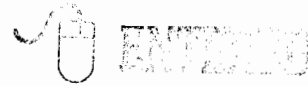


A.T. Kearney, Inc.
One Tabor Center, Suite 950
1200 Seventeenth Street
Denver, Colorado 80202
303 572 6175
Facsimile 303 572 6181

Management
Consultants



ATKEARNEY

December 27, 1991

Mr. Cliff Hawley, Chief
Program Support Bureau (Room S4300)
New Mexico Environment Department
1190 St. Francis Drive
Santa Fe, New Mexico 87501

Subject: Request for Proposal For Professional Services,
Part B Permit Application and Technical
Document Review for the Waste Isolation Pilot
Plant, Carlsbad, New Mexico

Dear Mr. Hawley:

A.T. Kearney is pleased to present one original and five copies of our proposal to provide Part B permit application and technical document review services to the New Mexico Environment Department for the Waste Isolation Pilot Plant (WIPP). As will be evident from your review of the enclosed Volumes, we offer significant advantages to the State, including extensive, hands-on experience in regulatory assessment of WIPP-related issues; unparalleled expertise in the Part B process; and the availability of a seasoned team of personnel with WIPP-related experience. We would indeed welcome the opportunity to serve the State of New Mexico in this vital assignment.

We look forward to learning of your reaction to our offer. Should you have any technical questions regarding this proposal, please contact [REDACTED] at [REDACTED]. Contractual questions should be addressed to [REDACTED] at [REDACTED].

Sincerely,

Louis H. Knapp
Vice President
Environmental, Health and Safety Practice

911203



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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**NEW MEXICO ENVIRONMENT
DEPARTMENT
HAZARDOUS AND
RADIOACTIVE MATERIALS
BUREAU**

Part B Permit Application and
Technical Document Review For
The Waste Isolation Pilot Plant,
Carlsbad, New Mexico

Proposal for Professional Services

Volume I

A.T. Kearney, Inc. December 1991

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I. INTRODUCTION

A. Who is A.T. Kearney?

A.T. Kearney (Kearney) is a multi-disciplinary, international management consulting firm founded in 1926 and is comprised of over 1000 professionals who are dedicated to providing clients with high quality products that give tangible results. Our Environmental, Health and Safety (EH&S) practice was established in 1968 and consists of over 65 professionals whose credentials span all disciplines necessary to provide complete support and assistance to the State of New Mexico Environment Department (State) for this procurement. The EH&S practice offers technical and regulatory experience in a number of disciplines such as chemistry, civil and environmental engineering, environmental health, environmental policy/regulation, hydrogeology and geochemistry, and biology. We offer not only local staff in support of this assignment, but can also draw upon a nationwide group of experts to accomplish even the most complex of tasks.

The EH&S practice has gained comprehensive experience in a number of vital areas important to this procurement, presented in Exhibit 1. As shown in this diagram, our practice provides expertise in permitting, risk assessment, QA/QC, mixed waste management, policy and regulatory analysis, RCRA corrective action, and closure/post-closure. In addition, Kearney can provide other services such as RCRA training, further demonstrating the depth and breadth of our knowledge in the RCRA arena.

B. What Can A.T. Kearney Provide?

We Have Regulatory Expertise. Kearney offers regulatory capabilities on both the Federal and State level. Our EH&S practice has been the prime support contractor to U.S. EPA for the RCRA Implementation Contract for over 10 years, and is also the RCRA support contractor for the State of Utah. For Federal and State regulatory agencies and numerous other clients, Kearney has provided the full spectrum of services for Part B and Subpart X permits, including over 900 Part B permit application reviews and responses to

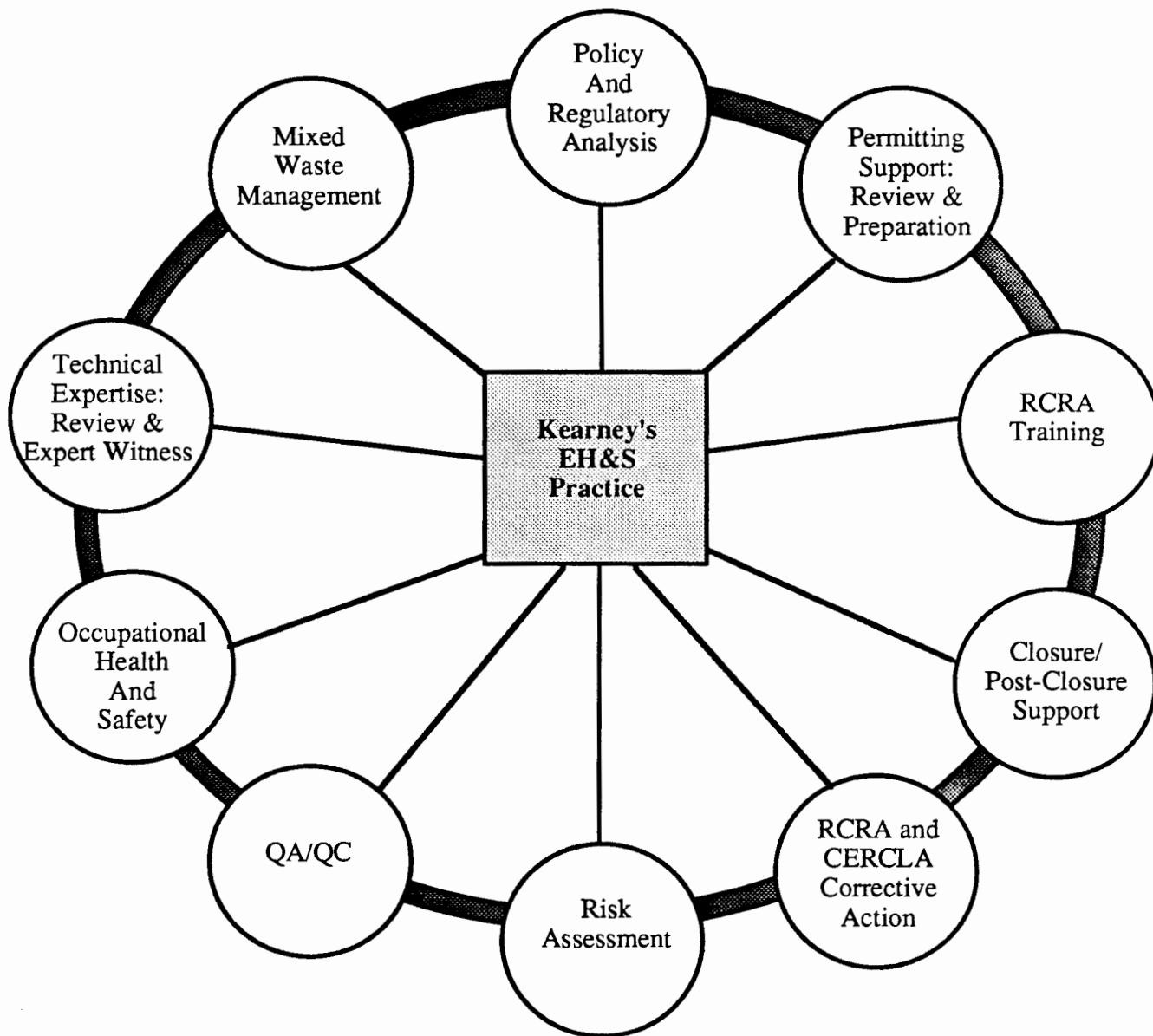
comments, permit writing, application preparation, and checklist preparation. Because of our unique dual understanding of both State and Federal regulations, Kearney provides streamlined, cost effective--yet technically superior--support to our clients.

We Have WIPP Technical Expertise. Performance of this assignment for the State of New Mexico requires not only a keen understanding of the regulatory arena, but also technical expertise in WIPP-specific areas. Again, Kearney offers unique capabilities in this capacity. Our group provided technical and regulatory support for EPA Headquarter's review of the No Migration Variance Petition (NMVP) for the WIPP, which required extensive, in-depth understanding of all technical aspects of the WIPP site. We reviewed and evaluated literally hundreds of documents in support of this task including: site geology/hydrogeology; WIPP unit design; environmental impact studies; detailed waste characterization (generator site characterization/treatment, transportation/packaging requirements); and waste transformation (i.e., gas generation). All documents reviewed are held in our Denver office and are immediately accessible to the Los Alamos field office.

As part of the WIPP project, we participated in a number of complex meetings between DOE and EPA representatives, where the full spectrum of issues associated with the WIPP were identified. Kearney then organized and managed EPA public hearings on the WIPP, and performed gas generation studies for the WIPP waste suite. WIPP-specific compliance checklists have been prepared by Kearney based on the No Migration Conditional Variance requirements, which were developed to also serve as EPA training tools for compliance inspectors. As a result of our extensive WIPP experience, Kearney is immediately prepared to respond to technical evaluations pertaining to the WIPP with little or no learning curve.

We Understand the State's Role. We understand the unique role of the State, and know how to meet your needs for this project. We have a solid track record supporting state agencies. Kearney is knowledgeable of the political, regulatory, and

EH&S Services Provided



Our practice provides a comprehensive project experience base to meet New Mexico Environment Department's requirements

technical factors associated with the WIPP that the State is presented with.

We Have No Conflict of Interest. Kearney is in a unique position to provide our technical and regulatory services to the State of New Mexico, without any conflict of interest. Even contractors that played no direct part in the preparation of the WIPP Part B permit application could suffer from indirect conflict of interest, if data collection/interpretation and/or design work are included as part of the WIPP application. Kearney provides the above technical expertise without any possibility of even indirect conflict of interest.

We Have the "Right People." Our proposed staff has direct, extensive experience in the task areas required, and we offer career professionals with the highest dedication to providing superior support for the New Mexico Environment Department. Almost all of our proposed project leaders have direct experience with both Part B permit application reviews and the WIPP site evaluation, and all of the supporting staff offer experience/expertise in either or both areas. We have professional engineers licensed in the State of New Mexico to evaluate applicable engineering information. Our staff has excellent credentials and experience, and will be dedicated to providing the New Mexico Environment Department the comprehensive support required under this procurement.

We Can be Effective Immediately. Kearney has demonstrated capability to step in and be effective immediately; we have a long history in programmatic management support and technical and regulatory compliance from which to draw. Additionally, site-specific experience eliminates the learning curve required by most firms, and we will not need to "learn at the client's expense."

We Offer Demonstrated Successful Task Order Management. Kearney focuses on scheduling and planning our resources toward the development of client's desired results. We realize that the client wants "the most for the money" (cost realism) and recognize the overall cost-savings to the client when the appropriate staff is applied to accomplish project objectives.

We are Performance Oriented and Work For the Client. We understand support roles and work positively to reinforce the responsibility and decision-making authority of our clients. We believe strongly that frequent and effective communication is the key to productive support relationships. Additionally, our personnel have a well-established track record of operating in demanding, politically-sensitive situations. We know the meaning of a deadline, and work to achieve "on-time" submittals of our products to our clients.

We Are Local. Kearney has concluded leasing arrangements for a field office located in Los Alamos, New Mexico. We have been selected for a major, multi-year environmental support contract for Los Alamos National Laboratories, and are currently staffing for this long-term commitment. Kearney is dedicated to providing local support to the Environment Department and is prepared to provide New Mexico-based personnel.

Organization of this Proposal

This proposal is organized to provide a complete discussion of all components required by the State in the Information Package. A cross reference to the key information required by the RFP is provided in Table 1 so that location of required information within the proposal can be easily determined.

Table 1

CROSS REFERENCE: REQUIRED COMPONENTS

<u>Item</u>	<u>Location</u>
1. Proof of General Liability Insurance	Volume II, Section VII.A
2. Bonding Capacity/Professional Services Liability Insurance	Volume II, Section VII.B
3. Experience/Training of Personnel	Volume I, Section II
4. Approach/Review Capabilities	Volume I, Section III.B
5. Past Work: RCRA Part B Permit Application and Technical Review ..	Volume I, Section IV
6. Cost, Terms, and Conditions	Volume II, Section VIII
7. Local Office Documentation	Volume I, Section VI.C
8. References	Volume I, Section VI.A, B
9. Subcontractors	(Not Applicable)
10. Conflict of Interest	Volume II, Section VII.C
11. SOPs	Volume III, Appendix E
12. Agreement to Abide by State/ Federal Laws	Volume II, Section VII.E

II. PERSONNEL AND PROJECT MANAGEMENT

Kearney is in a position to provide the State of New Mexico with personnel who possess both a thorough understanding of the RCRA permit application process and extensive knowledge of the major technical and regulatory issues associated with the WIPP. Kearney staff has reviewed hundreds of technical documents on the WIPP and has expended over 5,000 man-hours evaluating specific technical and regulatory issues of the WIPP. This unique combination of permit review expertise and WIPP-specific experience will minimize by at least one-fourth the time and expense normally required to perform the tasks required by the New Mexico Environment Department under this procurement.

We have assembled a professional team based on the following criteria, developed to ensure that Kearney is responsive to the needs of the State of New Mexico Environment Department:

- The professional team must be comprised of individuals with the technical skills and regulatory experience uniquely suited to accomplish the potentially diverse requirements of the proposal;
- Each individual on the team must have a proven record of providing high-quality client support;
- The team must have a sufficient resource pool from which to draw; this pool is comprised of highly qualified individuals who are immediately available and provide the necessary skills for the procurement; and
- The professional team is comprised of senior professionals who provide cost-effective performance based on their familiarity with the site and specialized technical and regulatory knowledge.

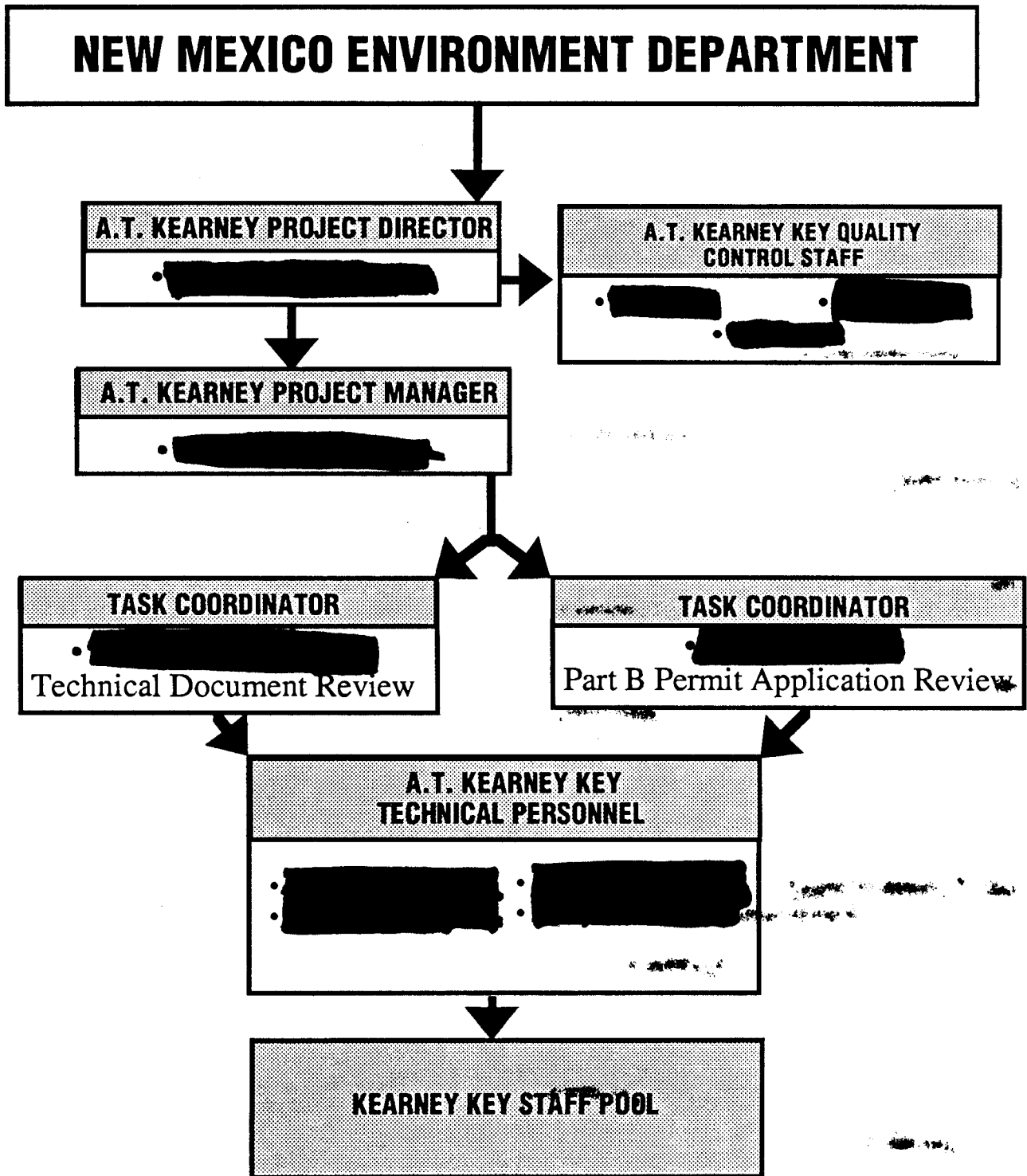
All of the personnel proposed for this project have conducted reviews of RCRA Part B permit applications for a wide variety of facilities, and most have direct experience with the WIPP.

Most of the core management/coordination project team participated in the review of the WIPP NMVP and reviewed a number of other WIPP-related documents in support of this task including the FSEIS, TRUPACT-II Safety Analysis Report (SAR), and Final Safety Analysis Report (FSAR) for the WIPP. Appendix D includes a complete list of documents reviewed by Kearney under the No Migration Variance Petition Review and clearly demonstrates the depth and breadth of WIPP knowledge our personnel offers. Many of the team members also assisted the U.S. EPA in conducting public hearings regarding the proposed conditional variance.

The proposed project management organization is presented in Exhibit 2. [REDACTED] serve as Kearney's Project Director and is responsible for overall project management and quality. [REDACTED] will ensure that the requisite resources needed to exceed the State of New Mexico's expectations are available. [REDACTED] has many years of experience in Program and Project Management and was the overall manager of Kearney's Review of the WIPP NMVP, spending over 500 hours reviewing the WIPP site data. [REDACTED] is a Professional Engineer registered in the States of California, Utah, Washington, and Colorado, and is applying for reciprocity registration in New Mexico. A summary of [REDACTED] background and relevant experience is provided in Exhibit 3-1, and a full resume is presented in Appendix A.

Kearney assigns a senior-level quality control staff to each project who reviews each project deliverable for technical accuracy, conformance to regulations, and continuity. [REDACTED] and [REDACTED] will comprise the quality control team for the New Mexico Procurement. [REDACTED] has over 20 years of experience as a toxicologist performing environmental risk assessments and will perform QC of deliverables related to health issues and risk assessments. He will be located in our Los Alamos project office. [REDACTED] is currently the Technical Director for Part B permit application reviews under Kearney's RCRA Implementation Contract. [REDACTED] will be

Project Organization and Core Project Team



A.T. Kearney Core Project Team Members

Consultant	Background	Recent Applicable Project Experience
<p>[REDACTED] P.E., CPA <i>Division Vice President</i> <i>Kearney/Centaur</i></p> <p><i>5 years with Kearney</i></p>	<ul style="list-style-type: none"> • Over 15 years engineering experience specializing in geotechnical and hydrogeological investigations • Broad experience in the design of radioactive waste storage structures and repositories • Experience in program and project management for major Federal, State, and commercial clients, including EPA, DOD, and DOE 	<ul style="list-style-type: none"> • Managed the EPA Headquarters assignment to conduct a technical review of the WIPP No-Migration Variance Petition • Program director for environmental services contract to Westinghouse, Hanford Co. • Assisted in preparing conceptual designs for mixed waste storage buildings • Program manager for a DOD contract to prepare Part B and Subpart X permit applications for Dugway Proving Ground, Utah • Technical director under a past RCRA implementation contract for the Western EPA regions
<p>[REDACTED] Principal <i>A.T. Kearney</i></p> <p><i>7 years with Kearney</i></p>	<ul style="list-style-type: none"> • Extensive knowledge of the RCRA program with particular emphasis on regulatory interpretation and the permitting process • Program management experience as Technical Director for Part B permit application reviews under Kearney's RCRA Implementation contract • Senior-level QC reviewer 	<ul style="list-style-type: none"> • Responsible for final content of all RCRA Part B Permit application reviews performed by A.T. Kearney; performed over 100 Part B Permit application reviews • Conducted technical reviews of three RCRA Part B permit applications involving mixed wastes • Served as work assignment manager, staff reviewer, and quality control reviewer for over 250 RCRA Part B Permit applications • Directed the preparation of over 30 RCRA operating permits and 35 corrective action draft permits

responsible for QC of all deliverables related to the review of the WIPP Part B permit application. She provided a similar service on Kearney's review of the WIPP NMVP. [REDACTED] will be responsible for QC of any waste analysis-related assessments. He has performed gas generation studies for TRU waste under the NMVP review, and understands the WIPP waste characterization and transformation. Exhibits 3-1 and 3-2 provide summaries of quality control staff background experience.

[REDACTED] is assigned as the Project Manager and will be responsible for overseeing the day-to-day activities on the project. [REDACTED] is a senior hydrogeologist with extensive project management experience on a wide variety of assignments. She was lead technical reviewer for the WIPP NMVP, and has spent over 600 hours reviewing the WIPP data. She will maintain part-time availability in the Los Alamos field office. [REDACTED] will be assisted by [REDACTED] and [REDACTED] is an expert in the RCRA permitting process and will be the Task Coordinator for the review of the Part B permit application. [REDACTED] will be the Task Coordinator for the Review of Technical Documents. [REDACTED] is a registered Professional Engineer in Colorado and New Mexico with over 10 years experience in evaluating engineering designs and technical documents, and has extensive knowledge of WIPP acquired through evaluation of the No Migration Variance Petition. He will be located in the Los Alamos field office.

Additional Core Project Team members include [REDACTED] and [REDACTED] will also be located in the Los Alamos field office and has experience with WIPP public hearings and WIPP checklist preparation, as well as extensive RCRA Part B permit review experience. [REDACTED] has extensive experience with the WIPP; he assessed the gas generation information in the NMVP and performed numerous calculations on potential releases. [REDACTED] has also prepared WIPP-specific checklists. [REDACTED] has extensive experience in preparing and reviewing Part B permit applications, and is knowledgeable of WIPP WAC. [REDACTED] is a Professional Engineer registered in Colorado and is currently acquiring certification in the State of New Mexico; he has

extensive experience in design review, and is extremely knowledgeable in RCRA permitting requirements. The backgrounds and relevant experience of [REDACTED], the Task Leaders, and the entire Core Project Team are summarized in Exhibits 3-3 to 3-5. Complete resumes of the management team and technical staff are provided in Appendix A.

The task managers and key staff will draw on individuals from the Environment Health and Safety staff resource pool to complete specific portions of each task. The individuals chosen from the resource pool will have knowledge and experience related to the specific task. A matrix diagram which indicates the portions of the project for which individuals in the resource pool have experience is provided in Exhibit 4. The full resumes of these individuals are also provided in Appendix A.

We believe our project management structure and the proposed staff will deliver tangible results and exceed the New Mexico Environment Department's expectations for this assignment. Our staff is highly capable and experienced, and our firm is committed to providing the Department with the expert assistance our clients have come to expect from Kearney.

A.T. Kearney Core Project Team Members

Consultant	Background	Recent Applicable Project Experience
<p>██████████ Manager A.T. Kearney</p> <p><i>5 years with Kearney</i></p>	<ul style="list-style-type: none"> • Over 20 years experience as a Toxicologist including research, environmental risk assessment and laboratory operation • Experience in managing a large number of professionals as the director of the Corporate Environmental Center for a major oil company • Experience as a program manager and Quality Assurance Director for Kearney RCRA Implementation contract and DOE-GOCO Environmental Service contracts 	<ul style="list-style-type: none"> • Performs management functions as technical director for risk assessment, toxicology, technical training and quality assurance projects for the RCRA Implementation contract • Managed and conducted risk assessments and environmental information reports for DOE's Hanford site • Conducted Risk Assessment at several major oil refineries • Established preliminary cleanup level goals for major mixed-waste remedial program
<p>██████████ Manager A.T. Kearney</p> <p><i>5 years with Kearney</i></p>	<ul style="list-style-type: none"> • 19 years experience in health and safety management, major permitting and compliance projects, and applied research • Expertise in conducting environmental audits, and developing compliance programs for chemical manufacturers • Experience in Waste Analysis Plans and data for mixed waste facilities, including WIPP 	<ul style="list-style-type: none"> • Participated in the review of the WIPP No Migration Variance Petition with emphasis on the Waste Analysis Plan and evaluation of waste analysis data • Reviewed the Part B permit application and alternate treatment proposal for a mixed-waste management facility • Provided environmental compliance and permitting assistance to a major corporation's entry into the hazardous waste treatment business • Provided permitting strategy assistance and permitting support to two large waste management companies

A.T. Kearney Core Project Team Members

Consultant	Background	Recent Applicable Project Experience
<p>[REDACTED] Manager A.T. Kearney</p> <p><i>3 years with Kearney</i></p>	<ul style="list-style-type: none"> • 10 years of professional and managerial experience for both commercial and governmental clients, including U.S. EPA, DOD, and DOE • Extensive experience in managing, planning, conducting and supervising large-scale, complex environmental assessment and remediation projects 	<ul style="list-style-type: none"> • Project hydrogeologist/geochemist for the review of the WIPP No-Migration Variance Petition. Performed extensive technical document review, including site geology, hydrology geochemistry, unit design, and waste analysis requiring knowledge of the WIPP Waste Acceptance Criteria and waste transformation processes • Performed reviews of RCRA Part B permit applications and post-closure permit applications, including Subpart X permit applications • Assisted in development of a compliance checklist to ensure the WIPP facility was in compliance with the Conditional Variance granted by EPA headquarters; assisted in WIPP public hearings, numerous field trips, interagency meetings • Managed major project for commercial clients involving technical experts from around the country to assess fate and transport of organic/inorganic constituents in the subsurface in an injection well setting
<p>[REDACTED] P.E. Associate A.T. Kearney</p> <p><i>3 years with Kearney</i></p>	<ul style="list-style-type: none"> • Over 10 years of engineering experience specializing in landfill and impoundment design and construction, including technical evaluation of the WIPP design • Extensive knowledge of RCRA regulatory policies and guidelines at both the State and Federal level, with particular expertise in RCRA Part B permit application preparation and review, as well as permit preparation 	<ul style="list-style-type: none"> • Technically reviewed the engineering design features of the WIPP facility to assess compliance with 40 CFR 264.600 and 268 standards • Reviewed numerous RCRA Part B permit applications for completeness and technical adequacy. Included design evaluation, assessment of operating procedures, waste analysis plans, and closure plans • Developed and prepared draft design, operation, and monitoring conditions for a major commercial hazardous waste landfill, including design/implementation of community relations/management plans, and expert witness testimony

A.T. Kearney Core Project Team Members

Consultant	Background	Recent Applicable Project Experience
<p>██████████ Associate A.T. Kearney</p> <p>3 years with Kearney</p>	<ul style="list-style-type: none"> • Over 13 years extensive experience in regulatory analysis and RCRA permitting • Managed numerous RCRA Part B permit application reviews • Experience in conducting RCRA inspections and permitting processes while working for the State of Colorado • Planned and conducted RCRA training courses for State and EPA personnel 	<ul style="list-style-type: none"> • Managed and conducted over 100 completeness/technical adequacy and evaluations of RCRA Part B permit applications and closure/post-closure plans • Prepared and conducted RCRA training course for basic permit writing and for the review of closure/post-closure plans • Managed the preparation of several HSWA permits for EPA
<p>██████████ Associate A.T. Kearney</p> <p>4 years with Kearney</p>	<ul style="list-style-type: none"> • Extensive knowledge of the RCRA permitting process and regulatory analysis • Extensive knowledge of sampling techniques and equipment for both waste analysis and environmental sampling • Experience in hydrogeology and groundwater monitoring system design and construction in compliance with RCRA guidelines 	<ul style="list-style-type: none"> • Performed completeness and technical accuracy reviews of numerous Part B, Subpart X, and Post-Closure permit applications with emphasis on general facility standards, closure, and groundwater monitoring • Assisted in developing a checklist to ensure the WIPP facility was in compliance with a conditional variance granted by EPA Headquarters • Drafted five HSWA permits including fact sheets and public notices • Drafted an operating permit for a Subpart X OB/OD unit • Assisted in planning and conducting several public meetings/public hearings, including the WIPP
<p>██████████ Associate A.T. Kearney</p> <p>3 years with Kearney</p>	<ul style="list-style-type: none"> • Over 5 years engineering experience in design and evaluation of pollution control processes and equipment • Experience in the characterization of waste and waste streams to determine appropriate treatment methods • Knowledge of groundwater modeling techniques 	<ul style="list-style-type: none"> • Participated in the technical review of the WIPP No Migration Variance Petition with emphasis on the potential for short and long-term gas generation from microbial activity and corrosion of mixed hazardous waste • Prepared a training program and manual on groundwater modeling techniques • Coordinated the development of a checklist to ensure the WIPP facility was in compliance with a conditional variance granted by EPA headquarters

A.T. Kearney Core Project Team Members

Consultant	Background	Recent Applicable Project Experience
<p>[REDACTED]</p> <p>P.E. Associate A.T. Kearney</p> <p>3 years with Kearney</p>	<ul style="list-style-type: none"> Over 7 years of engineering experience in all phases of the RCRA and CERCLA programs Broad experience with designing, installing, and maintaining groundwater sampling programs for RFIs and RI/FS 	<ul style="list-style-type: none"> Performed completeness and technical accuracy reviews of numerous Part B, Subpart X, and Post-Closure permit applications Managed groundwater sampling program for a large corporation Designed sampling and analyses plans for both soil and groundwater investigations
<p>[REDACTED]</p> <p>Manager A.T. Kearney</p> <p>4 years with Kearney</p>	<ul style="list-style-type: none"> Over 8 years of hazardous waste experience with emphasis in all areas of the RCRA permitting program Experience in program and project management for contracts with the U.S. EPA, State of Utah, DOE, and DOD 	<ul style="list-style-type: none"> Technical lead for the development of a RCRA Part B Closure Plan for the mixed waste double-shell tanks at DOE Hanford Managed the preparation of RCRA Part B and Subpart X permit applications of U.S. Army, Dugway Proving Grounds Managed and performed numerous RCRA Part B permit applications for both EPA and the State of Utah Prepared safety analysis reports for a hazardous waste storage site and two radioactive waste management sites requiring acceptance to TRU waste in accordance with WIPP WAC

Experience Profile of A.T. Kearney's EH&S Personnel Resources

Part B Application Review

PERSONNEL	General Facility Requirements Subparts A-E, H	Waste Analyses/Sampling	Process Description Subparts J-O	Groundwater Subpart F	Closure/Post-Closure Subpart G	Miscellaneous Units Subpart X	Radioactive Waste/Mixed Waste	Technical Document Review	Risk Assessment	Air Modeling/Monitoring/Meteorology	Groundwater/Surface Water Hydrogeology	Groundwater Modeling	Sampling Methods QA/QC Plan/Waste Analysis	Calculation and Technical Drawing Review	Meeting Logistics/Management	Public Hearing Logistics/Management	Fact Sheet/Statement of Basis (Background Document) Development	Drafted Permits RCRA & HSWA/Prepared Checklists	Engineering Design (Unit Evaluation)
[REDACTED]							X	X							(X)	(X)	X		
[REDACTED]			X	X		X	(X)	(X)	(X)	(X)	(X)	X	(X)	X			(X)	(X)	X
[REDACTED]	X	X	X	X	X	X	(X)	(X)	X		(X)		X	(X)	(X)	(X)	(X)	(X)	(X)
[REDACTED]	X	X		X	X	X		X					X	X				X	
[REDACTED]	X	X						X	X	X	X	X	X					X	
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[REDACTED]	X	X	X	X	X	X		X	X	(X)	X		X	X					X
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[REDACTED]	X	X	X	X	X	X	(X)	(X)			X		X	(X)	(X)	(X)	(X)	(X)	X
[REDACTED]	X	X			X	X		X					X						
[REDACTED]	X	X	X	X	X	X		X		(X)	X		X		(X)	X	(X)		
[REDACTED]	X																		
[REDACTED]	X	X	X	X	X	X	X	X			X		X	X					
[REDACTED]			X			X		X	X					X					X
[REDACTED]	X	X	X	X	X	X	X	(X)			X		(X)	(X)	(X)	X	(X)	X	(X)
[REDACTED]			X		X		X	X			X			X					X
[REDACTED]	X	X		X	X	X	(X)	(X)	X	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	
[REDACTED]	X		X	X	X	X		X			X		X	X		X			
[REDACTED]	X	X	X	X	X	X	X	X	X		X		X	X	X		X		
[REDACTED]	X	X				X		X		X			X		X		X	X	

Core Project Team Members are Capitalized

X = Relevant Experience (X) = WIPP-Specific Experience

III. A.T. KEARNEY'S UNDERSTANDING OF THE PROJECT

Successful accomplishment of all tasks for the State of New Mexico Environment Department requires that the contractor exhibit exceptional understanding of the project requirements on both a task-specific and global basis. Kearney knows the requirements of each element of a Part B permit application review because we have performed hundreds of these reviews. Additionally, because we are knowledgeable about the WIPP itself and the gamut of sensitive issues surrounding the facility, Kearney recognizes how this review integrates with the "larger picture." Kearney offers exceptional and unique qualifications for timely completion of all tasks in a cost-sensitive and technically superior manner.

A. WIPP Overview: Important Considerations for the Part B Review

The WIPP site is a controversial facility and review of the Part B permit application for this unit will require an understanding of those issues relevant to determination of regulatory compliance of this Subpart X unit. Additionally, since the permit application has been submitted for the Test Phase, an understanding of the Test Phase tasks and how the Part B/Subpart X requirements apply to a permit application for the Test Phase will be required.

The WIPP is a mined repository located approximately 26 miles southeast of Carlsbad, New Mexico, and was constructed within the Salado Formation, some 2150 feet below ground surface. Under the proposed land withdrawal which recently gained Senate Energy Committee approval, a six-year Test Phase (with a maximum two-year extension) could be approved by Congress. During the test period, a number of tests would be performed to assess various aspects of the WIPP such as:

- Hydrologic modeling (i.e., Los Medanos Model);
- Backfill and sealing system studies;

- Alcove and bin-scale tests (waste characterization and transformation, particularly gas generation); and
- Behavior of Salado formation (closure, brine inflow).

Because the Part B permit application was submitted for the Test Phase rather than the entire potential operational period, an understanding of Test Phase (Period) activities is required to evaluate activities associated with the WIPP during this period. Studies performed under the Test Phase address many issues critical to the WIPP operation during this time period. For example:

- The actual WIPP closure rates appear to be over three times faster than originally estimated; an understanding of room stability is important because the impact of unit design on waste management is a critical consideration in Part B permit application reviews. Kearney has reviewed proposed WIPP unit designs and has participated in site visits on behalf of U.S. EPA to evaluate the effects of room closure. Additionally, since the Part B permit application applies to the Test Phase, an understanding of the proposed Waste Retrieval Plan is essential. Unit design and waste emplacement (including all associated design criteria) are also critical elements of Part B permit application reviews, including that of the WIPP.
- The issue of waste characterization as a whole is also an important part of the Part B permit application review. WIPP waste characterization has undergone intense scrutiny from both regulatory agencies and the public, and Kearney is acutely aware of these WIPP waste characterization and management concerns. Since many types of wastes proposed to be emplaced at the WIPP will be characterized based on process knowledge rather than actual waste analysis, a thorough understanding of the waste generation process is required. We have critically reviewed a number of documents containing waste characterization information such as the

TRUCON, TRAMPAC (shipping criteria), WIPP WAC, and various TCLP, EP Toxicity, and gas generation/waste characterization studies (i.e., Clements and Kudara). Kearney understands the importance of the applicability and accuracy of generator site characterization by methods such as Real Time Radiography (RTR) and process knowledge (i.e., mixed wastes). We are prepared to provide a comprehensive assessment combining detailed understanding of waste characterization information with knowledge of regulatory requirements.

- Waste transformation, specifically gas generation, is of critical importance because some of the gases generated due to waste transformation may be flammable and potentially explosive. Kearney performed gas generation studies evaluating the effects of radiolysis, corrosion, biodegradation, and volatilization on gas generation, as well as short and long-term operational hazards, and has prepared compliance checklists outlining requirements set forth in the No Migration Conditional Variance. These checklists are critically weighted toward waste characterization and gas generation criteria and are provided in Appendix C.
- Site environmental conditions including contaminant migration in air, soil, groundwater, and surface water are of critical importance to Part B/Subpart X compliance and have undergone intense scrutiny at the WIPP. The issue of unit dissolution (deep-seated and near-surface) and its potential affect on unit integrity has been evaluated by Kearney, along with the impact of underlying brine pockets within the Castile formation. Groundwater flow both within the Salado and encasing formations is also important in terms of potential contaminant migration (addressed in part by groundwater flow models such as SWIFT III), and unit stability and waste transformation. For example, the affect of inflowing Salado brine on waste and waste containers is important, as well as the impact that the disturbed zone and rock mechanics may have on unit design. Also, groundwater flow within the Salado marker beds and in overlying formations (i.e., Culebra) also must

be understood so that requirements concerning protection of human health and the environment under 40 CFR 264.601 are met.

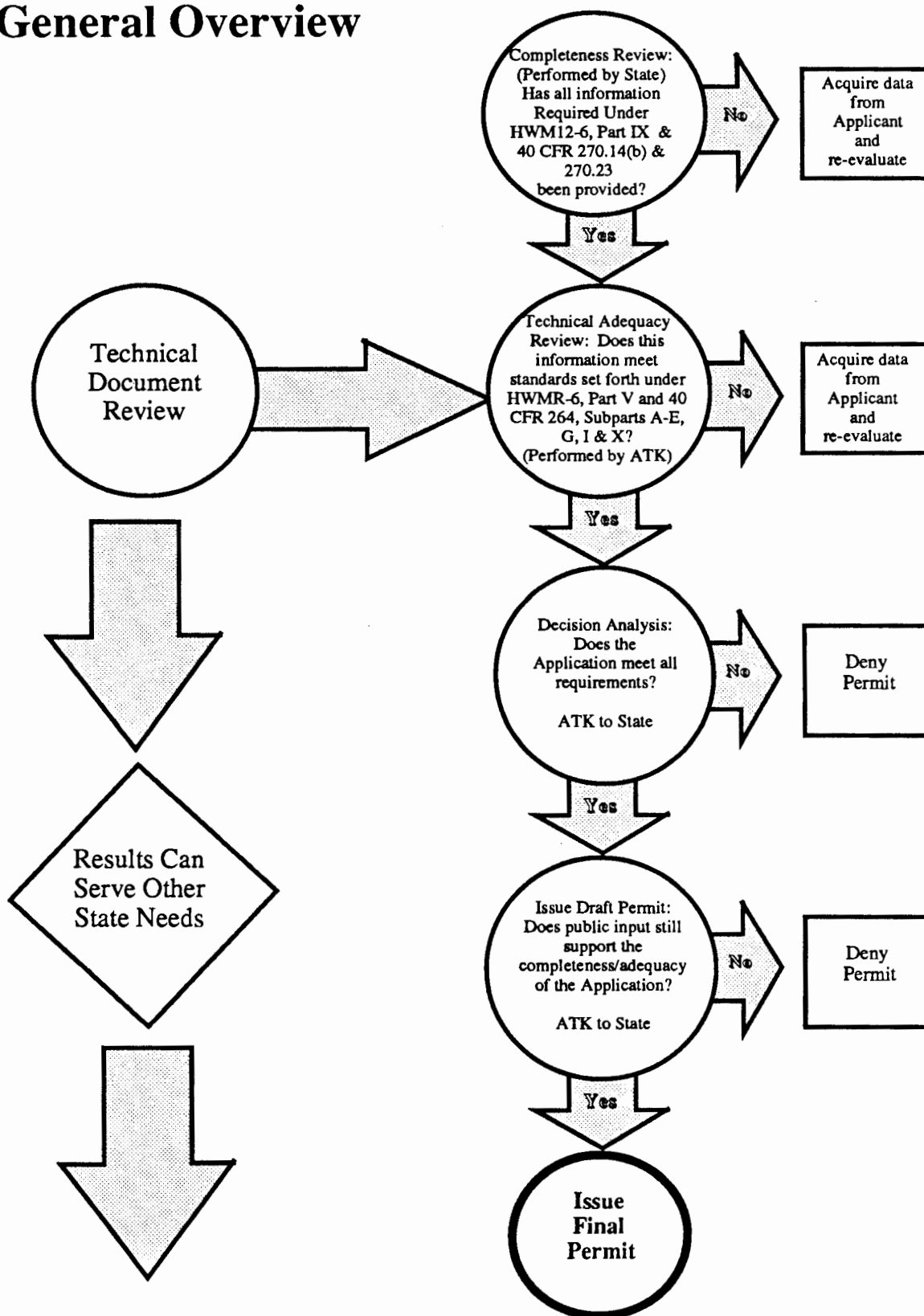
In addition to the major issues listed above, Kearney is also aware of other concerns that must be understood to perform a thorough review of the permit application. For example, in addition to groundwater and brine inflow concerns, the nature of the Salado Formation relative to gas permeability is also important. The Salado Formation exhibits an exceptionally low permeability to air/water, which would initially appear to be a favorable site condition (particularly relative to fluid flow within the unit). However, the gas-dissipating capability of the formation is affected by such a low permeability, and it could seriously enhance the potential for gas build-up within the unit. Also, modeling of contaminant migration within air, groundwater, and soil and groundwater is often used to evaluate potential contaminant movement; Kearney has reviewed a number of the WIPP-specific modeling results relative to these media, and understands potential problematic areas.

Kearney provides a broad understanding of issues surrounding the WIPP and knows how this will impact review of the permit application. While competitors on this procurement may provide in-depth knowledge of a very specific aspect of the WIPP, we believe that this knowledge alone cannot sufficiently address all of the areas which must be understood in order to effectively complete the review. Kearney understands the full range of issues that must be addressed during the review and how these issues directly affect State and Federal regulatory compliance.

B. Our Understanding of the Part B Permit Application and Technical Document Review

Kearney understands not only the issues at WIPP which will be of critical importance relative to this project, but also all aspects of the Part B permit application and technical document review process. Exhibit 5 presents a general understanding of the review processes, showing the major questions that will be asked under each procedure. As presented in this Exhibit, we realize that the Part B permit application review and technical document review tasks are not mutually exclusive, and results of

Permit Review Process: General Overview



**A.T. Kearney understands the entire Part B Permit
Application Review Process**

document reviews could be used in Part B assessments. Each task is discussed individually below, with the understanding that integration of the application and document review tasks is highly probable.

B.1. Review of the RCRA Permit Application

Kearney's approach to successful review of the WIPP's RCRA permit application is presented in Exhibits 6 and 7, and is discussed in detail in the following sections. As shown in Exhibit 6 and as indicated in the RFP, the completeness review will be accomplished first by the State of New Mexico.

B.1.a. Completeness Review - State of New Mexico

The completeness review of the permit application will be conducted by the State of New Mexico. Kearney understands the completeness review process and how the results of this review will integrate with the review process.

One of the main objectives in performing the completeness review is to determine whether all of the required information and documents have been included in the application and to determine if that information is sufficiently complete to continue on to the next phase (technical review). The completeness review will include an evaluation of the application in accordance with New Mexico Hazardous Waste regulations (HWMR-6), Part XI, 40 CFR (b) and 270.23.

Kearney is prepared to conduct the technical review after the Department has assessed completeness of the permit application. It is our understanding that the SPPO will provide a checklist evaluation and Summary of Findings which addresses the information missing from the applications.

B.1.b. Technical Evaluation

Kearney's familiarity with the WIPP site through our work with U.S. EPA Headquarters on the NMVP will help expedite the technical review process, allowing us to "hit the ground running." It is Kearney policy to work closely with the State permit reviewer, and to provide proactive support to the State throughout the review process.

Exhibit 6 presents Kearney's approach to the technical evaluation portion of the review.

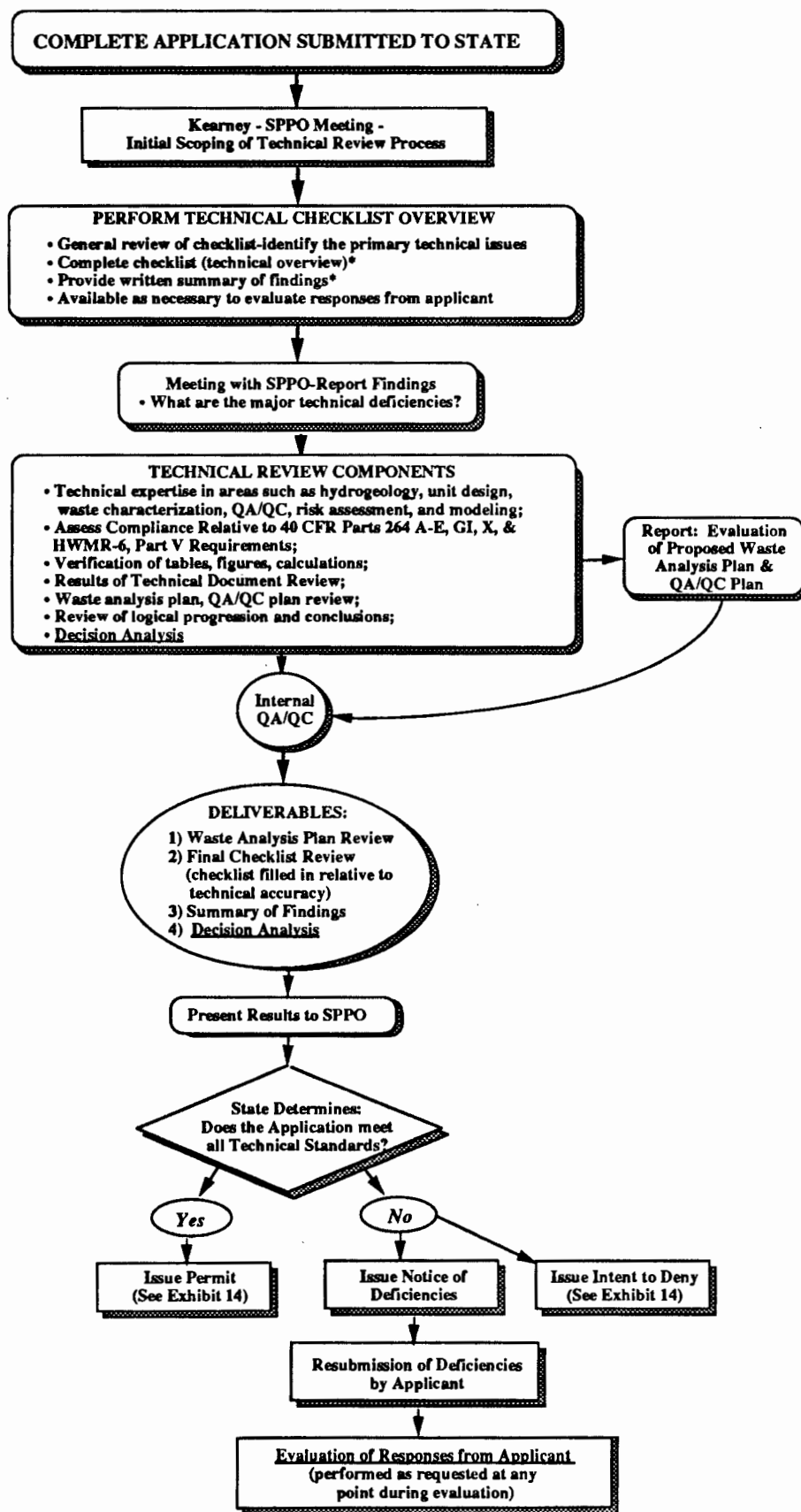
A Kearney-SPPO scoping meeting will be held wherein the results of the completeness analysis will be presented and discussed. Forthcoming technical review procedures/activities and time-frame for the technical review will also be outlined. After this meeting, the technical review will proceed. Kearney will conduct a thorough analysis of the technical information submitted in the permit application to determine whether the WIPP site meets the New Mexico regulatory requirements. This will include a detailed evaluation of the engineered design features and operating equipment, all geotechnical information, and proposed operational procedures and plans (e.g., Contingency Plan).

Checklist Evaluation. An initial general technical evaluation will be performed (based on the checklist) to provide the Department with a general understanding of technical deficiencies. The results of this checklist overview exercise will be presented in a meeting to the SPPO, and a more specific course of action relative to the technical evaluation will then be determined.

Comprehensive Technical Review. The full technical evaluation of the permit application will proceed following a second technical review meeting with the SPPO. This portion of the review will require extensive understanding of the site-specific issues, including integration of the results of the technical document review. Compliance of submitted information with 40 CFR 264 Subparts A-E, G, I, and X and HWMR-6 Part V is of major importance and will be a critical component of the technical review. Kearney is uniquely positioned to provide this service because not only are we keenly aware of regulatory requirements through our RCRA contracts, we are already in possession of and have reviewed approximately 500 DOE documents specific to the WIPP site (Appendix D). Important WIPP documents include:

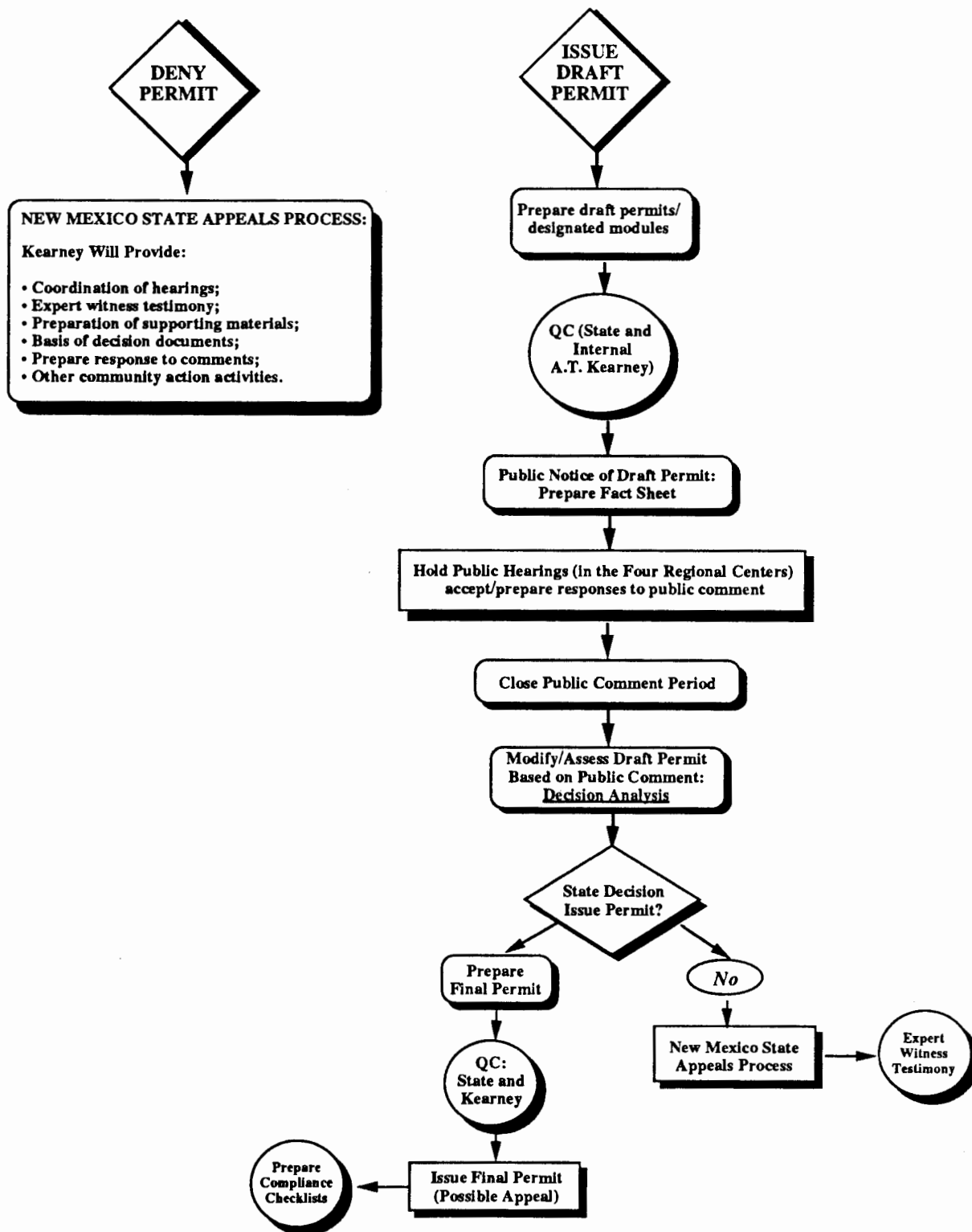
- The Final Site Environmental Impact Statement includes numerous data relative to hydrogeology, risk assessment, and contaminant migration that could serve as important background information for the WIPP Part B permit application.

PART B PERMIT APPLICATION TECHNICAL REVIEW



* preliminary; final checklist and summary findings will be provided after Technical Review

PART B PERMIT APPLICATION ADMINISTRATIVE PERMIT PROCESSING: AFTER THE REVIEW



Kearney is prepared to assist in maintenance of the Administrative Record throughout the review process, as well as additional public hearings, expert/factual witness testimony, and preparation of supporting materials or other tasks required by the Environment Department

- The TRUPACT-II SAR includes important waste shipment information (TRAMPAC), generator site waste characterization (from an NRC perspective), and waste transformation information.
- The No Migration Variance Petition included numerous data relative to waste and site characterization (i.e., TRUCON, the Waste Analysis Plan), including unit stability.

These reports, coupled with data from the Final Safety Analysis Report, Test Plan(s), and hundreds of other topic-specific reports which have already been evaluated by Kearney, provide an excellent basis for the technical review to be enhanced by further review of other/newer reports.

As part of the technical review, Kearney will specifically evaluate the waste analyses plan within the permit application, and provide a separate report to the SPPO on the proposed waste analysis plans and the QA/QC procedures. As indicated above, Kearney representatives are intimately aware of most of the current documentation concerning waste characterization. For example, Kearney led a Gas Generation Study and has prepared a compliance checklist (including gas generation monitoring, Appendix C) based on waste analyses and characterization requirements under No Migration Variance Petition criteria.

All engineering information in the application will be evaluated by a Kearney staff professional engineer. Our engineers know the WIPP unit design, container transport, and container management procedures, and are prepared to review all requisite portions of the Part B permit application.

Following completion of the technical review, a meeting with the SPPO will be held wherein the results of the review will be presented and the required waste analysis plan review, final checklist review, and Summary of Findings/Decision Analysis Report documents will be provided. (Kearney suggests that the Summary of Findings and Decision Analysis deliverables be provided within one document, pending State approval.) Using results of Kearney's findings and decision analysis, the State will then determine the next course of action. Should the State issue a Notice of Deficiency, Kearney will assist in preparation of this notice

and will evaluate responses from the applicant as requested by the Department.

Throughout the technical review process, Kearney will provide proactive support and communication to the State. We will use a team approach for the review, drawing upon personnel with specific expertise to evaluate critical elements, thus providing a high quality and cost-effective review. Our team will be available to perform evaluations of applicant responses throughout the review process.

B.1.c. Evaluation of Responses from the Applicant

Kearney is prepared to provide continual support relative to review of responses from DOE regardless of when or where these evaluations are to take place. Kearney is experienced in preparing and conducting meetings and conference calls on behalf of the State, including agenda development, summary sheets for major issues, guidance, and meeting minutes. This is in keeping with the track record demonstrated during the WIPP No Migration Variance petition review, when key Kearney staff, EPA staff, interested parties, and DOE contractors met over 30 times in 6 cities in an effort to further understand the technical data, assumptions, and engineering components present in the petition.

B.1.d. Decision Analysis

Following completion of the Department completeness review and the technical accuracy reviews, Kearney will produce a report that provides a basis for permit issuance/denial decisions to be made by the State. (This report will be included as part of the Summary of Findings document.) The decision analysis will include evaluations of specific aspects of the application important to this analysis, will detail whether or not enough information exists to support continuation of the permitting process, and if the provided data adequately meets regulatory requirements. All Kearney deliverables will undergo strict internal quality control review prior to delivery to the State to assure highest product quality.

B.1.e. Administrative Permit Processing Support

Throughout performance of this project and following completion of the formal review process, a number of administrative functions can be performed by Kearney. Activities are shown in Exhibit 7 and include:

- Establishment of a procedure and performance of said procedure to assure that all requests for information are directed through the SPPO; and
- Assisting the State coordinate public hearings, meetings, and other community-relations activities, including preparation, review and assembly of all written and verbal materials.

Kearney has extensive experience in these areas. For example, we organized the public hearings for U.S. EPA Headquarters for the NMVP hearings, and assembled written/oral public comment from these hearings into a written report for the U.S. EPA.

Additionally, Kearney is prepared to assist the State in maintaining and tracking the administrative records. Since the administrative record will be used by the permitting agency to support the permit decision, it is important to establish administrative records and procedures early in the review phase. This is vital because if this record is initiated late in the process, valuable time may be wasted hastily assembling the record, with the possibility that important documents and correspondence would be misplaced or mislabeled. Kearney has experience in handling the administrative record, and can assist the State in maintaining the volumes of documents and papers which will be acquired during the review process. We helped to establish the administrative record for the WIPP No Migration Variance Petition, which required extensive computer tracking and documentation of the information acquired under the Petition review process.

The New Mexico Environment Department may choose to either issue or deny the Part B permit, and Kearney is prepared to support the State in either instance. Should the permit be denied, at the request of the Department, Kearney can coordinate hearings and meetings, provide expert

witness testimony, prepare supporting materials (basis of decision documents), responses to comments, and other community action activities.

Should the State elect to issue a draft permit, Kearney is prepared to provide support throughout the permitting process. We can help prepare draft permits and permit modules, including Statements of Basis and Fact Sheets (both in English and Spanish). Kearney can also review and make any necessary corrections to the draft permit following QC review, and help organize and support public hearings, including acceptance and preparation of Department responses to public comment. Modification and assessment of the draft permit may also be required based on public comments; Kearney is prepared to provide this support, as well as additional decision analysis to assist the State in making final permit issuance decisions. Should the State elect to issue the permit, Kearney will assist in writing the final permit and will prepare a compliance checklist; we will also provide factual and expert witness testimony as required throughout the process. Should the State decide not to issue the permit, Kearney will assist the State during the appeals process, which also may include factual/expert witness testimony.

Kearney is uniquely qualified to assist the State in all of these areas. For example, Kearney has written approximately 100 permits under contract to the U.S. EPA, as well as several permits for individual states, including preparation of statements and fact sheets. Kearney personnel managed the issuance of a controversial land disposal facility permit in the State of Colorado while employed at the Colorado Department of Health. Our personnel were involved throughout the permitting process, from initial completeness review to issuance of the draft/final permit and subsequent adjudicatory hearings. Kearney has already prepared a WIPP-specific checklist (Appendix C) for U.S. EPA Headquarters to capture requirements listed by the Agency within the Federal Register, assuring compliance with the Conditional Variance. Additionally, Kearney staff members have also provided expert witness testimony on a number of occasions, including testimony relative to the Part B permit application for a hazardous waste landfill in the State of Colorado.

B.2. Review of Other Technical Documents

Kearney has reviewed and evaluated thousands of technical documents under a number of contracts and tasks, covering the spectrum of technical and regulatory topics. Because we have already evaluated hundreds of WIPP-specific documents, Kearney offers the unique ability to "hit the ground running" in terms of reviewing new WIPP documentation. We estimate that our prior knowledge of WIPP issues can translate into savings of up to 1000 man hours for the WIPP technical document review.

To perform a thorough review, Kearney will first evaluate the organization of the document to assure that a "logical progression" is followed. Detailed review of technical information within the text will be performed, including tables, figures, technical drawings, and calculations. All documents requiring engineering review will be evaluated by an engineer of the appropriate discipline. Kearney offers civil, mechanical, environmental, geotechnical, and chemical engineers for this procurement, assuring that all reviews will be performed by the appropriate personnel. All conclusions and assumptions and other information in the body of the text will also be technically evaluated. Upon completion of the review, Kearney will prepare a conclusionary summary wherein the result of the evaluation will be discussed, including a review of report conclusions to ensure they are supported by data within the text, and that the conclusions drawn are valid. Following completion of the review, a meeting will be held wherein the SPPO will determine the course of action. Should the State elect to go forward with some action (i.e., request for information/modifications), Kearney will evaluate responses from the author upon request.

Technical Document review is a fundamental building block of the Kearney EH&S practice. Under our RCRA Implementation Contract, we are required to review hundreds of individual documents prior to performing each RCRA Facility Assessment (RFA). Critical evaluation of extensive technical documentation is routine during RFI Work Plan Reviews, Part B permit application reviews, etc. For all of our commercial and federal clients, review of project-specific technical documentation (i.e., Work Plans, RI

reports) must be performed prior to and during implementation of the contracts. We have experience critically evaluating documents for technical adequacy in a regulatory compliance framework, and understand those elements that will be of specific importance to the State's decision-making process. Specific examples of Kearney's expertise in this area is provided in Section IV of this proposal.

C. Why A.T. Kearney?

As demonstrated above, Kearney has a solid understanding of the general and specific requirements associated with performance of Part B permit application and technical document reviews. We know the specific tasks which must be performed, and also recognize how these tasks fit into the broader perspective of the WIPP site itself. Kearney provides a margin of "added value" in that the full spectrum of WIPP issues is understood.

Kearney is committed to quality. For the past ten years, the EH&S group has conducted quality control reviews on each deliverable provided to a client. Kearney's quality policy requires that the document be reviewed by an expert in the field the document addresses, assuring technical and regulatory accuracy of the deliverable. This procedure will also be followed for any documents generated under this contract.

We recognize that the purpose of this contract is to provide superior support to the State of New Mexico Environment Department so that State representatives can make the most informed decision possible concerning the WIPP. As with our other state contracts, we know that our role is to provide services to our client and that the State has ultimate decision-making responsibility.

Kearney has unparalleled experience with the RCRA permitting program, which is discussed more thoroughly in the following sections. We have performed completeness and technical adequacy evaluations for permit applications in the states of Pennsylvania and Illinois under our U.S. EPA contract, as well as for states such as Utah with whom we have State-sponsored contracts. State reviews performed by Kearney were tailored to the State's specific needs, and reviews were conducted using State regulations, policy, and

guidance. Kearney has performed Part B permit application reviews for every type of facility including Subpart X units, mixed waste units, and research demonstration and development (RD&D) applications.

Kearney's approach to Part B permit application and technical document reviews brings together a strong, multi-disciplinary team with demonstrated experience in specific areas of expertise. We are also aware that reviews conducted for the WIPP may need to be flexible, with more Applicant-State interaction than during the usual review process. We have performed reviews under these circumstances before, and Kearney is capable of providing timely, accurate review under challenging conditions.

IV. PROJECT EXPERIENCE

A.T. Kearney brings unparalleled experience to this procurement; our technical and regulatory expertise covers the entire range of skills and experience required to accomplish the listed tasks. Our personnel are experienced in both Part B permit application and technical document reviews and our corporate experience illustrates the depth and breadth of our understanding in these areas. We know--through experience--what it takes to "do the job," and by using experienced personnel, offers time and cost-effective performance; we will not learn at your expense.

A. Part B Permit Application Review Experience

Since 1981, Kearney has been the primary support contractor to the U.S. EPA for implementation of the RCRA program. This lengthy experience has provided our firm with a thorough understanding of the regulatory arena and Part B permit applications in specific, as well as other important aspects of the RCRA process including public participation, technical and regulatory guidance, training, and quality assurance. Although not directly related to requirements of this procurement, we also have experience relative to the corrective action program and post-closure requirements. Kearney Part B permit application review experience is summarized in Exhibits 8 and 9. More comprehensive project descriptions are provided in Appendix B.

Our EH&S group has conducted completeness and/or technical reviews of over 900 RCRA Part B permit applications and prepared corresponding notices of deficiency (Exhibit 9-2, ATK-2). We have reviewed applications for every type of land disposal, storage, and treatment facility, including Subpart X units. Our reviews have included both completeness and technical adequacy assessments, and encompass all aspects of Part B permit application sections including verification of relevant calculations; critical evaluation of design; site hydrogeology, including adequacy of proposed monitoring well construction and system design; qualification of key personnel; adequacy of training programs; emergency response procedures; waste analysis plans; unit closure procedures and costs; and financial assurance documentation. Relative

to groundwater monitoring system reviews, a technical assessment entails a thorough, detailed evaluation of site-specific information concerning geology and hydrogeology, well construction, proposed sampling parameters in relation to wastes managed, site-specific fate and transport data, monitoring systems design, and background water quality.

We have reviewed permits for facilities which managed mixed waste (Exhibit 9-2, ATK-2), including DOE Bettis Atomic Power Laboratory, DOE Oak Ridge National Laboratories, DOE Savannah River, and DOE Mound. Additional permit-related projects involving applications. DOE facilities include review of Subpart X permit applications for the Oak Ridge Y-12 plant, and observation of trial burns at a number of facilities such as the Idaho National Energy Laboratory (INEL).

Kearney has worked directly with a number of states on critical permit issues. For example, Kearney has maintained a direct support contract with the State of Utah since 1988 (Exhibit 9-3, ATK-3), under which we have performed a number of tasks including Part B permit application reviews for various facilities. We have reviewed Part B permit applications for a number of state agencies under our RCRA support contract (Exhibit 9-2, ATK-2). Kearney staff has provided expert witness testimony for the State of Colorado on the proposed Part B permit application for the Highway 36 (Last Chance) Hazardous Waste Landfill. Additionally, Kearney performed QA/QC investigations for the State of Colorado at the Highway 36 Hazardous Waste Landfill during liner installation, performed under the RCRA implementation contract.

We have also prepared Part B permit applications for a number of commercial clients (Exhibit 9-4, ATK-5), as well as the Part B and Subpart X permit applications for the U.S. Army Dugway Proving Ground (Exhibit 9-5, ATK-6). Kearney prepared four chapters of the Part B permit application for the Hanford double-shell tanks (Exhibit 9-3, ATK-4), as well as conceptual design layouts

Kearney's Project Experience Matrix

Project	Project Number Cross Reference, Appendix D	Part B Permits		Petition Review and Preparation of Part B Application	Evaluation of Responses	Preparation of Review Documents and Notices	Waste Analysis Plan Review	Decision Analysis	Permit Preparation (Model/Module)	Expert Witness Testimony/Litigation Support	Coordinating Public Hearings/Meetings and Community Action Activities	Checklist/Fact Sheet Preparation	Permit and Application Modification	Technical Document Review/Preparation	Negotiation Skills	Training	Administrative Support: Permitting Process
		Review of Part B Permit	Writing NODs														
WIPP - No Migration Variance Petition Review	ATK 1			X	X	X	X	X			X	X		X	X		X
Part B Permit Application Reviews for U.S. EPA	ATK 2	X	X		X	X	X	X	X		X	X	X	X		X	
Utah State	ATK 3	X	X		X	X		X				X		X	X	X	X
Hanford Support	ATK 4			X	X		X	X			X			X	X		
Permit Support, Commercial Clients	ATK 5			X	X		X	X		X	X		X	X	X	X	
Dugway Proving Ground, Part B and Subpart X Permit Application Preparation	ATK 6			X	X	X	X	X					X	X	X		
Preparation of RFAs	ATK 7				X			X						X	X		
Public Meeting/ Involvement; Commercial Clients	ATK 8							X			X	X			X	X	X
Review of RFI Workplans and Reports	ATK 9				X	X	X	X						X			
Additional RCRA-Related Experience	ATK 10	X			X	X	X	X	X	X	X	X		X		X	X
Safety Analysis Reports Nevada Test Site	ATK 11	X				X	X	X						X			