



## School Nominee Presentation Form

### ELIGIBILITY CERTIFICATIONS

#### School and District's Certifications

The signatures of the school principal and district superintendent (or equivalents) on the next page certify that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of their knowledge. *In no case is a private school required to make any certification with regard to the public school district in which it is located.*

1. The school has some configuration that includes grades Pre-K-12.
2. The school has been evaluated and selected from among schools within the Nominating Authority's jurisdiction, based on high achievement in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental education.
3. Neither the nominated public school nor its public school district is refusing the U.S. Department of Education Office of Civil Rights (OCR) access to information necessary to investigate a civil rights complaint or to conduct a district wide compliance review. The Department of Defense Education Activity (DoDEA) is not subject to the jurisdiction of OCR. The nominated DoDEA schools, however, are subject to and in compliance with statutory and regulatory requirements to comply with Federal civil rights laws.
4. OCR has not issued a violation letter of findings to the public school district concluding that the nominated public school or the public school district as a whole has violated one or more of the civil rights statutes. A violation letter of findings will not be considered outstanding if OCR has accepted a corrective action plan to remedy the violation.
5. The U.S. Department of Justice does not have a pending suit alleging that the public school or the public school district as a whole has violated one or more of the civil rights statutes or the Constitution's equal protection clause.
6. There are no findings of violations of the Individuals with Disabilities Education Act in a U.S. Department of Education monitoring report that apply to the public school or public school district in question; or if there are such findings, the state or public school district has corrected, or agreed to correct, the findings.
7. The school meets all applicable federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

### U.S. Department of Education Green Ribbon Schools 2015-2018

Public  Charter  Title I  Magnet  Private  Independent  Rural

Name of Principal: Mr. Michael T. Dittrich

(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in the official records)

Official School Name: Maplewood Richmond Heights Middle School

(As it should appear on an award)

Official School Name Mailing Address: 7539 Manchester Road

(If address is P.O. Box, also include street address.)

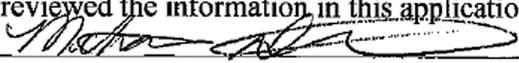
County: St. Louis County State School Code Number \*: 096107-3000096107

Telephone: (314) 565-0669 Fax: (314) 781-4629

Web site/URL: <http://www.mrhschools.net/middle-school/home> E-mail: Michael.dittrich@mrhschools.net

\*Private Schools: If the information requested is not applicable, write N/A in the space

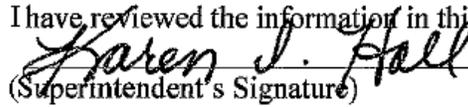
I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.

  
(Principal's Signature) Date: 1/20/17

Name of Superintendent: Ms. Karen I. Hall  
(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in official records)

District Name: Maplewood Richmond Heights School District

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.

 Date: January 20, 2017  
(Superintendent's Signature)

### Nominating Authority's Certifications

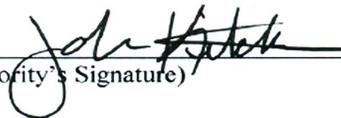
The signature by the Nominating Authority on this page certifies that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of the Authority's knowledge.

1. The school has some configuration that includes grades Pre-K-12.
2. The school is one of those overseen by the Nominating Authority which is highest achieving in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental and sustainability education.
3. The school meets all applicable federal civil rights and federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

Name of Nominating Agency: Missouri Department of Elementary and Secondary Education

Name of Nominating Authority: Mr. John Kitchens  
(Specify: Ms., Miss, Mrs., Dr., Mr., Other)

I have reviewed the information in this application and certify to the best of my knowledge that the school meets the provisions above.

 Date: January 27, 2017  
(Nominating Authority's Signature)

### SUMMARY AND DOCUMENTATION OF NOMINEE'S ACHIEVEMENTS

Provide a coherent summary that describes how your school is representative of your jurisdiction's highest achieving green school efforts. Summarize your strengths and accomplishments in all three Pillars. Then, include concrete examples for work in every Pillar and Element. Only schools that document progress in every Pillar and Element can be considered for this award.

### SUBMISSION

The nomination package, including the signed certifications and documentation of evaluation in the three Pillars should be converted to a PDF file and emailed to [green.ribbon.schools@ed.gov](mailto:green.ribbon.schools@ed.gov) according to the instructions in the Nominee Submission Procedure.

OMB Control Number: 1860-0509

Expiration Date: March 31, 2018

#### Public Burden Statement

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is 1860-0509. Public reporting burden for this collection of information is estimated to average 37 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The obligation to respond to this collection is required to obtain or retain benefit P.L. 107-110, Sec. 501, Innovative Programs and Parental Choice Provisions. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, 400 Maryland Ave., SW, Washington, DC 20202-4536 or email [ICDocketMgr@ed.gov](mailto:ICDocketMgr@ed.gov) and reference the OMB Control Number 1860-0509. Note: Please do not return the completed ED-Green Ribbon Schools application to this address.

## Maplewood Richmond Heights Middle School, Maplewood Missouri



### School Contact Information

School Name: Maplewood Richmond Heights Middle School	Street Address: 7539 Manchester Rd.	
City: Maplewood	State: MO	Zip: 63143
Website: <a href="http://www.mrhschools.net/middle-school/home">http://www.mrhschools.net/middle-school/home</a>	Twitter: Used to promote our instruction <a href="https://twitter.com/mrhmiddle-school?lang=en">https://twitter.com/mrhmiddle-school?lang=en</a> Facebook: Used for all school updates <a href="https://www.facebook.com/MRHMSchool/">https://www.facebook.com/MRHMSchool/</a>	
Principal: Michael Dittrich	District: Maplewood Richmond Heights School District	
Principal Email: <a href="mailto:michael.dittrich@mrhschools.net">michael.dittrich@mrhschools.net</a>	Principal Phone: (314) 565-0669	
Lead Applicant and Position: Melissa Breed-Parks- School Garden Integration Specialist		
Lead Applicant Email: <a href="mailto:melissa.breed-parks@mrhschools.net">melissa.breed-parks@mrhschools.net</a>	Lead Applicant Phone: (314) 644-4406	

### School Characteristics

Level <input type="checkbox"/> Early Learning Center <input type="checkbox"/> Elementary (PK - 5 or 6) <input type="checkbox"/> K - 8 <input checked="" type="checkbox"/> Middle (6 - 8 or 9) <input type="checkbox"/> High (9 or 10 - 12)	School Type <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private/Independent <input type="checkbox"/> Charter <input type="checkbox"/> Magnet	How would you describe your school? <input checked="" type="checkbox"/> Urban <input type="checkbox"/> Suburban <input type="checkbox"/> Rural	Total Enrolled: 186 Graduation rate: 100% Attendance rate: 96% 2015-2016: 96%
Does your school serve 40% or more students from disadvantaged households? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
% receiving FRPL: 45.4%	% limited English proficient: 1.6%	White: 55.2% Multi Racial: 8.7% Hispanic: 3.3%	Black: 30.6% Asian: 1.6% Other: 0.6%

# Summary Statement

Maplewood Richmond Heights Middle School (MRHMS) is located in Maplewood, MO. The City of Maplewood received the National Green City Award as the result of a large and concentrated effort from Maplewood Richmond Heights Middle School and its district. Maplewood, MO is also the very first Green Dining District in Saint Louis.

MRHMS has worked hard with support from the communities of Maplewood and Richmond Heights for the creation of a green school that upholds the district cornerstones of scholarship, stewardship, leadership, and citizenship. MRHMS has led the way in developing innovative programming and learning surrounding the unique sustainability needs in an urban area. MRHMS has very limited green space but has still provided a rich curriculum that integrates gardens, aquaponics, urban chickens, bee hives, composting, and a rain garden. At the core of this work is a belief that sustainable schools and communities provide all members the greatest opportunities for success.

The staff at MRHMS have deeply integrated their teaching and learning into this belief. MRHMS has deeply embedded teaching sustainability and green practices into the curriculum in core content areas and exploratory classes. Through the use of units that revolve around books like *Seed Folks* or *Good Food Revolution*, teachers provide our students opportunities to explore green initiatives while still honoring national and state standards for learning. The MRHMS cafe maintains partnerships with local farmers and universities, and utilizes products from our own gardens, backyard chickens, and honey bees.

MRHMS derives its approach from the metaphor of school as expedition, taking students outside of the classroom over 15% of the school year. Student learning is taking place outside, in the community, or beyond the community. This approach to learning shifts the focus into the natural environment and promotes a connection with the community. An example would be students studying water quality and its relationship to macroinvertebrates starting in our local watershed in 7th grade and ending with a trip to Ocean Springs, MS and the Gulf of Mexico at the end of 8th grade. MRHMS was the focus of a viral video (<https://goo.gl/GOIH0E>) when our school produced a video around biodiversity and salamanders in the Smoky Mountains. Expeditionary learning creates a space for students to begin to view the world through a lens of justice and fairness, and then explore the causation of the social, economic, and environmental justice issues that surround us everyday. This is the heart of Education for Sustainability, and it has been at the center of the work at MRHMS for a decade.

## Cross Cutting Questions

**1. Team** - Has your school assembled a team of teachers, administrators, staff, students and interested members of the community, to help the school accomplish green goals? **(x) Yes ( ) No**

We have multiple groups that set goals related to sustainability, investigate issues, and initiate action for change. The Sustainability Steering Committee (district-wide), attended by our Garden Integration Specialist, Melissa Breed-Parks, ensures sustainability mission alignment, defines and communicates district-wide goals, and monitors progressive efficiency. All 7th and 8th grade team teachers including team leaders, Whitney Strubhar and Deanna Sainz, focus, when appropriate, on environmental and community stewardship opportunities through our metaphor, School as Expedition. The Sustainability class, led by Science Teacher Bill Henske, is offered every semester and serves as a multi-grade student leadership group to solve sustainability issues in our school. This class has tackled initiatives around water runoff, energy conservation, composting, improving our aquaponics system, and alternative transportation. The Cornerstone Class, led by Patrice Bryan, is offered twice each semester and serves as a multi-grade student leadership class to look at issues around water quality, food shortage, and environmental factors that affect poverty and social injustice in our community and the world around us.

**2. Benchmarking** - Is your school participating in a local, state or national school program, such as EPA ENERGY STAR Portfolio Manager, EcoSchools, Project Learning Tree, or others, which asks you to benchmark progress in some fashion in any or all of the Pillars? **( x ) Yes ( ) No**

For each of the past four years, a team of students has participated in the U.S. Green Building Council-Missouri Gateway Chapter Green Schools Quest. During this process, the students collect baseline data in the area subject to improvement. In the past years, students have collected data on classroom energy use, green transportation, storm water retention, and food systems. MRHMS placed 2nd place in 2016 and 3rd place in 2014.

Data was collected through our Sustainability Class to support a reduction in energy per class for the middle school. Students placed kilowatt monitors in classrooms and then provided specific feedback to individual teachers on usage with suggestions on how to improve. Teachers were then re-evaluated, and a reduction of energy was observed in 100% of our classrooms.

**3. Awards** - Has your school, staff or student body received any awards or grants for facilities, health, or education related to environmental sustainability?

Yes ( ) No

- Pure Power Gold Leader with Ameren UE- 2015, 2016
- USGBC Gateway Chapter Green Schools Quest 2nd Place 2016, 3rd Place 2014
- District Chef Robert Rusan: 2015 National School Nutrition Hero (Rusan is one of five school nutrition professionals from across the country to be awarded this prestigious honor by the School Nutrition Association.)
- Ladue Garden Club Grant Recipient - 2012, 2013, 2014
- Waters Foundation Sustainability Systems Thinking Training - 2012
- Teacher at Sea Program 2016- Bill Henske, Science Teacher
- Tremont Institute Food Waste Heroes - 2014, 2015, 2016
- National Green School Conference Presenters- 2013, 2016
- Gateway Greening Grant - 2012
- Waste Reduction Grant, St. Louis County Public Health Dept., 2015
- Environmental Protection Agency - Green Power Partner List - Current
- Bilateral US-Arab Chamber Sustainability STEM Summer Fellowship 2013 - Bill Henske, Science Teacher
- Jennifer Seydel (Executive Director of Green Schools Network) Ted Talk includes us as a model school.  
<https://www.youtube.com/watch?v=aADcSV0fUoU>

**4. Goals** - List one to three goals your school is planning on attempting over the next year.

1. Our existing aqua-ponics system (currently offline) needs functional systems in place for ongoing success. Students in the Sustainability class are investigating changes needed to create a more sustainable and energy efficient system with educational components for sharing with other students and community members.
2. Our 7th graders will investigate human geography and how mass transit moves in our city. We will analyze new routes that have been proposed by city and county officials. Students will present these findings to our high school sustainability class and district sustainability team. The data will also be shared with city and county officials. In addition, students will write and propose a bill to our area representatives to provide free mass transit for school age children for educational purposes.
3. In coordination with our Director of Building and Grounds, our sustainability class plans to investigate and implement EPA Energy Star Portfolio Manager. The baseline data will be used by students and staff to study, propose, implement and measure changes in energy usage and consumption.

## Pillar I: Reduced Environmental Impact and Costs

### ENERGY

**1. Energy STAR** - Do you track resource use in ENERGY STAR Portfolio Manager?

Yes  No

If yes, what is your score? NA	If score is above a 75, have you applied for and received ENERGY STAR certification? <input type="checkbox"/> Yes <input type="checkbox"/> No Year: NA
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**2. Energy** - Has your school reduced its total non-transportation energy use from an initial baseline?

Yes  No

Baseline Year: 2014	Energy (kBtu / student): 11,586
Ending Year: 2016	Energy (kBtu / student): 10,972
Reduced kBtu: Baseline Energy – Ending Energy = 614	kBtu / student
%Reduction: Reduced Energy / Baseline Energy = 5.3%	% kBtu / student
Percentage Reduction per Year: % Energy / (Ending Year – Baseline Year) = 2.65%	kBtu / student / year
Data was collected using utility bills from local providers. In addition to building data, data was also collected through our Sustainability Class to support a reduction in energy usage per class for the middle school. Students placed kilowatt monitors in classrooms and then provided specific feedback to individual teachers on their usage with suggestions on how to improve. Teachers were then re-evaluated and a reduction of energy was observed in 100% of our classrooms. We have installed motion sensors on all switches in the middle school, installed a solar array and LED lighting in select locations, updated facilities with high efficiency water heaters, and continue to look for ways to retrofit to improve our building efficiencies. Some motion sensors, for classrooms with considerable natural light, were changed back to switch lights to allow teachers to keep lights off during instruction and take advantage of natural light.	

**3. Greenhouse Gases** - Can your school demonstrate a reduction in greenhouse gas (GHG) emissions?

(  ) Yes (  ) No

Baseline Year: 2014	GHG Emissions (MT CO <sub>2</sub> e / student): 2.4
Ending Year: 2016	GHG Emissions (MT CO <sub>2</sub> e / student): 0
Reduced GHG: Baseline GHG – Ending GHG = 2.4 MT CO <sub>2</sub> e / student	
% Reduction: Reduced GHG / Baseline GHG = 100 % MT CO <sub>2</sub> e / student	
% Reduction per Year: % GHG / (Ending Year – Baseline Year) = 100 % MT CO <sub>2</sub> e / student / year	
The Middle School shares a building with the high school in our district. We use a yearly total of 1,716,000 kWh of electricity which equates to 3432 kWh of electricity usage per student, per year. Prior to 2015, our electricity was produced though coal plants. We used the EPA greenhouse gas equivalency calculator to determine our GHG production per student.	
100% of our electricity is purchased through Ameren UE's Pure Power or generated through solar electric grid.	

**4. Renewable Energy** – Does your school use a renewable fuel source?

(  ) Yes (  ) No

On-site renewable energy generation: 36.34 MWh or 2.18%	Type: Solar Panels - We have three systems that are capable of a total of 25 KWh
Purchased renewable energy: We purchase 2,522,000 kWh of electricity through Pure Power and Ameren UE.	Type: Green-e Certified Renewable Energy Certificates.

**5. Building** - Has your school constructed or renovated building space in the past ten years?

(  ) Yes (  ) No

### WATER AND GROUNDS

**6. Water Use** - Can you demonstrate a reduction in your school's total water consumption?

(  ) Yes (  ) No

Baseline Year:	Water Use (gal / student / year):
Ending Year:	Water Use (gal / student / year):
Reduced Water Use: Baseline Water Use – Ending Water Use = gal / student / year	
% Reduction: Reduced Water Use / Baseline Water Use = % gal / student	
% Reduction per Year: % Water Use / (Ending Year – Baseline Year) = % gal / student / year	
% Reduction Domestic Water Use:	% Reduction Irrigation Water Use:
While we do not have baseline data, we have installed new high efficiency hot water heaters through a program with our local utility provider. Our rest rooms all have low flow and automatic fixtures. A bottle filler has been added to the drinking fountain, decreasing waste and time needed for student refreshment. In addition, water from our aquaponics lab is used to water indoor plants relieving us of the need to use tap water or fertilizer to maintain plant health. The middle school garden uses a rain barrel and green roof.	

**7. Landscaping** – Does your school have water efficient or regionally appropriate landscaping (WERAL)?

(  ) Yes (  ) No

Total Area: 31,000 sq ft	WERAL Area: 27,000 sq ft	% WERAL: 88%
Water Efficient Plants: big bluestem, Indian grass, goldenrod, coneflower. We have almost no open lawn or unused landscape that requires fertilizer or watering.		
Regionally Appropriate Plants: prairie dropseed, serviceberry, American beautyberry, winterberry, Eastern redbud, sideoats grama, coneflower, slender mountain mint, ironweed, butterfly milkweed, common milkweed, New England aster		
WERAL Features: In addition to all grounds using regionally appropriate landscape plants, a student-designed 2,280 square foot rain garden captures runoff from an adjacent city-owned parking area, tennis courts, and half the playing field. The garden filters and slows infiltration with native plants selected for pollinator and ecosystem interactions. This has eliminated all flooding of our track and athletic field.		

**8. Alternate Water Sources** - Does your school use alternate water sources for irrigation?  Yes ( ) No  
 We have a rain barrel in our school garden that is used for keeping plants and chickens watered. We recycle aquarium water during cleaning for fertilizing and watering indoor plants. Our indoor grow beds use recycled water from tanks that are used to house and raise fish. This water has also been used to water plants throughout the building.

**9. Runoff** - Does your school try to reduce storm-water runoff and/or reduce impermeable surfaces?  Yes ( ) No

Our students have built a rain garden that collects runoff from campus and adjoining parking areas from our city hall parking lot. Our main parking lot was built to include a holding tank for storm water runoff. Our outdoor commons uses permeable surface materials to increase stormwater infiltration. Fields are aerated and non-garden areas receive regular mulch to reduce soil compaction and evaporation and increase water absorption.

**10. Ecology** – Does your school have area(s) set aside for ecologically beneficial (EB) uses?  Yes ( ) No

Total Area: 31,000	EB Area: 5980 sq ft	% EB Area 19.1%
We are a land-locked urban campus with only a small amount of available space, but we have several small areas that serve this purpose. Our rain garden is designed with native, pollinator beneficial species. Our middle school garden has a perennial bed for pollinators. Our bee-yard has a pollinator pond to provide water to birds and insects throughout the year. Within our garden, we have several student built houses for native pollinators. Multiple compost bins divert solid waste and increase soil fertility and biodiversity. A green roof on the garden shed is a passive means for providing habitat and cooling the shed.		

### WASTE

**11. Solid Waste** – Has your school diverted some of its solid waste from a landfill through recycling and composting, and/or has it implemented practices to reduce waste at the source (source reduction)?  Yes ( ) No

cu yds waste diverted: 38 %	mos. / yrs. covered : 10 month academic calendar average
Approximately eight cubic yards are diverted each week from landfill waste with approximately 13 cubic yards heading to landfills. This does not include our district's electronic recycling, battery recycling/disposal, or our onsite composting programs. MRH has worked with Saint Louis Composting but has since moved this service to in-house. We use solid waste in our composting initiatives and food scraps for our urban chickens.	
avg monthly cu yd. waste / student: .279	mos. / yrs. covered: 10 month academic calendar average
In 2015-16 MRH received a waste reduction grant from the Saint Louis County Health Department. Waste and recycling inventories were conducted by student groups, and our awareness campaign increased recycling compliance and reduced waste generation. Students are encouraged to bring reusable water bottles to school and on expeditions, refilling with an attachment to the drinking fountain. School lunch meals are eaten on reusable serviceware, and takeaway trays are of compostable material.	

**12. Hazardous Waste** - Does your school have a program for tracking, managing, and safely disposing of hazardous waste, and/or for systematically reducing the amount produced?  Yes ( ) No

How many gallons or lbs. does your school currently have of each of these classes of hazardous materials?				
Flammable liquids 0.5 gallons	Corrosive liquids .25 gallons	Toxics 0.1 lbs	Mercury 0	Other:
As part of our educational programming and for the safety of all students and staff, we have eliminated the use of any toxic chemicals, materials or activities that would produce hazardous waste.				
We have battery recycling available for all staff and students. We are migrating testing to electronic probes that produce no hazardous waste. Electronic waste is collected once a year by the technology department.				

13. **Green Cleaning** - Does your school use a green cleaning custodial standard?  Yes ( ) No

Which green cleaning custodial standard is used?  GS-37 category	What % of your products are certified?  50% - There are two products that we use daily through the spaces, hypermax terragreen and #3 maxima which serves as our disinfectant. The hypermax is 100% green clean certified. There is not a disinfectant available that has been certified.	What specific 3 <sup>rd</sup> party certified green cleaning product standard is used  Green Seal
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14. **Electronic Waste** - Does your school recycle electronics in an environmentally responsible way?  Yes ( ) No

MRHMS works with district technology coordinator to send old or obsolete technology to a recycling center where they reuse, resell, or otherwise process for disposal or reclamation of heavy and precious metals. MRHMS also works to recycle any batteries in partnership with Republic Services.

### TRANSPORTATION

15. **Alternative Transportation** – Do students and/or staff use alternatives to single passenger vehicles to get to and from school?  Yes ( ) No

Bus transportation is provided for all students living one mile or further from school. The school district leases its own buses and houses them on campus to reduce carbon footprint to and from a bus yard. We conducted student surveys as part of a class project and found that 21% take district-leased school buses, 17.7% carpool, 27.3% walk, 31.5% ride in a car (includes students with siblings), and 2.5% ride bikes or skateboard. Several staff members, including the building principal, walk or bicycle to work depending on the weather.

16. **Accommodations** – Does your school accommodate alternative transportation by providing designated carpool parking stalls, bike racks for all ages, a Safe Pedestrian Routes or Walking School Bus program, and/or other programs?  Yes ( ) No

We have a bike rack for students who choose to ride to school. Due to the increasing amount of students skateboarding to school, students worked with a local technical high school to provide a skateboard rack to secure boards during the day. Our school is located on one of the busiest intersections located near a school in the Metropolitan Saint Louis area. We have district funded crossing guards to ensure safe crossing of our busy streets.

### PURCHASING

17. **Paper** - Is any of your school's total office/classroom paper sustainably sourced?  Yes ( ) No

% post-consumer recycled content paper: 0	% paper from FSC certified forests: 100%	% chlorine-free paper: 0%
MRHMS is a 1:1 Chromebook school and utilizes very little paper. Students turn in over 75% of all work digitally and when paper is needed students and staff are expected to be thoughtful and purposeful with its use. Identification tags must be swiped by a staff member for their project to print. Our total budget for paper this year was \$795 or \$4.30 per student.		

18. **Food** - Is any of the food purchased by the school organic, local, or environmental or sustainable in some other way?  Yes ( ) No

Our district defines local as food grown within 200 miles of St. Louis. Sunfarm, one of our vendors, purchases from Thies Farms in Maryland Heights. We have purchased tomatoes, zucchini, yellow squash, and watermelon from them. Saint Louis University's Healthy Eating with Local Produce (HELP) is another partner. They help process locally grown food for our food service. We have purchased mashed potatoes, potato wedges, sweet potato coins, applesauce, and marinara sauce. McKaskle Farm is an organic rice and corn farm where we purchase rice and cornmeal. Locally sourced food is approximately 5% of our total food acquisition.

## OVERALL ENVIRONMENTAL IMPACT

**19. Environmental Impact Summary** - Summarize your school's top accomplishments in energy use/ghgs, water and grounds, waste, transportation and purchasing. Be sure to include any innovative efforts or efforts not included already in this section.

The biggest impact our sustainability efforts have had is to build a sustainable school community, with ripples out into our area's communities at large. Many of our initiatives have been in place so long, we are not able to decipher a baseline. Participating in the Pure Power program and making sure that 100% of the energy provided by our local electric company is a source of pride in our building. This in conjunction with our solar arrays helped Maplewood, MO be recognized as the EPA Green Power Community of the Year.

Through our journey of studying water quality and conservation of water, our students have a better understanding of the need for clean water and the effects poor water quality can have on the environment around them. Studying water from our local watershed and tracing that water to the Gulf of Mexico helps students realize the importance of being good stewards to their community resources and beyond.

Our landscaping and dedication to green spaces has helped support a robust curriculum that involves pollinator studies, beekeeping, tree climbing, and garden areas. Very few areas remain in our footprint that are not landscaped with water efficient plants or regionally appropriate plants. With the exception of the high school athletic fields on our campus there is very little area requiring fertilizer and watering.

Students and staff hold each other accountable for waste reduction. This year we revisited our recycling efforts and have added battery recycling for this academic year. MRHMS is very proud to know that 38% of the waste in our building is diverted from a landfill and this does not include cafe scraps that are handled in in house by either composting or feeding them to our backyard chickens.

MRHMS has recently investigated and began to implement more use of our mass transit system as we move about the city to learn through our metaphor, School as Expedition. This has resulted in a decrease of use from our fleet buses and the carbon footprint from using this option.

MRHMS has also seen a decrease in the amount of paper per student purchased each year. We have continued to purchase the same amount of paper the past four years even though our student population has grown by over 20%.

## Pillar 2: Improve the health and wellness of students and staff

### ENVIRONMENTAL HEALTH

**1. Water Sources** - Is the school's water source, whether municipal, on-site well, or other, (  ) Yes (  ) No protected from potential contaminants?

We use a municipal water supply that meets and exceeds all Missouri state drinking water standards.

**2. Drinking Water** - Does your school have a program in place to test for and control lead (  ) Yes (  ) No or other contaminants in drinking fountains and sinks?

Maplewood Richmond Heights School District conducts testing each time a water line is disturbed to ensure lead and other contaminants are not present. MRHMS has never had an incident of detecting lead or any other contaminants in the water supply.

**3. Moisture** - Does your school take steps to control moisture from leaks, condensation, (  ) Yes (  ) No and excess humidity, to promptly clean up mold or remove moldy materials when found?

MRHMS has had two incidents in the past year of water main leaks. Both were no fault of the MRH school district, but water damage was sustained to the interior of our building. Both times clean up was immediate in cooperation with a professional restoration company specializing in flood damage.

**4. Ventilation** - Does your school have procedures and protocols for inspecting and maintaining the building's ventilation system and all unit ventilators to ensure they are clean and operating properly, and to ensure spaces are adequately ventilated with outside air consistent with state or local codes or national standards? ( x ) Yes ( ) No

MRHMS works with district maintenance to ensure proper filter replacement quarterly. In addition, indoor plants that improve overall air quality are strongly encouraged in each room. Recently the MRHMS sustainability group worked with a mentor from Green Schools Quest to identify air quality issues including the lack of ventilation in district copy rooms. This has sparked conversation within district building and grounds to address this issue.

**5. Airborne Contaminants** - Has your school taken steps to control for specific airborne contaminants like exhaust systems for heating systems and labs, no idling policies for vehicles (including school buses), vehicle loading/unloading zones at least ten feet away from air intakes, doors and windows, and or other policies and practices? ( x ) Yes ( ) No

Maplewood Richmond Heights District Transportation has adopted a no idling policy for all district buses. All unloading and loading zones are a minimum of ten feet from all air intakes. An indoor quality study is currently in process by a former MRHMS sustainability student. This data will be shared with our middle school sustainability class.

**6. Integrated Pest Management** - Does your school use Integrated Pest Management (IPM) to control pests? ( x ) Yes ( ) No

Recognizing the potential impact of both chemicals and pests on health and the environment, the Board of Education of the School District of Maplewood-Richmond Heights requires that all district property and facilities utilize a system of integrated pest management (IPM) for controlling insects, rodents, weeds and other pests. Integrated pest management is the use of a variety of methods for effective pest control while minimizing pesticide use.

**7. Chemical Management** – Does your school have policies and procedures for identifying, managing and or reducing exposure to other chemical hazards like smoking on school grounds or buses, mercury in thermometers, radon in below ground spaces, CCA in playground equipment, materials used for cleaning, chemicals used for teaching, etc.? ( x ) Yes ( ) No

Our buses have a no-idling policy and no smoking is permitted on campus. All cleaning products have the GS-37 Green Seal Standard for Industrial and Institutional Cleaners. All below grade spaces are ventilated and/or open to the outside. Classes have eliminated the use of mercury thermometers and lighting. Flammable and corrosive materials are secured in a locking cabinet. Most chemical testing in science has been replaced with electronic probes, reducing the amount of chemical waste. MRHMS is also a designated smoke free campus.

## NUTRITION AND FITNESS

**8. Healthier US Schools** – Does your school participate in the USDA's Healthier Schools Challenge or a similar program? ( x ) Yes ( ) No

Our in-house school food service program follows best practices outlined by USDA guidelines and others. Daily selections include a salad bar, select over serve practices, a daily vegetarian option, and a free breakfast available to all students. This approach has served as a model to local, national, and international visitors. Our school Chef, Robert Rusan was a national School Nutrition Hero honored by the SNA in Washington D.C. in 2015. In addition, our school food service program was highlighted in a presentation at the National Green Schools National Conference in 2015. In an effort to make sure every student starts off the day with a healthy breakfast, every student in the middle school is provided a free breakfast.

**9. Healthy Foods** – Does your school incorporate fresh, local and/or organic produce a Farm to School program, a school garden or some other source into the cafeteria, or a class cooking lesson? ( x ) Yes ( ) No

Maplewood Richmond Heights has been a regional leader in Farm to School since 2008. This program incorporates fresh, local, and organic produce from local farms and vendors into the cafeteria. Our middle school garden produces 700 pounds of food annually to be used in the cafeteria and Seed to Table class lessons.

All classes at MRHMS have access to a commercial grade kitchen for food integration. One example that incorporates school curriculum would be our Spanish class using the kitchen to introduce authentic Mexican cuisine while using produce and herbs from our school garden.

**10. Fitness** – How many minutes a week are spent on supervised P.E., and what % of that takes place outdoors?

minutes P.E.: 285 per week	% outdoor P.E.: 60 %
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Fortunately, each student at MRH Middle School gets to take PE five days a week. In addition, we have a goal that each student must be active doing moderate to intense activities during at least 50% of the class time. We use our outdoor PE curriculum to provide a variety of outdoor activities for the students to participate in. Some of these units include aquatics and a water safety unit (outdoor pool), football, soccer, tennis, personal fitness training, skiing and gardening as a lifetime fitness skill. One of our PE teachers is already tree climbing certified and our second PE teacher is scheduled for training. One of our PE teachers is also certified for the archery in schools program.

**11. Outdoor Safety** – Does your school have programs to raise awareness of safe sun exposure (e.g. EPA SunWise), safe outdoor air quality (e.g. AirNow AQ Flag), etc.  Yes  No

We do not have a specific program, but sun exposure and other environmental factors that could hinder the health and wellness of our students during expeditions away from campus are addressed during advisory classes. During our expedition to Ocean Springs, Mississippi and the Gulf Coast Sea Laboratory, students are prepped for wearing appropriate clothing and sunscreen.

**12. Outdoor Activity** – Does your school provide opportunities for outdoor exercise and recreation separate from P.E.?  Yes  No

MRHMS School as Expedition provides numerous opportunities for students to be in the outdoors to make curricular connections or encourage lifelong fitness. Students participate in a tree climbing program with one of three teachers that are certified in tree climbing for physics and biology units. Another aspect of our physics unit focuses on students attending Steinberg Ice Skating Rink to study Newton's Laws on a near frictionless environment. Students are encouraged to participate in local walking expeditions to reduce their carbon footprint. In addition, our school schedule allows time for students to participate in daily energy release on the school athletic fields immediately following lunch.

### COORDINATED SCHOOL HEALTH PROGRAM

**13. Health Education** – Is education about exercise, nutrition and safety integrated into classroom assignments and assessed?  Yes  No

Through our PE/ Health class, each student attends PE for fifty minutes each day and is required to participate in a daily fitness activity that usually lasts for 10-15 minutes. We fitness test each student once a quarter and provide individualized support for those students whose overall fitness level is below normal. During the nutrition unit, students compile a self-reflection of calories and nutrients consumed. We exceed state minutes for PE and Health by 25% by providing daily physical education classes.

MRHMS is also involved with a Meet with a Doctor program, an innovative program designed with Saint Louis University School of Medicine. Students meet with medical students to discuss patient rights as they grow older. During this time students meet one on one with a medical student to understand their rights in asking their physician questions regarding their health and nutrition.

The MRHMS Garden Integrationist collaboratively teaches a unit on nutrition that includes trips to local food markets.

**14. Health Services** – Does your school have a school nurse or health center to provide first aid, emergency care, assessment and planning management for chronic conditions like asthma and management of health and emotional stressors for students and staff?  Yes  No

Annual staff trainings are held with the school nurse on delivering emergency first aid, EipPens, and asthma medications. In addition, MRHMS has one teacher from each grade level and the building principal certified in Wilderness First Aid. Medical backpacks accompany every expedition, with general first aid equipment and specific medications or allergy treatments for the individual students attending each trip. Also, MRHMS has a Youth in Need counselor on staff for intervention and student wellness.

**15. Mental Health** - Does your school take steps to support student mental health and through anti-bullying programs, peer counseling, etc.? (  ) **Yes** (  ) **No** school climate

Restorative Practices- MRHMS was the host for the first Character Plus Restorative Practices Academy. MRHMS focuses on the repair of relationships during harmful situations such as bullying and mistreatment.

Partnership with STL County Children's Service Fund:

- One full-time therapist on staff from Youth In Need Inc.
- Safe Connections counseling services available on-site to students who have experienced trauma.
- Preferred Health counseling services available on-site to students who struggle with substance abuse.

Blue Devil Etiquette Services - A replacement for traditional In School Suspension that focuses on repairing harm instead of punitive practice.

Team building exercises in and out of class for staff and students.

Critical friends program where each teacher is responsible for building a healthy trusting relationship with 10-15 students.

**16. Employee Wellness** – Does your school provide programs to assist employees with fitness, nutrition, stress management, avoidance of injury and environmental hazards and decreased tobacco use? (  ) **Yes** (  ) **No**

- Trust Wellness Campaign through our insurance provider
- Free flu vaccine for all staff
- Biometric screenings for all staff
- Smoking cessation programs
- Weight loss and healthy eating program (Healthy Living)
- Exercise challenges (walking programs)

**17. Community** - Does your school have partnerships in the community to help support school initiatives, to connect the classroom with real-life examples, and to provide support for health-related activities? (  ) **Yes** (  ) **No**

- MRH Wellness Committee includes community health professionals, food service staff, counselors, nurses, faculty, and parents. Its role is to assess, evaluate, and communicate policies, procedures, and long-range goals for health in eight areas: nutrition, physical education, health education, safe environments, mental health services, student health services, health promotion for employees, and community involvement.
- St. Louis University Meet with a Doctor program: 8th grade students meet individually with medical residents.
- PE/Health classes take a food systems expedition to compare historic Soulard Market, Whole Foods Market, and City Greens Market as healthy local food sources.
- Middle school students collaborate with our Early Childhood Center to offer a farmers market to the community.

**18. Family** – Does your school take steps to make families of all types welcome and to actively engage them in ways to improve health outcomes? (  ) **Yes** (  ) **No**

MRHMS begins to engage incoming families in the spring of the previous year by adding them to a weekly eblast and then providing each incoming student an opportunity for a home visit. MRHMS has had parents serve as stewards to our gardens and our chickens during breaks. In addition, MRHMS has hosted family nights with an emphasis on bringing the entire family and learning about our sustainability practices. The result has been new backyard gardens and urban chickens being implemented in the homes of our students. MRHMS has continued to support these families by providing seeds and incubating chicken eggs for adoption.

## OVERALL HEALTH IMPACT

**19. Health Summary** - Summarize your school's top accomplishments in environmental health, nutrition and fitness, and coordinated school health. Be sure to include any innovative efforts or efforts not included already in this section.

The MRH School District received a grant from the Missouri Department of Health and Senior Services to complete the CDC School Health Index (SHI). We received a full day of training in April 2016 on utilizing this assessment tool, and created four ad hoc working committees that would impact the middle school in the following eight areas: nutrition, physical education, health education, safe environments, mental health services, student health services, health promotion for employees, and community involvement. Once we completed the assessment, we then used the SHI tool to identify priority areas and develop specific action plans. The (4) actions specific to the middle school that were adopted by the Wellness Committee are as follows:

- Updating suicide prevention protocols
- Train all teaching staff and administrators on suicide prevention/intervention protocols/best practice
- Implement an electronic health record system for our health/school nurse offices
- Create a comprehensive professional development program for nutrition services staff

In addition, The MRH Weekends on Wheels (WOW) Pantry delivers food to families in need in the district. WOW, a 501c3, is a district initiative supported by the middle school that provides meals for families in need.

## Pillar 3: Effective Environmental and Sustainability Education

### CURRICULUM AND ASSESSMENT

**1. Literacy Requirement** - Does your school have an environmental or sustainability literacy requirement?       Yes    No

One of our four cornerstones at MRHMS is Stewardship. All students learn about and practice becoming stewards of their environment, their community and their school. There are many sustainability requirements woven into the middle school curriculum from the Cycles of Matter unit in science to the World Problems unit in communication arts. This concept is one of the lenses we use for all of our school activities and interactions. In addition, most students have an opportunity to take a semester long problem-based exploratory class on sustainability.

**2. Lessons** - To what extent are environmental and sustainability concepts integrated into the curriculum in each subject and each grade? In the table below, list each grade taught in your school. Then list at least one environmental and/or sustainability curriculum or lesson used in all classes in that grade and the specific subject standards covered

Grade	Curriculum or Lesson	Subjects
7	History of Sustainability and Ethnobotany with George Washington Carver Global Issues Independent Research project	ELA
7	Pollinator study - Scientific method Atmospheric science and climate change - Weather Soil food web - Ecosystems	SCI
7	Native American agriculture/native plants	SS
7	geometry--garden bed area and compost bin volume	MATH
8	Seed Harvesting and Saving Community Gardening with Seedfolks	ELA
8	Watershed mapping - Hydrosphere Water quality testing - Quantifiable data Soil formation and quality - Nutrient cycles Carbon cycle modeling Environmental effects on germination - Cellular reproduction Biospheres - Closed ecosystem study Renewable energy production (biofuels) - Chemical reactions	SCI
8	Economics/history of cotton	SS
8	Calculating Carbon sequestration in Oscar the Oak (Heritage tree on campus)	Math
7/8	Alternative Lifestyles - Individual sustainability choices Fish Banks - Regulating for sustainable harvest Invasive Species study - Why, how and what to do about it Bear reintroduction and tracking study	Sustainability

	Green Schools Quest project (aquaponics)	
7/8	Nutrition Understanding Food Systems	Health
7/8	Instruments from recycled materials	Music
7/8	Created public seed library	E4
7/8	Andy Goldsworthy natural sculptures	Art

**3. Assessments** - To what extent are environmental and sustainability concepts integrated into assessments in each subject and each grade? In the table below, list each grade taught in your school. Then list at least one environmental and/or sustainability curriculum or lesson used in all classes in that grade.

Grade	Curriculum or Lesson Assessed	Assessment Tool
7 ELA	History of Sustainability and Ethnobotany with George Washington Carver Global Issues Independent Research project	Written responses Essay; infographic
7 SCI	Pollinator study Soil food web	Conduct and present a data study using pollinator data Create a food web game using the fauna of the soil food web
7 SS	Native American agriculture/native plants	Written response
7 MATH	geometry--garden bed area and compost bin volume	diagram and show calculations
8 ELA	Seed Harvesting and Saving Community Gardening with Seedfolks	Technical writing project Creative writing
8 SCI	Watershed history mapping - Hydrosphere Water quality testing - Quantifiable data Water Use monitoring Soil formation and quality - Nutrient cycles Environmental effects on germination - Cellular reproduction Carbon sequestration study - Carbon cycle Biospheres - Ecosystems Renewable energy production (biofuels) - Chemical reactions	Map, data comparison, and written analysis Conclusion comparing water quality between 2 sites Analysis of proposed conservation measure Diagram of soil profile and identify components in each level Lab report on the effect of cellular radiation on seed germination Calculation of carbon storage per year for a tree and a written explanation for how the carbon is sequestered Change over time graphs of biotic variables in biosphere. Measure the amount of calories in an unknown biofuel

**4. STEM** - To what extent are the environment and sustainability used as a context for learning STEM (Science, Technology, Engineering and Math) thinking skills and content knowledge? In the table below, list each grade taught in your school. Then list at least one environmental and/or sustainability curriculum or lesson used in all classes in that grade.

Grade	Curriculum or Lesson	STEM Standard
7 SCI	Pollinator study - Students observe and collect data on pollinator/plant interactions and use years of study data to address questions of interrelationships	4.A Organisms are interdependent with one another and with their environment
7 SCI	Soil Food Web - Students dissect different soils and identify the trophic levels of organisms	4.2.A As energy flows through the ecosystem, all organisms capture a portion of that energy and transform it to a form they can use
7 SCI	Energy Transformation Project - Students design and build machines to transfer energy from one renewable source to a usable form	1.2.F Energy can be transferred within a system as the total amount of energy remains constant (i.e., Law of Conservation of Energy)
7 SCI	Ecology/adventure overnight - students compare abiotic variables between multiple sites in a forest	4.1.D The diversity of species within an ecosystem is affected by changes in the environment, which can be caused by other organisms or outside processes
8 SCI	Water quality testing - Students compare the water quality between several different natural aquatic ecosystems.	5.3.A Earth's materials are limited natural resources affected by human activity
8 SCI	Carbon sequestration - Calculate the amount of carbon stored by trees and plants.	3.2.B Photosynthesis and cellular respiration are complementary processes necessary to the survival of most organisms on Earth
8 SCI	Water use log and water conservation - students	5.3.A Earth's materials are limited natural resources

	collect and analyze their personal water use and use model to determine the effects of conservation measures	affected by human activity
8 SCI	Watershed history study - students compare how land use in watershed has changed over time and how these changes may positively or negatively impact water quality	5.2.A The Earth's materials and surface features are changed through a variety of external processes

**5. Green Tech/Careers** - To what extent are the environment and sustainability used as a context for learning green technologies and career pathways? In the table below, list each grade taught in your school. Then list at least one environmental and/or sustainability curriculum or lesson used in all classes in that grade. You can use the same list as above. In the Career Pathway cell, put the technology or career pathway addressed

Grade	Curriculum or Lesson	Green Technology/Career Pathway
7	Riverlands Audubon Sanctuary	Wildlife management - US Fish and Wildlife employees, Army Corps of Engineers, and others talk with students about careers in wildlife management
7	Tree physics	Arboriculture - Students learn some of the fundamentals of working in trees and about different tree related jobs
7	Pollinator Study / bee project	Apiculture / agriculture - students learn about honey production and marketing
7	Tremont Institute	Students meet teacher naturalists and interact with park rangers.
8	Washington University School of Engineering	Environmental engineering - All 8th graders visited several different engineering labs that worked on sustainability issues.
8	Wastewater treatment plant	Wastewater management - St. Louis City Water guides show students their job and explain the path to a career in wastewater management
8	Gulf Coast Sea Laboratory	Marine Science - All students learn about marine science and pathways to careers in marine biology and oceanography
8	Fish sampling lab	Fisheries - Students learn about fish sampling from the MO Department of Conservation staff

**6. A.P. Environmental Science** - For schools serving grades 9-12, do you provide an A.P. Environmental Science course? ( ) Yes ( ) No (x) NA

Provide the percentage of last year's eligible graduates who completed the course during their high school career	Percentage scoring 3 or above:
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## PROFESSIONAL DEVELOPMENT

**7. Certification** - For each certification listed below, provide the number of teachers in each grade who are certified and the year certified. Add additional rows as needed.

Certification	Grade (# Teachers) Year; Grade (# Teachers) Year:...
Tremont Co Teaching Certification	8th Grade - 3 teachers certified in 2015
Tremont Co Teaching Certification	7th Grade - 1 teacher certified in 2015, 1 teacher in 2014, 2 certified in 2016.
Tremont Co Teaching Certification	Technology Instructor (2016), Instructional Coach (2014)
Science in a Tree Certification	1 - 7th grade (2016), 1 - 8th Grade (2015), 1 - PE (2016)
Sustainability Education Concepts and Teaching Methods (GEF)	7/8th grade - 2 teaches certified in 2012

**8. Workshops Attended** - In the table below, list workshops in which teachers participated in the last three years. Include the

number of teachers, their grades and the year of participation. Add rows as needed. Categorize the workshops using the list provided in the directions. Webinars and online course will also count.

Workshops (Category 1, 2, or 3)	Grade (# Teachers) Year; Grade (# Teachers) Year:...
Sustainability Institute for Educators	7/8 1 staff member 2016
Forest Park Voyagers	7/8 1 staff member 2014
National Green Schools Conference 2015	1 7/8th teacher, Principal, Food Service Director, and Middle School Garden Integration Specialist

**9. Workshops and Lessons Provided-** In the table below, for the last three years, list workshops (title and event) given by a teacher or a lesson which they published in media widely available to the public. For workshops provide the title, venue and estimated number of attendees. For lessons provide the title and a link.

Workshops or Lessons	# Attendees
Grow MO seed library workshop for public at Maplewood Public Library , E4 students and teacher, garden integration specialist, spring 2015	20
Garden Curriculum Integration for teachers, Gateway Greening Bell Garden, July 2016	12
Garden Curriculum Integration for teachers, Education Plus Best Practice Conference for Elective Teachers, November 2015	6
Ensuring a Healthy Sustainable Future, National Green Schools Conference 2015	75
USDA Health and Farm to School Summit, MRH, 2015	25
USGBC Gateway Chapter's Green Schools Quest kickoff summit, 2013- Hosted at MRHMS	100
2016 Teacher Escape- Great Smoky Mountain Institute at Tremont - Implementing sustainable practices into learning.	50

## OUTDOOR LEARNING EXPERIENCES

**10. Outdoor Learning -** For each grade briefly describe a meaningful outdoor experience and the subject standards to which it connects.

Grade	Outdoor Experience (Subject Standard)
7	Great Smoky Mountains Institute at Tremont, TN. All 7th grade students engage in a week of activities connected to physics, social studies, creative writing. Activities include ethnobotany, salamander monitoring, and geology.
7	Tree climbing - Students use the tree to investigate concepts of gravity, force and motion, and simple machines
7	Garden integration: pollinator study. Students collect data each fall on pollinators visiting various plant species in the garden as an introduction to scientific method. Through this lesson, they study long term changes in pollinator populations, relationships between plant and pollinator species, and the effect of abiotic variables on pollination activities.
7	All class overnight- students conduct ecosystem study of abiotic variables including aspect, light, moisture, and population
7	Riverlands - scientific method- students design and implement a simple ecological investigation.
8	Tree climbing - Students study the carbon cycle through a project measuring the carbon sequestration of our campus oak tree.
8	Garden integration: seed-saving. Students save seeds from our gardens and design seed packets to share them with the public. Students practice technical and persuasive writing skills.
8	Community garden expedition: Students visit a large community garden as they read the novel <i>Seed Folks</i> , composing their own chapter for narrative and creative writing project.
8	Canoeing - Students learn about stream order and watersheds as they canoe through 3 different streams
8	Riverlands - Students learn about wetlands and aquatic ecosystems through guided hikes and lessons on adaptations of aquatic organisms.
8	Gulf Coast Laboratory in Ocean Springs, MS. All 8th grade students engage in a week long expedition of multidiscipline activities. Activities include using dichotomous keys for ocean life, shark fishing, and shark dissection.

**11. Context & Community -** Describe how outdoor learning is used to teach an array of subjects in context, engage the broader

community, and develop civic skills.

Context: The 8th grade seed-saving unit has grown into a robust interdisciplinary experience. Art integration teaches technical botanical drawings. Communication arts classes researches and writes plant descriptions and growing information for the seed packets. Science classes tested household radiation by taping seeds to cell phones and conducting germination tests. Math classes enumerated seeds produced by each plant and extrapolated seed production for future generations as an example of exponential growth and scientific notation. Social studies classes run a farmer's market where seeds are sold as an economics lesson. E4 (gifted program) class cataloged seeds, researched plant families and started a seed library.

Community: Seed packets of vegetable, flower, and native plant seeds saved by the entire 8th grade are sold to the public at the spring farmer's market. This event is held in conjunction with the Early Childhood Center and also supplies seeds for free to the Grow MO Seed Library at the Maplewood Public Library. The E4 class made a presentation to the public at the library on its use and how to grow the plants.

## COMMUNITY ENGAGEMENT

**12. Community Engagement** - Describe students' civic/community engagement projects integrating environment and sustainability topics.

Service learning projects:

- Trail building at Riverlands Migratory Bird Sanctuary
- Invasive bush honeysuckle removal along Deer Creek.

Green Schools Quest projects:

- increasing public awareness of non-polluting modes of transportation (hosted a bike race)
- Sustainability students teaching first graders about the importance of pollinator habitat and rain gardens for runoff mitigation.

"Grow MO" Seed Library: gifted program students created a seed library for flower, vegetable, and native plant seeds housed at the municipal public library. Our library is updated yearly with seeds saved from school gardens, and this information is presented through a public workshop on its use. The outcome has been an established seed library located in our municipal library visited by community members.

School-wide Service day helping clean up local parks, assisting senior citizens in maintaining their gardens and yards, and assisting a local community garden in preparation for planting.

**13. Partnerships** - Describe your partnerships to help your school and other schools achieve in the 3 Pillars. Include both the scope (the size and diversity of audiences reached) and impact (what kind of change and how much was there) of these partnerships.

- Earthdance Farms, an organic farm school in Ferguson, Missouri, tours our school with their farm apprentices and we visit their farm for an expedition.
- Webster University students in the Education for Global Sustainability Master's degree program visit our school and use it as a case study. We have hosted the Experiential Education Exchange's teacher workshop.
- MRHMS has supported several schools in their quest for green initiatives. MRHMS has provided seeds harvested from the MRH gardens to Normandy Middle School and Hancock Place Elementary. Melissa Breed Parks, our Garden Integration Specialist, has consulted with multiple schools throughout Saint Louis on sustainability practices. Michael Dittrich, our building principal, has served as a mentor and consultant to Hancock Place Elementary on establishing and growing their classroom gardening program. This mentorship has helped provide gardening lessons to over 800 students at Hancock Place Elementary.

## OVERALL EDUCATION IMPACT

**14. Education Summary** – Summarize your school's top accomplishments in curriculum, professional development, outdoor learning, and community engagement. Be sure to include any innovative efforts or efforts not included already in this section.

One of the major accomplishments of MRHMS is knowing that we are educating the whole child and providing them opportunities to understand their impact on their surrounding environment. MRHMS has worked hard and intentionally at developing a robust curriculum that challenges students to think critically about the decisions they make and how it affects the world around them. The staff consistently imbeds targeted learning units and creates unique expeditionary opportunities to provide learning centered around our cornerstone of stewardship. Two of our core centerpiece activities are the development and refinement of two culminating expeditions to Tremont, Tennessee and Ocean Springs, MS. These expeditions have a central focus routed in each individual student's participation in deepening their understanding of the natural world and collaboratively working to better understand sustainable practices surrounding water quality. Students also key in on the impact human decisions and contact have on the environment and its natural inhabitants.

During the Tremont experience students have a food immersion experience of eating pulled pork, beans, cornbread, etc. for an Appalachian Mountain Feast. Right after we have a local banjo player come in and tell the history of instruments and music in the Smoky Mountains. This is followed by the Lost Mill Strong Band which comes in and plays the banjo and upright bass while telling stories of the great people that settled the area in and around the Smoky Mountains. On the third night we have a local storyteller come and tell stories around the campfire in a replica native american tribal structure. The students listen to stories of the first people to visit the Smoky Mountain and some fictional stories that get the students on the edge of the bench.

During the Ocean Springs experience students celebrate with two immersion meals. The chef at the center says the gulf communities are known for two types of food, soul food and seafood. During their time here students will experience a soul food dinner, a seafood buffet (including fresh catch from the students), and other foods integrated into other meals throughout the week. For example, grits as an option for breakfast, gumbo for dinner, and shark.

MRHMS has devoted resources to developing the professionals at MRHMS. Custodians are trained using Green Seal GS-37 products. Our staff has been asked or selected to present at numerous green initiative conferences. The highlight was presenting to a standing room only crowd at the National Green Schools Conference in Virginia Beach, VA. This resulted in Jennifer Seydel, Executive Director of the Green Schools Network, using MRHMS as an example of an exemplary school in her 2016 Ted Talk on Green, Healthy, Sustainable Schools.

Outdoor learning has a large impact on engaging students in learning standards and high interest activities. Our school was one of the first in the area to work with Adventure Tree to implement science in a tree. As part of our science in a tree program, we were featured in an NPR segment in 2016 (<https://goo.gl/amR5hb>) for teaching to the middle school brain. We currently have three teachers certified in in tree climbing and have another scheduled for future training.

We have hosted several community engagement events where community members and families have been invited for an evening in our gardens and other sustainable initiative areas. We have also provided opportunities for students and families to become stewards for our chickens and gardens over extended holiday breaks. The result has been students beginning their own gardens at home and families starting their own flock of backyard chickens.

Our innovative efforts continue to challenge our students and the impact is visible for years after they leave the middle school. We currently have high school students promoted from the MRHMS experience studying indoor air quality for our shared middle school and high school building. These students are engaging in experiments in the aquaponics laboratory that was created by the middle school, and we have high school garden interns that were part of the middle school Urban Farmers Club. MRHMS looks forward to continuing their leadership in green initiatives and challenging our students to understand the decisions they make today can have both immediate and long lasting impact on our community and the world around us.

## MEDIA

**15. Media** - Submit up to 4 photos (with appropriate signed permissions) or up to 4 minutes of video content to illustrate your schools' efforts. Include a list with a brief description below for each item

**1. Pollination:** Scientists in 7th grade have been hard at work collecting data for a longitudinal pollinator study. Before they could begin the data collection process, students needed to first be able to identify the various plants in the middle school garden, as well as typical pollinators that they might encounter. With the help of Mrs. Breed Parks, the students explored the garden's flowering plants and learned about inflorescence, or the arrangement of flowers on the stem or twig of a plant. Through pictures and videos, students also learned how to distinguish pollinators based on different physical characteristics. Students collected data in our school gardens and rain garden to view honey bees, green metallic bees, moths, beetles, and butterflies to name a few.

**2. Water Quality:** At Riverlands, students explored sampling and monitoring protocols. During one rotation, D-nets were used to gather aquatic life forms from the water. Students were then able to analyze the quality of the water based on the types of organisms that they observed. As part of the second rotation, students used a seine net to gather organisms from the water in order to study adaptations and diversity.

**3. Tree Climbing:** As part of our science in a tree program, we were featured in an NPR segment in 2016 (<https://goo.gl/amR5hb>) for teaching to the middle school brain. We currently have three teachers certified in tree climbing and have another scheduled for future training.

**4. G.W. Carver:** Seventh graders participate in a unit on research and sustainability. As an introduction to this unit the students worked with Mrs. Breed-Parks to learn about George Washington Carver. Students began by reading the biography, *George Washington Carver*, by Tonya Bolden. Carver's reputation is based on his research into and promotion of crops that could serve as an alternative to cotton (which depletes the soil), such as peanuts, soybeans, and sweet potatoes, which also aided nutrition for farm families. Carver was a strong advocate for sustainability, developing hundreds of products from everyday plants including cosmetics, dyes, paints, and gasoline.

After learning about Carver's life, students discussed the unique way that peanuts grow. Peanuts are typically planted after the last frost, but students got a head start to the season by starting indoors. Their plants should sprout quickly, and in a few weeks students will transplant them outside.

A final activity for the week included an expedition to United Provisions, an international grocery store located in the Delmar Loop. At the market, students completed a scavenger hunt where they found food from another culture. They had to identify what country the food came from, the main ingredients, and what it reminded them of from their own culture. Students were also able to sample foods from other cultures and discussed the importance of those foods to the culture. Experiences at the market were connected with the students' work on sustainability and George Washington Carver as they talked about the history of agriculture in the United States and then compared that to other countries.