**Habitat Goal Implementation Team**
**2014 January SAV Workgroup Minutes**
Tuesday, January 28, 2014
9:00AM-1:00PM
Waldorf Charles County Public Library

**Participants:**
Lee Karrh, Chair
Hannah Martin, Staff
Ken Moore
Jennifer Walker
Cassie Gurbisz
Erin Shields
Brook Landry
Dave Wilcox
Becky Golden
Sadie Drescher
Mark Mendelson
Howard Weinberg
Peter Tango
Tish Robertson
Cindy Johnson
Matthew Stover
Todd Beser

**Action Items**

- Justify using 192K acres for restoration goal
- Identify segments that currently have no regulatory goal, but have recent SAV data that can be used to create a goal.

**Decisions**

- Chesapeake Bay Program SAV Abundance Indicator will be updated by April 2014
- SAV Restoration Goal- 192K acres (regulatory based) and modify places that now have data and create goals for some areas in order to clarify misfits (segments currently without clarity goals).

**Presentation: "Photosynthetic Response to Elevated Bicarbonate Levels by Four Species of Low-Salinity Submerged Aquatic Vegetation", Jennifer Walker (St. Mary's College of Maryland)**

- As a result of increasing atmospheric carbon dioxide levels, carbon dioxide in seawater is increasing. As CO2 increases, pH of oceans decreases resulting in ocean acidification with bicarbonate being the dominant form of dissolved inorganic carbon (DIC). All plants can use CO2 but some can use bicarbonate. Seagrasses and algae can effectively use bicarbonate. No research extended to freshwater submersed plants.
- Experiment: Which low salinity plants can use bicarbonate, how effectively can they use bicarbonate, and how will that affect the future ecosystem of areas like Susquehanna Flats, MD?

- Four Species observed and analyzed using linear mixed effects model in R to determine overall trend in species
    - Coontail-highest photosynthetic rate overall
    - Eurasian Watermilfoil-signification upward trend
    - Stargrass-highest slope, best at using bicarbonate
    - Wild Celery-no linear trend (other studies show it can use bicarbonate but most effectively at a higher pH than what was tested in this experiment)
- Discussion:
    - Did you look at hydrilla? Not for this experiment
    - Was temperature a factor? No-kept them at 21.5 degrees C but photosynthesis isn't necessary affected by temperature.
    - Cassie: We've looked at temperature, but these species don't mind temperature change.
    - Need to find compensation points similar to what Zimmerman found with eelgrass

**Presentation: "Chesapeake Bay Shoreline Management Expert Panel", Sadie Drescher (Center for Watershed Protection)**

- Due to the TMDL and WIPs, expert panels are charged with drafting reports on recommendations to the Water Quality Goal Implementation Team and Chesapeake Bay Program modelers at the Chesapeake Bay Program. This expert panel is a BMP expert panel, it must be vetted through the urban stormwater workgroup, watershed technical workgroup and then the water quality GIT to update information in the model or get new information.
- Panel Charge
    1. Evaluate how shoreline practices are modeled
    2. Review Literature
    3. Provide a definition, geographic boundary, and qualifying conditions
    4. Develop pollutant removal rate protocols
    5. Define reporting units
    6. Recommend reporting, tracking and verification procedures
- Shoreline management is defined as any tidal shoreline practice that prevents and/or reduces tidal sediments to the Bay. Based on a query on 5/16/13, there is zero shoreline management practices reported in the watershed. An update was necessary because the removal rate was based on outdated, limited stream restoration data, the removal rate was less than reported values, and these practices are being under and/or mis-reported.
- The panel produced four draft protocols; Prevented sediment, Denitrification, Sedimentation, and Marsh Redfield Ratio (one time credit).
    - Discussion: marshes will keep up with sea level rise if they are allowed to transgress into upland.
        - We have section of sea level rise, no hard recommendations. Asked practitioners if they are designing for sea level rise. There are no hard numbers.
        - There is tracking and verification and we are recommending 5 years.
    - Property owners: do they have to have projects approved?

        - That will be local questions, this doesn't supersede permit requirements. All these practices would need permits.
- There will be dissent document because not everyone agrees on some of the recommendations.

**Dissent topic: "Qualifying conditions in regards to SAV", Lee Karrh (Maryland Department of Natural Resources)**

- TMDL/WIP process is to improve water clarity in the Bay. SAV is the measure of progress but shoreline erosion management methods can negatively impact SAV.
- There is a subestuary scale paper is coming out in Estuaries and Coasts that reports negative impacts on SAV distributions when you have greater than 5.4% riprap.
- Results favor natural shorelines over armored shorelines (DNR work). If you have stone in the water, SAV do not thrive. Natural shoreline had higher SAV %cover, frequency of occurrence, species diversity and species richness.
- Most SAV occurs where erosion is less than 2 ft per year so it was proposed to give total loading credit to areas that have greater than 2 ft per year erosion rates. Use offshore SAV footprint to determine crediting. This was not adopted by the expert panel and did not take into consideration qualifying conditions of SAV. This will be part of dissent document. There will be significant dissent on this topic (about 40% of panel).
    - Scott Hardaway and Pam Mason did not ask Ken Moore and others about this.
    - The ongoing research right now is very important to this panel.
    - Peter Tango: what is the long term shoreline development trend? Are we not armoring as much?
        - Lee-more shoreline projects going in but they are different. Have to be careful about terminology. Armor is immediately associated with revetments (not permitted as much recently). Living shoreline structures are mostly hybrid where you have stone sill. If you look at stone sill from water surface down, it doesn't look very differently from a revetment.
        - Hard time changing our goals on modifying a natural condition. Erosion is a natural condition and not always anthropogenic.
        - Jana Davis ran some math. Per linear foot for shoreline erosion control is 4-10 times more efficient at removing sediments particularly from being put into the model.
        - WIPs are part of TMDL. State and local government are required to install practices to prevent N and P from entering water. Bioretention ponds, stream restoration work, waste water treatments, cover crops are all BMPS to reduce N and P from going into the water. Shoreline erosion management methods are problematic because there are government programs that help people protect their shorelines (sometimes homeowners) and county can get credit without spending a dime. This is very attractive to meet those TMDL goals.
        - Spending all the money but not thinking about the resources.

- Sadie: these are recommendations and we do recommend the panel will come together in 2 years to revisit new science to adapt the BMP
- We don't know the fate of this right now. Has not been vetted through the other workgroups.

**Discussion of SAV goal, making CBP and regulatory goals agree, consider "new" analyses for goal-setting. (Dave Wilcox, VIMS, Becky Golden, MD-DNR, Howard Weinberg, UMCES, All)**

Where did the restoration goal come from? Howard Weinberg:

- Efforts began in 2002 to develop a goal for SAV acreage (not yet tied to water clarity attainment). Data used-VIMS aerial surveys (1978 through 2002), historical data aerial photos (as early as the 1930s), used in setting state regulations. Whatever was deemed the best (largest areal extent by segment) was digitized and merged into one historical layer.
- Segmentation used. Initially there were 78 CBP monitoring segments. They were later split where water quality or physical factors were thought to greatly affect or preclude SAV occurrence in part of the segment creating separate goals. They were further split by state where multiple jurisdictions occurred within a single segment. Creating a final total of 104 segments.
- Single Best Year (SBY) each segment was divided into 3 depth zones. SAV was clipped to the shoreline and no bathymetry on "land" so SAV on "land" was not counted. No-grow zones were removed from the depth zones. SBY was the year for a given segment that had the most SAV from the VIMS survey or historical data. For each segments SBY, ascertain the deepest zone containing greater than 20% SAV coverage or greater than 10% coverage in at least 3 of the 4 five year periods from 1978-2000. SAV was clipped to this application depth. The resulting SAV for each segment was merged into one layer and the final output was the restoration goal of 184,889 acres.
- Why restoration goal acres and reg acres don't always match
    - Different methods were used to establish regulations on a per segment basis (basically "pick and chose" between an array of options)
- There are only state regulations. No federal.

Verification of MD SAV/Water clarity-Becky Golden:

- Liza Hernandez (Chesapeake Bay Program) had been working on water quality standards indicator and summed up the goal acreages across bay segments and that acreage is over 192K acres.
- Is the 185K number correct because it is the most stated goal or is 192K correct because it's what is in regulations?
- Becky looked at CBP data, Howard's spreadsheets, and code of MD regulations.
- All COMAR goals can be derived from acreages in Howard's spreadsheets. For all MD segments, the goals in COMAR are either the single best year or the unclipped historical acreage out to application depth, whatever is greater.

- MD misfits-(segments with zero SAV reported) goals were established based on the total surface acre between the shoreline and the 0.5 meter depth contour divided by the 2.5 water clarity acres multiplier.
- Current goals in COMAR are based on 2004 and 2005 SBY.
- We know where the numbers are coming from and are based on historical maps and acreages. Not based on shallow water and water quality.
- Only looked at MD numbers. Cindy Johnson (VA DEQ) emailed Liza last week and stated that numbers in state standards match values in Howard's spreadsheets. Numbers in pink came from 2004 model runs (confirmation load allocation model) SAV goal acres could not be attained so DEQ lowered SAV acres to match what was expected to be attained under the cap load allocation and triennial review process would take 18-24 months.
- There are multiple options
    - 1. Do nothing and keep 185K bay wide goal and existing individual segment goals
        - Not acceptable from CBP. Made clear from CBP leadership. It better be consistent between jurisdictions and defensible scientifically.
    - 2. Change bay wide goal and have new 192K based on regs.
        - Simplest, but can we defend this because jurisdictions did things differently?
        - The regs are what counts. They should be consistent. Use same way to assess how we are doing compared to this by clipping consistently.
        - Scientifically, 206K is easiest to defend. Throwing away deeper area that was used to establish attainment depths is questionable.
    - 3. Change bay wide and segment goals to reflect current SAV data, address clipping issues and errors and consistent method of goal selection.
        - Choose uniform methodology and bring in DE and DC.
        - Is it okay to have the goal different than the regulations? This would have to be taken through reg process to change?

Discussion:

- MDE, Matt, implications of changing goals on CBP TMDL. Concern about this. Wouldn't change too much but if they did it, it would be potentially sending the wrong message to public. All for making this accurate. But you have to determine if you're splitting hairs.
- Based on model output?
- Good point that how important will this be for TMDL load requirement? How much time should we spend on it if it's not going to make a difference?
- With your conversation with Rich, what does he envision? Changing load allocations based on the goal or is that potential outcome? He realizes it could be an outcome.
- Consensus that science supports 207K figure. Consistent approach and what happens from then?
- 192K is easy and in regs, but it's hard to defend it because methods were not consistent.
- Howard: I don't think you can go 206K route, because you will have to go higher based on recent years.

- Getting states to change their regs might be difficult but Lee was told it's not his problem. 192K could be the goal and 220K could be a target.
- Restoration vs attainment goal are two different things.
- If we reopen analysis it will come up to 221K acres.
- SBY-if you look at sub estuaries and the change in distribution of SAV, the beds move. The SBY doesn't reflect where they can grow because the beds are dynamic. Maximal extent observed is more accurate where SAV could potentially grow under ideal conditions.
    - But all available habitats will most likely not be inhabited at one time.
- Composite areas are included for other MGMT purposes. MD dredging or other use of the bottom includes composite area that allows them to move around.
- State is being proactive and using the larger area.
- What do you use for assessing if a segment attains or not? Its either one or the other. MD and VA do it differently.
- 192K drives TMDL. You wouldn't have to remodel. There is a lot to be said about being consistent. Acknowledge certain issues.
- Restoration goal was 185K. There isn't a restoration goal for the segment. Does it meet water quality standards? Decision consensus building is that we should stick with 192K and modify with places that we have data now and create goals for some areas. Clarifying misfits.
- Propose put in regs of where SAV data has now but not in past. VA DEQ can start the process and inform MGMT. discuss with MGMT to include a new segment (may not be an issue).
- Action: work and justify the 192K. ID segments with no goals that have had non-zero SAV data in more recent years (i. e. WBRTF)
- We are assessing deeper and shallower than what we set as the 192K target. If 220K is the target and 192K is standard, maybe if we assess differently and that didn't go into the standard, it is okay.