

Green Ribbon

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

XX Public Charter Title I XX Magnet Private Independent Rural

Name of Principal: Ms. Rebecca Pellerin

Official School Name: Moriarty Environmental Sciences Magnet School

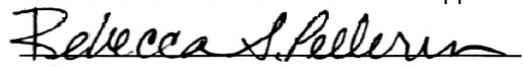
Official School Name Mailing Address: 20 Lawler Lane, Norwich, CT 06360

County: New London State School Code Number *: 1042011

Telephone: 860.823.4206 Fax: 860.823.4246

Web site/URL: <http://www.norwichpublicschools.org/page.cfm?p=3010> E-mail: rpellerin@norwichpublicschools.org

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



Date: 1/25/17

(Principal's Signature)

Name of Superintendent: Ms. Abby I Dolliver

District Name: Norwich Public Schools

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



Date: 1/26/17

(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: Connecticut State Department of Education

Name of Nominating Authority: Dr. Dianna Wentzell, Commissioner

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



Date: 1/27/17

(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 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 and reference the OMB Control Number 1860-0509. Note: Please do not return the completed ED-Green Ribbon Schools application to this address.

SUMMARY

Moriarty Environmental Sciences Magnet School is a K-5 intra-district magnet public school located in Norwich, a small city in eastern Connecticut. The school serves 418 students. Our students are remarkably diverse, due to the proximity of the two largest casinos in New England. We are comprised of over thirteen different cultures and over seven different languages. We are 64 % minority students, 17% English language learners or non-English primary language at home. Our school population is 71 % eligible for free and reduced lunch.

Moriarty Environmental Sciences Magnet School seeks to create in our students passionate environmental stewards and collaborative problem solvers who understand the importance of sustainability and technology. As compassionate and culturally competent community members, students take action to impact local and global issues in a powerful way. We have certainly made impressive progress in this over the last three years. Our highlights include: curriculum changes, health and wellness practices, and the addition of inspiring outdoor classroom spaces.



Figure 1 Moriarty second graders visit a greenhouse at a local organic farm as part of their Nutrition and Plants unit.

One of our greatest accomplishments has been the creation and inclusion of our outdoor learning spaces into the curriculum. These include: a community garden, natural wildlife habitat, local bodies of water, butterfly garden, sidewalk gardens to create more permeable surfaces, and an outdoor classroom pavilion. The building of our environmental education curriculum was a process that has yielded great results. When you walk onto our school grounds you see engaged students seeking answers to their questions through cross-curricular inquiry units.

For example, fifth grade studies “What is in our water and how did it get there?” Through this unit students learn to test water for dissolved oxygen, pH, turbidity, biodiversity, temperature and salinity. They



Figure 2 Moriarty fifth graders investigating biodiversity in Mohegan Park Pond as part of their "What is in our Water?" unit.

apply these skills to local bodies of water and determine the water quality of each location. While engaged in this unit, they read about water issues, sewage treatment plants, and methods to clean water. In the spring, they design water filters using the engineering design process and develop alternative solutions to “clean up our water”.

Along with our district’s active energy management of our school, we have an afterschool club that worked with Norwich Public Utilities to do an energy audit. This group used the results to

make suggestions to reduce our energy use, including removing old TV’s that were being used as clocks, set back hot water temperatures on thermostats, remove a refrigerator from staff room, and turn off Smart Boards and projectors when not in use. Over the past year they also did a schoolyard survey and found that our landscape is predominately impermeable surfaces. They investigated various surfaces, designed and created a rain garden for the entrance our building replacing slabs of concrete with beautiful.

“Making mindful choices for our environment” is only one part of our tagline. Making mindful choices for ourselves is demonstrated through our health and wellness work. Our district has been recognized for successfully supporting farm to school practices. Moriarty’s composting and recycling program was also featured in the local news in 2016. Student work in composting and recycling was shared in the article as an example for other schools, demonstrating that recycling can be built into the lunch program, with little to no cost, while teaching students about sustainability.

Community partners are an integral part of our work. We work closely with Food Corps, Norwich Public Schools Food Service, and FRESH New London to ensure we both teach about proper nutrition and provide healthy food and drink options to our students. The district has a processing kitchen and is able to source about 50% of the school food with locally farmed fruits, vegetables and dairy.

First grade is doing a year-long inquiry on “My Healthy Self” and second grade is learning about “Eating locally, seasonally and farm to table”. Both grades learn about nutrition, growing food, and preparing healthy meals. All fourth and fifth graders take part in “Health Lab,” a curriculum written in collaboration with the local hospital to teach about nutrition and body systems. Students explore fats, proteins, carbohydrates, and the digestive system, through interactive hands-on labs. Moriarty participates in USDA Healthier US School

Challenge and is working towards gold level. Lastly, classroom celebrations are mostly non-food related. If food accompanies the celebration it must meet our “Healthy Requirements,” including food brought in by parents. For example, instead of cupcakes, a birthday student will get to pick to be line leader, add an extra 5 min of recess for the class, pick a special lunch seat, or eat lunch with the teacher. Our students spend about 30% of their day outdoors for recess, gym and the outdoor classroom.

Last spring, we were recognized as a *Magnet School of Excellence* by *Magnet Schools of America* for our theme-based programming and work as a magnet school. In fall of 2016, we were certified as a bronze level Ecoschool based on our schoolyard habitat.

Green and Healthy Outlook

As a member of the CT Green LEAF schools, the Moriarty staff has actively participated in workshops, professional development, conferences and program trainings. Our staff members have been trained in Project WET, Project WILD, Schoolyard Habitats, School Gardens, Monarch Recovery, statewide environmental training, and Project Learning Tree. As a part of the CT Green LEAF schools, not only do we actively participate in trainings but we evaluate our progress as a “green school” by using the CT Green LEAF self-assessment tool. Each year our Green Team uses the assessment tool to identify areas of strength and those in need of focus or improvement. Together we create action plans to address these focus areas capitalizing on our strengths.

Moriarty’s Green Team is made up of teachers, paraprofessionals, fourth and fifth grade students, custodial staff, magnet theme coach, principal, and our Food Corps members. The Green Team has worked together using the self-assessment tool to oversee and facilitate creating outdoor learning spaces, community gardens, our air quality flag program, composting bins, recycling and composting program for breakfast and lunch, educating about the correct use of “green” cleaning products, and conducting energy audits, schoolyard surveys and more. In addition, Moriarty has a Magnet Team that focuses on sustaining the environmental science theme through curriculum, partnerships and grants.

As we transitioned from a traditional public elementary school to a magnet school in 2013, it was imperative that we integrate our theme into all we do, and develop standards to evaluate progress of students’ environmental literacy. Hence, we used NAAEE Guidelines for Excellence to drive our Magnet Standards. In fact, each curricular unit is aligned to our Magnet Standards as well as Next Generation Science Standards and Common Core State Standards.

Moriarty Environmental Sciences Magnet Standards

Through the implementation of these standards it is our belief that students will develop a sense of wonderment, ownership, and stewardship about the local and global environment.

Standard 1: Students will question, analyze and interpret information through the curricular projects as Scientists, Engineers, Mathematicians, Readers and Writers utilizing technology and engineering practices.

Standard 2: Students will demonstrate knowledge of Environmental Processes and Systems by researching an environmental topic and producing an opinion piece.

Standard 3: Students will develop skills for understanding and addressing environmental issues as demonstrated through their local and/or global impact projects and opinion pieces.

Standard 4: Students will demonstrate personal and civic responsibility of environmental issues by creating and participating in a local and/or global impact project.

Environmental Literacy is not only built into the school day through curriculum; it permeates our whole school culture. Lunch composting and recycling is consistently being evaluated for effectiveness and efficiency. Students developed the procedures used for recycling breakfast waste. After school clubs work with community partners to focus on environmental topics. Our PTO also organizes environmentally friendly events such as “Earth Day” and “Outdoor Movie Night”.

Community partnerships are essential to creating sustainable cultures of inquiry and environmental literacy in our curriculum. Some of our community partnerships, including: Connecticut Department of Energy and Environmental Protection worked with our students on water quality testing and land pollution and trained teachers in Project WET and Project WILD; New England Science and Sailing works with 5th grade on water pollution, water testing, marine biology waves and wind; CT Audubon Society works with Kindergarten students during their Ornithology unit and with third graders on animal adaptations; Denison Pequotsepos Nature Center works with students on animal adaptations and habitats; Norwich Public Utilities helped the Earth Club complete a school energy audit; Food Corps works with students daily on Farm to Table, gardening and nutrition; local gardening businesses have donated plants, seeds and equipment to help create outdoor learning spaces; and Mystic Aquarium works with our students on marine animals and aquatic life.

Recently we have been recognized with a bronze award from Ecoschools and received certification from Audubon and NWF for our Schoolyard Habitat and Monarch Meadow.

Moriarty has set the stage in many ways for other schools in the area. Staff members have presented at workshops and conferences on schoolyard habitats and school gardens. The Magnet Theme Coach collaboratively wrote and presented a climate change curriculum and the principal presented our Environmental Explorer Program at a Connecticut Best Practices in Sustainability Conference. We have grown to be mentors as other district schools have visited to observe our outdoor learning facilities.

Environmental and Sustainable Literacy

Each year students in kindergarten through fourth grade use inquiry to explore an environmental topic using our magnet standards. Fifth graders walk through this process on their own during their Capstone project. Student projects are evaluated by a rubric and yearly data is collected and analyzed. Each year students have shown growth in mastery of these standards. Our goal for year 3 was that **75% of 5th grade students will demonstrate**



Figure 3 Moriarty students inspired by the outdoors in their "Writing in Nature "

mastery of Magnet Standards by scoring 12 or more points (total possible points were 16) on their capstone projects. This goal was met this year. With a total of 69 students, 54 of them scored 12 or more points on the capstone projects (78%). The goal will increase by 5% of students demonstrating mastery of the standards each year until 100% is reached.

We have built numerous environmental features into our curriculum including: a community garden, natural wildlife habitat, local bodies of water, butterfly garden, sidewalk gardens to create more permeable surfaces, and an outdoor classroom. Below is an overview of 2015-2016 year-long inquiry projects:

Kindergarten- Students became ornithologists and studied the birds in our schoolyard: what they need to survive, what times they are there and how we can make our schoolyard more welcoming for them. They read many books about birds, were visited by the CT Audubon Society, observed birds in our schoolyard and wrote a book about birds. As they observed our schoolyard they realized there is little water for the birds to bathe in and drink. As their impact project, they installed a birdbath in our entrance garden. **First Grade-** Students studied monarchs throughout the year. They learned that they are a dying species and they have very few places to land and rest in their migration process. During their investigation they realized that meadows, a common resting ground for monarchs, actually provide life to many types of animals. This led to inquiry questions about the types of life found in a meadow. They read texts on monarchs and meadows, wrote about meadow animals, observed the life cycle of monarchs and monitored their growth and migration by tagging them and using the online site “Monarch Watch”, and created a mural to represent the abundance of life in a meadow. As their impact project, they designed our very own “Monarch Meadow”. **Second Grade-** Students spent time in our garden learning about plants, nutrition and the benefits of eating seasonally, organically and locally. They observed, investigated and researched a plant or herb of their choice and highlighted its health benefits. They visited a Nature Center to learn about native species, what plants need to grow and survive, and put this information into practice by planting and caring for their own plants and creating an informational booklet or poster. Second graders created a pizza garden, including the plants and herbs they studied, as their impact project. **Third Grade-** Students investigated the question, “Are bees more dangerous to humans or humans to bees?” They were visited by beekeepers, botanists, and researched about bees, and created posters educating our school community on the importance of bees and what we can do to protect them. **Fourth Grade-** Students have used inquiry to investigate climate change and the role humans play. Students design and build their own

weather instruments that they use to collect data and determine climate. They calculate both their own and the school's carbon footprint and design action plans for lessening that footprint. After learning about various ways to address climate change, they design a personal solution. **Fifth Grade-** Students take part in a capstone project. They investigated pollution through digital sources, books, articles, and on a field trip to New England Science and Sailing (NESS). Connecticut Department of Environmental Protection and Energy and NESS visited the school and helped students with hands-on learning projects addressing air, water and land pollution. Students researched one type of pollution in depth, wrote a persuasive piece on it and worked individually or in small groups to create their own impact projects. Some solutions included writing letters to influential people in government, creating and gathering signatures on a petition, labeling storm drains around town, creating and hanging flyers around the community, and making and recording Public Service Announcements and advertisements.



Figure 4 Moriarty fourth graders evaluating properties of materials to determine the best for use as landscape stabilizing beams.

Healthy School Environment

There is strong collaboration between our facilities, food service, transportation and school staff, helping to ensure that we exceed state expectations of healthy school environments. We have “No Idling” signs posted on the outside of our building for buses and parent drop off/pick up. In addition, our buses have emissions-reducing equipment. As a district we do not use pesticides for any reason and at Moriarty we use only compost material for fertilizer in our gardens and outdoor learning spaces. The school nurse teams with our 3rd graders to monitor outdoor air quality using the EPA “Air Quality Flag Program”. All cleaning supplies that are used in district are certified “green” products and we ensure that teachers use only these products. In fact, we have been using “green” products long before it became a Connecticut State law. There is a facilities committee investigating future renovations for our school, including using solar panels for alternative energy and more energy efficient lights and equipment. Our facilities director is an integral part of our school's sustainability initiatives and has attended the “Best Practices in Sustainability Conference” with a team of our staff. Facilities uses EPA's Tools for Schools to help meet and exceed state requirements for indoor environmental quality. Some examples include: changing filters in HVAC systems twice a year, placing carbon monoxide detectors

outside boiler rooms, making sure light fixtures are mercury free; installing smoke detectors in every room and testing for radon every 5 years.

Healthy Nutrition

Moriarty Environmental Science Magnet School’s tagline is “Making mindful choices for ourselves, our environment, and our world”. Hence, nutrition and wellness are of the utmost importance to us. Along with our nutrition lessons, our students have a variety of choices at lunch including hot lunch, cold sandwich or yogurt parfait. If a student has an allergy or food restriction, lunches and breakfasts are prepared individually for that student. Staff and students work alongside Food Corps members to bring the farm-to-table experience to life. Students learn to prepare the garden, plant, care for and harvest fruits and vegetables. The food in our garden is then used for class recipes or in school lunches. First grade is doing a year-long inquiry on “My Healthy Self” and second grade is learning about “Eating locally, seasonally and farm to table”. Both grades learn about nutrition, growing food, and preparing healthy meals. Food Corps also teaches a program called “Sprout Scouts” to students.

Physical Well-Being

Physical well-being is an integral part of students’ and staff’s days at Moriarty. We promote physical activity in many ways including: PE class, movement breaks, staff yoga, staff meditation, brain breaks, ‘Recess Rocks’, and outdoor classroom. Every student this year has 45 minutes of physical education weekly. Our students spend about 30% of their day outdoors for recess, gym and the outdoor classroom. In addition, classroom incentives are often outdoors and physical. Some examples include: extra recess, Fun Friday team



Figure 5 Moriarty first graders study patterns, shadows and sunlight.

building activities, walking around the reservoir, extra movement breaks, and structured games.

Curriculum-wise, students are often outdoors studying our schoolyard habitat, growing food, learning about ecosystems and testing water. In addition, students in grade one are learning about how to care for your body. This includes interviewing a nutritionist, yoga instructor, personal trainer, nurse, dance instructor, and learning about the importance of physical activity.

Energy and Water Conservation

Our curriculum address both energy and water in the upper grades. Energy savings awareness is shared by both students and our facilities staff. Energy efficiency solutions put in place by our Earth Club during our building walkthrough with our utility company were in addition to what the school already does to save energy with lighting occupancy sensors, heating system that was changed from oil to cleaner-burning natural gas, energy efficient lights, and boilers and furnace are serviced every year to make sure they are working efficiently. Earth Club has also cared for our gardens and collected rainwater in harvesting barrels to be used to water plants. Fourth and fifth graders also did a schoolyard survey, and concluded that we have poor run-off with the impervious surfaces in our parking lot and front entrance. Students designed a rain garden that would replace a 10x 12-foot rectangle of concrete to create both a more permeable surface and a more welcoming entrance.



Figure 6 Moriarty first graders planting schoolyard trees.

Norwich is unique in that we have our own public utility company that comes once a month to test our water for lead and other contaminants. This ensures that our school water is healthy and safe to drink. Each year in October we participate in Walk to School Day and every staff member and student meet in a local neighborhood and walk about a half mile together to school. This is to promote physical activity and reducing our carbon footprint.

Green Purchasing and Waste Management

Norwich School District has been proactive around green purchasing for years. They were purchasing recycled paper products and green cleaning products years before it became a Connecticut State Law. As Moriarty transitioned to an environmentally themed school we took many steps to reduce, reuse and recycle more effectively. We estimate, based on student and staff data collection, that about 35% of our solid waste is diverted from the trash. We accomplish this through having recycling bins in every classroom, a recycling and compost program at lunch, kitchen recycling and composting waste, and our breakfast recycling program. Much of our recycling was student driven. Using inquiry, students identified problems and created efficient ways to

reduce, reuse and recycle. For example, third grade found that many students were dumping plastic cereal containers in the trash instead of recycling because they were not sure what to do with leftover cereal or milk. Students identified this problem and created ways to solve it, proposing that we buy strainers for

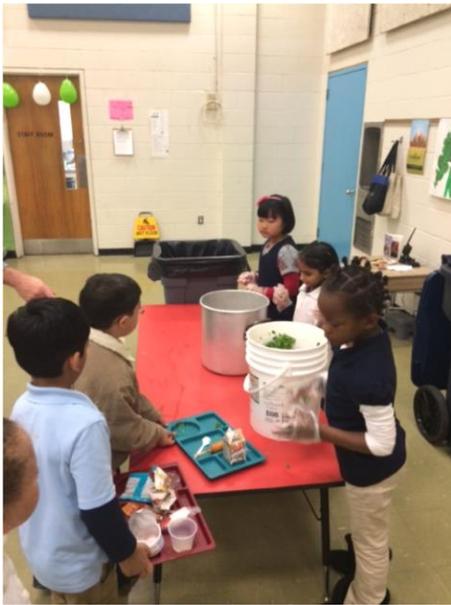


Figure 7 Moriarty students helping peers to compost and recycle lunch waste.

classroom sinks to catch extra cereal as they pour the used milk and cereal through it and a dish bin to put clean plastic cereal bowls in so they can be recycled. This was approved and now our breakfast program recycles 100% of our cereal containers! Third, fourth and fifth graders run our recycling and composting program at lunch and help younger students determine what foods can be composted and recycled. Earth Club members help with compost bins and turning the bins monthly.

Another example of student problem solving was the result of 5th graders losing printing privileges because the district was afraid they would waste paper. In response, students created a process to ensure they did not waste paper and could still be able to print. They were all trained in Google Classroom and were only allowed to print once a teacher had checked their electronic copies and approved printing.

Students also decided to track paper use and chart usage by fifth graders. The combination of Google editing and tracked paper use made them more conscious of how much paper they used. This process has been so successful, that it was passed down to fourth grade.

Our facilities manager and custodians also use waste reduction strategies. Dispensers measure out cleaning supplies to reduce waste, ordering of paper towels, cleaning and kitchen supplies is closely tracked. At Moriarty, we continue to look for further savings. In 2015, a small team visited other local Green Ribbon Schools to look for best practices in reducing lunch waste. Working with our food service manager, we put into practice the best ideas we had seen. These included reducing plastic container use, moving from prepackaged foods to scooping the foods onto student trays, and assessing the use of plastic ware and evaluating if individual sporks were a better choice. We are proud that our food service, facilities director and school staff all work so collaboratively. It has really allowed us to create sustainable changes. Norwich District and Moriarty Magnet School have always complied with all state laws, but we are also proactive, collaborative and in many ways a sustainable model for other schools!