July 23, 1990
CL/pb emsmot.pb

Introduced by: Audrey Gruger

Proposed No.: 90-594

MOTION NO. 8007

A MOTION approving the scope of work for phase two of the emergency medical services master plan and authorizing the executive to issue a consultant contract for technical services to complete phase two of the emergency medical services masterplan, for an amount not to exceed $83,000.

WHEREAS, the King County Council has authorized and directed the executive to prepare a master plan for emergency medical services, and

WHEREAS, the purpose of the master plan is to improve emergency medical services by identifying and evaluating alternative methods of delivering paramedic services, and

WHEREAS, the master plan will also evaluate EMS service alternatives on the basis of cost-effectiveness, efficiency, and relative performance, and

WHEREAS, phase one of the master plan identified the factors which contribute to increased calls for services and deteriorating response times, and

WHEREAS, the council shall approve the scope of work for both phases of the master plan process;

NOW, THEREFORE, BE IT MOVED by the Council of King County:

A. The county executive is hereby authorized and directed to issue a contract for consultant assistance in completing phase two of the master plan as outlined in Attachment A, and in accordance with Council Motion No. 7454;

B. The duration of phase two of the master plan shall not exceed six months;

C. The amount of the consultant assistance for phase two shall not exceed $83,000, provided that the contract herein authorized shall be issued at an amount not to exceed $76,200, and;

D. In the event that the EMS Master Plan Steering Committee recommends the analysis of more than two alternatives to the

current service delivery system, and that the $76,200 is insufficient to fund the analysis of the additional alternative(s), the executive is authorized to increase the amount provided for consultant assistance up to, but not exceeding, $83,000.

E. The current service delivery system, and a combined basic life support and advanced life support system (identified as "enhanced EMT service") shall be two of the systems which receive full analysis in the study.

PASSED this 30th day of July, 1990.

KING COUNTY COUNCIL
KING COUNTY, WASHINGTON

Lois North
Chair

ATTEST:

Gerald A. Peterson
Clerk of the Council

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EMERGENCY MEDICAL SERVICES MASTER PLAN: PHASE II

Proposed Scope of Work and Technical Approach

Submitted by
King County Emergency Medical Services Division
Revised July 24, 1990

Steven Call, Manager

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I. EMERGENCY MEDICAL SERVICES MASTER PLAN - PHASE II SCOPE OF WORK

Phase II of the EMS Master Plan is described in Council Motion 7454. The major objective of Phase II is to identify and evaluate the current service delivery model as well as three alternative methods of providing advanced life support (ALS) or paramedic service in King County.

Motion 7454 requested that the EMS Division identify a consultant to assist the EMS Master Plan Steering Committee in examining alternative methods of providing advanced life support in King County. Motion 7454 further requested that the EMS Steering Committee recommend to the County Executive a service delivery model which will provide the most effective and cost-efficient paramedic service to the citizens of King County. The Final Report on Phase II and the Executive's recommendation will then be transmitted to the County Council for approval.

In addition to requesting a review of the current paramedic service delivery system, the Motion 7454 specified that the consultant analyze an alternative identified as "enhanced EMT service." This alternative proposes that the fire services be utilized as primary providers of both basic life support and advanced life support services.

The consultant will also be directed to perform further analysis on those alternatives deemed feasible by the EMS Master Plan Steering Committee, as well as on the current system and fire-service based system.

As described in Motion 7454, each service delivery alternative and the current service delivery system will be examined according to the same set of criteria. These are listed below:

1. A **description** of the delivery system and the type of service provided. All alternatives will assume that there will be no decrease in level of service or standards provided;

2. A **ranking** of each service delivery alternative according to objective performance criteria such as average response time performance, workload utilization, and medical level of care;

3. A determination of the **costs** of each delivery system required to meet a specified level of performance and projected call volumes including training costs, capital, equipment, and facility costs,improvements, operations maintenance, and personnel;

4. A comparison of the costs of providing additional increments (units) of service, the performance gains of such additions, and the times at which such additions would need to occur to maintain a specified level of performance;

5. A discussion of the **organizational, legal, and financial** changes needed to implement and maintain each delivery system.

A queuing model approach was specified as a means of quantifying the service delivery trade-offs presented by each alternative. These trade-offs will be addressed by means of an analytical planning model (called EMSIMS, emergency medical services information and mapping system) developed and copyrighted by Jerry Schneider, Ph.D., Department of Engineering, University of Washington.

A linear programming model will be utilized by the consultant as a method of establishing base optional schedules for manning paramedic units for each service delivery alternative examined.

ELEMENT 1: DESCRIPTION OF ALTERNATE SERVICE DELIVERY MODELS

Phase II shall involve the analysis of four alternative service delivery models, including the current system, the enhanced EMT system, and at least two other service delivery models. The consultant will be responsible for developing a methodology for ensuring comparability between service delivery models, and for carefully defining the units of service being compared.

The consultant shall be responsible for describing and evaluating service delivery models in terms of several elements listed below:

A. The types and medical skill levels of prehospital providers who respond to calls for service, and a description of the functions of the providers relative to other parts of the EMS system, specifically dispatch centers, hospitals, physicians, and transport services.

B. The administrative structure(s) responsible for the service, and how they would function, including mechanisms for providing on-line and off-line medical control, initial training and continuing education, and maintaining quality assurance.

C. The numbers and type of personnel required, including supervisory personnel and the amount and type of initial and ongoing training required.

D. Any organizational, structural, legal, and financial changes necessary to implement or maintain the delivery system, including capital and equipment needs necessary to maintain the system through the year 1997 (the last year of the 1992-1997 EMS Levy period). Provide documentation if possible as an Appendix (bibliography) in final report showing where systems similar to alternatives are operational.

RESPONSIBILITIES

The consultant will prepare and present to the Steering Committee an analysis of each alternative considered. The Steering Committee will recommend changes in alternatives if necessary. In the final report, the consultant will briefly reference service delivery alternatives examined and rejected and summarize why this was done.

After review of four alternatives as described above, the EMS Master Plan Steering Committee shall be responsible for determining, in conjunction with the consultant, at least two paramedic service delivery alternatives for further review and analysis in Elements II, III and IV. The consultant's budget for this scope of work will be based on analysis of two alternatives in Elements II, III, and IV. Additional alternatives for analysis may be recommended at the conclusion of Element I by the Steering Committee and will result in additional analysis costs for the consultant and/or subcontractor. Provision for any additional casts has been anticipated in the motion authorizing Phase 2 of the Master Plan.

PRODUCT

The consultant shall prepare a written report for Element 1 describing and analyzing the alternatives, and presenting conclusions and recommendations. Summary results will be presented of Element I will be presented to the EMS Master Plan Steering Committee.

Element II:

ANALYSIS OF OPERATIONAL ASPECTS OF SERVICE DELIVERY ALTERNATIVES

DESCRIPTION

The consultant shall perform a detailed, quantitative analysis and comparison of paramedic service delivery alternatives recommended by the EMS Master Plan Steering Committee in order to

determine the number of units of service required for each alternative to meet projected call volumes, while meeting performance standards to be specified by the EMS Division and the Steering Committee.

In order to facilitate this analysis, the contractor shall subcontract with Jerry Schneider, Ph.D., Department of Engineering, University of Washington, to adapt existing computer software, and to model service delivery alternatives. A program developed and copyrighted by Dr. Schneider called Emergency Medical Services Information and Mapping System (EMSIMS), is suitable for examining and evaluating workload, response times, deployment patterns, and other service aspects of the paramedic service delivery alternatives considered in Phase II. A summary of the output capabilities of EMSIMS is attached to this Scope of Work as Appendix 1.

Each service delivery system will be examined using the factors listed below:

1. Number of units needed to meet demand (1990 base and number added to meet projected paramedic responses in medium projections for the years 1992 and 1997 by geographical area (FAZ area), within performance standards specified by EMS and the Steering Committee.

2. Optimal unit location given demand and number of units.

3. Average response time per unit and system wide in each alternative for peak and non-peak times of day.

4. Determine capacity utilization per unit and systemwide in each alternative for peak and non-peak time periods of the day.

5. Number and percent of calls served for peak and non peak time period for response time intervals of 8 minutes, 10 minutes, 12 minutes.

6. Apply a linear programming model to determine the optimal staff scheduling necessary for each alternative. This model will assume certain constraints to staff deployment including no split shifts, a minimum of eight hour shifts or other constraints specified by the EMS Division prior to the beginning of this element.

RESPONSIBILITIES

The consultant through its subcontractor will be responsible for developing and applying an effective methodology for utilizing the analytical capability of EMSIMS, response projections resulting from Phase I, and the EMS Division's geocode data base.

The EMS Division will provide the contractor with linear programming software from the King County Auditor Office if necessary.

PRODUCT:

The consultant shall prepare a written report for Element II describing and analyzing the alternatives, and presenting conclusions and recommendations. A summary oral presentation of results of Element II to the EMS Master Plan Steering Committee for discussion of results and recommendations.

The subcontractor shall provide the EMSIMS program to the EMS Division, including the necessary software, operating manual, and program documentation.

ELEMENT III:

COST FACTORS OF ACHIEVING PERFORMANCE STANDARDS FOR EACH SERVICE DELIVERY ALTERNATIVE

DESCRIPTION

The consultant will project the costs associated with each paramedic service delivery alternative based on information developed in Element I and Element II above. Cost information will be presented in three categories each with subcategories. These are listed below:

A. Implementation costs of Service Delivery Alternative

1. Personnel
2. Initial Training
3. Supplies
4. Capital expenditures (crew quarters, vehicles, medical equipment)

B. Operating costs:

1. Personnel
2. Continuing education
3. Supplies
4. Capital expenditures (crew quarters, vehicles, medical equipment)
5. Facilities operation and maintenance.

C. Incremental costs of additional units under medium response projections for the factors listed below. This section should also note when it will be necessary to add units based on information obtained in Element II.

   1. Personnel
   2. Initial Training
   3. Supplies
   4. Capital expenditures (crew quarters, vehicles, medical equipment)

D. Total System Costs for Years 1992 and 1997 (Total of A, B, and C above).

PRODUCT

The consultant shall prepare a brief written summary for Element 3 describing and analyzing the alternatives, and presenting conclusions and recommendations. A summary oral presentation of results of Element 3 will be made to the EMS Master Plan Steering Committee for discussion of results and recommendations.

ELEMENT IV:

SUMMARY COMPARISON OF PARAMEDIC SERVICE DELIVERY SYSTEMS AND RECOMMENDATIONS

DESCRIPTION

The consultant shall summarize and compare service delivery alternatives for overall efficiency and cost effectiveness. The following dimensions will be utilized in making this summary comparison:

A. The cost of each service delivery alternative for 1992-1997 given the response and revenue projections from Phase I of the EMS Master Plan, cost data from Phase II, Element III and performance and deployment data from Phase II, Element II, and performance standards specified by EMS and the EMS Master Plan Steering Committee.

B. The optimal level of performance achievable given available revenue, assuming status quo sources of funding for 1992-1997.

C. Medical control.

D. Operational, legal, and administrative feasibility and implementation issues.

PRODUCT

The consultant shall prepare a summary report for Element IV describing and analyzing the alternatives, and presenting conclusions and recommendations. A summary oral presentation of results of Element 4 to the EMS Master Plan Steering Committee for discussion and results and recommendations. The consultant will discuss the relative strengths and weaknesses, and the feasibility and mechanics of implementation associated with each system.

The consultant shall recommend a service delivery alternative to the EMS Master Plan Steering Committee.

ELEMENT V:

REPORTING, COORDINATION, AND PRESENTATIONS

REPORTING

The consultant will report to the manager of the King County Emergency Medical Services Division, who will function as the project manager. The project manager shall be responsible for approving any alterations to the consultant's schedule for delivery of portions of the project. It is strongly suggested that the consultant remain in close informal contact with the Project Manager.

COORDINATION

This portion of the project will require close coordination between the consultant, the subcontractor, the EMS Division, Budget Office, and Council staff, and the Steering Committee. This coordination will be facilitated by weekly meetings between the project director,and consultant.

The consultant will assist the Project Manager in keeping the Executive, County Council, and others informed of progress on this project, including participating in presentations. In addition to the materials required under **PRODUCTS** above, the consultant must be available, if needed, for meetings and oral presentations as listed below:

> 6 monthly briefing meetings with the EMS Master Plan Steering Committee are anticipated to provide updates on Elements I-IV above.

Additional anticipated meetings are:

1 briefing meeting with the County Executive and Seattle-King County Health Department Director.

2 briefing meetings with County Council Staff

2 oral presentations to the County Council.

PART VI: CONDITIONS OF ACCEPTANCE AND MILESTONES

CONDITIONS OF ACCEPTANCE

The Project Manager will accept the project as completed when the consultant has demonstrated completion of the scope of work as agreed to as part of the executed contract for services, and the Project Manager has approved each stage of the project in accordance with the Scope of Services.

Element II is the principal responsibility of Jerry Schneider, Ph.D., Department of Civil Engineering, University of Washington, subcontractor to the consultant.

The Project Manager has the right to reject and/or request revisions to the work at the various sign-off points throughout the project.

PROJECT MILESTONES AND PAYMENT SCHEDULE

The Project is planned for six months, from August 1, 1990 to January 1991 with allows an additional eight weeks to finalize Steering Committee recommendations, complete the final report and submit it to the County Executive.

August 1, 1990:	Phase II begins.
September 28:	Presentation and Written Report on Element 20% of contract amount paid on acceptance.
October 26:	Presentation and Written Report on Element 2. 20% of contract amount paid on acceptance.
November 30:	Presentation and Written Report on Element 3. 20% of contract amount paid on acceptance.
December 14:	Presentation and Written Report on Element 4. to Steering Committee and recommendations

December 28: Presentation of Element 4 (continued.) and recommendations.

20% of contract amount paid on acceptance.

January 28, 1991: Draft of Phase II Final Report due, and distributed to Steering Committee members for review and comment.

February 18: Comments on Final Report Draft due.

February 27: Final Report Transmitted to County Executive.

20% of contract amount paid on acceptance.

APPENDIX 1

SUMMARY AND OUTPUT CAPABILITY OF THE
EMERGENCY MEDICAL INFORMATION AND MANAGEMENT SYSTEM (EMSIMS)

The EMSIMS computer program, developed and compyrighted by Jerry Schneider, Ph.D., Professor, Department of Civil Engineering, University of Washington, is designed to provide description, analysis, and computer simulation of emergency medical service delivery systems.

The EMSIMS database incorporates three principal types of information which will be used to compare service delivery systems in Phase II. These include (1) the EMS geocode system which relates current and projected EMS incidents (and the EMS incident database) to quarter mile sections, and includes all current fire station, paramedic quarters,and hospital locations; (2) a road network representing highways and streets in King County, with the capability to assign paramedic unit speeds over different sections of the network depending on time of day or type of road; and (3) geographical features, reference lines such as municipal boundaries, and place names. EMSIMS provides both quantitative data output and map displays of essential planning information. It is thus possible to use both numerical results as well as maps in evaluating service delivery alternatives.

EMSIMS has several types of output data and maps. These include:

* Distribution of current and projected response levels by 1/4 mile section by paramedic unit and system wide. This permits excellent use of small area response projections by Forecast Analysis Zone (FAZ) made in Phase I by allowing projected differential growth in the County to be incorporated in the analysis.

* Over 100 candidate locations for paramedic units (fire stations, hospitals) from which units can provide service. These can be examined system wide, or by individual unit. Response time and demand system wide or by individual unit can be examined. The effects of one or more units being out of service on response time can be evaluated. Optimal unit locations given demand and number of units can be determined. Appropriate backup patterns can be determined.

* Number and percent of calls served within response time standards can be determined, depending on the alternative being examined, and by time of day.

EMSIMS permits rapid, extensive, and realistic computer simulation and evaluation of complex service delivery systems with multiple paramedic units.

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2. TECHNICAL APPROACH

Prepared by

SLR Inc.
Health Care Consultants and Architects

June 20,1990

ELEMENT I: DESCRIPTION OF ALTERNATIVE SERVICE DELIVERY MODELS

Purpose: The purpose of Element I is to identify and describe a broad range of potential service delivery models and to recommend no more than four alternative service delivery systems for further analysis. A set of evaluation criteria will be developed for systematically analyzing, comparing and evaluating the alternatives.

Approach: SLR will implement a planning process that provides a mechanism for input from many constituencies involved in the delivery of emergency medical services in King County, such as physicians, fire districts, the EMS Division, paramedics, EMT's, and the County Council/staff.

Task I.1 Evaluation Criteria: SLR will work with the Steering Committee to develop a set of evaluation criteria that will be used throughout the study to analyze, measure and compare the alternatives. The criteria will include such factors as cost, medical control, funding, implementation feasibility, performance standards, utilization of available resources, staffing, etc.

Task I.2 Literature Search: SLR will carryout a comprehensive literature search to identify the types of EMS systems currently in operation throughout the US and abroad, and their important elements. This search will focus on prior studies that have evaluated and/or compared various elements that are integral to an EMS system, such as organization and administrative structures, funding mechanisms, legal parameters, medical control, education and training, provider agencies, patient outcome, etc.

Task I.3 Key Interviews Inside KC: SLR will carry out separate presentations/worksessions with representatives of 1) the County's fire chiefs and 2) emergency room physicians. The fire chiefs and physicians will be asked to respond to each element that is integral to an EMS system and to discuss their perspectives about the range of options available to achieve each element.

This information, along with information drawn from the literature, will be tabulated and consolidated into a matrix format that will then be used to develop a range of potential alternatives.

Task I.4
Interim Presentation and Worksession:

SLR will facilitate a worksession with the Steering Committee during which the range of potential alternative delivery systems will be presented for discussion and evaluation. The objective is to narrow the range of EMS service delivery models to no more than four, and assure that they are practical, potentially implementable, and appear to best meet the criteria established in Task I.1 above.

Task I.5
Evaluate and Compare Alternatives:

The evaluation and comparison of alternatives will be based on the evaluation criteria established in Task I.1 and will include development of the following analytical information. SLR will

- forecast numbers and types of provider/agencies and their functions

- describe the operational impacts of each alternative on the provider/agencies within the EMS system, including workloads by year and the range of number of units needed in each alternative.

- estimate the numbers and types of personnel needed to implement each alternative and the training/educational requirements.

- describe the administrative/organizational structure, including provision of medical control, training, education and quality assurance as well as general administration and supervision

- delineate the legal parameters necessary to implement each alternative

- describe the potential funding opportunities and constraints of each alternative.

Task I.6
Final Presentation and Worksession:

At the conclusion of Element I, SLR will prepare a brief description and tabular comparison and evaluation of each alternative to be distributed prior to a formal presentation of same to the Steering Committee. SLR will then prepare and deliver a formal presentation of the results and findings of the study to date and to work with the Committee to fine-tune the alternatives, select two for further study and to make recommendations about the next steps of the study process. (The extent to which more than two alternatives are deemed worthy of further study, the scope of the contract and the budget will be amended to reflect this.)

Product:

SLR will prepare a brief, interim "white paper" that describes each alternative, incorporating the Steering Committee's recommendations. The descriptions will delineate the major qualitative and quantitative data and identify the preliminary pros and cons of each alternative as understood at this point in the study.

ELEMENT II: ANALYSIS OF OPERATIONAL ASPECTS OF SERVICE DELIVERY ALTERNATIVES

Purpose:

The purpose of this element is to rigorously evaluate and compare the two alternatives in terms of response times, utilization of resources and staffing. This will include identifying the number of units needed to implement each alternative as well as the optimal location of those units. The analysis should better define and contrast the alternatives so that the costs of each can be evaluated and described in Element III.

Approach:

SLR will subcontract with Jerry Schneider of the University of Washington's Engineering Department. Based on performance standards and utilization criteria, Dr Schneider will develop a computerized geo-coding system that measures workload levels and response time performance of various systems of paramedic site locations so as to optimally locate units throughout the county. The computer program will evaluate various sites by measuring the response times that will likely occur within each unit's defined service area, given the projected workloads by time of day.

Task II.1 Workloads by FAZ Area:

SLR will provide Dr. Schneider the medium-range workloads that will be generated in each FAZ area during 1992 and 1997.* The workload data, completed in Phase I of the this master planning effort, will be examined in terms of PM peak hours** in each FAZ for EMT and paramedic responses. This information will be provided on computer disk to Dr. Schneider. The extent to which the alternatives change the level of workloads served or re-allocates the workloads between EMT's and paramedics, SLR will provide these variations to Dr. Schneider for input into his computer simulation model.

Task II.2 Workloads by Geo-codes:

Dr. Schneider will allocate the FAZ data to match his geo-code boundaries which, in some FAZ areas will involve quarter-square miles, in others it will allocate by square mile, and in those FAZ areas with very low population density, it will require hand manipulation to allocate the workloads to those geo-codes where it is known that the majority of the population resides.

Task II.3 Adapt Existing Computer Model:

Dr. Schneider will adapt his computer simulation model to reflect the special needs of the EMS system in King County. The current geo-coding system, called RIMS, was originally designed for another purpose and will need to be re-programmed to match the special needs and requirements of the EMS system. Once adapted, the system will be copyrighted by Dr. Schneider and called "Emergency Medical Services Information and Mapping System." (EMSIMS)

Dr. Schneider will develop and apply an effective methodology for utilizing the analytical capability of EMSIMS, the search algorithm, response time criteria, workloads developed in Phase I, and the EMS Division's geocode data base.

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* If indicated, the analysis will be extended to the year 2000.

** If indicated, the analysis will be extended to include AM peak hours and/or non-peak hours.

Task II.4
Evaluate the Alternatives:

Once completed, EMSIMS will be suitable for examining and evaluating workload, response times, deployment patterns, and other service aspects of the paramedic service delivery alternatives to be evaluated and compared.

Dr. Schneider, together with SLR and staff from the EMS Division, will complete the necessary iterative process of identifying the most optimal site configurations that best meet response time standards and utilization criteria for each alternative. The evaluation will focus on alternative resource deployment strategies such as:

- locating those units that will operate on 24 hour/day schedules and identify geographic areas where supplemental staffing may be required to meet peak call times

- geographic comparison and evaluation of response time standards at intervals of 8, 10 and 12 minutes

- analysis of the percentage of all calls that meet the range of response time standards.

In addition, the analysis will identify when additional units will need to be added through the year 1997 under each alternative service delivery system.

If applicable, SLR and Dr. Schneider will utilize the linear programming software developed by the King County Auditor's Office to determine the optimal staff scheduling necessary for each alternative at various performance standard levels.

Task II.5
Presentation

SLR, together with Dr. Schneider, will prepare a formal presentation and present it to the Steering Committee. The presentation will describe the process, analysis, findings, conclusions and recommendations of his evaluation of the alternatives. This will include Dr. Schneider's assessment of the relative strengths and weaknesses of each alternative as well as recommendations of which alternatives should be further studied. ~~The Steering Committee will be asked to formally recommend that any alternatives that do not meet performance standard criteria or appear to be not feasible, be eliminated from further study.~~

Task II.6
Manual

Dr. Schneider will develop a detailed training manual on the use of the EMSIMS computer program. This manual will be transferred, along with the software package, to the EMS Division for its own use. In addition, Dr. Schneider will provide any necessary training that may be required by the Division in order to use the computerized mapping program.

Task II.7
SLR
Coordination:

SLR will work with Dr. Schneider throughout Element II to assure that his product meets the necessary goals, objectives and schedule for the study. The extent to which Dr. Schneider is unable to accomplish the above described tasks or to meet the schedule, SLR will be responsible for making the EMS Project Manager aware of the problem and to equitably reach a resolution. If the resolution is outside the scope of work as defined in this proposal, then fees for extra services will be necessary. SLR does not accept any responsibility for the quality of the work to be provided by Dr. Schneider.

Product:

The product of Element II will include a written summary of the results of the analysis, including a matrix that compares the alternatives on the factors listed in the scope of work, including:

- Number of units needed to meet demand in 1992 and 1997
- Optimal unit location
- Average response times by time of day for each unit and on a system-wide basis.
- Number and percent of calls from each FAZ area that meet the response time standards of 8, 10, and 12 minutes.
- Optimal staffing schedule for each alternative
- Strengths and weaknesses of each alternative
- Capacity utilization

ELEMENT III: COST FACTORS OF ACHIEVING PERFORMANCE STANDARDS FOR EACH SERVICE DELIVERY MODEL

Purpose: The purpose of Element III is to provide detailed cost estimates necessary to implement the range of alternatives. The cost estimates will delineate 1) implementation costs, 2) on-going annual operating costs, and 3) incremental costs of adding new units over time.

Approach: SLR will collect the needed historical data on personnel, staffing, supplies and capital costs which will serve as the basis for developing proforma budget statements for each alternative. SLR will also complete a Life Cycle Cost Analysis or Net Present Value Analysis that will aggregate the three types of costs that will occur over time and compare the overall costs of each alternative.

Task III.1
Collect Data: SLR will collect and analyze historical cost data on personnel, staffing, supplies, facilities and capital equipment expenditures necessary for the ongoing operations and implementation of new units. SLR will also collect cost data relative to training and education expenses which will vary depending upon the provider agency.

Based on the historical cost data, SLR will analyze the budget trends, policies and procedures which will be used to develop forecast assumptions.

Task III.2
Proforma Budgets: Based on the forecast assumptions, SLR will prepare annual proforma budget statements for each alternative which delineate the implementation costs, on-going operation expenditures by unit, and the incremental costs of adding units over time.

In addition, the cost information will be compared to the projected revenues available to support county EMS operations as defined in Phase I of this master plan. Revenue excesses or deficits will be indicated on an annual basis and potential tradeoffs will be identified.

Task III.3
Life Cycle Costs: The proforma budget statements will be completed in a format that will permit analysis, comparison and evaluation of the alternatives through Life Cycle Cost analysis. LCC uses net present value analysis to compare alternatives over time and

the methodology used by SLR takes into account both capital and operating costs.

Task III.4
Presentation: SLR will prepare and present its financial findings to the Steering Committee for discussion and recommendations. ~~The Steering Committee will be asked to make recommendations to eliminate from further study any alternatives that are not financially feasible.~~

Product: SLR will document the financial findings, assumptions and recommendations as needed for completion of the final report.

ELEMENT IV: SUMMARY COMPARISON OF PARAMEDIC SERVICE DELIVERY SYSTEMS AND RECOMMENDATIONS

Purpose: The purpose of Element IV is to aggregate the available findings, conclusions and recommendations into summary form in order to facilitate the Steering Committee and other decision-makers in developing formal master plan recommendations.

Approach: SLR develop needed materials that summarize and compare the alternatives per the evaluation criteria established in Task I.1. Such information will include how well each alternative is able to:

- meet performance standards for response times
- increase the percentage of calls below response time standards
- utilize available capacity
- meet medical control standards
- implement operational, legal, and administrative requirements
- reduce costs per unit
- funding availability

SLR will also delineate the pros and cons of each alternative and make recommendations to the Steering Committee as the tradeoffs between them. And finally, this information will be presented to the Steering Committee which will be requested to

develop formal recommendations as to the desired master plan alternative that will be forwarded to the County Council for review and approval.

Product: The product at the close of Element IV will be establishment of the the desired master plan alternative for paramedic services in King County through the year 2000.

ELEMENT V: REPORTING, COORDINATION AND PRESENTATIONS

Final Report: SLR will prepare the final master plan document that will summarize the methodology, findings, conclusions, and recommendations of Phase II. The report will follow the format established during Phase I, including an executive summary under separate cover together with a main report that describes the recommended master plan alternative. The main report will be supplemented by technical appendices which will include the detailed data and analysis used to reach the study's conclusions.

Formal Presentations: SLR will prepare and deliver one formal presentation to the County Executive together with DPH. SLR will also deliver one formal presentation to the County Council.

Project Management: SLR will meet with the Project Manager once per week for two hours throughout the study effort. These meetings will provide a forum for discussing study progress, to resolve issues, and to maintain close monitoring of the schedule, budget and direction of the study. In addition, SLR is prepared to provide three interim briefings to the Council staff and Budget Staff throughout the course of the study.

The extent to which additional meetings or presentations are required and approved by the EMS Division, SLR will bill the Division for extra services as these would be outside the scope of the study as described above.

3. SCHEDULE

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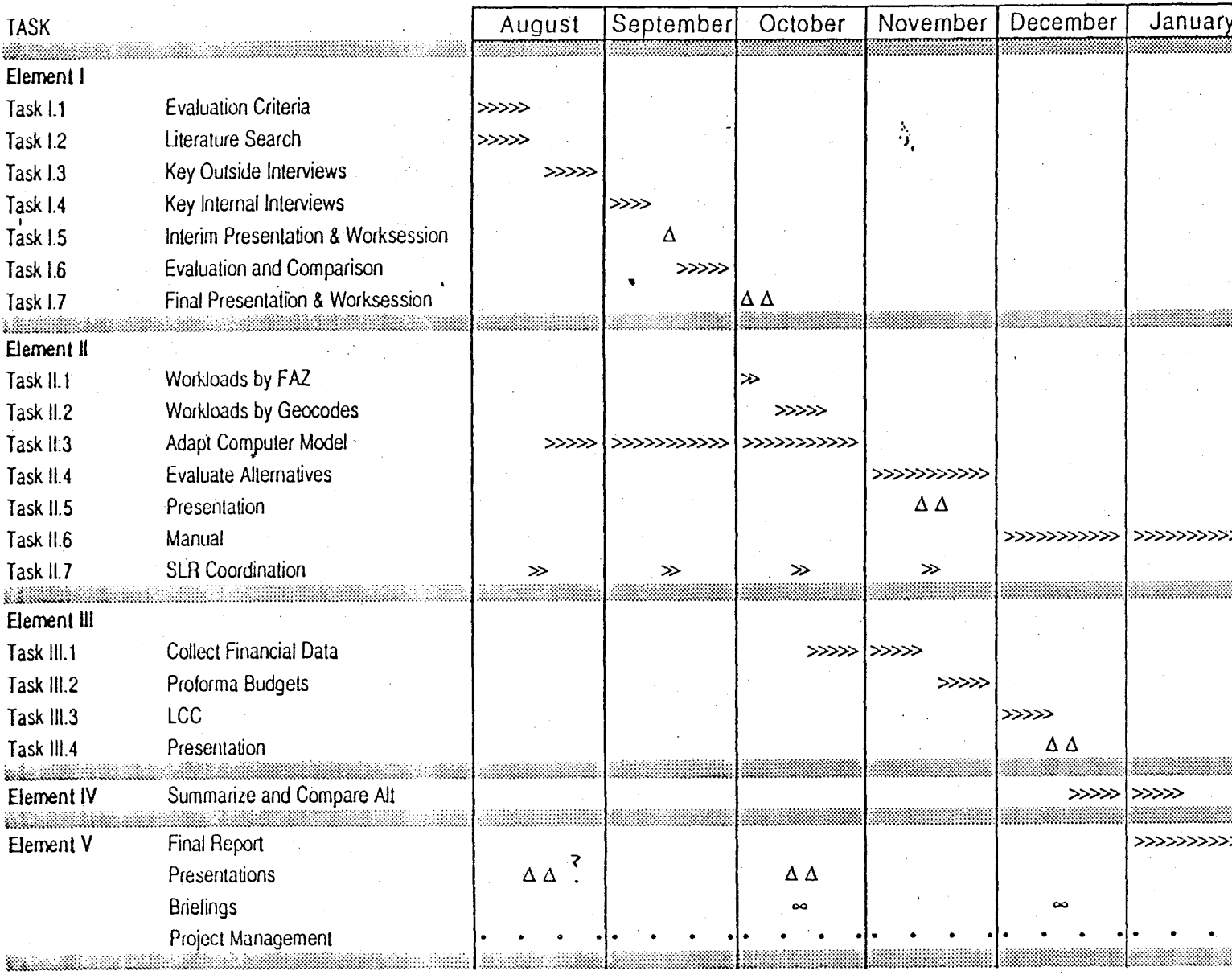
EMS MASTER PLAN PHASE II
PROPOSED SCHEDULE



4. BUDGET

EMS MASTER PLAN PHASE II
PROPOSED BUDGET

TASK		URR	ME	GZ	JS	TOTAL HOURS	PROPOSED FEES
Element I							
Task I.1	Evaluation Criteria	8				8	
Task I.2	Literature Search			24		24	
Task I.3	Key Internal Interviews	32		32		64	
Task I.4	Interim Presentation & Worksession	12	6	12		30	
Task I.5	Evaluation and Comparison	40	24	60		124	
Task I.6	Final Presentation & Worksession	12	4	12		28	
	Subtotal	104	34	140		278	$20,630
Element II							
Task II.1	Workloads by FAZ (2 Alternatives)			20		20	
Task II.2	Workloads by Geocodes			8	40	48	
Task II.3	Adapt Computer Model				120	120	
Task II.4	Evaluate Alternatives	12		20	80	112	
Task II.5	Presentation	12		12	24	48	
Task II.6	Manual				40	40	
Task II.7	SLR Coordination	16				16	
	Subtotal	40	0	60	304	404	$14,596
Element III							
Task III.1	Collect Financial Data		8	24		32	
Task III.2	Proforma Budgets		8	40		48	
Task III.3	LCC		4	8		12	
Task III.4	Presentation		4	8		12	
	Subtotal	0	24	80		104	$7,240
Element IV	Summarize and Compare Alt	24	24	80		128	$9,280
Element V	Final Report	60	16	24		100	
	Presentations	12	4			16	
	Briefings	12	4			16	
	Project Management	48	48			96	
	Subtotal	132	72	24		228	$18,900
TOTAL ESTIMATED PROFESSIONAL FEES		300	154	384	304	1142	$70,846
Contingency	(@2.5%)						$1,771
Direct Expenses	(@7.5%)						$5,313
TOTAL PROPOSED BUDGET							$76,159