

Name of Award: Hiram M. Chittenden Award for Interpretive Excellence

Name of Nominee: George I. McBroom

Position, Title, Series, and Grade: Natural Resources Specialist, GS-0401-09

Organization, Location, and Mailing Address: CESAM-OP-CA
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Hiram M. Chittenden Award for Interpretive Excellence
Executive Summary
George I. McBroom
Carters Lake

Carters Lake Project is honored to nominate Natural Resources Specialist George I. McBroom for the 2020 Hiram M. Chittenden Award for Interpretive Excellence. Mr. McBroom demonstrates the highest levels of creativity and originality in the execution of the project Interpretation Services and Outreach Program. His efforts to implement cutting edge technology into the Carters Lake Nature Center significantly increases the quality of visitor experience.

Throughout the 2019 season, Mr. McBroom planned and implemented the inaugural Carters Lake Summer Learning Series. This long term event provided environmental education for nearly one thousand Americans and an excellent opportunity for citizens to get outdoors to experience nature. Mr. McBroom developed numerous meaningful relationships with partner organizations and individual professionals in the delivery of this program; these relationships will benefit USACE for years to come.

Mr. McBroom is a pioneer of innovation. His efforts to introduce novel technology into the learning experience significantly expands the effectiveness in delivery of our mission. Initiatives such as augmented reality, virtual reality, and touch panels provides exceptional value to American citizens of all ages and demographics. Mr. McBroom's pursuit and determination to achieve success in these realms provides an extraordinary endorsement of USACE advocacy to STEM fields.

Mr. McBroom's achievements and successes are the definition of excellence. He is a trailblazer in integrating new technology into USACE interpretation; his vision, courage, leadership, and determination are beyond reproach. He is an exceptional employee who provides unprecedented value to visitors, customers, and our employees. Mr. McBroom is highly deserving of receiving the Hiram. M. Chittenden Award for Interpretive Excellence in recognition of his accomplishments.

Creativity and Originality

- ***Carters Lake Summer Learning Series***

For the 2019 Recreation season, Mr. McBroom planned and implemented the first ever Carters Lake Summer Learning Series, which was a series of interpretive learning events that took place over the entire 2019 season. The events consisted of astronomy, meteor viewing, nature photography, historic archive viewing, rocketry, and bird spotting and identification nature hike. Additional events included beekeeping 101, geology learning instruction, pollinator gardening demonstration and instruction, native plant identification, Abby the Archaeobus archaeology and history learning, and a blacksmithing demonstration. The 2019 Summer Learning Series generated 975 interpretive contacts.



Archeology program, part of the 2019 Carters Lake Summer Learning Series. This program was planned and coordinated by George, and delivered by a partnered private sector archeologist.

Mr. McBroom worked with the Carters Lake Park Ranger team to provide programming, and he engaged local organizations, hobby associations, and professional individuals in partnerships to provide these events at the lake. The relationships forged by Mr. McBroom will benefit Carters Lake for years to come. The subjects of the programs were chosen at random, but themed to incorporate aspects of the project or outdoor interests in order to get people to the lake and in the outdoors. Mr. McBroom's secondary program objectives were to focus on small group participation to promote one on one interactions between participants and subject

matter experts. This interactive dynamic increased the effectiveness of the educational focus of the programs.

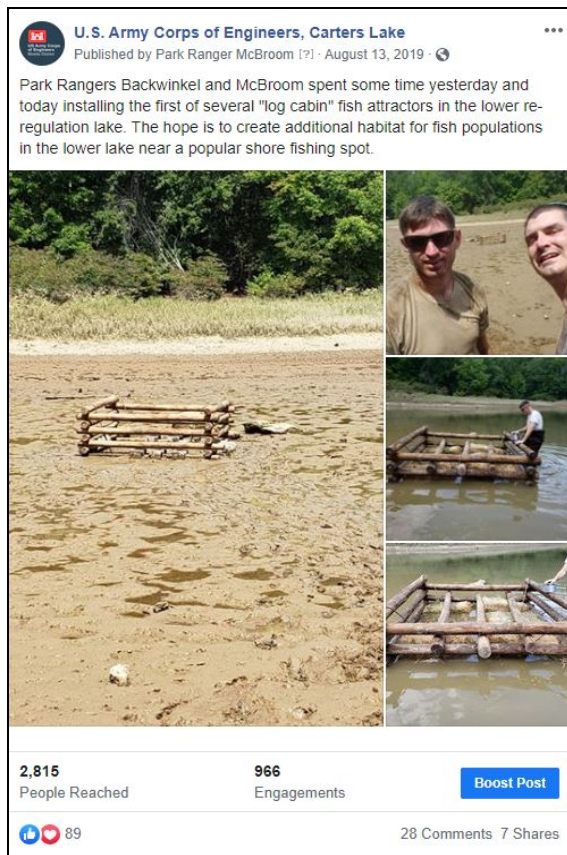
Mr. McBroom's efforts to implement this program are remarkable primarily due to the fact that historic interpretation endeavors at the project concentrated almost solely on water safety and total quantity of water safety contacts. This was a highly successful series of events, especially considering it was the inaugural year of this program. Mr. McBroom is building on these successes in subsequent years to provide relevant and educationally focused interpretation to the public.



Native Plant Identification Program, delivered by partnered Master Gardener organization.

- ***Social Media in Interpretation Services and Outreach Program***

Recognizing that generations today communicate much differently than in the past, Mr. McBroom very effectively incorporated social media into project outreach. Through his oversight, the Carters Lake Facebook page made 132 posts in 2019 that generated 321,895 reaches, 41,996 engagements, 4,626 post reactions, and 2,169 post shares. Each post averaged 2,436 reaches, 318 engagements, 35 reactions, and 16 shares. From the beginning of 2019 to the end of the year, followers of the page nearly doubled from 2,217 to 3,964 followers. These metrics are unbelievably impressive and are reflective of Mr. McBroom's determination to incorporate modern communication mediums into our mission.



Social media posts created by Mr. McBroom. These two posts were seen by 23,200 unique people. The total of 3,713 engagements shows that 3,713 unique people interacted with these posts; these interactions include clicks on links and images, comments, likes, and shares.

Made a Positive Experience for Visitors

The Carters Lake Nature Center provides a plethora of relevant information and interpretation encompassing all USACE missions delivered at Carters Lake. The majority of the displays in the Nature Center have historically been static panels containing images and narratives; they target a small demographic segment of the population. Mr. McBroom has demonstrated leadership and innovation in integrating cutting edge technology into the Carters Lake Nature

Center and the Interpretation Services and Outreach Program that widely expands the target demographic.

- ***Augmented Reality Sandbox***



Carters Lake Nature Center visitor interacting with augmented reality (AR) sandbox.

In 2019, Mr. McBroom launched the augmented reality (AR) sandbox display in the Carters Lake Nature Center. This AR display involves the use of a sandbox with a reactive camera and projector positioned over the top of the box. The camera reads the surface of the sand, sends a signal to the computer, and the computer processes the data to display colors and topography lines on the sand surface. Higher elevations are shown as darker colors progressing to snowcap while lower elevations are shown progressing to a darker blue color indicative of deep water. Users have the ability to simulate rainfall with their hands, and the flow of rainwater follows contours created by the user. This occurs in real time as visitors shape and contour the sand. This technologically immersive display is a combined force of teaching with technology and hands-on manipulation to learn about different geologic features and hydrology. The display provides an example of how topography correlates with environmental factors and demonstrates the effects from point source pollution on the large ecosystems. Mr. McBroom was very inventive in development of this display; it was a DIY built with minimal cost by project volunteers and Park Rangers under his leadership and direction. Mr. McBroom also managed all code programming associated with the camera, projector, and computer system further reducing cost associated with its development.

- ***Virtual Reality Applications***

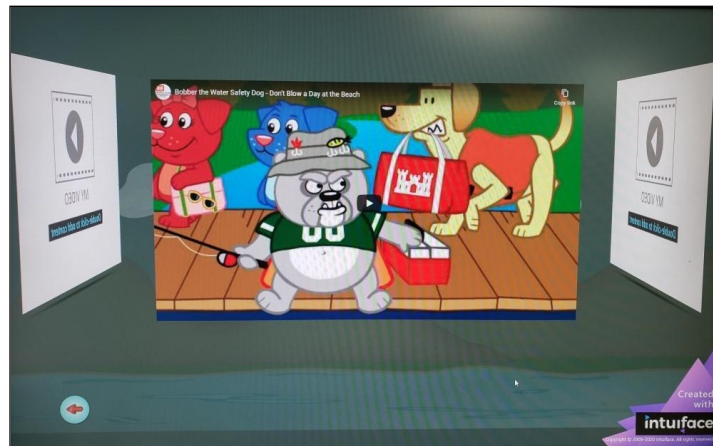
In the last quarter of 2019, Mr. McBroom developed a partnership with Kennesaw State University (KSU), College of Computing and Software Engineering, in Marietta, GA to develop virtual reality (VR) learning opportunities at the Carters Lake Nature Center. This highly beneficial partnership provides VR solutions to the Carters Lake Nature Center that are valued at tens of thousands of dollars per individual application. The partnership provides students at KSU required credit hours towards their major field of study while developing the applications. This partnership promotes important and meaningful collaboration between STEM academic disciplines and public service that provides the public with an opportunity to acquire knowledge about natural resources, the environment, history, and cutting edge technology. Concepts slated for development include VR immersion into food chains, honey bees and pollinators, and Native American culture. The VR applications will be delivered to visitors through VR headsets.

The first VR application, Native American Culture Experience, is currently in development this semester. The anticipated deployment date is later in 2020. The Native American Culture Experience will place the visitor in the Nature Center in front of multiple pedestals with objects on them, which are associated with Native American culture. The visitor has the ability to pick up any of the objects, and be transported from the Nature Center to a time period in which the

object fulfills an essential life function. Once the visitor completes the learning objectives within that mission, they return to the Nature Center to interact with other objects. Mr. McBroom researched and developed all concepts associated with the application. Additionally, he collaborated extensively with KSU professors and students to develop the concepts and specific work flow processes. He also conducted numerous in progress review meetings with professors and students while development is underway. This serves as an important QA/QC step in the development process.

- ***Interactive Touch Panels***

Mr. McBroom took the initiative in 2019 to conduct research on methods to mitigate the target demographic limitation that existed in the Carters Lake Nature Center. Among several methods, he identified interactive touch screen panels as an effective way to engage a wider range of the population. Mr. McBroom devoted considerable time in 2019 to determine specific hardware and software requirements needed to implement touch screen panels. He also conducted substantial



Screenshot of touch panel, showing water safety video.

research into programming requirements and has acquired the knowledge and capability to develop the programming himself. This initiative is currently in development at Carters Lake, with the first of several planned touch screen panels on site and being programmed by Mr. McBroom. This in-house capability not only provides efficiency in terms of cost savings but also provides the ability to troubleshoot and easily modify content when needed.

The implementation of technology into the Carters Lake Nature Center greatly expands the effectiveness of our interpretation program. The concept is unique in that the target audience is all demographics who visit the Nature Center; younger generations may be familiar with the technology, but learn about the subject; older generations may be familiar with the subject, but learn about the technology. This significantly expands the effectiveness of the resources required to implement interpretation initiatives, as traditional interpretation initiatives usually target smaller demographic segments of the population. Mr. McBroom has done an exceptional job of bridging generational gaps in delivering innovative interpretive solutions.

Enhancement of the Public's Understanding of the U.S. Army Corps of Engineers and the Site

- ***Rocket Launch***

In the fall of 2019, Mr. McBroom presented a rocketry program in partnership with the Gilmer County, GA Library System. This program provided participants with an understanding of rocketry technology and a hands-on opportunity to observe it firsthand. The focus ranged from hobby use to utilization of rocketry by NASA, which provided an excellent segue to USACE support to NASA as part of our Interagency and International Services (IIS) mission. Future rocketry related events are being planned for 2020.



Rocketry program.

This program is highlighted because it is a perfect example of how Mr. McBroom uniquely incorporates USACE mission related information into interpretive programming as a hands-on event. The subject of the program provides the opportunity to introduce the participants to a significant mission of USACE, IIS, which participants would have no way to learn about if not participating in the program.

During the program, Mr. McBroom enlisted the help of a project volunteer, a professional videographer, to create an outtake video event summary, which was posted to the project Facebook page.

- ***Water Safety***

Water safety is a significant priority of the project. Under Mr. McBroom's leadership, the Interpretation Services and Outreach Program at Carters Lake provides extensive engagement in environmental education, as can be seen by the educational topics provided during the 2019 Summer Learning Series. Mr. McBroom finds creative opportunities to incorporate water safety messages into programming much the same as the IIS mission was incorporated into the Rocketry program. For example, a program covering an environmental education topic may begin or end with a five minute discussion on water safety. Above that, he has enlisted the help of project volunteers, gate attendant contractors, Sheriff's deputies, State Game Wardens, and other project partners to incorporate water safety messaging into their contacts. This extended outreach by partners is accomplished by water safety handout material and direct personal messaging to lake visitors to remind them to engage in water based activities safely. This effort culminated at the end of FY19 when the Carters Lake Project Park Ranger team was awarded the South Atlantic Division FY19 Team Water Safety Award for quality and quantity of water safety contacts. Through Mr. McBroom's program oversight, the Carters Lake Park Ranger team completed 54,938 direct water safety contacts in FY19, a significantly high number for a small team of four Park Rangers.

- ***Volunteers***

Mr. McBroom has had incredible success in developing volunteers to provide interpretation services to the public. In 2019, volunteers led several interpretive programs at the Carters Lake Nature Center. Volunteers are stationed at the beach and other park locations during time of high visitation to provide water safety outreach to the public. These volunteer teams are mobile, flexible, and able to respond to high utilization areas on short notice when it is needed.

- ***Dark Sky Preservation***

Negative externalities at project sites often diminish the quality of environmental experience. Mr. McBroom had the vision to appreciate how the rural characteristic of Carters Lake provides a significant opportunity to actively limit these externalities, specifically those impacts associated with light pollution. In late 2019, he actively engaged the International Dark Sky Association in designating Carters Lake as an IDSA Dark Sky Park. This multi-year effort is continuing with dark sky quality surveys being conducted at multiple project locations through the summer and into the fall of 2020.

In addition to the light quality surveys, Mr. McBroom led the completion of a project lighting inventory, which is incorporated into the Carters Lake Project Lighting Plan to mitigate the effects of necessary lighting on the project. Through his leadership and determination, visitors to any location at Carters Lake will experience a more natural environment with reduced externality pressures. Reduced light pollution provides an immediate benefit to evening astronomy related interpretive education programs. Reduced light pollution also has a direct and desirable effect on nocturnal species, which many are negatively impacted by light pollution from increased urban sprawl in the last several decades. Mr. McBroom's resolve in undertaking this initiative provides a direct positive influence on interpretation, recreation, and environmental stewardship missions at Carters Lake Project.

CITATION

Natural Resources Specialist George I. McBroom is hereby recognized as the recipient of the 2020 Hiram M. Chittenden Award for Interpretive Excellence. Mr. McBroom has touched the lives of many American citizens through implementation of technology in the Interpretation Services and Outreach Program. He is a pioneer of innovation who seeks unique opportunities to deliver the U.S. Army Corps of Engineers mission. Mr. McBroom has demonstrated exceptional vision, courage, leadership, and commitment deserving of this recognition. Mr. McBroom is an asset to the U.S. Army Corps of Engineers.