University of Virginia’s Historic
BLANDY EXPERIMENTAL FARM
The State Arboretum of Virginia

2009-2010 School Programs
For Grades PreK through 12

Reservations Start August 1, 2009
Please go to our registration website at
http://www.web.virginia.edu/blandy/

Hands-on, experiential learning in an outdoor setting

We welcome public, private, and home school groups.

For more information call (540) 837-1758 Ext. 242
or e-mail schprog@virginia.edu
NOTE TO EDUCATORS:
Blandy Experimental Farm Science programs are:
♦ Virginia Standards of Learning Correlated
♦ Grade Level Targeted and
♦ Designed to Emphasize Hands–On, Experiential Learning

A visit to the State Arboretum of Virginia is more than just a tour. This is a place to get a student excited about science! Our programs feature hands-on learning and investigations to provide children positive and meaningful experiences with the natural world. We are dedicated to teaching science by making it engaging and fun!

All of our programs are designed to meet Virginia Standards of Learning requirements. Programs offered to multiple grade levels are tailored to the specific grade level learning needs of your students. Many of our programs integrate science and math SOLs; others include social studies and language arts SOLs. The SOLs covered are listed for each program. Our programs are designed to help enrich what you are teaching in the classroom. Programs also can be used to introduce or review a unit you have already taught to your class. Near the end of the school year, you may wish to select a program that will introduce your students to concepts that they will cover in the next grade. There are many options for how these programs can be used to help you provide an optimal learning experience for your students. We look forward to participating with you in providing the best possible science learning experience for your students.

Our facilities include:
♦ 175-acre Arboretum collection featuring over 1000 species of trees, shrubs, and herbaceous plants
♦ Parking area designated for school buses
♦ Picnic area with tables and a water fountain
♦ Two classrooms: Parkfield Learning Center and Peetwood Pavilion for Environmental Education (seasonal, covered outdoor classroom)
♦ Wheelchair-accessible restrooms in the Quarters (our main office building ), Parkfield Learning Center and the Peetwood Pavilion

Program Structure

For 3 to 5 classes visiting Blandy:
Classes are assigned to a rotation schedule. With these schedules, Blandy staff and teachers share the responsibility for leading students through the program activities. The rotation schedule is:
♦ Designed for schools bringing 3-5 classes in one day
♦ Designed as a series of stations the classes move through using a predetermined schedule
♦ Designed so that students are engaged for the majority of the time they are at Blandy and are intended to enhance the students’ learning experience
♦ Available for the following programs: Let’s Sprout, Flower Functions, Scoop on Soils, Rocks Talk, Virginia Natives, Water Wonders, It’s for the Birds, Snake Savvy, Mammals, and Young Ecologists
♦ Arrival time is 9:40 a.m. for program briefing and restroom visits.

For 1 to 2 classes visiting Blandy:
Programs are 90 minutes (which includes pre-program orientation and restroom break) unless otherwise stated in the program description. We can take up to two classes at one time— one in the Parkfield Learning Center and one in the outdoor class-

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See page 9 for descriptions of our self-directed programs. Four different themes.
Mammals (preK-2)
Children learn all about mammals! They touch different types of mammal fur, learn where mammals live, how to tell the difference between fox prints and bobcat prints, and mammals native to Virginia. Students explore Blandy looking for signs mammals leave behind. This program also focuses on the senses mammals use to find food, seek prey, and escape predators.

Science SOL: K.1, K.2, K.4, K.6, K.8, K.9; 1.1, 1.5, 1.7; 2.1, 2.4, 2.5, 2.7
Math SOL: K.1, K.2, K.8; 1.1; 2.1, 2.2, 2.9, 2.12, 2.21
Fee: $3 per student

Snake Savvy (Grades 1-5)
As long as you know about snakes, there is no reason to be afraid of them! In this program, students learn characteristics that differentiate Virginia’s venomous and non-venomous snakes. They also learn to identify some of Virginia’s most common snakes. Students have the opportunity to feel snake skin. We also talk about what to do when students encounter snakes in the wild and practice this behavior on a nature walk.

Science SOL: 1.1, 1.5, 1.7; 2.1, 2.4, 2.5, 2.7; 3.1, 3.4, 3.5, 3.6; 4.1, 4.5, 4.8; 5.1, 5.5
Math SOL: 2.12; 3.14
Fee: $3 per student

It’s for the Birds (Grades 2-4)
What adaptations allow birds to secure food and shelter? In the classroom, students learn about how different bird beaks are adapted to the food they eat. Outdoors, students use binoculars to observe birds in their natural habitats. This program is recommended for the winter as well as warmer times of the year.

Science SOL: 2.1, 2.4, 2.5, 2.7; 3.1, 3.4, 3.5, 3.6, 3.8, 3.10; 4.1, 4.5, 4.8
Math SOL: 3.8; 4.6
Fee: $3 per student

What teachers say about our programs:
“Exceeded expectations; all students were kept active and involved.”
“Beautiful setting- kid friendly staff!”
Skulls (Grade 7)
Students will identify several skulls of native Virginia animals by examining skull characteristics and using a dichotomous key. They develop hypotheses regarding skull and teeth adaptations for food preferences. They also construct a food web based on evidence of animals found on a nature walk and on the skull investigations they performed. Join us for this exciting new program! This program is designed to take two hours.

Science SOL: LS.1, LS.4, LS.5, LS.7, LS.8, LS.9, LS.12
English SOL: 7.1
Fee: $5 per student

Let’s Sprout (Grades K-2)
Capture the imagination of budding young scientists as they explore the wonders of seed germination and plant growth. What do seeds do? How do plants grow? The concept of plant life cycles is reinforced on a nature walk and by planting seeds to take home. This is our most popular program!

Science SOL: K.1, K.4, K.6, K.8, K.9; 1.1, 1.4, 1.5, 1.7, 1.9; 2.1, 2.4, 2.7, 2.8
Fee: $3 per student

Arbor Sleuth (Grades 5-7)
What are the important features that distinguish one tree from another? Student detectives hone their observation skills as they tour the Arboretum identifying mystery trees. They use hand lenses and dichotomous keys to locate characteristics that distinguish trees from one another. This program can be scheduled year round. In spring, the focus is on tree flowers; summer and fall the focus is leaves and fruit; in winter our focus is on buds and bark.

Science SOL: 5.1, 5.5; 6.1; LS.1, LS.5, LS.11, LS.12
Math SOL: 5.11; 6.10
Fee: $3 per student

What teachers say about our programs:
“The rotations were awesome and well organized; everything went smoothly.”
Virginia Natives (Grades 2-4)

Does our backyard look like your backyard? On the Native Plant Trail, students identify producers, consumers and decomposers in the ecosystem layers of our woodland habitat. Through inquiry-based activities, students investigate how these plants and animals interact with one another and their physical environment.

Science SOL: 2.1, 2.5, 2.4, 2.7, 2.8; 3.1, 3.4, 3.5, 3.6, 3.8, 3.10; 4.1, 4.5, 4.8
Social Studies SOL: VS 2
Fee: $3 per student

Flower Functions (Grades 3-4)

Learn about the mysterious world of flowers and their pollinators in this program! Students dissect flowers using hand lenses and dissecting scopes to identify and observe the parts of flowers. They explore flowers and pollinators around Blandy on a nature walk as they learn about the fascinating relationships plants and their animal partners have developed with one another.

Science SOL: 3.1, 3.4, 3.5, 3.8, 3.10; 4.1, 4.4, 4.5
Math SOL: 3.21; 4.20
Fee: $3 per student

Incredible Insects (Grades 2-3)

Explore the world of crawling, flying, and hopping insects with your students through this NEW program. Students discover how insects survive by using mimicry, camouflage and other mechanisms. They also learn about life cycles of insects and build their own ‘bug sucker’ to take home! Students also explore the grounds in an exploratory journaling activity as they search for insects in their natural environment.

Science SOL: 2.1, 2.4, 2.5; 3.1, 3.4, 3.6
Math SOL: 2.20; 3.19
Fee: $3 per student

What teachers say about our programs:
“Presentations were highly engaging and interactive. The hands-on activities were fabulous!”
**Young Ecologists (Grades 6 & 7)**
What is a habitat? What types of plants and animals might be found there? What resources do organisms need to survive in their habitats? Blandy is your outdoor science and math laboratory as students become young ecologists by investigating the diversity of life in different habitats. They also explore some of the environmental factors that influence ecosystem diversity. This program is designed to take two hours.

Science SOL: 6.1, 6.7; LS.1, LS.4, LS.7, LS.8, LS.9, LS.10, LS.11, LS.12
Math SOL: 6.7, 6.8; 7.7, 7.16, 7.19, 7.20, 7.21
Language Arts SOL: 6.1, 6.7, 6.8; 7.1, 7.8
Fee: $5 per student

**Preschool Explorers (Grade: PreK)**
Choose from one of the following themes for your preschool students. In each, students explore the natural world using their senses and powers of observation through a variety of activities.

♦ Plants and Trees– Examine trees and plants up close and personal!
♦ Food Webs– Explore connections among animals.
♦ Weather– Observe clouds, wind, and how the weather affects animals and nature.

VA Foundation Blocks for Early Learning
Science Block 1, 3, 4, 6
Personal & Social Development Block 1, 2, 3, 4
Physical & Motor Development Block 3, 4, 5
Mathematics Block 3, 4, 5, 6
Literacy Block 1, 2
History & Social Science Block 4, 7

Fee: $3 per student

**Science Explorations (Grades 6-12)**
A day-long investigation! From developing a hypothesis to presenting their results, students conduct a scientific investigation based on an inquiry they choose about the environment at the Arboretum. A sampling of numerous possibilities: investigate animal and plant adaptations; explore the effect of abiotic factors on lichen; explore the biodiversity value of wetlands. Call (540) 837-1758 Ext. 242 to discuss possibilities. This program is scheduled from 9 a.m. to 2 p.m. Class size limit is 15.

Science SOL: 6.1, LS 1, CH 1, Bio 1 and many others depending on the inquiry chosen
Math SOL: 6.7, 6.8; 7.7, 7.16, 7.19, 7.20, 7.21; 8.1, 8.3, 8.12, 8.13, 8.14, 8.18; A5, A18; PS 1, PS 2, PS 3, PS 8, PS 9, PS 10
Language Arts SOL: 6.1, 6.2, 6.6, 6.7, 7.1, 7.8, 7.9; 8.2, 8.7, 8.8; 9.2, 9.6, 9.7; 10.1, 10.7, 10.8; 11.1, 11.7

Fee: $8 per student

**Careers at the Arboretum (Grades 9-12)**
Are your students curious about career opportunities at an arboretum? This program provides an inside look at various career options that an arboretum provides. Students explore aspects of the science background knowledge and diverse skills necessary to succeed in specific careers and work alongside our arboretum staff to gain first-hand experience learning what each job entails. Please select one arboretum career you would like to experience for each program. Learn what it means to be a horticulturalist, an invasive species specialist, an arborist, or an ecological research scientist. Program requests will be arranged based on staff specialist availability.

Please contact Candace Lutzow-Felling, Director of Education, to schedule this program: (540) 837-1758 ext. 230
Programs that emphasize Aspects of the Environment

**Scoop On Soils (Grades 3-5)**
With this investigative program, students learn that soil is more than just dirt! First, students learn about soil particle size by playing a game. Then, students experiment with different types of soil building on the concepts learned in the soil game. Data collection, measurement, observation and use of scientific methods are reinforced. This program is recommended for winter as well as warmer times of the year.

Science SOL: 3.1, 3.7, 3.10; 4.1, 4.8; 5.1, 5.7  
Math SOL: 3.14, 3.21, 3.22, 3.8; 4.10, 4.11, 4.12, 4.19, 4.20; 5.11, 5.18, 5.21, 5.3  
Fee: $3 per student

**Rocks Talk! (Grades 4-5)**
What do the rocks at the Arboretum tell us about our geologic history? Students identify common Virginia rocks and the distinctions among gneous, metamorphic and sedimentary rocks. On the grounds they look for evidence of tectonic plate movement, weather and erosion, and examples of human impact on the natural rock cycle. This program is recommended for the winter as well as warmer times of the year.

Science SOL: 4.1, 4.8; 5.1, 5.7  
Fee: $3 per student

**Water Wonders (Grades 4-6)**
Students locate and learn about their watersheds using topographic maps. Students then collect, measure, record and analyze water quality indicators such as temperature, dissolved oxygen, pH and nitrates. They also learn how to identify macro-invertebrates of Blandy’s wetlands.

Science SOL: 4.1, 4.5, 4.8; 5.1, 5.5; 6.1, 6.5, 6.7, 6.9  
Math SOL: 3.17, 3.5; 5.11; 6.1  
Social Studies SOL: VS 1, VS 2; USI.1, USI.2; CE.1  
Fee: $3 per student

**Water Quality Technology (Grades 6-12)**
This program focuses on measuring water quality indicators using technology. For the program, students use TI-83 graphing calculators and Vernier LabPros to measure temperature, pH, dissolved oxygen, ammonium and other indicators. Students use high-tech equipment for motivated students. It is designed to take two hours and best accommodates groups of no more than 15.

Science SOL: 6.1, 6.5, 6.7, 6.9; LS 1, LS 7, LS 12;  
CH.1; BIO.1, BIO.3  
Social Studies SOL: USI.1, USI.2; CE.1; WG.1  
Fee: $5 per student
When students are not in a scheduled program, what can you do? Reserve a backpack full of fun, self-directed activities! We have developed four backpack sets, each with a different theme. There are four backpacks to each set; each pack has supplies for 6 students. Instructions, equipment and all necessary materials are included in each pack. Use the on-line program registration system to reserve a set of backpacks for your class.

For more information, contact schprog@virginia.edu. Fee for each Backpack Set: $15

**EARTH TALKS**

*Grades 6-8*

Explore geology at Blandy using our NEW backpack set. Activities include examining the rocks and soil of Blandy, learning the geology of Virginia and fossil and rock scavenger hunts!

[Skills Used: Observation, Map reading, Inferring, Investigation, Analyzing and Classification]

**USE SOME SENSE!**

*Pre-School & Kindergarten*

Did you hear that? What is that smell? Look at that color! Come visit Blandy and find out how we use our senses to observe the world around us. This backpack set contains several hands-on activities for your students.

[Skills Used: Observation, investigations using the senses, communication]

**WILD THINGS!**

*All Grades*

What birds make Blandy their home? Who lives in Lake Georgette? Are there creatures hiding in the rock walls? Observe the wildlife that makes the Arboretum their home using Peterson Flash Guides, binoculars and grade specific hands-on activities.

[Skills Used: Observation, communication and identification]

**GREEN AND GROWING**

*All Grades*

Where is the plant that smells like pizza? Did you know that leaves have veins? Have you ever seen a “tree cookie?” Explore the plants, trees, and herbs at Blandy using Peterson Flash Guides, hand lenses, and grade specific hands-on activities.

[Skills Used: Investigations using the senses, observation and identification]
For middle and high school groups

For week day science research immersion experiences, please register for our Science Explorations program

Blandy Experimental Farm offers many opportunities for hands-on environmental science research experiences for middle and high school students. Opportunities abound in our succession fields, native plant garden, meadow restoration area, wetlands, woodlands, and arboretum. Investigations can focus on general ecology, environmental science, entomology, botany, forestry, zoology, or other subjects.

Please call or e-mail us to discuss the potential learning experiences we can provide to meet the learning goals and objectives for your students (contact information is below).

**Program Fees**

- **Friday afternoon or evening** (2 hours) $5.00/student
- **Saturday** (6 hours) $15.00/student
- **Sunday** (4 hours) $10.00/student

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¨ Book the full schedule at a rate of $28.00/student. You are welcome to add additional hours of instruction led by teachers in your group while you are at Blandy.
¨ Maximum group size is 14 students.
¨ Two teachers should accompany each group. Additional chaperones are encouraged. Teachers and chaperones pay room fees but are not charged program fees.
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**Facilities Use**

- **Parkfield Learning Center** $50.00/day
  - Indoor classroom; maximum occupancy = 45
- **Peetwood Pavilion** $25.00/day
  - Covered outdoor classroom; seats 36 at 6 picnic tables
- **Quarters Dining Room** $25.00/day
  - Seats 22
- **Quarters Library** $50.00/day
  - Seats up to 50 depending on the room arrangement
- **Quarters Kitchen** $25.00/day
  - Meals can be catered or prepared by your group in our kitchen.
- **Quarters Dorm Rooms** $8.00/night/person
- **Quarters Apartment (VIP suite w/ 2 single beds, a private bathroom, kitchen & living room; teachers only)** $12.00/night/person
- **Farm House Rooms** $12.00/night/person
- **Entire Farm House** $150/night
  - **Includes kitchen dining room, and meeting space; lodging fee is separate**

The farm house can sleep 16 people. There are 3 rooms that sleep four with 2 sets of bunkbeds and 2 rooms that sleep 2 with one bunkbed. Four bedrooms are on the second floor of the house; one bedroom is on the first floor. The house has a full kitchen, dining room, and living room. The dining and living rooms are blended into a great room that has seating for twelve and can serve as a classroom.

**School groups are encouraged to book rooms in the farm house.** This is for management and safety purposes as it allows all members of the group to stay together. The house is normally available for school groups from early September through March. Please inquire about availability.

**Contacts**

- Contact our Director of Education, Candace Lutzow-Felling, to discuss research program options and details: Office phone: (540) 837-1758 extension 230 E-mail: lutzow-felling@virginia.edu
- Contact our Administrative Assistant, Ned Olinger, for all facility reservations and for caterer suggestions: (540) 837-1758 extension 223
The mission of the Blandy Education Program is to encourage scientific exploration and discovery, and stewardship of our natural world by fostering a learning community among preK-12 students and teachers, and scientists. We welcome your inquiries and will gladly discuss your ideas of ways in which we may be able to assist you with the tools, knowledge, and resources you need to meet your educational needs. An overview of the programs and resources we now have are described.

Programs for Students
- Nineteen outdoor-based science programs taught by Education staff using the inquiry method
- Four teacher led outdoor programs with all required materials contained in a backpack
- Water quality analysis
- Field ecology research experiences (ranging from 5 hours to three-day immersion experiences)
- Field ecology research projects (semester or year-long)

Resources for Teachers
- Science content advice and resources
- Science process and technology skills advice and resources
- Lesson planning resources (for example: pertinent materials to teach evolution, biodiversity, weather, global climate change, watershed science, ecological structure and complexity, scientifically valid online science content and lesson resources)
- Partnering on grant writing for specific projects

Teacher Professional Development Opportunities
- Project Underground is a national education program that focuses on caves and karst topography. Facilitators and participants work together to model hands-on activities from the Education Guide. The materials are intended for classroom teachers and cavern, park, museum, and nature center staff. Visit www.dcr.virginia.gov/underground.shtml for more information about Project Underground.
- Project Learning Tree is an award winning environmental education program for teachers and other educators working with preK through eighth grades. The activities are interdisciplinary and designed to help educators add environmental education to their curricula. During the workshop participants model activities that they can implement in their classroom. PLT has also developed Secondary Modules for grades 9-12. For more information on the PreK-8 Activity Guide or any of these modules visit www.plt.org.
- Project WILD is an interdisciplinary environmental education program emphasizing wildlife and the environment created by the national Council for Environmental Education. With the activities in this guide, educators bring awareness and appreciation of wildlife into the classroom. The Curriculum and Activity guide is mainly designed for K-12 educators. The guide has many great activities that can be used in informal settings as well as formal settings. More information about Project WILD can be found at www.projectwild.org.
- Flying Wild is another environmental program from the Council for Environmental Education designed for grades 3-8. The "Educator’s Guide to Celebrating Birds" focuses on the subjects of bird conservation and bird migration. This program was developed with the input of conservation organizations and environmental educators. The guide can be used in the formal classroom or informally for a Bird Festival or other outreach event. Please visit www.flyingwild.org for more information on this program.
- MWEE (Meaningful Watershed Educational Experiences). This multi-day workshop explores the hydro-ecological connections between the Shenandoah River watershed and Chesapeake Bay. Participants learn about current scientific research in watershed ecology, conduct field investigations, and collaborate in adapting their new knowledge and investigative skills for their individual classrooms.
- Scientific research skills. Teachers engage in the scientific inquiry process beginning with making observations and asking questions to designing and conducting investigations, analyzing data and communicating their results. This workshop will provide you with new skills to infuse the dynamic practice of science into your classroom.
- Experimental design and statistics. Participants gain expertise in designing experimental investigations that build on previous scientific knowledge, are statistically testable, control for confounding factors, and can be completed within a designated time frame. During this process we explore descriptive and analytical statistics that contribute to the design process and are appropriate for Middle and High School learners.
- Research Experiences for Teachers. This is a National Science Foundation program that involves an 8-week research internship working with a scientist at Blandy; offered intermittently; please inquire.

Please contact your district's administrator's for information on obtaining professional development credits for any of these workshops.

Call 540-837-1758 Ext. 242 or email at schprog@virginia.edu with questions or for more information about any of these professional development opportunities.
Blandy Experimental Farm Off-Site Programs

Bring Blandy Experimental Farm’s education team right into your classroom with our new off site Programs! Our educators share the excitement of science using hands-on inquiry methods.

As with our on-site programs, each program incorporates hands-on activities and are Virginia Standards of Learning correlated. Each program is 50 minutes in length. We can present up to four programs in one day. We will travel to schools within a 30 mile radius of Blandy Experimental Farm. Programs listed below are available from November 15 – March 15. Call (540) 837-1758 Ext. 242 or email schprog@virginia.edu for more information.

**Program Fees**

<table>
<thead>
<tr>
<th>Length of program</th>
<th>50 minutes</th>
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<tbody>
<tr>
<td>Number of students/program</td>
<td>30 maximum</td>
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Fee $135 for first program $115 for each additional

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**Bird Watch**

*Grades 2 & 3*

Students learn about bird migration and how and why birds migrate. Each class will make a feeder station to set up at school for year round bird watching! Students will learn how to observe and identify birds.

Science SOLs addressed:
2.1, 2.4; 3.1, 3.4, 3.5

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**Caves & Karst**

*Grades 4 & 5*

Students explore a model cave to learn about the fascinating ecosystem that exists below their feet. Students also learn about cave organisms, geology and karst topography systems in our region. Requires a large space such as a gymnasium to set up the ‘cave’. Two class minimum for this program.

Science SOLs addressed:
4.1, 4.5, 4.8; 5.1, 5.7
Program Registration

Registration for Blandy Education programs is online. To register for programs, use the link at the top of this page. A few important notes about registering:

♦ When registering for programs, please be sure to enter the most accurate number of children attending each program as well as each teacher’s name so that we are prepared for your school groups.
♦ Once you have registered online you should receive a confirmation email in 24 hours. If you do not receive such an email– you are not signed up for any programs. Call us at 540-837-1758 Ext. 242 for assistance.
♦ Please call us with any questions you have about program structure, content, etc.

Class size: Minimum class size for a program is 10 students. For groups spanning several grade levels, we prefer to limit the group to three consecutive grades, e.g. grades 3, 4, & 5 or K, 1, & 2. Please go to page 2 for program structure.

Cancellation Fee: If you cancel your program(s) within 3 weeks of your scheduled date, you will be charged the minimum fee of $30 per program canceled. We are unable to fill timeslots vacated within 3 weeks of a program date due to the lead time needed for schools to schedule field trips. Programs will be held rain or shine, except for severe weather.

Chaperones: One per 5-6 students; chaperones come for free!

Special Needs: Please advise us as soon as possible if you have students with special needs (i.e. peanut allergies, wheel chairs, special education, etc.). We will make every effort to accommodate them.

Be Prepared: Maximize your students’ experience at Blandy! Come to the Arboretum for a program preview. Call or email us to schedule a preview.

Restrooms: Allow 20 minutes for the whole class to visit the restroom. Restrooms are located in the Quarters Building and at the Peetwood Pavilion.

Picnic Grove: Seats about 60 people. First-come, first-serve basis; no reservations are taken.

Who is in charge? Teachers PLEASE remember: YOU are responsible for your own self-guided activities when your class is not participating in the program. Please abide by arboretum rules and etiquette. During the staff led activities, we expect the teachers and chaperones to manage student behavior.
Education Program

BLANDY EXPERIMENTAL FARM
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(540) 837-1758 Ext. 242
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