-261-1470	Manager of Business Development	Mr. Gary French
Refined Pipelines	Santa Fe Pacific Pipeline Partners	888 S Figueroa St	Los Angeles CA 90017		213-614-1095	Manager Products Movement	Ms. Mary Morgan
Refined Pipelines	Buckeye Partners LP	PO Box 123	Woolser OH 44691		216-264-8847	CEO	Mr. R. Dean Smith
Refined Pipelines	Apex Marine Corp.	2001 Marcus Ave	Lake Success NY 11042		516-775-6700	President	Mr. Leo Berger
Refined Pipelines	Texas Eastern Products	PO Box 2521	Houston TX 77252		713-627-5400	Manager Measurement	Mr. Duane Hurms
Refined Pipelines	Olympic Pipe Line Co	PO Box 5568	Denver Co 80202		303-861-4475	Property Accounting	Mr. Mark Cooper
Refined Pipelines	Wolverine Pipe Line Co	PO Box 900	Dallas TX 75289		214-658-2405	Crude Logistics Manager	Mr. Ron Neatows

Subsection	Company	Address	Address?	Interviewist	Phone	Title	Name
Development	Engineering/Construction Spaulding DeDecker & Associates Inc	655 W 13 Mile	Madison Heights MI 48071		313-385-5545	Vice President	Mr. Paul Wade
Construction	Fluor	3333 Mitchell Dr	Irvine, CA 92720		714-975-5000	Lead Engineer	Mr. Phil Metzlar
Construction	McDermott Inc	1010 Common St	New Orleans, LA 70112		504-587-5400	Chief Engineer	Mr. Dave Daigle
Construction	Jacobs Engineering Grp	251 South Lake Ave	Pasadena Calif 91101		818-449-2171	Chief Engineer	Mr. Tim Ferguson
Construction	Ryland	PO Box 4000	Columbia MD 21044		410-715-7000	Executive Vice President	Mr. Alan Hobbitzell
Construction	APAN Corp.	PO Box 311	Owings Mill MD 21117		410-363-7836	Vice President	Mr. Eric Kunz
Construction	Lewis Homes of California	PO Box 670	Upland CA 91785		909-985-0971	Vice President Land Development	Mr. Gerry Bryant
Construction	Hovnan Enterprises Inc	Po Box 500	Red Bank NJ 07701		908-747-7800	Director of Land Acquisition	Mr. Bill Anner
Construction	Bechtel Corp.	50 Beale St	San Francisco CA 94105		415-768-1234	Senior Vice President	Mr. John Carter
Construction	HBE Corp.	11130 Olive St Rd	St Louis MO 63141		314-567-9000	Chief Engineer/Construction	Colleague
Construction	JE Merit Constructors Inc	PO Box 80257	Baton Rouge LA 70898		504-769-7750	Vice President	Mr. Greg Landry
Construction	McCarthy Building Cos	1341 N Rock Hill Rd	St Louis MO 63124		314-968-3300	Chief Operating Officer	Mr. Roger Burnet
Con/Real Estate	SAE America Group Inc	7200 Wisconsin Ave	Bethesda MD 20814		301-907-0211	Director of Marketing	Mr. Hardin Byars
Con/Real Estate	Fletcher Pacific Construction Compa	707 Richards St	Honolulu HI 96813		808-521-7861	Market & Business Development	Ms. Trudy China
Con/Real Estate	Pardee Construction Co	10880 Wilshire Blvd	Los Angeles CA 90024		310-475-3525	Senior Vice President of Land Acquisition	Mr. Dick Shephard
Con/Real Estate	Crow Construction	1 Penn Plz	New York NY		212-594-0860	Vice President Marketing	Mr. Charles Sheppard
Con/Real Estate	Post Properties Inc *	3350 Cumberland Circle	Atlanta GA 30339		404-850-4400	Controller	Ms. Judy Denman
Con/Real Estate	Dress Co	211 Grandview Dr	Fort Mitchell KY 41017		606-341-0355	Vice President	Mr. Jim Miller
Con/Real Estate	AG Spinos Construction Inc	PO Box 7126	Stockton CA 95207		209-478-7954	Vice President	Mr. Ray Hanes
Con/Real Estate	Amurcon Corp.	26555 Evergreen	Southfield MI 48076		313-352-0202	President	Mr. B.M. Burman
Con/Real Estate	Colson and Colson Construction Co	2741 12th St SE	Salem OR 97302		503-370-7070	Acquisition	Mr. Eric Jacobson
Con/Real Estate	Hartins Builders Inc	12301 Old Columbia	Silver Spring MD 20904		301-622-9000	Director of Marketing	Mr. Ted Nelson
Con/Real Estate	Sordani Enterprises Inc	45 Owen St	Wibes-Barre PA 18704		717-287-3161	Vice President and Treasurer	Mr. Charles Parchie
Con/Real Estate	Liberty Construction Corp.	28388 Franklin Rd	Southfield MI 48034		313-356-4060	Exec Vice President	Mr. Armen Kalaydjian
Con/Real Estate	Walton Construction Inc	15365 W 95th St	Lenexa KS 66219		913-492-3232	Controller	Mr. Vic Reed
Con/Real Estate	New Plan Realty Trust	1120 Avenue of the Americas	NY NY 10036		212-869-3000	Vice President of Operations	Mr. Leonard Cancell
Con/Real Estate	Clayton Homes	4726 Airport Hwy	Louisville, TN 37777		615-970-7200	Vice President and CFO	Mr. Richard Ray
Con/Real Estate	Centex	3333 Lee Pkwy	Dallas, TX 75219		214-539-6500	CEO and President	Mr. T. Steven Bilheimer
Con/Real Estate	Rouse	10275 Little Patuxent Pkwy	Columbia MD 21044		410-992-6000	Executive V.P. Operations	Mr. R. Harwood Beville
Con/Real Estate	PHM	33 Bloomfield Pkwy	Bloomfield Hills MI 48304		313-647-2750	President and COO	Mr. Robert Burges
Con/Real Estate	Weingarten Realty	2600 Citadel Plaza Dr	Houston TX 77292		713-866-6000	Director of Sales	Ms. Janet Brown
Con/Real Estate	Federal Realty	4800 Hampden Lane	Bethesda MD 20814		301-652-3360	Director of Marketing	Ms. Meg Lacy
Subdividers and Develop	NVR LP	7601 Lewinsville Rd	McLean VA 22102		703-761-2000	Vice President	Mr. Thomas Ruck
Subdividers and Develop	Galesi Group	Rosierdam Industrial	Schenectady NY 12306		518-356-4445	Chief Operating Officer	Mr. David Buicco
Subdividers and Develop	Purvan Group	757 Rumbler Rd	Dallas TX 75231		214-891-2000	V.P. of Marketing and Sales	Mr. Christopher Gallagher
Subdividers and Develop	Anvan Development Corp.	1901 S Myers Rd	Oak Brook Terrace IL 60181		708-932-5700	Director of Marketing	Mr. David Williams
Subdividers and Develop	Ernest W Hahn Incv	4350 La Jolla Village	San Diego CA 92122		619-546-1001	Manager of Corporate Development	Mr. Mark Degner
Highway and Street Const	Brown and Root	PO Box 3	Houston TX 77001		713-676-3011	Manager of Highways and Civil Engineer	Mr. Frank Abvaganas
Highway and Street Const	APAC Inc	3340 Peachtree Rd NE	Atlanta GA 30326		404-261-2610	President	Mr. Charles F. Potts
Highway and Street Const	APAC Georgia Inc	PO Box 19855	Atlanta GA 30325		404-351-6301	President	Mr. Jack Newhard
Highway and Street Const	APAC Inc Barns Construction Co.	PO Box 399	Kingston NC 28501		919-527-8021	President	Mr. David Schwartz
Highway and Street Const	Granite Construction Inc	PO Box 50085	Watsonville CA 95077		408-724-1011	Manager of Business Development	Mr. Joe McGowan
Real Estate	Weichert Realtors Inc	1625 Rie 10 E	Morris Plains NJ 07960		201-267-7777	Vice President Marketing	Mr. Philip Dezan
Real Estate	Prudential California Realty	9595 Wilshire Blvd	Beverly hills CA 90212		310-271-5001	Vice President Marketing	Mr. Terry Pullun
Real Estate	Moore and Co	390 Grant St	Denver CO 80203		303-778-6600	Chief Operating Officer	Mr. Gordon Mickelson
Real Estate	CB Commercial Real Estate Group	1533 Fremont Ave	Los Angeles CA 90071		213-613-3242	President	Mr. Gary Belan
Real Estate	Cardinal Industries	2255 Kimberly Parkway	Columbus OH 43232		614-755-6400	President	Mr. Paul Jarvis
Real Estate	Grubb and Ellis Co	1 Montgomery St	San Fran CA 94104		415-956-1990	Director of Corporation	Ms. Penny Pence Smith
Real Estate	Shannon and Luchs Co	901 15th St NW	Washington DC 20005		202-326-1000	Senior Vice President	Mr. Thomas Joyce
Real Estate	Balfour Co	4849 Golf Rd	Stokie IL 60077		708-677-2900	President and COO	Mr. Tom Meador

Subsection	Company	Address	Address	Interviewist	Phone	Title	Name
Utilities							
Telecommunication	American Telephone & Telegraph		Atlanta GA 30375		404-249-2000	Outside Plant Engineer	Mr. Peter Ross
Telecommunication	Southern Bell		Thorton CO 80241		303-451-2599	Director of Planning	Mr. Jerry Simmons
Telecommunication	US West		Philadelphia PA 19103		215-963-6000	Director of Customer Service	Mr. Ray Clarke
Telecommunication	Bell Atlantic		San Antonio TX 78250		314-235-9800	Director of Core Planning	Mr. Steve Dinnmitt
Telecommunication	Southern Bell		Chicago IL 60606		312-750-5000	Attn.: Engineering and Planning	Colleague
Telecommunication	Ametech		Irving TX 75038		214-718-5600	Acting Director Network Engineering	Mr. Vernon Itz
Telecommunication	GTE		New York NY 10017		212-370-7400	Attn.: Engineering and Planning	Colleague
Telecommunication	NYNEX		San Francisco CA 94108		415-394-3000	Attn.: Engineering and Planning	Colleague
Telecommunication	Pacific Telesis Group		Little Rock AR 72202		501-661-8000	Attn.: Engineering and Planning	Colleague
Telecommunication	ALLTEL		Chicago IL 60631		312-399-2500	Attn.: Engineering and Planning	Colleague
Telecommunication	CENTEL		New Haven CT 06506		203-771-5200	Attn.: Engineering and Planning	Colleague
Telecommunication	Southern New England Telecoms		Rochester NY 14646		716-777-1000	Attn.: Engineering and Planning	Colleague
Telecommunication	Rochester Telephone		Cincinnati OH 45209		513-841-8100	Attn.: Engineering and Planning	Colleague
Telecommunication	Cincinnati Bell		Rosemead CA 91770		818-302-1212	Power Production Vice President	Mr. Larry Hamlin
Utilities	Seacor		New York NY 10003		212-460-4600	Attn. Public Information Department	Colleague
Utilities	Consolidated Edison Co NY		Newark NJ 07101		201-430-7000	Attn.: Engineering and Planning	Colleague
Utilities	Public Service Enterprise		Richmond VA 23219		804-775-5700	Attn.: Engineering and Planning	Colleague
Utilities	Domination Resources		Juno Beach FL 33408		407-964-4600	Attn.: Engineering and Planning	Colleague
Utilities	FPL Group		Rochester NY 14649		716-546-2700	Attn.: Engineering and Planning	Colleague
Utilities	Rochester G&E		Columbus OH 43215		614-221-1000	Attn. Plant Engineer	Colleague
Utilities	American Electric Power		San Francisco CA 94177		415-973-7000	Attn.: Engineering and Planning	Colleague
Utilities	Pacific Gas and Electric		Atlanta GA 30346		404-393-0650	Attn.: Engineering and Planning	Colleague
Utilities	Southern		Charlotte NC 28242		704-594-0887	Attn.: Engineering and Planning	Colleague
Utilities	Duke Power		Spokane WA 99202		509-489-0500	Attn.: Engineering and Planning	Colleague
Water	Washington Water Power		Dallas TX 75201		214-812-4600	Attn.: Engineering and Planning	Colleague
Water	Texas Utilities		New Orleans LA 70161		504-529-5262	Attn.: Engineering and Planning	Colleague
Power	Energy Corp.		Kansas City MO 64106		816-556-2200	Manager Plant Engineer	Mr. Mike Schocky
Utilities	Kansas City Power		Portland OR 97232		503-464-5000	Senior Vice President Operations	Mr. John Hohling
Power	Pacific Power and Light		Houston TX 77210		713-629-3000	Vice President Strategic Administration	Mr. Steve Navac
Utilities	Houston Industries Inc		Atlanta GA 30308		404-526-6526	Location Committee Director	Mr. Don Perkins
Utilities	Georgia Power Co		Allentown PA 18101		215-770-5151	Mgr - Scheduling, Citing & Surveying	Mr. Alec Cassaday
Utilities	Pennsylvania Power and Light Co		Raleigh NC 27602		919-546-6486	Transmission Location Director	Mr. John Brockwell
Utilities	Carolina Power and Light		Phoenix AZ 85072		602-236-2500	Attn.: Engineering and Planning	Colleague
Utilities	Bonneville Power Admin		Voorhees NJ 08043		609-346-8200	VP of Engineering	Scott Harrison
Water Supply	Salt River Valley Water Users Assoc		Harrison Park NJ 07640		201-784-9434	Director of Engineering	John S. Young
Water Supply	American Water Works Company Inc		Hershey PA 17033		717-533-5000	Director of Engineering	Richard Hensch
Water Supply	United Water Resources Inc		Wilmington DE 19804		302-633-3918	Director of Engineering	Bruce Juergens
Water Supply	Pennsylvania-American Water Co		San Jose CA 95112		408-453-8414	Chief Engineer	Thomas Cleveland
Water Supply	General Waterworks Corp.		Duluth MN 55802		218-722-2614	Attn.: Engineering and Planning	Rob Guzzetta
Water Supply	California Water Service		Portland ME 04101		207-773-6438	Vice President Operations	Colleague
Water Supply	Topoka Group Inc		San Antonio TX 78221		210-922-1213	Vice President	Mr. Paul Schumane
Water Supply	Consumers Water Co		Baltimore MD 21201		314-391-6700	Vice President Operations	Colleague
Water, Sewer & Utility	HB Zachary Co		East Moline IL 61244		309-752-1227	Vice President	Mr. Bruce Frost
Water, Sewer & Utility	Li Fra-Con Construction Corp.		Houston TX 77057		713-952-1000	Human Resources	Mr. Mick Murphy
Water, Sewer & Utility	Li Murphy Brothers Inc		Fort Lauderdale FL 33324		305-587-4512	Assistant Vice President of Operations	Ms. Susan Burch
Water, Sewer & Utility	Li Offshore Pipelines		Houston TX 77036		713-270-5174	President	Mr. Roger Pittman
Water, Sewer & Utility	Li Bureau and Sims Inc		Denver CO 80202		303-297-2100	Colleague	Mr. B. J. Oert
Water, Sewer & Utility	Li Baker Energy Resources Corp.						Colleague
Oil and Natural Gas	Prima Energy						

Subsection	Company	Address	Address 2	Interviewist	Phone	Title	Name
Media/Entertainment							
Television Networks	Turner Broadcasting System	100 International Blvd	Atlanta, GA 30303		404-827-1500	Vice President Marketing	Ms. Julia Sprunt
Television Networks	Capital Cities -ABC	77 West 66th	New York NY 10023		212-456-7777	Vice President Relations	Mr. Joseph Fitzgerald
Television Networks	Chris-Craft Industries	600 Madison Avenue	New York NY 10022		212-421-0200	President	Mr. Herbert Siegel
Television Networks	Home Box Office Inc	1100 Ave of the Americas	New York NY 10036		212-512-1000	Exec Vice President of Marketing	Mr. John Billlock
Television Networks	ISCI Holdings Inc	1 Media Crossways	Woodbury NY 11797		516-364-8450	President	Mr. William P. Whelan
Television Networks	BET Holdings	1237 31st NW 20007	Washington DC		202-337-5260	Vice President	Mr. James Ebron
Television Networks	Ind. Family Entertainment	1000 Centerville PO Box 5549	Virginia Beach, VA 23467		804-523-7301	Vice President	Mr. Stephen Centz
Print Media	The Washington Post	1150 15th St NW	Washington DC 20071		202-334-4600	Executive Vice President of Operations	Mr. Alan Spohn
Print Media	Cox Enterprises	PO Box 105337	Atlanta GA 30348		404-843-5000	Vice President	Mr. John Hoyette
Print Media	Hearst Corp.	959 8th Ave	New York NY 10019		212-649-2000	Controller	Mr. Peir De Maria
Print Media	Chicago Tribune	435 N Michigan Ave	Chicago IL 60611		312-222-3232	Vice President Marketing	Mr. John Purner
Print Media	Advance Publications Inc	950 Flagerboard Rd	Staten Island NY 10035		718-981-1234	Publisher	Mr. Richard Diamond
Print Media	Media General Inc	PO Box 85333	Richmond VA 23293		804-649-6000	Vice President	Mr. Bill Evans
Publishing	Time Warner Inc	75 Rockefeller Plaza	New York NY 10019		212-484-8000	Exec Vice President and CFO	Mr. Bert Wasserman
Publishing	Dun & Bradstreet	299 Park Av	New York NY 10171		212-593-6800	President and Director of Research	Mr. William Doeschler
Publishing	Times Mirror	220 West First St	Los Angeles CA 90012		213-237-3700	Vice President Relations	Mr. Donald Kellerman
Publishing	Tribune	435 North Michigan Ave	Chicago IL 60611		312-229-9100	Vice President Relations	Mr. Joseph Hays
Publishing	Knigh-Ridder	One Herald Plaza	Miami FL 33132		305-376-3800	Senior Vice President Operations	Mr. W.H. Harwell Jr.
Publishing	McGraw-Hill	1221 Avenue of the Americas	New York NY 10020		212-512-2000	Senior Vice President	Mr. Donald Dubin
Publishing	New York Times	129 West 43rd Street	New York NY 10036		212-556-1234	Vice President Services Development	Ms. Katharine Darrow
Publishing	E.W. Scripps	1105 N Market St	Wilmington DE 19801		302-478-4141	Exec Vice President	Mr. Bill Burleigh
Publishing	Marvel Entertainment Group	387 Park Ave South	New York NY 10016		212-696-0808	Vice President	Mr. Michael Hobson
Motion Picture	Sony	9 W 57th St	New York NY 10019		212-371-5800	Senior Vice President	Mr. John Stern
Motion Picture	Walt Disney	500 South Buena Vista St	Burbank CA 91521		818-560-1000	Vice President Production	Mr. Mireille Sonia
Motion Picture	Warner Bros., Inc	1041 N. Formosa Ave	W. Hollywood CA 90046		213-850-2571	Vice President	Mr. Donald Daves
Motion Picture	MCA Inc.	70 Universal City Plz	Universal City CA 91608		818-777-4300	President	Mr. Robert Blattner
Motion Picture	Paube Communications Corp.	10000 W Washington	Culver City CA 90232		310-280-6000	President	Mr. Charles Moeker
Motion Picture	MGM-Paube Communications Corp.	450 N Roxbury Dr	Beverly Hills CA 90210		310-281-4000	Vice President of Marketing	Mr. James White
Motion Picture	Fox Inc.	P.O. Box 900	Beverly Hills CA 90213		310-277-2211	Senior Vice President	Mr. David Hanlehan
Motion Picture	Orion Pictures Corp.	1325 Ave of the Americas	New York NY 10019		212-956-3800	Vice President Marketing	Mr. David Forbes
Motion Picture	Twentieth Century Fox	10201 W Pico Blvd	Los Angeles CA 90064		310-277-2211	Executive Vice President	Ms. Nancy Utley
Motion Picture	Paramount	15 Columbus Circle	New York NY 10023		212-373-8000	Senior Vice President Production	Ms. Michelle Manning
Video Games	Nintendo	PO Box 957	Redmond WA 98052		206-882-2040	Vice President Operations	Mr. Phillip Rogers
Advertising	Saatchi & Saatchi	3501 Sepulveda Blvd	Torrance CA 90509		310-214-6000	CEO and President	Mr. Joseph Croun
Advertising	R.R. Donnelley & Sons	414 New Orleans Suite 610	Chicago, IL 60610		312-527-7210	Director of Marketing	Mr. Gordon Hochhalter
Advertising	Interpublic Group	1271 Ave of the America	New York NY 10020		212-359-8000	Senior Vice President	Mr. Ronald Sugarman
Advertising	Valassis Communications	36111 Schoolcraft Rd	Livonia MI 48150		313-359-1300		
Advertising	Baata	225 Main St	Menasha WI 54952		41-472-2777		
Advertising	Leo Burnett	35 W Wacker Dr	Chicago IL 60601		312-220-5959	Senior Vice President and Treasurer	Mr. Gerald Henseler
Advertising	Road Media & Co.	8255 N Central Park	Skokie IL 60076		708-329-8100	Executive Vice President Direct Client	Mr. Jim Thompson
Mapping						Cartographic Manager	Mr. Victor Healy

Subsection	Company	Address	Address2	Interview list	Phone	Title	Name
Education/Simulation							
Simulation Techniques	Delix Systems	1953 Gallows Rd, Suite 700	Vienna, VA 22182		703-734-8300	Vice President of Operations	Mr. C. James Wigge
Simulation Techniques	Integral Systems	500 Philadelphia Way	Lanham Seabrook, MD		301-731-4233	Vice President Marketing	Mr. Steven Carebedi
Simulation Techniques	Silicon Graphics Inc. / Systems Soft	2011 North Shoreline	Mountain View, CA		415-960-1980	Vice President	Mr. James Burton
Simulation Software	Ameritex Artificial Intelligence, Inc.	274 North Pleasant St	Amherst, MA 01002		413-256-8941	Vice President Engineering	Dr. Thomas D. Williams
Simulation Software	Apple Computer/Apple Products Div	20525 Mariani Ave	Cupertino, CA 95014		408-996-1010	Vice President Engineering	
Simulation Software	CAE Link Corp	PO Box 1237	Silver Spring, MD 20901		301-593-1748	President	Michael Yeh
Simulation Software	Microsoft	1 Microsoftway	Redmond, WA 98052		206-822-8080	Senior Vice President marketing sales	Mr. Scott Oku
Simulation Software	CACI Products Co.	3344 North Torrey Pines Ct.	LaJolla, CA 92037		619-457-9681	President	Mr. Joseph S. Annino
Simulation Software	Chen Computer Corp	441 West St	Amherst, MA 01002		413-253-7805	President	Mr. James Chan
Simulation Software	Columbia University/Department of	450 Computer Science Bldg.	New York, 10027		212-854-2736		
Simulation Software	Aircraft Performance Unlimited	PO Box 11625	Saint Paul, MN 55111		612-854-2440	President	Mr. Mark Thelin
Simulation Software	Airline Software	26 Firemens Memorial Dr.	Pomona, NY		914-354-1933	President	Mr. Gordon Rosen
Simulation Software	Aviation Analysis, Inc.	PO Box 3570	Carson City, NV 89702		702-882-1011	President	Mr. Gary P. Cocanour
Simulation Software	Aviation Simulation Technology, Inc.	Hanscom Field East, Bldg. 1777	Bordford MA 01730		617-274-6600	Director of Manufacturing	Mr. Grant Felley
Simulation Software	Douglas Aircraft Co.	3855 Lakewood Blvd.	Long Beach, CA 90846		310-593-5511	Vice President	Mr. David Swain
Simulation Software	Hughes Training Systems, Inc.	2200 Arlington Downas Rd	Arlington, TX 76011		817-695-2000	Engineering Manager	Mr. Duane Humphries
Simulation Software	Lasertrak Corp	5700 Flatiron Pkwy	Boulder, CO 80301		303-449-2655	President	Mr. John Smith
Simulation Software	Micro Systems, Inc.	65 Hill Ave	Fort Walton Beach, FL 32548		904-244-2332	President	Mr. Larry Cooper
Simulation Software	Tracor Flight Systems, Inc	6500 Tracor, Ln	Austin, TX 78725		512-926-2800	Director of Advanced Systems	Mr. Chuck Hosick
Simulation Software	ST Systems Corp/Technology Applic	4400 Forbes Blvd	Arlington, TX 76011		817-640-5000	Vice President of Operations	Mr. Swayne Humphrey
Simulation Software	Discovery Channel		Lanham, MD		703-827-6600	Vice President	Mr. Richard Bishop
Academia					301-986-1999		
Academia	University of Arkansas	Ozark Hall - Geography Rm 108	Fayetteville, AR 72701		501-575-2000	Geography Department	Dr. Eugene Sander
Academia	University of Arizona	Forbes Hall Rm 306	Tucson, AZ 85721		602-621-2211	Dean of College of Agriculture	Dr. Victor L. Lechtenberg
Academia	Purdue University	1140 Agriculture Administration	West Lafayette, IN 47907-1140		317-494-4600	Dean of Agriculture	Dr. Edwards F. Hayes
Academia	Ohio State University	1960 Kenny Rd	Columbus OH 43210		614-292-6446	Vice President Research	Dr. Barry J. Jacobsen
Academia	Montana State University	209 Lindfield Hall	Bozeman MT 59717		406-994-0211	Dean of Agriculture	Dr. Paul Mausel
Academia	Indiana State University	Geography and Geology Dept.	Terre Haute, IN 47809		812-237-6311	Department of Geography and Geology	Professor Kevin Price
Academia	University of Kansas	213 Lindley Hall	Lawrence, KS 66045		303-492-8141	Geography Department	Dr. Alex Goetz
Academia	Univ of Colorado	Campus Box 250	Boulder CO 80309		415-642-6000	Earth Sciences	Dr. Wilford A. Hasler
Academia	University of California - Berkeley		Berkeley, CA 94720		919-684-8111	Dean of Natural Resources	Dr. Norman L. Christensen
Academia	Duke University	Box 90329	Durham, NC 27708-0329		313-764-1817	Dean of School of Environment	Dr. Gary Brewer
Academia	University of Michigan	430 E. University	Ann Arbor, MI 48109-1115		206-543-2730	Dean of School of Natural Resources	Dr. David Thorop
Academia	University of Washington	AR-10	Seattle, WA 98195		509-335-3564	Dean of Forest Resources	Dr. Robert V. Smith
Academia	Washington State		Pullman, WA 99164		619-534-2230	Vice President Research	Dr. Donald Anderson
Academia	Univ. Calif at San Diego		LaJolla, CA 92093		1402-472-7211	Dean of Natural Sciences	
Academia	University of Nebraska	14th and R Street	Lincoln, NE 68588		515-294-4111	Dean of Technology and Science	Dr. David G. Topel
Academia	Iowa State		Ames, IA 50011		217-333-1000	Dean College of Agriculture	Dr. Roger A. Muzar
Academia	University of Illinois		Urbana, IL 61801		808-948-8111	Dir. Institute of Environmental Studies	Dr. Charles F. Hayes
Academia	University of Hawaii		Honolulu, HI 96822		919-962-8901	Acting Dean of Natural Sciences	Professor Steve Walsh
Academia	University of North Carolina	2444 Dole St	Chapel Hill, NC 27599		206-582-2747	Geography Department	Dr. James E. Marion
Academia	Auburn University		Auburn University, AL 36849			Dean of Agriculture	James Nichols
Academia	Virginia Polytechnical Institute		Blacksburg VA 24061			Dean of Agriculture and Life Sciences	Dr. Richard Stok
Academia	University of Minnesota	2003 Upper Buford Cir	St. Paul, MN 55108		612-625-5000	Dean of College of Natural Resources	Dr. Arthur Kidnay
Academia	Colorado School of Mines	1500 Illinois St	Golden, CO 80401		314-882-2121	Director of Natural Resources	Dr. A. R. Vogt
Academia	University of Missouri	1-30 Agricultural Building	Columbia, MO 65211		804-220-7331	Director of Natural Resources	Mr. Marie Brown
Arch	Colonial Williamsburg Foundation	Box 1776	Williamsburg, VA 23187-1776		804-229-1616	Director of Archaeology	Mr. Bill Kelso
Arch	Association for the Preservation of V	Yeardley House	Jamestown, VA 23081		804-221-3463	Director-Center for Remote Sensing	Mr. Eugene Silvenson
Arch	College of William & Mary	William & Mary	Williamsburg, VA 23187-1776		202-857-7000	Geographer	Ms. Alice T.M. Reclin
Academia	National Geographic	1145 17th St, NW	Washington, D.C. 20036				

Subsection	Company	Address	Address 2	Interview list	Phone	Title	Name
Insurance	GEICO	5260 Western Ave	Chevy Chase MD 20815		301-986-3000	Vice President	Mr. David Schindler
Insurance	Aetna	1 Civic Center Plaza	PO Box 295 Hartford CT 06143		203-240-6455	Manager	Mr. Ed Connolly
Insurance	State Farm Mutual Fire & Casualty	1 State Farm Plaza	Bloomington IL 61710		309-763-1819	Personnel Department	
Insurance	Allstate Insurance Co	1 Allstate Plz	Northbrook IL 60062		708-402-5000	President	Mr. Jerry Chow
Insurance	Lowers Corp.	667 Madison Ave	New York NY 10021		212-545-2000	Director of Insurance	Mr. J. Kenneth Cavanaugh
Insurance	CNA Financial Corp.	CNA Plz	Chicago IL 60685		312-822-5000	Claims Manager	Mr. Steve Wootton
Insurance	Nationwide Mutual Insurance	1 Nationwide Plz	Columbus OH 43216		614-249-7111	Property Manager Department	
Insurance	Liberty Mutual Insurance Group	The American Rd	Dearborn MI 48121		313-322-3000	Director of Marketing	Mr. Helen Venezia
Insurance	Berkshire Hathway Inc	1440 Kiewit Plz	Omaha NE 68131		402-346-1400	Claims Examiner	Mr. Hand Schroder
Insurance	USF and G Corp.	100 Light St	Baltimore MD 21202		410-547-3000	Manager of Fire and Marine Claims	Mr. Michael Branick
Insurance	American Financial	1 E 4th St	Cincinnati OH 45202		513-579-2121	Attn.: Claims Manager	
Insurance	Employers Reinsurance Corp.	PO Box 2991	Overland Park KS 66201		913-676-5200	Vice President Marketing	Mr. Allan Mauch
Insurance	Reliance Group Holdings Inc	55 E 52nd St	New York NY 10055		212-909-1100	Executive Vice President & Controller	Mr. Robert Steinberg
Insurance	St. Paul Fire & Marine Insurance	385 Washington St	St Paul MN 55102		612-221-7911	Executive Vice President	Mr. Patrick Thiele
Insurance	General Reinsurance Corp.	PO Box 10350	Stamford CT 06904		203-328-5000	Executive Vice President	Mr. Kenneth Lesrange
Insurance	Fireman's Fund Insurance Cos	777 San Marin Dr	Novato CA 94998		415-899-2000	Senior Vice President	Mr. Paul Lapierre
Insurance	United States Fidelity and Guaranty	PO Box 1138	Baltimore MD 21203		410-547-3000	Vice President and Controller	Mr. John Roblin
Insurance	Crum and Forester Inc	211 Mount Airy Rd	Basking Ridge NJ 07920		908-204-3500	Vice President	Mr. James Killelea
Insurance	Mutual of Omaha	Mutual of Omaha Plz	Omaha NE 68175		402-342-7600	Executive Vice President Marketing	Mr. Ronald Annes
Insurance	Farmers Insurance Exchange	PO Box 2478 Terminal	Los Angeles CA 90051		213-932-3200	Vice President Marketing	Mr. Martin Feinstein
Insurance	Federal Insurance Co	PO Box 1615	Warren NJ 07061		908-580-2000	Vice President Marketing	Mr. Greg Georgias
Insurance	Royal Group Inc	PO Box 1000	Charlotte NC 28201		704-522-2000	Vice President Marketing	Mr. Clark Jackson
Insurance	American International Group	70 Pine St	New York NY 10270		212-770-7000	Director of Marketing	Mr. John Greene
Insurance	Chubb	PO Box 1615	Warren NJ 07061		908-580-2000	President	Mr. Richard Smith
Insurance	Torchmark	2001 Third Ave South	Birmingham AL 35233		205-324-4200	Executive Vice President	Mr. William Graves
Insurance	SAFECO Corp.	SAFECO Plaza	Seattle WA 98185		206-545-5000	Vice President	Mr. Richard Campbell II
Insurance	CIENA	PO Box 88059	Atlanta GA 30356		404-399-3600	Claims Vice President	Mr. John Egbert
Insurance	Unum	2211 Congress St	Portland ME 04122		207-770-2211	Vice President	Ms. Eileen Ferrar
Insurance	Capital Holding	400 West Market St	Louisville KY 40202		502-560-2000	Director of Marketing	Mr. Barry Meyers
Insurance	Lincoln National	1300 South Clinton St	Fort Wayne IN 46802		219-455-2000	Vice President Business Development	Mr. Robert Malik
Insurance	AON	123 North Wacker Dr	Fort Wayne IN 46802		312-701-3000	Chief Operating Officer	Mr. Paul Davies
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Insurance	American General Corp.	PO Box 3247	Houston TX 77253		713-522-1111	Senior Vice President & CFO	Mr. Austin P. Young
Insurance	IAMBAC	One State Plaza	New York NY 10004		212-668-0340	Executive Vice President	Ms. Elizabeth Tower
Insurance	20th Century National Insurance	One Moody Plaza	Galveston TX 77550		409-763-4661	CEO and President	Mr. Orson C. Clay
Insurance	20th Century Insurance	6301 Owensmouth Ave	Woodland Hills CA 91367		818-704-3400	Vice President Marketing	Mr. Tom Copel
Insurance	Kemper	Rte 22	Long Grove IL 60049		708-540-2000	Director of Sales	Mr. Richard Redeker
Insurance	Continental Corp.	180 Maiden Ln	New York NY 10038		212-440-3980	President and COO	Mr. William Thiele
Insurance	Old Republic International	307 Michigan Ave	Chicago IL 60601		312-346-8100	Senior Vice President	Mr. William Schuman
Disaster Relief orgs.	American Red Cross	430 17th St NW	Washington DC 20006		202-737-8300	Director of Technical Support & Operations	Mr. Armond Mascelli
Disaster Relief orgs.	FEMA	Federal Center Plaza 500 C St	SW Washington DC 20472		202-646-2500	Director	Mr. James Wint

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Mapping	Etak		San Francisco				
Academia	National Geographic	1145 17th St, NW	Washington, D.C.	20036	202-857-7000	Senior Editor	Mr. Thomas O'Niell
Simulation Software	Broderbund Software						
Print Media	Gannett - USA Today	1100 Wilson Blvd	Arlington VA	22234	703-284-6000		
Motion Picture	'Lucasfilm Ltd.	P.O. Box 2009	San Rafael CA	94912	415-662-1800	Exec Vice President	Markets Ms Carhleen Black
Motion Picture	Spelling Entertainment	5700 Wilshire Blvd	Los Angeles CA	90036	213-965-5888		

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