|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Management Approach 1:** Identify an appropriate suite of metrics to measure the multiple facets of stream health to complement the baywide Chessie BIBI. | | | | | |
| **Key Action**  *Description of work/project. Define each major action step on its own row. Identify specific program that will be used to achieve action.* | **Performance Target(s)**  *Identify incremental steps to achieve Key Action* | **Partners**  **Responsible**  *Identify responsible partner for each step.* | **Geographic Location** | **Timeline**  *Identify completion date (month and year) for each step.* | **Factors Influencing and/or Gap**  *ID related factor or gap in Mgmt. Strat* |
| 1. Update and refine the Chesapeake Bay Basin-wide Index of Biotic Integrity (“Chessie BIBI”) for streams | 1. Updating the database will be completed Nov 2015. The following remaining steps will be completed in 2016. 2. Metric and index calculations 3. Index sensitivity improved 4. Bioregion under-representation analysis 5. Genus-level metrics tested | ICPRB | Chesapeake Bay Watershed | Steps 2-5: Apr 2016  Final report completed Sept 2016 | It is a biological endpoint that will reflect the improvements in stream health and function called for in the 2014 Chesapeake Watershed Agreement At this time, the index needs to be updated with the most recent macroinvertebrate data. |
| 1. Establish 2008 baseline and approach for determining future trends (% change) | 1. Provide stream representation comparable to CBWM Phase 6 including 1st-4th order streams (also reconcile differences in scale from various sampling programs, 1:24K v 1:100k) 2. Develop method to express site-specific biological data as percent of stream miles with a passing rank in Chesapeake Bay watershed 3. Determine time period for the 2008 baseline and calculate baseline 4. Decide how trends (i.e., % change from 2008 baseline) should be determined from random sampling design data | ICPRB  USGS  Technical Advisory Group for Chessie BIBI update | Chesapeake Bay Watershed | Final report completed Sept 2016 | Chessie BIBI currently not reported in stream miles *(not included as a factor influencing or gap but necessary metric to be developed for outcome)* |
| 1. Determine and report progress | 1. Periodically acquire and process available stream data from Bay States and District of Columbia 2. CBP calculate and report % change in Chessie BIBI index | Bay States and DC provide data; ICRPB work with monitoring staff and EPA CBP for QA process; EPA CBP report and track | Chesapeake Bay Watershed | Dec. 2017 | Lack of process and funding to track and report updated Chessie BIBI |
| 1. Identify practicable metrics consistent with BMP verification guidance to credit projects for N, P, and sediment load reductions and stream functional improvements for overall improvement in stream health, and incorporate these recommendations into BMP Verification Plans. | 1. Stream Health Work Group continue to work with Habitat GIT to review future drafts of state Verification Program Plans to assure states incorporate Verification Committee recommendations. 2. Stream Health Work Group to receive regular updates on results of “pooled monitoring” research via Chesapeake Bay Trust (CBT) grantees or CBT staff | Suggested  BMP Verification Committee, Habitat GIT, SHWG, state agencies (MD DNR Monitoring and Non-Tidal Assessment) | Chesapeake Bay Watershed | January 2016 – ongoing | Robust stream restoration monitoring to evaluate the potential functional lift or improvement in stream functions from BMP implementation |
| **Management Approach 2:** Provision of adequate funding and technical resources to support functional lift in stream restoration projects, in addition to nutrient and sediment reduction. | | | | | |
| **Key Action**  *Description of work/project. Define each major action step on its own row. Identify specific program that will be used to achieve action.* | **Performance Target(s)**  *Identify incremental steps to achieve Key Action* | **Partners**  **Responsible**  *Identify responsible partner for each step.* | **Geographic Location** | **Timeline**  *Identify completion date (month and year) for each step.* | **Factors Influencing and/or Gap**  *ID related factor or gap in Mgmt. Strat* |
| 1. Implement pooled monitoring approach throughout Chesapeake Bay watershed | 1. SHWG provide input to existing pooled monitoring research program, including topics 2. Develop strategy for monitoring database/clearinghouse 3. Working with the existing pooled monitoring effort, provide input on short- and long-term funding plan. Where appropriate as determined by the existing pooled monitoring advisory group and the Stream Health Work Group, participate in key expansion/development efforts. 4. Help organize and lead, with the Maryland Water Monitoring Council Monitoring Work Group and the existing CBT Pooled Monitoring advisory group, efforts to disseminate results, including but not limited to an annual forum to expose regulatory, practitioner, and manager audiences to regulatory- and practice-relevant research outcomes. 5. Incorporate Trout Unlimited’s Potomac Headwaters Home Rivers Initiative in West Virginia and Coldwater Habitat Restoration Program in Pennsylvania. 6. With the existing pooled monitoring advisory group, evaluate potential and develop a plan for expansion across the watershed. | Ad-hoc Pooled Monitoring Committee facilitated by CBT  Maryland Stream Restoration Association representative address expansion of effort Bay-wide.  VA DEQ interested  ICPRB contact for database development inquires  Trout Unlimited | Maryland (current effort)  District of Columbia, Virginia interested jurisdiction  Potential Chesapeake Bay Watershed | **December 2017** | Sufficiency of data to demonstrate effectiveness of stream restoration practices  Investments in research to improve the body of knowledge surrounding restoration techniques and net benefit to stream and watershed health. |
| **Management Approach 3:** Active and engaged participation by local communities with Federal and State partners is central to Bay restoration (see Management Strategy for full Approach). | | | | | |
| **Key Action**  *Description of work/project. Define each major action step on its own row. Identify specific program that will be used to achieve action.* | **Performance Target(s)**  *Identify incremental steps to achieve Key Action* | **Partners**  **Responsible**  *Identify responsible partner for each step.* | **Geographic Location** | **Timeline**  *Identify completion date (month and year) for each step.* | **Factors Influencing and/or Gap**  *ID related factor or gap in Mgmt. Strat* |
| 1. Develop a “Stream Restoration Permit Committee” of the Stream Health Work Group that brings practitioners, regulators and the regulated community together to resolve issues and find common ground to identify actions to streamline the stream restoration project permit review process | 1. Identify members of the Stream Health Work Group to form the Committee 2. Develop meeting schedule 3. Review latest synopsis of permit issues, recommendations and actions. 4. Provide recommendations to Stream Health Work Group (and Bay Program Partnership) on priority actions to streamline stream restoration project permit review process | Committee:  US ACE (North Atlantic Division, Baltimore, Norfolk),  EPA, MDE, VA DEQ, VMRC,  Anne Arundel County, Fairfax County,  PA DEP, DC DOEE, Trout Unlimited,  Other jurisdictional representatives (DE, WV, NY) | Chesapeake Bay Watershed | January 2016 - ongoing | Information needs to support innovative, effective design approaches to identify restoration potential and success for different land uses, stream types, and current and future site constraints, causes of impairment/stressors |
| 1. Work with federal, state regulatory agencies and local governments to develop streamlined process to evaluate WIPs, MS4 restoration plans or other relevant site analyses as sufficient documentation for alternative site analysis in support of stream restoration permits | 1. Convene Stream Health Restoration Permit Committee  2. Develop case study permit examples  3. Review criteria and guidance for site selection alternatives analysis  4. Review example WIPs and other watershed or site level analyses to provide information needs for site alternative analysis  5. Recommend guidance for using WIPs, or other documentation to satisfy site alternatives analysis requirement for permits  6. Identify steps to implement recommended guidance | Stream Restoration Permit Committee,  MDE\*, MD DNR, DOEE, VADEQ interested  \*MDE  (performance targets may differ as per 9/14/15 letter to MD Counties from MDE) | Maryland, Virginia, District of Columbia (interested)  And other  Chesapeake Bay jurisdictions pending | January 2016 – June 2016 | Information needs to support innovative, effective design approaches to identify restoration potential and success for different land uses, stream types, and current and future site constraints, causes of impairment/ stressors |
| 1. Establish minimum stability monitoring requirements for restoration projects | 1. Convene Stream Health Restoration Permit Committee 2. Identify minimum stability monitoring assessment parameters and standards 3. Document how higher level performance monitoring assessment parameters (i.e., water quality and biology) will be assessed 4. Recommend guidance for minimum stability monitoring and incorporate into BMP Verification Guidance 5. Identify steps to implement recommended guidance and coordinate with Key Action 4 in development of practicable metrics as relevant | South River Federation with interest from FWS, MDE, Severn River Keeper,  VA DEQ, DOEE interest to participate, USGS | Chesapeake Bay Watershed | July 2016 – March 2017 | Sufficiency of data to demonstrate effectiveness of stream restoration practices |
| **Management Approach 4:** Develop and promote holistic stream restoration design guidelines that identifies the level of degradation and improvement of stream functions and key stressors/factors limiting potential uplift. | | | | | |
| **Key Action**  *Description of work/project. Define each major action step on its own row. Identify specific program that will be used to achieve action.* | **Performance Target(s)**  *Identify incremental steps to achieve Key Action* | **Partners**  **Responsible**  *Identify responsible partner for each step.* | **Geographic Location** | **Timeline**  *Identify completion date (month and year) for each step.* | **Factors Influencing and/or Gap**  *ID related factor or gap in Mgmt. Strat* |
| 1. Implement recommendations from the STAC workshop report to establish a joint SHWG and USWG work group to develop guidance (e.g., via an expert panel) to align the stream restoration BMP protocols for nutrient and sediment loads delivered downstream to optimize improvements in stream health and function (e.g., improve instream aquatic life to improve Chesapeake Bay BIBI). Also use work group to address other technical issues identified in STAC Workshop on Sustainable Stream Restoration. | 1. Identify work group facilitator and reps from SHWG and USWG. 2. Establish charge for work group 3. Establish list of expected outcomes and deliverables 4. Develop timeline 5. Develop guidelines (interim and final) 6. Get approval from SHWG and USWG and the Water Quality and Habitat GITs | Suggested  SHWG reps  USWG reps.  to include US ACE Baltimore District, STAC, USGS | Chesapeake Bay Watershed | Interim guidelines March 2018  Revised and final guidelines December 2018 | Uniform design process for stream restoration that can measure change in stream functions and/project success based on a project goals and objectives. Specific to the Bay TMDL, a design process for restoration projects to reduce nutrient and sediments loads delivered downstream while at the same time ensuring optimal habitat conditions restored. |
| 1. Review and provide recommendations for the water quality impairment listing and TMDL process to determine the best way to address impairments (e.g., stressors) that are not associated with a pollutant TMDL (e.g. categorized as 4c non-pollution)) | 1. Coordinate with representatives from State agencies involved in TMDL and MS4 Programs and Toxic Contaminants Work Group. 2. Review Biological Stressor Identification (BSID) Analysis, sediment TMDLs and MS4 permits to determine best way for biological stressors identified by the BSID and classified as 4c can be addressed. 3. Work with other states to address issue | Monitoring and Non-Tidal Assessment as  representative from SHWG with interest from  VA DEQ, WV DEP, PA DEP, NY DEP FWS, MDE interested, USGS | Maryland, Virginia, Pennsylvania, District of Columbia | December 2017 | Targeting procedures for cost-effective restoration actions and design approaches that will achieve both water quality and biological functional improvement |
| 1. Continue to provide stream training to regulators and practitioners | 1. Convene joint Stream Health and Urban Stormwater Work Group (see also Action 9) 2. Identify priority training needs 3. Expand opportunities for participation Baywide through technology (e.g. webinars to supplement face-to-face meeting) 4. Secure funding for training and training provider 5. Develop training workshop(s) content 6. Identify steps to implement recommended training | Joint work group & interested parties/ identify training provider | TBD based on training needs identified | Ongoing |  |
| **Management Approach 5:** Work with CB Partners to include the Enhancing Partnering, Leadership, and Management GIT, to enhance the capacity of local governments, organizations, and landowners of beneficial stream restoration and maintenance practices. | | | | | |
| **Key Action**  *Description of work/project. Define each major action step on its own row. Identify specific program that will be used to achieve action.* | **Performance Target(s)**  *Identify incremental steps to achieve Key Action* | **Partners**  **Responsible**  *Identify responsible partner for each step.* | **Geographic Location** | **Timeline**  *Identify completion date (month and year) for each step.* | **Factors Influencing and/or Gap**  *ID related factor or gap in Mgmt. Strat* |
| 1. Provide training and education materials to local officials on stream restoration and health | 1. SHWG coordinate efforts with Upper Susquehanna Coalition (USC) to provide input on stream health to Local Leadership Work Group to assist with development of curriculum for watershed protection and restoration (e.g., Upper Susquehanna Coalition Emergency Stream Intervention initiative provides an example of the type of content applicable for this action). 2. SHWG coordinate efforts with Trout Unlimited’s Potomac Headwaters Home River Initiative and Coldwater Habitat Restoration Program in providing education materials to local governments. | Stream Health Work Group, USC, Trout Unlimited, and  Local Leadership Work Group/Cross-GIT Coordinator | Chesapeake Bay Watershed | Dec 2017 |  |
| 1. The Chesapeake Bay Commission will work collaboratively with CBP partners to idenify legislative, budgetary and policy needs to advance the goals of the Chesapeake Watershed Agreement.  We will, in turn, pursue action within our member state General Assemblies and the United States Congress.  See CBC Resolution #14-1 for additional information on the CBC’s participation in the management strategies. |  | CBC | Chesapeake Bay Watershed | Dec 2018 |  |

|  |
| --- |
| **Acronym Guide** (for all workplans) |
|  |
| AACC – Anne Arundel Community College |
| ACFHP - Atlantic Coast Fish Habitat Partnership |
| ACJV – Atlantic Coast Joint Venture |
| AgNPS – Agricultural Non-Point Source Pollution Model |
| Appalachian LCC - Appalachian Landscape Conservation Cooperative |
| ASTSWMO – Association of State and Territorial Solid Waste Management Officials |
| BayFAST/CAST/MAST/VAST – Federal Assessment Scenario Tool/Chesapeake AST/Maryland AST/Virginia AST |
| BDJV – Black Duck Joint Venture |
| BKT – Brook trout |
| BMP – Best Management Practice |
| CAC – CBP Citizens’ Advisory Committee |
| CAFO – Concentrated Animal Feeding Operation |
| CB – Chesapeake Bay |
| CBC – Chesapeake Bay Commission |
| CBF – Chesapeake Bay Foundation |
| CBIBS – Chesapeake Bay Interpretive Buoy System |
| CBIG – Chesapeake Bay Implementation Grants |
| CBP – Chesapeake Bay Program |
| CBPO – Chesapeake Bay Program Office |
| CBRAP – Chesapeake Bay Regulatory and Accountability Program grants |
| CBSAC – Chesapeake Bay Stock Assessment Committee |
| CBSSC – Chesapeake Bay Sentinel Site Cooperative |
| CBT – Chesapeake Bay Trust |
| CCWC – Choose Clean Water Coalition |
| CEAP – Conservation Effects Assessment Project |
| Chessie BIBI – Chesapeake Bay Basin-wide Index of Biotic Integrity |
| CNMP – Comprehensive Nutrient Management Plan |
| CNU – Christopher Newport University |
| CRC – Chesapeake Research Consortium |
| CREP – Conservation Reserve Enhancement Program |
| CSN – Chesapeake Stormwater Network |
| CWA – Clean Water Act |
| DAT – CBP Diversity Action Team |
| DC – District of Columbia |
| DCNR – Pennsylvania Department of Conservation and Natural Resources |
| DE – Delaware |
| DEP – Department of Environment |
| DE DNREC – Delaware Department of Natural Resources and Environmental Control |
| DNR –Department of Natural Resources |
| DoD – Department of Defense |
| DOEE – Dist. Of Columbia Department of Energy and Environment |
| DOF – Department of Forestry |
| DOT – Department of Transportation |
| DST – Decision support tool |
| DU – Ducks Unlimited |
| EC – Chesapeake Executive Council |
| EJ SCREEN – Environmental Justice Screening and Mapping Tool |
| EO Strategy – Executive Order 13508 Strategy for Protecting and Restoring the Chesapeake Bay Watershed |
| EJ – Environmental Justice |
| EL – Environmental Learning |
| ELCSS – Environmental Literacy Challenge for Systemic Sustainability |
| ERP – Elizabeth River Partnership |
| EPA – Environmental Protection Agency |
| Ex Comm - Executive Committee of the Sustainable Fisheries GIT |
| FERC – Federal Energy Regulatory Commission |
| FOD – Chesapeake Bay Program Federal Office Directors |
| FTE – full time employee |
| FWG – Forest Work Group |
| FWS – Fish and Wildlife Service |
| GIS – Geographic Information System |
| GIT – CBP Goal Implementation Teams |
| GMU – George Mason University |
| GSA – General Services Administration |
| HBCUs – historically black colleges and universities |
| HSCD – EPA Hazardous Site Cleanup Division |
| HWGIT – Healthy Watershed Work Group |
| ICPRB – Interstate Commission on the Potomac River Basin |
| IPC – Interfaith Partners for the Chesapeake |
| LCC – Landscape Conservation Cooperatives |
| LGAC – CBP Local Government Advisory Committee |
| LL – Local Leadership |
| LU – Land Use |
| LUWG – Land Use Work Group |
| MATOS - Mid-Atlantic Telemetry Observing System |
| MB – CBP’s Management Board |
| MD - Maryland |
| MDE – Maryland Department of Environment |
| MDSG – Maryland Sea Grant |
| MOU – Memorandum of Understanding |
| MSP – Math Science Partnership |
| MS4 – Municipal Separate Storm Sewer System |
| MWCOG – Metropolitan Washington Council on Governments |
| MWEEs – Meaningful Watershed Educational Experiences |
| MWS – Master Watershed Stewards |
| NAAQS – National Ambient Air Quality Standards |
| NALCC - North Atlantic Landscape Conservation Cooperative |
| NATA – National Air Toxics Assessment |
| NCBO – NOAA Chesapeake Bay Office |
| NGO – Non-government organization |
| NEIEN – National Environmental Information Exchange Network |
| NERR – Chesapeake Bay National Estuarine Research Reserve |
| NFWF – National Fish and Wildlife Foundation |
| NOAA – National Oceanic and Atmospheric Administration |
| NP – National Parks |
| NPDES – National Pollutant Discharge Elimination System |
| NRCS – Natural Resources Conservation Service |
| NPS – National Park Service |
| NYS DEC – New York State Department of Environmental Control |
| ODU – Old Dominion University |
| ORES – Oyster Reef Ecosystem Services |
| ORP – Oyster Recovery Partnership |
| OSSE – Office of the State Superintendent of Education |
| PA – Pennsylvania |
| PA DEP – Pennsylvania Department of Environmental Protection |
| PCB – polychlorinated biphenyl |
| PMP -- Pollution Minimization Plan |
| PRFC – Potomac River Fisheries Commission |
| PSC – CBP’s Principles' Staff Committee |
| QA – quality assurance |
| RFB – Riparian Forest Buffer |
| RMNs - Regional Monitoring Networks |
| SAV – Submerged Aquatic Vegetation |
| SERC - Smithsonian Environmental Research Center |
| SHWG – Stream Health Work Group |
| SRBC -- Susquehanna River Basin Commission |
| STAC – CBP Scientific and Technical Advisory Committee |
| STAR – CBP Scientific and Technical Assessment Research team |
| TCW – Toxics Contaminants Workgroup |
| TEA - Tidewater Ecosystem Assessment Division of MD DNR |
| TMDL – Total Maximum Daily Load |
| TNC – The Nature Conservancy |
| TSCA – Toxic Substance Control Act |
| UMBC – University of Maryland Baltimore County |
| UMCES – University of Maryland Center for Environmental Science |
| UMCES-CBL – University of Maryland Center for Environmental Science-Chesapeake Biological Lab |
| UMD – University of Maryland |
| USACE – U.S. Army Corps of Engineers |
| USDA – U.S. Department of Agriculture |
| USFWS – U.S. Fish and Wildlife Service |
| USFS – U.S. Forest Service |
| USGS – U.S. Geological Survey |
| UVA – University of Virginia |
| VA – Virginia |
| VCU – Virginia Commonwealth University |
| VA CZM – Virginia Coastal Zone Management |
| VBOE – Virginia Board of Education |
| VDGIF – Virginia Department of Game and Inland Fisheries |
| VIMS – Virginia Institute of Marine Science |
|  |
| Virginia DEQ – Virginia Department of Environmental Quality |
| VMRC – Virginia Marine Resources Commission |
| WG – work group |
| WIP – Watershed Implementation Plan |
| WQN - Water Quality Network |