Welcome
Introduction from Lisa Swanger. Attendees present: Dave Fuss, Horry County; Terri Davis, Georgetown County; John Adair, Surfside Beach; Tara Friday, Myrtle Beach; Linda Strickland, Myrtle Beach; Kevin Blayton, North Myrtle Beach; Lisa Swanger, CCU; Susan Libes, CCU WWA; Emma Boyer, WRK; April O'Leary, WRK; Michelle LaRocco, NI-WB NERR; Hannah Sarver, NI-WB NERR; Amy Scaroni, Clemson Carolina Clear (called-in); April Turner, SC Sea Grant (called-in); Dan Newquist, Waccamaw COG; Sean Torrens, SC DHEC; Cara Schildtknecht, CCU.

SMS4 representatives missing: Kevin Chestnut, Conway; Jay Beeson, North Myrtle Beach; Paul Rotondo, Briarcliffe Acres; Ben Quattlebaum, Atlantic Beach.

Education providers missing: Renee Williamson, MI2020; Beth Thomas, NI-WB NERR.

Housekeeping
- Introductions. Welcome new NI-WB NERR Education Specialist, Hannah Sarver.
- June 8, 2016 meeting minutes were approved.
- Reminder: notes from the August 11, 2016 Water Quality Meeting (follow-up from June 2016 Biannual Meeting to discuss methods for communicating with the public about what the beach advisories do / do not mean and MS4 permit requirements with regards to water quality sampling) were distributed via email in September. Contact Lisa with questions.
- Reminder: no ½ year summary provided today since we switched to a calendar year. The 2016 annual report will be finalized in March 2017. Contact Lisa with questions about the document or date of distribution.
- During the June Biannual Meeting, Lisa mentioned that the CWSEC online activity database system is getting old and CCU web support staff would soon help to transfer it to a newer system and possibly add a few new features (e.g., drop-down menu options). A wish list for new features was to be solicited from ed providers in the fall for starters; however, due to recent CCU web support staff changes, this has been postponed. The database is still functioning appropriately. There are still plans to complete the transfer and possibly add new features in the future (date to be determined).

CWSEC Core Education Provider Updates
- NI-WB NERR Education Program – Michelle LaRocco (on behalf of Beth Thomas)
  - Upcoming K-12 Education: Estuary Field Studies, Freshwater Pond Studies, SC DNR Discovery Winyah Bay Boat Trips (Georgetown & Horry County Schools-April), Georgetown County Spring Break Environmental Career Day.

Upcoming K-12, Public & Community Outreach: School Career & Science Fairs, NI-WB Clean Team Highway Cleanups, Georgetown County Library Programs, NERR Lunch & Learn Series, serving on two committees (Speaker & Marketing) for 2017 National Marine Educators Association 2017 Conference hosted in Charleston, and working on offering Osher Lifelong Learning Institute (OLLI) courses to the public. Locations and dates are to be determined.

Contact Beth with any questions.

- NI-WB NERR Coastal Training Program – Michelle LaRocco

  - As part of the Clean Coastal Ocean Waters Workgroup focused on watershed management and volume reduction, the “Strategies and Tools to Protect and Restore Coastal Water Quality Workshop” (hosted by the Governors South Atlantic Alliance (GSAA), SC DHEC, North Inlet - Winyah Bay NERR, SC Sea Grant, and the City of North Myrtle Beach) is taking place on December 8th 2016. It’s focused on coastal water quality issues and the regulatory framework around stormwater management. The workshop was funded through a grant from EPA to the GSAA to host a workshop in each of the 4 states (NC, SC, GA, and FL) in SC, DHEC was the hosting agency.

  - Planning a water quality communications workshop for the hospitality industry in January / February 2017 (produced out of August 11, 2016 water quality follow-up meeting). Dates have been discussed and are waiting to be confirmed. Should it not take place, an alternative option is to offer a user friendly one-page fact sheet (Q&A) for hospitality staff to refer to if visitors / tourists ask them water quality questions.

  - Hosting a 2-day Wilderness First Aid Workshop in March 2017. Initially intended for staff that conduct field work, but also open to the public. Might be of interest to Master Naturalists, volunteer water quality monitors, eco-tour groups, etc. Workshop fee is $300 and a 3-year certificate will be awarded. Contact Michelle for more details.

  - Research and stewardship NI-WB NERR staff teamed-up to run the Climate Change Vulnerability Tool for Coastal Habitats (CCVATCH) funded by the NERRS Science Collaborative Transfer Grant program with a small grant to study some climate stressors and interactions on the ground in NI-WB marsh and Murrells Inlet. Partners in North Carolina, the NC NERR, NCDNER, and others are conducting a similar study, so it is a two-state effort.

  - Currently working on the NI-WB NERR CTP 5-year strategy document. A draft should be complete by June 2017 and Michelle may reach out to CWSEC partners for input.

- Co-hosting 2017 Waccamaw Conference on February 11th 2017 (see WRK updates below for more details).

- Waccamaw RIVERKEEPER – Emma Boyer

  - 2017 Waccamaw Conference is scheduled for February 11, 2017 (hosted by WRK, NI-WB NERR, CWSEC, and Horry County Museum). This year’s theme: “Innovation on the Waccamaw: Past, Present and Future.” In the past, the format of the conference has consisted of a “science conference style” (i.e.,
concurrent session and exhibits) which didn’t receive the number and diversity of public attendance as desired – usually just reaching the regular faces in the community (e.g., volunteer water quality monitors). This year has been revamped with a new venue and more “family friendly” format for the community. It will take place at the Horry County Museum in Conway - specializes in local history. Rather than the traditional conference style, there will be a mix of speakers, interactive demonstrations / exhibitors, and a new student poster session throughout the halls and exhibits of the museum for attendees to freely explore. Confirmed speakers so far: Dr. Erik Smith, NI-WB NERR (discussing water quality monitoring research & technology) and Walter Hill, Horry County Museum Director (discussing how river was used in history, how it has changed).

- Continuing water quality monitoring as usual. Volunteer monitor luncheon to be held in the spring – date to be determined.
- During Hurricane Matthew, monitors only missed one sampling date for safety precautions.
- April O’Leary (WRK staff) announced the “Cleanup Our Waterways Initiative”, an adopt-a-landing and cleanup program. New name denotes the new strategy and facelift of this 2-week initiative. First time held last year after the 2015 October flood. This year, it was 3-times more successful (more volunteers, more locations, more trash). Since the change, a total of 28,000 lbs of trash was collected. WRK received a litter prevention award from Horry County for their efforts. A total of 564 volunteers, 80 miles of river, and 51 locations were completed in 2016. This enhanced overall education opportunities (more videos, more robust monthly newsletters). Also coordinated a river jump fundraiser with WPDE meteorologist (who jumped in river). Volunteers want to know more about what they can say to the public. Technical difficulties during the meeting prevented WRK from playing their new video clip (mix of still and video such as pictures of the river during historical crest, some of the potential threats to the river). WRK will send the link to the video shortly.

- Carolina Clear – Amy Scaroni
  - Next billboard campaign will focus on shorescaping, “Healthy Landscapes, Healthy Ponds.” Will be placed at 4 locations around the Coastal Waccamaw region. Please tell Amy if you see one since they don’t know the exact locations yet. This theme was produced out of the Stormwater Pond Outreach project. It was found that this type of message (discussion of healthy communities) resonated most with focus groups. Fighting the cultural norm of mowing to the waterline through the use of before-and-after photos of vegetated buffers around ponds. Essentially, giving people an idea of how shorescaped ponds can look nice (normalizing as a preferred practice).
  - Statewide commercials (currently under development) will focus on bacteria.
  - New information sources: bioretention and treatment video will be posted on YouTube - primarily intended for contractors.
  - New educational sign focused on floating wetlands and permeable pavers.
  - DHEC and Center for Watershed Excellence are replicating the Georgia adopt-a-stream volunteer water quality monitoring program – plan to follow the model
in South Carolina. DHEC will not be using the data to craft TMDLs, but it offers good citizen science and educational opportunities. First coordinator meeting will take place on December 13, 2016 in Columbia. Contact Amy with any questions.

- Silt Fence and Beyond Workshop, focused on erosion and sediment control, will take place on February 16, 2017 in Charleston. It is geared towards contractors and engineers through proper selection, maintenance and upkeep of erosion control structures. Contact Amy with any questions.
- Currently in the process of developing a new website. The transfer will be complete in January 2017 - will be more user and mobile friendly.
- The SC Aquarium will be hosting a global plastic pollution summit 2017 for those interested. Date to be determined.

**SC Sea Grant – April Turner**

- Stormwater Pond Research and Management Collaborative:
  - Most of the state of the knowledge chapters have been peer reviewed. The next step is to collectively review/edit all chapters as one document prior to publishing. The project is in a holding pattern until the Environmental Quality Specialist has been hired (Melody Hunt left Sea Grant in July and interviews are underway). The position was formerly held by Cal Sawyer and Dan Hitchcock. Sea Grant hopes to have the new hire in place by early January 2017.
  - A SC Association of Stormwater Managers quarterly meeting was held in Columbia back in November. Several researchers involved in the collaborative delivered presentations and solicited feedback from the audience regarding what types of research and communications these managers need.
- S.C. Coastal Water Monitoring Network Visualization and Access Portal (SCCWMN Model): Updates have been ongoing. Dr. Susan Libes contributed. Provides shared water quality monitoring and hydrologic research coast wide, including long term and event-based monitoring. Andrea Sassard, Sea Grant has been working to get all data compiled on a GIS platform and is adding Hurricane Matthew data to the site. The tool is live, but there is still tweaking going on.
- SC Coastal Information Network: Has updated the resources portal to include climate change, resiliency, and flood resources (since the October 2015 flood event), etc. The website (www.sccoastalinfo.org) has been revamped – fresh look, easier access, more resources, and events.

**WWA – Lisa Swanger (on behalf of Dr. Susan Libes)**

- Please contact Susan with specific questions.
- Monitoring Programs: Will continue to develop Appendix C of the CWSEC Annual report; Volunteer Monitoring Data Conferences to take place (River VM luncheon) at end of March - date TBD; Murrells Inlet Watershed Steering Committee meeting January 10, 2017; continues to provide technical assistance to the Town of Surfside Beach Stormwater Committee and present updates at all meetings - an educational presentation delivered to the committee in July will be presented again to the public; CCU Campus monitoring in December and May.
Long Bay Hypoxia Monitoring Consortium: New budgets were approved for NMB and Horry County. CMB is pending

Staffing updates: The EQL Director position still needs to be filled – may need to rethink the structure. New hire process is close to completion for web application / database support position.

Data accessibility: Back in routine of uploading data from river gaging and volunteer monitoring to EPA’s national database, Storage and Retrieval (STORET). The last time uploading took place was most likely in 2014 - the staff who were doing this didn’t keep records. A set of instructions and methods for checking that uploads are taking place on a routine basis have been developed. The current plan may be to do this monthly or quarterly (formally done on a semi-annually basis which may have contributed to the issue). Better to upload more frequently. Data available to the public through EPA’s MyWatersMapper site (https://watersgeo.epa.gov/mwm/) and National Water Quality Council’s Water Quality Portal (https://acwi.gov/monitoring/waterqualitydata.html).

**CWSEC – Lisa Swanger**

- The 2nd annual Grand Strand’s Canines for Clean Water spoksedog contest (coordinated by two CCU students for coursework credit for the purposes of educating public in a fun way about pet waste and water quality) is taking place December 3rd 2016. Last year’s winner participated in several public events (e.g., Myrtle Beach Pelicans baseball games and Surfside Family Festival). This year’s event will take place during the Myrtle Beach State Park’s Santa at the Beach event. Anticipating hundreds of people. Great opportunity to educate the public while also serving as the “entertainment” while they wait in line on the beach for pictures with Santa. Students also created a paw pledge to increase public participation.

- Restore America’s Estuaries / The Coastal Society Summit - December 11-14th 2016 poster presentation.

- Water quality communications workshop to be held sometime during January / February 2017 (see NI-WB NERR CTP updates for details).

- Co-hosting 2017 Waccamaw Conference - February 11th 2017 (see WRK updates above for more details).

- Awarded mini-grant funding for NOAA Climate Stewardship Action Project (to revitalize a local school rain garden and incorporate climate change concepts with stormwater and watershed education lessons). Phase I (rain garden assessment and pre-project student evaluation) with Ocean Bay Middle School was completed in November. Phase II and III (rain garden maintenance and education) will take place in the spring 2017 with the assistance of CCU Environmental Education Interns and independent study students.

- CWSEC 2017 Annual Report will be completed and distributed in March 2017.


- Planning to coordinate a spring 2017 Homeowner’s Association Workshop, “Getting to Know Your Neighborhood Stormwater “System”, in collaboration with Horry County and possibly additional member SMS4s. It will target HOA’s located in the Little River/Longs region and feature overview of CWSEC, NPDES, stormwater
system features, HOA responsibilities, common issues and problem solving, county role and resources, and an interactive as-built activity. Past workshops received approximately 20-35 attendees each (based on interactions and connections with HOAs). The county typically receives multiple initial follow-up calls, but overtime, the workshop has been found to help HOAs use the provided resources to respond to the internal calls from their residents and problem solve rather than immediately turning to the county for aid. Podcasts and resources from past workshops are available on the CWSEC website (under past trainings). Georgetown County expressed interest, but has struggled to garner community interest.

Ongoing projects:
- Develop and lead Riverkeeper Challenge lesson (state science standards have been incorporated) and water quality monitoring activity (modeled after World Water Monitoring Challenge) - school presentation scheduled in Georgetown County was forced to be rescheduled due to Hurricane Matthew; supervise CCU intern and independent study course students; and serve as a SC Green Steps Schools Mentor and County Coordinator.

2017 Activity Planning
- Revisions to the 2017 CWSEC Activity Plan were reviewed in depth. No questions or concerns expressed. All agreed that the next appropriate step is for Lisa to distribute a clean version of the revised plan for one last review. Should no comments / questions be submitted to Lisa by the deadline (TBD), the document will be considered approved.

SMS4 Roundtable Discussion
- Terri - Georgetown has rain barrels to give to county schools. Lisa will follow-up to help coordinate along with stormwater / watershed education.
- Sean - Barrelponics in Williamsburg County may be a potential resource or possible guest speaker for school / CWSEC meetings. The group uses barrels to make hydroponics system and have instructions on how to make them and grow vegetables.
- Dave – Horry County has been busy post-Hurricane Matthew. A lot of debris management needs have kept staff from being able to focus on regular tasks. The River system – there have been complaints about “smelliness” in the area. There has been investigations, particularly in the Conway area. Determined that this is a product of sites that have been flooded and the smell of decay. Kingstree last year had the same “rotten pumpkin” smell. Sewer overflows and septic failures do occur, but other than that, nothing too egregious.
- John – This happened where I live too. Water gets into places it hasn’t before.
- Dave – Susan is maintaining toxicity readings near Crabtree, but no evidence has been found. Water has gotten into garages / yards and who knows what people store in there - oil/gas/chemicals. Can’t specifically trace it back to one location. This is why we caution people to not wade around in floodwaters.
- Emma – We received calls about some smells too. April (WRK) discovered a fish kill (clarified on 1/3/17 to have taken place in Smith Lake and not technically Crabtree) around the time of the toxicity reading. Susan’s toxic assay, measuring daphnia, are coming back positive and DO toxic assay reported low DO readings. So we have been alerting DHEC. With the Granger Plant right there, they had to pump water into and out of the coal ash chamber. This brought public attention and provided a good
opportunity for offering education (e.g., getting toxic chemicals out of garages) and serving as a community resource.

- Dave – Decomposition of all of the organic material in the river drops the DO. This occurs in ponds too and one pond was breached by a neighboring swamp. During last year’s 2015 flood event, high groundwater levels leached into waterways. High iron content was also observed - it will be interesting to see if we get the same occurrence this year. We spoke with USGS about wishing that iron monitoring took place last year. With the help of CCU, a metals analysis will be conducted during river gaging samples (analysis will occur this winter and spring). Since CCU’s Environmental Quality Lab doesn’t have the capacity, samples will be sent to a USGS lab based in Denver, CO. This will help to provide an explanation to the public as to what is occurring.

- Sean – People often mistake iron bacteria for an oil spill.

- Tara – We received only one call about iron bacteria last year, but none this year.

- Emma – No bacteria spike was recorded this year. Last year, there were spikes of bacteria in the month following the rain - but we’ve had a dry spell this year.

- Lisa – There was a question regarding the condition of the coal ash ponds after Hurricane Matthew that was brought up during the November Horry County Stormwater Advisory Board meeting. Emma, you have been communicating with DHEC on it. Can you please share any updates at this time?

- Emma – There are 2 ponds on Granger. They are working on clearing pond 1 (as the floodwaters were rising, there was seepage into the chamber which led to concerns regarding the pressure on the sides of the structure). They pumped water into the chamber to stabilize it, and then after flood, they had to reroute the water into pond 2 before going through the normal stormwater discharge point (which was under water for a while). There was also an incident where foam was observed on the intake canal (runs between ash pond 1 and 2). They cleaned it up. Following tests, they determined it was cenosphere (silica-based component of ash). No structural issues or breaches were found, so the discharge could have possibly been windblown into the canal. The berm remained intact. We are trying to get reports on stormwater discharge from Santee Cooper. They did do some shoring of berms, but this is the point of the legal suit. They are unlined pits. They do monthly in-depth samplings and weekly tests for pH and TSS. I will be reaching out to them for report updates.

- Dave – I reached out to Shaunna Stevens (SC DHEC) too. They aren’t doing any special monitoring in addition to the regular monitoring. Concerns were expressed that if water can seep in, then contaminants can also seep out.

- Emma – I wish they could do more robust monitoring of the discharge.

- Dan – Hog Inlet and Cherry Grove Watershed monitoring update: Participated in a previous watershed management plan in Murrells Inlet with several partners. DHEC is very supportive of doing community-based plans through the 319 program. There are similar issues and impairments in the North Myrtle Beach area regarding bacteria and oyster beds as Murrells Inlet. Hosted several community meetings to solicit input and learn more about community concerns - they were well attended. A draft of the plan, following EPA’s 9 elemental framework, is anticipated to be complete and sent to DHEC for review in February 2017. This has been a good effort so far and a lot of support has been received from Horry County and North Myrtle Beach. It will also focus on resources of concern – oyster reefs. Received help from Dr. Keith Walters (CCU) and the Coastal Oyster Recycling and Restoration Initiative (CORRI) that he
oversees. The general public has been very responsive so far. In the meetings, people spoke about family, culture, and the history of harvesting oysters from Hog Inlet for generations, which is no longer available to them. I will also be presenting on this at the Governors' South Atlantic Alliance Workshop.

- Dave – qPCR bacterial source tracking project will occur in Hog Inlet. It will start with human and general mammal. Results will help to determine the next steps and where certain BMPs should be placed within the watershed, even if we’re not supposed to be a part of the 319 plan.
- John – We’ve had more water quantity than quality issues. Overall, we’ve had a good summer regarding monitoring - only one high bacteria level recorded. This may, in part, be a result of an aggressive maintenance program for the past 2-3 years to get the Community Rating System (CRS) number down. Numerous mapping, cleaning of catch basins, and use of a new vac truck have occurred – receive more CRS credits to do annual maintenance instead of once every permit cycle. Some basins haven’t been maintained in a while. Other changes - increased flow from Dogwood to the Myrtle system. A combination of things seem to be working. People don’t seem to understand flooding, so we’re trying to educate the public on the water table, municipal stormwater system limitations, and methods to ensuring homes are as resilient as possible.
- General discussion –People also don’t understand the difference between the October 2015 event (more rain spread out over a longer period of time) and the 2016 events (less rain in a shorter period of time) regarding what the system can handle.

Guest Speaker – “Murrells Inlet Estuary Microbial Source Tracking Study” by Cara Schildtknecht, Coastal Carolina University graduate student

- Microbial source tracking study in Murrells Inlet was conducted in fall 2015 (study timeline provided in the presentation below).

- Desired outcomes: determine upstream sources of fecal bacteria, whether sediments serve as a sink or source for fecal bacteria, and whether fecal bacteria is human-sourced.
- Collected samples in three sub-watersheds in MI consistently above DHEC water quality standards: bike bridge (BB), Harrelson’s Seafood (HS), and Boat House Run (BHR) during the summer and fall of 2015.
  - HS: volunteer monitoring station and upstream (intermittent flow).
  - BHR: volunteer monitoring station near sewer lift station (always had water) and upstream (no water unless after rain).
  - BB: volunteer monitoring station next to sewer lift station. Only had one site - no upstream site.
- Three dry (72 hours of dry before a forecast rain event - tried to link dry and wet with forecast rain event) and three wet weather samples (water and sediment) were collected
and analyzed for bacteria, genetic source trackers, and chemical source trackers (E. coli, Bacteroides, human-sourced Bacteroides, caffeine, conductivity/salinity, and turbidity). Wanted to eliminate sewer lift stations as a possible source.

- Gastrointestinal issues – fecal indicator bacteria (FIB) often co-located with what makes people ill. Concerned with recreational contact and shellfish consumption transmission.

- Results & general notes:
  - Release of this section of the minutes is pending finalization of the project report.

- Discussion:
  - Emma – Isn’t MI2020 doing something within the area?
  - Lisa – Yes, Dan Hitchcock is involved.
  - Dave – Constructed wetlands.
  - Dan – This is part of the active 319 grant.
  - Tara – I believe it was mentioned at a past South Carolina Association of Stormwater Managers (SCASM) meeting that the Town of Bluffton has been doing research and monitoring on retention and structural BMPs. Findings show BMPs are working, but the water quality is still poor downstream of the BMP (possibly bacteria in channel still). Recommend BMP treatment train.
  - Michelle – Dan Hitchcock has been pushing treatment trains for years.
  - Dave – regarding the MI watershed plan, we (Dave Fuss and Tracy Jones, Georgetown County) recommended BMPs installed closest to discharge site.
  - Tara – but who will pay? You’d have to treat on your parcel.
  - Lisa – If you have follow-up questions or feedback for Cara, please contact me or Cara directly (ceschildt@g.coastal.edu). Happy holidays.

Lunch and Continued Discussions