

AGENDA
LEXINGTON COUNTY COUNCIL
Committee Meetings

Tuesday, March 23, 2004

Second Floor - County Administration Building
212 South Lake Drive, Lexington, SC 29072
Telephone - 803-359-8103 -- FAX 803-359-8101

2:15 p.m. - 2:45 p.m. - Economic Development

- (1) Pelion Airport Capital Improvements - Community & Economic Development -
Tammy Coghill, Director
- (2) Old Business/New Business
- (3) Adjournment

2:45 p.m. - 3:00 p.m. - Public Works

- (1) New Position - Public Works - John Fechtel, Director **A**
- (2) Old Business/New Business
- (3) Adjournment

3:00 p.m. - 3:15 p.m. - Health & Human Services

- (1) Establishment of Formal Position of Director of Public Safety and Homeland Security -
Public Safety - Art Brooks, Administrator
- (2) Reorganization of the Consolidated Communications Operations - Public Safety -
Chief Tim James, Assistant Sheriff and Interim Public Safety Director
- (3) Old Business/New Business
- (4) Adjournment

3:15 p.m. - 3:45 p.m. - Committee as a Whole

- (1) RFP for Banking Services Presentation - Procurement/Treasurer -
Sheila Fulmer, Procurement Manager and William Rowell, Treasurer **B**
- (2) Old Business/New Business
- (3) Adjournment

3:45 p.m. - 4:15 p.m. - Pictures - Judicial Center

Economic Development

J. Jeffcoat, Chairman
B. Rucker, V Chairman
B. Derrick
J. Carrigg, Jr.
T. Cullum
S. Davis

Health & Human Services

J. Wilkerson, Chairman
J. Jeffcoat, V Chairman
J. Owens
T. Cullum
S. Davis

Public Works

B. Derrick, Chairman
J. Owens, V Chairman
J. Wilkerson
T. Cullum
B. Keisler
S. Davis

Committee as a Whole

S. Davis, Chairman
B. Derrick, V Chairman
B. Rucker
J. Wilkerson
B. Keisler
J. Jeffcoat
J. Carrigg, Jr.
J. Owens
T. Cullum

A G E N D A
LEXINGTON COUNTY COUNCIL
Tuesday, March 23, 2004
Second Floor - Council Chambers - County Administration Building
212 South Lake Drive, Lexington, South Carolina 29072
Telephone - 803-359-8103 FAX - 803-359-8101

4:30 P.M. - COUNCIL CHAMBERS

Call to Order/Invocation
Pledge of Allegiance

Employee Recognition - Art Brooks, County Administrator

Presentation of Resolutions

- (1) John D. Frick - Presented by Chairman Smokey Davis
- (2) Sheriff James R. Metts and the INTEL Team (Intelligence through Teamwork, Effort and Accountability in Management) - Presented by Councilman John Carrigg

Resolutions

- (1) Mr. James B. Ellisor **C**
- (2) Mr. John O. "Tee" Derrick **D**

Appointments **E**

Bids/Purchases/RFPs

- (1) Motorola Portable VHF Radios and Accessories - Public Safety/Fire Service **F**
- (2) Laptops/Computers and Monitors - Sheriff's Department/Information Services **G**
- (3) Bomb Canine - Sheriff's Department **H**
- (4) Bomb Suit & Accessories - Sole Source Procurement - Sheriff's Department **I**
- (5) Robot and Accessories - Sole Source Procurement - Sheriff's Department **J**

Chairman's Report

Administrator's Report

Budget Amendment Resolutions

Approval of Minutes - Meeting of February 24, 2004 K

Ordinances

- (1) Ordinance 03-12 - Conveyance of Real Estate From the County of Lexington to the Town of Lexington (Hendrix St.) - 3rd and Final Reading - Tentative L
- (2) Ordinance 04-01 - \$15,000.00 Supplemental Budget Appropriation - Solicitor - 2nd Reading M

Zoning Amendments

- (1) Zoning Map Amendment - M04-02 - 3139 Sidney Road, Parcels A, B, & C - Announcement of 1st Reading N

Public Works, B. Derrick, Chairman

- (1) New Position - Public Works (Tab A)

Health & Human Services, J. Wilkerson, Chairman

- (1) Establishment of Formal Position of Director of Public Safety and Homeland Security - Public Safety
- (2) Reorganization of the Consolidated Communications Operations - Public Safety

Presentations

- (1) Ms. Lisa Lynch, 312 Basing House Road, Columbia, SC 29212 - Flood Damage
- (2) Mr. Jim Reynolds, President, Total Comfort Service Center; Ms. Val Richardson, Workforce Development Manager, Palmetto Health; Dr. Frank Vail, Superintendent, Lexington School District IV; and Mr. Gene Rountree, President, Food Service, Inc. - Midlands Education and Business Alliance - Economic Development/Workforce Development
- (3) Mr. John A. Huffman, AICP, Planner and Grants Administrator - Central Midlands Council of Governments - Hazard Mitigation in Lexington County O
- (4) Mr. Pete Oliver, 165 Lake Murray Terrace, Lexington, SC 29072 - Nassau Plant P

OLD BUSINESS/NEW BUSINESS

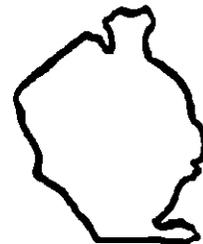
EXECUTIVE SESSION/LEGAL BRIEFING

MATTERS REQUIRING A VOTE AS A RESULT OF EXECUTIVE SESSION

ADJOURNMENT



COUNTY OF LEXINGTON
PUBLIC WORKS DEPARTMENT
ENGINEERING



MEMORANDUM

DATE: March 11, 2004

TO: Art Brooks, County Administrator
Larry Porth, Finance Director
Katherine Doucett, Personnel Director

FROM: John Fechtel, Director of Public Works, 
Assistant County Administrator

RE: New Position Request

Since July, we have had a substantial increase in new subdivision submittals and corresponding revisions. This has really pushed the Stormwater division in reviewing all these projects and turning them around in a timely manner. We have had numerous complaints by the developers due to our backlog of projects. Anticipating this, I submitted a request for a new/additional position in the FY 04-05 budget (see attached).

Based on the input from the developers, engineers and the County Councilmen present at a meeting on March 3, I request that County Council approve this new position request at their next meeting (funding available in this year's budget). If this is done, then this position would be factored into next year's budget as an existing position.

My estimate for the remainder of this year (3 months) is as follows:

1. Personnel Costs	\$11,093.
2. Operating Costs	588.
3. Capital Costs	1,470.
TOTAL*	\$13,151.

* Available in this year's budget. The above costs were computed by multiplying .25 (3 months) by the annual personnel and operating costs and using the total capital costs.

**New Program
Section I**

COUNTY OF LEXINGTON

New Program Request
Fiscal Year - 2004-2005

Fund # _____ 1000 Fund Title: _____ GENERAL
 Organization # 121400 Organization Title: STORM WATER MGT.
 Program # _____ Program Title: FEMA ENGINEERING ASSOC II

Object Expenditure Code Classification	Total 2004 - 2005 Requested
Personnel	
510100 Salaries 1	32,940
510300 Part Time # _____	0
511112 FICA Cost	2,520
511113 State Retirement	2,256
511114 Police Retirement	0
511120 Insurance Fund Contribution 1	6,000
511130 Workers Compensation	659
511131 S.C. Unemployment	0
* Total Personnel	44,375
Operating Expenses	
520100 Contracted maintenance	0
520200 Contracted Services	0
520300 Professional Services	0
520400 Advertising	0
521000 Office Supplies	300
521100 Duplicating	200
521200 Operating Supplies	200
522100 Equipment Repairs & Maintenance	0
522200 Small Equipment Repairs & Maint.	0
522300 Vehicle Repairs & Maintenance	0
524000 Building Insurance	53
524100 Vehicle Insurance # _____	0
524101 Comprehensive Insurance # _____	0
524201 General Tort Liability Insurance	328
524202 Surety Bonds	0
525000 Telephone	252
525010 Long Distance	20
525100 Postage	100
525210 Conference & Meeting Expenses	600
525220 Employee Training	0
525230 Subscriptions, Dues, & Books	200
525300 Utilities - Admin Bldg _____	100
525400 Gas, Fuel, & Oil	0
525600 Uniforms & Clothing	0
526500 Licenses & Permits	0
* Total Operating	2,353
** Total Personnel & Operating	46,728
** Total Capital (From Section II)	1,470
*** Total Budget Appropriation	48,198

**FUND 1000
PUBLIC WORKS - STORMWATER MANAGEMENT (121400)
FY 2004-05 BUDGET REQUEST**

NEW PROGRAM OVERVIEW

**FEMA Engineering Associate II
Stormwater Management**

The County has been involved with the FEMA (Federal Emergency Management Agency) Flood Program for many years. Although it is not a requirement for the County to participate, if it does not there cannot be any federally backed flood insurance or reimbursement in case of major flooding. Until this time, two employees of this department have shared this responsibility in addition to their regular duties. Their other duties are primarily commercial/industrial plan review and inspections of these sites as to stormwater issues.

Due to an increased workload in both areas, greater efficiency can be achieved by the creation of this position to solely handle flood issues. Approximately 1500 hours annually are spent on FEMA issues between the two existing employees. With the complexity of this type of program, an Engineering Associate II position is required. As more flood-prone area is developed, the number of customers needing this service is also increasing.

In addition, a more concentrated effort can lead to reduced flood insurance rates for the citizens of this County. A fee schedule to offset the additional costs will be proposed in the near future in order to reduce the budgetary effect to the General Fund budget.

STAFFING LEVEL

	Grade
1 FEMA Engineering Associate II with insurance	13

FUND 1000
PUBLIC WORKS - STORMWATER MANAGEMENT (121400)
FY 2004-05 BUDGET REQUEST - NEW PROGRAM

PERSONNEL

510100 SALARIES & WAGES (1) \$ 44,375.00
Salaries, FICA cost, state retirement, insurance fund contribution, and worker's compensation.
1 FEMA Engineering Associate II

OPERATING

521000 OFFICE SUPPLIES \$ 300.00
For necessary supplies (pens, pencils, folders, notepads, etc.).

521100 - DUPLICATING \$ 200.00
Cost for duplicating documents, letters, etc.

521200 = OPERATING SUPPLIES \$ 200.00
Necessary items of operating not classified as office. Maybe 100' measuring tapes, stakes, flagging, etc.

524000 - BUILDING INSURANCE \$ 53.00
Pro rata share of office space insurance at County Administration Building.

524201 - GENERAL TORT LIABILITY INSURANCE \$ 328.00
Insurance to cover possible claims against the County.

525000 - TELEPHONE \$ 252.00
1 each office telephone estimated \$21.00/month x 12 = \$252.00.

525010 - LONG DISTANCE \$ 20.00
As needed for long distance toll charges.

525100 - POSTAGE \$ 100.00
Anticipated postage costs.

525210 - CONFERENCE & MEETING EXPENSES \$ 600.00
~~Estimated costs for training and information on the local and state level.~~

525230 - SUBSCRIPTIONS, DUES, & BOOKS \$ 200.00
Estimated costs of these items.

525300 - UTILITIES - ADMINISTRATION BUILDING \$ 100.00
For utility bills for 100 square foot office at Administration Building.

FUND 1000
PUBLIC WORKS – STORMWATER MANAGEMENT (121400)
FY 2004-05 BUDGET REQUEST

CAPITAL

540000 – SMALL TOOLS & MINOR EQUIPMENT \$ 200.00
To cover calculators (engineering type), etc.

1 Ea. Computer (New) \$ 1,070.00
Necessary for employee to correspond with others (written, email), and track all aspects of the FEMA program, check flood maps, etc. Includes XP office software and 17” monitor.

1 Ea. Used Desk \$ 80.00
Necessary for employee to work from.

1 Ea. Used Chair \$ 40.00
For employee to sit at desk.

2 Ea. Used File Cabinets \$ 80.00
Necessary for storage of files

COUNTY OF LEXINGTON

Banking Services

Evaluation Committee Report and Recommendation

Request for Proposal No. P04002-02/06/04H

March 1, 2004

PURPOSE

The County of Lexington solicited proposals from qualified offerors to provide Banking Services for the collection and disbursement of funds. The objective of requesting proposals was to determine which bank could offer the County the highest quality of service at the most reasonable cost. Furthermore, it is the desire of the County to consolidate all bank accounts in the name of the County of Lexington, in the custody of the Treasurer or any other officer, held in either an operating or fiduciary capacity, under a single banking relationship with one financial institution. This will require the successful offeror to encompass all bank accounts in the name of the County of Lexington. Additionally, two (2) Automated Teller Machines was a requirement of the proposal. The Automated Teller Machines will serve county government departments and improve service to the public and will be located in the County Administration Building and Traffic/Bond Court.

Analysis of accounts show that residual balances will offset service charges. The Automated Teller Machines will be provided at no additional cost to the County. Services to be provided will be on a case by case basis as determined by the individual Departments. Currently, approximately seven county departments use a variety of banking services for the collection and disbursement of funds utilizing a total of approximately 43 separate demand accounts.

<u>Department</u>	<u>Number of Accounts</u>
Treasurer	5
Finance	3
Clerk of Court	4*
Register of Deeds	1
Sheriff	10
Magistrates	19
Library	1

* Does not include accounts established for specific court cases, which currently numbers sixty-four.

The majority of the relationship activity takes place in the demand accounts operated and maintained by the following county departments: Treasurer, Finance, Clerk of Court, Sheriff and Magistrates. The services used by these departments include, but are not limited to, general deposit and disbursement services, controlled disbursement (positive pay), wire transfer services, ACH services, reconciliation services, retail lockbox services, information services and online services.

EVALUATION COMMITTEE

On April 23, 2002, County Council approved the use of the Request for Proposal process to select a qualified offeror to provide Banking Services for the County of Lexington. As required by the County's Purchasing Ordinance and RFP Criteria, an evaluation committee was appointed by Art Brooks, County Administrator, to evaluate and review the proposals and ultimately report its recommendation to County Council for their consideration. Committee members were Larry Porth, Assistant County Administrator/Finance Director; Jim Schafer, Director of Information Services; William Rowell, Treasurer; Brad Mathis, Deputy Treasurer/Current Tax Collections and Investments, Treasurer; Jan Alonso, Deputy Treasurer/Accounting Operations, Treasurer; Sylvia Dillon, Senior Accountant, Sheriff's Department; Judge Thomas Rawl, Lexington Magistrate; Bonnie Hensell, Deputy Clerk of Family Court; Sheila R. Fulmer, Procurement Manager; and Donna J. Harris, Procurement Officer.

SOLICITATION REQUIREMENTS

The required legal advertisements for soliciting sealed competitive proposals from qualified offerors were placed and appeared in the South Carolina Business Opportunities Publication; Lexington County Website; and online publication Demandstar on January 5, 2004. Solicitations were e-mailed to all potential offerors at this time. A pre-proposal conference was held on January 15, 2004 and nine prospective offerors attended. Proposals were due and received by 5:00 p.m. on February 6, 2004. At that time, the County received proposals from six (6) offerors:

Bank of America
BB&T
Carolina First
First Citizens Bank
National Bank of SC
Regions Bank

SouthTrust Bank and Wachovia submitted a no-bid response stating that they could not meet the specifications of providing a local Retail Lockbox in Lexington.

EVALUATION PROCESS

On February 9, 2004, the Evaluation Committee began its evaluation process. Copies of the proposals received from the offerors were distributed to each committee member for his or her individual evaluation. The committee met again on February 23, 2004 for a detailed discussion of the proposals. Each proposal under consideration was evaluated and scored on the following award criteria listed in the order of their relative importance and respective scoring of each criteria factor as follows: (1) Cost of proposed banking services; (2) The degree to which the County's requirements and needs will be met; (3) Quality of response; (4) Corporate capability; and (5) References.

After the evaluation committee was in agreement that it had obtained, reviewed, and analyzed all information and documentation presented and collected in the evaluation process, the committee felt that they had obtained the highest rated offeror and proceeded negotiations with BB&T.

TERM OF CONTRACT

It is the intent to award and execute a contract with a startup date of July 1, 2004 or earlier. The term of this contract shall be for a period of three (3) years from the effective date of the contract. The County may extend the contract if it appears to be in the best interest of the County of Lexington/Lexington County Treasurer. Said extension may be less than, but will not exceed two (2) additional one year periods. Contract prices shall remain firm for the initial term of the contract (three years). Any change in contract cost will be effective in an amount equivalent to the percentage increase for the previous calendar year (Dec - Dec), using the Consumer Price Index (CPI-U, South Region), as published by the U.S. Department of Labor, Bureau of Labor Statistics.

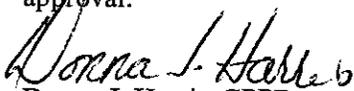
COST OF SERVICES

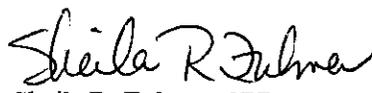
Analysis of accounts show that residual balances will offset service charges.

RECOMMENDATION

The evaluation committee and County Treasurer is in agreement that it has obtained, reviewed, and analyzed all information and documentation presented and collected in the evaluation process. It is the recommendation of the committee to seek the award of this contract to BB&T as meeting all the essential requirements as set forth in the Request for Proposal. BB&T has demonstrated the ability to provide the desired services and additional services that best meets the County's needs.

The committee and the County Treasurer hereby submit this recommendation for Council's consideration and approval.


Donna J. Harris, CPPB
Procurement Officer


Sheila R. Fulmer, CPPB
Procurement Manager


William O. "Bill" Rowell
Treasurer

RESOLUTION

THE COUNCIL FOR THE COUNTY OF LEXINGTON, SOUTH CAROLINA, MEETING IN GENERAL SESSION THE 23RD DAY OF MARCH, TWO THOUSAND AND FOUR ADOPTED THE FOLLOWING:

WHEREAS, James B. Ellisor served with honor on the Lexington County Health Services District Board of Directors since March 1995; and

WHEREAS, his commitment to devoting the time necessary to fulfill the responsibilities of this appointment is a reflection of his concern for Lexington County and its citizens; and

WHEREAS, during Jim's tenure on the Board he has witnessed such projects as the Emergency Room expansion, construction of facilities at Chapin, Gilbert, Batesburg-Leesville, Swansea, Lexington, and construction of the Lexington Medical Park and Irmo Medical Park, the construction of the Carroll Campbell Place Alzheimer's Facility, The Radiation Oncology Expansion, Open MRI Addition, Heart Cath Lab Addition and plans for the \$130 million expansion to Lexington Medical Center that will include complete replacement of the Operating Room, expansion to the Laboratory and other departments which is the largest expansion of a South Carolina hospital in the history of the state; and

WHEREAS, Mr. Ellisor has also served as Board Secretary, Chairman of Finance and Operations Committee, Vice Chairman of the Building Committee and has served on the Executive Committee, PHS Board, Joint Conference Committee, Audit Committee, Planning Committee, Community Outreach and Credentials Committee.

NOW, THEREFORE, BE IT RESOLVED that we extend to **JAMES B. ELLISOR** our sincere thanks and gratitude for the tremendous job he has done for the Board, the County and the citizens of Lexington County.

George H. "Smokey" Davis, Chairman

William C. "Billy" Derrick, V Chairman

Bruce E. Rucker

Jacob R. Wilkerson

Bobby C. Keisler

Johnny W. Jeffcoat

John W. Carrigg, Jr.

Joseph W. "Joe" Owens

M. Todd Cullum

ATTEST:

RESOLUTION

THE COUNCIL FOR THE COUNTY OF LEXINGTON, SOUTH CAROLINA, MEETING IN GENERAL SESSION THE 23RD DAY OF MARCH, TWO THOUSAND AND FOUR ADOPTED THE FOLLOWING:

WHEREAS, Mr. John O. "Tee" Derrick is a respected businessman in the Gilbert Community and owner of Derrick's Service Center who has provided towing services for the County of Lexington since 1974; and

WHEREAS, his commitment to devote the time necessary to ensure the safety of Lexington County's vehicles has been impeccable; and

WHEREAS, "Tee" has had a long and distinguished career as a volunteer with the Gilbert Summit Fire Department since 1977, serving in the capacity of Chief and Captain; and

WHEREAS, while serving as Chief of the Gilbert Summit Fire Department was instrumental in the purchase of additional fire vehicles and equipment through various fund raisers; and

WHEREAS, "Tee" served five terms as a member of the Gilbert Town Council; and

WHEREAS, he is an outstanding member of his community supporting his church and assisting those who have special needs; and

WHEREAS, "Tee" has been a dedicated and loyal servant to the citizens of Lexington County and to the Lexington County Fire Service.

NOW, THEREFORE, BE IT RESOLVED that we extend to **JOHN O. "TEE" DERRICK** our sincere appreciation for all he has done for Lexington County and the Lexington County Fire Service.

George H. "Smokey" Davis, Chairman

William C. "Billy" Derrick, V Chairman

Bruce E. Rucker

Jacob R. Wilkerson

Bobby C. Keisler

Johnny W. Jeffcoat

John W. Carrigg, Jr.

Joseph W. "Joe" Owens

M. Todd Cullum

A P P O I N T M E N T S - B O A R D S & C O M M I S S I O N S

March 23, 2004

BILLY DERRICK

Children's Shelter - Nancy R. Caughman - Nominated

JOHN CARRIGG

Accommodations Tax Board - Judy Knoechel - Term expired 12/31/03 - Eligible for Reappointment

Children's Shelter - Vacant - Term expired 6/30/01

Assessment Appeals Board - Larry B. Mack - Term expired 9/21/02 - Eligible for Reappointment

TODD CULLUM

Accommodations Tax Board - Marila J. Turbyfill - Term expired 12/31/03 - Eligible for Reappointment

Children's Shelter - Gloria Jackson - Term expired 6/30/03 - Eligible for Reappointment; however, does not attend board meetings

Health Services District Board of Directors - Elizabeth W. Foster - Term expires 03/10/04 - Eligible for Reappointment

ATHLETIC COMMISSION

Steve Keefe - Term expired 11/30/00 - Unable to contact - no response
Joel Slotnick - Term expired 11/30/02 - Eligible for Reappointment - Willing to serve again

LEXINGTON/RICHLAND ALCOHOL & DRUG ABUSE COUNCIL

At-Large Appointments
Anida P. Mims - Term expired 12/31/03 - Eligible for Reappointment

CULTURAL COUNCIL OF RICHLAND AND LEXINGTON COUNTIES

Replacement of former Chairman Bill Banning

BUILDING CODE BOARD OF APPEALS

Plumbing - Perry Kimball - Term expired 08/13/03 - Not eligible for Reappointment
Mechanical Contractor
Building Industry (new)
Member at Large (new)

CENTRAL MIDLANDS COUNCIL OF GOVERNMENTS

Melanie P. Ellerbe - At Large - Terms expires 06/15/04 - Eligible for Reappointment

HEALTH SERVICES DISTRICT BOARD OF DIRECTORS

James E. Clark - At Large - Term expires 03/10/04 - Eligible for Reappointment

TEMPORARY SIGN AND PERMITTING COMMITTEE

John A. Huffman - Nominated by Jacob Wilkerson

LEXINGTON COUNTY COUNCIL
BOARD/COMMISSION NOMINATION FORM

Name of Board/Commission: CHILDREN'S SHELTER

Nominee: Nancy Reasonover Caughman

Address: 1218 Ridge Road Leesville SC 29070

Employed by: SC Department of Natural Resources

Address: 1000 Assembly Street Columbia SC

Home Telephone: 803-532-4174 Business Telephone: 803-734-9094

Mobile Phone: 803-532-8979 Beeper Number: N/A

Fax Number: (WK) 803-734-6310

Is nominee aware of board/commission activities and responsibilities: Yes

Background information (include education, community service activities, previous service on county boards/commissions or any other boards/commissions on which you are currently serving):

BS Sociology - College of Charleston (1986)

Graduate Leadership Lexington County (1998)

Certified Public Manager (2000)

Served on Advisory Board for Leadership Lexington County (1999-2002)

Currently serve as vice-president of the WELCA

Unit Board - Cedar Grove ELC Leesville (2003-2005)

Batesburg - Leesville Elementary School Improvement

Council (2002-2003)

Twin City Civic Association (TCCA) Team Mother

(1998-2003)

Palmetto Panthers USSSA Baseball Team Mother (2003- Present)

Submitted by: Billy Derrick

Date: 3/15/04

Lexington County Council

FAX - 359-8101

COUNTY OF LEXINGTON

Procurement Services

MEMORANDUM

(O) 359-8385

(F) 359-2240

DATE: March 10, 2004

TO: Art Brooks
County Administrator

THROUGH: Sheila R. Fulmer, CPPB
Procurement Manager 

FROM: Janice A. Bell, CPPB
Procurement Officer 

SUBJECT: Motorola Portable VHF Radios and Accessories
Public Safety/Fire Service

We have received a requisition for the purchase of Motorola Portable VHF Radios and Accessories for Public Safety/Fire Service. The radios and accessories will be purchased directly from the manufacturer (Motorola) through the South Carolina State Contract #OIR2002.07.

The Fire Service employs two types of communications equipment in our day-to-day operations. We utilize the 800 MHZ system as our primary means of emergency communications, the dispatching of emergency calls, and all administrative daily radio communications. During emergencies, our need for portable communications devices increases greatly. The initial and service costs associated with the 800 MHZ system make adding additional fire ground radios cost prohibitive, based on usage. We have developed a plan that uses our existing VHF portable and mobile radios on emergency scenes. This reduces traffic on the 800 MHZ system making it more available for priority dispatching. The VHF system serves the Fire Service effectively as a back up communications system in the event of primary systems failure. The continued use of our VHF system will be an asset as a fire ground and backup primary communications system that should be operable with any new communications systems that may be considered in the future. These items were recommended and approved by Russell Rawl, Fire Service Coordinator. Total cost of these items including tax is \$20,976.86.

Funds are appropriated in the following account:

1000-131500-5A4108 (16) Portable VHF Radios and Accessories

I concur with the above recommendation and further recommend that these purchases be placed on County Council's agenda for their next scheduled meeting on March 23, 2004.

copy: Larry Porth, Director of Finance/Assistant County Administrator
Chief Timothy James, Sheriff's Department/Interim Public Safety Director
Russell Rawl, Public Safety/Fire Service Coordinator
Brian Hood, Public Safety/Fire Service Chief Administrative Officer

COUNTY OF LEXINGTON

Procurement Services

MEMORANDUM

(O) 359-8319

(F) 359-2240

DATE: March 10, 2004

TO: Art Brooks
County Administrator

THROUGH: Sheila R. Fulmer, CPPB
Procurement Manager



FROM: Donna J. Harris, CPPB
Procurement Officer



SUBJECT: Laptops/Computers and Monitors
Sheriff's Department/Information Services

We received a purchase request from Chief Timothy James, Sheriff's Department/Interim Public Safety Director for the purchase of five (5) Dell laptop computers, twenty-nine (29) Dell computers, and twenty-nine (29) Dell monitors. A large percentage of the Sheriff's Department's existing computers are outdated. They do not have sufficient memory to run software program upgrades. The laptops will enable the Detectives to capture and process data at crime scenes and in the office. The Laptops/Computers and Monitors will be purchased directly from the manufacturer (Dell Marketing LP) through the South Carolina State Contract #03-S5869-A9659.

Jim Schafer, Director of Information Services, has reviewed and recommended the requested equipment for replacement.

The cost of the Dell laptops is \$8,222.55, the cost of the Dell computers is \$19,793.27, and the cost of the Dell monitors is \$3,623.55. Total cost for the laptops, computers, and monitors is \$31,639.37 including applicable sales tax.

Funds are appropriated in the following accounts:

1000-151200-5A4686 - (5) Laptops	\$ 8,222.55
1000-151200-5A4687 - (20) Computers and Monitors	\$16,211.64
1000-151100-5A4689 - (4) Computers and Monitors	\$ 3,120.52
2632-151300-5A4679 - (5) Computers and Monitors - Inmate Services	\$ 4,084.66

I concur with the above recommendation and further recommend that this purchase be placed on County Council's agenda for their next scheduled meeting on March 23, 2004.

copy: Larry Porth, Director of Finance / Assistant County Administrator
Chief Timothy James, Sheriff's Department / Interim Public Safety Director
Jim Schafer, Director of Information Services

COUNTY OF LEXINGTON

Procurement Services

MEMORANDUM

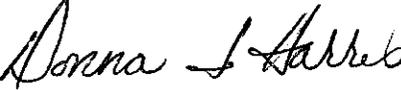
(O) 359-8319

(F) 359-2240

DATE: March 15, 2004

TO: Art Brooks
County Administrator

THROUGH: Sheila R. Fulmer, CPPB
Procurement Manager 

FROM: Donna J. Harris, CPPB
Procurement Officer 

SUBJECT: Bomb Canine - Sheriff's Department
Q04015-03/12/04H

Invitations for Bids were advertised and solicited from qualified dog handlers for a Bomb Canine. The bomb canine is to be used to safely detect suspected explosive devices during a terrorist threat, provide dignitary protection, and to deter terrorist activity at likely terrorist targets, i.e., airports, bridges, dams, government buildings, schools, water plants, etc. We received quotes from four (4) vendors (see attached bid tab).

Bids were evaluated by Nandalyn Heaitley, Grants Administrator, Sheriff's Department and Donna J. Harris, Procurement Officer. The grant procedures have been approved by the South Carolina Department of Public Safety.

It is our recommendation to award this bid to Beck's Canine as the lowest responsible bidder. The cost of the Bomb Canine is \$7,500.00 including training and applicable sales tax.

Funds are appropriated in account:

2477-151200-5A4311 - (1) Bomb Canine & Accessories - Homeland Security Grant - \$7,500.00

I concur with the above recommendation and further recommend that this bid be placed on County Council's agenda for their next scheduled meeting on March 23, 2004.

copy: Larry Porth, Director of Finance / Assistant County Administrator
Sheriff James Metts, Sheriff's Department
Chief Timothy James, Sheriff's Department / Interim Public Safety Director
Nandalyn Heaitley, Grants Administrator, Sheriff's Department

COUNTY OF LEXINGTON

BID TABULATION SHEET

BID: Q04015-03/12/04H

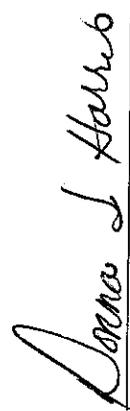
DATE: March 15, 2004

PROJECT: To provide Bomb Canine for the Lexington County Sheriff's Department.

Qty	Description	Canine Consultants	Tarheel Canine	Southern Police Canine, Incorporated	Beck's Canine
		Charles Kirchner 864-592-3112	Gerald Bradshaw 800-766-9032	Elizabeth Mills 252-459-6500	Kevin Beck 910-279-4343
	Total Price	Total Price	Total Price	Total Price	Total Price
1 ls	Bomb Canine	\$ 8,000.00	\$ 8,000.00	\$ 9,095.00	\$ 7,500.00
1 ea	Handler Course	N/C	N/C	\$ 2,500.00	N/C
	Total	\$ 8,000.00	\$ 8,000.00	\$11,595.00	\$ 7,500.00

Recommend award to Beck's Canine.

Bids Opened: March 12, 2004 at 3:00 p.m.


 Donna J. Harris, CPPB
 Procurement Officer

COUNTY OF LEXINGTON

Procurement Services

MEMORANDUM

(O) 359-8319

(F) 359-2240

DATE: March 15, 2004

TO: Art Brooks
County Administrator

THROUGH: Sheila R. Fulmer, CPPB
Procurement Manager



FROM: Donna J. Harris, CPPB
Procurement Officer



SUBJECT: Bomb Suit & Accessories / Sole Source Procurement - Sheriff's Department

We received a purchase request from Chief Timothy James, Sheriff's Department/Interim Public Safety Director for the purchase of one (1) Bomb Suit and Accessories. The bomb suit will be worn as a safety protective device in case the bomb that is recovered explodes.

This has been deemed a Sole Source through Med-Eng Systems, Incorporated for compatibility as this equipment is used by the FBI, U.S. Military, and other bomb squads in South Carolina. The Lexington County Sheriff's Department Bomb Squad may have to respond as part of the Statewide COBRA response team.

The grant procedures have been approved by the South Carolina Department of Public Safety. It is our recommendation to award this purchase to Med-Eng Systems, Incorporated. The cost of the Bomb Suit and Accessories is \$16,587.90 which includes shipping and applicable sales tax.

Funds are appropriated in account:

2477-151200-5A4630 - Bomb Suit & Accessories - Homeland Security Grant - \$16,587.90

I concur with the above recommendation and further recommend that this bid be placed on County Council's agenda for their next scheduled meeting on March 23, 2004.

copy: Larry Porth, Director of Finance / Assistant County Administrator
Sheriff James Metts, Sheriff's Department
Chief Timothy James, Sheriff's Department / Interim Public Safety Director
Nandalyn Heaitley, Grants Administrator, Sheriff's Department

COUNTY OF LEXINGTON

Procurement Services

MEMORANDUM

(O) 359-8319

(F) 359-2240

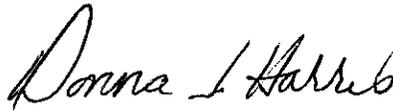
DATE: March 12, 2004

TO: Art Brooks
County Administrator

THROUGH: Sheila R. Fulmer, CPPB
Procurement Manager



FROM: Donna J. Harris, CPPB
Procurement Officer



SUBJECT: Robot and Accessories / Sole Source Procurement - Sheriff's Department

We received a purchase request from Chief Timothy James, Sheriff's Department/Interim Public Safety Director for the purchase of one (1) Robot and Accessories. The robot will provide emergency responders with a remote means of recon from a safe distance. The robot can enter the suspected area with cameras, weapons, tools, etc., and will report back to the emergency responders as to the dangers involved; thereby, saving lives of responders and citizens.

This has been deemed a Sole Source through Remotec Incorporated for compatibility reasons as this equipment is used by the South Carolina Law Enforcement Division. The Lexington County Sheriff's Department Bomb Squad's personnel are trained on and have knowledge of the capabilities of Remotec Robots.

The grant procedures have been approved by the South Carolina Department of Public Safety. It is our recommendation to award this purchase to Remotec Incorporated. The cost of the Robot and Accessories is \$99,323.70 includes shipping and applicable sales tax.

Funds are appropriated in account:

2477-151200-5A4310 - (1) Robot and Accessories - Homeland Security Grant \$99,323.70

I concur with the above recommendation and further recommend that this purchase be placed on County Council's agenda for their next scheduled meeting on March 23, 2004.

copy: Larry Porth, Director of Finance / Assistant County Administrator
Sheriff James Metts, Sheriff's Department
Chief Timothy James, Sheriff's Department / Interim Public Safety Director
Nandalyn Heaitley, Grants Administrator, Sheriff's Department

Minutes are left out intentionally until approved by Lexington County Council. Upon Council's approval, the minutes will be available on the internet.

COUNTY OF LEXINGTON, SOUTH CAROLINA

ORDINANCE NO. 03-12

AN ORDINANCE APPROVING THE CONVEYANCE OF REAL ESTATE FROM THE COUNTY OF LEXINGTON TO THE TOWN OF LEXINGTON.

WHEREAS, the County of Lexington (hereinafter “the County”) owns a tract of land located on Hendrix Street in the County of Lexington, State of South Carolina; and

WHEREAS, the County has been asked by the Town of Lexington to convey a small portion of the subject property along with a water line and access easement for the purposes of locating a water tank for the Town of Lexington; and

WHEREAS, the County does not have a present need for the subject property and the County finds that it would serve a proper public purpose to provide the subject property and related easements to the Town;

NOW, THEREFORE, be it ordained and enacted by the Lexington County Council as follows:

Section 1. The Lexington County Council hereby approves the transfer of the subject property and related easements attached hereto as Exhibit “A” to the Town of Lexington.

Section 2. The Chairman of the Lexington County Council is hereby authorized to execute and deliver the Quitclaim Deed attached hereto as Exhibit "B" and to further execute all other appropriate documents for the conveyance of such property.

Enacted this _____ day of _____, 2003.

George H. Davis, Chairman

ATTEST:

Dorothy K. Black, Clerk

First Reading: _____

Second Reading: _____

Public Hearing: _____

Third & Final Reading: _____

Filed w/Clerk of Court: _____

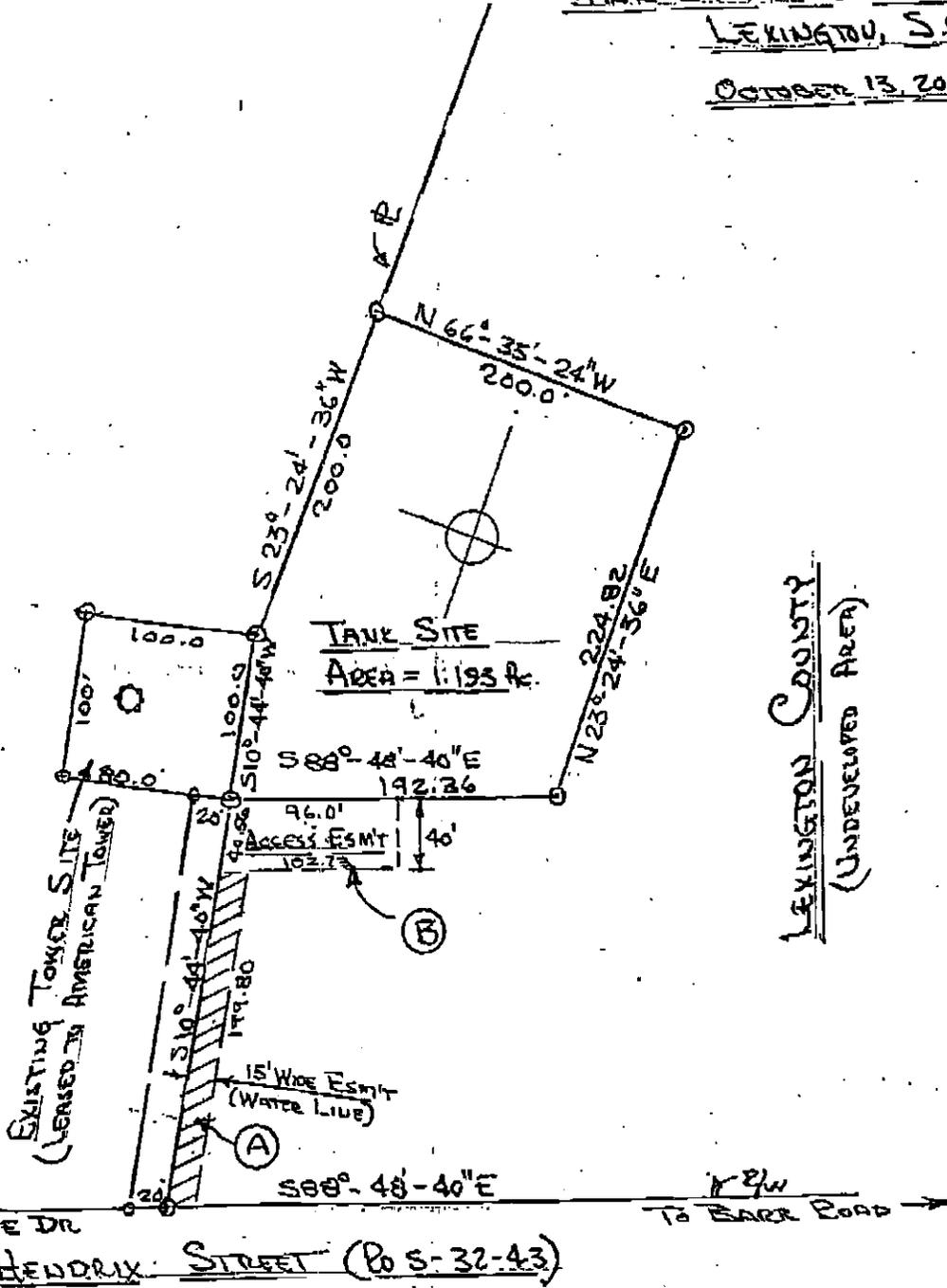
Exhibit A

PROPOSED ELEVATED WATER TANK SITE FOR TOWN OF LEXINGTON, S.C.

OCTOBER 13, 2003

LEXINGTON COUNTY REC COMM.
(DEVELOPED PARK AREA)

SCALE: 1" = 100'



LEXINGTON COUNTY
(UNDEVELOPED AREA)

NOTE! ALL AREAS AND BEARINGS WERE TAKEN FROM EXISTING MAPS OF RECORD -- NO SURVEY MADE AT THIS TIME.

EASEMENT AREAS:

Area A - Water Line Esm't = 0.069 Ac.
Area B - Access Esm't = 0.091 Ac
Total = 0.160 Ac

COUNTY OF LEXINGTON, SOUTH CAROLINA

ORDINANCE 04-01

**AN ORDINANCE ADOPTING A SUPPLEMENTAL APPROPRIATION
FOR FISCAL YEAR 2003-2004**

Pursuant to the authority granted by the Constitution of the State of South Carolina and General Assembly of the State of South Carolina, be it ordained and enacted by the Lexington County Council as follows:

Section 1. Findings. Since the adoption of the annual budget for the Fiscal Year 2003-2004, County Council has determined that additional funding needs to be appropriated to meet certain needs of the County for Fiscal Year 2003-2004. County Council has further determined that additional appropriations may be made from the General Fund balance into specific accounts so as to meet any additional Fiscal Year 2003-2004 obligations of Lexington County.

NOW, THEREFORE, be it enacted by the County Council of Lexington County as follows:

County Council hereby makes a supplemental appropriation not to exceed the sum of \$15,000.00 (Fifteen Thousand and No/100 Dollars) from the County General Fund balance into a specific account in the Solicitor's Office of the Eleventh Judicial Circuit for projected expenditures in legal expenses for the remainder of Fiscal Year 2003-2004.

Enacted this _____ day of _____, 2004

George H. "Smokey" Davis, Chairman

ATTEST:

Dorothy K. Black, Clerk

First Reading:

Second Reading:

Public Hearing:

Third & Final Reading:

Filed w/Clerk of Court:



COUNTY OF LEXINGTON, SOUTH CAROLINA

Department of Community & Economic Development
County Administration Building (803) 359-8121
212 South Lake Drive Lexington, South Carolina 29072

ZONING MAP AMENDMENT APPLICATION # M 04 - 02

Address and/or description of property for which the amendment is requested:

3139 Sidney Road, Parcels A, B, & C, TMS #002899-03-010,2899-03-009,002899-03-020

Zoning classifications: R-1 (current) C-1 (proposed)

Reason for the request (use the back of this application form if necessary):

The owner is deceased. The best use of the property is commercial (office). The estate would like to sell the property for commercial use - primarily as office space.

Even though this request will be carefully reviewed and considered, the burden of proving the need for the amendment rests with the applicant.

Date 3-4-04

() Owner?

(x) Agent?

Telephone # 803-781-8700

Signature [Handwritten Signature]

Name (print) Joseph M. Epting
PR Estate of Edna M. Corley

Address PO Box 2387
Irmo, SC 29063

1. 3 / 4 / 04 Application Received

2. 3 / 4 / 04 Fee Received

3. / / Newspaper Advertisement

4. / / Property Posted

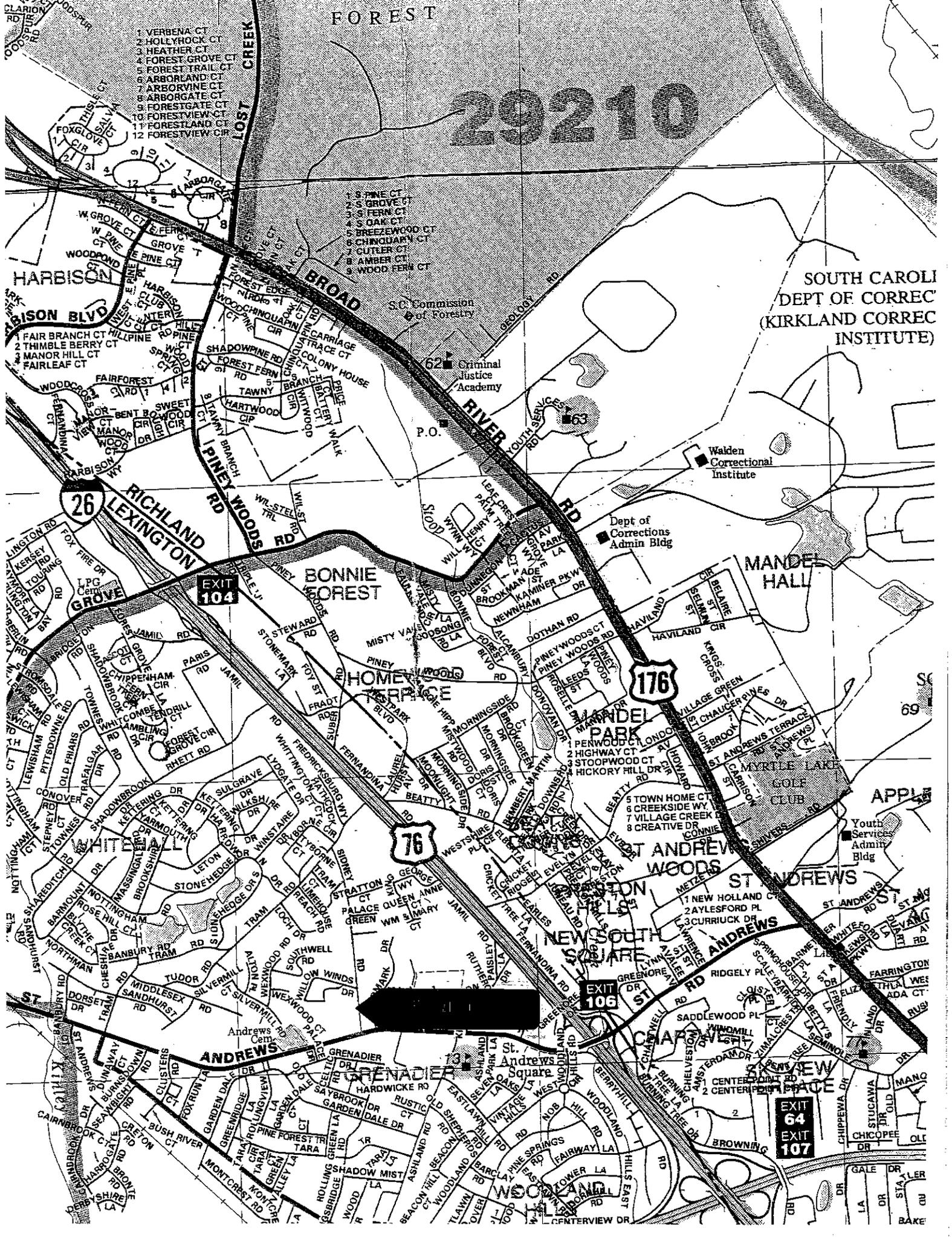
5. / / Notices Sent

 / / Planning Commission Recommendation: _____

3 / 23 / 04 First Reading 4 / 13 / 04 Public Hearing / / Second Reading / / Third Reading

Results: _____





29210

- 1. VERBENA CT
- 2. HOLLYHOCK CT
- 3. HEATHER CT
- 4. FOREST GROVE CT
- 5. FOREST TRAIL CT
- 6. ARBORLAND CT
- 7. ARBORVINE CT
- 8. ARBORGATE CT
- 9. FORESTGATE CT
- 10. FORESTVIEW CT
- 11. FORESTLAND CT
- 12. FORESTVIEW CIR

- 1. S PINE CT
- 2. S GROVE CT
- 3. S FERN CT
- 4. S OAK CT
- 5. BREEZEWOOD CT
- 6. CHINGQUARY CT
- 7. CUTLER CT
- 8. AMBER CT
- 9. WOOD FERN CT

SOUTH CAROLINA
DEPT OF CORREC
(KIRKLAND CORREC
INSTITUTE)

62 Criminal
Justice
Academy

Walden
Correctional
Institute

Dept of
Corrections
Admin Bldg

26

EXIT
104

176

76

EXIT
106

EXIT
64

EXIT
107



Hazard Mitigation in Lexington County What has been done and what remains to be done

In 2000 the federal government passed the Stafford Act also known as the Disaster Mitigation Assistance 2000 Act, DMA2K. This law mandated that for local governments including school districts, water and sewer districts, and recreation commissions to receive 75% financing for disaster mitigation (for both preparation and clean up of natural disasters, not chemical spills or terrorism) local governments would have to prepare plans satisfactory to the Federal Emergency Management Agency within the Department of Homeland Security.

In 2003 Central Midlands signed a contract with the Emergency Management Division of the S. C. Adjutant General's Office to prepare a regional plan. That planning process is now well advanced with satisfactory cooperation from local governments in all four counties of the region.

I am enclosing a list of both the regional Core Planning Team representing the region as a whole to direct the entire planning effort and the Lexington County Risk Assessment and Hazard Mitigation Planning Committee to prepare and submit materials for risk assessment and the eventual preparation of Action Plans for each local jurisdiction.

I have been assigned to prepare the regional plan and assist each local government with the fashioning of its own Action Plan. In April I will submit a draft of the plan to the Core Planning Team and ask for comment. Then I will send the draft to the EMD for its comment. With their approval I will then give the plan to participating jurisdictions for their review. They will make modifications as they see fit and then submit a preliminary letter of support for EMD and FEMA. Then each local government will be asked to adopt the plan by resolution in August 2004.

With the plan adoption and formal status given by FEMA a local government will be able to apply for funds to implement its Action Plan included in the regional document.

Each year the Core Planning Team will have to update the plan and once every five years revise it comprehensively. Local governments not participating in the first year can do so in subsequent years.

I appreciate all the help that Mr. Ellis and Mr. Fechtel have given me to make this as good a plan as it can be for Lexington County. Their help and the Administrator's willingness to run some articles letting the public know that the plan is ready for draft review and comment will be a great help to the process this spring and summer.

If you have questions, please let me know.

John A. Huffman, AICP
Planner and Grants Administrator March 15, 2004

**Table I-A
Project Planning Timeline for Major Work Element**

Step 1	Establish the Core Planning Team	Complete from 1/1/03 to 1/31/03
Step 2	Gather Data and Hazard Information in Each County	Complete from 2/1/03 to 9/30/03
Step 3	Appoint and Establish County Based Hazard and Risk Assessment Comm.	Complete from 9/3/03 to 12/31/03
Step 4	Hold First Public Meeting in Each County	Complete from 12/1/03 to 12/31/03
Step 6	Prepare Body of Plan Identifying Hazards and Linking Them to Mitigation Measures	Complete from 1/1/04 to 3/31/04
Step 7	Devise Action Plan for Prioritizing and Implementing Mitigation Measures	Complete from 3/31/04 to 4/30/04
Step 8	Prepare Procedure to Update the Plan and Keep Viable	Complete from 4/30/04 to 5/31/04
Step 9	Finish First Draft and Hold Final Public Meeting	Complete 6/1/04 to 6/30/04
Step 10	Make Final Revisions and Submit to EPD with letters of support from Local Govern.	Complete from 7/1/04 to 7/15/04

**Table I-B
Central Midlands Regional Risk Assessment and Hazard Mitigation Committee**

Name	Organization
Ronald Scarboro	City of West Columbia
Tom Barber	Newberry County
H .E. Edwards, Jr.	Town of Lexington
Donnie Shields	City of Forest Acres
Ben Baxley	Town of Springdale
Mike Byrd	Richland County
Neil Ellis	Lexington County
Howard Lederfind	City of Columbia
Ken Knudsen	City of Cayce
Phyllis Watkins	Fairfield County

**Table I-D
Lexington County Risk Assessment and Hazard Mitigation Planning Committee**

Name	Organization	Name	Organization
Barry Bolen	Lexington School District 2	John Hanson	Town of Irmo
W. M. Gummerson	Lexington School District 3	Randy Mahan	SCANA/SCE&G
Charles Haggard	Mayor of Pelion	Mike Burkhold	Town of Swansea
Cecil McClary	Lexington School District 4	David L. Busby	Town of Pine Ridge
H. Bedenbaugh	Lexington School District 1	Jim Cagney	S. C. Dept of Transportation
Daryle Fontenot	S. C. Dept of Natural Resources	Ronald Scarboro	Fire Chief, City of West Columbia
Mark Forrester	Gilbert-Summit Water District	Jay Criscione	Lexington County Recreation & Aging
Stan Shealy	Mayor of Chapin	Johnny White	Mayor of South Congaree
Gene Edwards, Jr.	Town of Lexington	Joan Taylor	Town of Batesburg-Leesville
Susan Cutter	USC Dept of Geography	Ken Knudsen	City of Cayce
Paul Livingston	Midlands Technical College	Philip Price	Mayor of Gilbert
Director	Gaston Water District	Mike Dawson	River Alliance
Neil Ellis	Lexington County Emergency Prepare.	Pete Hankins	Lexington Hospital Medical Services
Bill Bull	Director, Lexington Joint Muni. W & S	Kyle Oden	S. C. Emergency Preparedness Div.

Friday, March 05, 2004



To: Lexington County Council

Ref.: Additional information AT&T Nassau Metals – What did AT&T Nassau Metals know and when did they know it?

Attached is an article, "Resources and the Bell System", from Bell Labs Record published October 1972. It discusses Nassau Smelting & Refining Company (soon to be AT&T Nassau Metals), It should also be noted that this article was written 4 years before Nassau Smelting & Refining opened operations in Gaston, South Carolina. The Bell System or Western Electric purchased the original Nassau Smelting & Refining Company facility in 1931 in Staten Island, NY, and has operated that facility continuously through today, 2004.

Please note the following:

1. page 284 – "Extremely stringent emission standards, expressed initially as 'essentially zero concentration.' were adopted for beryllium, cadmium, mercury, and asbestos. Should use of these materials become restricted because manufacturing facilities were unable to meet the government standards, then several important Bell System applications might be affected:
 - Mercury in mercury wetted sealed contacts; **we know of no substitute for mercury in this type of application**
 - Cadmium in fuse alloys: **fuse alloy substitutes would require considerable development**
 - Beryllium in copper-beryllium alloys for submarine cable hardware and beryllium oxide for the closed space triode: **replacement of either would be difficult**
2. Page 285 – "Each of the many thousands of types of insulated wire and cable constructions presents its own recycling, disposal, and pollution problems. Rarely in the past have these products been designed with environmental impact or disposal cost as major factors for consideration. The nonmetallic portion of the scrap received at Nassau Smelting and Refining is about 20%. Most of this represents wire insulation that must be disposed of in some way."
3. page 289 – picture caption at bottom – "...he will add other materials (beryllium, for example) and start the furnace."

Respectfully Submitted,

Pete Oliver

Contents

PAGE

- 270 Major Trends in Switching *An Interview with William H. C. Higgins*
Mr. Higgins, Vice President of the Switching Systems Area at Bell Labs, discusses trends in the Bell System and the worldwide telecommunications industry.
- 279 ANALIT Turns Test Data into Test Information *Eugene J. Carola*
A computer program makes it easy for Operating Companies to find telephone lines that are potential sources of trouble. —AN EXCHANGE PLANT ARTICLE
- 282 Resources, the Environment, and the Bell System
Tom D. Schlabach
The problems of depletion of resources and damage to the environment demand sophisticated approaches to design and manufacture of telephone equipment.
- 290 Testing Undersea Repeaters *G. A. Smith and A. F. Berger, Jr.*
The testing of undersea repeaters—once a tedious and time-consuming job—can now be done automatically using a new crystal band test set.
-

Departments

- 295 40 and 20 Years Ago in the RECORD
- 296 News From Bell Laboratories
 New Crystal for Communications Systems
 Enters Production Stage 296
 Rare-Earth Compounds Convert Carbon Monoxide 298
- 299 Special Publications
- 300 The Authors

Applied research can point the way to new designs and alternative production methods that conserve resources and minimize pollution. Much, in fact, has already been done, including substitution for critical materials and development of nonpolluting processes.

Resources, the Environment, And the Bell System

Tom D. Schlabach

THE TWIN PROBLEMS of depletion of our resources and damage to our environment have become matters of great concern for industry. To help solve these problems, the Bell System has taken the approach that they must be considered along with the more traditional factors of cost and function in design of systems and equipment. This is because the impact of an industry on our resources and environment is determined largely by the materials and manufacturing processes it selects. The time to make the selection and consider alternatives is during the design process. Thus, the designer assumes a central role since his decisions influence the pattern of consumption, pollution, and recycling. He should make these decisions wise ones from the viewpoints of the environment and the conservation of mineral resources, as well as from the viewpoints of function and cost.

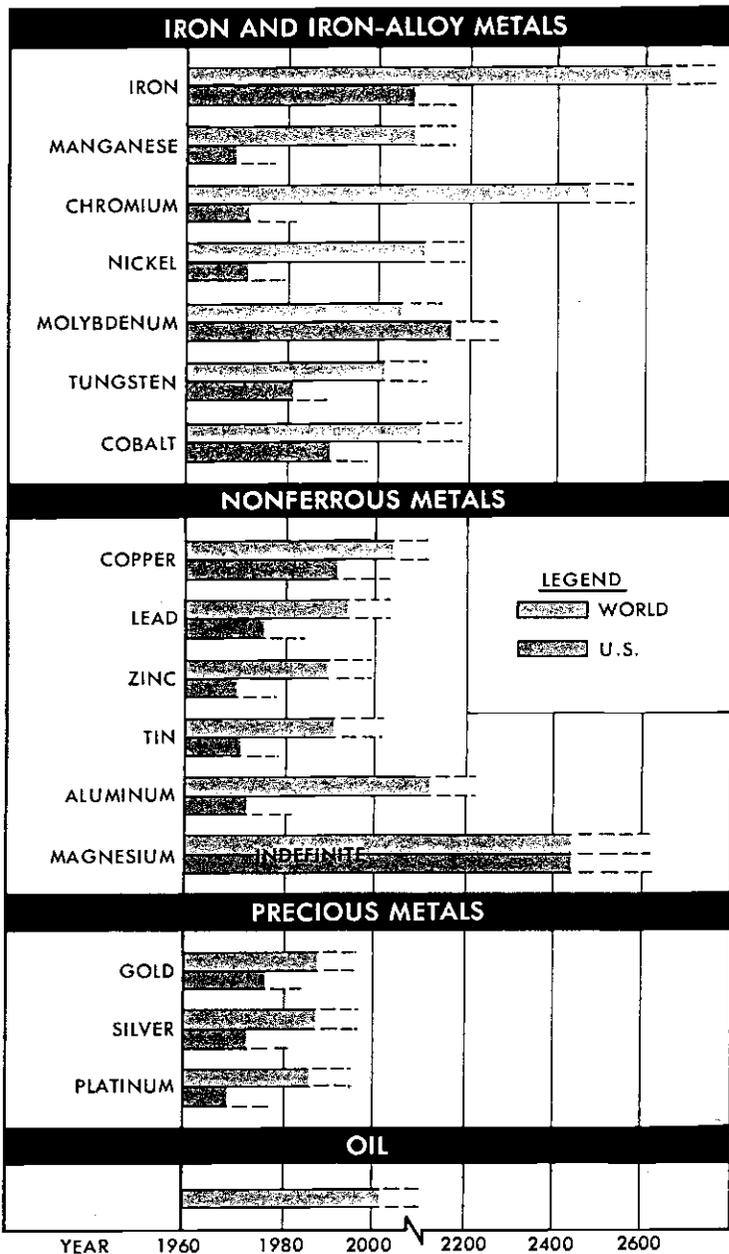
Minerals, coal, and oil are, for all practical purposes, nonrenewable resources. Yet, in industrialized societies they are subject to increasingly rapid depletion. This is an alarming fact because there are only nine metallic elements (silicon, aluminum, iron, calcium, magnesium, sodium, potassium, titanium, and chromium) whose abundance by weight in the earth's crust exceeds 0.01 percent

of the total. All other metallic elements must be looked upon as being potentially scarce. Consequently, as demand for them increases, leaner ores will have to be mined, leading to higher costs, greater power consumption, and more ecological damage.

Depending on the assumptions made, predictions of availability can appear grim. The more ominous forecasts say that the world's reserves of copper, for example, will be exhausted by about 2020, lead by about 1995, and aluminum (from bauxite sources) by shortly after 2100. These predictions, however, assume a rising per capita consumption and population growth rate, and estimates of current reserves that are unrealistic. A more balanced view (see illustration, page 284) also takes into account other materials and processes that will come into broader use as traditional mineral resources become scarcer. Even within this more balanced view of consumption and substitution, however, the long-term adequacy of certain mineral reserves is questioned. These include our sources for gold, silver, copper, nickel, tin, zinc, molybdenum, uranium, and tungsten, and even aluminum if we restrict our source to bauxite. Near-term exhaustion is predicted for both mercury and helium.

How do these possibilities affect our industry? Seventy-six of the 92 naturally occurring elements

These crystals of copper (magnified about six times) would have literally gone down the drain, except for a newly developed recycling process for printed circuit boards. The process recycles the recycling solution after it has removed copper from the boards, thereby solving a waste disposal problem and conserving copper.



Bars indicate the points in time when various resources may become depleted in the world and in the United States. The exact times cannot be pinpointed because they depend on certain assumptions; the dashed lines therefore indicate a range of time. Supplies of many critical materials may run out within this century. This possibility has spurred efforts at Bell Laboratories and other research centers to seek out adequate substitutes.

are used in Bell System products. Thirty-five of these are used in the telephone itself, an additional 21 in telephone equipment and 20 more in various manufacturing processes. The single most important metal purchase by the Bell System is copper for use as conductors. Our current consumption is about 520 million pounds per year, or 15 percent of the total U.S. consumption.

Many people are surprised to learn that a sizable part of this consumption comes from scrap metal. But recycling has long been an important contributor to available mineral resources in the U.S., particularly metals. About 50 percent of our steel, 45 percent of our copper, 50 percent of our lead, 30 percent of our aluminum, 25 percent of our zinc, 12 percent of our nickel and 20 to 30 percent of our precious metal consumption is recovered from scrap sources.

The Bell System itself during 1970 generated nearly 600 million pounds of usable scrap valued at well over \$100 million. From this scrap, Nassau Smelting and Refining returned some 200 million pounds of finished product to the Western Electric Company for its use (see illustration, page 286), including substantial amounts of precious metal. Some 30 percent of Western Electric's copper needs was provided from this scrap by Nassau and other refineries.

Concomitant with the production and consumption of mineral resources is a pattern of scrap, waste, and pollution. The amount of such by-products is large, its impact on our environment is profound, and industry is responsible for the majority of it.

Some experts, in examining the causes of pollution, have concluded that the nature of our productive technology, rather than our growing population and consumption, is principally responsible for our increasing pollution. However, attempts to quantify environmental effects in terms of impact per unit of production are difficult.

Both industry and government have become acutely aware of waste and pollution, and these problems have obvious implications for the design and manufacture of Bell System equipment. One governmental action in this field that illustrates these implications is the Clean Air Act of 1970. This act establishes ambient air and emission standards for a wide variety of substances—standards which must be met by 1975. The most familiar are the standards for automobile exhaust emissions, but others are of equal importance. Extremely stringent emission standards, expressed initially as "essentially zero concentration," were adopted for beryllium, cadmium, mercury, and asbestos. Should use of these materials become re-

stricted because manufacturing facilities were unable to meet the government standards, then several important Bell System applications might be affected:

- Mercury in mercury-wetted sealed contacts: we know of no substitute for mercury in this type of application.
- Cadmium in fuse alloys: fuse alloy substitutes would require considerable development.
- Beryllium in copper-beryllium alloys for submarine cable hardware and beryllium oxide for the close-spaced triode: replacement of either would be difficult.

Very stringent emission standards were also proposed for the following elements: arsenic, boron, barium, chromium, copper, manganese, nickel, selenium, vanadium, and zinc. The message is clear. Trace metallic elements in the air are to be strictly controlled, and this will affect both the cost and availability of these elements and substances containing them. It has been estimated that the cost of pollution control in the U.S. over the next five years because of the Clean Air Act and similar legislation may run to \$100 billion.

It is worth noting that this air we are trying to clean up is the same air that must be brought into the Bell System's central offices and in which the System's switching and transmission equipment must function. Failures and malfunctions of such equipment because of poor air quality are well documented. The costs incurred in preventing such problems are large. (Some of Bell Labs' current efforts to control and monitor such pollution are reviewed in *The Bell System and Pollution Control*, RECORD, June/July 1972.)

With this brief survey of mineral resources, consumption, and environmental considerations, it is now appropriate to examine the effects these factors will have on design. Broadly, the design implications fall into three categories: (1) *material cost and availability*, leading to substitution of materials and evaluation of the unique properties of certain materials; (2) *recoverability and scrap value*, focusing attention on the conservation of materials and design for recycling; (3) *disposal costs*, providing guidelines for selecting manufacturing processes and the handling of non-recyclable products.

In regard to substitution of materials, it is clear that there will be an increasing use of plastics relative to most metals. (The exceptions are steels and possibly aluminum alloys; the cost-availability trends of these two classes of materials ensure their continued use.) Such substitutions are to

be welcomed because they conserve metals for more essential purposes. However, the shift to plastics simply creates a different set of resource and pollution problems.

Since plastics can not generally be recycled from scrap, we must consider their disposal as well as their possible reuse. For example, a mechanical method is available for economically stripping the plastic insulation from the copper when old cable is being recycled. The mechanical method is preferable to burning from an environmental viewpoint, particularly for polyvinyl chloride (PVC), which evolves hydrogen chloride on burning, but often the cable design does not allow for mechanical stripping. Each of the many thousands of types of insulated wire and cable constructions presents its own recycling, disposal, and pollution problems. Rarely in the past have these products been designed with environmental impact or disposal cost as major factors for consideration. The nonmetallic portion of the scrap received at Nassau Smelting and Refining is about 20 percent. Most of this represents wire insulation that must be disposed of in some way.

More generally, these lessons are to be learned from case histories of material substitutions: (1) the time and effort required to bring about the substitution can be considerable, (2) substitutions may have a strong impact on related technologies, and (3) potentially the substitution may be inferior when certain unique material properties are involved. The designer must look as far ahead as possible and try to anticipate the potential difficulties such changes may present.

Two examples with which the author is familiar illustrate these points well. The first is substitution of aluminum for copper as a conductor material—a substitution that may be made for reasons of both cost and availability. The substitution program was started in 1965 but only became commercial for the Western Electric Company in late 1970. Why? Because during this time new aluminum alloys, new processing techniques, new manufacturing equipment, new connector technology, and new cable constructions had to be evolved. And all of these had to be evaluated at the research, development, manufacturing, and field-trial stage.

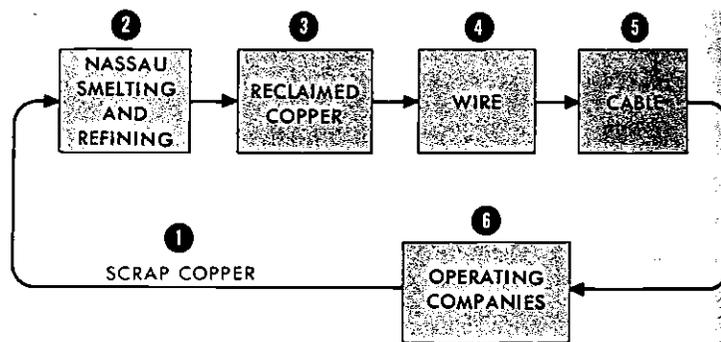
The second example is material substitution necessitated by periodic nickel shortages. This has been a subject of recurrent Bell System interest for over 30 years. In many essentially mechanical applications, it was possible to substitute alloys with less nickel—or even none at all—while only marginally decreasing performance or increasing costs. When this same attention was

turned to magnetic alloys, however, it became apparent that, although substitutions were possible (specifically the replacement of permalloys with ferrites), the potential gains did not warrant the man-years of effort required to implement these changes. This was so because circuit and equipment designs had been built around the specific magnetic characteristics of nickel alloys, and these characteristics were not easy to duplicate in the substitute material. We often depend in our designs on certain properties that one material or element uniquely provides, and substitution in these cases may be very difficult if not impossible. Mercury in mercury-wetted contacts has already been mentioned. Other examples come to mind that depend on the unique properties of gold, tungsten, helium, or tantalum, for instance.

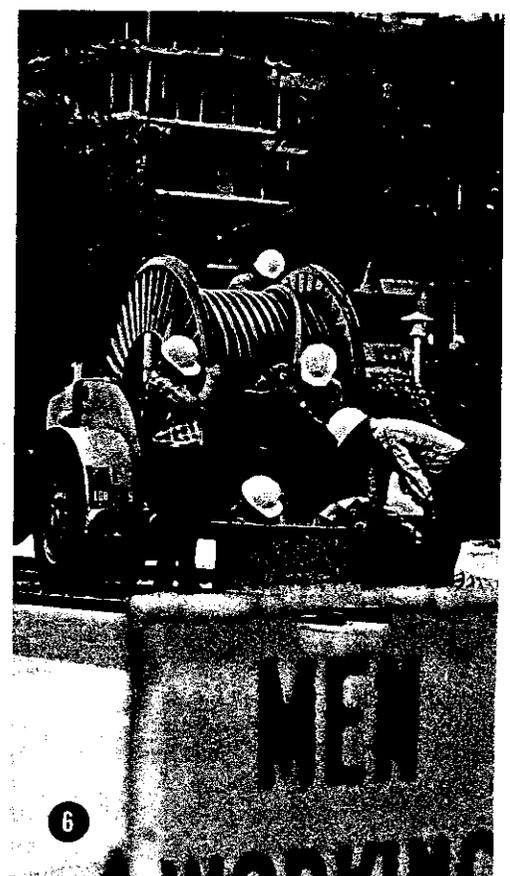
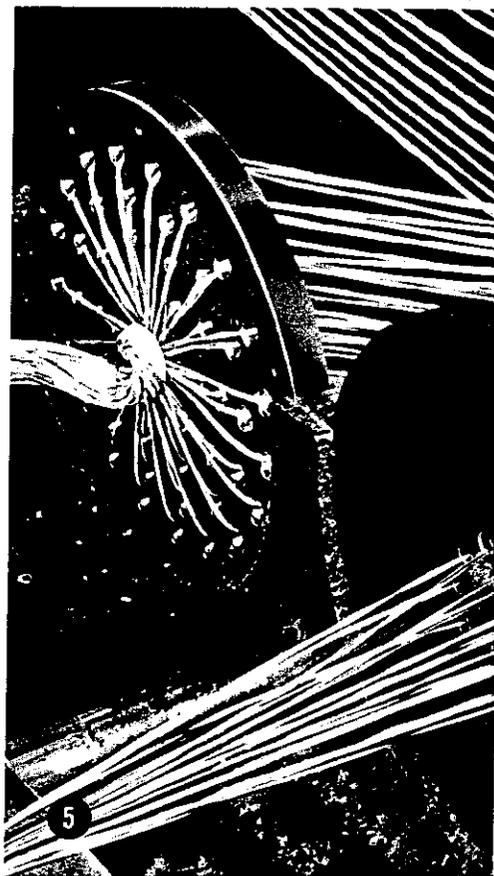
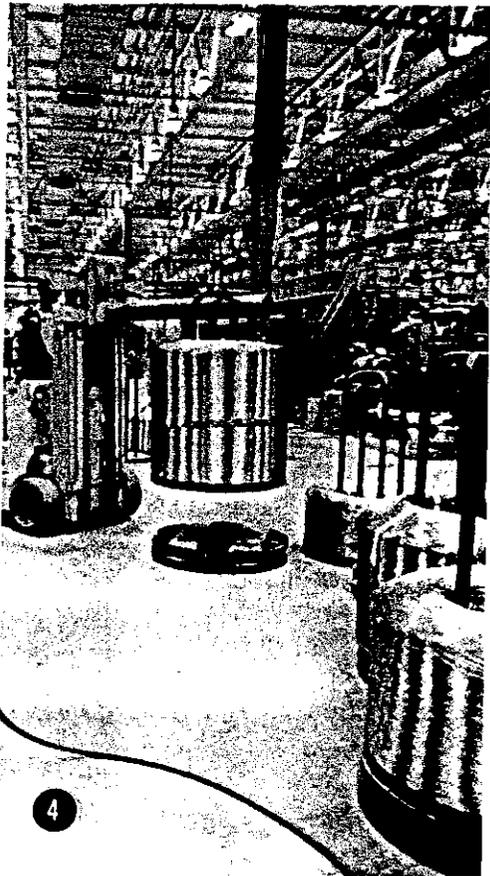
Partial substitution in the form of composites—combinations of materials designed to exploit the best properties of each—is often an effective solution to material problems. Since composites allow critical (or expensive) materials to be conserved and at the same time permit sophisticated “tailoring” of properties, they are likely to be used more and more. Perhaps the most notable exploitation of composites has been in the packaging and building industries; however, important examples exist in many other industries. A few examples from the telephone field are selective gold plating and precious metal edgelays and inlays in connectors and relays, copper-clad aluminum wire and dropwire, and copper-clad laminates for printed circuitry.

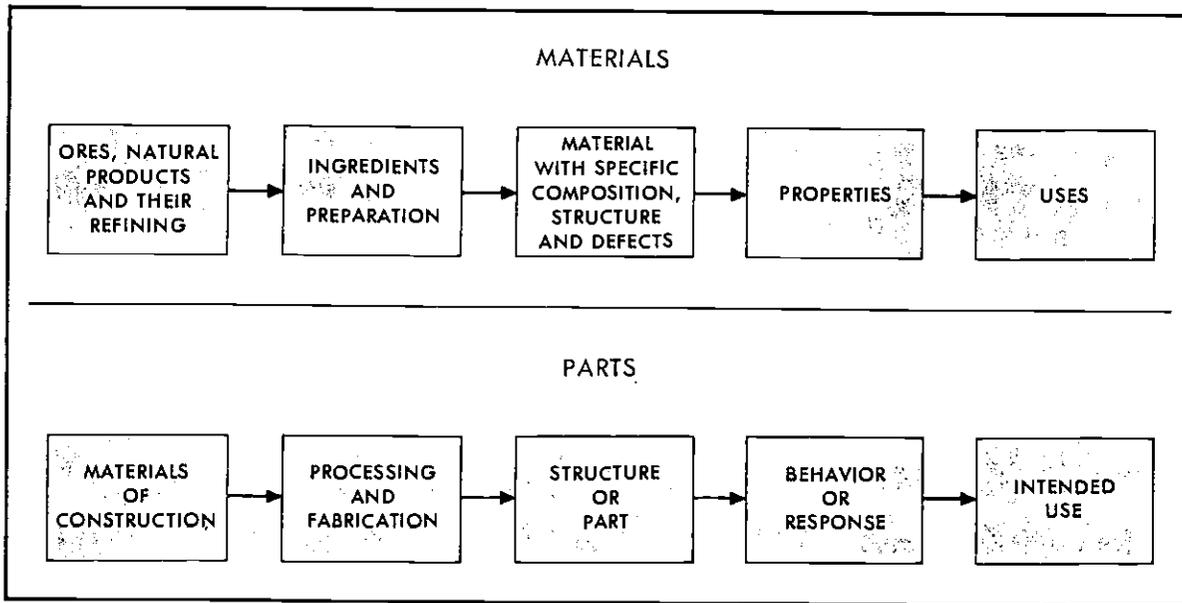
Although composites have many advantages, they present two immediate complications of concern to the designer: a compatibility problem and a scrap problem. Compatibility troubles can arise in the form of galvanic corrosion, interdiffusion, chemical reactivity, and thermal mismatch. The scrap problem has several aspects. If the composite scrap cannot be recycled easily, the composite may be uneconomical. In addition, if the critical constituent is not readily recoverable, the adulterated scrap is worth less and can even represent an absolute loss of the critical constituent for future use. Applications which result in the degradation of a substance to an unrecoverable form must be avoided.

As difficult as the formulation of a good composite might seem, there have been some remarkably successful developments with these structures in recent years. An excellent example, and one in which Bell Laboratories played an important role, was the development of a new American coinage. Most U.S. coins now are a composite consisting of an outer cladding of a 75/25 copper-nickel alloy



Scrap is a valuable source of copper for the Bell System, furnishing 30 percent of the System's needs. The valuable material moves in a cycle, from refinery to wire factory to telephone company and back to refinery again. Thus, as they modernize old central offices and replace old cable, the Bell System Operating Companies ship the scrap to Nassau Smelting and Refining Company, a subsidiary of Western Electric in Staten Island, New York (1 in diagram above and photos opposite). There the scrap is melted and purified in a huge reverberatory furnace (the burning log in photo 2 removes oxygen from the molten copper to keep the finished wire from being brittle). The molten copper is reclaimed by a continuous casting process (3) and hot-rolled into 5/16-inch-diameter rod. The rod is then shipped to Western Electric manufacturing plants where, depending on the ultimate use, it is formed into wire (the Phoenix, Arizona, plant appears in photo 4) and stranded into cable (5). Next, the reclaimed copper is returned to the Operating Companies through sales of new cable (6).





At many stages in the processing or manufacture of a material, the process engineer can choose from alternatives, and can select those procedures that minimize pollution, scrap, and undesirable by-products. In most cases, there is no unique method of achieving the desired properties and

uses. Similarly, the designer of parts and equipment has many alternatives during the various phases of design. He can choose those materials, fabrication steps, and structures that yield the behavior demanded by the intended use, and yet produce minimum impact on the environment.

with a copper core. This composite satisfies a stringent requirement for density and electrical resistivity (for coin-operated machines); it is chemically and thermally compatible; it has satisfactory wear, appearance and coining properties; it conserves precious metals; and its scrap can be entirely recycled back into the same product.

Composites deserve more attention from designers. However, since the design of an optimum composite may be quite involved, the focus should be on larger-scale applications which warrant such detailed attention. For reasons of overall economy and conservation of critical materials, particular attention must be given to the scrap recycling and recovery aspects.

Planning for material substitutions will undoubtedly become more important. With the exception of steels and aluminum alloys, other metals and alloys will come increasingly to be looked upon as precious materials serving very special purposes. They will be carefully tailored for their applications, will have tighter tolerance in their specifications, and will cost more.

As manufacturing facilities act to bring their own pollution problems under control, there will be greater interest in processing and fabrication procedures which minimize pollution, scrap, and

by-products. Additive processes will be preferred to subtractive processes and solventless processes will be preferred to solvent processes. Fabrication by stamping, forming, extrusion, etc., will be preferred to machining. Closed-loop processes (those in which process materials are reused rather than discarded) will replace open-loop processes. Applied research plays an important role in these developments. Often, cost savings can be realized along with these objectives.

An example is additive processes for making printed circuits which are supplanting subtractive processes. The additive processes are based on etching techniques that offer lower costs and less pollution. One of these is the photoselective metal deposition process developed at the Western Electric Engineering Research Center in Hopewell, N. J. This process is planned for use at Western Electric in Columbus to produce back panel wiring for the miniature crossbar switch.

New polymer systems developed in our Chemical Research Laboratory are being evaluated for magnet wire insulation at Western Electric in Buffalo. These polymers are designed to replace the currently used oleoresinous enamels, which can produce air pollution by loss of solvent and volatile degradation products.

In addition, in the manufacture of printed-wiring boards a method has been developed for electrolytically regenerating spent cupric chloride etchant to yield fresh etchant and to recover the copper removed during etching. Pollution and disposal problems are eliminated in this closed-loop system, which was adopted for use at Western Electric, Columbus, in 1971 with an estimated cost savings of \$150,000 per year.

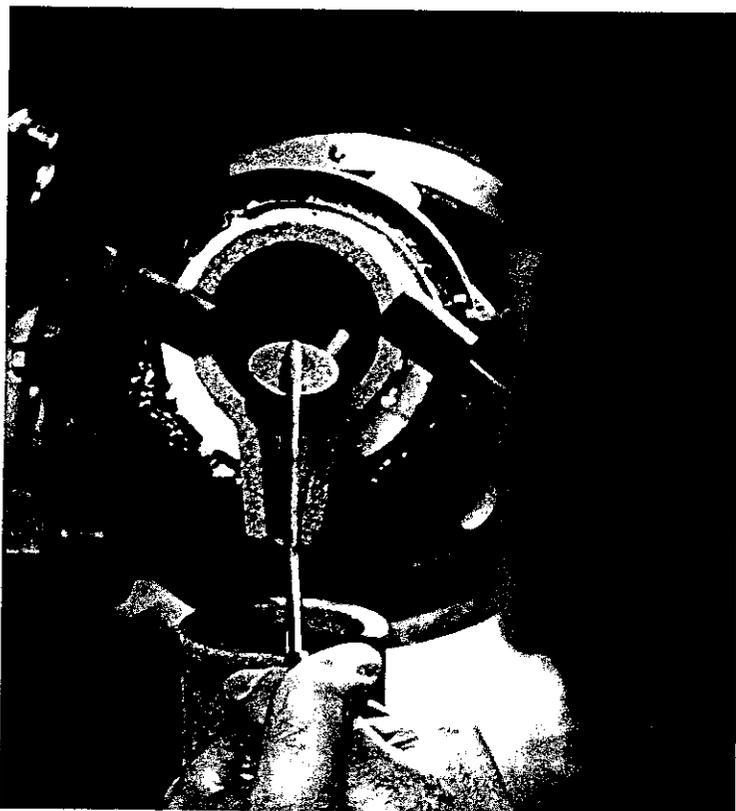
Finally, as an excellent example of scrap recovery and upgrading, we can cite a method developed for reclaiming high-cost, high-purity tantalum powder from defective tantalum capacitors. New capacitors made from this reclaimed powder meet specifications, and the method was proven feasible at Western Electric, Winston-Salem, N. C., with projected cost savings of \$20,000 per year.

I have discussed some general design implications of mineral resource and environmental trends. Many questions remain, however. The first might be to ask whether the traditional design procedure based on cost-performance criteria does not already ensure an optimal selection of materials and processes. The answer, I think, is no. Rarely does a decision in design engineering require one specific material and process. Options always remain for alternative materials and processes and for slight design modification (see illustration, page 288). Only indirectly does the function the designer wishes to achieve dictate a given material and process.

Another critical question: How do we design for environmental quality? We can do this by first letting the normal design-materials-manufacturing interactions take place. Then, from the remaining few material choices, we can add the pluses and minuses of resources and environment to establish the final materials and processing choice. This procedure preserves the soundness of the design while it minimizes environmental damage and conserves resources.

There is, however, a need for careful quantification and prediction of environmental pluses and minuses. The Western Electric Company, with cooperation from Bell Labs, is developing procedures for realistically assessing the economic costs of various materials and processes in terms of the pollution and scrap problems they present. In addition, long-range forecasting of the price-availability trends of our more critical resources is being undertaken continuously to provide the maximum lead time for introduction of material substitutes. Such assessment and forecasting techniques will give valuable guidance to design engineers, and will go far to soften the impact of scarcity, pollution, and waste products.

October 1972



Richard E. Manners prepares a sample of a copper-based alloy in the Metal Processing Laboratory at Bell Labs in Murray Hill, New Jersey. In top photo, he loads copper pellets into a crucible in a vacuum furnace. Later he will add other materials (beryllium, for example) and start the furnace. In bottom photo, Manners views the interior of the furnace through a quartz window as, by remote control, he pours the molten alloy from the crucible into a mold. The casting will then be tested to determine its properties. Experiments of this nature are helpful in leading researchers to alloys that can replace pure copper in many uses.