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.
2. 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)*
3. 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

4. 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*
5. 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.	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.

	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.				
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*
6. 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
7. 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	Stream Restoration Permit Committee, MDE*, MD DNR, DOEE, VADEQ interested *MDE	Maryland, Virginia, District of Columbia (interested) And other Chesapeake Bay		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

	alternatives analysis requirement for permits 6. Identify steps to implement recommended guidance	(performance targets may differ as per 9/14/15 letter to MD Counties from MDE)	jurisdictions pending	January 2016 – June 2016	
8. 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*
9. 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.,	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	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.

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.				Revised and final guidelines December 2018	
10. 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
11. 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*

12. 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	
13. 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