

**FINAL REPORT**

**COMPREHENSIVE REVIEW  
OF WAKE COUNTY FIRE PROTECTION**



**Submitted to:**

**Board of County Commissioners  
Wake County, North Carolina**

**September 28, 1994**



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**Prepared by:**

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## **EXECUTIVE SUMMARY**

The delivery of effective fire protection and public safety programs is an important responsibility of local government. In 1993, the Board of Commissioners of Wake County recognized the need for a comprehensive study of the County's fire protection services and selected TriData Corporation of Arlington, Virginia to conduct the project. This report presents the findings and recommendations that were developed by TriData, an international consulting firm which specializes in public fire protection and emergency medical services. TriData has conducted similar studies for counties and municipalities throughout the United States and Canada.

The major focus of this study is directed toward the delivery of fire services in unincorporated areas, which are directly under the jurisdiction of Wake County. The intimate relationship between incorporated and unincorporated areas and the changing boundary lines make it unrealistic to consider the protection of unincorporated areas without also considering the needs of the incorporated areas. It is also evident that some level of joint planning and coordination of fire services among all of the responsible jurisdictions will be essential for the future. There is a common desire among all of the jurisdictions to strive toward providing higher levels of service in all areas.

The study examined all aspects of the delivery of public fire protection services in Wake County. The existing fire protection organizations were observed to be doing a reasonably good job, but the overall system involves too many small fire departments, each attempting to operate as a "stand alone" organization. There is a countywide mutual aid network, however, the level of coordination among departments could be improved. There are major variations in the resources that are available to each department and the level of service that each is able to provide. As the County

continues to grow, the demand for more capable, consistent, and reliable services will have to be addressed.

The report recommends some major changes in the organization and operation of fire departments, which should be based on a master plan and a cooperative agreement among all of the political jurisdictions that are responsible for providing fire protection. The recommendations include a significant reduction in the number of separate fire departments and the conversion of several existing departments from rural to municipal organizations. There are additional recommendations relating to increased support that the County should provide to the fire departments to coordinate and unify their efforts. The coordination and unification recommendations are particularly significant as a means of providing effective and efficient services.

The recommendations are based on a premise that volunteer organizations can and should continue to provide the backbone of the emergency response network in most of Wake County. The economic benefits of a volunteer system and the existing system of capable operating volunteer fire departments justify these recommendations. There will have to be an expanding component of career personnel to supplement the volunteers and provide services that volunteers will not be able to provide. Wake County should place an emphasis on programs that support and enhance the volunteer system. The County should continue to provide training and assist with the recruiting and retention of volunteers.

The existing career personnel and any new career personnel in the fire departments should be expected to provide a full range of services, including fire suppression, emergency medical and rescue support, public fire safety education, fire prevention inspections and code enforcement. The code enforcement functions cannot be performed by employees of non-governmental fire departments, however, they can be performed by personnel who are Wake County employees or employees of an

incorporated town or city. The fire prevention programs should be managed and coordinated by the County Fire Marshal.

The report also recommends the implementation of risk reduction strategies that could have a significant impact on the number and severity of fires in the future, saving lives and property much more effectively than is feasible through the best fire suppression efforts.

Additional recommendations address the need for a closer relationship between the fire departments and the EMS/rescue squads that provide emergency medical and rescue services in Wake County. The current missions of fire departments and rescue squads are parallel in many respects. The career personnel who are needed to supplement the volunteer fire departments can also support the mission of rescue squads.

Several of the fire departments have developed technical rescue capabilities, particularly extrication of trapped patients from automobile accidents, while the rescue squads have tended to focus more on patient treatment and ambulance transportation. The fire service should officially assume the responsibility for technical rescue operations and continue to develop these capabilities.

Several of the fire departments have initiated "first responder" programs to provide rapid response to EMS patients, working with the Wake County Department of Emergency Medical Services. The first responder programs that have been initiated on a district-by-district basis should be expanded to a countywide plan. All of the fire departments should have the capability to deliver first responder medical care, as a minimum, and basic life support (BLS) with automatic defibrillation is recommended.

The report also encourages continued coordination between the fire service and Wake County's Emergency Management Office to increase the level of preparation and

planning for major emergency situations. Emergency Management is doing an outstanding job with planning and the fire departments should continue to take advantage of this valuable assistance in planning for major emergency operations.

## **Current Situation**

The current fire protection situation in Wake County can be described as complex and moving in several different directions at the same time. Fire protection is provided by a mixture of 24<sup>1</sup> municipal, rural, and combined municipal/rural fire departments. The responsibility for fire protection is divided among the 12 incorporated cities and towns and 23 fire districts that have been established in the unincorporated areas of the County. A property tax is levied in each fire district to support the fire department that serves the area. Wake County contracts with an individual fire department or municipality to serve each fire district and turns the tax revenues from the district over to the designated fire department. There are some unincorporated areas that are not included in any fire tax district and do not pay taxes to support a fire department, however, all areas of the county are within the response district of a fire department.

Only three of the incorporated communities have their own municipal fire departments, while one additional town is in the process of transforming a rural department to a municipal department. Most of the incorporated communities contract with rural or combined rural/municipal fire departments to provide fire protection.

The Wake County Board of Commissioners oversees all of the fire districts and the County Fire Marshal is assigned to coordinate the County's relationship with the individual fire departments that serve the districts. The Fire Marshal is also responsible for fire prevention and investigation functions in the unincorporated areas and contracts

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<sup>1</sup> This does not include the career fire department which provides aircraft rescue and fire fighting (ARFF) services to RDU airport. This special purpose fire department is operated by the RDU Airport Authority.

to provide these services to some of the incorporated towns. The County also operates a Fire Training Academy, which serves all of the fire departments in the County, and contracts with the City of Raleigh to provide emergency 9-1-1 dispatch services for the fire districts.

Only the cities of Raleigh and Cary are served by full-time career fire departments; 22 volunteer fire departments operating from 29 fire stations protect the remainder of Wake County. Some parts of the County are served by well-funded and well-equipped volunteer fire departments. The population and the commercial and industrial development of the County are increasing, placing new and significantly greater service demands on some of the volunteer departments, causing several of the volunteer fire departments to begin utilizing career personnel for daytime coverage. Approximately 70 career personnel have been hired to supplement the 700 plus volunteers in the County. The growth has increased the tax revenues of the districts where the most rapid growth is occurring, which is funding the added expenditures to pay for career personnel.

Several of the municipalities have annexed areas that were previously part of the rural fire districts, which has reduced the service areas and tax bases of those districts. When an area is annexed, the municipality may contract with the same fire department to serve the area, or contract with a different department, or provide the service through a municipal department. The annexations have left a few of the volunteer fire departments with very fragmented areas to serve and severely reduced their revenues.

## **Future Direction**

The most significant contribution to the objective of providing effective and efficient fire protection and emergency services to all parts of Wake County would be the development of a single master plan to unify the efforts of all jurisdictions and

organizations toward a set of shared goals and objectives. This can be accomplished if all of the responsible officials recognize the value of coordination and cooperation, and the contributions they can make to the effective delivery of emergency services. The master plan should define the services that will be provided and the approaches that will be used to establish performance goals and objectives. All of the jurisdictional entities and individual agencies should agree to work together toward those common goals.

The roles of the County, the individual municipalities, and the fire departments in the overall fire protection and emergency service system need to be better defined and officially adopted within the planning process. This should result in a joint agreement, linking the County and all of the incorporated municipalities to the goals and objectives. The master plan should also define the structures, relationships, and decision making processes that need to be incorporated in the agreement. This spirit of cooperation among jurisdictions and service providers should direct the overall mission of fire protection in Wake County in the future.

The agreement should facilitate unencumbered mutual aid and automatic response agreements (closest station to an emergency always responds) among all of the participants and ensure that all areas are served. Continuing cooperation and coordination among Fire Services, Emergency Medical Services, and Emergency Management should support the development of an efficient and capable emergency response system for Wake County. The fire service should be directly involved in the support of the EMS/rescue system on a consistent and coordinated basis throughout the County.

The plan should identify fire prevention and public fire safety education as equal priorities with fire suppression. The long term safety and welfare of the County's residents can be provided more effectively and efficiently through a proactive approach to fire prevention and risk reduction than through fire suppression. Fire suppression and

effective response to other types of emergencies will continue to be essential services with a very high priority for the County and the municipalities.

*Fire Departments* -- An efficient and well coordinated combination of municipal and rural fire departments should be able to meet the needs of Wake County and the incorporated cities and towns, using a combination of career and volunteer personnel. The number of fire departments (organizations - not stations) should be reduced and their service levels should be defined with specific performance objectives for suburban areas and for rural areas.

The concept of a single countywide fire department could be considered, however, this does not appear to be the best approach for Wake County at the present time. Several of the rural fire departments should become municipal fire departments, while continuing to function as primarily volunteer organizations within the countywide system model. As municipal fire departments, the respective towns would contract with Wake County to serve the adjacent unincorporated areas. It is difficult to maintain strong volunteer participation within a very large organization.

Wake County has recently reestablished written contracts with the individual fire departments that protect unincorporated areas. These contracts should be increased in scope and in the responsibility they place on the fire departments to provide consistent levels of service and to adopt countywide standard operating procedures. The contracts should also define the fiscal relationships and the services that the County will provide to support the fire departments. Realistic and consistent training standards and qualifications for different positions should be adopted and the training should be provided to support the attainment of these objectives. The system of contracts should address all forms of relationships among the County, the municipalities, and the rural fire departments that are necessary to provide protection for all areas, however the operational procedures and performance standards should be consistent countywide.

The contractual relationships should require the fire departments to cooperate on issues such as joint planning of fire station locations and apparatus purchases, training programs, training requirements for different ranks, standard operating procedures, and incident management procedures. Joint purchasing of apparatus, equipment and supplies should be strongly encouraged to reduce costs for all of the departments.

## **County Fire Marshal**

The responsibilities assigned to the County Fire Marshal have increased rapidly in the past three years. The Fire Marshal's Office does not have the necessary resources to perform its full range of code enforcement inspections and other functions that are required at the present time. To meet immediate needs, one or two additional code enforcement personnel are needed, however, in the longer term a substantial part of the code enforcement workload should be turned over to the local fire departments as they become better established with career personnel. The expansion of the County Fire Marshal's staff should be directed toward coordinating and supporting the efforts of the individual fire departments and performing those functions that are not feasible to delegate.

The long range plan should involve a cooperative agreement among the county and the incorporated towns. The County Fire Marshal's staff would provide the staff expertise and program support, while fire fighters would perform many of the routine inspections.

*Fire Administrator* -- The duties of the County Fire Marshal and the Fire Marshal's Office have been expanded far beyond the traditional role as the primary enforcer of fire related laws and investigator of fire origin and cause. The Fire Marshal is actually functioning as a County Fire Administrator and the Board of County

Commissioners should restructure the position and the organization to reflect the full scope of duties and responsibilities which have been assigned to the office.

The County Fire Administrator would report directly to the Assistant County Manager and would work closely with the Fire Advisory Board. The Fire Marshal should report to the Fire Administrator and would direct fire prevention, code enforcement and public fire safety education programs.

This structure would also include:

- A Human Resources Manager to support all of the functions related to staffing, including the recruiting and retention of volunteers and the management of full-time County employees. The County Fire Training Coordinator would report to the Human Resources manager.
  
- A Support Services Manager, who would be responsible for the budget and administrative support functions. The Fire Administrator's responsibilities would include planning and coordination of emergency services functions among the individual fire departments that would actually deliver the majority of the services. A staff planner position should report directly to the Fire Administrator.

*Fire Advisory Board* -- A County Fire Advisory Board (or Fire and Rescue Advisory Board) should be established as an oversight and advisory body. The Fire Advisory Board would submit a recommended consolidated budget for fire service operations and capital expenditures to the Board of County Commissioners. It should also be the approving authority for policies and procedures involving the fire departments and would make the recommendation to the County Commissioners on issues such as which fire department should be authorized to build a new station to cover

an unprotected area, which types of specialized apparatus should be purchased, and where career personnel are needed.

The Fire Advisory Board should have five to seven members who should be appointed by the Board of County Commissioners. The Board members should include one of the County Commissioners, and the Fire Administrator's Office should support the administrative functions of the Fire Advisory Board. The Fire Administrator could be a voting or non-voting member of the Fire Advisory Board.

### **Fire District Restructuring**

The report recommends the consolidation of the County's 23 existing fire tax districts into one tax district, which would include the unincorporated areas that are not currently included in a fire district. (If the single district plan is not adopted, the districts should be reconfigured into a smaller number of units.)

The cities of Raleigh and Cary should be encouraged to expand their service delivery areas for fire protection and other emergency services to include all of the surrounding unincorporated areas where their municipal career fire departments can respond most quickly. This would form a band around the two cities to encompass all of the fragmented areas that have been created by annexations. The main objective of this plan would be to provide the primary emergency response to these areas from the closest available fire station(s). If a single fire district plan is not adopted, the unincorporated areas that would be served by the two major fire departments should be consolidated as two fire districts; an expansion of the Raleigh Suburban Fire District and a new Cary Suburban Fire District.

The consolidation of all remaining unincorporated areas into one fire district and the "levelling" of the fire tax rate would be the best overall approach. Under this model

all of the fire tax revenue would be distributed from one account based on countywide priorities, needs, and following the recommendations of the Fire Advisory Board. (The Raleigh and Cary suburban areas could be included or excluded.) The current system perpetuates an imbalanced distribution of resources between districts with the low valuations and high tax rates and high valuation districts with lower tax rates.

The availability of an effective functional fire department is a benefit to the entire population, whether or not the services are ever used. The major benefit of a single district plan is that it allows all needs throughout the County to be weighed and prioritized on an equal basis. Moving from the existing system to a single district plan is likely to encounter resistance, because taxpayers and service providers are likely to be suspicious that revenues from their area will be used to subsidize some other area. This concern can never be eliminated and it is very difficult to define where the equitability line should be drawn in any situation, however, the countywide tax system is used to fund most other services. The existing system of 23 fire districts is far too many to be managed efficiently and is very cumbersome to keep up to date with changing circumstances.

An alternative to the single district plan would be to reduce the number of districts by abolishing those that are no longer viable as independent districts and merging or restructuring the unincorporated areas as larger districts. The "new" districts should be defined by logical geographic areas and could also be defined as high and low service level areas according to the density of development and the response capabilities that the fire departments can provide.

Where a rural and a municipal fire department currently operate in parallel, they should be merged into one organization to serve both incorporated and unincorporated areas. The single department could be a municipal fire department or a rural fire department.

The overall objective of this part of the plan should be to reduce the number of individual organizations that are responsible for delivering fire and emergency services and to create larger organizations that can function more effectively and efficiently. The Master Plan Agreement should also establish the policy that the closest available responder(s) will always be dispatched to any fire or other emergency, regardless of the political jurisdiction. This would eliminate a problem in the existing system, where fire fighters from one jurisdiction must drive past another fire department's station en route to a fire in their own district.

### **Regional Planning and Coordination**

All of the responsible agencies and jurisdictions in Wake County should work together to plan fire station locations, apparatus purchases and other capital improvements to reduce duplication and ensure that needs are addressed in an efficient and timely manner. A regional planning and coordination system is needed to ensure that all needs are addressed and the limited available resources are utilized efficiently. The recommended Master Plan agreement should extend this concept to the incorporated municipalities as well as the unincorporated areas.

Similarly, the individual fire departments should operate as one combined system for response to emergency incidents. The fire departments should all work together on a routine basis. The response to any emergency situation should automatically bring the closest available resources that meet the needs of the situation, without regard to district lines. This "seamless" approach would require a much higher level of coordination and standardized training than is currently in place. The coordination and training support should be provided by the County Fire Administrator's Office.

The citizens of Wake County should be able to expect a standard and consistent level of performance and fully integrated operations from whichever fire department or

departments respond to their emergency incident. The approach to every emergency or non-emergency service should be consistent. The same should apply to specialized resources, such as Hazardous Materials and Technical Rescue Response Teams.

## **Fire Prevention**

There is a new emphasis on fire prevention in all parts of North Carolina, as a result of state legislation mandating the enforcement of a State Fire Code in commercial occupancies. State legislation requires the County and the municipalities to conduct inspections and to enforce the Fire Code on a mandatory schedule, depending on the occupancy classification. The Wake County Fire Marshal has been working quickly and effectively to establish and implement the necessary enforcement programs and record keeping systems.

In many cases the Fire Code is being applied for the first time to existing occupancies and must address an accumulation of previously unidentified hazards. This should result in a significant reduction in obvious fire risk problems in a relatively short period of time and a continuing trend toward risk reduction. The occupancies in the County can be divided among those that were built in the past with lower fire protection standards and those that have been built to meet current standards. The current prevention efforts will reduce the gap, but cannot be expected to eliminate all of the differential between these categories.

The most efficient element of fire protection would be to ensure that every residential occupancy in the County is provided with functional smoke alarms. Smoke detector promotion and installation programs should be a major emphasis in the areas of fire prevention and public fire safety education programs.

One of the major objectives for the future should be to try to limit the level of fire risk in new construction to the lowest possible level. This can be accomplished very effectively in an area that is expecting major growth over the next decade by requiring the installation of automatic sprinklers and other forms of built-in fire protection in new construction. This approach has effectively limited growth in the demand for additional fire protection in areas where it has been applied.

The lack of good data for past years makes it difficult to provide a good analysis of fire department performance and fire experience trends for the County. Data collection and analysis should be provided by the County Fire Administrator. New data collection systems have recently been developed by the County Fire Marshal and the individual fire departments to track fire experience and loss data and maintain fire response records. These systems are needed to support the analysis of fire experience in Wake County, however the existing data is incomplete and unreliable. The new systems should significantly improve the ability of the County to implement plans and programs in the future, based on good experience data.

## **CHAPTER I. INTRODUCTION**

This study presents the results of a project that was conducted for Wake County by TriData Corporation of Arlington, Virginia. TriData is an international consulting firm that specializes in the organization and operations of public fire departments and emergency medical services.

The study is intended to address the following area which were identified in the Request for Proposals:

- Review and evaluate the existing fire departments in Wake County in order to make recommendations on how the departments can achieve the desired effectiveness in the most efficient manner and how the departments can work cooperatively to achieve an optimum level of fire protection throughout the County. Specific areas of review and analysis include: station type and location; type and location of equipment; location and number of paid personnel; methods for handling special hazards (hazardous materials and confined spaces); necessary operation and fiscal changes for service standardization; plan of service delivery in non-rated areas; methods for improvement of fire service's role in fire suppression, investigation, and training.
- Develop a five year plan for the allocation of major resources (stations, equipment, apparatus, paid personnel and water points) throughout the County, at levels consistent with the performance standards included in fire department service contracts.

- Assist County staff in the development of the means to revise these plans as demographic and fire hazard conditions in the County change over time.
- Develop a model standard operating guideline for the management of Wake County volunteer fire departments, compatible with the existing service contracts between departments and the County and directed at the most efficient achievement of the performance standards within the contracts.

The Request for Proposals included 11 specific questions that were asked of the consulting team:

1. What is the consultant's professional opinion of the 21 fire departments serving Wake County's jurisdiction, and of the system as a whole?
2. What alternatives (including continuation of the current system as it is) does the consultant offer for review by the Wake County Board of Commissioners?
3. What does the consultant recommend as a five year (specific) and 10 year (general) plan for programs, budgets, and resources, including staff, equipment, water supply, and stations?
4. What is the consultant's assessment of existing equipment, and recommendations for additional/replacement equipment?
5. What is the consultant's assessment of existing stations, and recommendations for additional/replacement of stations?

6. How will proposed annexation by cities and towns affect ability for fire service's delivery among the Wake County fire departments?
7. What financing and structural alternatives does Wake County have with regard to fire fighting -- e.g. countywide tax district, consolidation of departments, use of fees, grants, or alternative funding?
8. Should Wake County fire departments improve their insurance ratings? If so, how? What should be the goal for insurance ratings in the unincorporated districts, as well as the standard in the incorporated areas that Wake County fire departments serve?
9. What does the consultant recommend with regard to the staffing and organization of professional fire fighting in Wake County, while maintaining a sensitivity to the need for a strong volunteer basis for fire fighting in the County's jurisdiction?
10. How should Wake County handle the need for confined space rescue and hazardous materials response in its jurisdiction?
11. How can we improve the fire service's role in fire suppression, investigation, and training?

The overall purpose of this project is to help Wake County and all of the interested parties and organizations within the County become aware of the choices that are available, how to weigh the choices, and to develop a plan and implementation strategy based on the most desirable objectives.

During the past nine months, TriData staff visited every fire station in Wake County to talk with volunteer and career personnel, evaluate their equipment and

capabilities first-hand, and assess each department's needs. TriData has worked intimately with the Fire Chiefs and especially with the County Fire Marshal and his staff, who were extremely helpful in providing information and data, and supporting the study team. Many individuals and organizations were contacted and provided additional information and assistance. The overall study takes into account the needs of the County and its citizens, the volunteer and career fire fighters, the individual departments, the Fire Marshal's Office, and the municipalities within the County.

Chapter Two provides a description of the different entities that constitute the existing fire protection system in Wake County. Chapter Three lists general recommendations about the future direction and organization of fire protection system, including a five- and ten-year plan. Chapter Four provides an analysis of special areas of fire protection, listing recommendations for future directions in each specific area.

## **Strategic Overview**

Over the next ten years Wake county should anticipate rapid population growth, primarily occurring within expanding incorporated areas.

The existing system of independent fire districts works fairly well, but is not an efficient or effective system for the needs of a rapidly growing suburban county. The County should promote and support the development of a more efficient system to deliver consistent levels of service at a reasonable cost.

Fire protection and related services should be planned as a "seamless" countywide system, based on a high level of cooperation and coordination among the service providers. Under this system the closest fire department would always respond to emergency calls and all of the fire departments would routinely respond and operate as an integrated system.

The fire service in most of Wake County should be planned as a combination career/volunteer model, with career personnel providing weekday, daytime staffing in most areas and primarily volunteer staffing at night and on weekends.

The Raleigh-Cary-Morrisville-RDU Airport area will be protected by full-time career fire departments, supplemented by some volunteer support units. These fire departments should work closely together and with the surrounding departments and should protect all unincorporated areas within and immediately adjacent to their incorporated service areas.

The growing incorporated communities should take the primary responsibility for providing fire protection and related services within and around their incorporated areas.

The rural fire departments in most of these communities should become municipal fire departments, with career fire chiefs and daytime personnel.

In areas that remain unincorporated, the system should support strong volunteer organizations, supplemented by daytime career personnel. The career personnel in these areas could be County employees contracted to the individual departments.

All of the unincorporated areas within the County should be consolidated into a single fire district and taxed at an equal level for fire services. The County should contract with whichever fire department is most appropriate to serve each area. (In this manner Wake County would contract and establish a contractual partnership with each fire department in the county.)

Wake County should support the countywide system by providing coordination and services to the fire departments, including systemwide planning, training, emergency communications, and a platform for the development of standardized programs, policies and procedures. An additional effort should be directed towards human resources, assisting the fire departments with the recruiting, development and retention of volunteers and support services that would provide administrative and managerial assistance to the fire departments. These services could include programs such as joint purchasing of apparatus and equipment, the development of specialized teams (hazardous materials, technical rescue, confined space,...) that would be shared resources for the overall system.

The County Fire Marshal's responsibilities in the unincorporated areas for fire prevention, public fire education and fire cause investigations should continue. These services should be offered to the incorporated communities on a contractual basis.

The Fire Marshal's functions should be one component of the duties and responsibilities of a County Fire Administrator, who would have administrative

responsibility for all of the County's programs relating to fire protection and the fire departments.

The delivery of Emergency Medical Services should involve the coordinated participation of the fire departments and rescue squads, working with the County's EMS Department. The relationships could be based on coordinated service delivery or consolidation of the services. (It appears that consolidation of Fire-Rescue-EMS would provide significant efficiency enhancements, particularly as more career staffing and 24 hour coverage of the fire stations are provided.)

The fire departments should take-on the responsibility for technical rescue services, including automobile extrication, from the volunteer rescue squads. All fire departments should provide at least first responder, and preferably BLS medical treatment.

As growth leads to higher activity levels in the suburban fire departments, programs to provide overnight staffing with sleep-in or live-in volunteer personnel should be promoted. As the system evolves, it may become necessary to provide 24 hour career staffing at some of the higher activity stations.

Most of the volunteer stations will have to be renovated, rehabilitated or replaced to accommodate career and overnight crews. Stations will have to be added in the more populous areas as the population continues to increase.

## **Summary of Recommendations**

### **Overall System of Fire Protection**

*Restructure the existing fire departments into a smaller number of organizations that would all function as one system.*

*The overall system would include municipal career fire departments, municipal career-volunteer combination departments, and rural volunteer or career-volunteer combination departments.*

### **Volunteer Organizations**

*Continue to utilize the volunteer organizations as the primary emergency responders for the foreseeable future, but the provision of fire protection by the organizations must be better coordinated.*

*The County should take a much more active role in coordinating and supporting the volunteer departments.*

### **Volunteer and Career Personnel**

*Design the new system around the concept of volunteer and career personnel complementing one another in their duties.*

*Develop specific policies and procedures addressing the relationship between paid and volunteer personnel. These should establish a unified qualification and promotional process that are tied directly to minimum training and performance standards. (The*

*system should include an oversight mechanism to ensure that the participants meet their obligations as individuals and organizations.)*

*Utilize career personnel to perform functions that are not practical for volunteers to perform -- including daytime, weekday emergency response.*

*Utilize career personnel to perform maintenance functions, training, and to conduct pre-fire planning, public fire safety education, and fire code enforcement.*

*Establish a cadre of "duty crews" who rotate to ensure that volunteer personnel will be available to respond and operate equipment at unstaffed stations at all times.*

*Establish a minimum entry level, training and performance requirements for all career and volunteer positions within the County.*

### **Relationship between Rural Fire Departments and Municipalities**

*Joint planning must occur between the municipalities and rural volunteer organizations in Wake County to improve the use of system resources and eliminate system redundancies.*

*Consider the transition of rural volunteer corporations into municipal departments, especially in areas where the municipality is becoming the dominant component of a fire department's service area.*

*Combine the rural fire departments to create a smaller number of stronger organizations to serve contiguous unincorporated areas. Restructure the fire districts to coincide with these new organizations or combine all of the unincorporated areas of the County into a single fire district. New response areas should be defined so that the closest station always responds to an emergency.*

### **Fire Advisory Board**

*Appoint and empower a Fire Advisory Board to recommend, approve, and manage minimum performance guidelines, policies, and procedures. The Board should be the primary source of policy direction for fire protection services, and should advise the Board of County Commissioners on fire service needs.*

*The Fire Advisory Board should evaluate and prioritize budget requests on a Countywide basis and present the Board of County Commissioners with a recommended consolidated annual budget and revenue allocation plan.*

### **Restructuring the Fire Marshal's Office**

*Restructure the Fire Marshal's Office into a Department of Fire Protection Services, headed by a County Fire Administrator. The primary role of this Department would be to coordinate and support the fire departments. The Fire Administrator should be supported by a Planner and three divisions: Fire Marshal, Support Services, and Human Resources.*

*Create two additional positions for a Fire Inspector/Investigators in the Fire Marshal's Office as soon as possible.*

*The Fire Marshal's responsibilities and authority in the areas of emergency response need to be more clearly defined.*

## Consolidation of Tax Districts and Distribution of Funds

*Consolidate the 23 fire service districts into one countywide district which would have one tax rate and provide a more equitable cost for fire protection. A uniform tax rate of 10 cents per \$100 of assessed valuation is recommended for the initial period.*

*Funding allocations for capital projects should be based on countywide priorities, with money coming from a single fire tax district.*

## Insurance Class Ratings

*Establish a Class 9S rating as the minimum service level for the entire County for the immediate future. Higher service levels should be provided in developed areas and gradually implemented in all areas.*

*To take advantage of the insurance savings, the countywide plan for providing fire protection services should set an objective of providing at least Class 8 service to all built-up areas and at least Class 5 in urbanized areas.*

## Response Standards

*Establish a more reasonable basic standard for initial response that would include:*

- *At least one attack unit with at least four trained and equipped personnel at the scene within 5 minutes, and*
- *A full structure fire response team of 12 to 15 personnel assembled on the scene within 8 to 10 minutes.*

- *A full response team should have the capability to establish and maintain a fire attack flow of at least 350 gallons per minute by the 10 minute mark, while conducting interior search and rescue and fire suppression operations.*

### **Fire Prevention and Public Fire Safety Education**

*When feasible, utilize line fire fighters to perform fire inspections and to conduct public fire education coordinated by the Fire Administrator on a countywide basis. Assign specific inspection and education roles to career and volunteer personnel.*

*Develop a program to train and qualify fire fighters to perform occupancy inspections in low hazard occupancies. This will allow the inspectors to concentrate on medium and high hazard occupancies.*

### **Fire Investigation**

*Establish an improved system for follow-up investigations of suspicious fires. This should involve law enforcement organizations and the Fire Marshal's staff.*

### **Apparatus**

*All apparatus and facilities obtained through future capital expenditures which use tax revenues should become County property.*

*Apparatus purchases should be coordinated and planned by the Fire Advisory Board so that all apparatus, including special apparatus, is strategically located throughout the County, and duplicate equipment purchases are eliminated. The apparatus plan must take into account the ability to have the apparatus staffed at all times.*

*Apparatus replacement budgets and schedules based on an average of fifteen years of first line service should be planned and prioritized by the Fire Advisory Board. Each unit should be evaluated annually.*

*The apparatus replacement program should be based on mileage, condition, and suitability of each vehicle, not strictly age.*

## **Facilities**

*Establish a Capital Improvements Project Committee under the Fire Advisory Board to assist with developing countywide facility plans.*

*The Capital Improvements Project Committee should identify and prioritize fire service capital projects in the County. It should consider the creation of joint-use facilities, automatic mutual aid when evaluating the location of new facilities, and future design needs for sleep-in, live-in, or and career personnel.*

*At a minimum, provide a fire station within a maximum of five road miles of all developed areas of the County.*

## **Special Rescue and Hazardous Materials**

*Establish a plan to strategically locate, fund, train, and equip 3 additional technical rescue teams across the County. The County teams should be part of a coordinated overall plan with Raleigh and Cary.*

*Continue support for the Raleigh and Wendell Hazmat Teams to serve the County.*

## Training

*Maintain the training of all fire fighters at the hazmat operations level.*

*A Human Resources position should be established within the Fire Administrator's Office to create a training system for all fire departments providing services to Wake County.*

*Establish the Position of Chief of Training with full-time responsibility for implementing and monitoring competency based training programs for all departments providing contracted services to Wake County.*

*Establish a task force to work with the Director of Human Resource Development and the Chief of Training to create a system that will implement consistent competency based training programs for all ranks and all departments.*

*Establish that compliance with the training programs, determined by the task force, is mandatory for all departments providing contracted services to Wake County.*

*Develop a standard Wake County Training Manual.*

*Implement the site safety recommendations documented by the North Carolina Department of Insurance.*

*Establish and implement a certification program for all instructors who will participate in live fire training.*

*Establish and maintain a computer based record keeping system to document and maintain individual and department training records.*

*Mandate the development, documentation, and adherence to detailed lesson plans for any activity conducted at the Academy.*

*Establish a training program that requires each contracted department to annually participate in a performance based evaluation of their ability to safely, efficiently, and effectively complete a standard set of practical fireground evolutions. The evolutions should directly reflect the content, goals, and objectives contained in the County Training manual.*

*Establish a drill schedule that requires multiple departments to train together. Develop and provide a management training series that focuses on critical skills essential to implementing change.*

## **Communications**

*Redesign the communications system and protocols around the new organization of fire services in the County, ensuring that the same communications protocols are used by all departments. The communications center should be the hub for dispatching assignments and coordinating automatic mutual aid response.*

*Ensure that all departments and units in the County can communicate between one another.*

## **CHAPTER II. Existing Fire Protection Capabilities**

The existing system of fire protection in Wake County divides the responsibility for providing fire protection between the County and the incorporated municipalities. The County's responsibilities are managed primarily by the County Fire Marshal and the Fire Marshal's Office. Municipalities and rural volunteer fire departments are responsible for the provision of fire suppression. This study was commissioned by Wake County and is primarily directed toward the County's areas of responsibility, both organizational and geographic. Because of the close relationship between the County and the municipalities, however, the report also takes some of the needs of the municipalities into account.

There are a variety of different arrangements between the County and individual municipalities that define working relationships and service agreements for emergency and non-emergency services. This chapter examines the current organization of fire services in Wake County, describes the resources, activities, workloads, and capabilities of the existing fire departments, and provides an assessment of the adequacy of the existing system for current and short-term requirements.

### **Service Area**

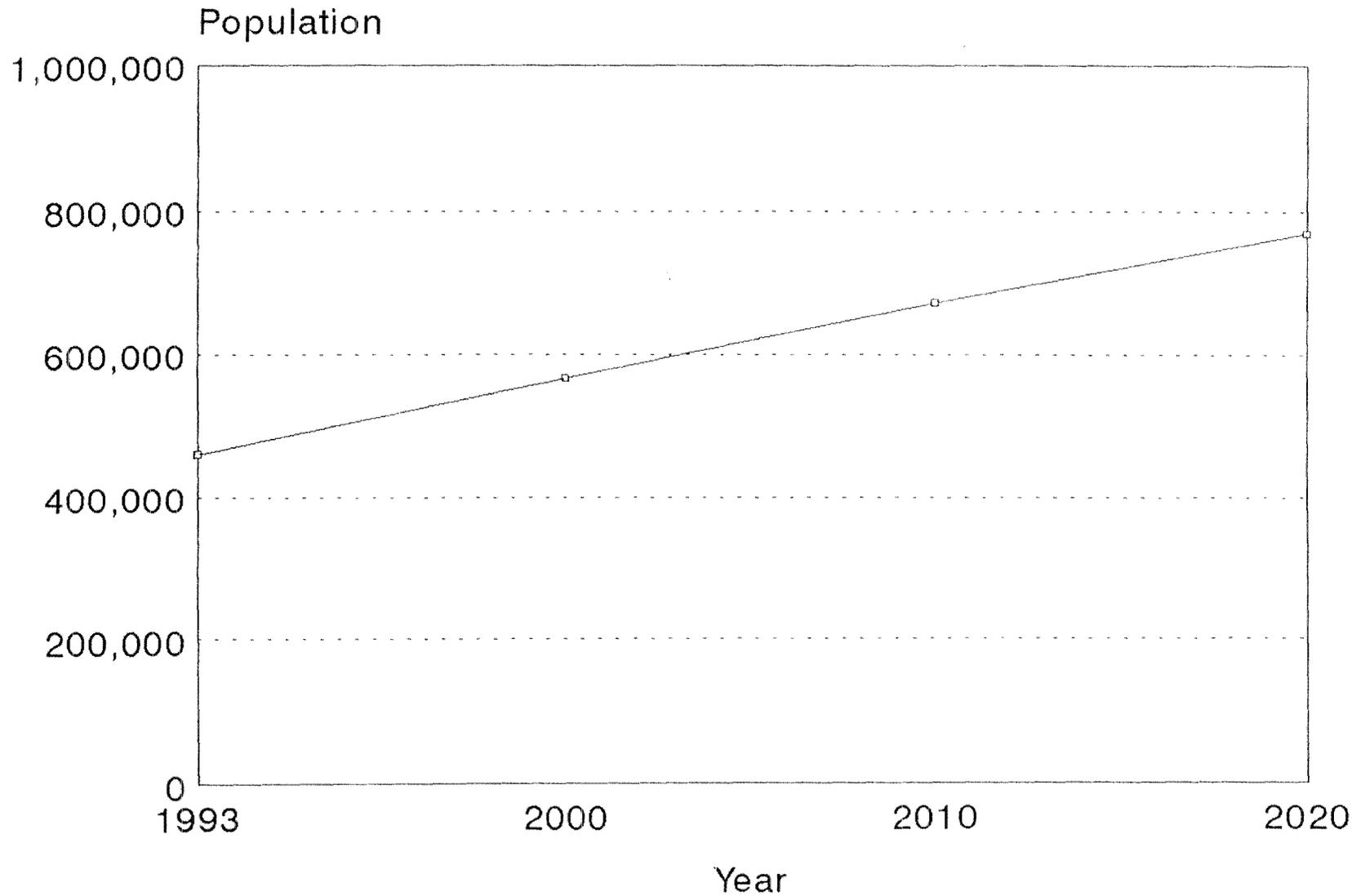
Wake County surrounds and includes the cities of Raleigh and Cary, and the incorporated towns of Apex, Fuquay-Varina, Garner, Holly Springs, Knightdale, Morrisville, Rolesville, Wake Forest, Wendell and Zebulon. The County covers 858 square miles with a population of 477,000. The entire Raleigh-Durham metropolitan

area is experiencing rapid population and business growth, and several of the incorporated communities are in the process of rapidly expanding their areas and populations through annexation. Estimates from the Wake County Planning Department indicate that the population will grow by nearly 100,000 persons by the year 2000, and by 300,000 by the year 2020 (Figure 2-1). The incorporated areas are predominantly suburban communities, however, there are areas of commercial and industrial development, particularly around RDU Airport and Research Triangle Park.

The population growth can be described as a mixture of suburban and rural. The cities and towns are growing, with new developments in and adjacent to their incorporated areas. The cities and towns control the access to water and sewer systems, which promotes growth within the incorporated areas and annexation of developing areas to the established communities. There are also large areas of rural land in the County, much of which is expected to remain unincorporated, however, residential growth is also occurring in these areas.

# Figure 2-1: Wake County Population Projection

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Source: Wake County Planning/GIS Departments

## **Overall Organization of Fire Protection**

Fire protection services are generally broken down into two main categories: fire suppression and fire prevention. Fire suppression services are delivered to the citizens of Wake County through a complicated network of municipal and rural fire departments. The Wake County Fire Marshal's Office provides some coordination and support for the fire departments and has the responsibility for fire prevention in the unincorporated areas of the County.

Most of the 21 rural volunteer fire departments in Wake County are independent, non-governmental organizations, supported by special fire tax districts that are established by the County. The process of establishing volunteer fire departments and rural fire tax districts is defined under North Carolina statutes. Several of the volunteer departments employ career fire fighters to provide daytime weekday staffing.

Most of the incorporated towns within Wake County also contract with rural volunteer fire departments to provide fire protection for the incorporated areas. Only three municipalities operate municipal fire departments: Raleigh, Cary, and Zebulon-Municipal. Morrisville is in the process of establishing a municipal department to take over from the rural volunteer department. The City of Raleigh (municipal) Fire Department contracts with Wake County to serve one of the County fire districts.

The existing system has evolved over several years, without a long range plan for the overall system. Wake County has not adopted a formal plan for the organization and delivery of fire protection services. In the face of a changing environment that is associated with rapid population growth, this is an essential time to engage in a planning process to determine where the fire service delivery system should be headed and to plot a course toward the most desirable destination.

## **County Functions and Responsibilities**

Counties in North Carolina have specific responsibilities in the area of fire prevention and code enforcement. Wake County has also assumed limited responsibilities for the delivery of fire suppression services. The County establishes the rural fire districts, contracts with the volunteer departments to serve the districts, authorizes the fire tax rates, and collects the revenue for the fire departments. It also provides centralized communications through the Raleigh Emergency 9-1-1 Communications Center and a fire training facility which is available to all of the rural departments, as well as the municipal fire departments in Wake County. The County also encourages and supports mutual aid among the departments by providing small grants to the participating departments.

Wake County does not have a specifically defined statutory responsibility for the delivery of fire services, but it is an important function of county government to ensure that its citizens are well protected, that emergency services are provided effectively and efficiently, and particularly that the organizations it funds are well managed. Moreover, it is a compelling interest of the County to encourage cooperation, planning, coordination and efficiency, where they serve the best interests of the citizens and taxpayers.

***County Fire Marshal*** -- The statutory functions of the County Fire Marshal relate to fire prevention, fire code enforcement, and fire cause determination. The State of North Carolina assigns these responsibilities to each County and the specific requirements have been greatly expanded with the adoption of a mandatory State Fire Code.

The County Fire Marshal is also assigned the responsibility for coordinating and supporting the operations of the fire departments. The Fire Marshal's Office has a small, but very capable staff to address its wide range of responsibilities. The individuals

have very good training in several different areas and are able to perform many different functions as emergency responders, as well as inspecting occupancies and determining the cause and origin of fires. This small group of individuals is extremely valuable to the overall system.

The process of establishing fire tax districts to collect tax revenues for the volunteer fire departments and contracting with individual fire departments to serve the districts has existed for many years, however, it is only within the past two years that the County has developed performance contracts with the volunteer organizations. The specific requirements that are included in the current contracts are not highly demanding, but the relationship has been established to move in the direction of more performance-oriented contract requirements as a condition for obtaining the tax revenue.

The County Fire Marshal is responsible for assisting the volunteer fire departments with their contracts and budget submissions to the Board of County Commissioners. This has become a much more complicated and time consuming process since the contractual relationship has been more formally established and the fire departments have been required to participate in the annual budget process. Additional responsibilities assigned to the County Fire Marshal's Office include fire fighter training, on scene coordination of major incidents, and liaison with other public safety agencies and offices, and the supervision of three career fire fighters who are currently assigned to the Fairview Fire Department.

***Fire Prevention*** -- Wake County is responsible for the enforcement of the State Fire Code in the unincorporated areas of the County. The incorporated municipalities are responsible for enforcing the Fire Code in the towns and cities, however, several of the towns contract with the County for fire prevention and code enforcement.

The State of North Carolina has placed new mandatory requirements on counties to enforce the State Fire Code in several classes of occupancies, most of which were not

previously inspected. There is an increasing recognition of the need to prevent fires through code enforcement and to reduce the level of fire risk through public fire education and awareness programs. The County Fire Marshal's Office has the primary responsibility for these programs. Because of the new fire code requirements, the enforcement group within the Fire Marshal's Office has experienced a dramatic rise in its workload and responsibilities in the past three years.

The Fire Marshal's Office has 11 authorized positions to perform all of its assigned tasks (Figure 2-2). Ten of these positions are currently filled and one of these has shared responsibilities between training and code enforcement.

Two of the authorized positions are clerical employees and two others are primarily assigned to inspect schools for fire code and electrical code compliance and also assist with fire cause investigations.

The Fire Marshal's Office also supervises three career employees who were hired to provide daytime staffing for the Fairview Fire District and who are funded from the District's revenues. This is a new program which may be a model for some of the other fire departments to provide their daytime staffing.

***School Inspections*** -- All of the 105 public schools in the County (including those in incorporated communities) are required to be inspected semi-annually for compliance with the State Fire Code and the National Electrical Code. The two inspectors assigned to this duty work closely with the school system and the local fire departments to accomplish this objective. Because they are also certified as electrical inspectors, the two individuals have been instrumental in the investigation of some fires.

***Public Fire Safety Education*** -- The Fire Marshal's Office also attempts to reach the community through public fire safety education programs. These programs are not

## Existing Organization Wake County Fire Marshal's Office

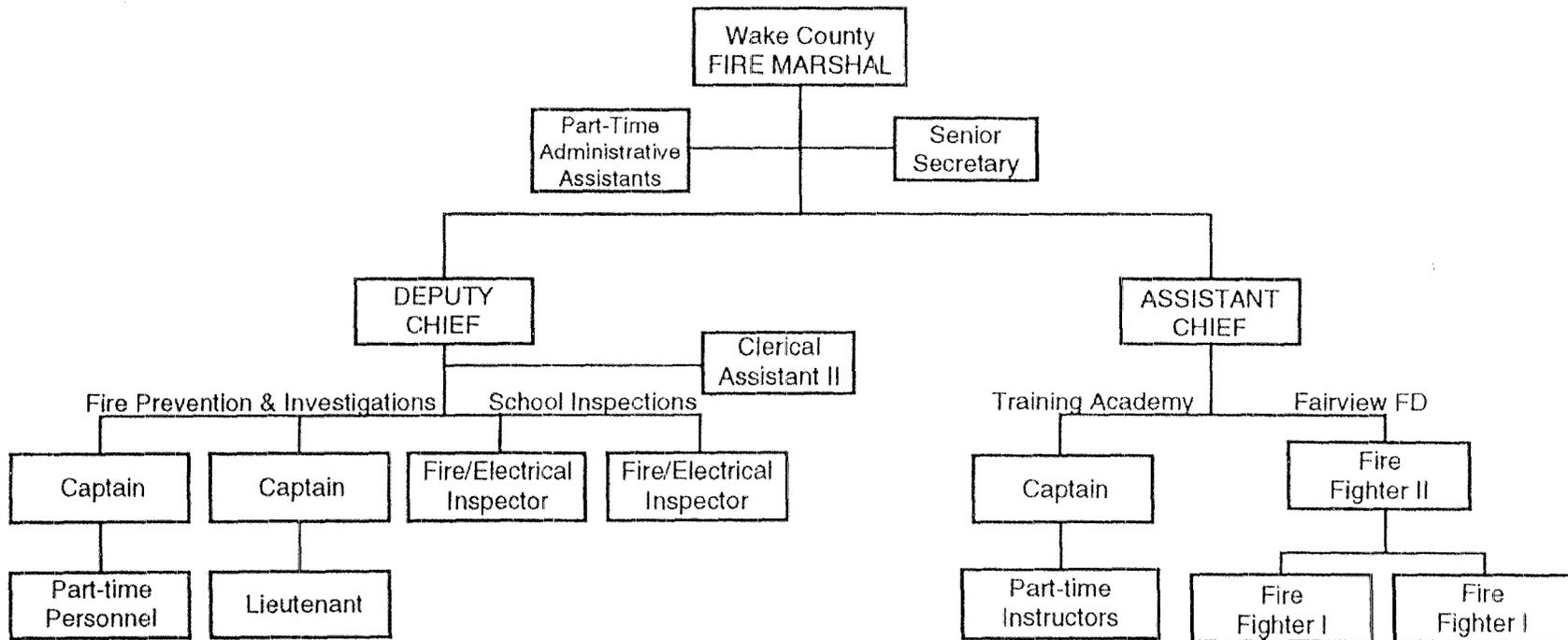


Figure 2-2

funded and must be addressed with available personnel as the opportunity presents itself. Some of the volunteer fire departments assist in these efforts. A public fire safety education trailer, designed to teach fire safe behaviors to pre-school children, is used by several of the fire departments jointly with the County Fire Marshal's staff. The trailer was donated to the County in 1993.

## **Fire Service System Evolution and Accountability**

Fire service delivery systems usually evolve over a period of time, usually tracking the evolution and development of the communities they serve. The current situation in Wake County can be described as moving from the second stage to the third stage (described below). The concepts of accountability and performance expectations must be considered in an appropriate context relating to the four evolutionary stages:

*First Stage* -- The origins of the volunteer fire service date back to a time when members of the community organized themselves for mutual protection from fires. From this origin, many volunteer fire departments evolved as capable and sometimes powerful autonomous organizations, which performed a valued public service without compensation to the members. These fire departments tended to be self-motivated, self-directed, and self-regulated; in most cases the members themselves raised the funds to obtain the equipment and build the fire stations. In this context it is difficult to place performance expectations upon the volunteer organization or to consider accountability as an issue.

*Second Stage* - The establishment of fire tax districts to fund volunteer fire departments in Wake County is related to the increasing involvement of fire insurance in the economic equations that relate to fire protection. Fire insurance companies offer reduced insurance rates to properties that are served by fire departments that meet minimum performance requirements. Special tax districts were created to fund the operations of existing fire departments or the establishment of new ones, with the expectation that the savings in insurance premiums would at least equal the tax burden to the individual taxpayer. (In most cases, the savings in insurance premiums are greater than the tax paid to the fire district.) The fire tax districts are defined by the distance from a fire station that is recognized by insurance companies as being "protected" by that fire department -- generally five road miles.

The economic benefits of providing organized fire protection should also include the savings in property loss due to fires, both insured and uninsured. Some values, such as lives saved or injuries averted, cannot be expressed in simple economic terms.

The Board of County Commissioners represents the interests of the citizens and taxpayers by establishing the fire districts and contracting with a rural volunteer fire department to serve each district (Figures 2-3 and 2-4). (The County also has the option of contracting with a municipal fire department to serve a fire district -- just as a municipality may contract with a rural fire department or a municipal fire department from another municipality or establish its own fire department.) The only performance requirement that is implied in the contract is that the fire department will meet the requirement for Class 9S service -- the minimum level recognized by insurance companies. Several of the rural fire departments provide higher levels of service on their own initiative. Accountability at this stage usually refers to accounting practices and not to performance levels.

*Third Stage* -- Wake County is at the threshold of a third stage in its approach to providing fire protection. This stage can be related to the County's continuing evolution from rural to suburban and a growing population that expects a standard and predictable level of fire service. Wake County is beginning to accept the responsibility for ensuring adequate services are provided to all parts of the County, as well as ensuring that the expenditure of tax dollars supports effective and efficient service delivery. This process began when the County developed written service contracts with the volunteer organizations and required the fire departments to submit their budgets to the County's regular budget preparation and review process. The performance requirements in the contracts at the present time are simple and should not be difficult to meet, however the relationship has been established to impose more demanding performance requirements in the near future.

Wake County Government Structure

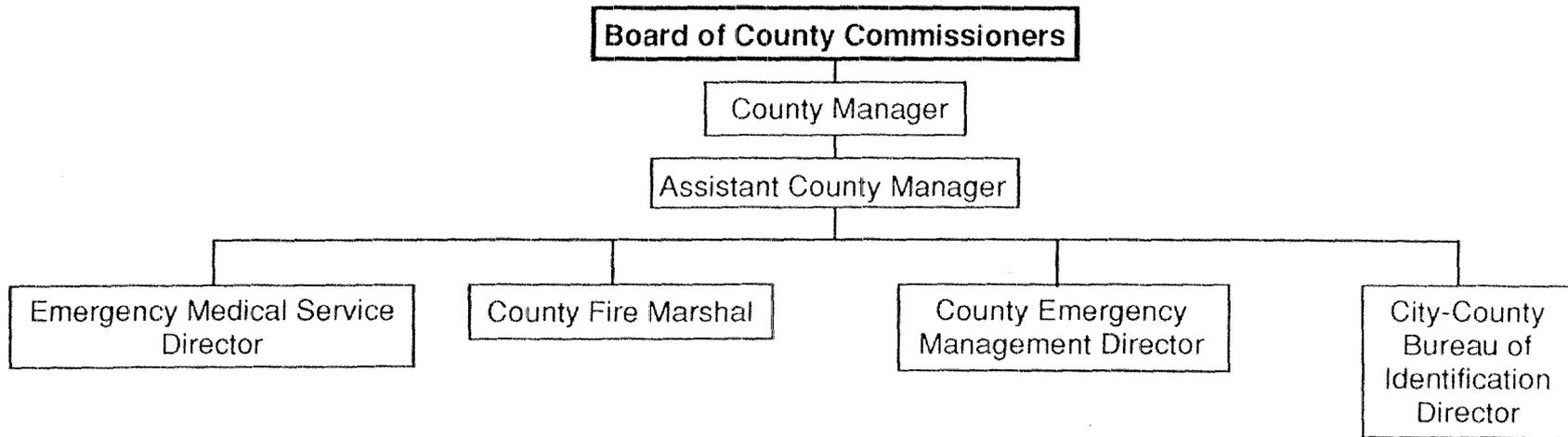


Figure 2-3

# Relationships of Fire Service Agencies and Jurisdictions

(EXAMPLES for ILLUSTRATION ONLY)

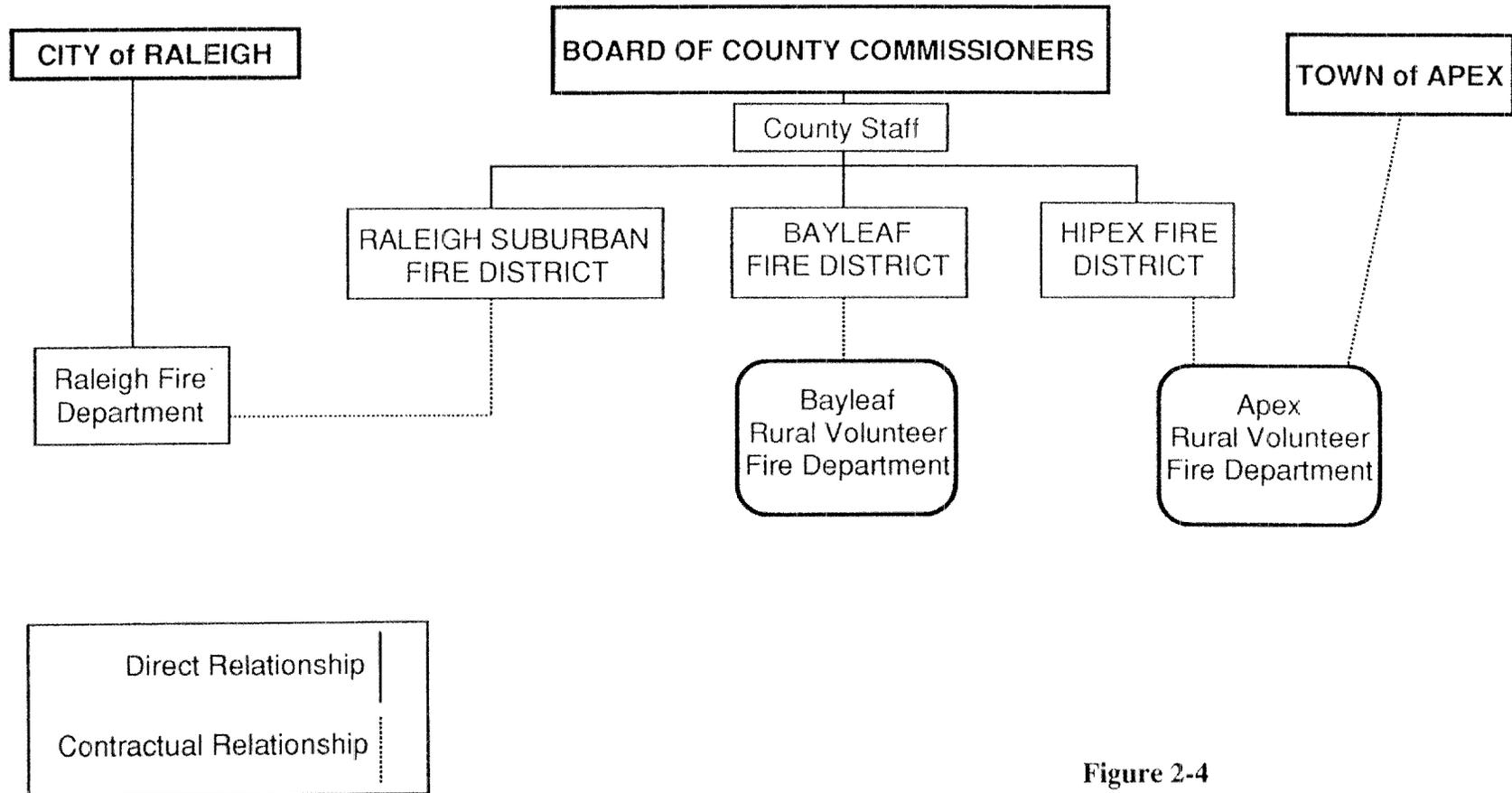


Figure 2-4

The volunteer organizations are also recognizing that it is increasingly difficult to meet the needs of the growing community. The frequency of calls is increasing rapidly, while the ability of volunteers to respond from home or from places of business is diminishing. The volunteer system may be able to provide adequate numbers of personnel for night and weekend responses, while daytime weekday coverage is decreasing. Most of the volunteer organizations have begun to provide their own career personnel for daytime coverage.

***Fourth Stage*** -- The system in Wake County may develop to a fourth stage, in which the County could be protected by a predominantly career force. The County could be the direct service provider in this type of system. This does not appear to be required in the next five years, but it could begin to evolve within ten years.

***Current Considerations*** -- As the fire service system continues to evolve, the Board of County Commissioners must consider the level of service that is provided and that taxpayers desire and are willing to pay for in all parts of the County. The County Commissioners must also decide if and when it will be appropriate to extend "rated" coverage to the areas that are outside the existing fire tax districts. To fund the expansion of services, it will be necessary to expand the tax districts to include the entire geographic area of the County. It will also be necessary to decide where the basic minimum level of protection is adequate (or all that can be afforded) and where higher levels of protection should be provided.

Decisions will have to be made on funding distribution that are more sophisticated than taxing all of the property within a five mile radius of a fire station to support the operations of that station. Because the unprotected areas have relatively small tax bases, the expansion of services can be funded much more easily if the entire unincorporated area of Wake County is included in a single fire tax district. Several existing fire stations will have to be replaced or renovated and stations will have to be added to provide faster response times in rapidly growing areas. Increasing performance

expectations and salaries for career personnel will require a higher expenditures in the future.

The County will be accountable for the quality and reliability of the service that is provided to the public. The accountability factor, however, is a two-way street: the County must also be accountable to the fire departments and fire fighters to provide the funds and system support that will allow them to operate safely and effectively. Both of these purposes are served if the County supports the individual fire departments, assists them in working together as a coordinated system, and provides overall support to the system through the County Fire Administrator.

### **Organization of Fire Departments**

There are 37 established political subdivisions within Wake County that have a role in the organization and funding of fire services (Table 2-1) (Refer to Table 2-2 for a definition of districts):

Incorporated Cities	2
Incorporated Towns	10
Rural Fire Districts	23
Special Districts	2

These subdivisions are served by 25 fire departments:

Career Municipal Fire Departments	2	(Cary, Raleigh)
Volunteer Municipal Fire Departments	1	(Zebulon Municipal)
Rural Volunteer Fire Departments	21	(All Others)
Special Fire Departments	1	(Airport)

The 25 departments operate a total of 29 fire stations in the County. The cities of Raleigh and Cary are served by career municipal fire departments, while the remainder of the County is served by 22 fire departments that are fully or primarily volunteer organizations. Raleigh Durham Airport is served by a career fire department.

Most of the rural fire departments are autonomous organizations that receive their funding through contractual relationships with the County and/or a municipality. The rural fire departments that serve unincorporated areas are funded by special fire district property tax levies, while the fire departments that serve incorporated towns and cities are funded by their general fund revenues. The rural fire departments also serve unincorporated areas that are outside the tax districts, although they receive no revenue from these areas. Table 2-3 summarizes the four basic types of fire departments in Wake County.

Table 2-1. Incorporated Areas, Districts, and the Associated Fire Department.

Fire Department	Incorporated Areas	Rural Fire Districts	Special Districts	Fire Dept. Type <sup>1</sup>
Raleigh FD	City of Raleigh	Raleigh Suburban		Municipal
Cary FD	City of Cary			Municipal
Apex	Apex	Hipex		RCFD
Fuquay Varina	Fuquay Varina	Furina		RCFD
Garner	Garner	St. Mary's		RCFD
Garner		Panther Branch		RCFD
Holly Springs	Holly Springs	Holly Springs		RVFD
Knightdale	Knightdale	Alert		RCFD
Morrisville	Morrisville	Morrisville	Rsrch. Triangle Park	RCFD
Rolesville	Rolesville	Rolesville		RVFD
Wake Forest	Wake Forest	Wakette		RCFD
Wendell	Wendell	Wendell-Holmes		RCFD
Zebulon Municipal	Zebulon			Municipal
Zebulon Rural		Wakelon		RVFD
Bayleaf		Bayleaf		RCFD
Durham Highway		Durham Highway		RCFD
Falls		Falls		RCFD
Fairgrounds		Fairgrounds		RCFD
Hopkins		Hopkins		RVFD
Six Forks		Six Forks		RCFD
Stony Hill		Stony Hill		RVFD
Swift Creek		Swift Creek		RCFD
Fairview		Ten-Ten		RCFD
Wake-New Hope		Wake-New Hope		RCFD
Yrac		Yrac		RVFD
RDU Airport			RDU Airport	CFR

<sup>1</sup> Fire Department Types: RCFD=Rural Combination Fire Department; RVFD=Rural Volunteer Fire Department; CFR=Crash Fire and Rescue

<b>Table 2-2. Types of Districts.</b>	
<b>District Type</b>	<b>Definition</b>
Fire Tax District	The geographic area that is established by the Board of County Commissioners to pay a special tax to support the operations of a fire department. The limits of a fire tax district in Wake County are established as five road miles from a fire station; areas beyond this distance do not pay the fire tax. If the five mile response areas of adjacent districts overlap, the areas are split at the approximate mid-point between the fire stations. Incorporated areas are excluded from the fire districts. The Board of County Commissioners may set a tax rate of up to 10 cents per \$100 of assessed valuation in each area.
Insurance District	The geographic area that is recognized by property insurance companies as being within the service area of a fire department (using the same criteria as are used to establish a fire tax district). The level of fire service provided within an insurance district is rated on a scale from 1 to 10, with Class 9S as the minimum recognized level of service for insurance rate credit. A district may have split ratings to describe two or more levels of protection provided in different areas.
Fire Department Response Area	The geographic area to which a particular fire department responds as the primary service provider. The response area may include areas beyond the limits of the fire tax district, or the insurance district; it is usually the entire area to which the fire department is closest. All parts of Wake County are within a response area.

**Table 2-3. Four Types of Organization of Fire Departments  
in Wake County.**

Organization Type	Description
Municipal-Career	Raleigh and Cary operate their fire departments within the structure of the municipal government. Both are fully staffed by career fire fighters. (Raleigh-Durham Airport also operates a career fire department as part of the airport authority, however, this organization does not provide structural fire protection.)
Municipal-Combination	The Zebulon Municipal Fire Department operates within the structure of the municipal government, and is staffed by a combination of career and volunteer (or part-time paid) employees. Morrisville is in the process of converting its rural fire department to this structure, and may eventually become an all career municipal fire department.
Rural-Volunteer	Most of the fire departments in Wake County are independent volunteer organizations that serve individual fire districts. Wake County manages the collection of property taxes from the unincorporated areas and awards a contract to a volunteer department to serve each district. The same volunteer departments may also contract with municipalities to provide protection for incorporated areas. Six of these departments are still all-volunteer organizations.
Rural-Combination	Fifteen of the rural fire departments employ enough career or part-time paid personnel, including daytime paid fire fighters and full-time or part-time paid fire chiefs. The majority of the members of these departments are volunteers.
Rural-Municipal Combination	Some of the incorporated towns in Wake County support volunteer fire departments that are intimately linked to the rural departments that serve the surrounding areas, but exist "on paper" as separate organizations. (For example, in Fuquay-Varina, there are two separate fire department organizations with individual budgets, however they function as a single fire department for operational purposes.) All of the rural-municipal departments utilize a combination of career and volunteer personnel.

## **Levels of Service**

The levels of service provided by the current rural volunteer fire departments vary significantly. Each fire department provides a different level of service, partly due to the differences in tax bases and tax rates which determine their funding, but also because of their leadership, organizational capabilities, local preferences, and circumstances. There has been little structure, organization or regulation to cause them to be similar or to operate as a unified system and they have evolved to be quite different from one another.

*Personnel* -- Most of the rural fire departments in Wake County are operating with relatively low service levels, when compared to urban fire departments. All of the rural departments are fully volunteer or primarily volunteer organizations. Unless they have career personnel on duty or an assigned crew of volunteers standing-by, volunteer fire departments cannot ensure that any specific number of personnel will be available to respond at any particular time. The actual capabilities of the individual departments vary considerably.

Each of the departments that has hired career personnel has taken a somewhat different course, again resulting in quite different outcomes. None of the rural departments has hired enough career personnel to fully staff its daytime weekday operations, however, at least two of the rural departments are almost fully dependent on full-time or part-time paid personnel during these periods. The overall staffing provided by paid personnel is very thin and widely distributed, so there is still a strong reliance on volunteer personnel to respond to working incidents at all times of the day. Several of the departments have difficulty mustering more than a handful of volunteers during normal work hours (Table 2-4).

Table 2-4. Fire Department Staffing Levels.

Department	Vol. Personnel	Full-time Paid Personnel	Part-time Paid Personnel	No. of Stations
Apex	46	5	0	1
Bayleaf	40	5	0	2
Durham Hwy.	40	5	0	2
Fairgrounds	22	2	1	1
Fairview	38	3*	0	2
Falls	25	2	0	1
Fuquay Varina	68	8	0	2
Garner	67	8	0	2
Holly Springs	26	0	0	1
Hopkins	30	0	0	1
Knightdale	36	5	0	1
Morrisville	22	2	8	2
Rolesville	32	0	0	1
Six Forks	34	6	1	1
Stony Hill	32	0	0	1
Swift Creek	25	1	4	1
Wake Forest	36	3	0	1
Wake/New Hope	39	5	1	2
Wendell	44	2	2	2
Yrac	24	0	0	1
Zebulon-Rural	23	0	1	0
Zebulon-Municipal	23	2	0	1
<b>TOTAL</b>	<b>772</b>	<b>64</b>	<b>18</b>	<b>29</b>

\*Career daytime staffing for Fairview are County employees under the supervision of the Fire Marshal. Their positions are funded by Fairview F.D. funds (this is a new staffing approach).

There are no paid crews on duty in any of the volunteer stations at night or on weekends. During evenings and on weekends it is not unusual to find several volunteers at their stations, however only a few departments provide accommodations for their members to sleep overnight in the stations to provide immediate response crews. Very few calls occur during the late night hours, but calls during these hours tend to be more severe than the average. All of the volunteer departments currently rely on members to respond to the station before they can actually respond to a call during the late night/early morning hours. All of the departments could benefit greatly from members who would "sleep-in" or "live-in" the stations, and eliminate the delay of responding from home to the fire station.



## **Current Budgets**

Each rural fire department receives funds from the property tax that is levied in the area it serves. The amount depends on the property tax rate and the assessed valuation of the property in the district. In addition, the departments that protect incorporated areas receive funds from the respective towns. Some of the towns provide funding equivalent to the fire district tax rate applied to the property in the incorporated area, while others have negotiated different rates or lump sum payments. Wake County also gives each department a lump sum of \$3000 annually for each station to compensate them for participating in the mutual aid system. The individual departments manage these funds and make their own decisions on expenditures. The departments may establish reserve accounts and set aside funds in reserve accounts for future expenses.

The tax levies are based on budgets submitted by the fire departments to the County for approval. The process of preparing and submitting budgets has become much more complicated in the past two years. The county imposed new requirements which placed a new administrative burden on the fire departments, and particularly on the County Fire Marshal to manage and coordinate the process. Once the budget is approved, the tax rate is set to raise that amount of revenue from the assessed valuation that is on the tax rolls for that district at that time. In recent years, the assessed valuation of several of the districts has increased significantly after adoption of the budget, which has increased the revenue above expectations. The fire departments have received all the funds that were generated by the increased valuations.

In adopting the 1994-95 budgets for the fire departments, the County decided to appropriate only the amounts that were generated in the 1993-94 fiscal year and to place the "new revenue" (from tax base growth and rate adjustments) into a reserve account for each department that would see an increase. The extra funds are being held for appropriation to specific purposes. A special advisory committee of fire chiefs has been

established, reporting to the County Manager through the Fire Marshal, to evaluate and recommend the allocation of these funds for specific purposes. This process has only been in place for a few weeks, however it appears to be a good interim plan for managing the unappropriated funds more closely. Table 2-5 shows the tax base, approved tax rate, and anticipated revenues for each district for the 1994-95 fiscal year. A total of \$307,048 is projected to be placed in the reserve accounts.

TABLE 2-5. 1994-95 WAKE COUNTY FIRE DISTRICT APPROPRIATIONS.

<u>District</u>	<u>Assessed Value</u>	<u>Rate</u>	<u>Appropriat.</u>	<u>Reserve</u>
Apex	\$259,801,517	0.100	\$220,831	\$38,970
Bayleaf	\$857,279,113	0.065	\$471,504	\$85,728
Cary	\$144,845,947	0.080	\$115,877	\$0
Durham Hwy	\$707,988,522	0.060	\$424,793	\$0
Fairgrounds	\$158,243,588	0.090	\$142,419	\$0
Fairview	\$444,282,898	0.070	\$310,998	\$0
Falls	\$89,377,982	0.100	\$84,871	\$4,467
Fuquay Varina	\$390,937,529	0.085	\$332,297	\$0
Garner	\$579,113,083	0.070	\$347,468	\$57,911
Holly Springs	\$50,623,313	0.095	\$48,092	\$0
Hopkins	\$72,354,036	0.075	\$54,265	\$0
Knightdale	\$300,406,922	0.080	\$210,285	\$30,041
Morrisville	\$131,137,428	0.100	\$131,137	\$0
Raleigh Suburban	\$1,593,370	0.095	\$1,514	\$0
Rolesville	\$258,542,581	0.070	\$168,053	\$12,927
Six Forks	\$276,355,843	0.060	\$165,802	\$0
Stony Hill	\$88,912,025	0.100	\$84,466	\$4,446
Swift Creek	\$349,715,435	0.055	\$157,372	\$34,972
Wake-New Hope	\$564,346,321	0.075	\$423,260	\$0
Wake Forest	\$144,179,315	0.075	\$93,717	\$14,418
Wendell	\$183,752,830	0.080	\$147,002	\$0
Zebulon Rural	<u>\$115,841,223</u>	0.095	<u>\$86,881</u>	<u>\$23,168</u>
<b>TOTAL</b>	<b>\$6,169,630,821</b>		<b>\$4,222,904</b>	<b>\$307,048</b>

## Activities and Workload

The following information describes and categorizes the emergency response activity in Wake County for the period of January 1, 1993 through December 31, 1993. Neither the individual departments nor the Fire Marshal's Office is currently able to provide consistent historical data for prior years. Data collection and reporting methods for each of the departments was inconsistent until 1993 and cannot be utilized to provide valid data relating to past experience. (Sometimes, this has resulted in slightly different numbers between reports).

During 1992, the Fire Marshal's Office and the individual departments initiated the use of a new fire reporting system.<sup>1</sup> Utilization of the new system will improve the quality, uniformity, reliability and usefulness of Wake County fire reporting in the future. The data that follows was provided to the Fire Marshal's Office by individual departments which utilized the new system during 1993.<sup>2</sup>

Some additional analysis was conducted using limited data that was available from reports and personal interviews by TriData's fire analysis staff. The information that was obtained in this manner appears to be generally consistent with recognized national and regional fire incident reporting information.

- During the period of January 1, 1993 through December 31, 1993, fire departments providing contracted services to Wake County fire districts responded to approximately 6,100 calls, including 483 mutual aid responses (Table 2-6 and Figure 2-5).

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<sup>1</sup> The new system was designed and developed by members of the Bayleaf Volunteer Fire Department. Some data may vary slightly between different reports.

<sup>2</sup> Refer to Appendix A for response data for individual departments. Appendix B contains comparative data from other North Carolina counties.

Table 2-6. Number of Calls by Department, 1993.

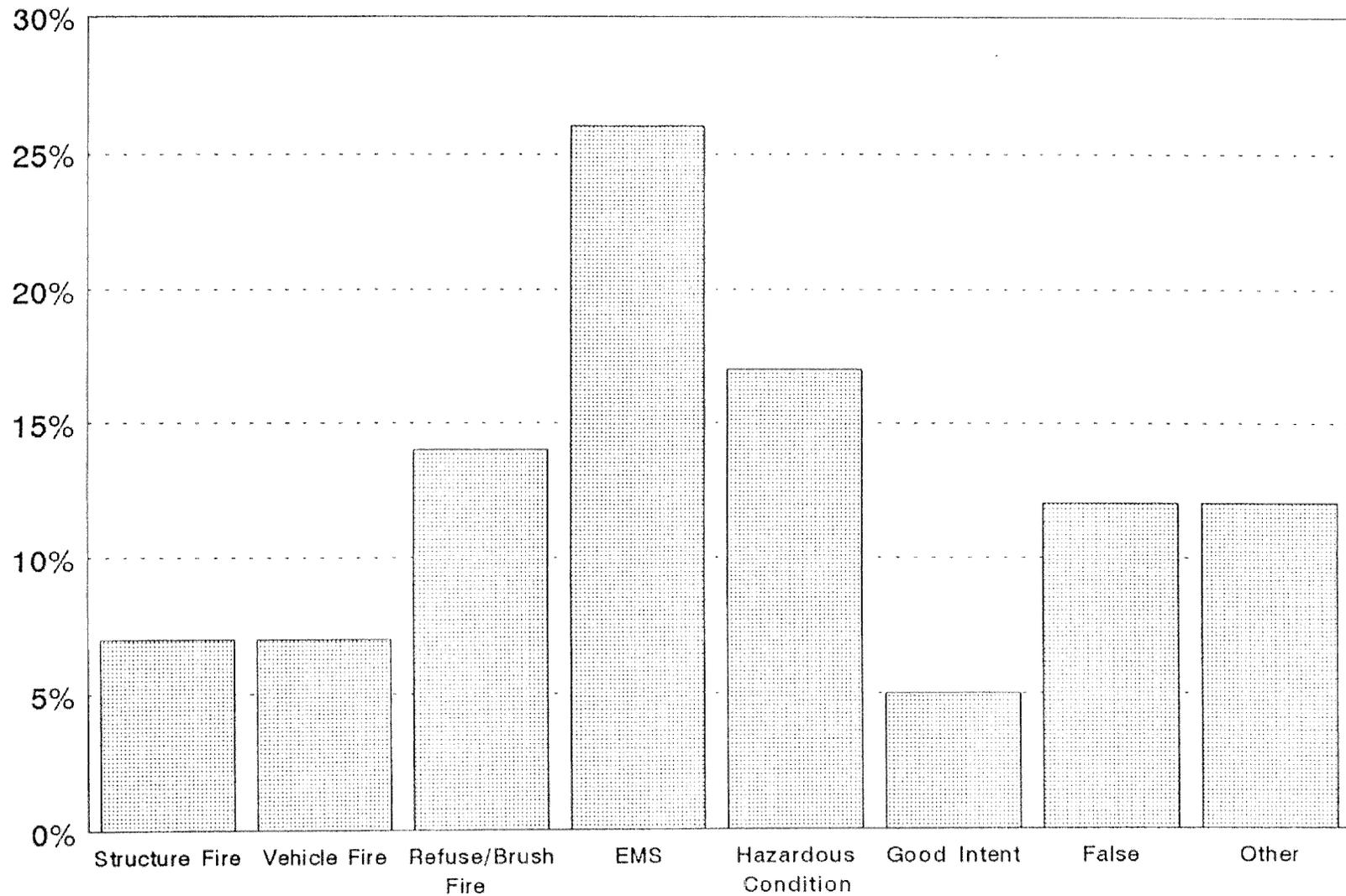
Department	Total Dist. Calls	Structure Fires	EMS	Vehicle	Refuse/Brush Fires	Hazardous Condition	Good Intent	False	Mutual Aid Calls *
Apex	357	44	91	37	40	53	9	32	17
Bayleaf	280	6	110	7	30	27	12	64	11
Durham Highway	362	6	118	9	32	99	19	46	17
Fairgrounds	133	1	52	15	17	9	15	21	130
Fairview Rural	406	15	305	9	37	76	24	19	22
Falls	123	2	71	4	9	4	1	14	5
Fuquay-Varina	275	28	1	29	46	78	9	29	14
Garner	646	76	22	59	118	178	49	75	17
Holly Springs	80	3	2	4	20	3	3	15	12
Hopkins	63	8	0	8	21	6	2	0	16
Knightdale	312	45	8	41	58	97	1	19	6
Morrisville	391	8	131	31	53	64	12	81	37
Rolesville	158	21	1	7	24	49	25	13	17
Six Forks Road	114	3	8	9	44	15	1	17	33
Stoney Hill	139	9	85	6	17	4	0	7	4
Swift Creek	215	5	52	10	38	29	6	26	9
Wake Forest	194	24	3	13	23	51	33	15	16
Wake/New Hope	814	49	338	16	50	41	55	155	57
Wendell	320	34	7	30	46	11	1	20	13
Yrac	87	9	24	11	2	17	8	5	22
Zebulon	120	6	1	15	36	29	15	5	8
TOTALS	5,589	402	1430	370	761	940	300	678	483
Percent		7%	26%	7%	14%	17%	5%	12%	9%

Source: Wake County Fire Marshal's Office

\*Mutual aid calls are outside of district, and totals in this column are not included in overall district total of 5,589 calls.

Note: This table does not reflect calls for municipal departments. The table reflects 88% of in-district calls; the remainder of in-district calls are classified as "other" types of emergencies. There were approximately 9,700 calls in the entire County in 1993.

# Figure 2-5: Percent of Calls by Call Type, 1993



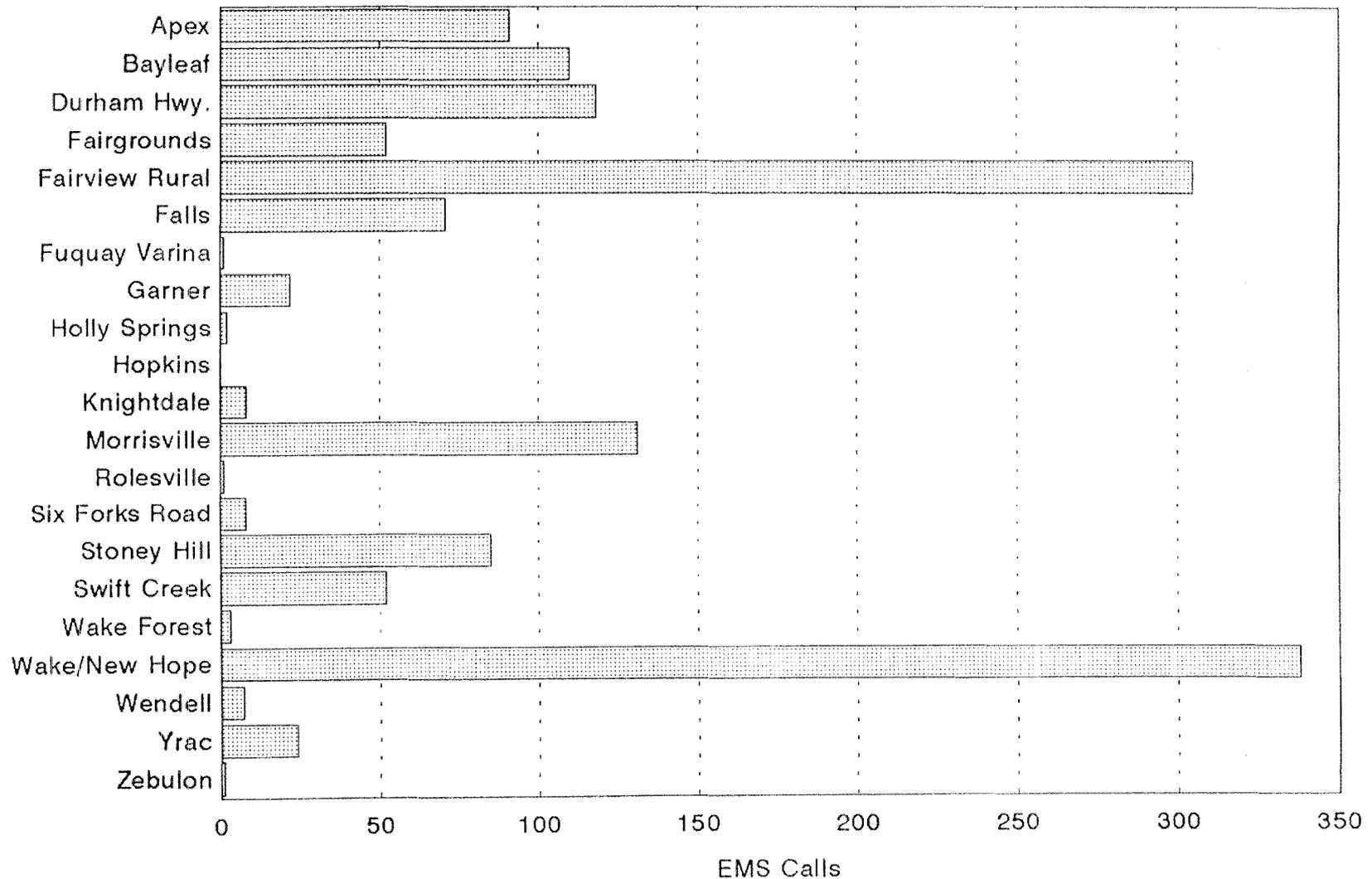
Source: Wake County Fire Marshal's Office

Note: The percentages represent the 5,589 in district calls. They do not include mutual aid calls.

- Emergency medical service is becoming the major activity for the fire departments that provide this service. Although less than two thirds of the 21 departments are actively participating in the First Responder Program, 26% of the total calls were classified as "EMS only" (Figures 2-5 and 2-6).
- Most of the fire departments in Wake County respond to very few structure fires. Approximately 7% of the total calls were for structural fires, while 21% of the total calls were for trash, brush or vehicle fires (Figures 2-5 and 2-6).
- Twelve of the 21 departments responded to 12 or fewer actual structural fire calls during the year. Ten of the departments responded to less than 200 total calls for their districts during 1993 (Table 2-6).
- Alarm system activations, which include malfunctions and unintentional alarm activations, make up more than 10% of the total calls. Departments serving highly rural districts have very few automatic alarm responses. Malicious false alarms represent less than 1% of all calls.
- The distribution of calls by day of the week does not vary significantly from day to day or from department to department (Figure 2-8):

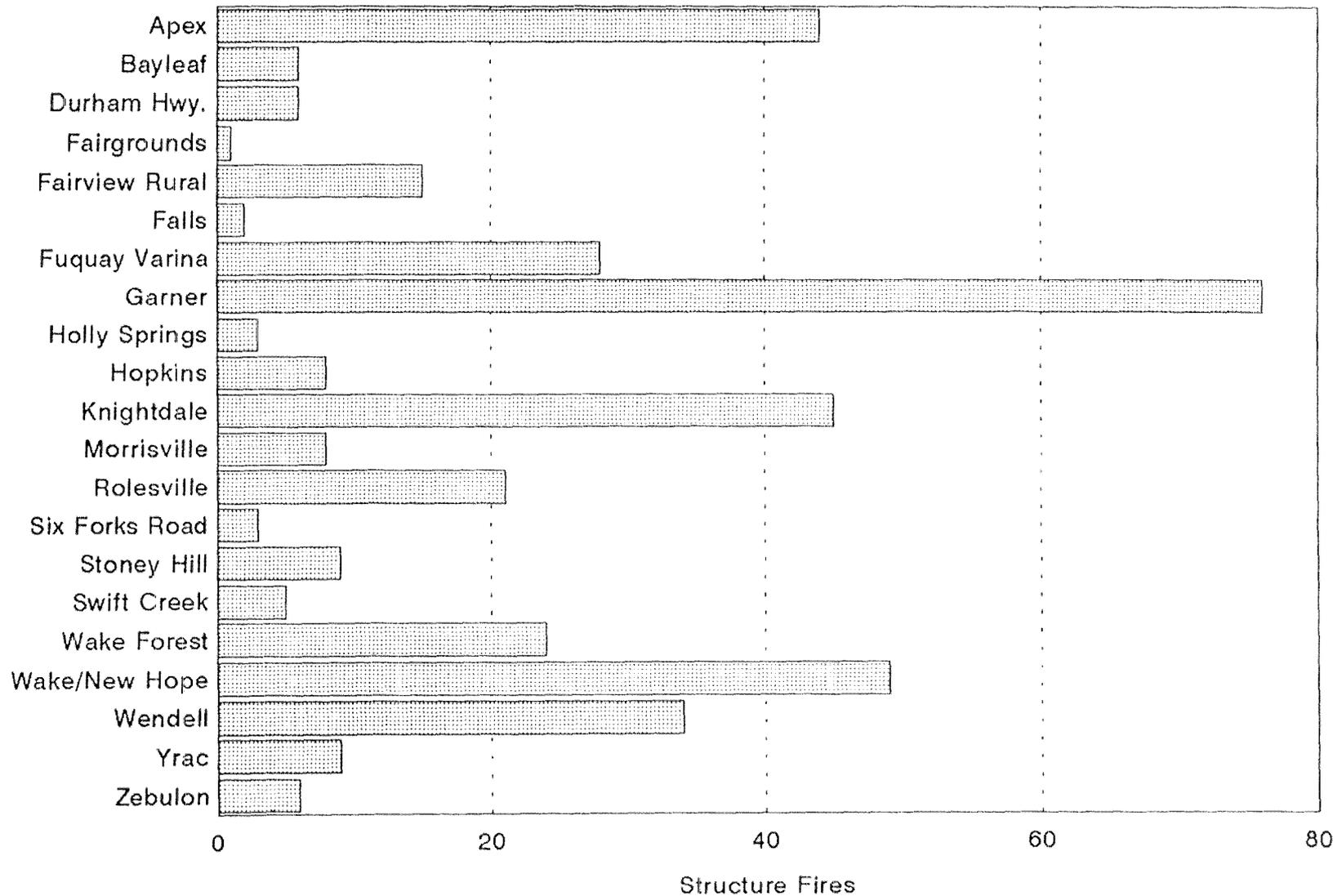
Sunday	14%
Monday	15%
Tuesday	15%
Wednesday	15%
Thursday	14%
Friday	16%
Saturday	13%

# Figure 2-6: EMS Calls by District, 1993



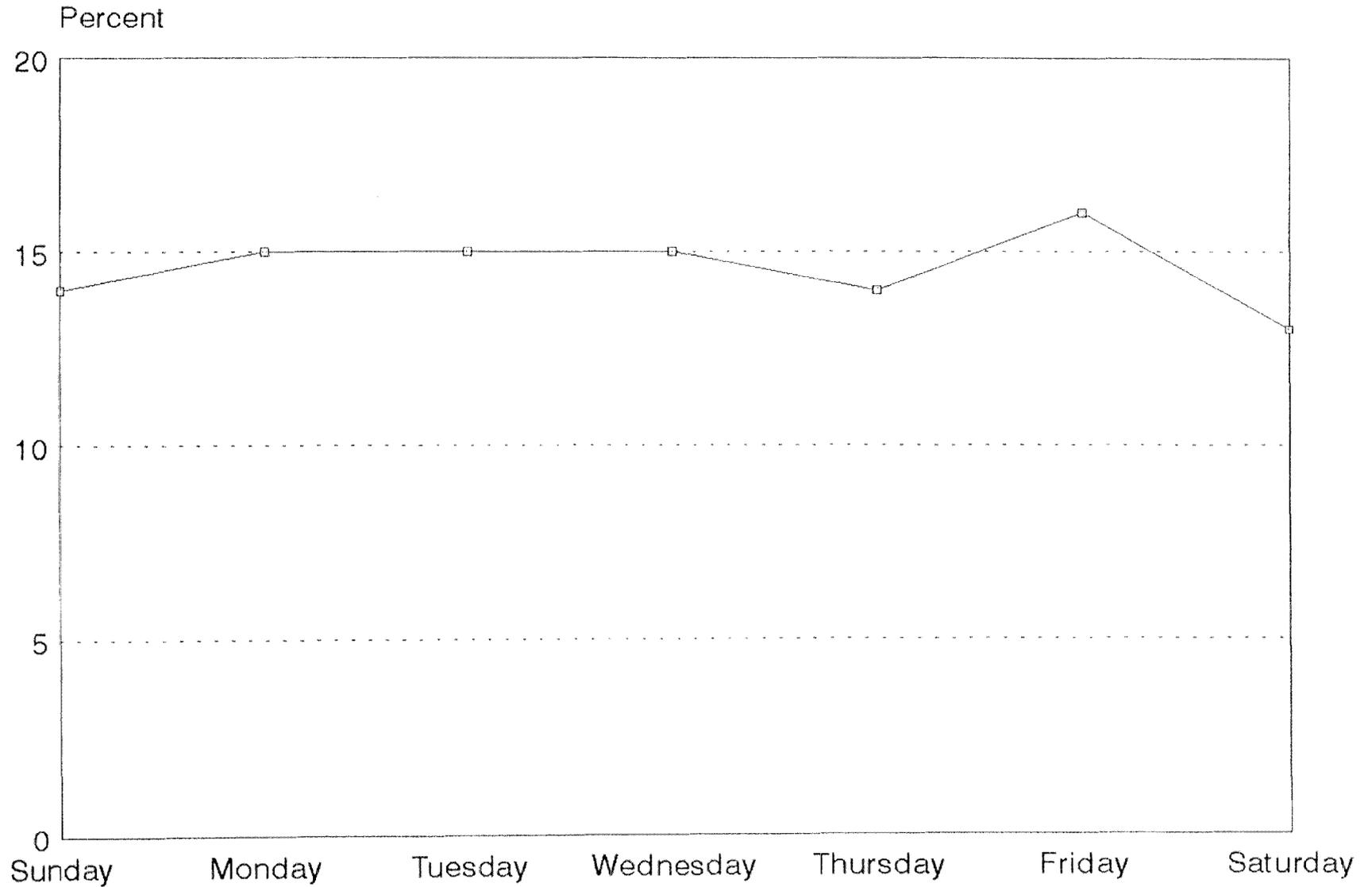
Source: Wake County Fire Marshal's Office

# Figure 2-7: Total Structure Fires by District, 1993



Source: Wake County Fire Marshal's Office

# Figure 2-8: Percentage of Calls by Day of Week, 1993



Source Lake County Fire Marshal's Office

- The percentage of total calls by hour of day differs slightly from the more rural departments to the more urbanized departments.
  - Most calls for fire department assistance occur between the hours of 7:00 AM and 7:00 PM (approximately 67%).
  - The highest hourly call rate, per hour, (7.1% of all calls) occurs between 5:00 and 6:00 PM (Figure 2-9).
  
- The number of structure fires in single family occupancies appears to be decreasing over the past three years. This is consistent with national trends.
  
- The average reported response times for each department to all types of incidents ranges from just under 5 minutes to 9 minutes (Table 2-7).<sup>3</sup> It is longer during the nighttime hours (Figure 2-10).
  
- The average response time to all incidents is reduced in those departments that have on-duty staff and those that respond frequently to "EMS only" calls.
  
- All of the fire departments average more personnel responding at night and on weekends. The average number of personnel responding to all incidents varies by time of day at each of the departments. The average numbers range from 4 to 14 personnel responding during the weekday daytime hours and from 7 to 20 personnel for nights and weekends (Table 2-7).

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<sup>3</sup> The response time data is "suspect" due to the number of inconsistencies and obvious errors in the reports that are provided by the Communications Center. Actual response times may be longer than reported in some cases because of the manner that is used to record times.

- The average number of personnel responding is lower in those departments that respond frequently to "EMS only" calls. The Wake County first responder standard requires only three personnel to respond to these calls.

**Table 2-7. Number of Calls, Average No. of Personnel Responding,  
Average Response Time, By District, 1993.**

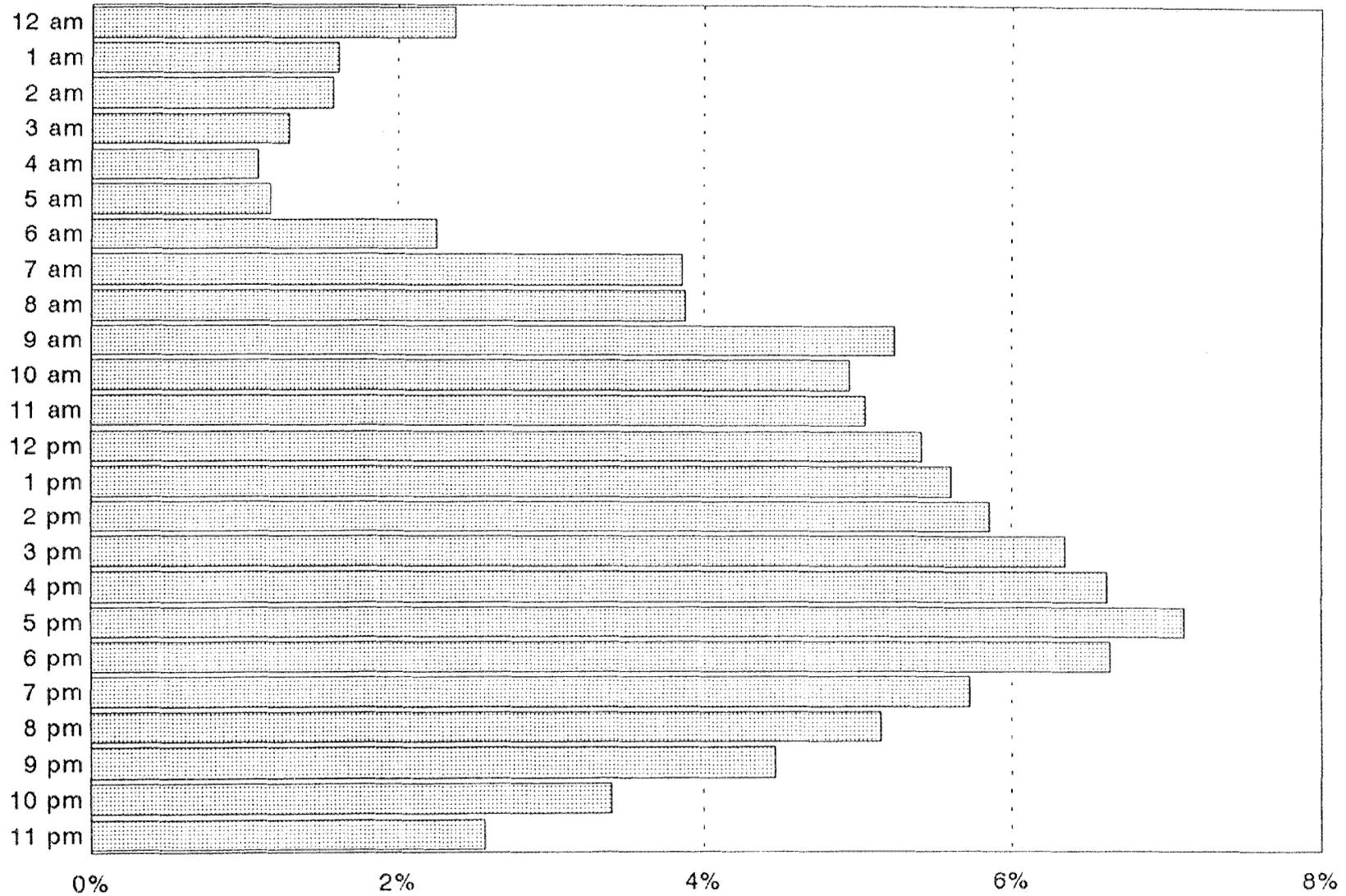
Department	Number of Calls in Dist.	Avg. # of Personnel Responding, 7AM-6PM Weekdays	Avg. # of Personnel Responding, 6PM-7AM Weekdays and Weekends	Avg. Response Time (Minutes)
Apex*	357	8	13	6.39
Bayleaf*	280	12	16	5.1
Durham Hwy.*	362	9	12	5.92
Fairgrounds*	133	4	5	5.25
Fairview*	406	9	9	7.45
Falls*	123	4	7	6.64
Fuquay Varina	275	8	11	7.74
Garner	646	14	18	5.97
Holly Springs	80	8	11	7.2
Hopkins	63	9	13	7.61
Knightdale	312	14	20	6.27
Morrisville*	391	5	7	6.96
Rolesville	158	14	16	4.68
Six Forks	114	8	11	6.97
Stony Hill*	139	6	10	9.01
Swift Creek*	215	7	10	5.64
Wake Forest	194	13	15	6.04
Wake/New Hope*	814	5	7	7.29
Wendell	320	13	17	6.39
Yrac*	87	7	11	6.49
Zebulon	120	14	18	4.84

Source: Wake County Fire Marshal's Office

Note: Total number of calls per district may vary slightly between reports.

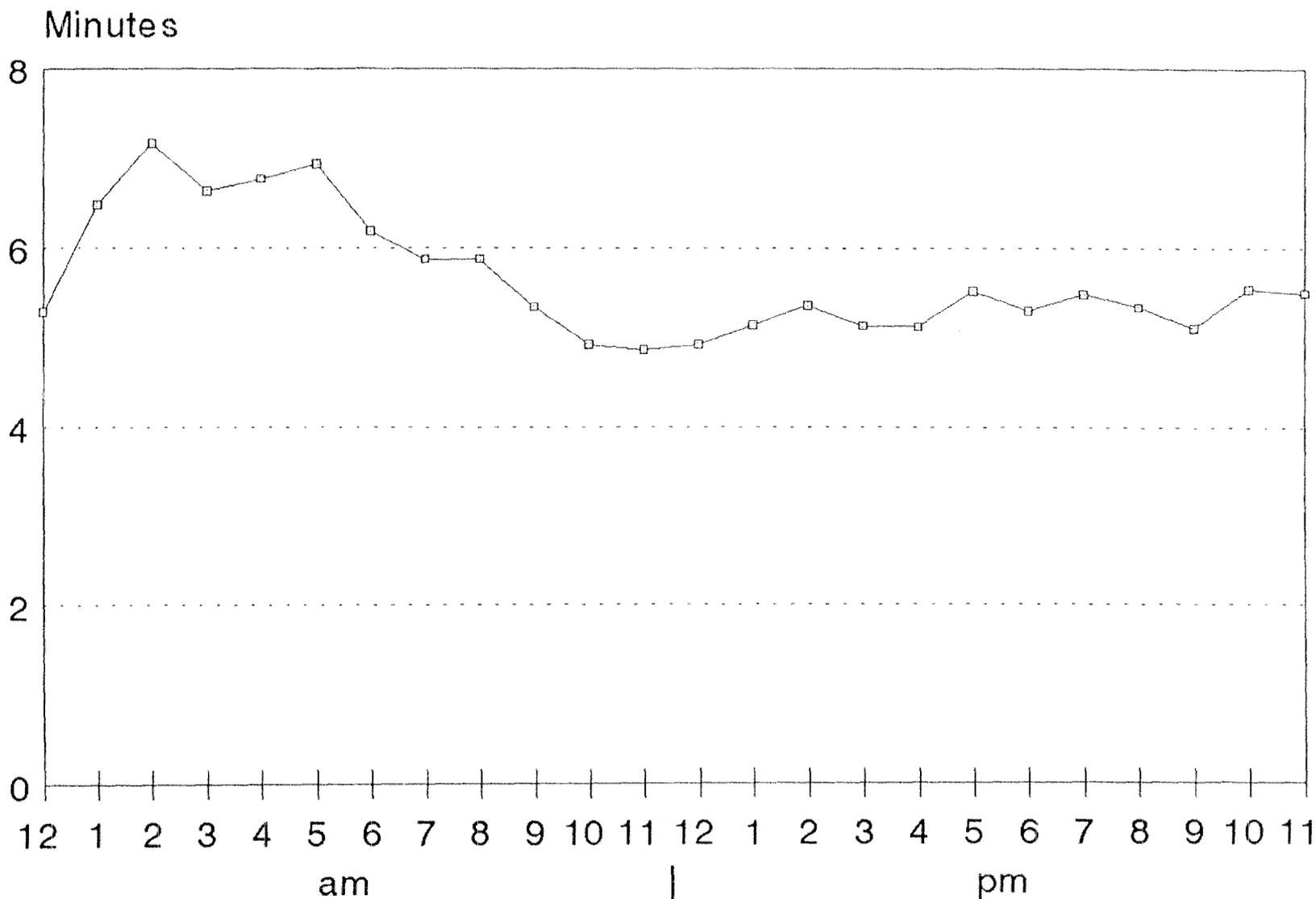
\* First Responder to medical incidents

# Figure 2-9: Percentage of Calls by Hour of Day, 1993



Source: Wake County Fire Marshal's Office

# Figure 2-10: Average Response Times by Hour of Day, 1993



Source: Wake County Fire Marshal's Office

Response times reflect responses by all volunteer and municipal departments in Wake County

## **Sources of Change**

The volunteer fire departments that serve most of the unincorporated areas of Wake County are faced with a rapidly changing environment which impacts on their ability to provide services currently and in the future.

*Changing Expectations* -- The regulations and expectations that are placed upon a fire department have increased significantly over the past decade. Regulations come from that national level (OSHA and EPA) and the State of North Carolina. The regulations include mandatory health and safety regulations, higher training and equipment standards, and new service expectations. The growing area of hazardous materials and environmental protection has also changed the response and operational expectations placed on fire departments.

*EMS* -- One of the major changes in the recent past has been the involvement of most of the rural fire departments in the delivery of emergency medical and rescue services, a domain that was previously assigned to a parallel system of volunteer rescue squads. The volunteer rescue squads have been impacted by many of the same forces as the volunteer fire departments and most are tending to specialize in emergency medical treatment and transportation. The volunteer rescue squads are supplemented by career personnel from the Wake County Emergency Medical Services Department. The fire departments are assuming more responsibility for technical rescue and extrication as the rescue squads have fewer personnel available to handle these functions.

Most of the volunteer fire departments have become first responders to emergency medical incidents. The fire department can often provide faster response than the rescue squad to patients in urgent need of medical care. This is particularly significant during the hours when career personnel are staffing the fire stations, because they can respond immediately; there is no delay for crews to respond to the station. The

frequency of fire and medical calls is low, so there is not a major concern that providing medical care detracts from the ability to provide fire protection. Automatic mutual aid provides additional back-up resources to cover for units that are busy on medical calls or other incidents.

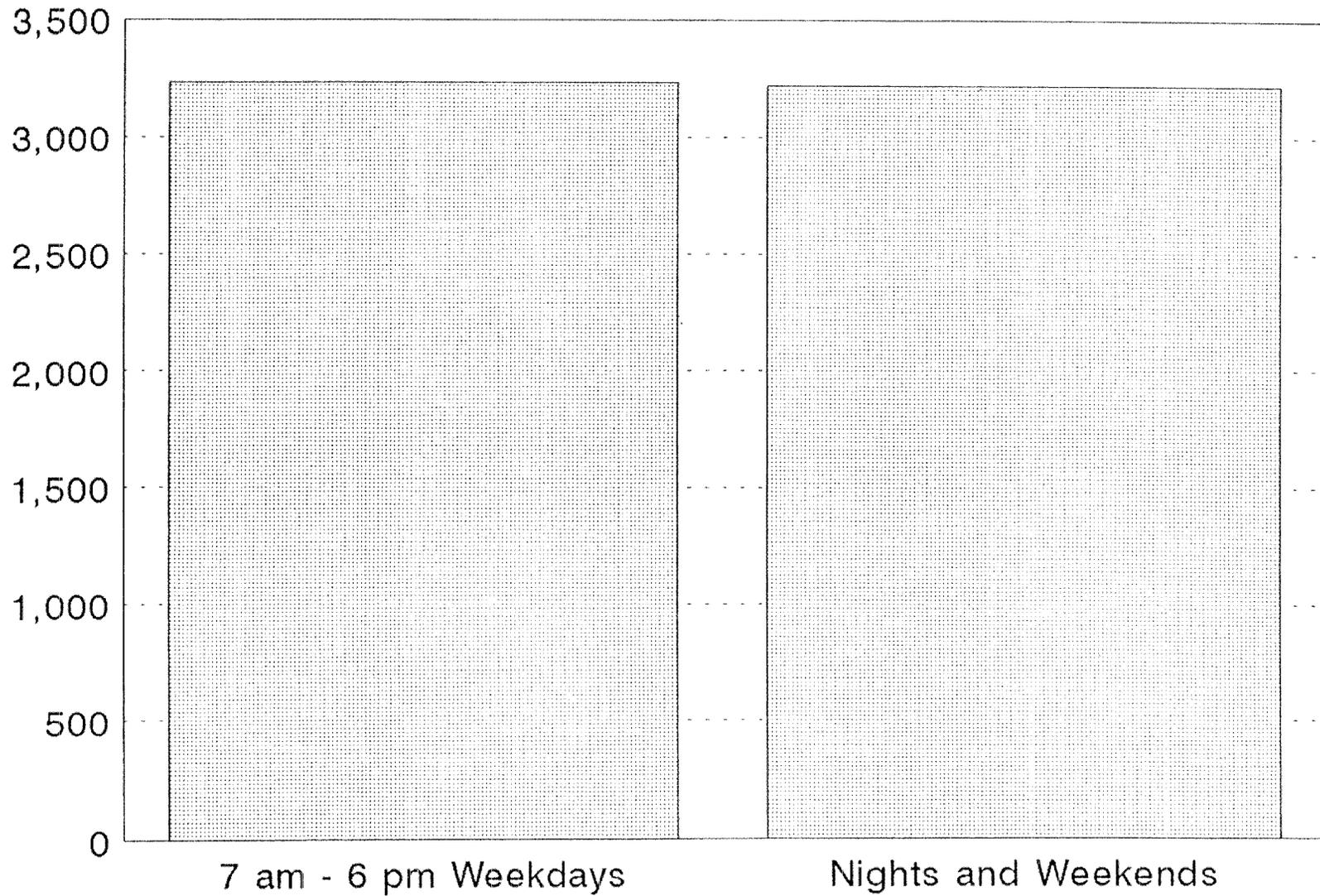
***Growing Population and Expanding Workload*** -- The volunteer fire departments individually and collectively are faced with a complex set of challenges and problems, beginning with a rapidly expanding and diversified population that is creating an expanding workload. Several of the fire departments have also become involved in responding to emergency medical incidents through the First Responder program, which has caused a rapid increase in their call volumes.

The increasing workload is occurring at a time when the fire departments are having difficulty in providing adequate volunteer response, particularly during daytime hours on weekdays (Figure 2-11), when a large proportion of the volunteers are at their regular jobs and unable to respond. Similar problems are being faced throughout the volunteer fire service today.

The difficulty in providing crews to respond to calls during daytime weekday hours has caused several of the predominantly volunteer departments to begin providing staffing with career or part-time paid personnel. Within the past three years, these factors have motivated several of the primarily volunteer fire departments to employ career personnel for the first time, primarily for daytime weekday coverage. Full-time or part-time fire chiefs have also been employed in several of the departments. The 16 volunteer departments that utilize career personnel have a total of 82 employees (64 full-time and 18 part-time) (Table 2-4). The volunteer departments continue to depend fully on volunteers to respond from home at night and on weekends.

A slight majority of the emergency calls actually occur during the daytime hours (Figure 2-11), when the primary response force is composed of the 82 paid personnel

Figure 2-11: Total Number of Calls on Weekdays vs. Nights/Weekends, 1993



Source: Wake County Fire Marshal's Office  
Total calls do not include municipal fire department responses

and a relatively small number of volunteers that are available. There are more than 700 volunteers in the County, most of whom are available to respond at night and on weekends.

The volunteer departments vary considerably in their strengths and capabilities, but they are generally good organizations managed by very dedicated individuals. The transition to partial career staffing appears to be inevitable, given the trends in population and development in the County. There will be large benefits to the taxpayers, however, if the role of volunteers as the predominant service providers at night and on weekends can be maintained for the foreseeable future.

***Tax District Funding*** -- The special tax districts have provided the fire departments with fairly predictable funding, often combining fire district revenue from protected unincorporated areas with contractual income from an incorporated town. Until recently, the revenues for all of the districts were fairly modest. As rapid growth has occurred in the unincorporated areas, the tax base and the resulting revenues for several of the departments have increased rapidly, allowing them to add and upgrade stations and purchase new apparatus and equipment. Equipment and stations have been added without an overall plan to coordinate services among the fire departments, resulting in less-than-efficient station placement. The addition of paid personnel has a major cost impact on the budget of a volunteer fire department and generally could not have been accomplished without the increasing revenues.

***Annexations*** -- In most parts of Wake County there has been increasing development of suburban and satellite communities and significant expansion of the incorporated areas. (Annexation to an incorporated community provides access to water and sewer systems. Wake County does not offer these services.) The annexation of additional areas by the towns and cities has changed the configuration of response areas and shifted tax revenues. In several cases, the property that caused the fire district tax base to grow rapidly over a few years were annexed into a city or town and cut from the fire district.

This rollercoaster trend is expected to continue for the foreseeable future with different impacts in different areas of the County.

The rural fire departments are being impacted by annexations of developed areas into the cities and towns. Annexation removes properties from the tax base that directly support the rural fire department; in most cases the municipality then contracts with the same fire department to provide service to the annexed area, however the municipality may pay the rural fire department at a lower rate. The municipality may also decide to provide the service through its own municipal fire department or contract with a different volunteer fire department. Several of the departments have had major portions of their service areas annexed and absorbed by other fire departments, in a few cases leaving only remnants of unincorporated areas that still require protection. This trend is expected to continue.

As annexations have occurred, significantly larger areas have come under the protection of the Raleigh and Cary Fire Departments -- the fire tax revenue from those areas is no longer collected and distributed to the volunteer organizations. These annexations have had the greatest impact on the Yrac, Fairgrounds, Six Forks, Swift Creek, Wake-New Hope, Falls, and Durham Highway fire districts. These departments have been left with diminished revenues and fragmented districts that are often very difficult to serve. Figure 2-12 displays the fragmented fire districts.

In many cases, the nearest available fire units are not dispatched to calls because of the fragmented district boundaries. Both Raleigh and Cary have added stations to serve their newly annexed areas, some of which are well-situated to cover adjacent unincorporated response areas. Units from rural fire departments must literally drive past city fire stations to reach some of these areas. In other cases, the city fire fighters must drive past volunteer stations to reach incorporated areas.

While the laws of North Carolina provide for an orderly and gradual process of reducing the tax revenue and transferring responsibilities when annexations occur, the impact of annexations has reduced the funding and service areas of some of the volunteer departments to the point that they are no longer viable or needed in their established roles as primary responders to fire incidents.

Until recently, most of the growth of the other incorporated communities (other than Raleigh and Cary) has had a relatively mild impact on the rural departments, because the funds that came from properties in the fire districts were replaced by contractual funding from the communities, although not necessarily on an equal basis. Recently, however, some of the communities have annexed into areas that were part of the tax district of a different fire department from the one that protects the town. This has caused the tax base and service area of one fire department to shrink while the adjacent fire department's service area grows. The growth and/or loss of geographic areas are not necessarily in proportion to the changes in revenues.

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## **Special Response Resources**

Over the past decade, fire departments across the country have begun to assume new "special response" tasks, which include hazardous materials and technical rescue. Hazardous materials incidents can involve anything from catching and removing contaminants in water bodies to extinguishing complicated and dangerous chemical fires. Technical rescue calls involve the extrication of victims from automobiles, confined spaces (sewers, vats, and tanks), collapse buildings, collapsed trenches, high angle areas accessible only by rope, and water bodies. These special response tasks are strictly regulated and require more training and equipment than traditionally carried by fire departments. The growing expectation for fire departments to provide emergency assistance at hazardous materials and technical rescue emergencies will place new demands on the fire service in Wake County.

*Hazardous Materials Response Teams* -- Wake County currently contracts with the City of Raleigh and with the Wendell Fire Department for its Hazardous Materials Response Teams. This arrangement appears to be satisfactory for the frequency of hazardous materials that are experienced in the County and makes good use of the available resources. The capabilities of both teams appear to be reasonably good and there is a good relationship between them. (Many of the members of the Wendell Team are actually off-duty members of the Raleigh Team.) The two teams back-up each other when needed.

*Technical Rescue Response Teams* -- Some of the rural fire departments have become involved in the automobile extrication portion of technical rescue, having assumed a large part of this responsibility from the volunteer rescue squads. Additional technical rescue capabilities are available through the Raleigh or Cary Fire departments or through the volunteer rescue squads. Both Raleigh and Cary have confined space rescue teams which could be called to respond to calls in Wake County on mutual aid. The

technical rescue/confined space capabilities should be incorporated into a plan for the development distribution of teams throughout the County.

## **Apparatus, Equipment, and Water Supply**

The volunteer fire departments in Wake County purchase, operate, and maintain their own fire apparatus. Most of these vehicles are titled as property of the individual organizations, although they may have been fully or partially financed from a fire district and County or municipal tax revenues. (A few of the vehicles are actually owned by municipalities, but they are all used by the volunteer fire departments.) The 21 Wake County fire departments operate a combined fleet of 179 individual vehicles of different types from several different manufacturers. The combined fleet includes 100 pumpers and pumper-tankers, 36 tankers, and 35 mini-pumpers and brush units, which is considerably more vehicles than are needed to meet the actual needs of the County (Table 2-8).

The size of the apparatus fleet reflects the perception that each department has attempted to equip itself to operate independently. The excessive number of vehicles results in higher operating and maintenance expenses, however in many cases this is not a major cost item. Many of the vehicles are older units that have been retained in the fleets when newer units were purchased instead of being retired or traded-in. They are kept in ready reserve status and require additional storage space in fire stations, but are seldom used; therefore, their operating and maintenance costs are very low. The actual difference in operating cost between keeping and disposing of an older unit is relatively minor. Some of the equipment could be distributed to substations to decrease response distances, if personnel are available to respond from those locations to incidents in their areas.

The additional expense is very significant when the fire departments want to purchase replacement vehicles for the average retained units. Only a limited number of vehicles should be funded from fire tax revenues -- an adequate number to provide the desired level of service plus a reasonable number of spares to replace units that are temporarily out of service.

TABLE 2-8. Wake County Apparatus Summary.

Department	Pumpers	Pumper Tanker	Tankers	Mini Pumpers	Heavy Equipment Trucks	Brush	Command	Aerial Appar.	Others	Total
Apex	3	1	2		1	2		1	2	12
Bayleaf	2	3	1		1	1			2	10
Cary	5				1	1		1	10	18
Durham Hwy.	2	1	2			1			1	7
Fairgrounds	1	1	2			1			1	6
Fairview	2	1	4		1					8
Falls		3				1				4
Fuquay Varina	4	1	4			1			3	13
Garner	2	4	2			3	1		3	15
Holly Springs	2		2			1			1	6
Hopkins		2	1			1			2	6
Knightdale	1	4		1		1			2	9
Morrisville		5				2			2	9
Raleigh	20			3	2		2	5	2	34
R.D. Airport									5	5
Rolesville	3		2	1		1			1	8
Six Forks	1	2	1			1			1	6
Stony Hill	1	2	1			2				6
Swift Creek	1	2	2			1				6
Wake Forest	2	1	2		1	2			2	10
Wake New Hope	2	2	5	2	1	1			1	14
Wendell	2	2	1			2	1		3	11
Yrac		3				1			1	5
Zebulon Municipal	2							1	1	4
Zebulon Rural	1	1	2			1				5
<b>TOTAL</b>	<b>59</b>	<b>41</b>	<b>36</b>	<b>7</b>	<b>8</b>	<b>28</b>	<b>4</b>	<b>8</b>	<b>46</b>	<b>237</b>

A "pool" of good reserve vehicles could be maintained by the County to be used by any of the departments when needed. The cost factor also becomes significant when the departments buy new apparatus to expand their fleets of first line vehicles or purchase replacement vehicles before the existing units need to be replaced. The ability of the individual departments to purchase new apparatus or to replace older units depends entirely on their individual budgets. The departments with strong revenues generally have reserve fund balances set aside for new apparatus, while those with less revenues may not have any reserve funds to replace obsolete and worn-out vehicles. If a department has the cash in reserve or can obtain financing, it can purchase apparatus and equipment according to its own priorities and perceptions of need.

There is no mechanism to regulate the purchasing habits of the volunteer departments. The spending habits of the different departments range from frugal to unrestrained and are generally in proportion to their revenues. They tend to spend the funds they have available to obtain the best apparatus, equipment and stations they can afford. Some of the departments are trading-in vehicles that are newer and in better condition than vehicles that some of the less fortunate departments cannot afford to replace. There is also no requirement to offer used apparatus to the other fire departments in Wake County before selling it to another department outside the County or to a dealer.

The ability to purchase and operate the newest, largest and fanciest fire apparatus is one of the intangible incentive factors in many volunteer fire departments; this is often justified by comparing the additional cost of "top of the line" fire apparatus with the cost of paid crews to staff the units. Most of the departments in Wake County have been fairly conservative in the purchase of apparatus, but the departments with more funds have acquired newer and higher quality apparatus than those with more restricted budgets. This presents an inequity in service delivery among the departments.

Each fire department is currently on its own to specify apparatus and buy from dealers or manufacturers. Substantial savings could be realized by deciding on a set of basic specifications for three or four categories of apparatus, and buying multiple units under a joint purchase plan. This approach could also include Raleigh, Cary, and other fire departments in the area and could involve all types of supplies and equipment.

Many volunteer departments take great pride in their apparatus and insist that they can buy a better unit than a governmental purchasing agency would buy for them, however it is very feasible to get a group of representatives together to develop specifications for a well designed units that would satisfy the needs of several departments. There could be some allowance for individual preferences within the general specifications.

***Water Supply Apparatus and Hydrants*** -- Fire departments rely on one of two sources for water supply: hydrant systems or mobile tankers. The majority of the geographic area of Wake County is not served by water mains and hydrants. All of the incorporated communities have water systems and hydrants in built-up areas, supported by good distribution and storage systems capable of providing adequate flows for fire fighting needs. Most of the unincorporated areas have no public water supply and depend on water delivery to the scene of a fire by fire department tankers. Some of the unincorporated areas have limited water service from private suppliers.

In new growth areas, hydrants are generally required, however, there is not necessarily an adequate water supply to support their use. The availability of water and sewers are controlled by the incorporated towns and cities, so property that is being developed is most likely to be annexed. All of the rural fire departments are oriented toward the use of mobile tanker trucks as either their primary or secondary source of supply. Most of the departments use a mixture of tanker-pumpers and single function tankers to deliver water to the scene of a fire.

**Pumpers** are primarily designed to move water through hose lines, primarily as a means of directly attacking a fire. They are sometimes used as part of a relay operation to deliver water through hose lines from a remote source to other pumpers at the scene of the fire. Pumpers may also be used to refill tankers at water source locations; the tankers shuttle water to the scene of the fire. Most pumpers used in urban areas have on-board water tanks of 500 to 700 gallons, which are used to attack small fires or to begin the attack on larger fires while a sustained water supply is established. The sustained water supply may come from a hydrant, or via hoseline relay or tanker delivery to the scene. Many of the pumpers in Wake County carry up to 1,000 gallons of water.

A **pumper-tanker** has a regular fire pump and attack hose lines to operate in a direct attack mode, in addition to a water tank of more than 1,000 gallons capacity. A tanker-pumper can be used as a pumper, as a water delivery vehicle to support other pumpers, or with other tankers and tanker-pumpers to "shuttle" water to the scene of the fire.

A **tanker** is designed for the primary purpose of delivering water and generally has very limited fire attack capability. The water carrying capacity of tankers in Wake County ranges from approximately 1,200 gallons to in excess of 3,000 gallons. Several tankers may be used to "shuttle" water from a source to the scene of a fire, then return to the source for additional water.

Each of the rural fire departments in Wake County has built its fleet of vehicles around its own circumstances, concepts, and preferences of water supply. Some use all pumper-tankers, some use pumpers supported by tankers, and some plan their operations around the use of large diameter hose to obtain water from hydrants or other sources. Most of the tankers have relatively small capacities, usually varying from 1,500 to 2,000 gallons (refer to Appendix B for a list of apparatus).

The best improvement in the water supply system would result from extending municipal water service to larger areas, particularly any new development areas. Three or four large capacity (3,000 gallons or more) tankers strategically located in the County would improve the water delivery capability, however, many of the roads and bridges in different areas will not support the weight of the larger vehicles. These would have to be evaluated on a local level.

Some of the departments that respond in areas that have hydrants appear to make good use of large diameter (four or five inch) hose, however, some are reported to be more comfortable with water supplied from tankers than from hydrants, even when hydrants are available. Large diameter hose is very efficient for delivering water at distances of up to one-half mile from a water source, particularly when a large, constant supply of water is needed, such as for a warehouse or industrial fire. The system could work much more efficiently if all of the participating departments used the same standard operating procedures for water supply and carried compatible hose.

The varying water supply preferences and philosophies among the different departments is evident in the range of vehicles they operate. Several of the volunteer departments have accumulated fleets of vehicles with water carry capacities, based on their independent judgements of how much water they will need, how far they will have to respond to a fire to deliver the water, how far they will have to go to refill their tankers (in a shuttle mode of operation), and how much water they can practically carry on one vehicle because of size and weight limitations. Because of this independent approach, several of the departments have more vehicles than it is practical for them to operate.

Several large fire stations around the County are filled with seldom used water transporting vehicles. Most of the departments appear to have adopted the philosophy of owning and operating a fleet of water delivery vehicles to be self-sufficient for most

situations, and only occasionally utilize mutual aid to obtain assistance from surrounding departments.

*Specialized Apparatus* -- There is a tendency among the volunteer departments to purchase more specialized apparatus, such as rescue units and equipment vehicles, than the system would need if these vehicles were shared and distributed under a Countywide plan. Several new specialized equipment vehicles have been purchased in a short time period, some of which could have been shared among departments instead of buying duplicate units. A new deployment plan should consider redistributing these units for balanced Countywide coverage before any additional units are purchased.

The Countywide system would benefit from the addition of two or three lighting and breathing air refilling units, elevated stream units, large diameter hose units, and pumpers with foam capabilities. The reliance on tankers for water supply in many areas suggests that the departments should be looking into the use of Class A foam and compressed air foam (CAF) systems to increase the efficiency of limited water supplies.

There are only two aerial devices in the County; an aerial ladder in Apex and an aerial platform that belongs to the Zebulon Municipal Fire Department. Raleigh and Cary have a combined total of six aerial units, which are available to respond on mutual aid. The need for aerial equipment outside the cities is very infrequent, however two additional aerial devices, strategically located within the system, would improve the overall resource distribution and aid in improving the ISO classification countywide.

## **Fire Stations**

The volunteer fire departments currently operate from 29 separate fire stations. Several of the stations are in immediate need of renovations, repairs, or replacement in order to meet code requirements. Most of the stations will require modifications to properly accommodate paid personnel, "sleep-in" crews, and other uses (Table 2-9).

All of the existing fire stations have been built by the individual departments according to their own judgement as to location and construction details. Their size, type of construction, and improvements reflect funds that have been available from their individual tax levies. Many of the departments also use self-generated funds to support building projects.

A very significant capital investment will be needed in Wake County's fire stations over the next five to ten years. Several of the existing stations will have to be renovated, expanded, or replaced to meet the needs of the fire departments. It would be much more feasible to provide the funding for these projects through a Countywide tax levy than through the individual fire district levies for individual projects. The recommended Fire Advisory Board should develop a capital improvements budget and make recommendations to the Board of County Commissioners on the projects that should be funded each year.

Table 2-9. Considerations about Future of Fire Stations.

Current Contract	Number of New Stations Needed	Number of Existing Stations to Close	Alterations or Renovations Needed for Existing Stations	Current Number of Stations	Future Number of Stations	Comments on Stations*
Apex	2	0	yes	1	3	New station in New Hill and southern area. Fire code.
Bayleaf	0	0	no	2	2	
Durham Hwy.	0	1	no	2	1	Close Station 2
Fairgrounds	0	0	no	1	1	Consider Raleigh/State contract
Fairview	1	1	yes	2	2	Relocate existing Station 1. Fire code.
Falls	0	1	yes	1	0	More storage space necessary. Fire code.
Fuquay Varina	1	0	no	2	3	Future stations for the south and east of district.
Garner	1	0	no	2	3	Future stations for the north and west of district.
Holly Springs	1	1	no	1	1	Future station in town, to the north and west.
Hopkins	0	0	no	1	1	
Knightdale	1	0	yes	1	2	Future stations between Knightdale and Gamer. Fire code.
Morrisville	1	1	no	2	2	
Rolesville	0	0	yes	1	1	Additional storage space necessary. Fire code.
Six Forks	0	1	no	1	0	
Stony Hill	2	1	yes	1	2	New station in northern area. Fire code.
Swift Creek	0	1	no	1	0	
Wake Forest	0	0	no	1	1	
Wake New Hope	1	1	no	2	2	Close station 1, new station in northern area.
Wendell	0	0	yes	2	2	
Yrac	0	1	no	1	0	
Zebulon	0	1	yes	1	1	Fire code.
Zebulon Rural	0	0	yes	1	0	

\* Fire code = Alterations and/or renovations are necessary for station to meet fire code.

## **System Summary**

The existing "fire suppression system" in Wake County works fairly well, but there is considerable room for improvements. Instead of a unified "system," it must be regarded today as a network of independent components — municipalities and fire districts, volunteer and career fire departments, the County Fire Marshal's Office, and the Emergency 9-1-1 communications system are all key elements. The components are not unified by plans or standard operating procedures and the number of component organizations and jurisdictional areas presents a major problem. One of the major objectives should be to structure a more efficient and better coordinated system for the future.

The capabilities of the individual fire departments range from high to low, based on several factors including funding, leadership, experience, local traditions, circumstances, and motivation. The higher capability departments respond reliably with sufficient, well-trained members to handle most situations, while others have a difficult time assembling even a small crew. The objective of the system should be to identify, reinforce, and duplicate the positive factors that make some of them top performers and to utilize those factors to bring all of the departments up to a higher capability level.

The circumstances of several of the departments are changing rapidly or have already changed. For some, these changes include new developments within their areas that have provided more funding and along with an increasing demand for service. In other cases, annexations of property by incorporated towns and cities have reduced funding and diverted the demand for service to other providers. Some areas with expanding needs are protected by inadequate fire departments, while in other areas function and well-equipped fire departments no longer have significant service areas to protect.

The system could be improved by reducing the number of individual fire departments and building on the success of the most capable organizations. The low performance departments should be brought to a higher level and response areas should be reconfigured to provide the best possible protection with the current and planned changes in jurisdictional areas. The personnel, apparatus, and equipment from the displaced organizations should be redirected to areas and functions where they can continue to serve productively.

The overall system should also be improved by providing a functional system for the individual fire departments to coordinate their training, resource deployment, response plans, standard operating procedures, and other components, so that they may routinely operate within a strong Countywide system. The career fire departments in Raleigh and Cary, as well as RDU Airport, should be equally involved in this countywide approach.

It is no longer feasible in many areas of the County to rely on volunteers as primary daytime responders. The current trend of adding career personnel to staff the stations during daytime weekday hours is a major change for fire departments that have in the past been exclusively volunteer. This trend can be expected to continue until career crews are in place in most of the stations to operate at least one fire suppression unit with four personnel during daytime weekday hours. Volunteers can and should be used as back-up responders during the day and should be able to provide the primary responders at night and on weekends. Even the stations in rural areas can be expected to require some daytime personnel within a few years.

The career personnel who come into the system should be expected to perform a full range of tasks, including maintenance functions, training, fire prevention, and public fire safety education, as well as emergency response. They should be directed toward objectives that support and supplement the volunteer system, as opposed to displacing volunteers and creating an all career system.

The fire department should continue to expand their participation as the first responder emergency medical service. Most of the departments have already implemented this service or are planning to move in this direction. This added service meets a need in the County, since the EMS call volume is increasing and the volunteer rescue squads are experiencing the same difficulties as volunteer fire departments in providing adequate crews. The career fire personnel can meet the need for rapid EMS response with very minor added costs. The expanded service should also carry over to night and weekend response as volunteer fire personnel obtain the training to provide emergency medical care.

Many of the fire departments are increasing the capabilities for vehicle extrication and establishing their expertise in other forms of technical rescue. The role of the volunteer rescue squads is changing and the evolution is moving toward combining and/or developing close working relationships between the fire departments and rescue squads.

The County already contracts with the Raleigh and Wendell fire departments for hazardous materials response. (These assignments may change when the State of North Carolina implements a Statewide plan for regional hazardous materials teams).

One of the priority areas to address is confined space rescue operations -- Wake County should designate and fund at least three strategically located fire departments to work toward training and equipping confined space teams. Each of these teams should be responsible for a portion of the County and all should be funded from a combined revenue source. The overall plan should integrate the capabilities of these teams with the existing Raleigh and Cary teams.

Fire prevention, which includes code enforcement, risk management, public fire safety education, and fire cause investigation, has been the primary responsibility of the Fire Marshal's Office. This role has expanded very significantly within the past two

years, primarily due to the imposition of mandatory inspections by the State of North Carolina. The Fire Marshal and his staff are doing an excellent job, however it is not a realistic expectation for the small staff to meet all of the challenges that have been presented.

As the Countywide system evolves, part of the responsibility for fire prevention functions should shift to the career personnel assigned to fire stations. All of the career personnel should be trained in multiple specialties and their time should be used productively to identify and reduce fire risks, educate the public on methods to prevent fires, prevent injuries, and improve their preparedness for emergencies. Volunteer personnel should also be encouraged to participate in these programs, including non-operational volunteers who could be recruited specifically for fire prevention and public fire safety education programs.

All of these areas should be major concerns, based on the consulting team's overall analysis of the existing fire protection system in Wake County.

## **CHAPTER III. RECOMMENDED PLAN FOR IMPROVEMENTS**

This chapter describes a recommended structure for the fire service in Wake County and provides several options and alternatives that should be considered in developing fully detailed plans. Specific considerations for five-year and ten-year planning are listed at the end of the chapter.

Most Counties and metropolitan areas never take the opportunity to stop, evaluate, and plan their future fire service system in this manner. This is an opportunity that should not be taken lightly, because it can be used to restructure the current unplanned system and to create a system that will meet future needs more effectively and efficiently. There are many different approaches listed in this chapter that should be carefully considered.

### **Overall Approach**

The primary recommendation resulting from this study is that the future direction of the fire service in Wake County should be planned as a countywide system. The present unplanned approach has 25 individual fire departments operating within a loosely coordinated system. The Countywide plan could be accomplished within a number of different structures. The system of separate fire departments could be continued, with some reduction in the number of departments, operating under a structure that provides increased coordination and cooperation among the departments. It would also be possible to consolidate all the fire departments into a single Wake County Fire Department.

The option of creating one large fire department headed by one Fire Chief is feasible, however it does not appear to fit the needs and priorities of Wake County at the present time. There are several capable fire departments within the County today and several municipalities that are growing and maturing. The full amalgamation of the fire departments could result in a significant loss of identity, independence, and local initiative which are important considerations, particularly in a system that is primarily dependent on volunteers. The desired results can be accomplished by creating a structure under which the County, the cities and towns within the county, and the individual fire departments can build and operate an efficient and effective system that meets the needs of all the citizens. The countywide system can be created and managed through joint planning, combined with ongoing cooperation and coordination among all the participating organizations.

Wake County is beginning to evolve from an all-volunteer fire service system to a volunteer-supported by career system. This should not be seen as the "beginning of the end" of the volunteer system. A well-managed blend of career and volunteer forces should be able to meet the needs of the County for the foreseeable future, if the system is well-planned and well-managed.

The existing volunteer organizations are an extremely valuable resource. Some of the organizations are strong, well funded and well managed, while others are having difficulty maintaining their operational capabilities. The number of independent volunteer fire departments should be reduced, in some cases because they are no longer needed to serve the areas they were established to protect. These organizations and their members can make a valuable contribution to the system, if they can be redirected to a different part of the mission. Some of the existing volunteer organizations should be merged to create stronger organizations to serve contiguous areas more effectively.

Several of the independent volunteer departments should become municipal fire departments, to gain the support and sponsorship of a local government. This should be

done carefully, in order to retain the organizational attributes that promote volunteerism. The growing towns have a compelling interest in supporting their local fire departments. The towns and the County will all benefit if the fire departments are developed as functional components of an efficient countywide system. The recommended plan would include municipal-career fire departments and both municipal and rural-volunteer (or combined career/volunteer) departments, all working together as one system.

### **Recommendation**

*Restructure the existing fire departments into a smaller number of organizations that would all function as one system.*

*The overall system would include municipal career fire departments, municipal career-volunteer combination departments, and rural volunteer or career-volunteer combination departments.*

## **Municipal Fire Departments**

The municipalities in Wake County are in a good position to work with the County to structure the future system of fire departments. Most of the incorporated towns in Wake County have contracted with rural volunteer fire departments; this has relieved the towns of the responsibility to operate their own fire departments. However, several of the towns have grown to the point that their populations and property valuations are equal to or greater than those of the unincorporated areas served by their fire departments. As this transition occurs, the towns are becoming the dominant force in guiding the development of local services. This trend is expected to continue as most of the population growth and commercial development is expected to occur in incorporated areas, because of their control of the water and sewer systems.

The residents and taxpayers of the towns expect their local government officials to ensure that they are provided with reasonable service levels with appropriate costs. This is becoming a larger concern to the elected and administrative officials of the towns, who want to ensure that their areas are adequately protected and their tax dollars go toward efficient and effective fire protection services. This is causing the town to be much more concerned with the management and operations of their local fire departments.

The most efficient overall approach for the County and the incorporated communities would be for all to cooperate in the planning and development of a coordinated countywide response system and to share in the cost and operation of those elements that can be most efficiently and effectively provided at a countywide level. A system of municipal fire departments, operating within a cooperative structure, can fulfill most of these needs.

Most of the towns will probably want to employ paid fire chiefs to manage their local operations and ensure that the needs and desires of the local communities are

addressed. Most of the towns will be able to utilize volunteer fire fighters to provide a major component of their needs for the next 5-10 years. The towns can also employ career fire fighters to supplement volunteer staffing and provide a range of additional fire and emergency services, depending on local needs.

In most cases the municipal fire departments can protect their surrounding unincorporated areas with very little additional cost. This approach would be much more efficient than the alternative of maintaining separate rural fire departments to protect the unincorporated areas. The revenue that would be derived from the distribution of the County fire tax would supplement the revenue collected from properties within the incorporated areas.

## **Future Role of Volunteer Fire Organizations**

Wake County currently places the responsibility for fire suppression in the hands of 21 different volunteer organizations. Although 16 of the 21 organizations currently employ paid personnel, fire response in the county still depends upon more than 700 volunteers as the primary fire suppression force. Each of the volunteer fire departments has different characteristics in terms of its number of calls, size of population served, size of response area, number of members, number of stations, number of apparatus, funding, and leadership.

The economic benefits of a volunteer system are easily recognized, when compared to a system that uses all career personnel. The cost comparison is only valid, however, if the volunteers can provide the level of service that the community needs, desires, and expects.

The volunteer system should have the capability to meet the needs of most of Wake County for at least 10 years into the future, but it is facing some challenges that will make the delivery of services progressively more difficult over this period.

**Challenges** -- The existing structure of the volunteer organizations is destined to change as a result of the factors that are evident in Wake County today. Some of the factors include:

- Annexations have virtually eliminated the primary response areas for some of the volunteer fire departments.
- Annexations have and will continue to change the size, shape, demographics, and tax bases of many of the fire districts.

- Growth is occurring in areas that are not adequately served by existing fire departments.
- The time commitment required for increased "mandated training" has and will continue to limit the number of potential volunteers.
- The shortage of volunteer personnel for daytime coverage is a concern at almost every department.
- Many of the residents moving into the existing districts are not "affiliated" with the local communities and are not oriented toward the volunteer fire service.
- The numbers and types of responses have changed significantly and, in many cases, discouraged active participation by "fire suppression oriented" volunteers.
- Current recruiting and personnel management programs do not attract or properly address the needs of potential new volunteer members.
- There is an existing need to standardize fire ground operations and implement an increased emphasis on multiple company training and operations.

*Retaining Pride within the Volunteer System* -- As a result of these challenges, some restructuring of the system is necessary to make optimal use of volunteers. One of the most important concepts Wake County must remember as this restructuring occurs is that the system must be designed to foster the individual identity and pride of volunteer organizations.

The current volunteer system has evolved without a plan and with a minimum amount of direction or "interference" from the County. It is only recently that the County has become directly involved in the administrative and operational affairs of the volunteer organizations. The existing system provides a high level of autonomy to each of the departments which appears to work well most of the time; however, it faces some critical organizational and operational challenges in the future. The County should not become so involved in the internal affairs of the volunteer organizations that their volunteer motivation is compromised. Instead, the County should focus on coordinating the fire protection system and utilizing the volunteers' capabilities, commitment, and leadership within the system. The future system will not be successful without the commitment of the volunteer organizations and their members.

Due to the challenges facing the current fire protection system, however, the County will have to assume a more active role in coordinating fire protection. Some volunteers may view a more active County role as a threat, however, the success of a new system will depend largely on the leadership skills of the volunteer chiefs, officers, and directors. Implementing a system that proposes to fit existing autonomous volunteer organizations into a structured role requires strong planning and leadership skills. Pride within the volunteer system can be retained if the County utilizes volunteer leadership to play a significant role in planning and directing the future fire protection system. This can be accomplished if the volunteer departments focus on their common goals and recognize the value of working together on developing and implementing consistent policies, procedures, and service deliverables.

*Areas Where the County Can Assist Volunteers* -- The County should take an active role in supporting and assisting volunteer organizations in several areas in the future. To take full advantage of the volunteers as a valuable resource, the County and the incorporated municipalities will have to provide more support to the volunteer system to enable the volunteer organizations to operate in a more coordinated and consistent manner. The County should concentrate on assisting in these areas:

*Automatic Mutual Aid Response* -- An increased emphasis on coordinated automatic response of neighboring departments and the establishment of consistent levels of performance should enable the volunteer organizations to function as elements within a strong countywide system.

*Training* -- The countywide system will need to provide a far more structured approach to training in order to assure that all personnel are capable of performing at consistent levels. Minimum certifications for positions and ranks must be established for both career and volunteer members.

*Human Resources* -- The success of this approach can be supported by assisting the volunteer organizations with human resource development services, particularly recruiting and retention of volunteer members. This support should be provided by the County. Consistent personnel management policies and effective human resource management programs for career and volunteer personnel will be essential components of an improved countywide fire protection system.

*Support Services* -- The County could assist the volunteers with budgetary and administrative duties. The Fire Marshal's Office has already begun to assist volunteer departments with the annual budget request process. Additionally, the County could coordinate countywide radio communications, purchasing, apparatus maintenance, and other services.

*Planning* -- The County could also assist with coordinating the strategic planning for the County. This may involve analyzing response times and service trends to determine areas of need.

*Ensuring Consistent Performance* -- The volunteer organizations will have to be held more accountable for their performance to ensure that the system provides a consistent service deliverable to all areas and maximizes both efficiency and effectiveness. The system must establish basic performance criteria for response and training, and ensure that each organization meets these criteria. (Refer to *Performance Standards* section in this chapter for more discussion). The most important objective for the next 6 to 12 months should be to develop a system of consistent performance objectives and standards that will be supported by the County and the municipalities and accepted by the fire departments.

### **Recommendations**

*Continue to utilize the volunteer organizations as the primary emergency responders for the foreseeable future, but the provision of fire protection by the organizations must be better coordinated.*

*The County should take a much more active role in coordinating and supporting the volunteer departments.*

## **Combining Career and Volunteer Efforts**

The future system should be designed so that career and volunteer personnel complement one another in the provision of fire protection. Career personnel should be used to support and supplement the volunteer delivery system, performing functions that are not feasible to accomplish with volunteers. Their primary functions should include staffing units for initial response during weekday daytime hours, performing maintenance functions, conducting pre-fire planning and fire code enforcement functions, participating in public fire safety education activities, and providing training and other services that support the volunteer system. Volunteer personnel should also be encouraged to participate in these activities to the extent that is practical.

At some point in the future, the County may need to utilize several 24 hour career staffed units to fill-in where there is an insufficient number of volunteers to staff a station. For example, the County may consider using four career personnel placed on a quint (a multipurpose vehicle that can function as a pumper, aerial ladder or emergency medical/rescue unit) to fill-in areas where volunteer personnel cannot provide consistent staffing.

The overall system will be strengthened if all career personnel are hired and initially trained to meet consistent training and performance standards. Although the career employees may work for different employers, a unified ongoing training and promotional system would allow the career personnel to advance and transfer within the countywide system, as well as providing the capability for them to perform their duties in a standard predictable manner.

Career and volunteer personnel should be considered as equal participants in the system. Uniform training and performance standards and an integrated rank structure should apply to both career and volunteer personnel. The Countywide approach should

fully incorporate all of the necessary support elements, including an expanded training system, to make these objectives achievable.

### **Recommendations**

*Design the new system around the concept of volunteer and career personnel complementing one another in their duties.*

*Develop specific policies and procedures addressing the relationship between paid and volunteer personnel. These should establish a unified qualification and promotional process that are tied directly to minimum training and performance standards. (The system should include an oversight mechanism to ensure that the participants meet their obligations as individuals and organizations.)*

*Utilize career personnel to perform functions that are not practical for volunteers to perform -- including daytime, weekday emergency response.*

*Utilize career personnel to perform maintenance functions, training, and to conduct pre-fire planning, public fire safety education and fire code enforcement.*

## **County - Municipal Cooperation**

One of the fundamental aspects of the recommended approach calls for the incorporated municipalities to join with Wake County in the formulation of a plan to provide fire department services to the entire county in an efficient and mutually supportive manner. This encourages the municipalities to become more directly involved in supporting their local fire departments, most of which would continue to depend on volunteers for the majority of their service delivery. The rapid growth of several of these towns, accompanied by increasing demands for fire department and other emergency services, has caused several of them to become concerned with the ability of the volunteer organizations to meet their future needs.

*Advantages of Cooperation* -- The County and the municipalities have a legitimate concern for accountability, both fiscally and in terms of the adequacy and reliability of the service that is currently provided and will be provided in the future. They must be concerned with justifying increasing expenditures, while ensuring that the needs of the taxpayers are met. The County's primary concern is for the unincorporated areas, while the municipalities are concerned about their incorporated jurisdictions; however, as a group they share the same concerns for the entire area of the county.

The County and the municipalities, working with the volunteer organizations, can assist each other by planning and developing one system to provide fire department services to all incorporated and unincorporated areas of the county. The fundamental objective should be to provide adequate and reliable service to all areas at an affordable cost.

The major benefits that can be achieved through joint planning and operations are:

- response of the closest fire department(s) to any emergency, regardless of jurisdiction and boundary lines
- the ability to access any or all of the resources of the system for any incident or series of incidents
- the ability of all components to work together as a unified operational system
- sharing the cost of major capital expenditures, special equipment, and support systems
- elimination of redundant and unnecessary costs and services

#### **Recommendation**

*Joint planning must occur between the municipalities and rural volunteer organizations in Wake County to improve the use of system resources and eliminate system redundancies.*

***Establish a Fire Advisory Board*** -- The primary recommendation of organizing the fire protection system in Wake County into a coordinated countywide system will require a focal point to make important policy and budget decisions. This focal point must represent the interests of the taxpayers and consumers, the elected bodies, and the service providers.

A Fire Advisory Board with five to seven members should be created to oversee the entire system, establish the foundation for coordination and cooperation, ensure service goals are met, plan for future changes, and make budget recommendations to the Board of County Commissioners. The Fire Advisory Board could include (for example:

- A County Commissioner
- A Town Manager
- A Municipal Fire Chief
- A Rural Fire Chief
- Citizen Representative(s)
- The County Fire Administrator

**Recommendation**

*Appoint and empower a Fire Advisory Board to recommend, approve, and manage minimum performance guidelines, policies, and procedures. The Board should be the primary source of policy direction for fire protection services, and should advise the Board of County Commissioners on fire service needs.*

## **Restructuring of Fire Departments**

The existing system of fire departments should be restructured to reduce the number of individual organizations (fire departments), while gradually increasing the number of fire stations. The below sections discuss the creation of *municipal* fire service areas and *rural* fire service areas.

***Municipal Fire Service Areas*** -- The municipalities can provide a "home" for several of the existing rural volunteer fire departments. In most cases this would change the relationship from a rural fire department which contracts to serve an incorporated area to a municipal fire department which contracts to serve an unincorporated area around its perimeter. This is a natural transition in the cases where the municipality is becoming the dominant component of a fire department's service area. It also fits in with the established practice of granting of extraterritorial jurisdiction to the municipalities in Wake County. The municipalities that protect unincorporated areas would receive a share of the County Fire Tax revenue in proportion to the area served.

The municipalities would become more directly involved in ensuring that the needs of their citizens are met. This can be accomplished efficiently by supporting and assisting the volunteer organizations. The individual municipalities could appoint career fire chiefs to manage and direct their fire departments, however they would also have the option of a volunteer fire chief.

The municipal structure would make the career personnel governmental employees, which would allow them to be assigned to code enforcement. This would also provide the employees with municipal personnel benefits and support systems.

Raleigh and Cary operate career fire departments that are well organized, well managed, well equipped, and adequately staffed to meet the needs of the cities for the

great majority of situations. Both cities are growing and have built fire stations (and are planning to build more) in locations that can serve unincorporated "islands" and fringe areas. The most efficient manner to serve these unincorporated areas will be to extend the coverage of the Raleigh and Cary fire departments to cover all of the unincorporated areas that fall within the reasonable geographic coverage areas of their fire stations.

If the unincorporated areas are not merged into a single fire district, two existing Wake County fire districts, Raleigh Suburban and Yrac, can be restructured to create a single fire district around each city. If the unincorporated areas become one district, the service areas for Raleigh and Cary can be identified within the larger overall district.

**Morrisville** is in the process of converting from a rural fire department structure to a municipal department and planning to move in the direction of primarily career staffing, 24 hours per day over the next few years. This plan recognizes that Morrisville will have increasing requirements for protection, with a growing commercial/industrial tax base, but will not have the resident population base to support a volunteer fire department. As this transition occurs, all of the area north and west of Raleigh will be served by career municipal fire departments -- Cary, Morrisville, and RDU Airport.

Morrisville should also continue to establish the capability to serve the growing Wake County portion of Research Triangle Park. This area will require a high level of protection. The revenue from the rapid growth should be sufficient to support a full-time career fire department.

**The Town of Zebulon** operates a municipal fire department and employs a career Fire Chief and a fire fighter. There is a separate Zebulon Rural Fire Department, however the municipal and rural department members respond to calls together. The two organizations should be merged into a single municipal department without delay.

Apex has a growing career staff supplementing a healthy rural volunteer department under a paid Fire Chief. This fire department can easily be transformed into a municipal department, which could serve the town, the existing Hipex Fire District, and additional areas that are not in the fire district at this time. Two additional stations are needed and planned for rapidly growing areas south and west of the Town of Apex and should be built as soon as feasible. (One of these stations will extend the five mile service area to cover the remainder of the unincorporated area to the county line.)

The Town of Holly Springs currently contracts with the Holly Springs Rural Fire Department. Rapid growth of the town is creating a valid concern for the ability of the all-volunteer department to meet the Town's current and future needs; the Holly Springs Fire Department provides a significantly lower level of service than most of the others in the current system. The Town has also annexed territory that was previously within the Ten-Ten Fire District (Fairview Fire Department) and added this area to the Holly Springs Fire Department's large service area.

The existing department has no daytime career staffing and does not participate in the medical first responder program. It has placed its emphasis on a contract to respond to a nearby utility plant at the expense of addressing the growing needs of the local community.

The situation suggests the establishment of a Holly Springs municipal fire department, however it may be more efficient for the Town of Holly Springs to contract with the Town of Apex for fire protection and for the Holly Springs Volunteer Fire Department to become part of the Apex organization, operating as a volunteer company of the Apex Fire Department. The Town of Holly Springs would benefit from a more regional approach to emergency response, because of the proximity of Apex, Fairview and Cary.

The rural volunteer fire departments in **Fuquay Varina, Garner, Knightdale, Wake Forest, and Wendell** could be converted to municipal fire departments with relatively minor changes. This would provide a governmental structure to support the volunteer organizations. The Town of Garner has plans to build a station on the west side of the city, which would be operated by the Garner Fire Department, and this would fit into the plan.

There is a sizeable area south of **Knightdale** that is currently beyond the five mile response area. A new fire station location has been identified south of the incorporated town which would provide better service to this area, however there is still a need for a station in or closer to the incorporated town. The existing station is in need of major renovation. The response areas to the north and west of Knightdale will be reconfigured if a "closest station responds" policy is adopted. A location for a third station to serve the Town's growing incorporated area should be identified in coordination with the Town's planners and with the surrounding jurisdictions.

### **Recommendation**

*Consider the transition of rural volunteer corporations into municipal departments, especially in areas where the municipality is becoming the dominant component of a fire department's service area.*

***Volunteer Fire Service Areas*** -- It will not be feasible to convert all of the rural departments to municipal fire departments. Three relatively large areas are expected to remain unincorporated. It is recommended to restructure the rural departments that serve these areas in order to create a smaller number of stronger volunteer organizations. Each of the three areas could be served by a combined rural department that includes all of the departments that currently serve parts of the area.

The existing fire districts should be completely restructured to coincide with response districts for the restructured rural departments or all of the unincorporated

areas of the County should be consolidated into a single fire district. Whichever method of restructuring is chosen, the response territories should be drawn so that the closest station responds to the location of the emergency.

The combinations of rural departments that appear to be reasonable at this time are:

Bayleaf - Six Forks - Durham Highway - Stony Hill

This department would serve most of the unincorporated area north of the City of Raleigh. Most of the Six Forks Fire District has been annexed and is now served by the Raleigh Fire Department and most of Durham Highway district is planned for annexation. The fire departments that serve these districts should be merged with the Bayleaf Volunteer Fire Department to create one strong volunteer organization to serve the area north of Raleigh. The Stony Hill Fire Department should also be included in this consolidation.

The Stony Hill Fire Department serves a large, sparsely populated area and has some very long response distances outside its tax area. The existing fire station is inadequate and should be replaced with a new station, west of the current location, however the district does not produce enough revenue to fund the cost. An additional station will be needed in the future to cover this area as it develops, however there is very little demand for an additional station in the area at the present time. The extreme northwestern portion of this area can be better served by fire departments from Franklin County. To create a stronger organization, the Stony Hill Fire Department should be merged with the Bayleaf Fire Department.

Wake New Hope - Rolesville - Hopkins

This department would serve the unincorporated area northeast of Raleigh, between Wake Forest and Zebulon. The built-up area of the Wake-New Hope district is being rapidly annexed by Raleigh, leaving the more rural parts to be served by the rural

fire department. The Rolesville and Hopkins areas are experiencing some residential development, but are expected to remain unincorporated. The Town of Rolesville is included in the area.

#### Fairview - Panther Branch - Swift Creek

The Fairview (Ten-Ten) and Swift Creek Fire Districts are both shrinking in size and growing in population at the same time. Cary is annexing parts of both districts and assuming responsibility for protecting the incorporated areas. The Town of Holly Springs is also annexing areas that were formerly served by the Fairview Fire Department. The unincorporated areas served by each of these departments are experiencing residential growth as they are reduced in area. Both of these areas could be served by one organizations which would operate 2 or 3 stations. Fairview Station #1 and the Swift Creek stations will not be needed in their present locations, however, a new station will be needed in the eastern part of the Swift Creek district.

The Fairview Fire Department has made significant progress since it initiated the program of providing career daytime staffing with County employees. The Swift Creek Fire Department, which was in need of major improvements when first reviewed, has made very good progress as the study has progressed. These two organizations could be merged to create a stronger fire department.

An alternative would be to combine the Fairview and Swift Creek Fire Departments with either the Fuquay-Varina or the Garner Fire Department to become part of a multi-station municipal fire department. (This would depend on the willingness of the two towns to divide-up and serve the unincorporated area.)

An alternative for this area would be to combine the Ten-Ten Fire District with the Panther Branch Fire District and the Swift Creek Fire District to create a consolidated rural service area. The reconfigured rural area could be served by a single

rural department that would eventually operate two existing stations, currently Garner #2 and Fairview #2 and a relocated Swift Creek station.

Cary's existing and planned stations will be able to cover the western portion of the Swift Creek Fire District within the next three to five years. Much of the Swift Creek area has already been annexed by Cary and another portion could be covered more quickly by the Fairview Fire Department. The existing Swift Creek fire station could be moved to the east to cover the area that is expected to remain unincorporated.

### Falls

The district served by the Falls Volunteer Fire Department is shrinking due to annexations and a large portion of the area will be protected by the Raleigh Fire Department. There will be a residual unincorporated area to protect which will require a fire station to the west of Wake Forest. The existing station is poorly located and inadequate for long term use. The Falls Fire Department can be absorbed into a Wake Forest Municipal Fire Department with a new station to be built between the Town of Wake Forest and the Stony Hill area.

### Fairgrounds, Yrac, Swift Creek

The Fairgrounds Fire Department serves an unusual area, much of which is state-owned property and partly within the Raleigh city limits. It is questionable to have a small volunteer fire department protecting large and valuable public facilities that are within or immediately adjacent to a major city with a career fire department.

Most of the unincorporated area in the Fairgrounds district lies between Raleigh and Cary and could be served by one or the other of the two cities. If the recommendation is adopted to have Raleigh and Cary protect the unincorporated areas that are within reasonable response distance of their stations. There would be no need for this fire department to exist to provide primary coverage.

The State of North Carolina contributes most of the funds that support the Fairgrounds Fire Department, however, the State would not pay a city to provide the same service. This situation needs to be resolved in developing a plan for the area.

Most of the area previously served by the Yrac Volunteer Fire Department has already been annexed by the City of Cary, leaving only isolated fragments of unincorporated territory, surrounded by incorporated areas. This situation should be addressed immediately by transferring the primary responsibility for this area to the City of Cary Fire Department.

This situation leaves two functional existing volunteer fire departments in the same general area without a mission (Fairgrounds and Yrac). The existing volunteer organizations should be recognized as valuable resources; they could be disbanded and the members could simply be encouraged to join existing volunteer organizations in other areas of the county, however this would not retain the value of the existing organizations.

It should be possible to define a modified role for these organizations that will be valuable to the system and sufficiently rewarding to the members to maintain their participation and take advantage of their training and skills. The Yrac and Swift Creek organizations could be absorbed as a back-up volunteer force for the Cary Fire Department, to provide supplementary personnel to report to working fires or to place additional units in service when needed to respond to an incident or to cover empty stations. A role could be established for the Fairgrounds organization to work in a similar role with Raleigh and/or Cary or as a countywide resource organization.

The mission of these two volunteer organizations could also be transformed to provide special services, such as operating special rescue units, a command post vehicle, a large diameter hose unit, lighting, air supply, and other special units.

The best approach to this problem could be to form a task force with members of both departments, along with personnel from Cary, Raleigh and other county departments, to consider the alternatives, and to propose a new role for the organizations.

**Recommendation**

*Combine the rural fire departments to create a smaller number of stronger organizations to serve contiguous unincorporated areas. Restructure the fire districts to coincide with these new organizations or combine all of the unincorporated areas of the County into a single fire district. New response areas should be defined so that the closest station always responds to an emergency.*

## **Future Structure of Fire Marshal's Office**

The countywide fire protection system could be directed by a County Fire Chief or managed by a County Fire Administrator. The designation of a County Fire Chief implies that the individual would be expected to manage and direct the system and would be accountable for all aspects of system performance. The term County Fire Administrator implies that the individual is primarily a facilitator, managing services that support and contribute to the system, but not operationally accountable for the service delivery aspects of the system.

The study team believes that the Fire Administrator model fits the needs and desires of Wake County more appropriately than a Fire Chief model. The recommended system should be planned as a group of separate fire departments that have recognized the values of coordination and cooperation in providing efficient and effective service.

*County Fire Administrator* -- A County Fire Administrator is needed in order for the new countywide fire protection network to function effectively. The Administrator would function as a facilitator and link among the County, the Fire Advisory Board, the fire departments and the municipalities. The primary role of the Administrator would be to support the countywide system that provides fire protection services in Wake County and to ensure that the system meets the needs of the County and incorporated communities. This includes monitoring how well the individual departments meet performance objectives and standards.

The Administrator would not have Managerial or operational authority over any of the chiefs of the local fire departments, as a County Fire Chief system would have under a more centralized system. The Fire Administrator's functions would be more involved with leading the countywide coordination efforts. The Fire Administrator should be responsible for maintaining accountability within the system and advising the

Fire Advisory Board and the appropriate municipal and County officials when a department does not meet performance standards. The Fire Administrator would also be required to keep the Board of County Commissioners informed about the state of fire protection in Wake County, communicating any needs or problems.

Within the Fire Administrator's Office there should be three major divisions of duties: Fire Marshal, Support Services, and Human Services (Figure 3-1).

***Fire Marshal*** -- The Fire Marshal would be responsible for the code enforcement, fire cause investigations, and public fire safety education programs. The fire prevention specialists in this section would manage the programs and provide the technical expertise. The career and volunteer fire fighters at the station level would assist with this mission.

***Support Services*** -- This division would be responsible for providing services to support the operations of the rural and municipal fire departments in the County. These functions could include purchasing, coordination of apparatus and equipment maintenance, operation and upgrading of the radio communications system, and similar functions. This division would also provide administrative assistance and budget support, particularly for the volunteer departments that have volunteer administrators.

***Human Services*** -- Human Services would assist with recruiting and retention programs and coordinate the training for volunteer and career personnel across the County. It would also manage the system to ensure that all personnel (career and volunteer) meet minimum training and performance standards.

***Planner*** -- There should also be a position for a planner, reporting directly to the Fire Administrator. The planner should analyze emergency activity trends, determine

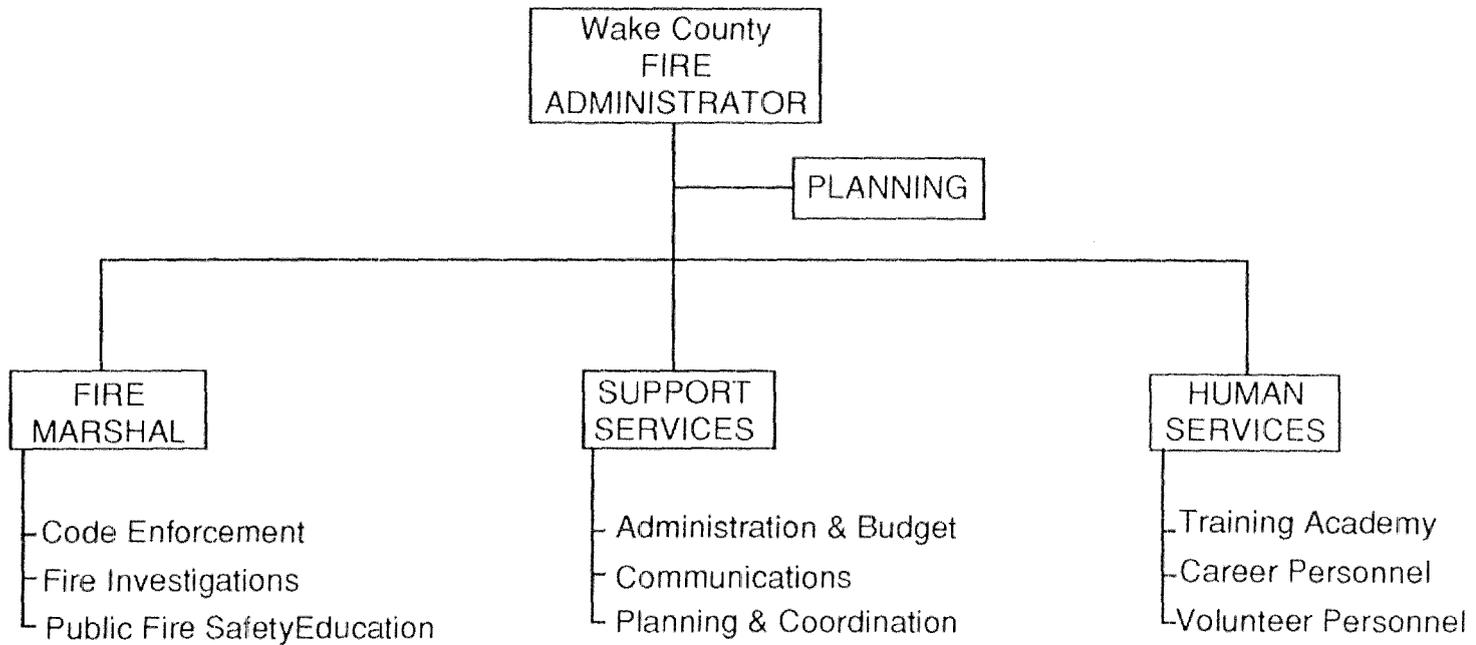
station location needs, plan the protection for growing areas, manage the data system, and conduct other projects that relate to the future needs for the County.

This Fire Administrator system of organization is successfully employed by several departments across the country. Its success, however, depends on accountability of all departments involved since no single person is "in charge" of the system. The study team cannot emphasize enough the importance of having all of the parties within the system hold one another accountable to meet the adopted performance standards.

### **Recommendation**

*Restructure the Fire Marshal's Office into a Department of Fire Protection Services, headed by a County Fire Administrator. The primary role of this Department would be to coordinate and support the fire departments. The Fire Administrator should be supported by a Planner and three divisions: Fire Marshal, Support Services, and Human Resources.*

**Proposed Organization**  
**Wake County Department**  
**of Fire Protection**



**Figure 3-1**

## **Consolidated Fire Tax and Response District**

The unincorporated areas of Wake County should be consolidated into a single fire district with a uniform tax rate. The unincorporated areas are currently divided among 23 individual fire districts, which are served by 22 different fire departments (21 volunteer and 1 municipal). A different property tax rate is approved by the Board of County Commissioners each year for each district and the revenue that is collected is turned over to the fire department that is contracted to serve the area. Some areas within Wake County are not included in any of the fire tax districts and do not contribute to the cost of providing fire protection, however, all areas are included in the response area of one of the fire departments.

*Imbalance* -- There is a major imbalance in the existing fire district taxation system. Each rural fire department is supported by an individual tax district and its revenue is primarily determined by the total property valuation in that district. This system provides much more revenue to the fire departments serving areas that are more densely developed and have higher property valuations. The fire departments in the higher revenue areas have more apparatus, which is generally newer and more sophisticated, more and larger fire stations, and more career employees than the fire departments protecting areas with smaller tax bases.

Property valuations reflect only one dimension of the demand for public fire protection services. Fire departments do not protect only buildings and contents, which are the primary constituents of the property tax base; they also protect people and their homes (without regard to their value), undeveloped areas, vehicles, and all kinds of things that do not appear on the tax rolls. An area that has a few high value commercial properties can generate much more revenue than an area that is primarily residential and agricultural and can usually justify a higher level of fire protection, however, it is in the best interest of all parties to provide an appropriate level of fire protection to all

areas. The areas that are currently beyond the 5 mile range of tax districts should contribute to the cost of the protection they currently receive.

Some of the sparsely developed areas do not generate enough revenue to support minimal fire departments, even with their tax rates set at the highest allowable level (10 cents per \$100). The fire departments in these areas have to supplement their revenues with fund-raising events just to stay in business. The fire tax rates in the high value districts are generally lower than the rates in lower valuation areas, while the total revenue is much greater.

*Level of Service* -- It can be argued that the individual fire districts provide the opportunity for the property owners in each area to decide how much they want to spend on fire protection, based on the level of service they desire. The actual practice, however, is that each fire department prepares and submits a budget based on the revenue it desires for the following year and the amount it can expect from its tax base. The Board of County Commissioners then sets the tax rate for each district, based on the budget request and the recommendation of the County Manager.

Once the tax rate is approved by the County, the revenue goes to the fire departments with few restrictions on how the funds can be spent. There is no functional process for the local taxpayers to influence the tax rate or the level of service that is expected and very little accountability for the expenditure of funds or the level of service. The first County-required audits have just been completed for FY 93-94. The contracts that have been established with the individual departments provide the foundation for establishing a higher level of accountability in a more performance based system.

The countywide system should be equitable, in the sense that recipients of the equivalent levels of service should pay an equivalent price. While it not possible to measure cost and benefit ratios for every individual taxpayer, the system should reflect a reasonable balance between the taxes that support the fire service and the level of

service that is provided. The existing system is inequitable, because the areas with the highest tax rates tend to have the lowest service levels (and vice versa). The tax rate must be set at the high end of the scale in the sparsely developed areas to generate enough revenue to operate. In high valuation areas, the needed revenue can be obtained with a lower tax rate.

Some of the volunteer departments also conduct their own fund raising activities, to supplement the tax revenues. Fund-raising events are a necessity for the volunteer fire departments that do not receive sufficient tax revenues to cover their operating costs.

The rural fire departments that service incorporated areas also receive funding from the municipal budgets, however this is not necessarily paid at an equivalent rate when compared with properties in the surrounding unincorporated area. In a coordinated countywide system it would be desirable to have properties in incorporated and unincorporated areas taxed at an equivalent rate for fire protection. This would have to be negotiated between the County and the municipalities.)

The areas that are not included within an existing fire tax district should be included in a consolidated tax district and the level of service to these areas should be improved within a short time period.

***Service Areas*** -- The fire districts do not necessarily reflect the most appropriate response area for each rural department. The districts were originally established on the basis of a four mile response distance from each volunteer station and each district is closely associated with a particular station or fire department. The districts were later increased to five mile response areas, the maximum recognized for fire insurance premium reductions, and the districts were split approximately half way between stations when adjacent five mile areas overlapped. The split points were agreed upon by the fire chiefs and are not necessarily at the mid-points between fire stations. Since the last major realignment, some of the rural fire departments have built second stations which are

close to the edges of their districts, however, the tax districts and response areas have not been readjusted.

Several of the districts have been reduced by the annexation of portions of their areas into the incorporated cities and towns. Most of the towns contract with the same fire department to serve areas after they are annexed, however the Raleigh and Cary fire departments protect the areas that are annexed by the cities. Some areas have been annexed by towns that contract with a different fire department to provide the service<sup>1</sup>.

The consolidation of all 23 existing fire tax districts into one is not essential, however, it would result in a much less complicated system and provide more discretionary power to the Board of County Commissioners to distribute the funds to address identified needs and priorities.

**Tax Rates** -- The existing fire district tax rates range from 6 cents to a maximum allowable rate of 10 cents per hundred dollars assessed valuation. The tax rate that is approved for each fire district is based on a budget submitted by the contracted fire department. The revenues for individual districts range from less than \$100,000 to more than \$500,000 because of the tremendous variations in the assessed valuation of the properties in the districts.

As noted in the previous section, the tax rate must be set higher in less developed areas to obtain needed revenues, while the tax base in highly developed areas generate more than adequate revenues with lower tax rates. The total tax levy from the unincorporated areas for the current year is approximately \$4.5 million; the same amount could be derived from a countywide rate of approximately 7.5 cents per hundred dollars assessed valuation.

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<sup>1</sup> The fire districts were established to support individual rural fire departments, however it is theoretically up to the Board of County Commissioners to decide each year which particular fire department should be contracted to serve each fire district. This option has never been seriously considered.

A small upward adjustment in the countywide tax rate could provide the funds that will be needed for the capital improvement projects that have been identified. A uniform tax rate of 10 cents would generate more than \$6 million from the unincorporated areas. Changing to a uniform rate would have a minor impact on any individual taxpayer and would expand the tax base to include the areas that are currently outside the districts.

**Recommendation**

*Consolidate the 23 fire service districts into one countywide district which would have one tax rate and provide a more equitable cost for fire protection. A uniform tax rate of 10 cents per \$100 of assessed valuation is recommended for the initial period.*

**Allocation of Funds** -- The Fire Advisory Board should advise the Board of County Commissioners on the appropriate allocation of funds to the fire departments. The majority of the allocation should come from the revenue produced by the primary service area of the fire department, however a significant portion should be set aside for capital expenditures and discretionary allocation within the overall system according to countywide priorities and objectives.

Funds that are allocated to individual volunteer corporations should not become the "property" of the corporations. Future contracts between the County and the volunteer corporations should stipulate that equipment and property purchased using County tax funds would revert back to the County should the volunteer corporation close. All future capital expenditures that are funded with tax revenues should become County property.

As more responsibility is assumed by the County for providing shared support services and the countywide approach is moved in the direction of a "seamless emergency response system," it is necessary to provide some redistribution of the revenue to reduce

the gross imbalance. There should still be a larger proportion of the revenue directed toward the higher valuation areas than toward the lower valuation areas.

One of the principal advantages of forming a single tax district is to allow the total fire tax revenue from the unincorporated areas to be distributed to meet the overall needs of the County. The distribution formula should be worked out by the Fire Board and recommended to the Board of County Commissioners. The municipalities would also have to be involved in this process, as they would be partners with the County in the overall system.

A conceptual example of a distribution formula could be:

50% to directly support the operations of the Fire Departments based on their areas of primary responsibility for the area

20% for redistribution according to the needs of the individual fire departments

10% for Capital Expenditures (Countywide)

10% to support the functions of the County Department of Fire Protection Services.

5% for apparatus and equipment replacement reserve

5% for special projects

Note: This formula is presented as an example for discussion purposes only. It would be essential to have all of the parties participate in a detailed discussion of the items that should be included in each area and the individual and overall needs of the service providers.

### **Recommendation**

*The Fire Advisory Board should evaluate and prioritize budget requests on a Countywide basis and present the Board of County Commissioners with a recommended consolidated annual budget and revenue allocation plan.*

*All apparatus and facilities obtained through future capital expenditures which use tax revenues should become County property.*

## **Establishing Performance Standards**

The current standard contract between Wake County and the rural volunteer departments does not establish minimum performance standards for organizations, individuals, or ranks. Although response time and numbers are referenced, there is no performance evaluation program in place to measure a department's strengths or weaknesses. Twenty-one individual fire departments are providing 21 separate fire protection deliverables to 22 separate districts. The performance of the overall system can be improved by bringing the performance of the individual organizations up to the level of the strongest departments and coordinating their efforts to work together as one service delivery system.

The fire departments currently determine their own levels of performance. They tend to have adopted a stand-alone posture with minimal reliance on automatic mutual aid. They have their own entry and training programs, and there are no consistent requirements that could be utilized to determine individual or department performance capabilities throughout the county. A countywide set of performance objectives and standards should be the foundation for the restructuring that must occur to maintain and strengthen the volunteer system. The County must realize that the success of performance standards hinges on the extent to which organizations are held accountable to maintain the standards. Valid performance standards within the contracts with volunteer organizations should be used to plan and measure the level of fire protection in Wake County. (Appendix C contains a sample of contractual performance standards).

*Service Level Objectives through Insurance Ratings* -- The minimum short-term service level objective should be to provide "Level 9S" service to every part of the county. Higher levels of service should be provided in more developed areas:

At least Class 3 service and preferably Class 2 in Cary, Raleigh, and (in the future) Morrisville.

At least Class 5 and potentially Class 4 in incorporated towns and highly developed areas (where hydrants are provided).

At least Class 8 or better in moderately developed unincorporated areas.

(Additional discussion of these objectives can be found in chapter four under the heading "Insurance Protection Classifications.")

### **Recommendation**

*Establish a Class 9S rating as the minimum service level for the entire County for the immediate future. Higher service levels should be provided in developed areas and gradually implemented in all areas.*

***Basic Fire Suppression Response Capability*** -- The classification system that is used by the insurance industry does not consider the entire role of a modern fire department. The response capability of the fire departments should be measured in terms of the ability to respond to a given location with an adequate number of properly trained personnel and the appropriate apparatus and equipment to conduct a standard interior fire attack operation.

The performance standard should ultimately be based on the capabilities of all the individual fire departments working together as a countywide system, using an automatic mutual aid response plan and a single set of standard operating procedures. It should also consider the ability to respond to rescue incidents, medical emergencies, and other types of incidents that can be anticipated. The standards for rural fire protection do not contemplate fast response. Often, rural response times are too long to plan to conduct effective interior search and rescue or fire suppression for most structure fires.

## Recommendation

*Establish a more reasonable basic standard for initial response that would include:*

- *At least one attack unit with at least four trained and equipped personnel at the scene within 5 minutes, and*
- *A full structure fire response team of 12 to 15 personnel assembled on the scene within 8 to 10 minutes.*
- *A full response team should have the capability to establish and maintain a fire attack flow of at least 350 gallons per minute by the 10 minute mark, while conducting interior search and rescue and fire suppression operations.*

These objectives are reasonable in the one to five year time period for the areas where fire stations already exist or are planned - generally in and around the built-up towns. The first stage of working toward this set of objectives would be have at least one crew of four personnel on duty or ready to respond from each station at all times. This crew could include a mixture of career and volunteer personnel, as long as they can respond without delay, who are trained to work together as a team, and follow standard operating procedures.

There are major cost advantages if the staffing can be provided with volunteers at night and on weekends. Facilities for volunteer personnel to "sleep-in" at the fire stations could allow for the immediate response of an initial attack force at night and on weekends. Some of the stations might be able to provide "live-in" facilities for college students or others who have an interest in the fire service.

The four-person crew would be a first-out immediate response company. It could be backed-up by additional staffed units from surrounding stations and/or units from the

same station staffed by more volunteers. A few stations in key locations could house additional personnel for additional units.

It would take several years to bring the entire county up to this level of response capability, however it is feasible to start with the stations in more built-up areas and gradually extend the service level out to more stations as the population and commercial development increase in these areas. Approximately 20 stations would have to be staffed with daytime crews of career personnel within the first five years.

To meet the five minute response time objective in all built-up areas would require several more stations to be added to reduce first-due response distances to around 2.5 miles. These stations could be added gradually in growth areas over a period of 10 or possibly more years.

## **Fire Prevention and Public Fire Safety Education**

The greatest impact on reducing the fire problem should result from public fire education and fire prevention programs. Communities across the nation have found that aggressive public fire safety education can reduce the fire problem. As mentioned previously, both career and volunteer personnel should be utilized in the future to strengthen public fire safety education and prevention efforts.

All of the fire departments that currently employ career personnel should utilize those personnel to perform fire prevention inspections and develop pre-fire plans within their first-due areas. Career personnel should focus their prevention efforts on businesses and schools, which are areas that volunteers who work during normal business hours cannot usually handle. Volunteer personnel, however, should concentrate on residential fire prevention. This includes ensuring that all homes have functional smoke detectors and performing home fire safety checks.

The most cost-effective investment in public fire protection is probably to ensure that every dwelling unit is provided with working smoke alarms. This objective should be adopted and supported as a major effort for the entire fire safety system. The accomplishment of this objective would probably save more lives and property in any particular year than all of the fire suppression forces combined. It would be appropriate to task volunteers with this objective since it could be accomplished during the evenings and weekends. Volunteers could also offer home fire safety checks during these timeframes, when they are not working, and residents are generally at home. The career fire fighters at the stations should also be used to perform basic inspections, especially of commercial buildings and occupancies, and to deliver public fire safety education programs.

The County Fire Administrator's Office should coordinate Countywide fire prevention and public fire safety education programs. This would include training fire fighters on performing inspections about the Fire Code. Utilizing line personnel to perform inspections will allow the Fire Marshal's staff to concentrate on complex occupancies and enforcement problems, and plans review. The entire program should be coordinated through the Fire Marshal and the County Fire Administrator.

A countywide coordinated approach to fire protection and education will create a consistent level of prevention throughout Wake County. It could ensure that public fire safety education is delivered to all schools, and that all businesses are inspected annually.

### **Recommendations**

*When feasible, utilize line fire fighters to perform fire inspections and to conduct public fire education coordinated by the Fire Administrator on a countywide basis. Assign specific inspection and education roles to career and volunteer personnel.*

## **Five-Year Plan for the Fire Service**

Below is a list of changes and actions that the study team recommends for the next five years. They are assembled in a logical order, but do not have to be accomplished in this order. Within a five year period, the system described thus far in this chapter should be fully functional and implemented.

1. Structure the fire service as a countywide system with fewer separate entities.
2. Continue to operate as a primarily volunteer fire service, with the exceptions of Raleigh, Cary, and Morrisville. Utilize career personnel for daytime weekday staffing and to perform other functions that support the volunteer system. Establish organizational standards and performance objectives for the volunteer organizations.
3. Restructure the County Fire Marshal's Office around the County Fire Administrator model. Develop the Department of Fire Protection Services.
4. Establish the Fire Advisory Board as an advisory body to guide the fire service, review the budgets submitted by individual fire departments, prioritize budget allocations among alternatives, and submit a consolidated budget to the Board of County Commissioners for approval. The Fire Advisory Board would also develop capital improvement plans, review and approve standard operating procedures, and provide oversight for the fire service in the County.
5. Consolidate all of the unincorporated areas of Wake County into a single fire district and establish a uniform tax rate.

6. Restructure the fire departments by reducing the number of separate, independent organizations; convert to municipal fire departments where appropriate; redirect resources, including personnel, where their mission has been displaced. Provide a small administrative support staff within the Fire Administrator's Office to assist with coordination.
7. Restructure contracts with fire departments to reflect new organization and standards of performance.
8. Establish uniform entrance and training standards for volunteer personnel, including requirements for promotions. This is an extremely important step for making the system function.
9. Establish uniform hiring standards, job descriptions, and position/rank requirements for all career personnel (including municipal fire department personnel, if the cities and towns agree.) A unified recruiting and hiring process would be very efficient.
10. Increase the County's commitment to training fire departments members in order to meet the objectives of #8 and #9. Work with Raleigh and Cary to form a single consolidated training program if possible.
11. Provide sufficient personnel in the new County Fire Administrator's Office to meet inspection requirements or manage programs using career fire fighters as inspectors.
12. Establish a program to check all residential smoke alarms annually and offer "home fire safety surveys" by volunteer personnel.

13. Standardize equipment, operations, and command procedures on a Countywide basis.
14. Redraw response boundaries so that the closest station is dispatched to an emergency. Utilize automatic mutual aid where necessary.
15. Create volunteer "sleep-in" or "live-in" programs at stations to improve staffing and response times.
16. Develop a plan for the integration of fire departments and rescue squads on a countywide basis -- or a clear, agreed-upon definition of responsibilities between fire departments and rescue squads.
17. Develop three confined space rescue teams, each based within a volunteer or career fire department, in addition to the existing Raleigh and Cary teams.

## **Ten-Year Plan for the Fire Service**

The following list of ideas and goals should be considered for ultimate long-term planning purposes.

1. Provide a maximum five minute response time to all built-up areas, with a minimum of four personnel (career or volunteer) arriving on or with the first unit.
2. Provide an eight to ten minute response time for rural areas.
3. Institute a countywide distribution of career-staffed fire suppression companies as needed to supplement volunteer response.
4. Consider the establishment of a unified career force to cover Raleigh and Cary, (and possibly Morrisville), and adjoining areas as one fire department. Also, consider the amalgamation of fire departments in surrounding areas as a County fire department with multiple volunteer companies supported by career companies.
5. Work toward full integration of fire/rescue/EMS countywide.
6. Regularly evaluate progress, results, and circumstances, keeping the five-year plan and ten-year plan regularly updated.

## **CHAPTER IV. SPECIFIC AREAS OF RECOMMENDATION**

The chapter provides detailed discussions and recommendation about several specific areas of the fire service. The areas include: fire stations, insurance protection classifications, apparatus, special response resources, and emergency medical services, training, personnel, communications, and code enforcement/inspection.

### **Fire Stations**

New fire stations and improvements to existing stations will require a significant capital investment in the next five to ten years. The County and the appropriate municipalities will have to develop a formula to share the cost of each of these projects.

Most of the fire stations that have been built by the rural volunteer fire departments did not contemplate occupancy by career personnel or by sleep-in volunteer personnel. They were built simply to house fire apparatus -- most lack sleeping, living and work areas. Only a handful of the newer and larger stations are suitable for long term needs. Most of the existing fire stations will require additions, rehabilitation, or total replacement to meet future needs.

It is important to recognize that fire stations (as well as fire apparatus) can have a direct impact on the feelings of autonomy and pride in volunteer fire departments. The districts that have a strong and expanding tax bases can afford facilities that assist in attracting and retaining volunteer personnel. The districts with limited or shrinking tax bases are often hard-pressed to properly maintain their existing vehicles and stations.

The Fire Advisory Board should develop a countywide capital improvements budget, and make recommendations to the Board of County Commissioners on projects that should be funded each year, based on input from a Capital Improvements Project Planning Committee (discussed further below).

*Capital Funding for Stations* -- Several of the fire stations that will need work are likely to transfer from rural fire department ownership to the municipalities if the recommendations in other parts of this study are followed. The funding of capital expenditures for modifications and for new construction may include both municipal and county tax district funds. The individual projects will have to be prioritized along with the plans for additional stations.

The number of projects that must be addressed will require a very thorough analysis of capital funding alternatives. Different funding mechanisms can be used to spread the cost over a reasonable period of years. The consolidation of all of the unincorporated areas into a single fire tax district should provide the largest possible tax base to support the cost of the capital projects, if the fire district tax is the most appropriate funding mechanism for the capital improvement projects.

### **Recommendation**

*Funding allocations for capital projects should be based on countywide priorities, with money coming from a single fire tax district.*

*Capital Projects Planning Committee* -- One of the tasks that should be addressed in the first year is to establish a committee underneath of the Fire Advisory Board to develop a facilities plan and a priority list for capital projects. The committee should be responsible for the review and approval of all capital construction requests submitted by departments providing fire protection within the County. The Fire Advisory Board should review and approve the recommendations of this committee.

The committee should include representatives from the County and from the municipalities that need to be involved in planning capital projects. It should include one member from the Fire Administrator's Office, and a maximum of four representatives from the municipal and rural volunteer fire departments. Representatives from the Raleigh and Cary Fire Departments should also be invited to participate with the committee. The role of this committee should become an ongoing committee project.

### **Recommendation**

*Establish a Capital Improvements Project Committee under the Fire Advisory Board to assist with developing countywide facility plans.*

**Fire Station Plan** -- A fire station plan should be developed by the Capital Projects Committee, and regularly updated to identify needs, prioritize projects, coordinate station locations, and develop design requirements. The Cities of Raleigh and Cary, the incorporated towns and the County rural fire departments should all participate in the planning process. The planning process should look at the following considerations:

1. **Joint Use of Facilities.** Future fire stations could serve as multiple use facilities, possibly shared by police, fire, EMS, or another agency, potentially providing space for other functions that can be reasonably blended into the fire station environment. It should be feasible to work with an architect to develop a reasonably standard design that can be adapted to several specific fire station sites and requirements with considerable savings in design and construction.
2. **Station Location.** Specific criteria for locating and equipping fire stations within the County. In establishing locations for station, the plan should be based on the premise of the closest unit responding to an emergency. The location planning process should take into account an enhanced utilization of mutual aid and

automatic mutual response from all departments within the County, including the Cities of Raleigh and Cary.

3. **Station Design.** Specific criteria addressing station design and construction should be included in the plan. Design plans should include considerations for sleep-in or live-in crews, and career personnel.

Automatic mutual aid response agreements with fire departments adjacent to the County should also be developed.

### **Recommendation**

*The Capital Improvements Project Committee should identify and prioritize fire service capital projects in the County. It should consider the creation of joint-use facilities, automatic mutual aid when evaluating the location of new facilities, and future design needs for sleep-in, live-in, or and career personnel.*

**Station Locations in Unprotected Areas** -- There are still some unincorporated areas that are not within a fire tax district because the response distance is more than five road miles from the nearest fire station. The closest rural fire department responds to calls in these areas; one of the departments reports that more than 20 percent of their calls are to properties outside their tax area.

The County should attempt to provide a fire station within a maximum of five road miles of all developed areas of the County, to provide a minimum level of service. Two large unprotected areas could be covered by adding two new stations; one each for the Apex and Knightdale Fire Departments. Both fire departments are ready to proceed with these projects within one year. In both cases, the unprotected areas may not generate enough revenue to fully support the construction and operation of an additional

station at the present time, however, the fire districts can afford to support the investments until the tax base in the added service area matures.

The third significant unprotected area is served by the Stony Hill Fire Department and is north and west of their tax district. A new station for this area is not likely to be built without financial support from an outside source, since the existing tax district barely supports the fire department's current expenses and the unprotected area is sparsely populated.

The existing Stony Hill station should be replaced with a more suitable facility, which could be built north and west of the present location to alleviate part of the need for a second station. Mutual aid companies from outside the county can cover part of the extreme northwest corner of Wake County faster than Stony Hill, however, at some point in the future another station will be needed to cover the unprotected area.

The remaining unprotected areas are small gaps between districts, which do not in themselves merit additional stations. Most of these areas can be covered within five miles by additional stations that are already planned or by minor adjustments in response areas.

Building a fire station within five miles does not in itself provide fire protection. Some of the rural departments have built substations and placed apparatus in remote areas where there may not be any personnel to respond with the vehicles. The departments need to develop a cadre of personnel in the areas where stations are located to respond promptly when they are dispatched. Even when trained personnel are available in the area, a station within five miles only provides the minimum level of service that is recognized for insurance purposes. (Class 9S)

## **Recommendations**

*At a minimum, provide a fire station within a maximum of five road miles of all developed areas of the County.*

*Establish a cadre of "duty crews" who rotate to ensure that volunteer personnel will be available to respond and operate equipment at unstaffed stations at all times.*

## **Insurance Protection Classifications**

Rural fire districts are rated for insurance purposes, primarily based on the operational capabilities of their fire departments and the availability of water for fire suppression. The classification system is on a one to ten scale: Class 10 indicates unprotected property, while Class 1 is considered as very highly protected. Most large cities are rated as Class 2 or 3 and a only a small number rated as Class 1. Rural areas are generally rated in the Classes 6 to 9.

Properties in Class 10 areas generally pay the highest fire insurance rates and lower rates apply to areas with each successive lower numerical classification (see Figure 4-1). In North Carolina, Class 10 property insurance rates are generally about twice as high as Class 1 rates. Individual insurance companies may utilize different rate structures, however, the largest reduction in premiums, almost 20%, generally occurs between Class 10 and Class 9S. There are additional savings in insurance premiums for each step from Class 9 down to Class 6. All properties in Classes 1 through 6 generally pay the lowest rate. (In many other states, the difference in insurance premiums is only significant when the level of service provided by the fire department is Class 8 or lower.)

It is important to recognize that the fire insurance classification system is intended only to establish a base rate for setting fire insurance premiums for property - it does not consider any other aspects of fire protection or fire department services. It cannot be directly translated into premium dollars, because of competition between insurance companies and because most fire insurance is sold as part of an insurance package and makes up a small proportion of the total premium.

Most of the rural volunteer fire districts in Wake County are rated with a split classification 6/9S, which indicates that the fire departments provide Class 6 service in the areas where a water is available from hydrants (generally incorporated and

**Figure 4-1**

**Example of Fire Insurance Premiums versus Fire District Taxes**

To provide a cost comparison for home owners, the Wake County Fire Marshal's Office conducted a survey of homeowner's insurance premiums for single family homes under different protection classifications. The following information was obtained from seven different insurance companies, based on a wood frame single family dwelling, valued at \$100,000, insured for replacement value. The "model home" has smoke detectors and deadbolt locks and the policy includes a \$500.00 deductible amount. The following figures are the averages of those provided by the seven companies.

Protection Class	Average Premium	Class Savings	Total Savings
10	\$489	---	---
9S	\$387	\$102	\$102
8	\$360	\$27	\$129
7	\$322	\$38	\$167
1-6	\$257	\$65	\$232

The amount of fire district tax on a home in Wake County depends on the district where it is located. The rates range from 5.5 cents to 10 cents per \$100.00 assessed valuation in different districts. A home owner in the lowest tax rate area would pay \$55.00 annually; in the highest tax rate districts the cost would be \$100.00.

A home that is not currently within a fire tax district would be insured as Class 10 property and would not pay any fire tax. Using the figures provided above, the insurance premium would be \$489. If the property is included in a fire district that can provide Class 9S service, the insurance savings would be greater than the cost of the fire district tax. (\$102 insurance premium savings versus \$100 maximum fire district tax.)

immediately adjacent areas) and Class 9S in the areas where they depend on tankers for water supply. (The 9S classification indicates that the fire department meets North Carolina minimum standards for rural fire protection.)

A few of the rural districts that have no incorporated service areas and no water supply systems are uniformly rated as Class 9S. Areas beyond the five mile response distance from the closest fire station are rated as Class 10 and receive no reduction in their insurance rates.

Three districts (Wake-New Hope, Fairgrounds, and Bayleaf) are rated entirely as Class 6 and Bayleaf is working on a Class 5 rating. Wake Forest and Zebulon have Class 5 ratings in their incorporated service areas.

#### **Recommendation**

*To take advantage of the insurance savings, the countywide plan for providing fire protection services should set an objective of providing at least Class 8 service to all built-up areas and at least Class 5 in urbanized areas.*

It appears to be feasible to meet Class 8 requirements in most areas with relatively minor improvements in operational areas. A large part of the improvement could be achieved simply by advancing from an unstructured mutual aid system to a functional countywide automatic mutual aid response system. While the lower insurance premiums are desirable, the insurance rating system should not be the driving force behind fire protection improvements.

## **Apparatus**

Apparatus needs in the future should be considered on a countywide basis, based on what apparatus resources each department has, where certain types of apparatus are lacking, and what is the potential staffing level for units. The overall future concept of apparatus should be premised on using mutual aid resources from the County departments.

*Mutual Aid Apparatus* -- Most of the departments appear to have adopted the philosophy of owning and operating a fleet of water delivery vehicles to be self-sufficient for most situations, and only occasionally utilize mutual aid to obtain assistance from surrounding departments.

In most cases, it would be more practical and efficient to dispatch one or two units from several surrounding stations than to count on having drivers and crew members for several vehicles coming out of one station. In other words, it would be more efficient to have fewer tankers placed strategically throughout the County which all of the fire departments could use through automatic mutual aid. Under this plan, tankers from two or three departments could be dispatched to fires where a water supply is needed. A few strategically located large capacity tankers would help. Substantial savings could be realized if the departments coordinated their purchasing of new apparatus and limited their fleets to a reasonable number of vehicles that each could operate as part of a coordinated plan.

There also should be a more concerted effort to plan a strategy and conduct training on the efficient delivery of water using uniform procedures for particular situations. All of the departments should be fully capable of working as a combined force according to the standard operating procedures.

*Future Apparatus Plan* -- In a countywide system, the individual fire departments would not have to plan their fleets around having enough water carrying capacity for every potential situation or in their district for simultaneous incidents. Units would be dispatched from the surrounding stations to assemble the combined force of personnel, apparatus and equipment, and water transport and delivery capacity to meet the needs of each situation. This is a more realistic approach in an environment where volunteer and career staffing is limited; it is usually easier to muster four or five members from each of three departments than to assemble twelve to fifteen members (a reasonable initial response team for a reported structure fire) from one department.

The countywide plan and the contracts to serve county areas should include a limitation on the number of vehicles that will be maintained through the tax revenues. The actual determination should be made by the Fire Advisory Board based on a recommendation from the Fire Chiefs, however it should include at least two primary attack units (pumpers or pumper-tankers) available to respond from each station. The combined fleet of water transporting units (pumpers, pumper-tankers or tankers) at each station should have the capacity to transport at least 3,000 gallons of water. "Surplus" equipment should be relocated to other areas of the County where they are needed.

These objectives can be accomplished with two or three primary fire suppression vehicles in each station. One brush unit or mini-pumper per station is also reasonable. If individual departments wanted to retain additional vehicles on their rosters, it would be their responsibility to pay the operating and maintenance costs with funds raised on their own.

The system should also include a reasonable number of spare vehicles to replace units that are out of service for maintenance or repairs. A ratio of approximately one spare for each five first line units should be adequate. The spare vehicles should be owned and maintained by the County and shared throughout the system as needed.

The Fire Advisory Board should determine the need for specialized apparatus and equipment and appropriate available funds to purchase these items. The cost of the specialized units should be shared and the vehicles should be county-owned, however, they could be assigned to particular departments to operate. The operation of specialized units is a potential mission for some of the volunteer departments that are no longer needed for primary fire protection. (At some future date, some of the special purpose vehicles could become "County units" staffed by 24 hour County-funded career personnel.)

### **Recommendation**

*Apparatus purchases should be coordinated and planned by the Fire Advisory Board so that all apparatus, including special apparatus, is strategically located throughout the County, and duplicate equipment purchases are eliminated. The apparatus plan must take into account the ability to have the apparatus staffed at all times.*

***Apparatus Replacement Budget*** -- The budget instructions for the volunteer departments this year include a requirement to set aside a reserve fund for apparatus replacement. This is a positive step for improved management. If the fire districts are consolidated, a certain amount of the total fire tax revenue should be set aside each year for apparatus. The actual expenditures for apparatus replacement should be planned and prioritized each year on a Countywide basis by the Fire Advisory Board. The County departments and the municipal fire departments that contract to serve County areas should be able to apply for appropriations from the County fire apparatus fund. The municipal departments could match with municipal funds to replace a vehicle or acquire an additional unit. Apparatus that is purchased with the County funds should be titled to Wake County or jointly titled to the County and another owner.

The replacement program should not be based strictly on age, but on the combined factors of mileage, condition, and suitability for each vehicle. Each unit should be evaluated annually by the County's fleet management staff. A replacement budget

based on an average of fifteen years of first line service is more realistic than twenty years, particularly if the utilization of individual units increases. Some of the fifteen year old vehicles should still be adequate for use as spares.

This approach would reduce the number of first line units that would be needed in the fleet and allow several older and obsolete units to be retired. There are some very good vehicles in the fleets of volunteer departments that are no longer needed because the districts have been annexed; these units should become available for reassignment within the countywide system to replace older and less adequate units. The apparatus reassignment process should be supervised by the Fire Advisory Board.

### **Recommendation**

*Apparatus replacement budgets and schedules based on an average of fifteen years of first line service should be planned and prioritized by the Fire Advisory Board. Each unit should be evaluated annually.*

*The apparatus replacement program should be based on mileage, condition, and suitability of each vehicle, not strictly age.*

**Apparatus Ownership** -- Apparatus that is purchased with tax funds should be regarded as public property in the custody of the individual fire departments and should be turned over to the County if those departments are dissolved. If they become municipal fire departments, the County and the municipalities should reach an agreement on the ownership question.

Any sale or trade-in of apparatus should require approval of the Fire Advisory Board, which would determine if a vehicle could be used by a different department within the county system before allowing a serviceable unit to leave the system. This would not necessarily apply to any vehicles that may have been purchased by the volunteer departments with non-tax funds.

An independent volunteer organization (which could operate as a rural or municipal fire department) could continue to raise its own funds and spend that revenue according to its own constitution and bylaws. This could include the purchase and operation of "volunteer owned" fire apparatus that would not necessarily be considered as a public asset. Existing apparatus that was purchased with non-tax funds could continue to be owned by a volunteer organization.

*Apparatus Maintenance* -- Each fire department currently provides its own apparatus and equipment maintenance. Some of the work is performed by volunteer and career personnel and some is sent out to various outside vendors. The Wake County Fleet Services Division may be able to provide a centralized apparatus maintenance facility that would be more reliable and economical than the current system. This alternative should be explored by the County Fire Administrator and reported to the Fire Advisory Board.

## **Special Response Resources**

Fire departments across the country have begun to take on additional "special response" capabilities in the past decade, including hazardous materials response teams and technical rescue teams. These areas are called special response because they require specialized training and equipment, beyond basic fire fighting skills.

Due to the increasing national concern to protect the environment, fire departments have assumed the role in many jurisdictions as the primary responder to stop chemical leaks, remove chemical and petroleum-based products that are found floating in local water bodies, and extinguish chemical fires. Knowledge of how to handle hazardous materials incidents requires special training and equipment.

Technical rescue is another fire department "special response" capability. It involves rescue from automobiles, confined spaces (sewers, vats, and tanks), collapsed buildings, trench cave-ins, areas accessible only by rope, and water bodies. Federal safety regulations require specialized training to conduct certain types of technical rescue operations.

*Hazardous Materials* -- Wake County should continue to work with the Raleigh and Wendell Hazmat teams and hold-off on making a decision in this area until the State's plans are known. If the Raleigh Fire Department Team is funded by State of North Carolina, it may become less costly for Wake County to obtain its services. If a different team is selected for the region, particularly one that responds from a more distant location, the local alternatives will have to be weighed.

Wake County should continue to support the Wendell Hazmat Team as a local resource to back-up a regional team or to provide immediate response capability when the regional team is not available.

All fire fighters, career and volunteer, are required by Federal law to be trained in basic hazardous materials operations. This is a standard and mandatory part of the training program for all fire fighters in the County. The County's Emergency Management Agency provides this training.

***Technical Rescue*** -- The Fire Departments and Rescue Squads will have to decide which agencies will develop and maintain different technical rescue capabilities in the future, particularly if the rescue squads move in the direction of specializing in emergency medical treatment and transportation and reduce their commitment to physical rescue. A joint planning and decision-making process will have to take place to make these determinations.

Most of the volunteer fire departments have become involved in automobile extrication and reduced the responsibility of the volunteer rescue squads to perform this function. This responsibility should be officially assigned to the fire departments to resolve any question of duties and responsibilities that could arise in the future.

There are several additional areas of technical rescue expertise and capability that should be addressed by the fire departments, to determine whether or not they are needed in Wake County. These areas include cave-in and confined space rescue, water rescue, urban search and rescue, and rope/high angle rescue. Some of these capabilities may already be available through the Raleigh or Cary Fire departments or through the volunteer rescue squads.

***Confined-space and Cave-in:*** Confined space and cave-in rescue capabilities appear to be priorities with the amount of construction and industrial activity that is occurring in Wake County. Teams to provide these capabilities should be established as part of a county-wide plan, involving the Raleigh and Cary Fire Departments with the County fire departments. These specialties require very specific training and equipment and should be geographically deployed to respond quickly to all areas of the County.

All career and volunteer personnel should be trained to recognize incidents that require these special teams and should be prepared to support their operations - only properly trained and equipped personnel should be permitted to take action on these incidents.

The Raleigh and Cary Fire Departments already have confined space rescue teams -- trained, equipped, and available to respond if needed. In the future, a network of five Fire-Rescue squads, one each from Raleigh and Cary and three from County fire departments, could be a reasonable geographic deployment of these specialties. Each team should be staffed to respond with at least four fully trained personnel for the required rescue specialty and at least two squads should be dispatched on any incident where the need for technical rescue operations is indicated. The teams could combine career and volunteer personnel, but all would have to be fully trained to work together, following standard operating procedures. All technical rescue equipment should be fully compatible.

The volunteer fire departments have purchased several special purpose vehicles which carry rescue equipment in recent years, but there is no plan in place to coordinate the equipment and advanced training for rescue specialists. The existing units can be used in the county-wide plan, with additional equipment and training. No additional heavy rescue units should be purchased until a Countywide plan has been adopted.

### **Recommendations**

*Establish a plan to strategically locate, fund, train, and equip 3 additional technical rescue teams across the County. The County teams should be part of a coordinated overall plan with Raleigh and Cary.*

*Continue support for the Raleigh and Wendell Hazmat Teams to serve the County.*

*Maintain the training of all fire fighters at the hazmat operations level.*

## **Emergency Medical Services**

Several of the fire departments have begun to offer emergency medical services (EMS) as first responders with the rescue squads to medical emergencies. Fire departments that already participate in EMS response are finding their EMS call volume is higher than their structure fire call volume (see Chapter 2). Some of the fire departments provide extrication services, and all of them work with the EMS agencies at vehicle accidents and other types of rescue incidents. Because of the distribution of 29 fire stations across the County, the fire departments have the ability to offer rapid EMS response. There are only 12 rescue squad locations outside of Raleigh to cover the same area. Fire stations that are staffed by "in-station" personnel and participating in the first responder program often can beat a rescue squad to the scene.

In the future, all fire departments should be incorporated in EMS response, especially for life threatening emergencies and all vehicle accidents. At a minimum, each fire engine crew should include at least one first responder or emergency medical technician (EMT) that could perform basic life support skills. Eventually, all fire fighters should be trained to either the first responder or EMT level. Fire engines should be dispatched to all incidents involving an immediate threat to life, such as cardiac arrest, vehicle accidents with injuries, trouble breathing, or heavy trauma calls, because the fire fighters can begin critical patient care before arrival of an ambulance.

The future plan should combine the fire departments and rescue squads into one organization. The two organizations have similar missions, could complement one another, and together could improve EMS response times in the County. Additionally, fire units could begin to carry automatic defibrillators. In the long term, several strategically located engines could be staffed with a paramedic to provide an even higher level of rapid response EMS care. A comprehensive study of the Wake County EMS system is recommended.

## **Training**

It is estimated that the volunteer fire fighters within Wake County spent more than 50,000 hours in various training activities during 1993. This is an indication of their commitment to the fire service and willingness to help others. The introduction of state and federally mandated training requirements in recent years has reduced the time available for discretionary training programs and placed additional emphasis on the need for effective and efficient training delivery systems.

The County can support and strengthen the fire service in Wake County by providing a strong foundation and support system for training. The County's existing Training Academy is the first element of this program and provides a valuable service; however the current program should be strengthened and expanded to provide a much more systematic and comprehensive approach. Training should be structured and scheduled around the needs of volunteers, to allow them to obtain the training they need at times they are available to attend and participate.

The individual fire departments in Wake County have widely varied training programs. Each department establishes its own training requirements, evaluates its own performance capabilities, and administers its members' compliance with the department's training mandates. The departments differ significantly in the levels of certification and training that have been established for different ranks and positions. They also utilize numerous different methods for delivering training and evaluating the effectiveness of their efforts.

For example, to become a driver/pump operator at one department, a fire fighter may be required to successfully complete a State certificated training program and then demonstrate competence by completing a detailed departmental performance evaluation.

At another department, a fire fighter may only have to drive and operate a pumper to the "satisfaction" of the Chief.

Some of the departments have written requirements for different positions while others have no documentation of their requirements or and no training records for individual members. While many of the volunteers have obtained high levels of certification and are actively participating in ongoing and special training programs, many others are barely meeting the minimum requirements established by their individual departments.

There is sufficient training available for individuals who are motivated and have the opportunity to participate. The Wake County Fire Academy offers a certificated fire training program that is sanctioned through the North Carolina Department of Community Colleges and the North Carolina Fire and Rescue Commission. Wake County Technical College also provides State certificated training programs. The courses and curriculum offered by both the Academy and Wake County Technical College focus on providing essential information and skills training related to operating at emergencies. Interviews with personnel throughout the County provided a very favorable response to the quality of training that was offered by both organizations.

Although fire departments and individual fire fighters are encouraged to use these available resources, it is almost entirely up to each department to establish and maintain training requirements and programs for their own personnel.

Training in operational skills and company functions is conducted most frequently at the fire stations or at local training sites. The training is generally led by personnel designated as instructors by the individual departments. This training is mostly department specific and focuses on individual department standards and operating procedures. Although instructor certification is required to teach in most cases, the ability of these individuals to plan, conduct, and evaluate training appear to vary considerably.

To be effective, training and education programs must address the specific needs of a fire department. The fire departments in Wake County should work toward operating with a higher level of coordination and consistency, based on standard operating procedures. While many similarities may exist, there is need to increase the consistency of training among the departments and to enhance the effectiveness of each department's training program within Wake County. Establishing similarities including operational guidelines and minimum individual and department performance requirements between numerous independent volunteer departments will be a difficult task.

Operational guidelines and training requirements must first be developed. The process must involve active participation from each of the individual departments. An integral part of this process must involve the establishment of an agreed-upon system with specific criteria for measuring each department's compliance with established training mandates. Any evaluation system must be based on a department's demonstrated ability to meet documented performance requirements.

There is an existing need to develop and implement management training programs. Courses that address: the recruitment process, leadership styles, motivational techniques, budget preparation, conflict management, and effective communication are needed. Participation in management training should be considered when establishing minimum requirements for leadership positions in all of the volunteer departments. There is a need to design a more comprehensive officer development training program in Wake County.

Each of the departments is faced with similar fire response deliverable expectations, however they do not have the same training nor performance requirements for their members. The lack of time available for training will continue to present challenges to all of the volunteer departments. The most efficient manner to address

these problems is through effective training programs, provided or coordinated through the County.

*Wake County Fire Academy* -- The Academy, which is located in the Southwestern corner of the County, was established in 1988 in order to improve the levels of training for volunteer fire fighters.

The Fire Academy was intended to provide departments with basic and continuing education programs and to maintain accurate training records. It was also intended to "centralize the management of the fire training program." The Training Division of the County Fire Marshal's Office is responsible for managing the Academy and has requested \$143,000 to provide fire service training in 1994/1995. Two County Deputy Fire Marshals are assigned to manage and conduct training at the Academy's training facility. They are supported by State certified instructors, who are paid through the community college system. Courses and programs are primarily directed toward providing certification directed training, manipulative skills and live fire training exercises, most of which is based on NFPA professional qualifications standards.

The North Carolina Department of Insurance has recently documented recommendations for improving site safety at the Academy. Subsequent changes resulting from this review and the documentation of procedures should improve safety at the training facility.

The facility is available for live fire training to all of the County departments, including Raleigh and Cary, and to the CP & L fire brigade. The training facility has experienced increased utilization each year. During 1993 it was utilized for more than 465 hours by County volunteer departments, while individual department members spent more than 11,000 hours training at the site. In addition to activities at the training facility, the training staff also assists departments that request support for their specific

training needs. The nature and extent of support requested varies significantly from department to department.

*Minimum Performance Requirements* -- Although the State of North Carolina has established minimum performance requirements for various levels of certification for individual fire fighters, each department in Wake County determines its own requirements related to membership, training and required certifications for its members. Most of the departments utilize the County training facility for "Essential/Individual Skills Training," however, less than 50 percent of the departments conduct live fire training involving single or multiple company evolutions at the facility. The County has not established minimum entrance or training requirements for the contracted departments. A policy and systems should be established to monitor performance capabilities for any of the volunteer departments.

Training involving multiple company operations is not frequently conducted at the Academy. Each of the 21 departments operates under its own procedures and essentially determines its own performance capabilities. The study found that there is wide range of record keeping systems relating to individual or department participation in training activities. Annual evaluation of each department should be conducted at the Training Academy or at a suitable location.

## **Standard Operational Performance**

*Performance and Certifications* -- While they are morally responsible to the people who live and or work in their districts, each of the 21 departments is, in reality, only accountable to itself for its performance capability. The existing County structure and the contracts with individual fire departments for delivering fire protection services provide minimum authority and no procedures for establishing or maintaining consistent performance levels.

There are significant differences in training requirements, operating procedures and resulting performance capabilities among the 21 volunteer organizations. Without standardized operations, performance evaluations of an individual or team have little practical value. Because each department has its own standard operating procedures and training requirements, there is no valid standard for measuring the performance capability of each individual or department.

The North Carolina Department of Community College and North Carolina Fire and Rescue Commission have authorized Wake County Technical and the Wake County Fire Academy as delivery agents for state courses that are nationally recognized and designed around national fire fighter certification standards.

Professional certification at different levels is based on an individual's completion of courses that satisfy standard recognized performance requirements. They are not based on an individual's ability to perform the specific tasks required by a particular fire department nor to operate as a team member of that department executing specific operations. Proficiency in the generic skills has little value to the individual or to the department unless they can be effectively applied to that department's operations. Continuous, performance based, skills training must be mandated, scheduled and conducted at the department level.

The lack of consistent operational guidelines and minimum performance requirements will significantly limit the ability of different departments to effectively complete required tasks during incidents requiring multiple department operations.

As the County departments begin to operate more closely together in the future, there will be a critical need to develop, implement and manage compliance with a standard set of operational guidelines. Appropriate training programs must be provided and training requirements must be followed.

***Mandated and Discretionary Training*** -- Maintaining proficiency in the required skills requires periodic practice. In recent years, several new State and Federal Regulations have been passed that directly impact on the time available for volunteers to train. Large amounts of time are now required in order to comply with hazmat and infectious disease training mandates found in 49CFR1910 and other OSHA regulations, NFPA 1500, State Fire Department Inspection Program, ISO requirements and other new regulatory programs.

The contractual agreement between Wake County and the volunteer departments establishes the mechanism to require standard training requirements. The current contract states that "Each fire department shall have an adopted guideline that addresses appropriate initial training of fire fighters and continuing education that meets or exceeds all State requirements." This wording does not provide the County nor the individual departments with appropriate guidelines for establishing or implementing the necessary training programs or objectively evaluating compliance. Each department is currently determining how their performance is measured.

The fire fighter entrance, membership and driver/operator requirements are inconsistent. In most cases, officers are elected or appointed based on highly subjective and a minimum of objective criteria. Performance capabilities at all levels vary greatly.

The goal of the training mandate within the County contract should be to see that all personnel are capable of performing at consistent levels. In order to meet that goal, detailed minimum performance standards for different positions or "ranks" for both career and volunteers will need to be developed and implemented. In addition to individual performance requirements, department operational performance minimums should be detailed and a system for measuring a department's performance capabilities should be established.

## **Personnel**

*Career Personnel* -- Many of the departments have recently been faced with a need to hire and train career personnel in order to provide minimum daytime coverage. Several other departments have recognized a need to implement career staffing in the near future. Until recently, the individual departments have been solely responsible for hiring their own personnel. Job requirements, performance evaluation methodologies, hours, working conditions, wage and benefit packages, and training requirements vary from one department to another.

*County Employment* -- The recent hiring of three career personnel for the Fairview Fire Department as County employees has established an excellent mechanism to address this issue in a more uniform and consistent manner. Planning and coordination of personnel policies among the departments will be essential in the future. There is already a need for those departments that employ career personnel to review, and in some cases establish, personnel practices and human resource development programs. The option of bringing these employees under the County structure, as has recently been implemented for the Fairview Fire Department, or as municipal employees, would relieve the volunteer organizations of many of the burdens of managing career personnel.

*Career/Volunteer Combination Staffing* -- As the utilization of career staff increases throughout the County, there will be potential for personnel and operational problems within individual departments as well as among the different departments. At the present time, there are no conflicts with neighboring career departments; they are currently the primary recruiting source for some of the volunteer departments.

The increased use of a mixed (volunteer/career) work force will require training in: managing change, leadership, conflict management, and team building skills, for most

departments. Creating and maintaining a work place that establishes an environment of trust between career professionals and professional volunteers will not just happen.

It is not realistic to expect the exact same level of performance from career staff and volunteers. Those persons hired by either the County or the individual departments should be expected to perform at a higher level than most volunteers of a similar rank because it is their job on a day-to-day basis. This does not mean that some volunteers may not perform at even higher performance levels than paid staff. Establishing, maintaining, and requiring adherence to realistic performance levels for all personnel by all departments will be an essential component of any system designed to improve the coordination and performance of the fire departments serving Wake County.

The establishment of a training system that effectively and efficiently addresses the needs of each of the volunteer departments while requiring consistent performance levels throughout the County is essential. That system needs to be developed, enforced and centrally administered.

### **Recommendations**

*A Human Resources position should be established within the Fire Administrator's Office to create a training system for all fire departments providing services to Wake County.*

*Establish the Position of Chief of Training with full-time responsibility for implementing and monitoring competency based training programs for all departments providing contracted services to Wake County.*

*Establish a task force to work with the Director of Human Resource Development and the Chief of Training to create a system that will implement consistent competency based training programs for all ranks and all departments.*

*Establish that compliance with the training programs, determined by the task force, is mandatory for all departments providing contracted services to Wake County.*

*Develop a standard Wake County Training Manual.*

*Implement the site safety recommendations documented by the North Carolina Department of Insurance.*

*Establish and implement a certification program for all instructors who will participate in live fire training.*

*Establish and maintain a computer based record keeping system to document and maintain individual and department training records.*

*Mandate the development, documentation, and adherence to detailed lesson plans for any activity conducted at the Academy.*

*Establish a training program that requires each contracted department to annually participate in a performance based evaluation of their ability to safely, efficiently, and effectively complete a standard set of practical fireground evolutions. The evolutions should directly reflect the content, goals, and objectives contained in the County Training manual.*

*Establish a drill schedule that requires multiple departments to train together.*

*Establish a minimum entry level, training and performance requirements for all career and volunteer positions within the County.*

*Develop and provide a management training series that focuses on critical skills essential to implementing change.*

## **Communications**

Communications services for most of the fire departments in Wake County are provided by a consolidated 9-1-1 Public Safety Communications Center which is operated by the City of Raleigh. The two exceptions are Cary and Apex which have chosen to operate their own Public Safety Communications Centers. Wake County contracts with the City of Raleigh to provide this service to the unincorporated County areas.

The communications service that is provided for the Wake County fire departments can be described as adequate; it gets the job done, but it could be done considerably better. Individual fire departments and the Fire Marshal's Office expressed dissatisfaction with both the dispatch and data provided by the existing system. The objective of receiving calls from the public and dispatching the appropriate fire department appears to be accomplished with reasonable accuracy. One dispatcher is assigned to dispatch fire calls and to handle tactical communications for Raleigh and the County departments. Calls are processed fairly promptly, as long as the assigned fire dispatcher is not too busy. It is not unusual for the one assigned dispatcher to be busy doing something else when one of the County units needs to communicate over the radio.

In addition, many of the dispatchers appear to be only marginally familiar with the geography, jurisdictional areas, and operational details of the rural fire departments. The radio system has been expanded to provide tactical radio channels for the rural departments, however the systems are not compatible with Cary or RDU Airport. These shortcomings could be described as inconvenient and sometimes aggravating, however they could present major problems in critical situations, such as a major incident where multiple Wake County companies must respond and communicate between one another.

The communications system should provide a much higher level of support for the County's fire departments. There should be one dispatcher dedicated to the County fire departments at all times, or (more efficiently) two dispatchers assigned to handle the Raleigh and surrounding area fire departments. The Communications Center should be the hub of operations and an efficient resource coordination point for mutual aid and joint response resources throughout the County. All of the fire departments should use identical communications protocols and the dispatchers should be an important element of the system for managing operations, not only for dispatching the appropriate fire department to an incident. The existing system falls short of desirable objectives in all of these areas, possibly because no concerted effort has been made to see how a well-planned and operated communications system can work.

A major effort is needed to improve the communications system to meet the present and future needs of the fire departments. The most effective approach to address this subject is as part of an overall plan to restructure and upgrade the operations of the fire departments. Some of the existing weaknesses in the Communications Center can be addressed, however it will be much more productive in the long term to develop a plan for the fire departments and then to plan the communications system to support that operational structure.

The communications system for the future should be designed to meet the needs of the fire departments, using standard operating procedures and communications protocols that would apply Countywide. All units in the system should be fully capable of communicating with each other and should be dispatched and redeployed following a structured Countywide system, supported by a computer aided dispatch system. To support the volunteer system, an advanced alpha-numeric paging system, interfaced with the dispatch system, should be acquired. In the future, the radio system should support data transmission for mobile digital status units and mobile data terminals.

The concept of a consolidated City-County Public Safety Communications Center is a progressive step and should not be abandoned in favor of a separate center for the County or a separate fire communications system. These recommendations presume, however, that the fire departments can have a much greater influence on the way that the service is provided than is presently the case. If the Public Safety Communications Center continues to function without a comprehensive plan for fire communications, the service will become less than adequate for the future needs of Wake County.

### **Recommendations**

*Redesign the communications system and protocols around the new organization of fire services in the County, ensuring that the same communications protocols are used by all departments. The communications center should be the hub for dispatching assignments and coordinating automatic mutual aid response.*

*Ensure that all departments and units in the County can communicate between one another.*

## **Code Enforcement, Inspections, and Fire Cause Determination**

The County's responsibilities for code enforcement were greatly increased by the adoption of the State Fire Code, which places the responsibility on local jurisdictions to perform mandatory occupancy inspections on a regular basis. This program has resulted in the enforcement of the fire code in hundreds of occupancies, many of which were not previously inspected, resulting in a very large increase in the workload and level of responsibility assigned to the Fire Marshal's Office. Many of the occupancies that are currently being inspected were never previously inspected or required to comply with any codes.

*State Fire Code Enforcement and Inspections* -- The office is specifically responsible for enforcing state fire code requirements that apply to all occupancies except one and two family dwellings. The State of North Carolina has adopted mandatory inspection frequencies for several classes of occupancies which must be accomplished with local resources. The municipalities have the responsibility to perform the required inspections or to contract with the County for this service. The County's jurisdiction currently includes: all unincorporated areas of the County, and the municipalities and extraterritorial jurisdictions of Apex, Holly Springs, Knightdale, Raleigh Durham International Airport, Rolesville, Wake Forest, Wendell and Zebulon. The County Fire Marshal's Office is also responsible for fire and electrical inspections of all public schools in the entire County.

The Fire Code Enforcement Team also assists local building officials with new construction projects to ensure compliance with State Fire Code. The fire inspectors review construction plans and inspect new buildings prior to the granting of a Certificate of Occupancy. These tasks are very demanding in a rapidly developing and diversifying service area.

Through April of this year, the Inspections Team had conducted more than 1,950 building inspections and identified more than 4,140 violations. This compares to 1,526 inspections that identified 6,329 violations during a similar period in 1993. There are 2,423 identified inspectable buildings in Wake County's jurisdiction, which include over 5,000 individual occupancies.

The Fire Marshal's Office has identified 2,423 occupancies that are subject to regular Fire Code inspection. The State Fire Code divides these buildings into three categories:

High Priority (Annual Inspection Required)	1,476
Medium Priority (Biannual Inspection Required)	494
Low Priority (Triannual Inspection Required)	<u>453</u>
TOTAL	2,423

To meet these objectives, the inspections staff must complete 1,874 building inspections annually. In addition, they are responsible for 105 public school campuses, which include more than 1,000 individual buildings, each of which requires two fire and electrical hazard inspections annually. The workload also includes more than 300 foster care and family care homes which require annual inspections, plus plans review and new construction inspections, issuance of permits and follow-up on complaints of fire code violations.

The workload exceeds the capabilities of the current staff and only the higher priority objectives are being met -- there are insufficient personnel to meet the medium and low priority workload. It will be necessary to add personnel, improve efficiency, and refine records management and follow-up techniques to come close to meeting the inspection objectives that are established in the Fire Code.

The most efficient manner to meet this objective would be to utilize the career fire fighters that have been hired to staff fire stations (as discussed in Chapter III). In

order to conduct code enforcement inspections, however, the fire fighters must be County employees or municipal government employees -- not employees of independent fire departments. (The three personnel who were hired by the County to staff the Fairview stations meet this requirement.) This is a significant reason to consider making all of the career fire fighters either County or municipal employees.

Innovations in methodology, training and increased utilization of computerized systems during the past ten months training have improved the productivity of the Inspections Division. Division personnel required an average of two hours to complete inspections during 1993 and are requiring just over 90 minutes per inspection during 1994.

A review of the current inspection workload with the Fire Marshal and an estimate of new construction demands throughout the County indicates that two additional Inspector/Investigators are needed as soon as possible to meet the mandatory inspection frequency requirements. Filling these two positions would be a stop-gap measure to address the immediate overload problem. The numbers need to be readjusted when a strategy is adopted relating to the use of fire suppression personnel to perform code enforcement functions.

*Fire Cause Determination/Emergency Response* -- The members of the Fire Marshal's Office respond to incidents to participate in fire cause determination and assist the incident commander. During 1993, slightly more than 10 percent of the total Fire Marshal's Office workload was dedicated to tasks identified in these two areas. Most of the current responsibilities assigned to the Fire Marshal deal with planning, administration, budgeting, and management tasks related to contracts with the 21 different volunteer departments. The responsibility and authority of the Fire Marshal's Staff in the areas of investigations and emergency response are not clearly defined. Fire departments may or may not utilize these services and expected outcomes and deliverables are not clearly identified.

Fire Marshal's Staff respond to major incidents and assist in implementing incident command. They serve as the Fire Marshal's representative in field operations and as technical advisor and/or coordinator between the City/County operations center.

In addition, assigned staff perform fire investigations upon request of any of the 21 different departments. They also serve as members of the Wake County Arson Response Team. The role of the Fire Marshal's Office and expected outcomes from their participation in these tasks need to be better defined.

### **Recommendations**

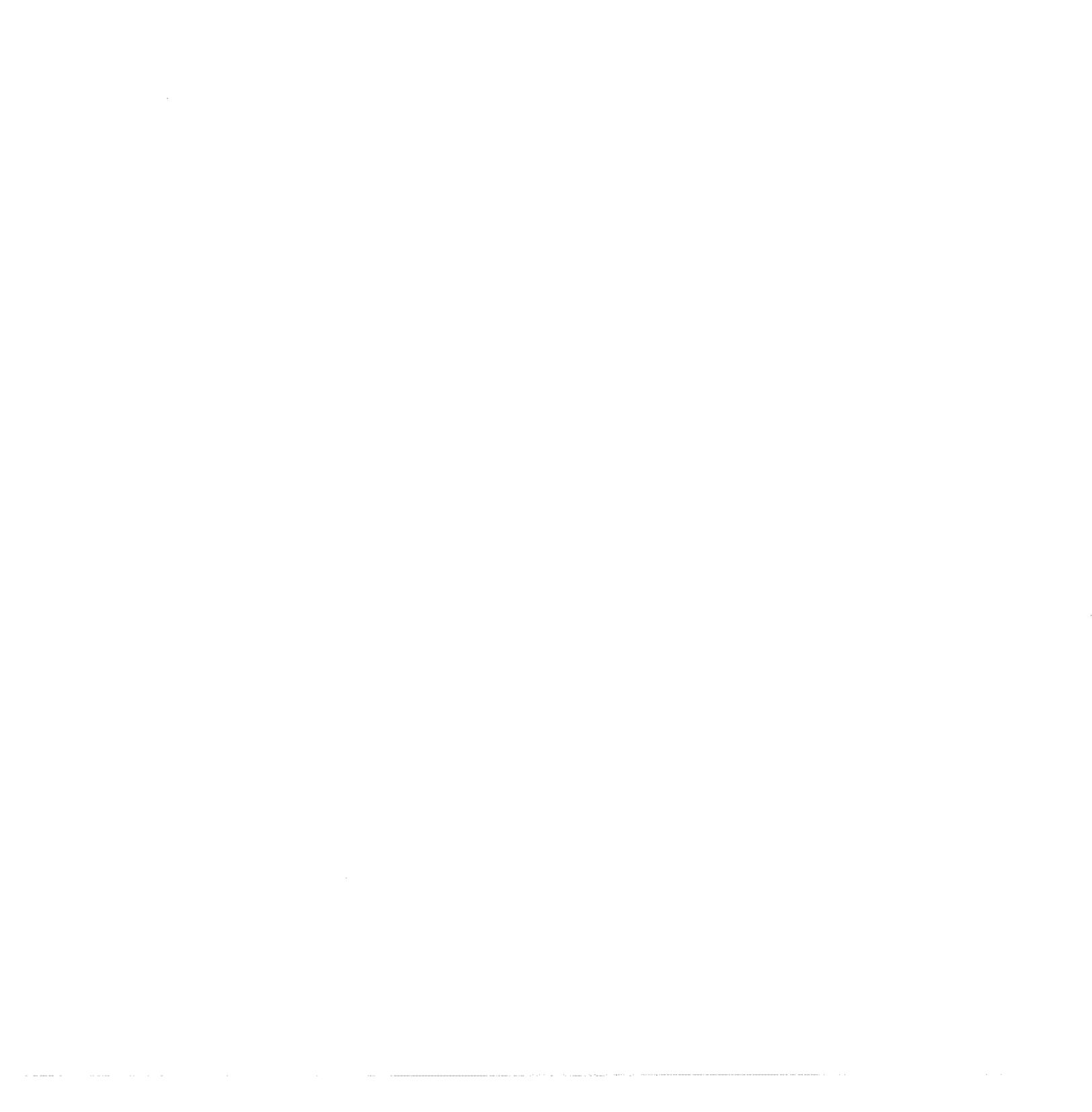
*Create two positions for a Fire Inspector/Investigators in the Fire Marshal's Office as soon as possible.*

*The Fire Marshal's responsibilities and authority in the areas of emergency response need to be more clearly defined.*

*Establish an improved system for follow-up investigations of suspicious fires. This should involve law enforcement organizations and the Fire Marshal's staff.*

*Develop a program to train and qualify fire fighters to perform occupancy inspections in low hazard occupancies. This will allow the inspectors to concentrate on medium and high hazard occupancies.*

**APPENDIX A. Description of Volunteer Fire Departments**



## APEX VOLUNTEER FIRE DEPARTMENT

The Apex Fire Department, which was formed 53 years ago, serves the Town of Apex and the Hipex Fire District. The Town of Apex has an ISO rating of 6, while the Hipex district is rated 6/9S. The Hipex fire district is primarily residential and borders on Cary, Morrisville, Holly Springs and Chatham County. Their response area includes a large section that is outside the tax district along the western border of the County. A new fire station is planned in the New Hill, Olive Chapel area. Additional stations will also be needed within the Town of Apex, which is experiencing substantial residential, commercial and industrial growth.

The department consists of approximately 46 volunteer members and five career staff, including the Fire Chief. There is a recognized need to add more full-time staff in order to meet increased demands and to improve daytime response. First responder medical calls and related costs are steadily increasing. The existing firehouse is being upgraded to meet code requirements. Funds are being set aside for construction of the new station in the New Hill area.

The Apex Rescue Squad provides emergency medical response to the district.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	4,500	Total Calls (in district):	357
Residences (County):	1,500	Mutual Aid (separate):	17
Commercial Buildings:	106	Total Weekday Calls: (7AM-6PM)	197
Approx. No. of Volunteer Personnel:	46	Total Night & Weekend: Calls (6PM-7AM)	160
Full-time Paid Personnel:	5	Avg. No. Personnel Responding Weekdays:	8
Part-time Paid Personnel:	0		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	13
Total Apparatus/Vehicles:	12	Average Response Time: (in district)	6.39
94/95 Budget:	\$287,500		
93/94 Funding to Date:	\$229,000		

## BAY LEAF VOLUNTEER FIRE DEPARTMENT

The Bay Leaf Volunteer Fire Department has an ISO Class 6 rating and is currently implementing a program to lower their rating to Class 5. They protect the largest and highest valuation rural district in Wake County and also participate in the First Responder Program. The district is primarily residential and is experiencing rapid development. It is bordered by fire departments serving Six Forks, Durham Highway, Falls, Stony Hill, Durham County and the City of Raleigh. The City of Raleigh continues to annex land in the southern part of the district, but has no plans for significant additional annexations.

The Bay Leaf Volunteer Fire Department consists of approximately 40 volunteers and five career staff. The department is studying and implementing numerous projects and programs to address their concern for recruiting and maintaining volunteers to meet future district needs. They have recently opened a second station in the western section of their district in order to improve response to an area that continues to experience rapid residential development.

During 1994, the department will continue its focus on compliance with NFPA 1500 and has forecasted additional expenses to meet increased costs associated with first responder costs. (During 1993, the department responded to more than 100 first responder calls).

Rescue service is provided to the district by Six Forks Rescue and Northern Wake Rescue Squads.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	12,300	Total Calls (in district):	280
Residences (County):	3,900	Mutual Aid (separate):	11
Commercial Buildings:	54	Total Weekday Calls: (7AM-6PM)	138
Approx. No. of Volunteer Personnel:	40	Total Night & Weekend: Calls (6PM-7AM)	142
Full-time Paid Personnel:	5	Avg. No. Personnel Responding Weekdays:	12
Part-time Paid Personnel:	0		
Stations:	2	Avg. No. Personnel Responding Weekends and Nights:	16
Total Apparatus/Vehicles:	10	Average Response Time: (in district)	5.10
94/95 Budget:	\$572,100		
93/94 Funding to Date:	\$476,500		

## DURHAM HIGHWAY VOLUNTEER FIRE DEPARTMENT

The Durham Highway Volunteer Fire Department was chartered in 1964 and has an ISO Class 6/9S rating. Their contracted county response district is primarily residential and is currently experiencing rapid residential and commercial growth. At least four subdivisions within the district will experience considerable development during the next three years.

The district is bordered by the Bay Leaf, Raleigh, and Six Forks districts and departments serving Durham County. A large portion of the district is within the planned annexation area of the City of Raleigh. The City has already annexed an area immediately adjacent to Durham Highway Station Two and an additional area in the district beyond the airport. The portion of Durham Highway's district that is outside of Raleigh's planned annexation area surrounds Station one.

The department, which provides first responder services, consists of approximately 40 volunteers and five full-time fire fighter/engineers. They are currently working to upgrade their First Responder Program to an EMT-D level. Durham Highway is attempting to staff one of the stations at night with "sleep-in" volunteers.

In 1993, the department responded to more than 100 first responder calls and are experiencing significant increases in training costs and required time commitments from members to provide this service. During 1994 the department is focusing on upgrading to EMT-D status and reducing their current ISO rating.

Six Forks Rescue Squad covers most of the Durham Highway Fire District.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	9,430	Total Calls (in district):	362
Residences (County):	3,270	Mutual Aid (separate):	17
Commercial Buildings:	300	Total Weekday Calls: (7AM-6PM)	210
Approx. No. of Volunteer Personnel:	40	Total Night & Weekend: Calls (6PM-7AM)	152
Full-time Paid Personnel:	5	Avg. No. Personnel Responding Weekdays:	9
Part-time Paid Personnel:	0		
Stations:	2	Avg. No. Personnel Responding Weekends and Nights:	12
Total Apparatus/Vehicles:	7	Average Response Time: (in district)	5.92
94/95 Budget:	\$444,000		
93/94 Funding to Date:	\$423,800		

## FAIRGROUNDS RURAL FIRE DEPARTMENT

The Fairgrounds district is bordered by the Yrac department and Durham Highway districts, and lies between the cities of Raleigh and Cary. It has an ISO Class 6 rating. The department provides fire protection and first responder services to an area that consists primarily of state owned facilities and parcels of unincorporated land adjacent to Cary. The district has a small number of residential, commercial and light industrial occupancies. The department also has fire protection contracts with the State of North Carolina and the City of Raleigh. Chartered more than 30 years ago, the organization operates from one station that was completed in 1993.

More than half of the responses in 1993 were first responder calls to special state-owned properties. The new station was located to meet the fire department's immediate needs and to address the state's Blue Ridge Road Development Master Plan. The state has projected that the area will house 4.2 million square feet of building space and more than 8,300 employees over the next 20 years. The district is served by Wake County Emergency Medical Services which has built a new station next to the Fairgrounds Station.

The department consists of approximately 22 volunteers and two paid employees. A number of the volunteers are students at the university and their availability for daytime response is limited. Recruitment of volunteers for daytime coverage is a concern. In 1993, Fairgrounds had the highest number of mutual aid responses of any of the volunteer departments serving the County.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	2,560	Total Calls (in district):	133
Residences (County):	1,070	Mutual Aid (separate):	130
Commercial Buildings:	85	Total Weekday Calls: (7AM-6PM)	59
Approx. No. of Volunteer Personnel:	22	Total Night & Weekend: Calls (6PM-7AM)	74
Full-time Paid Personnel:	2	Avg. No. Personnel Responding Weekdays:	4
Part-time Paid Personnel:	2		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	5
Total Apparatus/Vehicles:	6	Average Response Time: (in district)	5.25
94/95 Budget:	\$146,800		
93/94 Funding to Date:	\$145,800		

## FAIRVIEW RURAL FIRE DEPARTMENT

The Fairview Rural Fire Department has an ISO class rating of 9S and provides protection to the Ten-Ten Fire District. The district is rapidly growing and changing from a rural farming to a more populated suburban area. The Ten-Ten District is surrounded by fire districts served by the Apex, Holly Springs, Swift Creek, Garner and Fuquay/Varina Volunteer Fire Departments.

The district is also bordered by the City of Cary to the north. Cary currently plans to locate a station within one mile of Fairview Station 1 prior to 1999. The City of Garner has annexed property on the district's eastern boundary and is planning to construct a station within the annexed area. Holly Springs has annexed an area in the southeastern part of the district.

The department is funding three paid personnel this year. The decision to fund these positions reflects a concern for a lack of volunteer daytime personnel and a rapidly increasing demand for response services. There are approximately 38 volunteer members. In 1993, the department responded to approximately 20 structural fires, while more than 70% (305 calls) were for first responder services. The increased demand for first responder services and required training will continue to place time demands on a limited number of volunteers.

The department operates two stations. There is a current need to complete renovation and repairs to Station 1 to comply with minimum code standards.

Rescue services are provided to the district by: Fuquay, Garner, Apex and Cary Rescue Squads.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	10,005	Total Calls (in district):	406
Residences (County):	3,555	Mutual Aid (separate):	22
Commercial Buildings:	111	Total Weekday Calls: (7AM-6PM)	189
Approx. No. of Volunteer Personnel:	38	Total Night & Weekend: Calls (6PM-7AM)	217
Full-time Paid Personnel:	3	Avg. No. Personnel Responding Weekdays:	9
Part-time Paid Personnel:	0		
Stations:	2	Avg. No. Personnel Responding Weekends and Nights:	9
Total Apparatus/Vehicles:	8	Average Response Time: (in district)	7.45
94/95 Budget:	\$321,300		
93/94 Funding to Date:	\$281,600		

## FALLS VOLUNTEER FIRE DEPARTMENT

The Falls Volunteer Fire Department has an ISO Class rating of 6/9S and provides fire protection under contract for the County to a district that is predominantly residential. In addition to the County contract, they also deliver contracted services to a portion of the City of Raleigh. The department provides first responder services for medical calls.

The Falls District is surrounded by the fire districts that are served by the Bay Leaf, Stony Hill, Rolesville and Wake New Hope Volunteer Fire Departments. A significant portion of the district has been or is in the process of being annexed by the City of Raleigh. The area that borders Bay Leaf will most likely remain unincorporated.

The loss of revenue from occupancies within the annexed areas presents significant financial challenges to the department. The size and nature of the district is rapidly changing.

The department has two paid personnel and approximately 25 volunteer members. During 1993, the department responded to three structural fires while more than 50% (71 calls) of all runs were EMS in nature. Costs related to providing first responder services and associated time required for training are a recognized concern.

Most of the Falls Fire District is covered by the Northern Wake Rescue Squad.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	1,560	Total Calls (in district):	123
Residences (County):	494	Mutual Aid (separate):	5
Commercial Buildings:	30	Total Weekday Calls: (7AM-6PM)	65
Approx. No. of Volunteer Personnel:	25	Total Night & Weekend: Calls (6PM-7AM)	58
Full-time Paid Personnel:	2	Avg. No. Personnel Responding Weekdays:	4
Part-time Paid Personnel:	0		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	7
Total Apparatus/Vehicles:	4	Average Response Time: (in district)	6.64
94/95 Budget:	\$180,000		
93/94 Funding to Date:	\$100,600		

## FUQUAY VARINA VOLUNTEER FIRE DEPARTMENT

The Fuquay Varina Volunteer Fire Department, which has an ISO Class 6/9S rating, serves the southern reaches of the County, including the Town of Fuquay Varina and an area mostly north and east of town along the US 401 corridor. The Town of Fuquay itself has an ISO 5 rating. It is bordered to the west by Holly Springs and to the north by Fairview and to the east by Garner. The southern portion of the district is bordered by Harnett County. There is a considerable "no man's land" located on the southeastern border of the district, which will eventually require placement of an additional station.

There is minimum residential growth in the district with the exception of the area located immediately to the south and east of the Town of Fuquay Varina. In addition to providing contracted services to the County, the department also has contracts with Carolina Power and Light and the Town of Fuquay Varina.

Operating from two stations, the department has a defined rural and town response. There are two career fire fighters at each of the stations during daylight hours and approximately 40 total volunteers. There is a concern and recognized need regarding future recruitment, daytime staffing and the needed replacement of apparatus. The department plans to add two full time day staff during 1994 and to purchase a new service/salvage and overhaul vehicle.

The fire department does not provide first responder service. The district EMS needs are served primarily by the Fuquay Rescue Squad.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	9,300	Total Calls (in district):	275
Residences (County):	3,190	Mutual Aid (separate):	14
Commercial Buildings:	125	Total Weekday Calls: (7AM-6PM)	123
Approx. No. of Volunteer Personnel:	40	Total Night & Weekend: Calls (6PM-7AM)	152
Full-time Paid Personnel:	8	Avg. No. Personnel Responding Weekdays:	8
Part-time Paid Personnel:	0		
Stations:	2	Avg. No. Personnel Responding Weekends and Nights:	11
Total Apparatus/Vehicles:	13	Average Response Time: (in district)	7.74
94/95 Budget:	\$322,500		
93/94 Funding to Date:	\$327,100		

## GARNER VOLUNTEER FIRE DEPARTMENT

Garner is located in the southern portion of the County and is bordered by Johnston County to the south and the City of Raleigh to the north. The Swift Creek and Fairview Volunteer Fire Departments border the northern and western portions of the district and there is a considerable "no man's area" on the southeastern corner of the district. Currently, both the Knightdale and Garner Fire Departments are responding into parts of this "no man's land". There is a need to locate a station somewhere within this area.

The Garner Fire Department operates as two departments with two stations protecting two separate fire districts; one is located within the City of Garner and the second to the southwest, within the County. They have recently completed a deployment study and are regulating funding from both the County and town to locate a new station to the south and west in a newly annexed area. The town currently has an ISO rating of 5; St. Mary's is rated 6/9S, and Panther Branch is 9S.

The Garner Volunteer Fire Department has approximately 67 volunteer members who are supported by eight career personnel. All career personnel operate from the station located within the town. That station is dispatched on all calls within the district during daytime hours. Garner does not provide first responder services. Emergency medical services are provided by the Garner and Fuquay Rescue Squads.

In addition to rapid residential, commercial and industrial growth within the town, there is considerable residential growth in the County jurisdiction south of the city. The location of a planned third station would improve service to this area and would also impact available fire response to Fairview's district. The area South and East of Garner's current County district, toward Knightdale, will also require another station in the future.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	16,100	Total Calls (in district):	646
Residences (County):	5,500	Mutual Aid (separate):	17
Commercial Buildings:	228	Total Weekday Calls: (7AM-6PM)	312
Approx. No. of Volunteer Personnel:	67	Total Night & Weekend: Calls (6PM-7AM)	334
Full-time Paid Personnel:	8	Avg. No. Personnel Responding Weekdays:	14
Part-time Paid Personnel:	0		
Stations:	2	Avg. No. Personnel Responding Weekends and Nights:	18
Total Apparatus/Vehicles:	15	Average Response Time: (in district)	5.97
94/95 Budget:	\$478,700		
93/94 Funding to Date:	\$343,300		

## HOLLY SPRINGS FIRE DEPARTMENT

The Holly Springs Rural Fire Department is located in the southwest corner of the County, and has an ISO 6/9S rating. In addition to its contract with the County, the department provides contracted services to the Town of Holly Springs and Carolina Power and Light. The protection district consists of a mixture of urban and rural areas that include four manufacturing facilities, a school, three homes for elderly care and seven churches.

Both the Town and the County district are experiencing and forecasting significant residential development and associated commercial growth. The Town of Holly Springs is currently paying a larger portion of the fire department's budget. Rapid growth within the town and development of several residential areas have significantly changed the fire protection requirements for this area.

The department is bordered by fire departments serving Harnett County to the south, Fuquay Varina to the southeast, Ten-Ten Fire District to the east and north, and the Hipex Fire District to the north. The department is currently responding to an additional area adjacent to the southwest portion of the district. The department is an entirely volunteer organization with a Chief, five line officers, a training officer and approximately 20 fire fighters.

There is a recognized need to recruit new members and a concern for providing adequate daytime coverage for a rapidly developing rural and municipal district. The addition of full time staff to address both fire prevention and fire response needs is apparent. The current and forecasted growth within the town and district will place increased demands upon a small number of volunteers. The Town of Holly Springs is very concerned about the ability of the department to meet its future needs. The Town is annexing into the Ten-Ten Fire district.

Holly Springs Rural Fire Department is not currently approved to provide first responder services. Emergency medical response to the district is provided by the Apex and Fuquay Rescue Squads.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	1,470	Total Calls (in district):	80
Residences (County):	480	Mutual Aid (separate):	12
Commercial Buildings:	9	Total Weekday Calls: (7AM-6PM)	46
Approx. No. of Volunteer Personnel:	27	Total Night & Weekend: Calls (6PM-7AM)	34
Full-time Paid Personnel:	0	Avg. No. Personnel Responding Weekdays:	8
Part-time Paid Personnel:	0		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	11
Total Apparatus/Vehicles:	6	Average Response Time: (in district)	7.20
94/95 Budget:	\$45,100		
93/94 Funding to Date:	\$50,000		

## HOPKINS RURAL FIRE DEPARTMENT, INC.

Hopkins Rural Fire Department has an ISO Class 9S rating and serves a predominantly rural and agricultural area located in the eastern section of the County. The department is bordered by fire departments in Franklin County to the east, Zebulon to the south, Wendell to the south and west and Rolesville to the north and west.

The department is volunteer with no paid members and is currently not approved to provide first responder services. Rescue and emergency medical services are provided by the Zebulon Rescue Squad.

Because of the rural nature of the district, the department faces a considerable challenge in securing adequate funding. Daytime coverage and time necessary to meet training requirements present concerns for recruiting and future staffing requirements.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	2,735	Total Calls (in district):	63
Residences (County):	930	Mutual Aid (separate):	16
Commercial Buildings:	24	Total Weekday Calls: (7AM-6PM)	32
Approx. No. of Volunteer Personnel:	30	Total Night & Weekend: Calls (6PM-7AM)	31
Full-time Paid Personnel:	0	Avg. No. Personnel Responding Weekdays:	9
Part-time Paid Personnel:	0		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	13
Total Apparatus/Vehicles:	6	Average Response Time: (in district)	7.61
94/95 Budget:	\$51,600		
93/94 Funding to Date:	\$57,200		

## KNIGHTDALE VOLUNTEER FIRE DEPARTMENT

The Knightdale department, which was chartered in 1954, has a class 6/9S ISO rating. It serves both the Town of Knightdale and the rural areas (designated as the Alert Fire District) outside of the town limits. There is considerable residential growth both within and surrounding the town of Knightdale. Portions of the area are planned for annexation by Knightdale and Raleigh. The district is bordered by fire districts served by the Wake New Hope and Wendell Volunteer Fire Departments and by the Raleigh Suburban District, which is served by the City of Raleigh.

Knightdale is also currently providing protection for a sizeable "out of district" area to the south and east of its district. They have proposed constructing a new station to the south of their current location in order to allow them to better serve and receive compensation for serving this area. According to department records, more than 15% of their total rural runs were to this area in 1993. The County will have to provide for the deployment of response resources to this area.

The department consists of approximately 36 members, including five career personnel. Available records indicate that during 1993, the department responded to approximately 300 total calls. Approximately 65% of those calls were to rural areas. Knightdale does not currently provide first responder service within the district.

The current station needs to be replaced or repaired in order to meet several code compliance issues. Funds also need to be established in order to address costs anticipated for constructing and equipping a second station. Although the department currently benefits from a strong nucleus of volunteers, there is a need to develop recruitment and retention programs and policies in order to meet a rapidly changing "service" requirement.

The Knightdale Rescue Squad provides rescue services to the Knightdale Fire District.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	7,905	Total Calls (in district):	312
Residences (County):	2,780	Mutual Aid (separate):	6
Commercial Buildings:	119	Total Weekday Calls: (7AM-6PM)	157
Approx. No. of Volunteer Personnel:	36	Total Night & Weekend: Calls (6PM-7AM)	155
Full-time Paid Personnel:	5	Avg. No. Personnel Responding Weekdays:	14
Part-time Paid Personnel:	0		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	20
Total Apparatus/Vehicles:	9	Average Response Time: (in district)	6.27
94/95 Budget:	\$255,500		
93/94 Funding to Date:	\$242,400		

## MORRISVILLE RURAL VOLUNTEER FIRE DEPARTMENT

Chartered in 1955, the department has a 6/9S rating. In addition to its contract with the County, the department provides contracted fire protection to the Town of Morrisville and portions of Cary. The district is approximately 70% commercial and only 30% residential. The County district is changing as rural areas are annexed by Cary, Raleigh, and the Town of Morrisville. Most of the revenue comes from the Town of Morrisville, which is growing rapidly.

The department operates as a combination career/volunteer organization with two full time and seven part time personnel on duty each day. The career staff is supplemented by approximately 22 volunteers. There is an immediate and future concern and need to recruit and develop an adequate number of volunteer personnel, particularly with the high ratio of commercial property to residential. It is expected to become a predominantly career department as the area develops.

The department operates a medical First Responder Program which accounted for more than 50% of all 1993 runs. During last year, Morrisville experienced a significant increase in their total run activity, that increase is most influenced by response to medical and non fire calls.

During 1994, the Morrisville Rural Fire Department will be dissolved and a Morrisville Municipal Fire Department will be established. The apparatus and equipment will be transferred to the new departments, which will continue to operate from the same stations and will generally operate under the same response procedures. The municipal department will contract to serve the fire district area. Station 2's area is being annexed by Cary and a new station is being planned close to RTP.

Morrisville Fire District is served by the Apex and Cary Rescue Squads.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	1,945	Total Calls (in district):	391
Residences (County):	790	Mutual Aid (separate):	37
Commercial Buildings:	60	Total Weekday Calls: (7AM-6PM)	211
Approx. No. of Volunteer Personnel:	22	Total Night & Weekend: Calls (6PM-7AM)	180
Full-time Paid Personnel:	2	Avg. No. Personnel Responding Weekdays:	5
Part-time Paid Personnel:	8		
Stations:	2	Avg. No. Personnel Responding Weekends and Nights:	7
Total Apparatus/Vehicles:	9	Average Response Time: (in district)	6.96
94/95 Budget:	\$144,700		
93/94 Funding to Date:	\$133,200		

## ROLESVILLE VOLUNTEER FIRE DEPARTMENT

The Rolesville Rural Fire Department has a 6/9S rating and provides fire response services to the Town of Rolesville and its rural surroundings. The district is located on the northeastern boundaries of the County and is flanked by Franklin County to the north, Hopkins to the east, Wendell and Wake/New Hope to the south and Wake Forest to the north and west.

The district is a mixture of rural and agricultural with several residential areas, an elementary school, a small business section and several other commercial buildings. Most of the growth is residential in the town and throughout the district. The town is currently expanding its sewer lines to parts of its ETJ.

The department is volunteer with approximately 32 members on its active roster. The purchase of communications equipment and continued reconstruction of the firehouse are scheduled for 1994. The officers consist of a Fire Chief, two Assistant Chiefs, two Captains, a Training Officer and a Safety Officer. There is a concern for daytime coverage and a recognized need for increased personnel in order to address continued growth within the district.

Rolesville is not currently approved for first responder services and their district is served by the Northern Wake Rescue Squad.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	790	Total Calls (in district):	158
Residences (County):	2,465	Mutual Aid (separate):	17
Commercial Buildings:	85	Total Weekday Calls: (7AM-6PM)	76
Approx. No. of Volunteer Personnel:	32	Total Night & Weekend: Calls (6PM-7AM)	82
Full-time Paid Personnel:	0	Avg. No. Personnel Responding Weekdays:	14
Part-time Paid Personnel:	0		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	16
Total Apparatus/Vehicles:	8	Average Response Time: (in district)	4.68
94/95 Budget:	\$188,700		
93/94 Funding to Date:	\$167,100		

## SIX FORKS FIRE DEPARTMENT

The Six Forks Road Volunteer Fire Department which was organized in 1956, has an ISO rating of 6/9S. Rapid residential and commercial growth and annexation of areas by the City of Raleigh has caused the department to relocate three times. The current location has been annexed and is remote from its response area. It serves unannexed areas north of the Raleigh city limits and some parcels generally near Creedmore Road (N.C. Highway 50). Most of the district has been annexed or is planned to be annexed by Raleigh in the near future. The district consists primarily of residential occupancies with a small number of commercial properties.

There are approximately 34 active volunteer members, two full time and one part time paid personnel. Paid personnel perform general vehicle/building maintenance and some administrative duties. The department is housed in the same building as the Six Forks Rescue Squad which provides paramedic and rescue services to the Six Forks Fire District and parts of Raleigh. The department is currently certified at the operations level of hazardous materials and operates an air truck that responds to major incidents throughout the County.

There are significant traffic flow concerns in the immediate area of the station that may adversely affect travel time.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	4,155	Total Calls (in district):	114
Residences (County):	1,490	Mutual Aid (separate):	33
Commercial Buildings:	40	Total Weekday Calls: (7AM-6PM)	69
Approx. No. of Volunteer Personnel:	34	Total Night & Weekend: Calls (6PM-7AM)	45
Full-time Paid Personnel:	6	Avg. No. Personnel Responding Weekdays:	8
Part-time Paid Personnel:	1		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	11
Total Apparatus/Vehicles:	6	Average Response Time: (in district)	6.97
94/95 Budget:	\$190,800		
93/94 Funding to Date:	\$166,300		

## STONY HILL FIRE DEPARTMENT

The Stony Hill fire district includes the rural area north of Falls Lake reaching to the northern limits of Wake County. The department, which has an ISO rating of 9S, provides services to a sizeable area outside the tax district north and west of the current station. The service area borders on Durham and Franklin Counties. The Bayleaf, Falls, and Wake Forest Fire Departments can respond into the Stony Hill District on mutual aid.

The district was established in 1958 to serve what was then a rural farming community. Today, the district is becoming residential and there are three major campgrounds under construction.

The department has approximately 32 volunteers and functions as an all volunteer organization. It also provides first responder medical services within their district. BLS and ALS services within the district are provided through Northern Wake Rescue Squad.

Stony Hill's primary objective for the immediate future is the reduction of response times to areas north and west of the tax district through the construction of a substation. Construction of the campgrounds, run history and development projections indicate a growing need for fire resources in this area. The new station would allow the tax district to be expanded. Options for relocating the existing station to the west of its present location should be considered. The existing station is inadequate and most of the apparatus is ready for or close to the time for replacement. The department does not generate sufficient revenue to fund the stations and apparatus that appear to be needed.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	2,045	Total Calls (in district):	139
Residences (County):	740	Mutual Aid (separate):	4
Commercial Buildings:	35	Total Weekday Calls: (7AM-6PM)	63
Approx. No. of Volunteer Personnel:	32	Total Night & Weekend: Calls (6PM-7AM)	76
Full-time Paid Personnel:	0	Avg. No. Personnel Responding Weekdays:	6
Part-time Paid Personnel:	0		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	10
Total Apparatus/Vehicles:	6	Average Response Time: (in district)	9.01
94/95 Budget:	\$212,300		
93/94 Funding to Date:	\$82,000		

## SWIFT CREEK FIRE DEPARTMENT

The Swift Creek Fire Department, which has an ISO rating of 6/9S serves a rapidly developing area which borders on Cary, Garner, and Raleigh. The district is primarily residential with a significant number of commercial properties. Raleigh and Cary have annexed portions of the district and much of the new growth area is expected to be annexed by Cary as it develops.

Cary and Garner both are planning to build stations that will be able to respond quickly to portions of Swift Creek's current fire district.

The department has a Chief, two Assistant Chiefs, two Captains and approximately 25 volunteer fire fighters. One full time and three part time paid personnel staff the station during daytime hours.

The department provides first responder services and responded to more medical calls and automobile accidents than total fire calls during 1993. Emergency medical services are provided primarily by the Cary Rescue Squad and Wake County Emergency Medical Services.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	6,390	Total Calls (in district):	215
Residences (County):	2,465	Mutual Aid (separate):	9
Commercial Buildings:	86	Total Weekday Calls: (7AM-6PM)	114
Approx. No. of Volunteer Personnel:	25	Total Night & Weekend: Calls (6PM-7AM)	101
Full-time Paid Personnel:	1	Avg. No. Personnel Responding Weekdays:	7
Part-time Paid Personnel:	4		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	10
Total Apparatus/Vehicles:	6	Average Response Time: (in district)	5.64
94/95 Budget:	\$193,800		
93/94 Funding to Date:	\$160,000		

## WAKE FOREST FIRE DEPARTMENT

The Wake Forest Fire Department has an ISO Class 5/9S rating and serves the Town of Wake Forest and the Wakette Fire District. The Town of Wake Forest itself has an ISO 5 rating. The County district is bordered by Franklin County and the Rolesville, Falls and Stony Hill fire districts. The County district is primarily residential and is crossed by US Highway #1 and an active railroad route.

Three paid personnel were hired recently to address a recognized need for daytime coverage. There are currently 36 active volunteer members. The department has requested increased funds to support the housing of EMS personnel and for replacement of a 1971 pumper. The EMS issue needs to be addressed considering its effect upon future County hiring and deployment programs.

The area between Wake Forest and Raleigh is developing quickly and an additional station will be needed in the area. It may be adequately covered if Raleigh builds a station in the corridor. A unit with aerial capability should be added to respond in the Town of Wake Forest. The County should consider options that could provide better coverage by combining the Wake Forest and Falls Departments.

The Wake Forest area is served by the Northern Wake Rescue Squad.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	2,465	Total Calls (in district):	194
Residences (County):	865	Mutual Aid (separate):	16
Commercial Buildings:	45	Total Weekday Calls: (7AM-6PM)	105
Approx. No. of Volunteer Personnel:	36	Total Night & Weekend: Calls (6PM-7AM)	89
Full-time Paid Personnel:	3	Avg. No. Personnel Responding Weekdays:	13
Part-time Paid Personnel:	0		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	15
Total Apparatus/Vehicles:	10	Average Response Time: (in district)	6.04
94/95 Budget:	\$109,400		
93/94 Funding to Date:	\$96,200		

## WAKE/NEW HOPE FIRE DEPARTMENT

The Wake New Hope Fire Department has a Class 6 ISO rating and serves the unincorporated areas between Raleigh and Wake Forest as well as a rural area located in east central Wake County. The district borders on areas covered by the Knightdale, Wendell, Rolesville, Falls and Raleigh Fire Departments.

The department has five full time personnel who work Monday through Friday during daytime hours and approximately 39 active volunteers.

The district is primarily residential but has many commercial, business and industrial occupancies. The most heavily populated areas have been or are planned to be annexed by the City of Raleigh. The need for Station 1 is decreasing since Raleigh has annexed most of its response area and built stations to cover the area. Station 2 will become the focal point as when Station 1 is closed.

While the number of EMS related calls continues to rapidly increase the district has undergone a reduction in actual fire response demands. During 1993, the department responded to 813 total calls. More than one third of the calls were to provide first responder services.

Station 2 is new, modern and large enough for projected needs and the department has a very good apparatus fleet.

Wake New Hope Fire District is served by Knightdale Rescue Squad and Wake County Emergency Medical Services.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	12,400	Total Calls (in district):	814
Residences (County):	4,375	Mutual Aid (separate):	57
Commercial Buildings:	245	Total Weekday Calls: (7AM-6PM)	423
Approx. No. of Volunteer Personnel:	39	Total Night & Weekend: Calls (6PM-7AM)	391
Full-time Paid Personnel:	5	Avg. No. Personnel Responding Weekdays:	5
Part-time Paid Personnel:	1		
Stations:	2	Avg. No. Personnel Responding Weekends and Nights:	7
Total Apparatus/Vehicles:	14	Average Response Time: (in district)	7.29
94/95 Budget:	\$466,900		
93/94 Funding to Date:	\$501,000		

## WENDELL FIRE DEPARTMENT

The Wendell Fire Department, which has a 6/9S ISO rating, serves the Town of Wendell and the surrounding areas in the east-central part of the County. The area is primarily residential, but includes a diverse group of industrial employers and by educational, recreational and medical facilities.

Approximately 44 volunteers, supplemented by two full-time and two part-time fire fighters staff the department. They operate from a headquarters station located in Wendell and a substation on Bethany Church Road near the Riley Hill Community. The substation is small and is located a very short distance from the edge of the district.

The Wendell Fire Department also provides hazardous materials response to the entire County under a separate contract with the Emergency Management Agency, and acts as the backup to Raleigh's team.

Rescue service is provided by the Wendell Rescue Squad which is supported by a Wake County EMS Paramedic who is on duty 24 hours a day, seven days a week.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	5,600	Total Calls (in district):	320
Residences (County):	1,890	Mutual Aid (separate):	13
Commercial Buildings:	115	Total Weekday Calls: (7AM-6PM)	171
Approx. No. of Volunteer Personnel:	44	Total Night & Weekend: Calls (6PM-7AM)	149
Full-time Paid Personnel:	2	Avg. No. Personnel Responding Weekdays:	13
Part-time Paid Personnel:	2		
Stations:	2	Avg. No. Personnel Responding Weekends and Nights:	17
Total Apparatus/Vehicles:	11	Average Response Time: (in district)	6.39
94/95 Budget:	\$173,100		
93/94 Funding to Date:	\$154,400		

## YRAC FIRE DEPARTMENT

The Yrac department has an ISO Class 6/9S rating. It is an all volunteer organization with a current active roster of 24 fire fighting personnel. The department places strong emphasis on training and is currently investigating the possibility of upgrading their emergency medical response capabilities. Yrac is currently approved for first responder services.

The district consists primarily of residential occupancies with a very small number of commercial properties.

It was originally established to serve the Town of Cary and its surrounding unincorporated areas but the town formed its career fire department and left Yrac to protect the unincorporated islands that are surrounded by Cary. Cary has a passive annexation policy whereby owners must petition the town in order to be added to the town; which leaves many fragmented areas to be protected. Many areas within Yrac's area could be better served by Cary stations, while the Yrac station is close to the downtown area of Cary.

Many members of the department participate in fire prevention activities and there is a strong emphasis placed on training.

Yrac Fire District is predominantly served by Cary Rescue Squad.

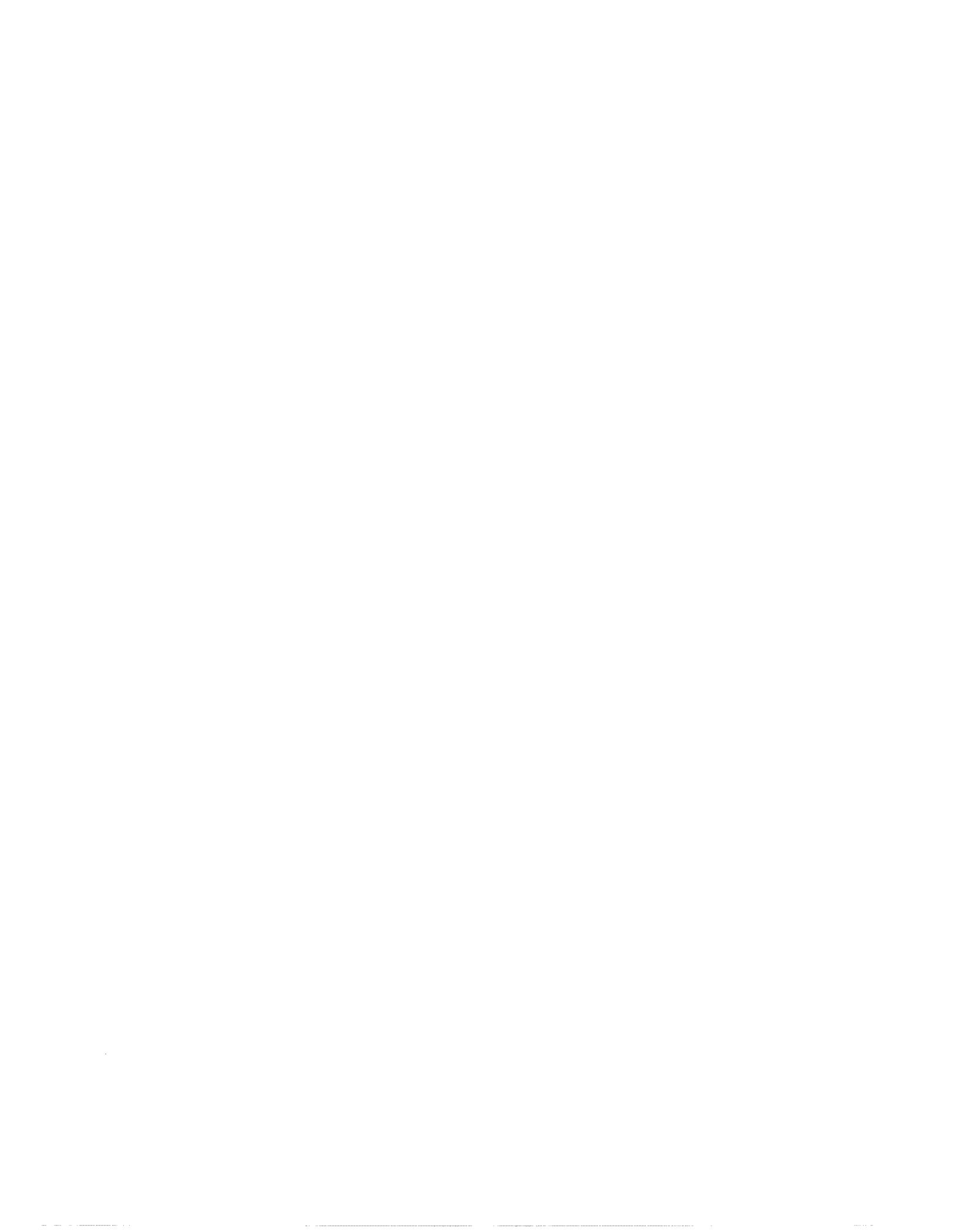
GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	2,530	Total Calls (in district):	87
Residences (County):	880	Mutual Aid (separate):	22
Commercial Buildings:	21	Total Weekday Calls: (7AM-6PM)	43
Approx. No. of Volunteer Personnel:	24	Total Night & Weekend: Calls (6PM-7AM)	44
Full-time Paid Personnel:	0	Avg. No. Personnel Responding Weekdays:	7
Part-time Paid Personnel:	0		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	11
Total Apparatus/Vehicles:	5	Average Response Time: (in district)	6.49
94/95 Budget:	\$116,100		
93/94 Funding to Date:	\$119,700		

## ZEBULON RURAL FIRE DEPARTMENT

The Zebulon Rural Fire Department has an ISO Class 6/9S rating and serves a predominantly rural residential area. The Town of Zebulon has an ISO 5 rating. The department shares facilities, but not apparatus or equipment, with the Zebulon Municipal Fire Department. Volunteers from both the town and rural departments respond together from the same station using town owned apparatus for "town fires" and district apparatus for "rural fires." The department also responds to incidents in Franklin, Nash and Johnston Counties on mutual aid. The municipal department has the only aerial apparatus in the eastern part of the country.

The department does not respond on medical calls. There are approximately 25 active volunteer members in the rural department and about an equal number in the town department and the chiefs are comfortable with recruiting new members and maintaining an active roster. Replacement of communication and other outdated equipment is viewed a major focus for 1994.

GENERAL INFORMATION		1993 RESPONSE DATA	
Population (County):	3,485	Total Calls (in district):	120
Residences (County):	1,190	Mutual Aid (separate):	8
Commercial Buildings:	65	Total Weekday Calls: (7AM-6PM)	49
Approx. No. of Volunteer Personnel:	23	Total Night & Weekend: Calls (6PM-7AM)	71
Full-time Paid Personnel:	0	Avg. No. Personnel Responding Weekdays:	14
Part-time Paid Personnel:	1		
Stations:	1	Avg. No. Personnel Responding Weekends and Nights:	18
Total Apparatus/Vehicles:	5	Average Response Time: (in district)	4.84
94/95 Budget:	\$112,700		
93/94 Funding to Date:	\$84,600		



## **Appendix B. Apparatus Summary**

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# APPARATUS INVENTORY

Department/Address (Station Number)	Unit	#	Pump Capacity	Tank Capacity	Make	Date In Service	Tactical Channels	
<b>APEX VOLUNTEER F.D.</b> 210 N. Salem Street Apex, N.C.	Pumper	1	2000	750	EI	93	Yes	
	Pumper/Tanker	3	1250	1000	Ford	88	Yes	
	Pumper	4	750	500	Chevy	68	Yes	
	Brush	5	175	200	Ford	87	Yes	
	Brush	9	175	200	Chevy	84	Yes	
	Ladder	1	1500	400	LTI	91	Yes	
	Tanker	8	450	2000	Chevy	82	Yes	
	Tanker	6	450	2000	GMC	86	Yes	
	Squad	4			Chevy	85	Yes	
	Utility Truck	4			Ford	87	Yes	
<b>BAYLEAF VOLUNTEER F.D.</b> <b>Station 1</b> 11713 Six Forks Road Raleigh, N.C.	Pumper	2	1000	750	Ford	84	Yes	
	Suburban	4	7750	7800	Chevy	88	Yes	
	Equipment Truck	25			EI	92	Yes	
	Suburban	250			Chevy	87	Yes	
	Brush	259	90	200	Ford	92	Yes	
	Pumper/Tanker	258	1250	1250	Pierce	89	Yes	
	Pumper	252	1250	750	Pierce	85	Yes	
			2590	2200				
	<b>BAYLEAF VOLUNTEER F.D.</b> <b>Station 2</b> 13116 Norwood Road Raleigh, N.C.	Pumper/Tanker	251	1250	1000	EI	93	Yes
		Pickup	255			Ford	86	No
Pumper/Tanker		256	1250	1250	Pierce	85	Yes	
Tanker		257	450	1250	Ford	79	No	
Pumper		254	400	500	Chevy	79	Yes	
			3350	4000				

# APPARATUS INVENTORY

Department/Address (Station Number)	Unit	#	Pump Capacity	Tank Capacity	Make	Date In Service	Tactical Channels
<b>DURHAM HIGHWAY Station 1</b> 11905 Norwood Road Raleigh, N.C.	Pumper	1	1500	750	Mack	84	No
	Brush	6	325	200	Ford	87	Yes
	Tanker	8	1500	1850	Mack	81	No
			<b>3325</b>	<b>2800</b>			
<b>DURHAM HIGHWAY Station 2</b> 8312 Pinecrest Road Raleigh, N.C.	Pumper/Tanker	2	1500	1000	EI	91	No
	Tanker	3	350	1250	Chevy	76	Yes
	Pumper	4	750	750	Chevy	76	Yes
	Utility	9			EI	87	Yes
			<b>2600</b>	<b>3000</b>			
<b>FAIRGROUNDS RURAL F.D.</b> 4021 District Drive Raleigh, N.C.	Pumper	191	1250	750	Mack	81	Yes
	Tanker	197	350	1500	Chevy	82	No
	Tanker	198	250	1500	Gruman	86	Yes
	Pumper/Tanker	196	1250	2500	Gruman	85	Yes
	Brush	199	150	250	Ford	87	Yes
	Suburban	19	<b>3250</b>	<b>6500</b>	Chevy	88	No
<b>FAIRVIEW RURAL F.D.</b> Station 1 4501 Ten-Ten Road Apex, N.C.	Tanker	2	400	1600	Intl.	72	Yes
	Pumper	4	500	500	Chevy	83	Yes
	Pumper/Tanker	5	1500	1000	Pierce	88	Yes
	Tanker	6	400	1500	EI	91	Yes
	Air/Salv. Rescue	SRI			Intl./EV1	94	Yes
			<b>2800</b>	<b>4600</b>			

# APPARATUS INVENTORY

Department/Address (Station Number)	Unit	#	Pump Capacity	Tank Capacity	Make	Date In Service	Tactical Channels
<b>FAIRVIEW RURAL F.D.</b>							
<b>Station 2</b>							
7401 Ten-Ten Road	Pumper	1	750	750	Int'l/LaFrance	68	Yes
Raleigh, N.C.	Tanker	3	400	1500	Chevy	80	Yes
	Tanker	7	400	1500	EI	92	Yes
			<b>1550</b>	<b>3750</b>			
<b>FALLS</b>							
11908 Falls of the Neuse Rd.	Brush	219	250	250	Chevy	84	Yes
Wake Forest, N.C.	Pumper/Tanker	217	1250	1000	Ford	88	Yes
	Pumper/Tanker	211	1250	1000	EI	94	Yes
	Pumper/Tanker	210	1250	1000	Ford	87	Yes
			<b>4000</b>	<b>3250</b>			
<b>FUQUAY VARINA F.D.</b>							
<b>Station 1</b>							
301 S. Fuquay Avenue	Pumper	6	1000	500	Ford	75	Yes
Fuquay-Varina, N.C.	Pumper	5	1250	750	FMC	88	Yes
	Salvage	1			Chevy	80	
	Brush	1	300	300	Ford	87	Yes
	Tanker	2	350	1250	Chevy	71	No
	Tanker	1	450	1500	Ford	90	Yes
	Pumper/Tanker	2	1250	1000	EI	90	Yes
	Pumper	1	750	500	Ford	68	Yes
	Sedan	1			Ford	94	Yes
	Wagon	2			Chevy	84	Yes
			<b>5350</b>	<b>5800</b>			
<b>FUQUAY VARINA F.D.</b>							
<b>Station 2</b>							
5617 Hilltop Road	Tanker	4	450	1500	Ford	90	Yes
Fuquay-Varina, N.C.	Tanker	3	450	1250	Ford	74	No
	Pumper	4	1500	750	EI	85	Yes
			<b>2400</b>	<b>3500</b>			

## APPARATUS INVENTORY

Department/Address (Station Number)	Unit	#	Pump Capacity	Tank Capacity	Make	Date In Service	Tactical Channels
<b>GARNER VOLUNTEER F.D.</b> <b>Station 1</b> 503 W. Main Street Garner, N.C.	Pumper/Tanker	1	1500	1000	Pierce	92	Yes
	Pumper	2	1500	500	Pierce	92	Yes
	Sup./Command	FS1			Mack	89	Yes
	Pumper	8	1000	700	Int'l.	74	Yes
	Tanker	7	400	1250	Ford	90	Yes
	Pumper/Tanker	5	1000	1500	Pierce	94	Yes
	Brush	3	500	750	Ford	88	Yes
	Sedan	1			Ford	90	Yes
	Pickup	11			Chevy	91	Yes
				5900			
	<b>GARNER VOLUNTEER F.D.</b> <b>Station 2</b> 9115 Sauls Road Raleigh, N.C.	Sup./Command	FS2			Chevy	77
Brush		13	500	900	Ford	88	Yes
Pumper/Tanker		10	1000	1000	Pierce	84	Yes
Brush		6	300	250	Dodge	72	Yes
Pumper/Tanker		4	1000	1500	Pierce	94	Yes
Tanker		12	400	1250	Ford	86	Yes
			3200	4900			
<b>HOLLY SPRINGS RURAL FD</b> 1140 Avent Ferry Road Holly Springs, N.C.		Pumper	1	750	750	Ford	74
	Pumper	2	1500	750	Kenworth	86	Yes
	Tanker	3	350	1250	Chevy	80	Yes
	Tanker	4	500	1500	Internat'l	94	Yes
	Brush	5	120	250	Dodge	91	Yes
	Suburban	6			Chevy	93	Yes
			3220	4500			

# APPARATUS INVENTORY

Department/Address (Station Number)	Unit	#	Pump Capacity	Tank Capacity	Make	Date In Service	Tactical Channels
<b>HOPKINS RURAL F.D.</b> 8933 Fowler Road Zebulon, N.C.	Pumper/Tanker	226	1250	1000	GMC/EEI	94	Yes
	Squad	22			Chevy	81	Yes
	Brush	224	250	250	Chevy	79	Yes
	Pumper/Tanker	222	1000	1000	Ford	82	Yes
	Tanker	227	450	1800	GMC/EEI	87	Yes
	Sedan	1			Ford	88	Yes
			<b>2950</b>	<b>4050</b>			
<b>KNIGHTDALE VOL. F.D.</b> 401 Hester Street Knightdale, N.C.	Pumper/Tanker	1	1250	1000	Ford	90	No
	Pumper/Tanker	5	1250	1000	Ford	93	No
	Brush	7	100	200	Chevy	88	No
	Salvage	8			Chevy	94	No
	Br./Mini.Pump.	6	250	750	Ford	91	No
	Pumper	4	1250	750	Ford	89	No
	Pumper/Tanker	3	250	1250	GMC	86	No
	Pumper/Tanker	2	450	1500	GMC	91	No
	Sedan	1		Ford	88	No	
			<b>4800</b>	<b>6450</b>			
<b>MORRISVILLE F.D.</b> <b>Station 1</b> 100 Oak Street Morrisville, N.C.	Pumper/Tanker	1	1500	1000	EI	87	Yes
	Pumper/Tanker	2	1250	1000	EI	90	Yes
	Brush	1			Ford	89	Yes
	Pickup	1			Ford	91	Yes
	Suburban	1			Ford	91	Yes
			<b>2750</b>	<b>2000</b>			



## APPARATUS INVENTORY

Department/Address (Station Number)	Unit	#	Pump Capacity	Tank Capacity	Make	Date In Service	Tactical Channels
<b>STONY HILL RURAL F.D.</b> 7025 Stony Hill Road Wake Forest, N.C.	Pumper/Tanker	262	1000	1000	KME	93	Yes
	Pumper	261	750	750	Mack	54	No
	Brush	263	150	150	Chevy	90	Yes
	Tanker	268	350	1250	FMC	84	Yes
	Brush	269	150	150	Ford	79	Yes
	Pumper/Tanker	264	1000	1000	Ford	88	Yes
				<b>3400</b>	<b>4300</b>		
<b>SWIFT CREEK RURAL F.D.</b> 6000 Holly Springs Road Raleigh, N.C.	Pumper/Tanker	3	1250	1000	Pierce	88	No
	Brush	4	100	250	Chevy	90	No
	Pumper/Tanker	5	750	1000	Ford	76	No
	Tanker	6	300	2500	Chevy	84	No
	Tanker	2	400	1500	Intl	93	No
	Pumper	1	750	500	Howe	60	No
				<b>3550</b>	<b>6750</b>		
<b>WAKE FOREST F.D.</b> 420 W. Elm Street Wake Forest, N.C.	Tanker	67	350	1200	Chevy	67	Yes
	Brush	69	200	200	Ford	77	Yes
	Brush	62	450	200	Chevy	69	Yes
	Tanker	68	450	1500	GMC	81	Yes
	Squad	6			Freight Limer	93	Yes
	Pumper	63	750	500	Chevy	71	Yes
	Pumper	64	1000	750	Ford/FMC	80	Yes
	Pumper/Tanker	61	1500	1000	FMC	89	Yes
	Chevy	60				88	Yes
	Air Trailer	6				91	No
			<b>4700</b>	<b>5350</b>			

## APPARATUS INVENTORY

Department/Address (Station Number)	Unit	#	Pump Capacity	Tank Capacity	Make	Date In Service	Tactical Channels
<b>WAKE NEW HOPE F.D.</b> <b>Station 1</b> 4615 St. James Road Raleigh, N.C.	Pumper/Tanker	1	1500	1250	Mack	88	Yes
	Pumper/Tanker	2	1500	1000	Mack	86	Yes
	Tanker	11	500	1800	Int'l.	93	Yes
	Mini Pumper	5	350	250	Chevy	90	Yes
	Support/Rescue	6			Chevy	90	Yes
				<b>3850</b>	<b>4300</b>		
<b>WAKE NEW HOPE F.D.</b> <b>Station 2</b> 3909 Watkins Road Raleigh, N.C.	Pumper	3	1000	750	Ford	80	Yes
	Pumper	4	750	500	GMC	61	Yes
	Tanker	12	500	1800	Int'l.	93	Yes
	Special Svs.	14			Int'l.	93	Yes
	Tanker	9	300	1250	Int'l.	93	Yes
	Mini Pumper	7	300	200	Ford	79	Yes
	Tanker	8	300	1200	Chevy	79	Yes
	Tanker	10	350	1500	GMC	77	Yes
	Brush	Mule					Yes
				<b>3500</b>	<b>7200</b>		
<b>WENDELL F.D.</b> <b>Station 1</b> 611 West Wilson Avenue Wendell, N.C.	Pumper/Tanker	115	1250	1000	EEL	88	No
	Pumper	111	750	750	FMC	74	No
	Pumper	9	1000	750	Gruman	76	No
	Haz.Mat/Air/Util.	TR11			Ford	87	No
	Brush	119	100	200	Ford	74	No
	Command	HR1			Beach Craft	86	Yes
	Haz.Mats	HR2			Trailer	90	
	Sedan	1			Chevy	88	No
			<b>3100</b>	<b>2700</b>			

# APPARATUS INVENTORY

Department/Address (Station Number)	Unit	#	Pump Capacity	Tank Capacity	Make	Date In Service	Tactical Channels
<b>WENDELL F.D.</b>							
<b>Station 2</b>	Pumper/Tanker	113	1250	1000	EE1	86	No
6529 Bethany Church Road Wendell, N.C.	Tanker	117	350	1250	FMC	74	No
	Utility/Brush	118			Chevy	80	No
			<b>1600</b>	<b>2250</b>			
<b>YRAC RURAL F.D.</b>							
325 E. Durham Road Cary, N.C.	Pumper/Tanker	292	1000	1000	Gruman	85	Yes
	Pumper/Tanker	293	1000	1000	Gruman	89	Yes
	Pumper/Tanker	297	1000	1000	Gruman	91	Yes
	Brush Unit	299	30	250	Chevy	70	Yes
	Suburban	29			Chevy	86	Yes
			<b>3030</b>	<b>3250</b>			
<b>ZEBULON RURAL F.D.</b>							
113 East Vance Street Zebulon, N.C.	Pumper	93	750	750	Ford	74	No
	Pumper/Tanker	94	1000	1000	GMC	88	No
	Tanker	97	350	1250	Ford	78	No
	Tanker	98	450	2000	GMC	91	No
	Brush Unit	99	250	250	GMC	92	No
			<b>2800</b>	<b>5250</b>			



**Appendix C.**

**Proposed Performance Standards for Fire Department Contracts**

## **Response Times**

Each Fire Department shall respond to at least 90 percent of the emergency incidents to which it is dispatched, within a five mile response distance of its closest station, within 10 minutes. The time shall be counted from the time of dispatch until the time of arrival of the first unit capable of initiating appropriate action, depending on the nature of the incident.

Each fire department shall, on at least 90 percent of the emergency incidents to which it is dispatched, have an appropriate unit en route to the scene within three minutes.

For the purposes of measuring response times and en route times, the following units shall be considered as appropriate:

For reported structure fires - a pumper or pumper tanker with at least four personnel.

For medical incidents - a response unit with at least three personnel, trained and equipped to provide first responder treatment.

It shall not be necessary for all of the required personnel to respond on the same vehicle, however all shall arrive at the scene with the proper equipment to initiate operations within the listed times.

## **Operations**

Each Fire Department shall operate within the Standard Operating Procedures and Guidelines approved by the Wake County Fire Advisory Board. Initial fire attack

operations shall be conducted in accordance with NFPA Standard 1410, Training Standards on Initial Fire Attack and NFPA 1231 Water Supplies for Suburban and Rural Fire Fighting.

Each Fire Department shall participate in the Wake County Automatic Mutual Aid response plan as adopted by the Wake County Fire Advisory Board.

Emergency medical operations shall meet the requirements established by the Wake County Department of Emergency Medical Services.

## **Training**

Each Fire Department shall participate in the Wake County Fire Training Program and shall provide additional training for its personnel in accordance with its own needs and the goals and objectives established below.

All members shall meet the training and certification requirements established for their respective ranks and positions in accordance with the plan adopted by the Wake County Fire Advisory Board. All members shall meet the minimum training requirements established by NFPA 1500, Standard for a Fire Department Occupational Safety and Health Program, by January 1, 1997.

Each Fire Department shall maintain training records for all of its members in accordance with the standards adopted by the Wake County Fire Advisory Board.