

**Clemson University
Clemson, South Carolina**

**Reports Required by *Government Auditing Standards*
and the *Uniform Guidance***

For the year ended June 30, 2018

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Clemson University, Clemson, South Carolina

Schedule of Expenditures of Federal Awards

For the year ended June 30, 2018

Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass-through Entity Identifying Number	Passed Through to Subrecipients	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER				
Department of Agriculture				
Acquisition of Goods and Services	10.RD	58-6080-7-003	\$ -	22,925
Acquisition of Goods and Services	10.RD	58-6080-7-004	-	17,623
Acquisition of Goods and Services	10.RD	58-6080-8-001	-	30,696
Acquisition of Goods and Services	10.RD	58-6080-8-003	-	12,629
Acquisition of Goods and Services	10.RD	58-6082-6-013	-	19,228
Acquisition of Goods and Services	10.RD	58-6082-7-012	-	46,907
Acquisition of Goods and Services	10.RD	58-6082-7-016	-	25,272
Acquisition of Goods and Services	10.RD	58-6082-7-017	-	20,000
Acquisition of Goods and Services	10.RD	58-6082-8-003	-	25,800
Acquisition of Goods and Services	10.RD	58-6082-8-004	-	20,900
Acquisition of Goods and Services	10.RD	58-6082-8-009	-	9,441
Acquisition of Goods and Services	10.RD	58-6082-8-012	-	2,095
Adaptation of Intelligent Spray Application Technologies in Peach Orchards	10.RD	59-5082-6-002	-	44,106
An Administrative Study to Develop Transfer Zones for Native Plant Materials: Intraspecific Functional Trait Variation - Common Garden Support	10.RD	16-CS-11330123-061	-	977
Animal Health	10.RD	Unknown	-	8,359
Areawide Pest Management of the Invasive Sugarcane Aphid in Grain Sorghum- Clemson University, South Carolina	10.RD	58-6048-6-015	-	25,518
Assessment of the Potential for WNS in Bats of Congaree National Park	10.RD	15-JV-11330134-108	-	5,528
Assisting Farmers in SC to Adopt Modern Soil Moisture Sensing Technologies to Improve Irrigation Scheduling and to Enhance Environmental Quality and Farm Profits While Reducing Irrigation Water and Energy Consumption	10.RD	69-4639-14-0010	-	888
Bat Monitoring on the Andrew Pickens Ranger District	10.RD	15-PA-11081209-020	-	19,479
Biosensor-Based Assay for the Detection and Quantification of Quorum Sensing Autoinducers (Acyl Homoserine Lactones and Autoinducer-2) Produced in Package Foods	10.RD	2018-67031-27359	-	40,708
Building Entrepreneurial Farm Management and Land Stewardship Capacity for South Carolina New and Beginning Farmers	10.RD	2016-70017-25351	6,461	142,796
Capacity Building for USDA- Rural Development Programs in South Carolina	10.RD	RD-RB-16-26	-	71,060
Clean WaterR3 - Reduce, Remediate, Recycle: Informed Decision Making to Facilitate Use of Alternative Water Resources	10.RD	2014-51181-22372	1,288,461	1,666,860
Crop Protection and Pest Management Extension Implementation Program for South Carolina	10.RD	2017-70006-27156	-	83,880
Crop Protection and Pest Management Extension Implementation Program for South Carolina to Advance Stakeholder Adoption in Key Commodities	10.RD	2014-70006-22568	-	26,703
Data Needed for Foreign Regulatory Packages for the PPV Resistant Transgenic Prunus Domestica CV. 'HoneySweet'	10.RD	58-1931-4-012	-	8,004
Demonstrating the Influence of Cover Crop Termination Time on Nutrient Provision to Yield of Cash Crop	10.RD	NR184639XXXXG006	-	1,911
Demonstration of Innovative Nutrient Management Strategies Combined with Soil Amendments to Enhance Fertilizer Use Efficiency, Farm Profits and Environmental Quality	10.RD	69-3A75-14-268	-	88,295
Developing a Life Cycle Assessment Model for Evaluating Policy Implications of Biofuels	10.RD	2012-67009-25266	1,934	8,932
Developing a Sensor-Based, Variable-Rate Nutrient Management Technique for Center Pivot Irrigation Systems	10.RD	2017-67011-26071	-	58,771
Developing Host Plant Resistance for Thrips in Cotton to Address Emerging Insecticide Resistance	10.RD	2017-70006-27264	29,312	67,721
Development and Comparison of Pathogen Viability Tests for Seed Certification and Improved Management of Bacterial Spot of Tomato	10.RD	2017-70006-27206	3,391	38,618
Edge of Field Water Quality Monitoring	10.RD	68-4639-15-527	-	13,266
Effects of Prescribed Fire Intensity and Frequency on Bat Foraging Habitat Use and Roosting Habitat	10.RD	17-JV-11330134-108	-	16,469
Enhancing FANH Education Through Sensor-Linked Mobile Applications to Improve Technical Literacy	10.RD	2017-70003-26390	-	45,226
Enhancing the Nutrient Use Efficiency in Crop Plants by Tailoring the Nitrogen and Phosphorous Release Rates from Rendered Animal Materials	10.RD	2016-67020-25264	-	109,541
Evaluating the Net Climate Benefits of Switchgrass Versus Pine Plantations in the Southeast: A Seed Grant to Support Data Collection and Model Development	10.RD	2017-68002-26612	-	13,351
Evaluation of Paper Bags for Pest and Disease Management in Organic Peach Production	10.RD	2016-51300-25726	58,887	186,167
Evaluation of Peach NCGR Germplasm for Fruitlet Freeze Tolerance	10.RD	58-2032-7-057	-	16,399
Expanding the Use of Wood Building Products in SC	10.RD	15-CA-11083150-053	-	78,928
Forest Health Conditions of St. Thomas and St. Croix, USVI	10.RD	15-DG-11120107-021	-	2,277
FY2017 NCPN Clemson/Scott Southeastern Budwood Program	10.RD	AP17PPQS&T00C138	-	90,076
Genetic Structure in Native Plants: Foundational Information for Developing Plant Materials Transfer Zones	10.RD	16-CS-11330123-060	-	4,695
Genomic Profiling and Development of a Comprehensive Catalogue of Plum Germplasm Using Genotyping-By-Sequencing (GBS)	10.RD	59-8080-6-001	-	29,888
Genomics, Transcriptomics and Microbiome Analysis of Dipteran Pests Affecting Livestock and Humans	10.RD	58-3020-6-015	-	11,328
Genotypic Specificity in Plant-Herbivore Interactions and its Application to Management of an Invasive Weed	10.RD	2015-67014-22956	-	107,851
Hatch	10.RD	Unknown	-	3,976,661

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina

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For the year ended June 30, 2018

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of Agriculture, continued				
Hayman Fire Resample	10.RD	14-JV-11221634-108	-	7,425
Impact of Fescue Toxicosis on Fetal Development and Postnatal Growth	10.RD	2015-67015-23218	-	50,534
Impact of Prescribed Fire on Polycyclic Aromatic Hydrocarbon Production and Contaminant Photo-transformation Reductions in Coastal Plain	10.RD	2014-67019-21615	-	102,981
Improving Soil Health in Peach Orchards: A Demonstration	10.RD	68-4639-14-0022	-	21,339
In Situ and Ex Situ Rare Plant Conservation	10.RD	17-CS-11081209-002	-	10,000
Intraspecific Functional Trait Variation Among Populations of Common Species of the Longleaf Pine Ecosystem	10.RD	16-JV-11330123-022	-	18,786
Investigating the Plant-Soil Feedback That Maintains the Legacy Effect in Invaded Ecosystems to Formulate Knowledge-Based Restoration Practices	10.RD	2017-67014-26698	-	21,749
Investigation of the Diversity of Phytoseiid Predatory Mites in Watermelons and Tomato and Their Use of Non-Prey Resources	10.RD	2018-67012-27994	-	23,439
Keeping the Green Heart Healthy: An Ecologically Sound and Economically Viable Conservation Plan for the Cowsee Basin	10.RD	2018-67020-27854	-	2,208
McIntire Stennis	10.RD	Unknown	-	620,167
Modeling Fire-Induced Tree Mortality for Eastern Hardwood Forests	10.RD	16-JV-11242311-079	-	14,493
Monitoring Success of Farm Bill Programs in Conserving Avian Wildlife	10.RD	69-4639-16-261	-	30,978
National Needs Training in Computationally Intensive Genomic Analysis and Application	10.RD	2016-38420-25299	-	102,081
On-Farm Demonstrations to Assist Producers with How Soil Sampling Influences Nutrient Management Decisions	10.RD	69-4639-17-140	-	18,607
Optimizing No-Till Cover Crop Management for Weed Control in Vegetable Production: Applied Res. & Ext. Training to Facilitate Grower Adoption	10.RD	2015-70006-24163	-	36,528
Outreach Activities for the Consortium of Appalachian Fire Managers and Scientists	10.RD	16-JV-11330136-001	-	81,793
Pine Seedling and Thinning Demonstration Site Development in the Piedmont of South Carolina	10.RD	69-4639-17-145	-	24,168
Potential of Woody Substrate- Based Bioreactors to Remediate Plant Pathogens in Agricultural Runoff for Onsite Water Reuse	10.RD	2018-67011-28074	-	12,453
Promote the Sustainable Carbon Market to South Carolina Forest Landowners	10.RD	69-4639-17-147	-	12,451
Repeated Prescribed Fires and Mechanical Fuel Treatments in the Southern Appalachian Mountains: Vegetation and Fuels after a Fourth Burn and a Second Mechanical Treatment	10.RD	15-JV-11330136-044	-	2,875
Seed Grant on Genomics of Prebiotic Carbohydrates Affecting Lentil Nutritional Quality	10.RD	2018-67014-27621	-	6,067
Selection, Molecular and Genetic Analysis of HLB Tolerant/Resistant Variant Citrus Plants	10.RD	2017-70016-26051	154,205	339,355
Southeastern Budwood Program	10.RD	16-8130-0423-CA	-	16,834
Stress Induced Modification of the Quantity and Composition of Phytochemicals in Fruits: Optimizing the Nitrogen Supply for Enhancing the Nutritive Quality of Strawberries	10.RD	2016-67014-24578	-	70,165
The Impact of Leptin Concentrations on the Development of Appetite Regulation in Beef Calves	10.RD	2018-67016-27472	-	5,757
To Evaluate the Potential of Organic Farming Practices in South Carolina	10.RD	69-4639-17-142	-	4,173
Toward a Near Real-Time Agricultural Drought Monitoring and Forecasting	10.RD	2015-68007-23210	-	7,826
Tracking and Managing Diseases of Floriculture Crops Caused by Oomycetes and Fungi	10.RD	58-8062-5-037	-	51,085
Transforming Nanocellulose Into an Advanced Biorenewable Reinforcement With Hyperbranched Polymers	10.RD	2016-67021-25016	6,767	34,657
Understanding the Vulnerability of Tri-colored Bats to White-nose Syndrome in South Carolina: Torpor Patterns and Hibernacula Conditions	10.RD	16-JV-11330134-010	-	22,165
Utilization of Cross Laminated Timber	10.RD	16-DG-11083150-054	-	115,475
Utilizing Deep-Rooted Cover Crops to Enhance Water Quality, Soil Health, and Farm Profits While Reducing Soil Compaction in Coastal Plain Region	10.RD	69-3A75-17-274	-	57,431
Water Use in the Propagation of Vegetative Animals	10.RD	58-3607-3-991	-	26,560
Will Use of Alternate Winter Roosts by Tri-Colored Bats Protect Them From White-Nose Syndrome?	10.RD	18-JV-11330134-001	-	33,009
Pass-through programs from:				
Cal Poly Corporation				
Improving Strawberry Gray Mold management through Identification of Ineffective Sprays	10.RD	2016-18-46134	-	8,648
California Strawberry Plant Growers Association				
Identification of Inoculum Sources and the Development of Methods to Reduce Dispersal of Xanthomas fragariae to minimize its impact on international trade of strawberry nursery stock	10.RD	TASC-2015-31-Clem	-	66,849
CHK Group, Incorporated				
Development and Use of Biosilica as a High Reactivity Pozzolan in Ultra-High Performance Concrete (UHPC) Mixtures	10.RD	CU-01	-	12,342
Cooper Tire & Rubber Company				
Securing the Future of Natural Rubber-An American tire and bioenergy platform from Guayle	10.RD	2016000344	-	900
Cornell University				
Developing an Eastern Broccoli Industry Through Cultivar Development Economically and Environmentally Sustainable Production and Delivery	10.RD	79598-10781	-	61,000
Dillon County				
Demonstrating tillage and cover crop management strategies on a corn-wheat-soybean rotation	10.RD	USDA prime #69-4639-15-504	-	2,872
Kansas State University				
2017 Air Force/4-H Partnership Youth Camps	10.RD	S17158	-	12,182
Navy/4-H Military Partnership and Outreach and Support	10.RD	S17178	-	10,364

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of Agriculture, continued				
Pass-through programs from, continued:				
Louisiana State University				
Biology, Ecology and Impact of Melanaphis Sacchari In Sugarcane and Sorghum Production Systems	10.RD	105611	-	4,030
Michigan State University				
RosBREED: Combining Disease Resistance with Horticultural Quality in New Rosaceous Cultivars	10.RD	RC1042858	-	172,326
North Carolina Central University				
New Strategy and Method for Isolating and Concentrating Foodborne Pathogens	10.RD	PO# USDA-NIFA-AFRI-003958	-	59,713
North Carolina State University				
An Investigation into Antixenosis, Antibiosis and Tolerance Mechanisms to Kudzu Bug in Soybean	10.RD	2015-2467-01	-	11,352
Building Capacity to Control Viral Foodborne Disease: A Translational, Multidisciplinary Approach	10.RD	2011-0494-01	-	32,326
Cross-Commodity Bt Resistance in Dynamic Row Crop Agroecosystems: Linking the Development of GE Technology at the Landscape-Scale to Resistance in Cotton Bollworm	10.RD	2017-2861.01	-	3,248
Determining Effects of Cover Crop Use on Pest Attraction to Tomato	10.RD	2015-0085-31	-	4,883
Growing New Roots: Grafting to Enhance Resiliency in U.S. Vegetable Industries	10.RD	2016-1498-01	-	176,930
Impact of Transgenic Bt Crops on Helicoverpa Zea Ecology and Subsequent Resistance Risk	10.RD	2014-2219-01	-	1,130
Moving Regional Food Systems Toward Sustainability: An Adaptive and Interactive Online Course in Local Food System Development for NC, SC, and VA Extension Agents and Other Service Providers	10.RD	2017-1456-03	-	14,664
Southeast Cattle Handling for Women Producers: Advanced BQA Training and Farm Safety	10.RD	2017-1419-02	-	2,242
Strawberry Disease Cycle Illustrations, Animations, and Time-Lapse Videos for IPM Education	10.RD	2015-0085-30	-	5,922
Pennsylvania Department of Agriculture				
Short and long-term solution for Armillaria Root Rot in Prunus; FY2016 Specialty Crop Block Grant Program and 2015 Specialty Crop Multi-State Program	10.RD	ME#44165761 // 16SCCMPA004	55,123	171,733
Pheasants Forever				
A multi-species approach to managing the effects of weather and land cover on upland game birds	10.RD	LPCI-16-08	-	28,478
Rutgers, The State University of New Jersey				
Protecting Pollinators with Economically Feasible and Environmentally Sound Ornamental Horticulture	10.RD	6065-PP2016-PO#479850	-	77,516
Protecting Pollinators with Economically Feasible and Environmentally Sound Ornamental Horticulture	10.RD	6142-PP2016- PO#607871	-	99,262
South Carolina Department of Agriculture				
Enabling Breeding of Peach Cultivars for Spring Climate Resilience Traits	10.RD	D039/AM170100XXXXG034	-	4,635
Evaluation of Novel POST-Emergent Herbicide Concepts in Sweet Potato	10.RD	D040/AM170100XXXXG034	-	6,335
Nutritional and Biological Yield Improvement of SC Grown Kale (Brassica oleracea var. acephala L.) for Improved Human Health	10.RD	NONE	-	6,582
Promoting Spinach Consumption and Sustainable Agricultural Practices in Schools Using Aquaponics	10.RD	NONE	-	3,690
Restoring the Sweet Potato Industry in South Carolina through Research and Extension	10.RD	NONE	-	12,531
Selecting Organic Kale Varieties with Increased Production and Nutritional Quality	10.RD	NONE	-	19,258
South Carolina Watermelon Disease Survey	10.RD	NONE	-	1,415
Training Growers in Use of Cover Crops and Reduced Tillage for Organic Vegetable Production	10.RD	NONE	-	4,500
South Carolina Forestry Commission				
Ice Storm Impact on Forest Health: Monitoring & Predicting the Growth & Mortality of Ice-damaged Trees in Southern Forests	10.RD	NONE	-	29,615
Post-hurricane Fuel Dynamics and Its Implications to Fire Behavior	10.RD	NONE	-	1,134
The Center for Produce Safety				
Preservation of Stone Fruits by Spray Application of Edible Coatings with Antimicrobial Properties	10.RD	2018CPS01; Grant # SCB17053	-	40,227
Validating a Physically Heat-treated Process for Poultry Litter in Industry Settings Using the Avirulent Salmonella Surrogates or Indicator Microorganisms	10.RD	2016CPS05	-	83,949
University of Arkansas				
Risk Management for Current and Potential Users of Unmanned Aircraft Systems (UAS) an Emerging Technology	10.RD	21752-01	-	3,660
University of Florida				
Evaluate the Efficacy of Selected Insecticides Against Redheaded Flea Beetle in Field Containerized Production	10.RD	PO 1800574483	-	3,620
Strategic Management of Multiple Diseases in Strawberry Nurseries and Production Fields in the Eastern United States	10.RD	UFDSP00010493	-	138,842

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of Agriculture, continued				
Pass-through programs from, continued:				
University of Georgia				
A System Approach to Improve Disease Management and Production of Watermelon in the Southeastern United States	10.RD	RF332-692/5054176	-	105,700
Cover Crop Influence on Stored Soil Water Availability to Subsequent Crops	10.RD	RD309-129/S001062	-	2,928
Getting to the Bottom of Bronzing, A Peach Skin Disorder Causing Severe Losses for Organic and Conventional Peach Growers	10.RD	RD309-129/S001067	-	1,206
Identification Factors Involved in Peach Skin Streaking	10.RD	RD309-137/S001373	-	15,000
Increasing Sustainability of Peanut, Cotton, and Soybean Production Systems Through Innovative Interseeding Technology to Enhance Farm Profit and Reduce Pest Occurrence	10.RD	RD309-129/S001061	-	3,229
Optimizing Nutritional Management in Fruit Tree Production in Southern U.S.	10.RD	RD309-137/S001520	-	14,836
Wholesale Success: Building the capacity of farmers to meet demand for locally and sustainably grown produce	10.RD	RD309-137/S001411	-	59,265
University of Hawaii				
New Engineered Approaches for Recovering Disperse Populations of Low-Tolerance Pathogens from Food	10.RD	2014-67005-21702	-	17,162
University of Minnesota				
Innovating to Expand Farm Financial Management and Benchmarking	10.RD	H005728802	-	15,099
University of South Carolina				
Evaluation of Farm to Institution Programs (Farm to School)	10.RD	16-3062/PO#20000020344	-	550
University of Tennessee				
Bioleaching of Biomass to Improve Thermochemical Conversion Efficiency with Reduced Emission	10.RD	8500047637	1,518	15,084
Omega-3 and Fatty Acid Production from Sweet Sorghum	10.RD	8500054640	-	102,053
University of Texas at San Antonio				
Cloud-based Decision Support System Integrating Biomass Quality, Uncertainty and Risk to Optimize the Production of Second-generation Biofuels	10.RD	1000001538	-	(1,109)
US Endowment for Forestry & Communities				
A Systems Approach to Design and Manufacture CNC-Enabled Lightweight Automotive Components	10.RD	E17-18	-	10,206
VRM Labs, Incorporated				
Novel Natural Antioxidants Extracted from Animal Red Blood Cells	10.RD	VRM-001	-	3,399
Washington State University				
Genome Database for Rosaceae: Empowering Specialty Crop Research Through Big-Data Driven Discovery and Application In Breeding	10.RD	123519-G003399	-	95,274
Total Department of Agriculture			1,606,059	11,231,154
Department of Commerce				
FY 2017 Summer Undergraduate Research Fellowship PML-PL	11.RD	70NANB17H133	-	250
Improving Disaster Resilience by Quantifying WUI community ember exposure	11.RD	70NANB17H213	-	58,723
Relativistic and QED Effects in Highly Charged Ions	11.RD	70NANB16H204	-	191,595
Summer Undergraduate Research Fellowship MML SURF	11.RD	70NANB18H141	-	14,788
Summer Undergraduate Research Fellowship SURF	11.RD	70NANB18H141	-	5,869
SURF - Boulder	11.RD	70NANB18H047	-	8,718
Pass-through programs from:				
GenWest				
Microplastic Marine Debris Research Support	11.RD	GSI-CU-1505	-	3,737
South Carolina Sea Grant Consortium				
Adaptability Toolkit for South Carolina's Coastal Water Infrastructure - Year 1	11.RD	N366 (R/CH-5)	-	(632)
Adaptability Toolkit for South Carolina's Coastal Water Infrastructure - Year 2	11.RD	N466 (R/CH-5)	7,250	35,625
Examining the Social Carrying Capacity for Mariculture Development on the South Carolina Coast	11.RD	R/A-36	-	17,129
Microplastic Contamination in Coastal South Carolina: Sources, Trophic Transfer, and Abundance in Biota - Year 2	11.RD	N468 (R/ER-46)	29,552	65,893
Performance Based Design of Low Impact Development Technologies in Response to Climate Change Induced Changes in Rainfall Patterns - Year 1	11.RD	N367 (R/CH-6)	-	3,037
Performance Based Design of Low Impact Development Technologies in Response to Climate Induced Changes in Rainfall Patterns - Year 2	11.RD	N467 (R/CH-6)	-	35,601
Total Department of Commerce			36,802	440,333
Department of Defense				
(DURIP-16) Grid Computing Laboratory for Integrative Behavioral and Optimization Research	12.RD	FA9550-16-1-0326	-	37,791
(YIP) Engineering Robust Enzyme Activity Through Fundamental Studies of Extremophile Enzymes	12.RD	FA9550-15-1-0163	-	135,291
2018 Mixed Integer Programming Workshop	12.RD	N00014-18-1-2161	-	1,000
A Multi-Function/Multi-Fuel ThermoAcoustic Generator/Heat Pump (TAG/HP) for Marine Expeditionary Forces	12.RD	N00014-14-1-0227	-	74,377
A Practical Approach for Modeling Matrix Diffusion Effects in REMChlor	12.RD	W912HQ-14-C-0009	108,529	238,730

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of Defense, continued				
A Unified Materials Approach to Mitigating Nonlinearities in HEL Optical Fibers	12.RD	N00014-17-1-2546	42,030	239,746
Abiotic Transformation of Chloroethenes in Low-Permeability Formations	12.RD	W912HQ-16-C-0022	139,622	359,999
Addressing Circuitous Currents MVDC Power Systems Protection	12.RD	N00014-16-1-3113	-	42,711
Assessing the Impact of Asymmetric Information in Interdiction and Bilevel Games	12.RD	N00014-17-1-2421	-	83,757
Complete and Resilient Documentation (CARD) for Operational Medical Environments	12.RD	W81XWH-17-C-0238	62,914	362,382
Complex Models on Graph Based Topological Spaces	12.RD	W911NF-17-1-0455	-	90,440
Computational Instrumentation for Research in Mobile Wireless Communication Networks	12.RD	W911NF-17-1-0244	-	250,895
Develop Integrated Management Practices for the Control of Chinese Tallow (Triadica sebifera) in Coastal Forests	12.RD	TO#M0026317F0023/ DO#M0026317D0006	-	59,845
Develop Integrated Management Practices for the Control of Chinese Tallow (Triadica sebifera) in Coastal Forests	12.RD	TO#M0026318F0018/ DO#M0026317D0006	-	1,055
Develop Integrated Management Practices for the Control of Chinese Tallow (Triadica sebifera) in Coastal Forests for Natural Resources Program, MCRD Parris Island, South Carolina	12.RD	W9126G-14-2-0042	-	10,169
Discriminatory Transcriptional Response of Environmental Microorganisms and Microbial Communities to Low-Dose Ionizing Radiation	12.RD	HDTRA1-17-1-0002	-	257,176
Economic Impact Analysis of the Economy Below Thurmond Dam in Response to Water Quality and Water Quantity Constraints	12.RD	W912HZ-16-2-0035	-	7,480
Efficient Delivery of Information in Tactical Packet Radio Networks	12.RD	W911NF-15-1-0545	-	112,365
Enhancing mHealth Technology in the PCMH to Activate Chronic Patients	12.RD	W81XWH-15-C-0070	-	368,214
Exploration of Carbon-Based Hybrid Nanoarchitectures as a Unique Platform for Managing Excited State Energies and Processes	12.RD	FA9550-16-1-0166	-	59,567
GPU Applications for TrueView Scene Simulation	12.RD	N66001-16-P-6865	-	24,614
High Order Bessel Beams Integrated with Time (HOBBITS)	12.RD	N00014-18-1-2377	-	8,646
High Power, Single Frequency Broad-area Diode Laser Emitters/Arrays and Their Applications in Microresonator Based Frequency Combs Optoelectronics Program	12.RD	W911NF-14-1-0640	-	91,781
HOBBIT Control System Development for Higher Order Bessel Beams Integrated in Time (HOBBIT)	12.RD	N00014-17-1-2779	-	174,202
Identifying and Evaluating Impacts to Wetlands from the Savannah River Estuary	12.RD	W912HZ-14-2-0002	-	254,768
Integrated Modal Control and Beam Combining of High Power Diode Arrays for the Next Generation HEL System	12.RD	N00014-17-1-2556	3,964	161,175
Liquid Sampling-Atmospheric Pressure Glow Discharge (LS-APGD) Microplasmas for Elemental, Isotopic, and Molecular Determinations	12.RD	HDTRA1-14-1-0010	-	173,666
Mini-Conference on Discrete Mathematics and Algorithms	12.RD	H98230-16-1-0052	-	1,425
New Fouling Deterrent Strategies to Defeat Barnacle Biofouling	12.RD	N00014-14-1-0488	-	(69)
New RLT Theory for Solving Continuous Nonlinear and Mixed-Discrete Optimization Problems	12.RD	N00014-16-1-2168	-	95,139
New Techniques for Network-Coded Multicast Distribution in Wireless Communications Networks	12.RD	N00014-17-1-2418	-	131,287
Non-Destructive Evaluation Precursor Mechanics of Embedded Magnetostrictive Composite Sensor	12.RD	W911NF-17-2-0184	-	41,693
Optical Fibers with Elevated Threshold for Higher-Order Mode Instability	12.RD	FA9451-15-D-0009/0002	29,684	53,607
Optimization Under Uncertainty and Conflict: Algorithms for Heterogeneous Quadratic Programs	12.RD	N00014-16-1-2725	-	151,817
Performance as a Partner in the Military Uniform System Technology (MUST) Program - Option 2	12.RD	SP4701-14-D-7004/0004	-	265
Predictive Structure-Function Relationships for Enzymes Immobilized on Complex Surfaces	12.RD	HDTRA1-16-1-0023	-	147,543
Preventing Infection by Surface Modification of Orthopaedic Fracture Fixation Implants for Improved Limb Salvage Outcomes	12.RD	W81XWH-14-1-0438	26,849	162,619
Privacy Support for TLA	12.RD	W911QY-16-C-0105	-	194,154
Rapid and Accurate Uncertainty Propagation for Nonlinear Dynamic Systems by Exploiting Model Redundancy	12.RD	FA9550-16-1-0158	-	106,852
Reactive Membranes for Rapid Isotopic Analyses of Waterborne Special Nuclear Material	12.RD	HDTRA1-16-1-0016	-	341,171
Reactive-Moiety Functionalization of Polyurea for Increased Shock-Mitigation Performance	12.RD	N00014-14-1-0286	-	62,103
Spatially and Temporally Agile Optical Communication Links for Maritime Applications	12.RD	N00014-16-1-3090	-	284,834
Stomach Content Analysis of Feral Hogs	12.RD	W912HZ-17-C-0026	-	36,588
Trust-based Human-Robot Collaboration (HRC) for High-Level Distributed Multi-Robot Motion Planning with Temporal Logic Constraints	12.RD	FA9550-17-1-0050	-	140,620
Ultra-Trace Level Quantification of Alpha- and Beta- Emitting Radionuclides with Extractive Scintillating Resin	12.RD	HDTRA1-12-1-0012	-	199,181
Wafer Bonding for Hybrid Photonic Integration Research	12.RD	W911NF-17-1-0283	-	7,634
Pass-through programs from:				
Advanced Functional Fabrics of America				
Yarn Covering of Advanced Monofilament	12.RD	PO# 381	-	11,203
Advanced Robotics for Manufacturing Institute				
Robotics Workforce Development	12.RD	NONE	-	192,152
Smart Companion Robots for Automotive Assembly (C/I ARMI)	12.RD	ARM-17-QS-F-02	15,750	86,471
Arizona State University				
Development of substrate-loaded microbial fuel cells for powering remote sensors	12.RD	17-169	-	15,921

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Clemson University, Clemson, South Carolina

Schedule of Expenditures of Federal Awards

For the year ended June 30, 2018

Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass-through Entity Identifying Number	Passed Through to Subrecipients	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of Defense, continued				
Pass-through programs from, continued:				
Clemson University Research Foundation				
Advanced Optical Fibers for High Power Fiber Lasers	12.RD	W911NF-10-1-0423	-	171,600
Novel Fiber Concepts for High Power Single Mode Fiber Lasers	12.RD	W911NF-12-1-0332	-	211,223
Cornerstone Research Group, Incorporated				
Health Monitoring Garment Development Consulting	12.RD	PO # 2017-00926	-	9,984
Create LLC				
LWIR Fiber Bundle for Thermal Imaging in Gas Turbine Systems	12.RD	89981	-	35,647
GSI Environmental Incorporated				
Development of a Quantitative Framework for Evaluating Natural Attenuation of 1,1,1-TCA,1,1-DCA,1,1-DCE, and 1,4-Dioxane in Groundwater	12.RD	2017-111-CLEMS-01	-	27,684
Leidos, Incorporated				
Organizational Justice Training for Supervisors	12.RD	P010188654 // CASES TO31	-	95,228
Massachusetts Institute of Technology				
Evaluation of Radiation-induced Photonic Defects in Si, Ge, Chalcogenides and Polymers	12.RD	5710003309	-	24,437
Microhortone, LLC				
Microwave Flow Cytometer: Count Microorganisms in Water	12.RD	CU-0001	-	75,206
Radiance Technologies Incorporated				
High Energy Lase Advanced Concepts (HELAC)	12.RD	17S-3093; T/O No.: 0008	-	75,837
Rutgers, The State University of New Jersey				
Single Crystal Fiber Lasers	12.RD	4816 PO # 445244	-	51,450
Scientific Research Corporation				
Joint Mission Environment Test Capability (JMETC) Support	12.RD	SR20181162 // SRC-BOA-0011-16-001	-	22,250
Joint Mission Environment Test Capability (JMETC) Support	12.RD	TO SR20172509 (T218) // BOA SRC-BOA-0011-16-001	-	161,239
Joint Mission Environment Test Capability (JMETC) Support	12.RD	TO# SR20170068//BOA# SRC-BOA-0011-16-001	-	179,848
Solutions IES				
Estimating Mobile-Immobile Mass Transfer Parameters Using Direct Push Tools	12.RD	2015.0031.ARMY	-	50,969
Sotera Defense Solutions Incorporated				
Hydrothermal Cladding of Single Crystal Fibers of Doped YAG. Phase2	12.RD	SC170104 SC160015//Prime	-	49,947
Hydrothermal Cladding of Single Crystal Fibers of Yb Doped YAG	12.RD	# N00173-14-D-2023	-	9,919
Southwest Research Institute				
CWA THERMAL DEFEAT IN REACTIVE ATMOSPHERES	12.RD	J99059CP	32,883	56,604
Structured Materials Industries, Incorporated				
Transparent Electromagnetic Shield Coatings	12RD	42011-081215-02 // CU Ref# 20150002800	-	16,500
TH Wiedemeier & Associates Incorporated				
Providing Additional Support for MNA by Including Quantitative Lines of Evidence for Abiotic Degradation and Co-Metabolic Oxidation of Chlorinated Ethylenes	12.RD	201502	-	(181)
University of Missouri - Columbia				
Site Preparation for Longleaf Pine Restoration on Hydric Sites: Stand Development and Ground Layer Response 15 Years Following Planting	12.RD	C00053591-1	-	12,538
University of Dayton Research Institute				
Carbon Dots for Energy Conversion and Storage Applications	12.RD	RSC16113	-	11,296
University of Delaware				
Tailored University Feedback for Forming (TuFF)	12.RD	42525	-	481,709
University of Illinois				
Internal Cooling of Fiber and Disc Lasers by Radiation Balancing and Other Optical or Phonon Processes	12.RD	084272-16069	-	254,665
University of Michigan				
Heat Rejection Using Advanced Materials - Passive and Active Cooling Strategies	12.RD	3003058759	-	87,549
Improving Energy Efficiency and Mobility of Connected Fleets via Route Preview and Cooperative Control	12.RD	3003058759	-	25,733
Improving Energy Efficiency and Mobility of Off-Road Connected Fleets via Route Preview and Cooperative Control	12.RD	3003058759	-	48,893
Metamaterials Design for Tank Tread Backers Pads	12.RD	3003058759	-	992
Optical Control Pairing and Scheduling for Manned-Unmanned Vehicles Teaming Based on RoboTrust Algorithms	12.RD	3003058759	-	48,985
Systems Approach to Wheel and Pad Metamaterial Design Including Robustness Issues	12.RD	3003058759	-	39,478
Tools for Optimal Selection of Energy Storage Technology in Electrified Military Vehicles	12.RD	3003058759	-	125,622
Virginia Polytechnic Institute				
Chiral Spin Liquids and Other Topological Phases of Cold Atoms and Molecules in Optical Lattices	12.RD	450408-19244	-	66,164
Total Department of Defense			<u>462,225</u>	<u>8,675,067</u>

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Clemson University, Clemson, South Carolina

Schedule of Expenditures of Federal Awards

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Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass-through Entity Identifying Number	Passed Through to Subrecipients	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of the Interior				
Administrative Histories of Fort Sumter National Monument and Charles Pinckney National Historic Site	15.RD	P14AC01689	-	37,620
Analysis of Bird Population Count Data	15.RD	G16AC00400	RWO #101	8,498
Community and Ecosystem-Level Effects of Growing v. Dormant Season Burning in the Southern Appalachians	15.RD	L16AC00192	-	48,209
Conservation of Parrott Rifle Tubes, Carriages, and Chassis' at Fort Sumter	15.RD	P16AC00782	-	5,178
Eastern Brown Pelicans: Dispersal, Seasonal Movements and Monitoring of PAH's and Other Contaminants in the Northern Gulf of Mexico	15.RD	G12AC20367	RWO #91	187,031
Evaluating Bat Community Structure Post-WNS in Chickamauga and Chattanooga National Military Park	15.RD	P16AC01114	-	17,296
Evaluating the Effect of White-Nose Syndrome on Long-Term Bat Community Structure and Remnant Bat Population Ecology	15.RD	G16AC00056	RWO #99	29,299
Foresight for Disaster Management: Infrastructure Risk Index Analysis	15.RD	P16AP00189	-	12,765
Fuels Management and Cultural Landscape Restoration, Kings Mountain National Military Park and Other Southeast Region Parks	15.RD	P15AC01798	-	20,761
Human and Ecological Health Impacts Associated with Water Reuse: Engineered Systems for Removing Priority Emerging Contaminants	15.RD	G15AP00171 P08AC00215	73,990	73,990
Internship Program for Fire and Fuels Management	15.RD	(formerly J5500080012)	-	16,552
JFSP Project 14-1-06-19-- Forest Fire Alters Disinfection Byproduct Precursors from Forested Watersheds	15.RD	L14AC00163	-	92,831
Liquefaction Probability Analysis of Pleistocene Deposits in the Greater Charleston, South Carolina Area	15.RD	G16AP00118	-	19,627
Multiscale Random Field-Based Probabilistic Regional Liquefaction Mapping	15.RD	G17AP00044	-	23,331
Needs Assessment for Facilities Maintenance Specialty Career Field	15.RD	P12AC11224	-	14,747
Needs Assessment for Visitor and Resource Protection and Three Specialty Career Fields in Collaboration of the CESU Network	15.RD	P12AC11224 (H5000085050)	-	7,185
NPS Southeast Region Marine Science Support Center	15.RD	P15AC01833	-	22,380
Refinement of Training Needs Assessment for National Park Service within the Office of Communications	15.RD	P12AC11224	-	228
Research to Evaluate Visitor Use Distributions, Impacts, Crowding, and Conflicting Use at Multi-Use Sites in Katmai National Park and Preserve	15.RD	P17AC01038	-	5,158
Retreat of Tidally Influenced Freshwater Forested Wetlands in the Southeast: Biogeochemical Investigations and Field Support	15.RD	G14AC00132	-	35,257
Social Science Research to Support the Implementation of a Visitor Use Management (VUM) Strategy for Commercially-guided, Boat-based Polar Bear Viewing at the Arctic National Wildlife Refuge	15.RD	F17AC00101	14,997	73,170
South Carolina Alligator Adaptive Management Strategies: Population Dynamics, Habitat Utilization and Conservation Threats	15.RD	G12AC20329	RWO #92	26,202
Spatial Ecology, Movement Patterns, and At-Sea Habitat use of Brown Pelicans in the South Atlantic Bight	15.RD	G16AC00395	RWO #100	149,148
State Water Resources Research Institute Program	15.RD	G16AP00082	8,113	86,641
The Effectiveness of Community Conservation Enterprises as a Tool for Sustainable Community Livelihoods and Conservation of Mountain Gorillas Across the Virunga Trans-boundary Landscape	15.RD	F16AP00402	-	6,359
The Effects of Management on Carbon Sequestration in Pocosin Wetlands of the Great Dismal Swamp, Virginia	15.RD	G14AC00131	-	25,226
Vessel-based Surveys for Pelagic Seabirds in the Gulf of Mexico	15.RD	G17AC00371	RWO #102	58,753
Visitor Use Management Research of Delaware Water Gap National Recreation Area	15.RD	P14AC01707	-	17,637
Pass-through programs from:				
Auburn University				
Improving Southern Flounder Management in Alabama Coastal Waters by Quantifying Habitat Specific Rates of Growth, Sex Determination, and Recruitment to the Commercial and Recreational Fisheries	15.RD	18-FAA-223047-CU	-	21,785
Florida Fish & Wildlife Conservation Commission				
Conserving Florida Grasshopper Sparrows by Understanding Predation Impacts and Habitat Use by a Common Nest Predator, the Eastern Spotted Skunk, in Relation to On-going Prescribed Fire Management	15.RD	16105 A-1	-	62,738
Kansas State University				
Evaluation of the Relationship Between Current Conditions, Travel Patterns, Visitor Thresholds, and Ferry Services at Cumberland Island National Seashore	15.RD	S18038	-	10,258
Montana Fish Wildlife & Parks				
Swift Fox Habitat and Dispersal on the Northern Great Plains of Montana	15.RD	FWP# 17-575	-	14,625
National Fish & Wildlife Foundation				
Northern Great Plains Swift Fox Connectivity (MT)	15.RD	0103.16.051313	-	53,598
North Carolina Wildlife Resources Commission				
Eastern Hellbender Reproductive and Larval Ecology	15.RD	WM-0326	-	22,097
Ecological Studies and Monitoring Strategies for Eastern Spotted Skunks in North Carolina	15.RD	WM-0322	-	42,221
Factors Influencing Bog Turtle Abundance and Nest Success in North Carolina	15.RD	WM-0306	-	16,475

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of the Interior, continued				
Pass-through programs from, continued:				
Population Analysis of Self-Sustaining Trout in North Carolina Streams: Current Dynamics and Future Monitoring Strategies South Carolina Department of Natural Resources	15.RD	DIF-0026 // PO No. NC10362680 // NC-F-17AF00221	-	21,561
A Resurvey of Historical Green Salamander Locations in South Carolina	15.RD	SCDNR FY2017-016 F16AP00113 (P24014306116P240_P967)	-	11,623
Distribution, Population Ecology, Genetic Relatedness and Habitat Associations of Eastern Spotted Skunks in South Carolina	15.RD	SCDNR FY2016-007/ P24014403016	-	15,880
Impacts of Special Hunting Clinics on the Recruitment and Retention of Young Adult College Student Hunters in South Carolina	15.RD	SCDNR FY2018-001/ P24016440118	-	12,375
Loggerhead Shrike Distribution and Population Ecology in South Carolina	15.RD	SCDNR FY2016-010/ P24019084009	-	14,216
Roosting and Foraging Ecology of Rare and Sensitive Coastal Bats	15.RD	SCDNR FY2017-019/ P24014304618	-	17,153
South Carolina Small River Conservation Planning Project	15.RD	SCDNR FY2018-008/ P24019497415	-	2,541
South Carolina Small River Conservation Planning Project (2016-2018)	15.RD	SCDNR FY2017-011	-	13,916
University of Utah Research to Inform Visitor Use Planning at Theodore Roosevelt National Park	15.RD	10044755-CLEMSON	-	31,902
University of Wyoming The Persistence of American Pika (Ochotona Princeps) in the Greater Yellowstone Ecosystem in a Future, Warmer World	15.RD	1002954E-CU	-	293
Wildlife Management Institute Interactive Conservation Planning for the Appalachian LCC (ALCC)	15.RD	ALCC 2014-02	-	50,307
Total Department of the Interior			<u>155,853</u>	<u>1,581,089</u>
Department of Justice				
Pass-through programs from:				
Chesterfield County School District Testing Integrative Models to Improve School Safety; Positive Behavior Interventions Support and the Olweus Bullying Prevention Program	16.RD	2014CK-BX-0012-CU	-	256,198
Total Department of Justice			<u>-</u>	<u>256,198</u>
Department of Transportation				
Dwight David Eisenhower Transportation Fellowship Program Graduate Fellowship	20.RD	693JJ31845078	-	3,250
University Transportation Center - Center for Connected Multimodal Mobility (C2M2)	20.RD	69A3551747117	46,660	437,252
Pass-through programs from:				
South Carolina Department of Transportation				
Adaptive Signal System Safety Impacts	20.RD	1936; SPR 737	-	29,612
Best Construction Practices for Longitudinal Joint Construction and Compaction	20.RD	1824; SPR No. 728	-	22,445
Compliance with the United State Environmental Protection Agency (USEPA) Effluent Limitation Guidelines-Turbidity Control and Surface Outlets	20.RD	1573; SPR No. 702	-	106,071
Cost Effective Strategies for Estimating Statewide AADT	20.RD	1691; SPR No. 717	9,780	76,494
Cross-Slope Verification using Mobile Scanning on SCDOT Interstates	20.RD	1714; SPR No. 719	113	52,180
Evaluation of Open Graded Friction Courses: Construction, Maintenance, and Performance, Phase II	20.RD	1781; SPR 725	-	84,675
Innovative Bridge Research and Deployment Project (IBRD-2012) NEXT-D Implementation and Field Monitoring of Hanging Rock Creek Bridge	20.RD	1596; Proj No. 29L1CEBR29018	-	46,740
Midblock Crash Analysis Using Precisely Geocoded Crashes	20.RD	1935; SPR 734	-	50,179
Operational and Economical Analysis of Access Management	20.RD	1665; SPR No. 715	-	35,736
SCDOT Asset Collection	20.RD	1692; SPR No. 716	41	99,371
University of South Carolina Assessment of Structural Degradation for Bridges and Culverts	20.RD	18-3551 PO#2000037629	-	9,724
Calibration of the AASHTO Pavement Design Guide to South Carolina Conditions - Phase II	20.RD	17-3296/PO#2000031396/ USC#15520FB40	-	147,359
University of Tennessee Development of a Security Platform for Vehicles to Infrastructure Network	20.RD	13-Clemson-OE2/ 8500037533	-	10,147
STC - Educational Component	20.RD		-	1,623
Wisconsin Department of Transportation Evaluation of H-pile Corrosion Rates for Wisconsin Bridges Located in Aggressive Subsurface Environments	20.RD	0092-16-03	-	32,924
Total Department of Transportation			<u>56,594</u>	<u>1,245,782</u>

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of the Treasury				
Mechanochromic Materials Research and Development Services Phase I	21.RD	TEPA16-35712	-	5,829
Total Department of the Treasury			-	5,829
National Aeronautics and Space Administration				
A Sounding Rocket Investigation of Neutral Jets Associated with Auroral Arcs	43.RD	NNX14AH09G	-	11,663
AZURE: Auroral Zone Upwelling Release Experiment	43.RD	NNX15AL71G	142,250	369,956
CHASING THE MOST POWERFUL BLAZARS	43.RD	NNX15AV09G	-	6,478
Chasing the Most Powerful Blazars - NRA/Research Opportunities in Space and Earth Sciences - 2015 (ROSES-2015)	43.RD	NNX17AC35G	-	32,812
Chasing the Most Powerful Blazars (Cycle 3)	43.RD	80NSSC18K0580	-	16,557
Compton Thick AGN: The Physics Behind the Obscuration	43.RD	80NSSC17K0635	-	28,000
Control and Modeling of Extensible Continuum Robots - NSTRF for Chase Frazelle	43.RD	80NSSC17K0173	-	52,548
Cosmic Chemical Memory and the Building Blocks of the Solar System	43.RD	NNX17AE32G	-	110,904
CUSP Upwelling and Heating Due to Small Scale Electric Field Fluctuations	43.RD	80NSSC18K0781	-	1,765
Full 3D Mapping and Identification of the >10 GE Extragalactic Sky Research Opportunities in Space and Earth Sciences - 2016 (ROSES - 2016)	43.RD	80NSSC17K0503	-	39,669
GRBS as Cosmic Probes of the UV and Optical Background	43.RD	80NSSC17K0506	-	39,833
Hunting High Redshift Blazars	43.RD	80NSSC17K0310	-	40,000
NASA Space Technology Research Fellowships (NSTRF) - Fall 2014	43.RD	NNX14AN43H	-	45,742
NRI-Small: Long, Thin Continuum Robots for Space Applications	43.RD	NNX12AM01G	-	116,804
ROSES 2015/Exoplanet Research Program - Direct Imaging and Interferometry of Proto-planets at the Epoch of Disk Clearing	43.RD	NNX16AJ81G	-	18,995
ROSES-2014/Fermi Guest Investigator - Cycle 8 VERITAS OBSERVATIONS OF HARD NEW FERMI-LAT SOURCE	43.RD	NNX15AU68G	-	1,705
ROSES-2015/Fermi Guest Investigator - Cycle 9 HUNTING HIGH-REDSHIFT BL LACERTAE OBJECTS	43.RD	NNX16AR71G	-	35,765
ROSES-2015/Fermi Guest Investigator - Cycle 9 THE LAT ON STEROIDS AND THE ROLE OF GALAXIES IN THE UNIVERSE	43.RD	NNX16AR72G	-	23,978
Roses-2015/SWIFT Guest Investigator - Cycle 12 ON THE ORIGIN OF TH EXTRAGALACTIC GAMMA-RAY AND NEUTRINO BACKGROUNDS	43.RD	NNX16AN68G	-	13,351
Signature of Energy Dissipation in the Magnetosphere-Ionosphere-Thermosphere Coupled System	43.RD	NNX17AG10G	-	33,555
Synthetic Biology for Recycling Human Waste into Nutraceuticals and Materials: Closing the Loop for Long-Term Space Travel	43.RD	NNX15AU46G	-	205,167
Utilizing Space-Based Technology to Determine Hydrological Properties of Soils for Characterizing, Understanding, and Predicting Terrestrially Linked Components of the Hydrologic Cycle	43.RD	NNX15AD47G	28,094	207,007
Pass-through programs from:				
ASTRA				
Transport, Chemistry, and Energetics of Water in the Mesosphere and Lower Thermosphere and Implications for Polar Mesospheric Cloud Occurrence	43.RD	NNX16AF67G // Subcon #171-01	-	160,028
College of Charleston				
Biotransformation of Space Mission Organic Waste and Martian Regolith into Nutraceuticals and Biocement	43.RD	521192-	-	23,327
Carolina Eclipse Initiative: Radio Astronomy of the 2017 Total Solar Eclipse Over South Carolina	43.RD	521179-EC-CM2	-	3,725
Carolina Eclipse Science Workshops for Upstate South Carolina Educators	43.RD	521179-EC-CM1	-	2,000
Evaluation of Polyphenol Antioxidants to Lower Redox & Active Irons Levels and Prevent Oxidative Damage	43.RD	521192-	-	24,822
Graduate Research Assistantship: Application of Magnetic Rotational Spectroscopy for nanoTesla Magnetic and Viscosity Sensors	43.RD	NONE	-	1,040
MiniREAP 2017: Microbial Fuel Cells with Peroxide Production for Space Life Support Systems Applications	43.RD	521179-RP-	-	8,983
Multi-Layer Magnetostrictive NDE/SHM Sensors	43.RD	521192-	-	2,752
Nanomaterials-Based Hybrid Energy Storage Devices and Systems for Space Applications	43.RD	521296-Clemson	-	29,917
Palmetto Academy 2017: In Situ Composite Manufacturing via Biocementation of Martian Soil	43.RD	521179-PA-	-	13,006
Palmetto Academy 2017: Student Participation in Developing Nanomaterials-Derived Technologies for Space Applications	43.RD	521179-PA	-	24,000
Palmetto Academy 2018: Creating a Kilonova Spectrum in the Laboratory	43.RD	521179-PA-	-	6,971
Palmetto Academy 2018: Microbial Peroxide-Producing Cells for Blackwater Treatment During Space Missions	43.RD	521179-PA-	-	11,552
Palmetto Academy 2018: Student Participation in Developing Nanomaterials-Derived Technologies for Space Applications	43.RD	521179-PA-	-	6,400
Regional Biomass Burning Measurements for Air Quality Assessment and Satellite Validation	43.RD	521192-	-	174
RockOn! 2018 Workshop Travel Funding	43.RD	521179-RO	-	8,793
SC Space Grant Campus Director Administrative Budget	43.RD	521179-CD-CM	-	114
SC Space Grant Consortium Graduate Research Assistantship	43.RD	521193-PA	-	11,428

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
National Aeronautics and Space Administration, continued				
Pass-through programs from, continued:				
Cornell University				
Waves and Instabilities from a Neutral Dynamo (WINDY)	43.RD	73921-10522	-	139,193
Freight Farms Incorporated				
T6.04-980 Self-Sustaining Crop Production Unit	43.RD	NNX16CA33P	-	3,952
Smithsonian Astrophysical Observatory				
An Experimental Program to Achieve High Accuracy Atomic Rates for the X-ray	43.RD	SV8-88008	-	33,031
Astrophysics Recovery Mission (XARM) and Beyond	43.RD	G07-18043X	-	36,540
X-raying New Galactic Accelerators with Chandra (Proposal No. 18500092)				
Structured Materials Industries, Incorporated				
High Power Ga203-based Schottky Diode	43.RD	PO# SMI42070-060917-01	-	11,500
The Aerospace Corporation				
TOMEX Plus: Turbulent oxygen Mixing Experiment Plus	43.RD	PO# 4600006190	-	17,014
University of Alaska - Fairbanks				
In-Situ Measurements of Neutral and Plasma Dynamics Associated with Earth's	43.RD	UAF 18-0025 PO518692	-	39,289
Cusp-Region Thermospheric Mass Density Anomaly				
University of Central Florida				
Leadership-Fellowship: Moving Beyond Traditional Leadership to Build Highly	43.RD	64016352-01	-	3,339
Functional Autonomous Teams				
University of Louisville				
Short-term Tidal Variability from the Troposphere to the Dynamo Region	43.RD	ULRF14-1328-01	-	74,756
University of South Carolina				
Explore a Unified, Ultra-efficient, and Gravity-Insensitive Flow Boiling Regime for	43.RD	15-2784 PO#91802 (15540 FC75)	-	24,773
Space Missions				
Total National Aeronautics and Space Administration			<u>170,344</u>	<u>2,174,673</u>
Institute of Museum & Library Services				
Pass-through programs from:				
Virginia Polytechnic Institute				
Identifying the Drivers of Success in Educational Programs at Nature Centers and	45.RD	451438-19244	-	100,693
National Parks				
Total Institute of Museum & Library Services			<u>-</u>	<u>100,693</u>
National Endowment for the Humanities				
Pass-through programs from:				
South Carolina Humanities				
Black Clemson	45.RD	17-1762-3	-	2,000
Total National Endowment for the Humanities			<u>-</u>	<u>2,000</u>
National Science Foundation				
A Screened Lab Addition to Enhance New Ecological Research at Clemson's Baruch Institute	47.RD	1624705	-	123,902
A Sustainable ATE Coordination Network for Enhancing Personalized Learning Using Virtual				
and Augmented Reality-based Technology Innovations in Technical Education	47.RD	1700621	-	87,346
ABR: Collaborative Research: Computational Jewelry for Mobile Health	47.RD	1619950	14,042	186,842
ADVANCE Institutional Transformation at Clemson University	47.RD	1629934	8,284	469,867
Advanced Cyberinfrastructure - Research and Educational Facilitation:				
Campus-Based Computational Research Support	47.RD	ACI-1341935	425,600	547,181
AF: Medium: Collaborative Research: Sparse Polynomials, Complexity and Algorithms	47.RD	CCF-1407623	-	60,111
AF: Small: Subdivision Methods: Correctness and Complexity	47.RD	1527193	-	43,455
AIR Option 2: Research Alliance Situational Intelligence for Smart Grid Optimization	47.RD	IIP-1312260	-	92,655
and Intelligent Control				
AIR-TT: Ultrapure Lignins Recovered from Paper-Mill Black Liquors as Renewable	47.RD	1701128	-	33,165
Biopolymers	47.RD	PHY-1305338	-	2,212
Biomechanics of Self-Assembly of the Lepidopteran Feeding Device				
Broadening Participation in engineering: Workshop on Reducing Attrition in	47.RD	1737686	-	45,337
Pre-calculus Pathways	47.RD	1638888	-	16,639
Building Research Capacity for STEM Faculty Development				
Capillary Channeled Polymer Structures and Chemistries for High Throughput	47.RD	1608663	-	93,372
Measurement of Large Molecules				
Capillary-Channeled Polymer Fibers: Chemistries and Structures for Protein Separations	47.RD	CHE-1307078	-	89
and Analytics				
CAREER: Advancing the Mechanistic Understanding of Field-Scale Preferential Flow and	47.RD	EAR-1151294	-	1,212
Transport Processes in Soils Using Geophysics				
CAREER: Cross-Layer Power-Bounded High Performance Computing on Emerging and	47.RD	1551511	-	58,645
Future Heterogeneous Computer Clusters				
CAREER: Electromechanical Transduction of Vibratory Energy Harvesters in Random and	47.RD	CMMI-1055419	-	78,920
Non-Stationary Environments	47.RD	OCI-1149644	-	63,997
CAREER: Harnessing Hybrid Computing Resources in PetaScale Computing and Beyond				

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina

Schedule of Expenditures of Federal Awards

For the year ended June 30, 2018

Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass-through Entity Identifying Number	Passed Through to Subrecipients	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, Continued				
National Science Foundation, continued				
CAREER: Hierarchical Mechanical Models of Cell Constructs	47.RD	CBET-1254609	-	58,473
CAREER: High Resolution Spectrochemical Imaging Through Tissue	47.RD	CHE-1255535	-	58,150
CAREER: Integrated Materials-Mechanics-Manufacturing Approach to Hot Blank - Cold Die (HB-CD) Forming of Lightweight Alloy Sheets	47.RD	CMMI-1254670	-	43,492
CAREER: Models for Supply Chain Design and Logistics Management of Biofuels	47.RD	CMMI-1462420	-	728
CAREER: Particle Magnetophoresis in Ferrofluid Microflows for Lab-on-a-Chip Applications	47.RD	CBET-1150670	-	46,099
CAREER: Student Motivation and Learning in Engineering	47.RD	1055950	-	22,779
CAREER: Characterizing Nanoparticle Surface Interactions using Dissolution Dynamic Nuclear Polarization-Enhanced Nuclear Magnetic Resonance	47.RD	1751529	-	6,786
CAREER: Cooperative Control and Decision-Making for Human-Agent Collaborative Teams	47.RD	1454139	-	91,911
CAREER: Detecting Patterned Profiles for Functional and Dysfunctional Teamwork	47.RD	1654054	-	96,769
CAREER: Elastocapillary fluid mechanics: spreading, splashing, and instability	47.RD	1750208	-	732
CAREER: Empowering Students to be Adaptive Decision-makers	47.RD	1745347	-	59,675
CAREER: Enabling Low-Cost, Maintenance-Free, Long-Term Embedded Sensing Without Batteries	47.RD	1453607	-	21,431
CAREER: Hierarchical Modeling for Rational Catalyst Design in Aqueous Conditions	47.RD	1554385	-	94,656
CAREER: Innovative Methods for Designing Adaptive Clinical Trials	47.RD	1651912	-	106,229
CAREER: Large Scale Simulations Enabled Materials Engineering for Heterogeneous Ice Nucleation	47.RD	1653352	-	14,412
CAREER: Leveraging the Three- Dimensional Multi-Stability from Origami Folding to Synthesize Multi-Functional Material Systems	47.RD	1751449	-	20,028
CAREER: Multiscale Study of the Structure and Dynamics of Nanoparticle-Protein Coronea	47.RD	1553945	-	31,352
CAREER: Perceptually Guided Hand Motion Synthesis	47.RD	1652210	-	40,921
CAREER: Quantifying drought and vulnerability indicators for water security in a changing environment	47.RD	1653841	-	64,514
CAREER: Quantifying the Adaptability of Building Structures, Envelopes, and Foundations	47.RD	1553565	-	121,793
CAREER: Self-Protecting Artificial Implants and Invigorating the STEM Education Pipeline with Biomaterials	47.RD	1555224	-	138,791
CAREER: Structural dynamics of post-translationally modified Calmodulin and its role in target recognition	47.RD	1749778	-	13,878
Career: Towards Engineering Electronic Defects in Inorganic Luminescent Materials	47.RD	1653016	-	89,943
Carolina Dynamics Symposium 2016-2018	47.RD	1600746	-	6,877
CC* Cyber Team: Cyberinfrastructure Empowerment for Diverse Research, Scholarship, and Workforce Development (CI Empower)	47.RD	1659297	26,598	100,110
CC*Data: National Cyberinfrastructure for Scientific Data Analysis at Scale (SciDAS)	47.RD	1659300	327,587	633,319
CC*IIIE Region: Southern Partnership in Advanced Networking (SPAN)	47.RD	ACI-1440659	520	4,913
CEDAR: Exploration of Lower-atmosphere Wave Forcing, Vertical Wave Coupling and Their Impacts on the Ionosphere and Thermosphere Variability Using WAM, Lidar and ISR	47.RD	1705448	-	760
Center for Aviation and Automotive Technological Education Using Virtual E-School [CA2VES]: A Resource to Meet Technician Workforce Needs	47.RD	1501695	325,551	1,522,319
CGV: Large: Collaborative Research: Modeling, Display, and Understanding Uncertainty in Simulations for Policy Decision Making	47.RD	IIS-1212501	-	10,194
CHS: Small: Looking Across the Uncanny Valley: Procedural and Data-Driven Methods for Gaze Modeling	47.RD	1423189	-	51,120
CHS: Small: Investigating the Behavioral Effects of Longitudinal Exposure to Immersive Consumer Virtual Reality	47.RD	1717937	-	62,366
CICI: Data Provenance: Collaborative Research: Provenance Assurance Using Currency Primitives	47.RD	1547164	-	44,895
CICI: RSARC: Secure Time for Cyberinfrastructure Security	47.RD	1738902	-	198,901
CNH-L: Coupled Social and Ecological Consequences of Conservation Easements	47.RD	1518455	-	146,765
Collaborative Research: Communicating Hurricane Information to Local Officials for Protective Action Decision Making	47.RD	SES-0838639	-	(86)
Collaborative Research: Data Selection for Unique Model Identification	47.RD	DMS-1419038	-	24,479
Collaborative Research: Effects of Hydrologic Processes on In Situ Stress Transients	47.RD	EAR-0944315	-	10,842
Collaborative Research: Halocarbon Biogeochemistry in Coastal Wetland Ecosystems	47.RD	1529927	-	37,362
Collaborative Research: II-NEW: Marcher - A Heterogeneous High Performance Computing Infrastructure for Research and Education in Green Computing	47.RD	1551262	-	4,676
Collaborative Research: Intracellular Localization of Biosynthetic Pathways for Conversion of Lipids to Dicarboxylic Acids in Oleaginous Yeast	47.RD	CBET-1403099	-	18,693
Collaborative Research: Jicamarca Radar Studies of Gravity Waves from D Region to Lower F Region	47.RD	AGS-1143514	-	15,363
Collaborative Research: Systematic Review of Studies to Improve Success in STEM Degree Programs of Hispanic Students Matriculating through Two-Year Institutions	47.RD	DUE-1446323	-	2,758
Collaborative Research: US-Brazil IRES / Analytical Applications of Nanomaterials and Microfluidic Devices	47.RD	1565508	-	29,808
Collaborative Research: An Intelligent Restoration System for a Self-healing Smart Grid (IRS-SG)	47.RD	ECCS-1408141	-	70,017
Collaborative Research: CICI: Regional: SouthEast SciEntific Cybersecurity for University REsearch (SouthEast SECURE)	47.RD	1642102	-	53,714
Collaborative Research: CICI: Secure and Resilient Architecture: SciGuard: Building a Security Architecture for Science DMZ Based on SDN and NFV Technologies	47.RD	1642143	-	145,037

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Schedule of Expenditures of Federal Awards

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
National Science Foundation, continued				
Collaborative Research: Comprehensive Investigation of Midlatitude Ionospheric Irregularities	47.RD	1360594	-	64,999
Collaborative Research: Controlling Cellular Physiology and Enzyme Localization for an Enhanced Oleochemical Biosynthesis in Yeast	47.RD	1706134	-	72,895
Collaborative Research: CRISP Type 2: Coordinated, Behaviorally-Aware Recovery for Transportation and Power Disruptions (CBAR-tpd)	47.RD	1822436	-	582
Collaborative Research: Dimensions US-BIOTAQ-Sao Paulo: Scales of Biodiversity-Integrated Studies of Snake Venom Evolution and Function Across Multiple Levels of Diversity	47.RD	1822417	-	23,075
Collaborative Research: EAGER: Energy Harvesting via Thermo-Piezoelectric Transduction	47.RD	1549977	-	11,910
Collaborative Research: Elucidating the chemical plasticity of fine roots in response to soil heterogeneities and developing a better parameter to forecast fine root decomposition	47.RD	1754679	-	15,820
Collaborative Research: Exploring the Evolution of Design Requirements Throughout the Design Process Using Network Models	47.RD	1463370	-	50,933
Collaborative Research: Heterogeneous Ice Nucleation in Clouds: A Synergistic Experimental and Simulation Approach	47.RD	1541944	-	39,371
Collaborative Research: High Resolution Spectroscopy and Spectro-Astrometry of Warm Gas in Herbig Ae/Be Stars: A Search for Forming Gas Giant Planets	47.RD	1517014	-	127,979
Collaborative Research: Intersectionality of Non-normative Identities in the Cultures of Engineering (InIce)	47.RD	EEC-1428523	8,906	49,817
Collaborative Research: IUSE: EHR: Engaged Student Learning Exploration and Design Tier: Engaging and Enabling Learners to Reason Logically about Code	47.RD	1611714	-	89,922
Collaborative Research: Microbicidal Carbon Dots for Combating Anti-Biotic Resistance and Beyond	47.RD	1701424	-	1,824
Collaborative Research: RAPID: Capturing a critical transition in fungal wood endophyte communities by rapid response sampling post hurricane in Puerto Rico	47.RD	1822081	-	13,088
Collaborative Research: Selection Methods for Algebraic Design of Experiments	47.RD	1720341	-	27,676
Collaborative Research: Student Perspectives on Researcher Identity and Transformed Epistemologies (SPRITE)	47.RD	1531607	-	72,910
Collaborative Research: Uncovering the Dynamics and Functionality of Origami Structures and Materials	47.RD	1633952	-	62,642
Collaborative Research: Understanding the Multiscale Behavior of Triboelectric Devices	47.RD	1662587	-	4,700
Collaborative Research: Variational Structure Preserving Methods for Incompressible Flows: Discretization, Analysis, and Parallel Solvers	47.RD	1522191	-	88,409
Collaborative Research: What Do Leaders Want?: Collecting and Coding Issue Positions and Demands in the Militarized Interstate Dispute (MID) Data, 1816-2010	47.RD	1729138	-	21,731
Collaborative Research: Who's Not at the Table? Building Research Capacity for Underserved Communities in Engineering	47.RD	1551605	-	15,940
Collaborative Research: A Long-Term Investigation of Auroral and Tidal Forcing of E-Region Thermospheric Winds at High Latitudes	47.RD	1552214	-	44,302
Computational-Experimental Insight across Time and Length Scales of Dynamics in Ionic Polymers	47.RD	1611136	-	59,354
Conductance Variability in Non-Conjugated Polymers: Memristors for Neuromorphic Applications	47.RD	1507266	-	123,724
CPS: Synergy: Collaborative Research: Semi-Automated Emergency Response System	47.RD	1812524	84,074	91,305
CPS: Synergy: Security of Distributed Cyber-Physical Systems with Connected Vehicle Applications	47.RD	1544910	-	131,696
CRII: CHS: Collaboratively Perceiving, Comprehending, and Projecting into the Future: Supporting Team Situational Awareness with Adaptive Collaborative Tactons	47.RD	1566346	-	33,970
CRII: CHS: Recommender Systems for Self-Actualization	47.RD	1565809	-	69,425
CRISP Type 1: Data-driven Real-time Simulation for Adaptive Control of Interdependent Infrastructure Systems	47.RD	1638321	-	231,375
CS For All: RPP: A Scalable RPP for Preparing and Supporting Teachers to Teach Culturally Responsive and Rigorous CS Courses in SC High Schools	47.RD	1738760	-	174,329
CSBR: Natural History: Expanding the footprint and the reach of the Clemson University Arthropod Collection	47.RD	1457909	-	101,001
CSR: Large: Collaborative Research: Computational Jewelry for Mobile Health	47.RD	CNS-1314342	-	1,182
CSR: Large: Collaborative Research: Smart Earpiece for Supporting Healthy Eating Behaviors	47.RD	1565268	-	104,837
CyberSEES: Type 1: Enabling Sustainable Water Supplies Through Self-Powered Sensor-Based Monitoring	47.RD	1539536	-	159,028
De Branges Spaces as Models for a General Theory of Function Spaces	47.RD	1600874	-	31,928
Digitization TCN: Collaborative Research: The Key to the Cabinets: Building and Sustaining a Research Database for a Global Biodiversity Hotspot	47.RD	EF-1410094	17,396	30,585
Dimensions: Collaborative Research: Functional Diversity of Chemosymbiosis in Lucinid Bivalves from Coastal Biomes	47.RD	1342763	-	116,615
Disentangling the Ecological Drivers of Teleost Body Form Diversity	47.RD	1830127	-	63,202
DMREF: Collaborative Research: An Integrated Multiscale Modeling And Experimental Approach To Design Fouling-Resistant Membranes	47.RD	1534304	-	126,631
EAGER CHS: Examining Self-Harm and Suicide Contagion Risks of Viral Social Media Challenges on Youth and Young Adults	47.RD	1832904	-	188
EAGER: Advancing Understanding of Function Modeling, Reasoning, and Thinking in Design by Mapping Behaviors to Cognitive Explanations	47.RD	1547236	-	40,950

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Clemson University, Clemson, South Carolina

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
National Science Foundation, continued				
EAGER: Autonomous Self-Healing of Commodity Acrylic Copolymers	47.RD	1744306	-	116,509
EAGER: Building a Framework to Advance Research through Undergraduate Participation: Investigating pH in 3D Tissue Test Systems	47.RD	CBET-1451319	-	4,679
EAGER: Characterization, Prediction, and Management of Latency Variation in Virtualized HPC and Warehouse Scale Systems	47.RD	1642542	-	122,434
EAGER: Collaborative: PRICE: Using Process Tracing to Improve Household IoT Users' Privacy Decisions	47.RD	1640664	-	84,309
EAGER: Control Theory for Real-time Privacy-preserving Consensus Control of Engineering Networks	47.RD	1824014	-	24,885
EAGER: Corrosion Reduction in Reinforcing Steel of Concrete Structures Through Grain Size Alteration	47.RD	1552794	-	62,575
EAGER: Defending Against Visual Cyberbullying Attacks in Emerging Mobile Social Networks	47.RD	1537924	-	123,503
EAGER: Evaluating the Feasibility of Estimating Cognitive Load Using Microsaccadic Eye Motion and Oscillation in Pupil Diameter	47.RD	1748380	-	69,023
EAGER: Feedback-based Network Optimization for Smart Cities	47.RD	1647361	-	82,493
EAGER: SSDIM: Multiscale Methods for Generating Infrastructure Networks	47.RD	1745300	-	53,621
EAGER: Towards a Traffic Analysis Resistant Internet Architecture	47.RD	1643020	-	72,510
Eighth Annual Graduate Student Mini-conference in Computational Mathematics; Clemson, SC; February 5-6, 2016	47.RD	1547107	-	349
Enhanced Production of Advancing Biofuels Through Model Guided Synthetic Biology	47.RD	CBET-1437836	-	72,092
Evaluating Sustainable Disposable Options for Compostable Biopolymers	47.RD	1553126	-	33,152
Explaining Choice, Persistence, and Attrition of Black Students in Electrical, Computer, and Mechanical Engineering	47.RD	1734347	9,130	23,913
Fast Algorithms for Large-Scale Nonlinear Algebraic Eigenproblems	47.RD	1719461	-	20,563
Fast and Scalable Multigrid Methods for Hypergraph Partitioning Problems	47.RD	1522751	-	63,725
Fluorescent Polymer Nanoparticles for Nano-Imaging and Sensing	47.RD	CHE-1412694	-	52,900
Fundamental Study of Nonlinear Electrokinetic Phenomena in Insulator-based Dielectrophoretic Microdevices	47.RD	1704379	-	28,971
Geometry of Measures and Regularity of Associated Operators	47.RD	1830128	-	14,115
GOALI: Tuning Renewable Solvent Systems for Lignin Purification and Fractionation	47.RD	CBET-1403873	-	20,652
GP-EXTRA: Building An Affective Pathway To The Geosciences Through Experiential Learning Opportunities For Non-Geoscience Majors	47.RD	1540702	-	196,979
Graduate Research Fellowship	47.RD	1246875 & 1744593	-	100,453
Graduate Research Fellowship Program	47.RD	1246875 & 1744593	-	138,279
Graduate Research Fellowship Program (GRFP)	47.RD	1246875 & 1744593	-	35,806
Growth Rates of Bacterial Taxa in Coastal Marine Ecosystems	47.RD	OCE-1261359	3,975	10,063
Highly Conductive Reduced Graphene Oxide Films for High Performance Electronic Devices	47.RD	1538215	78,098	90,572
High-Strength Carbon Fibers from Eco-Friendly Processing of Biomass	47.RD	1462804	-	120,796
Hydrothermal Brines: New Media for the Synthesis and Crystal Growth of Materials	47.RD	1808371	-	8,371
I/UCRC Phase II: Collaborative Research: Ceramic, Composite and Optical Materials Center	47.RD	1540025	-	32,970
II NEW: Infrastructure to Support Research in Network-Aware Data-Intensive Computing	47.RD	CNS-1405767	-	268,752
III: CGV: Medium: Collaborative Research: Computational Design and 3D Printing of Textiles	47.RD	1722997	-	30,751
III: Small: Collaborative Research: Privacy-Aware Collaborative Data Sharing in Human-Centered Social Networks	47.RD	1527421	-	99,128
Impact of Nonmigrating Tides on the Thermospheric Energy Budget and Constituents	47.RD	AGS-1112704	-	73,974
Instrument Development: Ultra-Sensitive, Single-Pass Electron Paramagnetic Resonance Spectrometers	47.RD	CHE-1152892	-	18,853
Interaction of Tool Wear and the Machining Affected Zone in Nickel-Based Superalloys	47.RD	1760809	-	8,182
Investigating Functional Peptides for Asymmetric Hypervalent Iodine Catalysis	47.RD	1664920	-	113,164
IREs: Call Me GLOBE-Under-represented Undergraduate Bioengineering Research in Singapore	47.RD	1460110	-	41,404
IUI Track-2 FEC: The Creation of Next-Generation Tools for Neuroscience- Noninvasive Radioluminescence Approaches to Optogenetics	47.RD	1632881	965,682	1,535,995
IUSE/ PFE: RED: Clemson University: Learning Teams and Innovation Ventures for Adaptable Training in Engineering (CULTIVATE)	47.RD	1730576	-	184,694
IUSE: EHR: Enabling Field Experiences in Introductory Geoscience Classes Through the Use of Virtual Reality	47.RD	1504619	-	26,121
IUSE: Understanding and Propagating the Essence of Successful Computing Education Projects	47.RD	1646691	-	7,421
Large Scale Networking (LSN) Workshop on Operationalizing SDN	47.RD	1747856	-	56,144
Material Removal and Ejection Dynamics in Femtosecond Laser Machining of Microchannels in Transparent Materials	47.RD	1563426	-	84,734
MCA-PGR: Spatial and Temporal Resolution of mRNA Profiles During Early Nodule Development	47.RD	1444461	-	443,303
Mechanics of Locomotion with Nonholonomic Constraints in a Fluid	47.RD	1563315	-	71,658
Mechanism for Heterogeneously Catalyzed Sugar Alcohol Reactions: Hierarchical Modeling and Experimental Studies	47.RD	CBET-1438325	-	70,063
Mechanisms of Fluid Feeding in Insects, from Nanoscale to Organism	47.RD	IOS-1354956	25,018	166,910
Methods Development for Systematic Investigation of Factors Driving Outcomes in Informal STEM Environmental Education Programs	47.RD	1612416	61,953	178,104

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Schedule of Expenditures of Federal Awards

For the year ended June 30, 2018

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
National Science Foundation, continued				
Modeling of the Subgrid-Scale Pressure-Strain-Rate Correlation in the Atmospheric Surface Layer	47.RD	AGS-1335995	-	25,815
Molecular Dynamics Simulations and Small Angle Neutron Scattering Studies of Light-Emitting Polymeric Nanoparticles	47.RD	CHE-1308298	-	22,210
MRI: Acquisition of a 500 MHz Nuclear Magnetic Resonance (NMR) Spectrometer with Cryoprobe	47.RD	1725919	-	478,169
MRI: Acquisition of a Cyberinstrument for Interdisciplinary Computational Science and Engineering	47.RD	1725573	-	994,161
Multi-Point Monin-Obukhov Similarity and Spectral Dynamics in the Convective Atmospheric Surface Layer	47.RD	1561190	-	82,665
New Methods for Studying the Time-Dependent and Steady-State Behavior of Markov Chains	47.RD	CMMI-1435261	-	18,533
Novel Graphene-based Label-free Biosensor Array for Smart Health and Drug Discovery	47.RD	1606882	52,985	109,072
Novel Optical Hosts: Chemistry, Single Crystal Growth and Applications	47.RD	DMR-1410727	-	96,630
NRI:FND:COLLAB: Drones and the Design of Public Outdoor Spaces	47.RD	1734247	-	54,643
NRT-DESE: Preparing Resilient and Operationally Adaptive Communities through an Interdisciplinary, Venture-based Education (PROACTIVE)	47.RD	1633608	-	418,080
NSF Graduate Research Fellowship Program	47.RD	1246875 & 1744593	-	47,555
NSF Graduate Research Fellowship Program	47.RD	1744593	-	177,891
NSF INCLUDES DDLP Statewide Consortium: Supporting Underrepresented Populations in Precalculus by Organizational Redesign toward Engineering Diversity	47.RD	1744494	745	38,818
NSF Student Travel Grant for 2018 ACM International Workshop on Security in Software Defined Networks and Network Function Virtualization(SDN-NFV Security)	47.RD	1807103	-	3,538
NSF/DOE Partnership on Advanced Combustion Engines: Thermal Barrier Coatings for the LTC Engine - Heat Loss, Combustion, Thermal vs. Catalytic Effects, Emissions, Exhaust Heat	47.RD	1258714	17,856	17,411
Number Theory Meetings in the Southeast	47.RD	1701290	-	16,295
Numerical Methods for Non-Newtonian Fluid Structure Interaction Problems	47.RD	DMS-1418960	-	47,408
Optical Carrier Based Microwave Interferometry for Spatially Continuous Distributed Monitoring of Structural Health	47.RD	CMMI-1359716	-	(2,243)
PFI: AIR Technology Translation - Functionalized III-V Nitride Based Microelectromechanical Sensors for Neutron Detection	47.RD	1512342	-	19,258
PFI: AIR Technology Translation - Functionalized III-V Nitride Based Microelectromechanical Sensors for Neutron Detection	47.RD	IIP-1512342	-	1,972
PFI: AIR-TT: Microwave Flow Cytometer: Monitor Yeast Cell Growth and Microbial Contamination in Fermentation	47.RD	1640578	-	22,331
PFI: AIR - TT: Novel Low-Power III-Nitride Heater Cantilever Based Selective VOC Sensor	47.RD	1602006	-	109,692
PFI: AIR-TT: Translation of Multimodal Membrane Adsorbers for Protein Purifications Phase I/UCRC Clemson University Site: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)	47.RD	1624641	-	90,884
Quantifying Dense Gas Dispersion in Urban Areas	47.RD	1703548	-	41,291
RAPID proposal: Impact of Storm Surge on Coastal Forest Demography in Response to Repeated Hurricane Disturbances	47.RD	1725377	-	69,206
RAPID: Airborne Measurements of Black Carbon Aerosol and Its Mixing State Over the Eastern Pacific/Central Coast of California	47.RD	1833008	-	19,710
RAPID: Cascading of Extreme Events (Drought-Wildfire) in a Pristine Watershed Located in the Southeast US: Implication on Hydrology, Water Quality and Microbial Communities	47.RD	1722482	-	37,059
RAPID: Severe Drought and Historical Extreme Flood (October 1-4, 2015) Regime in South Carolina: Assessment of the Water Quality Situation	47.RD	1602451	-	1,206
RCN: Advancing Research and Education Through a National Network of Campus Research Computing Infrastructures - The CaRC Consortium	47.RD	1620695	23,398	171,478
REU Site: Undergraduate Research in Collaborative Data Visualization Applications	47.RD	ACI-1359223	-	33,807
REU Site: Interfaces and Surfaces	47.RD	1460863	-	55,974
REU Site: Solid-State Devices for Electronics, Photonics, and Magnetics Technology	47.RD	1560070	-	127,708
REU Site: Summer Undergraduate Research Program at Clemson University	47.RD	1560300	-	108,738
REU site: Undergraduate Research in Biological Sciences: From Genomes to Phenomes - Exploring Function Across Scales	47.RD	1460895	-	130,897
Reversible Anion and Ion-Pair Recognition under Electronic Control	47.RD	1660329	-	82,245
Ri: Small Dynamic Payload Transport and Manipulation by Teams of Cooperating Mobile Robotic-Cranes	47.RD	1710898	-	105,871
Ri: Small: Collaborative Research: A Modular Approach to Robot Systems Incorporating Compliant and Soft Elements	47.RD	1718075	-	5,577
Ri: Small: Vine-Like Continuum Robots	47.RD	1527165	-	103,510
RII Track 1: Materials Assembly and Design Excellence in South Carolina: MADE in SC	47.RD	OIA- 1655740	-	(1,818)
RII Track-2 FEC: Advanced Biomanufacturing: Catalyzing Improved Host Development and High Quality Medicines through Genome to Phenome Predictions	47.RD	OIA-1736123	346,286	887,296
Role of Cell Volume Changes in Mechanotransduction of Hydrostatic Pressure	47.RD	CBET-1264579	-	8,777
RTG: Coding Theory, Cryptography, and Number Theory	47.RD	1547399	-	374,233
SaTC: EDU: Collaborative: Enhancing Security Education through Transiting Research on Security in Emerging Network Technologies	47.RD	1723663	-	13,131
Scalable Intelligent Power Monitoring and Optimal Control of Distributed Energy Systems Using Adaptive Critics	47.RD	ECCS-1308192	-	(684)

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Clemson University, Clemson, South Carolina

Schedule of Expenditures of Federal Awards

For the year ended June 30, 2018

Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass-through Entity Identifying Number	Passed Through to Subrecipients	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, Continued				
National Science Foundation, continued				
SDI-CSCS: Collaborative Research: S2OS: Enabling Infrastructure-Wide Programmable Security with SDI	47.RD	1700499	-	53,181
Self-Healing Photochromic Polymeric Coatings	47.RD	CMMI-1332964	-	4,682
SHB: Type II (INT): Collaborative Research: Creating Learning Systems with Mobile Technology to Improve Perioperative Services	47.RD	IIS-1237077	-	54,040
SHF: Medium: Collaborative Research: Specification and Mathematics Engineering for the Verified Software End-Game	47.RD	CCF-1161916	-	4,318
Simulation-Based Design of Polymer Nanocomposites for Structural Applications	47.RD	1563435	-	127,976
SNM: Defect-Engineered Nanocarbons for Electrochemical Energy Storage	47.RD	CMMI-1246800	30,734	32,428
SusChEM: Sustainable Chemistry from Combined Inorganic and Organic Waste Precursors	47.RD	1708844	-	115,685
Topics in Algebraic Geometry Codes	47.RD	DMS-1403062	-	37,034
Toward Commercialization of the Carbon Dots Technology	47.RD	1749313	-	3,989
TUES Type 1: Robots in Business and Society - A Hands-On Learning Experience	47.RD	DUE-1245250	-	17,785
TUES: Collaborate Research: Integrating Sustainability Grand Challenges and Experiential Learning into Engineering Curricula	47.RD	1620922	5,261	25,811
TWC: Medium: Collaborative: Studying Journalists to Identify Requirements for Usable, Secure, and Trustworthy Communication	47.RD	1513875	-	111,019
Understanding and Manipulating Charge and Entropy Flows in Layered Structured Transition Metal Dichalcogenides by and for Thermoelectricity: A Multi-Scale Materials Chem. Approach	47.RD	DMR-1307740	-	22,583
UNS: Formation and Toxicity of Disinfection Byproducts in Desalinated Waters	47.RD	1511051	20,112	32,815
UNS: High-performance Membranes for Engineered Osmosis	47.RD	1510790	-	74,387
Unveiling The Cosmic History of Light	47.RD	1715256	-	54,596
US Ignite: Track 1: Enabling Connected Vehicle Applications through Advanced Network Technology	47.RD	1531127	-	251,632
Using Ultra Violet Light to Produce Layered Fiber Reinforced Materials Derived from Biological Sources	47.RD	1537756	-	124,692
Workshop: Summer School on Methods for Case, Protocol, and Controlled Experiment Research on Design and Systems Engineering; Clemson, South Carolina; May 14-26, 2017	47.RD	1740217	-	7,709
Pass-through programs from:				
BWX Technology Incorporated				
Fabricating Uranium Mononitride Powder and Microsphere Using Sol-Gel Processing	47.RD	PO # 4900017542-0	-	339,209
Carnegie Mellon University				
Learning to See Seeing to Learn: A Sociotechnical System Supporting Taxonomic Identification Activities in Volunteer-Based Water Quality Biomonitoring	47.RD	1122371-358369	-	52,997
Learning to See Seeing to Learn: A Sociotechnical System Supporting Taxonomic Identification Activities in Volunteer-Based Water Quality Biomonitoring	47.RD	1122372-373003	-	4,886
Cornell University				
SCH: EXP: Home+, An Intelligent and Interoperable Suite of Robotic Furnishings, Learning and Evolving with Their Users	47.RD	81402.10758	2,234	32,597
Engineered Marine Coatings, Incorporated				
Marine Antifouling Deterrent Coatings - Subcontract for Quantum Paints	47.RD	NONE	-	91,294
Florida Atlantic University				
MRI - Development of the Intelligent River, A Basin-Scale Monitoring Instrument	47.RD	CRJ85	-	65,192
GATS, Incorporated				
Life-Cycle of the Quasi Two-Day Wave in the Southern Hemisphere	47.RD	GATS_SC_160003	-	17,162
Louisiana Tech University				
Sophomore Fast-Forward: A Summer Bridge Program to Support Retention in Engineering	47.RD	32-0969-54130-CU	-	8,668
Medical University of South Carolina				
RII Track-2 FEC: Bridging Cognitive Science and Neuroscience Using Innovative Imaging Technologies (Year 2 & 3)	47.RD	MUSC16-074-8B357	-	14,964
Northern Arizona University				
Digitization TCN: Lepidoptera of North America Network: Documenting Diversity in the Largest Clade of Herbivores	47.RD	1003017.02	-	3,174
Northwestern University				
DMREF: Simulation-Driven Design of Highly Efficient MOF/ Nanoparticle Hybrid Catalyst Materials	47.RD	SP0023246-PROJ0006614	-	8,309
Prasidiux				
SBIR Phase II: Development of Polymer Gel-Based Indicators to Monitor the Exposure of Pharmaceuticals to Harmful Temperatures	47.RD	PSXSUB003	-	27,651
Purdue University				
Expanding Access to and Participation in the Multiple-Institution Database for Investigating Engineering Longitudinal Development	47.RD	4101-77545	-	10,371
Hazards Sees: Bridging Information, Uncertainty, and Decision-Making in Hurricanes using and Interdisciplinary Perspective	47.RD	4101-84811	-	7,703
South Carolina State University				
A Partnership in Observational and Computational Astronomy II (POCA II)	47.RD	15-586021-BAPS-CU-SC	-	14,907
Louis Stokes South Carolina Alliance for Minority Participation (SCAMP): A Senior Alliance Enhancing Opportunities to Transition Students into Success STEM Pathways	47.RD	17-581054-SCAMP-Clemson-SC	-	14,795

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
National Science Foundation, continued				
Pass-through programs from, continued:				
The Samuel Roberts Noble Foundation				
Research - PGR Function Genomics of Beneficial Legume Microbe Interactions	47.RD	2017-G04-003	-	101,597
University of San Diego				
Collaborative Research: Military Veteran Students' Pathways in Engineering Education	47.RD	140065-U2015-001	-	27,425
University of California Davis				
Computational Infrastructure for Geodynamics	47.RD	201504240-01	-	41,278
University of Florida				
NSF INSPIRE: Virtual Environment Interactions: Exploring Embodied Learning in Support of Computational Thinking	47.RD	UFDSP00010994	-	2,038
University of South Carolina				
RII Track 1: Materials Assembly and Design Excellence in South Carolina: MADE in SC	47.RD	18-3494 22000-FB02/ PO#2000036759	-	475,181
University of Texas Austin				
Campus Bridging for Stampede	47.RD	UTA13-000068	-	639
Sequencing a Reference-grade Genome of the Domesticated Allotetraploid Cotton	47.RD	UTA15-000467 (1444552)	-	108,282
University of Utah				
CloudLab Phase II: Community Infrastructure to Expand the Frontiers of Cloud Computing Research	47.RD	10045119-CLEM PO# U000099152	-	953,616
CloudLab: Flexible Scientific Infrastructure to Support Fundamental Advances in Cloud Architectures and Applications	47.RD	PO# 166490 10034358-CLEM	-	72,645
CNH-L: Adaptation, Mitigation, and Biophysical Feedbacks in the Changing	47.RD	10040652-CU	-	41,035
Bonneville Salt Flats	47.RD	PO # U000094568	-	41,035
Virginia Polytechnic Institute				
RAPID: Integrated Geotechnical and Geophysical Field Data Collection to Investigate Scour and Post-event Infilling at Subaqueous Foundations, Levees and River Banks impacted by Hurricane Harvey	47.RD	479908-19244	-	6,550
Washington State University				
CIF21 DIBBS Tripal Gateway: Platform for Next Generation Data Analysis and Sharing	47.RD	123507_G003405	-	10,871
Total National Science Foundation			2,882,025	23,427,314
Tennessee Valley Authority				
Establish a Landscape Conservation Fellowship for the Tennessee River Basin Biodiversity Network	62.RD	13373 PO#3980142	-	24,379
Total Tennessee Valley Authority			-	24,379
Department of Veterans Affairs				
Grants for Adaptive Sports Programs for Disabled Veterans and Disabled Members of the Armed Forces	64.RD	2018-ASG-20	-	93,212
Targeted Delivery of Antioxidant Drugs Following Cerebral Ischemic Injury	64.RD	PO# 673-D75006	-	61,418
Total Department of Veterans Affairs			-	154,630
Environmental Protection Agency				
Forest Watershed Mgmt Practices & DW Quality	66.RD	CR-83586401	18,956	299,923
Partnerships for Sustainability: P2 Education and Assessment	66.RD	NP00D22514	-	5,498
Pollution Prevention Incentives States	66.RD	00D41717	-	19,363
Pass-through programs from:				
eXtension Foundation				
Pesticide Safety	66.RD	SA-2017-45	-	8,304
Friends of Lake Keowee Society, Incorporated				
Cane Creek Watershed Based Plan Development	66.RD	EQ-7-791	-	23,950
South Carolina Department of Health and Environmental Control				
South Carolina Volunteer Stream Monitoring Program (SC Adopt-a-Stream)	66.RD	NONE	-	2,867
Total Environmental Protection Agency			18,956	359,905
Nuclear Regulatory Commission				
Clemson University Nuclear Engineering and Radiological Sciences Scholarship Program	77.RD	NRC-HQ-84-14-G-0021	-	46,808
Probabilistic Risk Assessment Faculty Development in Nuclear Engineering and Science Program at Clemson University	77.RD	NRC-HQ-13-G-38-0002	-	7,985
US NRC Fellowship Grant at Clemson University	77.RD	NRC-HQ-12-G-38-0016	-	35,672
Total Nuclear Regulatory Commission			-	90,465
Department of Energy				
A New Paradigm for Understanding Multi Phase Ceramic Waste Form Performance	81.RD	DE-NE0008260	45,126	107,850
All-Digital Plug and Play Passive RFID Sensors for Energy Efficient Building Control	81.RD	DE-EE0007683	115,482	335,592
Alternative Sample Loading Preparation for Thermal Ionization Mass Spectrometry	81.RD	DE-NA0001735	-	(128)

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of Energy, continued				
Boosting Energy Efficiency of Heterogeneous Connected Automated Vehicle (CAV) Fleets via Anticipative and Cooperative Vehicle Guidance	81.RD	DE-EE0008232	15,000	331,041
Breeding High Yielding Bioenergy Sorghum for the New Bioenergy Belt	81.RD	DE-AR0000595	1,287,614	1,804,266
Characterizing and Interpreting the In Situ Strain Tensor During CO2 Injection Energize: An Interactive Evaluation Tool for Engaging the General Public with Energy Decision Making	81.RD	DE-FE0023313	9,794	229,199
Energy Efficiency for the Growing South Carolina Manufacturing Industries	81.RD	DE-NE0008568	-	133,732
Examination of Actinide Chemistry at Solid-Water Interfaces to Support Advanced Actinide Separations	81.RD	DE-EE0007727	-	190,934
First-Principles Calculation of Vibrational Mode in Complex Materials	81.RD	DE-SC0010355	-	158,727
Fully Integrated High Speed Megawatt Class Motor and High Frequency Variable Speed Drive System	81.RD	DE-SC0008487	-	125,596
Functionally Designed Ultra-Lightweight Carbon Fiber Reinforced Thermoplastic Composites Door Assembly	81.RD	DE-EE0007254	146,132	898,883
High-Temperature Atmosphere-Controlled Raman Microscope for Fuel Cycle Materials Research	81.RD	DE-EE0007293	206,629	415,414
Hydrogen Isotope Fractionation Using Graphene and Related 2-D Materials	81.RD	DE-NE0008675	-	128,566
Integrated Process Optimization for Biochemical Conversion	81.RD	DE-SC0018151	-	119,689
Integrated TBC/EBC for SiC Fiber Reinforced SiC Matrix Composites for Next Generation Gas Turbines	81.RD	DE-EE0008255	-	18,499
Lower Length Scale Characterization and Validation of Formation and Stability of Helium Bubbles in Nano-structured Ferritic Alloys Under Irradiation	81.RD	DE-FE0031281	-	86,269
Nano-structured Ceramic Membranes for Enhanced Tritium Management	81.RD	DE-NE0000728	-	60,771
Novel High Temperature and Radiation Resistant Infrared Glasses and Optical Fibers for Sensing in Advanced Small Modular Reactors	81.RD	DE-NE0008703	-	81,698
Radionuclide Waste Disposal: Development of Multi-scale Experimental and Modeling Capabilities	81.RD	DE-NE0000727	44,376	46,817
Robust Extractive Scintillating Resin and Adsorptive Membranes for Plutonium Isotopic Analyses of Aqueous Media	81.RD	DE-SC0012530	211,170	1,187,362
Robust in Situ Strain Measurements to Monitor Carbon Dioxide (CO2) Storage	81.RD	DE-NA0002920	-	250,800
Sampling Rare Events In Aqueous Systems Using Molecular Simulations	81.RD	DE-FE0028292	-	97,564
Synthesis and Single Crystals of Refractory Oxides of Lanthanides and Thorium	81.RD	DE-SC0015448	-	65,654
Pass-through programs from:				
Alliance for Sustainable Energy LLC				
Understanding the Role of Short-Term Energy Storage and Large Motor Loads for Active Power Controls by Wind Power	81.RD	XDJ-6-62584-01	-	(1,366)
Battelle Memorial Institute-PNNL				
Improved TRL of the LS-APGD Microplasma Ionization Source	81.RD	394845; Clemson, SC USA	-	4,068
Clemson University Research Foundation				
GATE Center of Excellence in Sustainable Vehicle Systems	81.RD	DE-EE0005571	-	(893)
Donald Danforth Plant Science Center				
A Reference Phenotyping System for Energy Sorghum	81.RD	22815-C	-	38,236
General Electric Company				
Joining of SiCf/SiC composites using polymer derived ceramics	81.RD	740134640	-	34,325
Handix Scientific LLC				
A Microfluidic Ice Nucleating Particle Counter for Continuous Measurements	81.RD	1801 // Prime # DE-SC0018474	-	14,315
Lawrence Livermore National Laboratory				
Characterization of Actinide Migration in Field Lysimeter Experiment	81.RD	B626646	-	61,338
Stabilization of Pu Complexes on Mineral Colloids by Natural Organic Matter	81.RD	B621273	-	13,247
Los Alamos National Laboratory				
Autonomous Monitoring of Wellbore Integrity Applying Time Reverse Nonlinear Elastic Wave Spectroscopy (TR NEWS) and Fiber Optic Sensing and Communication	81.RD	476893	-	18,879
Develop, Improve, and Maintain the Parallel Fine-Grained Soft Error Fault Injector	81.RD	406247	-	52,403
Louisiana State University				
Computational Catalysis and Atomic-level Synthesis of Materials: Building Effective Catalysts from First Principles	81.RD	41924	-	3,153
Missouri University of Science and Technology				
Additive Manufacture of Smart Parts with Embedded Sensors for In-Situ Monitoring in Advanced Energy Systems	81.RD	00042083-01	-	36,708
National Technology & Engineering Solutions of Sandia				
Experimental Investigation of Additive Manufactured Materials in Various Loading Conditions	81.RD	PO# 1908748	-	8,780
Global Optimization of Large-Scale AC Power Flow Problems	81.RD	PO# 1787843-0	-	52,040
NaSOW p.r. 1886058	81.RD	1678873	-	10,673
Savannah River Nuclear Solutions				
AMDT Testing (NSFB00014)	81.RD	PO 0000343108//TOA # NSCB00014//BOA 521 PO 347433; TOA	-	1,948
AMRL Microscopy Center Instrumentation and Data Preparation (NSCB000012)	81.RD	NSCB000012; BOA 521	-	7,016

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of Energy, continued				
Pass-through programs from, continued:				
Savannah River Nuclear Solutions, continued				
CAPER GMLC Southeast Regional Partnership Support Activities (NSCB00003)	81.RD	NSCB00003//BOA#0521// PO#277771	22,748	41,660
Evaluating Thermal Heating with Elemental Mercury (NSCB00006)	81.RD	NSCB00006//BOA#0521// PO#292699	-	41,135
Joint Appointment (JA) - Support of Laboratory Research and Development	81.RD	TOA/PO # 0000359811 //	-	-
LDRD Power Line Noise Study	81.RD	NSCB00013 // BOA 521	-	9,730
Li-ion Electrolyte Development	81.RD	0000262949	-	(195)
Solid State Power Substation Roadmap	81.RD	PO# 318416 // TOA #	-	-
SRNL External Review Committee (ERC)	81.RD	NSCB00009 // BOA # 521	-	67,045
SRNL External Review of Select Competencies: Environmental Science and Engineering, Chemistry and Radiochemistry, Materials Science and Engineering, and Separations Science and Engineering	81.RD	NSCB00005//BOA# 521// PO#289554	-	10,925
Support of Organosodalite Sorbents for Tc-99 and I-129 Remediation-NSCB00015	81.RD	PO# 313527 // NSCB00010 // BOA # 521	15,194	47,962
Support of Two-Day Workshop at SRS - NSCB00016	81.RD	BOA # 0521	-	(135)
Synthesis & Characterization of Solid Proton Conductors and Conductivity Measurements - NSCB00020	81.RD	NSCB00015; PO 0000353501; BOA 521	-	23,972
Technetium Extraction/Retention Studies (NSCB00008)	81.RD	PO # 361550 // NSCB00016 // BOA # 521	-	20,862
Thermal Diffusivity Measurements (NSCB00007)	81.RD	TOA/PO# 366765 //	-	-
Tritium Supply Chain Modeling NSCB00011	81.RD	NSCB00020 // BOA 521	-	1,561
SCUREF	81.RD	NSCB00008//BOA#0521 //PO#303764	-	39,072
Advanced Microanalytical Measurements	81.RD	PO# 308825 // TOA #	-	-
SRR Technical Support Provided by Clemson University	81.RD	NSCB00007 // BOA # 521	-	7,646
Tritium Supply Chain Modeling & Analysis	81.RD	PO 317010 // TOA#	-	-
Water Isotope Separation Testing	81.RD	NSCB00011 // BOA 521	-	132,090
University of Cincinnati	81.RD	B139023	-	7,860
Robust Metal-Ceramic Coaxial Cable Sensors for Distributed Temperature Monitoring in Fossil Energy Power Systems	81.RD	SRRA001	-	88,821
University of Minnesota	81.RD	B139020	-	18,100
Energy Frontier Research Center for Inorganometallic Catalyst Design	81.RD	B139024	-	17,189
University of Nebraska - Lincoln	81.RD	009170-002	-	-
Systems Analysis of the Physiological and Molecular Mechanisms of Sorghum Nutrient Use Efficiency, Water Use Efficiency and Interactions with the Soil Microbiome	81.RD	PO#4500082057	-	(10,308)
University of South Carolina	81.RD	A004527501	-	129,280
Center for Hierarchical Waste Form Materials (CHWM)	81.RD	25-1215-0123-006	-	83,219
University of Washington	81.RD	17-3256/USC#13020-FC78/	-	61,395
TA(A) Precursor-Derived Nanostructured Si-C-X Materials from MHD Electrode Application	81.RD	BPO9757 (formerly 763094)	-	21,137
UT-Battelle, LLC	81.RD	4000153152	-	20,606
Characterization of Novel Polymer Materials with AFM	81.RD	4000153773	-	17,532
MINOS Data Analytics & Fusion Advisory	81.RD	4000127400 /	-	-
Robust Network Fusion Algorithms for Detection and Localization of Radiation Sources	81.RD	Vendor # 0000062498	-	1,788
Total Department of Energy			2,119,265	8,281,921
Department of Education				
GAANN: Model Validation Analytics in Support of High Consequence Decision Making	84.RD	P200A150310	-	328,735
Graduate Fellowship in Electrical & Computer Engineering	84.RD	P200A150107	-	256,091
Pass-through programs from:				
National Writing Project				
NWP 2018-2019 13 Scale-up C3WP AI&PD Grant	84.RD	01-SC11-2018i3C3WP	-	10,034
South Carolina Commission on Higher Education				
ITQ - Exploring the Mathematics of Genetics	84.RD	NONE	12,266	81,974
ITQ - Understanding Geometry by Design	84.RD	NONE	21,180	39,071
Total Department of Education			33,446	715,905
Department of Health and Human Services				
Academy of Behavioral Medicine Research Annual Conference	93.RD	1R13CA216984-01	-	10,061

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RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of Health and Human Services, continued				
BloodSurf 2016: Blood-Biomaterial Interactions	93.RD	1R13HL132513-01	-	19,024
CanSim: A Novel Simulator for Training Cannulation Skills in Dialysis Care	93.RD	5K01DK111767-03	-	129,127
Carry over funds from the original COBRE:EPIC year 1 funds	93.RD	5P20GM109094-02 REVISED	-	345,135
Center of Biomaterials for Tissue Regeneration (CBTR)	93.RD	5P20GM103444-08	281,674	2,092,552
COBRE: Eukaryotic Pathogens Innovation Center (EPIC)	93.RD	5P20GM109094-02	-	347,803
COBRE: Eukaryotic Pathogens Innovation Center (EPIC)	93.RD	1P20GM109094-01A1	-	348,733
COBRE: Eukaryotic Pathogens Innovation Center (EPIC)	93.RD	5P20GM109094-02	-	402,776
COBRE: Eukaryotic Pathogens Innovation Center (EPIC)	93.RD	5P20GM109094	-	75,000
COBRE: Eukaryotic Pathogens Innovation Center (EPIC)	93.RD	5P20GM109094-02	-	305,033
COBRE: Eukaryotic Pathogens Innovation Center (EPIC)	93.RD	5P20GM109094-03	-	178,250
COBRE: Eukaryotic Pathogens Innovation Center (EPIC)	93.RD	5P20GM109094-03 revised	-	3,288
COBRE: Eukaryotic Pathogens Innovation Center (EPIC)	93.RD	5P20GM109094-02	-	51,655
COBRE: Eukaryotic Pathogens Innovation Center (EPIC)	93.RD	5P20GM109094-03	-	323,923
Creatine: A Novel Modulator of GABA Inhibitory Synapses	93.RD	1R03HD088942-01	-	92,378
Detecting and Monitoring Implant Infection Using X-ray Excited Luminescence Chemical Imaging (XELCI)	93.RD	5R01AR070305-02	5,319	322,804
Developing Luminescent Tension-indicating Orthopedic Screw	93.RD	1R21EB019709-01A1	-	30,958
Entamoeba Metabolism: The Role of Acetate Kinase and ADP-Forming Acetyl-CoA Synthetase	93.RD	1R15GM114759-01A1	-	97,547
Functional Tissue Engineering and Regeneration of the Aortic Root	93.RD	1R56HL130950-01	67,412	177,647
Identification of kinetoplastid parasite glucose uptake and subcellular localization inhibitors as therapeutic leads	93.RD	1R21AI127575-01	197,817	254,675
Inhibition of Human Islet Amyloid Polypeptide Aggregation	93.RD	1R35GM119691-01	-	348,038
Integrating Biomechanics & Cell Biology to Understand TMJ Pathology	93.RD	4R01DE021134-05 revised	107,981	303,838
Intensive Models of HCV Care for Injection Drug Users	93.RD	7R01DA034086-07	24,055	24,056
Label Free RF Imaging of Cell Membrane Heterogeneity in Liquid	93.RD	4K25GM100480-05	-	63,936
Mechanisms of Fluconazole-Induced Aneuploidy in Cryptococcus Neoformans	93.RD	1R15 AI119801-01	-	124,591
Mechanisms of Long-term Arsenic Exposure on Stem Cells	93.RD	1R15ES027651-01	-	89,778
Microfabricated Coculture Model: Myocyte Rescue by TNT-Transfer Mitochondria	93.RD	5R01HL124782-03	151,500	305,467
Multiplexed, Quantitative Fluorescence Imaging in Tumor Sections	93.RD	7R21CA196418-04 Revised	-	96,769
Nanowired Human Cardiac Spheroids for Heart Repair	93.RD	5R01HL133308-02	57,440	230,117
New Enzymes for DNA Demethylation	93.RD	1R15GM121997-01	-	100,390
New Generation DelPhi: large systems and beyond electrostatics	93.RD	2R01GM093937-06A1	35,615	393,278
Predicting the Heterogeneity of Cell-Fate Decisions	93.RD	7R01GM104184-05	25,093	123,057
Predicting the Toxicity of Nanomaterials by a Transforming Protein Corona	93.RD	1R15ES022766-01A1	-	20,524
Probe Identification by HTS for Plasmodium Falciparum Hexokinase	93.RD	1R03HD081723-01	-	6,409
Realizing Improved Patient Care Through Human-Centered Design in the OR	93.RD	5P30HS024380-02	169,803	999,960
Reducing Disparities in Birth Outcomes: A Randomized Controlled Trial on Centering Pregnancy	93.RD	5R01-HD82311-04	320,292	581,077
SLC6A8 mutant zebrafish as a high throughput screening tool to identify candidate therapeutics of Creatine Deficiency Syndrome	93.RD	1R03MH115354-01	-	7,165
SLC7A5-MTOR Regulation of Neural Development	93.RD	1R15NS096562-01A1	-	178,587
Structure-function relationships between human temporomandibular lateral capsule-ligament complex tensile stiffness, collagen ultrastructure and ECM composition: Investigation of sexual dimorphisms	93.RD	1F325DE027864-01	-	3,469
The Role of CAR and PXR in Gender Predominant P450 Expression and Induction	93.RD	2R15ES017321-03	-	133,395
Theranostic Approach to Treat Abdominal Aortic Aneurysms	93.RD	5R01HL133662-02	67,288	213,926
Translational Control of Encystation in the Entamoebae	93.RD	5R21AI08287-02	2,662	163,953
Undergraduate Education and Device Innovation Through Clinical and Translational	93.RD	5R25EB016589-05	-	53,873
Using Context to Validate and Improve Wrist-Tracking	93.RD	5R01HL118181-03	116,186	498,077
Pass-through programs from:				
Cornell University				
Quantifying Molecular Consequences of Human Missense Variants with Large-scale Interactome Perturbation Studies	93.RD	82513-11007	-	4,759
Doxy.me LLC				
Expanding teleconsent capabilities to improve clinical research recruitment	93.RD	NIH Prime # 1R41LM012547-01A1	-	550
Duke University				
Inflammasomes Mediate Inflammations in Bladder Outlet Obstruction	93.RD	2034859	-	85,239
Greenwood Genetics Center				
5214: Development of a Behavioral Outcome Measure for Rett Syndrome (RettBe)	93.RD	RTT5214-2016	-	6,464
Happy People Games LLC				
Interactive Digital Intervention to Prevent Violence among Young Adults	93.RD	2017000938	-	31,008
Icahn School of Medicine				
Data Coordination and Integration Center for LINCS-BD2K - DSR	93.RD	0255-7895-4609	-	24,468
Drug Combination Signatures for Prediction and Mitigation of Toxicity	93.RD	0255-8854-4609	-	55,354
Medical University of South Carolina				
A Work Systems Analysis of Sterile Processing	93.RD	MUSC17-076-8C877	-	1,694
Impact of Integrated HIV/NCD Screening on HIV Testing Uptake and Engagement in HIV Care: an RCT in Kisarawe, Tanzania	93.RD	MUSC16-104-8C312/ PO#296562	-	18,603
Methods for Retrospective Multi-Site Research	93.RD	MUSC12-046	-	140
South Carolina Clinical and Translational Research Institute (SCTR)	93.RD	MUSC18-038-8B122	-	3,218

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina

Schedule of Expenditures of Federal Awards

For the year ended June 30, 2018

Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass-through Entity Identifying Number	Passed Through to Subrecipients	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of Health and Human Services, continued				
Pass-through programs from, continued:				
North Carolina Central University				
Development of New Photo-Activated Antibacterial Agents	93.RD	P0069772	-	57,277
NUBAD, LLC		2013000548; F-Neo II		
A Rapid Assay for RNA Targeted Drugs	93.RD	(5R42GM097917-03)	-	46,879
Aminoglycosides with Reduced Ototoxicity	93.RD	CLEM-004	-	73,354
Development of Peptide Antibiotic Nucleic Acids	93.RD	Prime # 5R41A1114114-02	-	17,321
Nucleobase Aminosugars with Reduced Ototoxicity	93.RD	NARO	-	42,686
Screening the Ribosome for new Target Sites	93.RD	CLEM-003	-	55,189
Purilogs, LLC				
High-capacity Multimodal Anion-exchange Membranes for Purification of Biologics	93.RD	PSI0003	-	34,597
Protein A Membrane Columns for Rapid Protein Purification SBIR Phase I	93.RD	PSI0002	-	17,223
Rutgers, The State University of New Jersey				
Integrated Technologies for Polymeric Biomaterials, RESBIO	93.RD	6218 PO#663258	-	43,695
South Carolina Department of Health & Human Services				
Quality Assurance Services for the Bureau of Long Term Care Services (Federal)	93.RD	A20211999A (Federal) - FY18	-	519,676
Quality Assurance Services for the Bureau of Long Term Care Services (FFP Federal)	93.RD	A20211999A (FFP) - FY17	-	(116)
South Carolina Department of Social Services				
ICSS Employment and Training	93.RD	4400011567	-	606,088
ICSS Employment and Training - Year 3	93.RD	4400011567 Year 3	-	1,101,277
ICSS Employment and Training Institute	93.RD	4400011567 Training Institute	-	185,910
ICSS Employment and Training Institute - Year 3	93.RD	4400011567 Training Inst Year 3	-	280,723
University of Colorado - Denver				
Mechanisms of Mast Cell Directed Carbon Nanotube Toxicity	93.RD	FY16.714.002	-	68,666
Rocky Mountain Center for Total Worker Health	93.RD	FY17.247.007	-	10,383
Rocky Mountain Center for Total Worker Health	93.RD	FY17.347.005	-	37,023
University of Florida				
Probiotics That Moderate PH and Antagonize Pathogens to Promote Oral Health	93.RD	UFDSP00011201 00125985	-	30,292
University of Kentucky				
Southeast Center for Agricultural Health and Injury Prevention	93.RD	PO# 7800004263 3210000731-18-247	-	1,688
Southeast Center for Agricultural Health and Injury Prevention	93.RD	PO#7800003833 3210000531-18-005	-	13,971
University of Nebraska - Lincoln				
Group Testing for Infectious Disease Detection: Multiplex Assays and Back End Screening	93.RD	24-0548-0008-002	-	112,085
University of North Carolina - Charlotte				
Characterization of Various Multifunctional Nucleic Acid Nanoparticles and Understanding Their Immunotoxicity	93.RD	20170356-02-CLE	-	26,565
University of South Carolina				
South Carolina IDeA Network of Biomedical Research Excellence (SC INBRE)	93.RD	22050-Z217 22050-ZA01/ PO No. 2000035000	-	17,747
South Carolina IDeA Network of Biomedical Research Excellence (SC INBRE)	93.RD	18-3487 (15590-FB31)/ PO#2000036640	-	204,659
South Carolina IDeA Networks of Biomedical Research Excellence (INBRE)	93.RD	226141238E 226141198E	-	10,000
Bioinformatics Core - Determining the Role of Chromatin Structure on the Activity of CRISPR-Cas9	93.RD	PO#2000036640	-	10,000
University of Texas El Paso				
BUILdING SCHOLARS (Research Enrichment Core)	93.RD	226141238E 226141198E	-	34,275
BUILdING Scholars-Research Enrichment Core	93.RD	(formerly 226141170-04)	-	7,058
Upstate Affiliate Organization d/b/a Greenville Health System				
Managing Abstinence in Newborns (MAiN) 2.0, Expansion	93.RD	A202212651A-01CU; GHS Grant # G001217	-	181,800
Virginia Polytechnic Institute				
DPM Research: Monitoring Responses to Ventilation and Control by Water Sprays, and Capacity Building for Mine Ventilation Expertise	93.RD	431827-19244	-	10,822
Systems Analysis of Social Pathways of Epidemics to Reduce Health Disparities	93.RD	431828-19244	-	4,368
Total Department of Health and Human Services			<u>1,630,137</u>	<u>14,756,777</u>
Corporation for National and Community Service				
2017 National Civic Engagement Research Cooperative Agreement	94.RD	17REHSC001	-	16,559
Pass-through programs from:				
Furman University				
Implementation Evaluation for Greenville Health System School Based Health Centers	94.RD	NONE	-	39,249
Total Corporation for National and Community Service			<u>-</u>	<u>55,808</u>

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Clemson University, Clemson, South Carolina

Schedule of Expenditures of Federal Awards

For the year ended June 30, 2018

Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass-through Entity Identifying Number	Passed Through to Subrecipients	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, Continued				
Department of Homeland Security				
Pass-through programs from:				
University of South Carolina				
Coupling Experiments and Atomistic Modeling to Characterize Actinide Oxides in Support of Nuclear Forensics				
	97.RD	14-2646/17110 FA45 PO#'s 82368, 2000017843	-	30,667
Total Department of Homeland Security			-	30,667
Total Research and Development Cluster			9,171,706	73,610,589
Department of Education				
Student Financial Assistance Cluster				
Federal Supplemental Educational Opportunity Grants				
	84.007	Unknown	-	371,556
Federal Work Study Program				
	84.033	Unknown	-	776,439
Federal Work Study Program - Federal Job Location and Development				
	84.033	Unknown	-	60,000
Federal Perkins Loan Program Federal Capital Contributions				
	84.038	Unknown	-	9,607,249
Federal Pell Grant Program				
	84.063	Unknown	-	15,061,727
Federal Direct Loans				
	84.268	Unknown	-	105,426,351
Teacher Education Assistance for College and Higher Education Grants (TEACH Grants)				
	84.379	Unknown	-	14,477
Total Student Financial Assistance Cluster			-	131,317,799
Special Education Cluster				
Pass-through programs from:				
South Carolina Department of Education				
SC CREATE: Centers for the Re-Education and Advancement of Teachers in Special Education and Related Services Personnel				
	84.027	SC CREATE Funds Reservation	-	3,687
South Carolina Educational Interpreter Center				
	84.027	#4000037496	-	261,758
Total Special Education Cluster			-	265,445
Total Department of Education			-	131,583,244
Department of Agriculture				
SNAP Cluster				
Pass-through programs from:				
South Carolina Department of Social Services				
SNAP-ED Nutrition Education and Obesity Prevention (CATCH - Coordinated Approach to Child Health)				
	10.561	4400014598	-	32,045
SNAP-ED Nutrition Education and Obesity Prevention Grant				
	10.561	4400014563	-	30,963
SNAP-ED: CATCH (Coordinated Approach to Child Health)				
	10.561	4400017414	-	108,422
SNAP-ED: Cooking Matters (03)				
	10.561	4400017401	-	105,111
SNAP-ED: Implementation of Sesame Street Healthy Habits for Life/Let's Move				
	10.561	4400017384	-	142,662
SNAP-ED: Policy, System Environment (PSE) Strategies and Outreach				
	10.561	4400017366	-	80,244
Total SNAP Cluster			-	499,447
Total Department of Agriculture			-	499,447
Department of Transportation				
Highway Planning and Construction Cluster				
Pass-through programs from:				
South Carolina Department of Transportation				
State Work Zone Safety Training Program				
	20.205	CBSA-002 1865; Proj No. 88P030908A0.2560	-	275,951
Transportation Technology Transfer Service (T3S)				
	20.205	1982; WBS No. 88P036997A0.2560	-	177,846
Transportation Technology Transfer Service (T3S) 2018				
	20.205	88P036997A0.2560	-	275,645
Total Highway Planning and Construction Cluster			-	729,442
Total Department of Transportation			-	729,442

Clemson University, Clemson, South Carolina

Schedule of Expenditures of Federal Awards

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Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass-through Entity Identifying Number	Passed Through to Subrecipients	Total Federal Expenditures
OTHER PROGRAMS				
Department of Agriculture				
CAPS - Tier 1	10.025	AP17PPQFO000C017	-	38,397
CAPS - Pests of National Concern	10.025	AP17PPQFO000C017	-	16,395
District 2, South Carolina FY17 Trace (Animal Disease Traceability)	10.025	AP17VSSPRS00C007	-	88,658
District 2, South Carolina, FY 17 Umbrella (National Surveillance and Response for Animal Health Activities)	10.025	AP17VSSPRS00C030	-	243,943
FY18 D2 SC ADT	10.025	AP18VSSPRS00C076	-	1,953
FY18 D2 SC UMB	10.025	AP18VSSPRS00C014	-	14,549
Imported Fire Ant	10.025	AP17PPQFO000C060	-	27,471
Junior Invasive Inspectors/Farm Bill Project	10.025	16-8245-0907-CA	-	13,469
SC FY17 Forest Pest Outreach	10.025	AP17PPQFO000C110	-	36,645
SC FY17 Junior Invasive Inspectors Farm	10.025	AP17PPQFO000C182	-	25,283
SC FY17 National Honey Bee Survey Farm	10.025	AP17PPQFO000C179	-	12,940
SC FY17 Palm Commodity Survey Farm Bill	10.025	AP17PPQFO000C116	-	12,139
SC FY17 Pathways Survey Farm Bill Project	10.025	AP17PPQFO000C109	-	20,673
SC FY17 Witchweed	10.025	AP17PPQFO000C147	-	12,516
SC FY18 CAPS/Combined Survey (Pests of National Concern)	10.025	AP18PPQFO000C131	-	11,304
SC FY18 Exotic Woodborer Bark Beetle Survey	10.025	AP18PPQFO000C178	-	1,382
SC FY18 Honey Bee Survey FG Goal 1S.0589	10.025	AP18PPQFO000C176	-	819
SC FY18 Imported Fire Ant	10.025	AP18PPQFO000C366	-	15,081
SC FY18 P.ramorum Survey FB Goal 1S.0311	10.025	AP18PPQFO000C180	-	915
SC FY18 Palm Commodity Survey FB Goal 1S	10.025	AP18PPQFO000C179	-	1,622
SC FY18 Pathways Survey FB Goal 1S.0014	10.025	AP18PPQFO000C177	-	2,340
SC NAHLN FY17 Level 2 Member Lab Agreement	10.025	AP17VSNVSL00C003	-	117,398
SC NAHLN FY17 LIMS Agreement	10.025	AP17VSNVSL00C002	-	61,000
SF FY18 CAPS Infrastructure (Tier 1)	10.025	AP18PPQFO000C132	-	26,259
Stone Fruit Commodity/Farm Bill Project	10.025	16-8245-0891-CA	-	8,061
Improving Energy Efficiency in South Carolina Animal Facilities and Greenhouses: A Partnership for Education, Outreach and Technology Adoption	10.054	68-4639-15-0002 RM17RMEPP522C033 (FMMI #: 4500075453)	102,656	220,665
Production and Marketing Risk Management for Turf Grass Sod Producers in South Carolina	10.460		-	7,612
South Carolina Meat-Poultry Inspection Department- (All Other)	10.475	BASE17 (12-37-A307)	-	54,374
South Carolina Meat-Poultry Inspection Department- (Compliance)	10.475	BASE17 (12-37-A307)	-	33,950
South Carolina Meat-Poultry Inspection Department- (In Plant)	10.475	BASE17 (12-37-A307)	-	272,370
South Carolina Meat-Poultry Inspection Department- (Laboratory)	10.475	BASE17 (12-37-A307)	-	5,742
South Carolina Meat-Poultry Inspection Department- Cross Utilization '17	10.475	Cross Utilization	-	73,223
South Carolina Meat-Poultry Inspection Department- PHDCIS/FAIM17	10.475	PHDCIS17 (12-37-A307)	-	1,167
Clemson Sustainable Community Project	10.500	2013-41520-21027	22,198	220,513
Cooperative Extension Service - Smith Lever	10.500	Unknown	-	6,602,463
Web Based Nutrition Education and Evaluation Reporting System (webNEERS)	10.500	2012-41510-20085	-	18,569
Web Based Nutrition Education and Evaluation Reporting System (webNEERS)	10.500	2017-41510-26791	-	171,206
Wood Utilization: Pathway to Healthy Forests and Sustainable Communities	10.500	2015-46401-24241	-	46,822
Demonstrating Habitat Establishment for Pollinators and Other Beneficial Insects	10.902	68-4639-14-0021	-	235
Increase Awareness of Communities' Abilities to Develop Their Own Food Systems and Economics	10.902	69-4639-15-0001	-	30,526
Statewide Demonstration of Improved Irrigation Management to Conserve Water and Enhance Farm Profits Utilizing Real-Time and Site-Specific Weather Information	10.902	69-4639-16-266	-	11,340
Demonstration of Innovative Interseeding Technology for Crop Rotations to Enhance Soil Properties and Reduce Energy Consumption and Pest Occurrence While Optimizing Farm Profits	10.912	69-3A75-12-212	-	(521)
Pass-through programs from:				
Mississippi State University				
Stronger Economies Together (SET)	10.U01	018000.340753.23	11,040	17,238
South Carolina Department of Social Services				
SNAP-ED Implementation Sesame Street Healthy Habits for Life/Let's Move	10.U02	4400014785	-	36,403
South Carolina Forestry Commission				
Cogongrass and Invasive Forest Pests Detection and Education Project	10.U03	None	-	87,870
Forest Pests Detection and Education and Cogongrass Detection, Education, and Eradication Project	10.U04	None	-	57,219
University of Georgia				
Southern Region SARE Sustainable Agriculture Training Program -PDP- Model State Program Training	10.215	RD309-134/S001193	-	21,329
Sustainable Ag Research and Education. SARE program - Model State Program	10.215	RD309-137/S001447	-	26,709
University of Florida				
Southern Plant Diagnostics Network	10.304	UFDSP00011536/P0019073	-	12,115
University of Florida				
Southern Training, Education, Extension, Outreach and Technical Assistance Center to Enhance Produce Safety	10.328	UFDSP00011131	-	11,769
2018 4-H Military Partnership Grant	10.500	S17121.01	-	17,652
4-H Military Partnership and Outreach Support Program	10.500	S17121	-	12,546

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Schedule of Expenditures of Federal Awards

For the year ended June 30, 2018

Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass-through Entity Identifying Number	Passed Through to Subrecipients	Total Federal Expenditures
OTHER PROGRAMS, Continued				
Department of Agriculture, continued				
Pass-through programs from, continued:				
Pennsylvania State University				
AMS Grant Writing Workshop and Technical Assistance	10.500	5403-CU-USDA-2628	-	3,921
Total Department of Agriculture			<u>135,894</u>	<u>8,886,239</u>
Department of the Interior				
Digitize and Transcribe Historical Documents, Oversized Documents, Video Tapes, Audio Tapes, and Photographic Materials				
	15.945	P17AC01647	-	2,154
Digitize Archeological Oversized Documents and Photographic Materials				
	15.945	P16AC01783	-	12,770
Digitize Photographic Materials for Everglades and Biscayne National Parks				
	15.945	P16AC01406	-	40,402
Total Department of the Interior			<u>-</u>	<u>55,326</u>
Department of Justice				
Pass-through programs from:				
National 4-H Council				
South Carolina Mentoring Program	16.726	2017-JU-FX-0016	-	8,757
South Carolina Mentoring Program - NMP7	16.726	09165; NMP7	-	80,412
Total Department of Justice			<u>-</u>	<u>89,169</u>
Department of State				
Pass-through programs from:				
National Ability Center				
Adaptive Sports for Social Change (ASSC)	19.415	2016001342	-	12,557
Total Department of State			<u>-</u>	<u>12,557</u>
National Endowment for the Arts				
Pass-through programs from:				
South Arts				
South Arts: Launchpad Program - 2017 Performing Arts Exchange (PAE)	45.025	None	-	925
Total National Endowment for the Arts			<u>-</u>	<u>925</u>
National Endowment for the Humanities				
Call My Name: African Americans in Early Clemson University History	45.130	ZR-256734-18	-	507
Total National Endowment for the Humanities			<u>-</u>	<u>507</u>
Institute of Museum & Library Services				
Pass-through programs from:				
Richland County Public Library				
Fresh Food/Fresh Thinking	45.312	2017001063; PO #675	-	18,851
Total Institute of Museum & Library Services			<u>-</u>	<u>18,851</u>
National Science Foundation				
Collaborative Research: Computational Intelligence Methods for Dynamic Stochastic Optimization of Smart Grid Operation with High Penetration of Renewable Energy				
	47.041	ECCS-1232070	-	36,517
Clemson University Middle Grades Noyce Phase II Proposal				
	47.076	1540623	-	1,520
Tigers Teach Noyce Scholarship				
	47.076	DUE-1136293	-	(5,526)
Total National Science Foundation			<u>-</u>	<u>32,511</u>
Small Business Administration				
Pass-through programs from:				
University of South Carolina				
Small Business Development Center - Operating Grant (Federal) 2017	59.037	Federal	-	42,396
		Federal 21250 ZL85/ SBAHQ-18-B-0039	-	292,512
Small Business Development Center - Operating Grant (Federal) 2018	59.037	Federal Carryover 2016	-	13,560
Small Business Development Center 2016 Carryover	59.037		-	13,560
Total Small Business Administration			<u>-</u>	<u>348,468</u>
Environmental Protection Agency				
IPM Mosquito Control	66.204	AA-00D49416	-	25,701
Consolidated Pesticide Compliance Monitoring - Certification and Training				
	66.700	E-98463817	-	123,856
Consolidated Pesticide Compliance Monitoring - Enforcement				
	66.700	E-98463617	-	166,325

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Clemson University, Clemson, South Carolina

Schedule of Expenditures of Federal Awards

For the year ended June 30, 2018

Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass-through Entity Identifying Number	Passed Through to Subrecipients	Total Federal Expenditures
OTHER PROGRAMS, Continued				
Environmental Protection Agency, continued				
Consolidated Pesticide Compliance Monitoring - Special Programs	66.700	E-98463717	-	216,435
Fiscal Year 2015 Pollution Prevention Grant Program	66.708	NP00D41716	-	19,502
Pass-through programs from:				
Commonwealth of Virginia				
Animal Waste Analysis for the Commonwealth of Virginia	66.460	319-2016-01-PT	-	31,200
Total Environmental Protection Agency			-	583,019
Department of Energy				
Pass-through programs from:				
Southeastern Coastal Wind Coalition				
Southeast Wind Energy Regional Resource Center	81.U01	None	-	8,182
Total Department of Energy			-	8,182
Department of Education				
Exemplary Personnel for Education, Research, and Teaching in Special Education (ExPERTISE)	84.325	H325D140044	-	245,381
Pass-through programs from:				
South Carolina Department of Education				
2016-2017 Agriculture Education Professional Development	84.048	None	-	(66)
2017-18 Agriculture Teacher Education and Professional Development	84.048	Agriculture Education	-	46,628
Future Farmers Association (FFA) Program Assistant	84.048	FFA Program Assistant	-	18,839
Monaview Elementary				
Monaview Magic Initiative	84.287	1st PO #203214 // 2nd PO #211132	-	10,288
South Carolina Department of Education				
21st CCLC After-School Learning Centers at Spearman Elementary School and West Pelzer Elementary School	84.287	H63010006916 17 21st CCLC-20	-	2,044
21st CCLC After-School Program at Cedar Grove Elementary, Palmetto Elementary, LaFrance Elementary, Pendleton Elementary, and Townville Elementary	84.287	H63010006916 17 21st CCLC-40 Cedar Grove	7,479	10,092
21st CCLC After-School Program at Cedar Grove, Palmetto, LaFrance, Townville, and Pendleton Elementary	84.287	H63010006917 18 21st CCLC-40	91,870	121,665
21st CCLC After-School Program at Chastain and Liberty Elementary School	84.287	H63010006916 17 H63010006917 18	3,520	4,768
21st Century Community Learning Centers - Summer Bridge Program at Chastain Elementary and Liberty Elementary	84.287	H63010006917 18 Summer Bridge-91	-	2,766
21st Century Community Learning Centers - Summer Bridge Program at LaFrance, Townville, and Pendleton Elementary	84.287	H63010006917 18 Summer Bridge-92	-	2,759
21st Century Community Learning Centers - Summer Bridge Program at Spearman Elementary and West Pelzer Elementary	84.287	H63010006917 18 Summer Bridge-90	-	3,666
After-School Program at Cedar Grove Elementary, Palmetto Elementary, LaFrance Elementary, Pendleton Elementary, and Townville Elementary	84.287	H63010006916 17 Summer Bridge-92	41,844	50,676
After-School Program at Chastain and Liberty Elementary School - Summer Bridge Project	84.287	H63010006916 17 Summer Bridge-91	23,541	32,580
After-School Program at Chastain Elementary and Liberty Elementary	84.287	H63010006917 18 21st CCLC-50	44,271	92,268
After-School Program at Spearman Elementary and West Pelzer Elementary	84.287	H63010006917 18 21st CCLC-20	40,897	96,555
After-School Program at Spearman Elementary School and West Pelzer Elementary School - Summer Bridge Project	84.287	H63010006916 17 Summer Bridge-90	25,781	32,887
National Writing Project				
01-SC11-SEED2016; 2016-2017 SEED Advanced Institute to Scale Up the NWP College-Ready Writers Program Grant	84.367	01-SC11-SEED2016	-	(2)
2017-2018 NWP CRWP-SEED Professional Development in High-Need Middle or High School Grant with its partner: Carver Middle School	84.367	01-SC11-SEED2017- CRWPPD	2,250	13,049
2017-2018 NWP SEED Invitational Leadership Institute to Invest in Developing New Teacher-Leaders Grants	84.367	01-SC11-SEED2017-ILI	-	15,000
SEED: High Need PD for Orangeburg 05	84.367	01-SC11-SEED2018-C3WPPD	-	2,124
South Carolina Commission on Higher Education				
ITQ - Improving Historical Understanding through Structured Inquiry and Multimedia Exchange	84.367	None	13,082	29,599
National Writing Project				
2017-2018 i3 Scale-up the College Ready Writers Program (CRWP) Advanced Institute Grant	84.411	01-SC11-2017i3A1 // Prime# U411A160004	-	13,235
The Ohio State University				
Improving Literacy Outcomes for Beginning Readers with Disabilities	84.411	60046517	-	246,445
Total Department of Education			294,535	1,093,246
Department of Health and Human Services				
Clemson Care: A Campus-Wide Comprehensive Suicide Prevention Strategy	93.243	5U79SM061785-03	-	22,775

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Clemson University, Clemson, South Carolina

Schedule of Expenditures of Federal Awards

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Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass-through Entity Identifying Number	Passed Through to Subrecipients	Total Federal Expenditures
OTHER PROGRAMS, Continued				
Department of Health and Human Services, continued				
Pass-through programs from:				
South Carolina Department of Agriculture				
Food Safety Modernization Act (FSMA) Position - Year 2	93.103	FSMA Year 2	-	95,427
University of South Carolina				
Faith, Activity, and Nutrition: Dissemination in Underserved Communities - Year 3	93.135	17-3168/PO#2000029191 18-3457/PO#2000035993	-	148
Faith, Activity, and Nutrition: Dissemination in Underserved Communities - Year 4	93.135	USC No.11570-FB38	-	4,891
South Carolina Campaign to Prevent Teen Pregnancy				
Accelerating Progress: Strengthening Teen Pregnancy Initiatives Among High Need South Carolina Populations (Tier 1A)	93.297	None	-	5,086
South Carolina Department of Health and Environmental Control				
DHEC Farm-to Retail	93.757	CY-7-785	-	70,412
South Carolina Department of Health and Environmental Control				
South Carolina Outdoor Learning Environments	93.758	CY-7-545	-	7,670
Upstate Affiliate Organization d/b/a Greenville Health System				
GHS-REACH: A Caregiver Coaching Intervention for High Risk Patient/ Caregivers to Extend Dementia Capable Services	93.763	7315-1 // Grant # G007316	-	32,927
Total Department of Health and Human Services			-	239,336
Department of Homeland Security				
Pass-through programs from:				
South Carolina Emergency Management Division				
FEMA Public Assistance - 4286 Hurricane Matthew (Debris Removal 1-30 Days)	97.036	F#667 CUDLO1A	-	24,206
FEMA Public Assistance - 4286 Hurricane Matthew (Debris Removal 31-90 Days)	97.036	F#802 CUDLO2A	-	6,018
FEMA Public Assistance - 4286 Hurricane Matthew (Debris Removal 91-180 Days)	97.036	F#820 CUDLO3A	-	30,850
FEMA Public Assistance - 4286 Hurricane Matthew (Generator/Emergency Protective Measures)	97.036	F#1072 CUDLO1B	-	4,828
South Carolina Law Enforcement Division				
2016 Update of SC Ag-Watch Manual	97.067	15SHSP36	-	16,805
Total Department of Homeland Security			-	82,707
Total Other Programs			430,429	11,451,043
Total Federal Expenditures			\$ 9,602,135	217,873,765

Clemson University**Clemson, South Carolina*****Notes to the Schedule of Expenditures of Federal Awards******June 30, 2018***

Note 1. Basis of Presentation

The accompanying schedule of expenditures of federal awards (the Schedule) includes the federal award activity of Clemson University (the University) and is presented on the accrual basis of accounting. The information in the Schedule is presented in accordance with the requirements of Title 2 U.S. Code of Federal Regulations Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Because the Schedule presents only a selected portion of the operations of Clemson University, it is not intended to and does not present the financial position, changes in net position, or cash flows of the University.

Note 2. Summary of Significant Accounting Policies for Federal Award Expenditures

Expenditures for student financial aid programs include the federal share of students' Federal Supplemental Educational Opportunity Grant (FSEOG) program grants and Federal Work Study (FWS) program earnings, certain other federal financial aid for students and administrative cost allowances, where applicable.

Expenditures for federal research and development programs are determined using the cost accounting principles and procedures set forth in either OMB Circular A-21, *Cost Principles for Educational Institutions* or in Uniform Guidance, as applicable, wherein certain types of expenditures are not allowable or are limited as to reimbursement.

Negative amounts shown on the Schedule represent adjustments or credits made in the normal course of business to amounts reported as expenditures in prior years.

Expenditures for nonfinancial aid awards include indirect costs, related primarily to facilities operation and maintenance and general, divisional and departmental administrative services, which are allocated to direct cost objectives (including federal awards) based on negotiated formulas commonly referred to as facilities and administrative cost rates. Facilities and administrative costs allocated to such awards for the year ended June 30, 2018, were based on predetermined fixed rates negotiated with the University's cognizant federal agency. The University has elected not to use the 10-percent de minimis indirect cost rate as allowed under the Uniform Guidance.

Note 3. Federal Perkins Loan Program (CFDA Number 84.038)

The Federal Perkins Loan Program is administered directly by the University and balances and transactions relating to the program are included in the University's financial statements. Federal expenditures reported on the face of the schedule include loans outstanding at the beginning of the year, loans made during the year, loan cancellations, interest subsidies and administrative expenses. The balance of loans outstanding under the Federal Perkins Loan Program was \$7,389,809 as of June 30, 2018.

Clemson University**Clemson, South Carolina***Notes to the Schedule of Expenditures of Federal Awards**June 30, 2018*

Note 4. Contingencies

The University receives funds under various federal grant programs and such awards are to be expended in accordance with the provisions of the various grants. Compliance with the grants is subject to audit by various government agencies which may impose sanctions in the event of non-compliance. Management believes that they have complied with all aspects of the various grant provisions and the results of adjustments, if any, relating to such audits would not have any material financial impact.

**Independent Auditor's Report on Internal Control Over Financial Reporting
and on Compliance and Other Matters Based on an Audit of
Financial Statements Performed in Accordance with
*Government Auditing Standards***

Members of the Board of Trustees
Clemson University
Clemson, South Carolina

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the business-type activities and discretely presented component units of Clemson University (the University), as of and for the year ended June 30, 2018, and the related notes to the financial statements, which collectively comprise the University's basic financial statements, and have issued our report thereon dated September 28, 2018. Our report includes a reference to other auditors who audited the financial statements of the Clemson University Foundation, the Clemson University Land Stewardship Foundation and IPTAY, as described in our report on Clemson University's financial statements. This report does not include the results of other auditors' testing of internal control over financial reporting or compliance and other matters that are reported on separately by those auditors. The financial statements of the Clemson University Foundation, the Clemson University Land Stewardship Foundation and IPTAY were not audited in accordance with *Government Auditing Standards*.

Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered the University's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control. Accordingly, we do not express an opinion on the effectiveness of the University's internal control.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the University's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

A handwritten signature in black ink that reads "Elliott Davis, LLC". The signature is written in a cursive, flowing style.

Greenville, South Carolina
September 28, 2018

**Independent Auditor's Report on Compliance for
Each Major Federal Program; Report on Internal Control Over
Compliance; and Report on the Schedule of Expenditures of
Federal Awards Required by the Uniform Guidance**

Members of the Board of Trustees
Clemson University
Clemson, South Carolina

Report on Compliance for Each Major Federal Program

We have audited Clemson University's (the University) compliance with the types of compliance requirements described in the *OMB Compliance Supplement* that could have a direct and material effect on each of the University's major federal programs for the year ended June 30, 2018. The University's major federal programs are identified in the summary of auditor's results section of the accompanying schedule of findings and questioned costs.

Management's Responsibility

Management is responsible for compliance with federal statutes, regulations, and the terms and conditions of its federal awards applicable to its federal programs.

Auditor's Responsibility

Our responsibility is to express an opinion on compliance for each of the University's major federal programs based on our audit of the types of compliance requirements referred to above. We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the audit requirements of Title 2 *U.S. Code of Federal Regulations Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Those standards and the Uniform Guidance require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major federal program occurred. An audit includes examining, on a test basis, evidence about the University's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances.

We believe that our audit provides a reasonable basis for our opinion on compliance for each major federal program. However, our audit does not provide a legal determination of the University's compliance.

Opinion on Each Major Federal Program

In our opinion, the University complied, in all material respects, with the types of compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended June 30, 2018.

Report on Internal Control Over Compliance

Management of the University is responsible for establishing and maintaining effective internal control over compliance with the types of compliance requirements referred to above. In planning and performing our audit of compliance, we considered the University's internal control over compliance with the types of requirements that could have a direct and material effect on each major federal program to determine the auditing procedures that are appropriate in the circumstances for the purpose of expressing an opinion on compliance for each major federal program and to test and report on internal control over compliance in accordance with Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the University's internal control over compliance.

A deficiency in internal control over compliance exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. A *material weakness in internal control over compliance* is a deficiency, or combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. A *significant deficiency in internal control over compliance* is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies.

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

Report on Schedule of Expenditures of Federal Awards Required by the Uniform Guidance

We have audited the financial statements of the business-type activities and the aggregate discretely presented components of the University, a component unit of the State of South Carolina, as of and for the year ended June 30, 2018, and the related notes to the financial statements, which collectively comprise the University's basic financial statements. We issued our report thereon dated September 28, 2018, which contained unmodified opinions on those financial statements. We did not audit the financial statements of the Clemson University Foundation (a discretely presented component unit), the Clemson University Land Stewardship Foundation (a discretely presented component unit), and IPTAY (a discretely presented component unit). Those statements were audited by other auditors whose reports have been furnished to us, and our opinions, insofar as they relate to the amounts included for these discretely presented components units, are based solely on the

Report on Schedule of Expenditures of Federal Awards Required by the Uniform Guidance, continued

reports of the other auditors. Our audit was conducted for the purpose of forming opinions on the financial statements as a whole. The accompanying schedule of expenditures of federal awards is presented for purposes of additional analysis as required by the Uniform Guidance and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedule of expenditure of federal awards is fairly stated in all material respects in relation to the basic financial statements as a whole.

Elliott Davis, LLC

Greenville, South Carolina
September 28, 2018

Clemson University
Clemson, South Carolina
Schedule of Findings and Questioned Costs
For the year ended June 30, 2018

Section I. Summary of Auditor's Results

Financial Statements

Type of report the auditor issued on whether the financial statements were prepared in accordance with GAAP: Unmodified

Internal control over financial reporting:

- Material weakness identified? _____ yes X no
- Significant deficiency identified? _____ yes X none reported

Noncompliance material to financial statements noted? _____ yes X no

Federal Awards

Internal control over major federal programs:

- Material weakness identified? _____ yes X no
- Significant deficiency identified? _____ yes X none reported

Type of auditor's report issued on compliance for major federal programs: Unmodified

Any audit findings disclosed that are required to be reported in accordance with 2 CFR 200.516 (a)? _____ yes X no

Identification of major federal programs:

<u>CFDA Numbers</u>	<u>Name of federal program or cluster</u>
10.RD; 11.RD; 12.RD; 15.RD; 16.RD; 20.RD; 43.RD; 45.RD; 47.RD; 62.RD; 64.RD; 66.RD; 77.RD; 81.RD; 84.RD; 93.RD; 94.RD; 97.RD	Research and Development Cluster
10.500	Cooperative Extension Service – Smith Lever

Dollar threshold used to distinguish between Type A and Type B Programs \$3,000,000

Auditee qualified as low-risk auditee? X yes _____ no

Clemson University
Clemson, South Carolina
Schedule of Findings and Questioned Costs
For the year ended June 30, 2018

Section II. Financial Statement Findings

None reported

Section III. Federal Award Questioned Costs and Findings

None reported

Clemson University Clemson, South Carolina Summary Schedule of Prior Audit Findings For the year ended June 30, 2018

In accordance with *Government Auditing Standards*, issued by the Comptroller General of the United States, the following is the status of known material findings and recommendations from prior year audits:

Finding 2017-001 Student Loan Repayments

Federal Agency: Department of Education

Program: CFDA No. 84.038 – Federal Perkins Loan Program

CONTROLLER'S OFFICE

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Administrative Services Bldg.
108 Pearman Blvd.
Box 345321
Clemson, SC
29634-5321

P 864-656-2000
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Condition:

The University communicated incorrect separation dates to the third-party loan servicer for a number of students who separated from the University and began repayment during the 2016-2017 fiscal year.

A test of the loans entering repayment during the year revealed discrepancies in the separation date reported to the student loan servicer responsible for converting loans to repayment and the date the students completed the course of study. This resulted in a corresponding delay in the repayment start date with no impact on the total repayment cost of the loans.

Current Action

Taken/Current Status:

Student Financial Services and Financial Aid personnel attended training sessions presented by external counsel followed by meetings discussing internal controls and documentation of processes and reviews.

Student Financial Services developed and implemented Perkins loan separation procedures covering reporting of Perkins Loan recipients who graduate, withdraw during the term, complete the term but do not return to Clemson University, or students who drop below half-time enrollment.

Procedures include a validation of student system graduation data to the external loan servicer at each graduation, a monthly comparison of student system enrollment status to the external loan servicer and the Automated Clearinghouse, and monthly compliance reviews, and comprehensive documentation of variances and revisions.