WVWAPP: STREAMS   Last updated: 3/8/2013

Index	MetricID	Metric	Weight	Data	Shapefile (Original)	Shapefile (Project)	Source	Date of data	Date Downloaded	GIS type	Selection of features	Positive/ Negative	Units	Normalization	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Source
CONDITION/ FUNCTION																			
	1	Impaired	2	Impaired Streams (303d, TMDL, AMD)	AMD_Streams_HUC12_20090211.shp; DRAFT_2010WVImpaired_GIS.shp	impaired_xxx	DEP	AMD: 2/11/2009; Impaired: 1/11/2011	AMD: 3/10/2010; Impaired: 2/28/2011	line	303(d)/TMDL or AMD impaired streams	Negative	miles	Miles impaired streams/total stream mi	100% - 51%	50% - 11%	1% - 10%	0%	Best Guess
	2	Bio	0								Biologically impaired streams (macroinvertebrates)				100% - 51%	50% - 11%	1% - 10%	0%	Best Guess
	3	DioxPCB	0								Dioxin or PCB impaired streams				100% - 51%	50% - 11%	1% - 10%	0%	Best Guess
	4	Fecal	0								Fecal coliform impaired streams				100% - 51%	50% - 11%	1% - 10%	0%	Best Guess
	5	pHImp	0								pH impaired streams				100% - 51%	50% - 11%	1% - 10%	0%	Best Guess
	6	MetalsImp	0								Metals impaired streams				100% - 51%	50% - 11%	1% - 10%	0%	Best Guess
	7	ChlorideImp	0								Chloride impaired streams				100% - 51%	50% - 11%	1% - 10%	0%	Best Guess
Water Quality (SWQ) Weight=1	8	MedpH*	2								pH index, calculated on median values among samples per station: 100: >10 or <5, 200: >9 or <6, 300: >8 or <6.5, 400: 6.5 - 8	Positive	index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351+	New Hampshire Dept of Environmental Services thresholds
	9	MedRefIndex	0								Weighted Percentage of points that are DEP reference points (median among samples per station)	Positive	% points	% points per planning unit	0%	1-50%	51 - 99%	100%	DEP's reference points
	10	MedSulfate	1								Sulfate index, calculated on median values among samples per station: 100: >250 mg/l, 200: >50, 300: >25, 400: <=25	Positive	index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351 - 400	Poor: EPA's secondary drinking water standard, Fair: indication of some mining activities.
	11	MedNitro	0								Total Kjeldahl Nitrogen index, calculated on median values among samples per station: 100: >=0.5 mg/l, 200: >0.4, 300: >0.25, 400: <=0.25	Positive	index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351+	New Hampshire Dept of Environmental Services thresholds
	12	MedStressed	0								Median percent of stations fitting DEP's Stressed Category (GLIMPSS calculation)	Negative	% points	% of points per planning unit	100% - 51%	50% - 11%	1% - 10%	0%	DEP's Stressed Category definition (GLIMPSS calculation), except: need two metrics not attaining to be considered stressed, instead of DEP's 1.
	13	MedMetal	0								Median % of measured metals (Al, Fe, Mn, Se, Cu, Zn) not attaining DEP's water quality standards per station, calculated on median values among samples	Negative	% points		100% - 51%	50% - 11%	1% - 10%	0%	DEP's water quality standards for Al, Fe, Mn, Se, Cu, Zn)
	14	MedChloride	0								Median chloride index: 100: >860mg/l, 200:>230, 300:>115, 400: <=115	Positive	Index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351+	DEP acute and chronic water quality standards for Poor and Fair categories, half-way point for Very Good category
	15	MedSpecCond	1.5								Specific Conductance index, calculated on median values of samples per station: 100: >835 umhos/cm, 200: >500, 300: >200, 400: <=200	Positive	Index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351+	Poor: correspondence to chronic chloride concentration standard, Fair: EPA standard, Good: literature research
	16	MedGLIMPSS	2								GLIMPSS_CF index of Percent Threshold, calculated on median values: 100: <50, 200: <100, 300: <125, 400: >=125	Positive	Index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351 - 400	Index definition
	19	MedS&E	1								Median sum of individual indices for Embeddedness and Sedimentation scores: 100: <11, 200: <21, 300: <31, 400: >=31	Positive	Score	med score/planning unit	0 - 150	151 - 250	251 - 350	351+	DEP's RBP categories
	20	MaxMinpH	0								pH index calculated on extreme values among samples for each station (maximum or minimum): 100: >10 or <5, 200: >9 or <6, 300: >8 or <6.5, 400: 6.5 - 8	Positive	Index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351+	New Hampshire Dept of Environmental Services thresholds
	21	MinRefIndex	0	WAB database	WAB_STATIONS_201110.shp	wab_stations_xxx	DEP	10/14/2011	10/14/2011	point	Weighted Percentage of points that are DEP reference points (minimum among samples per station)	Positive	Index	% of sampling points	0%	1-50%	51 - 99%	100%	DEP's reference points
	22	MaxSulfate	0								Maximum sulfate index: values from 100 (high sulfate values) to 400 (low sulfate values)	Positive	Index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351 - 400	Poor: EPA's secondary drinking water standard, Fair: indication of some mining activities.
	23	MaxNitro	0								Total Kjeldahl Nitrogen index, calculated on extreme values among samples per station: 100: >=0.5 mg/l, 200: >0.4, 300: >0.25, 400: <=0.25	Positive	Index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351+	New Hampshire Dept of Environmental Services thresholds
	24	MaxStressed	0								Maximum percent of stations fitting DEP's Stressed Category (GLIMPSS calculation)	Negative	% points	% of points per planning unit	100% - 51%	50% - 11%	1% - 10%	0%	DEP's Stressed Category definition (GLIMPSS calculation), except: need two metrics not attaining to be considered stressed, instead of DEP's 1.
	25	MaxMetal	0								Median % of measured metals (Al, Fe, Mn, Se, Cu, Zn) not attaining DEP's water quality standards per station, calculated on extreme values	Negative	% points		100% - 51%	50% - 11%	1% - 10%	0%	DEP's water quality standards for Al, Fe, Mn, Se, Cu, Zn)
	26	MaxChloride	0								Chloride index, calculated on extreme values among samples per station (maximum or minimum): 100: >860mg/l, 200:>230, 300:>115, 400: <=115	Positive	Index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351+	DEP acute and chronic water quality standards for Poor and Fair categories, half-way point for Very Good category
	27	MaxSpecCond	0								Specific Conductance index, calculated on extreme vallues among samples per station: 100: >835 umhos/cm, 200: >500, 300: >200, 400: <=200	Positive	Index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351+	Poor: correspondence to chronic chloride concentration standard, Fair: EPA standard, Good: literature research
	28	MinGLIMPSS	0								GLIMPSS_CF index of Percent Threshold, calculated on extreme values among samples per station (maximum or minimum): 100: <50, 200: <100, 300: <125, 400: >=125	Positive	Index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351 - 400	Index definition
	29	MinRBP	0								Total RBP Score index, calculated on extreme values among samples per station: 100: <60, 200: <110, 300: <160, 400: >=160	Positive	Index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351 - 400	DEP's RBP categories
	30	MinBSS	0								Bank Stability Score index, calculated on extreme values among samples per station (maximum or minimum): 100: <6, 200: <16, 300: <17, 400: >=16	Positive	Score	avg score/planning unit	0 - 150	151 - 250	251 - 350	351 - 400	DEP's RBP categories

Index	MetricID	Metric	Weight	Data	Shapefile (Original)	Shapefile (Project)	Source	Date of data	Date Downloaded	GIS type	Selection of features	Positive/Negative	Units	Normalization	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Source
	31	MinS&E	0								Sum of individual indices for Embeddedness and Sedimentation scores, calculated on extreme values among samples per station: 100: <11, 200: <21, 300: <31, 400: >=31	Positive	Score	avg score/planning unit	0 - 150	151 - 250	251 - 350	351 - 400	DEP's RBP categories
	32	VolRem	0	Voluntary Remediation Sites	voluntary_remediation.shp	vol_remed_xxx	DEP		8/24/2011	point	any	Negative	#	#/sq mi planning unit					
	33	KarstRip	0	Karst geology	geologyKarstFormations_WVGES_1968_utm83.shp	karst_xxx	DNR	1968?		polygon	any	Positive	sq mi	% of riparian area					
	34	HES	0	Soils (highly erodible)	Soils_xxx	hes_xxx	SSURGO	Varies	Varies	polygon	EroHzdORT = severe, very severe	Negative	sq mi	% of planning unit with highly erodible soils					
	35	Imperv1*	2	NLCD Impervious surface	nlcd2006_impervious_2-14-11.img	nlcd06_imp_xxx	USGS	2/16/2011	2/18/2011	raster	Imperviousness	Negative	%	Mean % imperviousness per planning unit					
	36	AllWells	1.5	All Wells		allwells_rip_xxx					WELL_STATU: PL, ABODR, AC, AB, CONST	Negative	#	#/sq mi riparian area					
	37	CBMTWellProd	0	Coal bed methane and Trenton well production	cbm_and_trenton_well_prod.shp	cbt_well_prod_xxx.shp	WVGES			Excel	NA	Negative	Mcuft/day	Average production per planning unit					
	38	ActiveSurface1	0	Active Surface mining	active_surface_mine.shp	active_surface_mine_xxx	Varies (multiple datasets)	12/2011	Varies	polygon	Merge mining polygons: LULC 2009 Mined lands, Valley Fills, Refuse Structures	Negative	sq mi	% planning unit					
	39	ActiveSurfaceRip1	0									Negative	sq mi	% riparian area					
	39.1	LegacySurface1	0									Negative	sq mi	% planning unit					
	39.2	SurfaceMine1*	2	Active and Legacy surface mining								Negative	sq mi	% planning unit					
	40	UndrgrndMine1*	2	Underground mining	all_mining.shp	undrgrndmine_xxx	GES	3/10/2011	3/11/2011	polygon	Underground mining	Negative	sq mi	% planning unit					
	41	TotalCoalProd	0	Coal production (2000-2010)	CoalProdCumulative.xlsx	NA	US EIA	Varies	12/2011	Excel	Cumulative Total Production	Negative	thousand short tons	total coal production/sq mi planning unit					
	42	MinOps	0	Mineral operations	mineralOperations_USGS_200204_ut	mineral_ops_xxx	USGS	2002		point	any	Negative	#	#/sq mi planning unit					
	43	Timber	0	Timber harvest	WVDOF_Harvest.shp	timber_xxx	WVDOF		6/21/2011	point	any	Negative	sq mi	sq mi/planning unit					
	44	NPDES	0	NPDES (Non-coal)	ownrpdes_outlets.shp	npdes_xxx	DEP		8/24/2011	point	perm_type: Industrial, Sewage; iut_code: OUTLT, CSO	Negative	#	#/ sq mi planning unit	>3.0888	0.81081-3.0888	0.03861-0.81080	0	Sowa et al 2007 (modified to sq mi)
	45	CoalNPDES	0	Coal NPDES	hpu.shp	hpu_xxx	DEP		8/24/2011	point	any	Negative	#	#/sq mi planning unit	>3.0888	0.81081-3.0888	0.03861-0.81080	0	Sowa et al 2007 (modified to sq mi)
	46	Ag	0			lulc09_ag_xxx					Value: 82	Negative							
	47	Graze	0			lulc09_graze_xxx					Value: 81	Negative		% of planning unit					
	48	Developed	0			lulc09_natcover_xxx					Value: 20	Negative			>8	4-8	2-3	>0-1	Literature Review
	48.1	NatCover	0			lulc09_forest_xxx					Values: 41, 42, 43, 71, 91, 92	Positive	sq mi	% of planning unit					
	48.2	Forest	0								Values: 41, 42, 43	Positive		% of planning unit					
	49	AgRip1	1	LULC 2009	wv_lulc_09_10 (depsheds_WV.shp for headwaters catchments)	lulc09_ag_xxx	WVU NRAC		11/14/2011	raster	Value: 82	Negative							
	50	GrazeRip1	1			lulc09_graze_xxx					Value: 81	Negative		% of riparian area					
	51	DevelopedRip1	1			lulc09_urban_xxx					Value: 20	Negative			>8	4-8	2-3	>0-1	Literature Review
	51.1	NatCoverRip1	2																
	52	NatcoverHdwtr	0			natcoverhdwtr_xxx					Values: 41, 42, 43, 71, 91, 92; Headwater catchments (depsheds from Mike Strager)	Positive	sq mi	% of planning unit					
	53	AllRdRail	1.5	Roads/railroads	Routes feature class; Railroads_fromDNR100511.shp	roads_xxx;rail_xxx	WVDOT; DNR		9/28/2011; 05/2010	line	any	Negative	miles	miles/sq mi planning unit					
	54	AllRdRailRip1	0									Negative	miles	miles/sq mi riparian area					
	55	Superfund	0	Superfund sites (Envirofacts)	EPA_geodata_wv.shp	superfund_xxx	EPA	4/18/2011	5/18/2011	point	CERC1_INT = superfund NPL	Negative	#	#/sq mi planning unit					
	56	TSD	0	Hazardous waste disposal sites (Envirofacts)	EPA_geodata_wv.shp	tsd_xxx	EPA	4/18/2011	5/18/2011	point	RCRA1_INT, RCRA2_INT, or RCRA3_INT = TSD	Negative	#	#/sq mi planning unit					
	57	BoatLaunch	0	Boat launches	boatLaunches_DNR_200410_utm83.shp	boatlaunch_xxx	DNR	01/2004	12/15/2011	point	any	Negative	#	#/stream mile					
	58	Septic	0	Septic systems	structurePoints_SAMB_utm83.shp	septic_xxx	WVFO generated	09/2011	09/2011	point	Structure points which fall outside of sewer area boundaries (digitized from WV IJDC GIS Data Portal)	Negative	#	#/sq mi planning unit					
	59	SepticRip	0						09/2011	09/2011			Negative	#	#/sq mi riparian area					
	60	Landfill	0	Landfills	solidWasteFacilities_WVDEP_200202_utm83.shp	landfills_xxx	DEP	2002		point	any	Negative	#	#/sq mi planning unit					
Water Quantity (SWN) Weight=1	61	PWS	0.5	PWS (public water supply)	TNC_Watersources_2011_08_30	pws_xxx	DHHR	2011	8/31/2011	points	any except wells	Negative	#	#/stream mile					
	62	LQU	2	Large quantity users	2010_LQU_Facility_Location_Avg_UseType.shp	lqu_xxx	DEP (Brian Carr)	2011	8/31/2011	points	size class 1(a,b) and 2 streams	Negative	#	#/stream mi					
	63	LQU3yr	0			lqu_3yr_xxx						Negative	gallons	gal/stream mi (use sum total if multiple LQUs)					
	64	PWSTrib	0	PWS tributaries (NHD 24k)	TNC_Watersources_2011_08_30	pwstrib_xxx	DHHR	2011	8/31/2011	line	stream segments draining to PWS reservoir; FAC_TYPE: IN, RS	Positive	miles	# stream miles/total stream miles					
	65	WWTP	0.5	Sewer treatment plants	sewerTreatmentPlants_WVDEP_2002 03_utm83.shp	WWTP_xxx	DEP	2002	5/18/2011	points	sub_desc: Ind POTW	Negative	# customers served	# customers served/sq mi planning unit					
	66	DamDrainage	1	Dam drainage area	dam_drainage	dam_drainage_xxx	WVFO generated	12/2011	NA	polygon	any	Negative	sq mi	% of planning unit					
	67	Imperv2*	1.5	NLCD Impervious surface	nlcd2006_impervious_2-14-11.img	nlcd06_imp_xxx	USGS	2/16/2011	2/18/2011	raster	Imperviousness	Negative	%	Mean % imperviousness per planning unit					
	68	ActiveSurface2	0	Active Surface mining	active_surface_mine	active_surface_mine_xxx	Varies (multiple datasets)	12/2011	Varies	polygon	Merge mining polygons: LULC 2009 Mined lands, Valley Fills, Refuse Structures	Negative	sq mi	% planning unit					
	69	LegacySurface2	0	Legacy Surface mining	legacy_surface_mine	legacy_surface_mine_xxx	Varies (multiple datasets)	12/2011	Varies	polygon	Merge mining polygons: non-active WVFO generated mining from aerials/topo; LULC 2009 reclaimed mine lands; abandoned mine lands	Negative	sq mi	% planning unit					
	69.1	SurfaceMine2	1																
	70	UndrgrndMine2	1.5	Underground mining	all_mining.shp	undrgrndmine_xxx	GES	3/10/2011	3/11/2011	polygon	Underground mining	Negative	sq mi	% planning unit					
	71	LowFlow	0	Low flow impaired streams	WAB_STATIONS_201110.shp	impaired_xxx	DEP	1/11/2011	2/28/2011	line	LowFlow	Negative	miles affected streams	mi/total stream mi					
	72	Consum	0	Consumptive use data	water_consumption_2005.xls	consum_xxx	USGS	6/26/2005	11/18/2011	Excel	Sum of consumptive and non-consumptive water usage by county	Negative	Mgal/day	Mgal/day per planning unit					
	73	NonConsum	0			nonconsum_xxx						Negative	Mgal/day						
Hydrologic Connectivity (SHC) Weight = 1	74	Unimpeded	0	Functional river network	functionalrivernetwork_disso_jn.shp	FRnetwork_xxx	ERO	3/8/2011	3/16/2011	line	N_SZCL > = 4	Positive	miles	miles/total stream mi					
	75	TempImp	0	Impaired Streams (303d)	DRAFT_2010WVImpaired_GIS.shp	impaired_xxx	DEP	1/11/2011	2/28/2011	line	Temperature	Negative		# stream mi/total stream mi					
	76	Hdwtrs	1.5	Headwaters (24k)	NHDFlowline	headwtrs_xxx	USGS/WVU	07/2011	11/4/2011	line	NESZCL 1a, 1b (Stream Order 1, 2)	Positive	Miles (of streams)	# headwater stream miles/total stream miles					
	77	LocInt	1	Local integrity/Headwater catchments	locintgrty_rk; depsheds_WV.shp	locintgrty_xxx	ERO/PAFO	03/2011	3/21/2011	raster	local integrity score (grid_code); Headwater catchments	Positive	score	avg score/planning unit					
	78	WetArea	1	NWI Wetlands	CONUS_wet_poly	wetlands_nwi_xxx	FWS	2011	8/31/2011	polygon	Type: Freshwater emergent wetland, Freshwater forested/shrub wetland	Positive	sq mi	% planning unit					

Index	MetricID	Metric	Weight	Data	Shapefile (Original)	Shapefile (Project)	Source	Date of data	Date Downloaded	GIS type	Selection of features	Positive/ Negative	Units	Normalization	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Source
	79	PowPlants	0.5	Power plants		powplants_xxx	Ventyx		12/5/2011	point	size class 1(a,b) and 2 streams	Negative	#	# / stream mi					
	80	Forestriparea	1.5	LULC 2009	wv_lulc_09_10	lulc09_forest_xxx	WVU NRAC		11/14/2011	raster	Value: 41, 42, 43	Positive	sq mi	% of riparian area with forested cover	<60	60-80	80-90	>90	Literature Review
	81	Dams	1.5	Dams	WV_Dams_021011.shp	dams_xxx	ERO	2/10/2011	2/10/2011	point	Use: 1,2	Negative	#	#/ stream mi					
	81.1	AllRdRailRip2	2																
	82	Culverts	0	Road/rail stream crossings (culverts)	Routes feature class; Railroads_fromDNR100511.shp	roadrrX_xxx	WVDOT	Varies	9/28/2011; 05/2010	point	Headwater streams/roadRR crossings; Bridges over headwater streams	Negative	#	#/ stream mi	>0.4	0.2-0.4	0.1-0.19	0-.09	Sowa et al 2007 (#/sqkm)
	83	Bridges	0	Bridges	bridges_wvDOT_2008.shp	bridges_xxx	WVDOT			point	Bridges over non-headwater streams	Negative	#	#/stream mi					
	84	AllSGNCRip	1.5	SGCNs - ALL	EOs_All_wPartnerRTEdata_Feb2011_wEIInfo	ALL_SGNC_xxx	DNR/ researchers	2/14/2011	2/14/2011	point	G1-G3, S1-S3, Federally listed	Positive	#	# species/riparian area					
	84.1	MedTaxa	0	Taxa richness	WAB_STATIONS_201110.shp		DEP				GLIMPSS_CF taxa	Positive	#	median # taxa					
	84.2	MaxTaxa	1	Taxa richness	WAB_STATIONS_201110.shp		DEP				GLIMPSS_CF taxa	Positive	#	maximum # taxa					
	85	Muss	1	Mussel streams	WestVirginiaMusselStreams.shp	mussels_xxx.shp	WVFO generated	09/2011	09/2011	line	any	Positive	miles	Miles streams/total stream miles					
	86	Trout	0	Trout streams	TROUT_AUIDcodeNHD_2010IR.shp	trout_xxx	DEP	2010	8/15/2011	line	any	Positive	miles	Miles streams/total stream miles					
Biodiversity (SBD) Weight=0.5	87	NEHabRip	1	NE terrestrial habitat types	syst_ne110714	nehab_xxx	TNC - ERO	7/14/2011	8/8/2011	raster	any	Positive	#	# NE terrestrial habitat types in riparian area/planning unit					
	88	SpeciesPredict	0	Species diversity prediction (ELUs)	wvelu1108	elu_xxx	TNC - ERO			raster	any	Positive	Index	Index of predicted species diversity					
	89	CalcBedRip	1	Calcareous bedrock	wvelu1108	calcbed_xxx	TNC - ERO			raster	GEOL_DESC = Calcareous sed/metased; Mod calcareous sed/metased	Positive	sq mi	% of riparian area					
	90	NNISRip	1.5	Non-native invasive species	Invasive_plants_AgDNR.shp	nnis_xxx	WVDA/WVDNR	8/30/2011; 11/18/2011	11/18/2011	point	any	Negative	#	# species/riparian area					
	91	Corbicula	0	Corbicula mussels		corbicula_xxx	WVDEP	10/14/2011	10/14/2011	point	any	Negative		% points per planning unit					
	92	Carp	0	Carp		carp_xxx	WVDEP	10/14/2011	10/14/2011	point	any	Negative		% points per planning unit					
	93	Zebras	0	Zebra Mussels	none	zebra_mussels_xxx	WNDNR	11/17/2010	11/17/2010	line	any	Negative	miles	Miles streams/total stream miles					
	94	Infected	0	Quarantined/Infested/Infected counties	2011_Infested_Counties_WVDA_PID_GCS_NAD_83.shp	infected_xxx	WVDA	2011	8/31/2011	polygon	any (# of pests per county)	Negative	#	# of pests/county/planning unit					
	95	NatcoverRip2	2			natcover_rip_xxx					Positive		Values: 41-43, 71, 91-92	<50%	50-75	>75%		Literature Review
	96	AgRip2	1	LULC 2009	wv_lulc_09_10	lulc_ag_rip_xxx	WVU NRAC		11/14/2011	raster	Value: 82	Negative	sq mi	% of riparian area					
	97	GrazeRip2	1			lulc_graze_rip_xxx					Negative		Value: 81					
	98	DevelopedRip2*	2			lulc_urban_rip_xxx					Negative		Value: 20					
	99	ActiveSurfaceRip2*	2	Active Surface mining	active_surface_mine	active_surface_mine_xxx	Varies (multiple datasets)	12/2011	Varies	polygon	Merge mining polygons: LULC 2009 Mined lands, Valley Fills, Refuse Structures	Negative	sq mi	% riparian area					
Riparian Habitat (SRH) Weight=1	100	LegacySurfaceRip	1	Legacy Surface mining	legacy_surface_mine	legacy_surface_mine_xxx	Varies (multiple datasets)	12/2011	Varies	polygon	Merge mining polygons: non-active WVFO generated mining from aerials/topo; LULC 2009 reclaimed mine lands; abandoned mine lands	Negative	sq mi	% riparian area					
	17	MedRBP	1	WAB database	WAB_STATIONS_201110.shp	wab_stations_xxx	DEP	10/14/2011	10/14/2011	point	Median total RBP index: 100: <60, 200: <110, 300: <160, 400: >=160	Positive	Index	Index for each planning unit	0 - 150	151 - 250	251 - 350	351 - 400	DEP's RBP categories
	18	MedBSS	0								Median RBP Bank Stability Score index: 100: <6, 200: <16, 300: <17, 400: >=16	Positive	Score	med score/planning unit	0 - 150	151 - 250	251 - 350	351+	DEP's RBP categories
	101	AllWellsRip	1	All Wells	Wells_20111129	allwells_xxx	DEP	11/29/2011	11/29/2011	point	All of following wells selections	Negative	#	#/sq mi riparian area					
	102	AllRdRailRip3	1.5	Roads/railroads	Routes feature class; Railroads_fromDNR100511.shp	roads_xxx;rail_xxx	WVDOT; DNR		9/28/2011; 05/2010	line	any	Negative	miles	miles/sq mi riparian area					
	103	EnergyRip	0	Energy transmission lines	Ventyx_Existing_201111	energy_xxx	Ventyx	11/2011	NA	line	any	Negative	miles	miles/sq mi riparian area					
	104	PipeRip	0	Pipelines	Ventyx_Existing_201111	pipe_xxx	Ventyx	11/2011	NA	line	any	Negative	miles	miles/sq mi riparian area					
	105	WindRip	0	Wind turbines	FAA_CentralApps_asof25dec2010.shp	wind_xxx	PAFO	12/25/2010	5/4/2011	point	any	Negative	#	#/sq mi riparian area					
	106	BldgsRip	0	Buildings	structurePoints_SAMB_utm83.shp	bldgs_xxx	SAMB	2003	8/29/2011	point	any	Negative	#	#/sq mi riparian area					

WVWAPP: WETLANDS | Last updated: 3/8/2013

Index	MetricID	Metric	Weight	Data	Shapefile (Original)	Shapefile (Project)	Source	Date of data	Date Downloaded	GIS type	Selection of features	Positive/ Negative	Units	Normalization	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Source
CONDITION/ FUNCTION																			
	110	ForestHdwtrWet1	2	2009 LULC; Headwater wetlands	wv_lulc_09_10	foresthdwtrwet_xxx					Headwater wetland buffer w/ forested cover	Positive	sq mi	% wetland buffer					
	111	AgWet1	0	2009 LULC	wv_lulc_09_10	lulc09_ag_xxx	WVU NRAC		11/14/2011	raster	Value: 82	Negative	sq mi	% wetland buffer		>40%	10-40%	<10%	Literature Review
	112	GrazeWet1	0			lulc09_graze_xxx					Value: 81								
	113	DevelopedWet1	0			lulc09_urban_xxx					Value: 20								
	114	AgCatch	1			lulc09_ag_xxx					Value: 82			% wetland catchment		>40%	10-40%	<10%	Literature Review
	115	GrazeCatch	1			lulc09_graze_xxx					Value: 81								
	116	DevelopedCatch	1			lulc09_urban_xxx					Value: 20								
	117	ForestCatch	0			lulc09_forest_xxx					Values: 41-43	Positive							
	118	NatCoverCatch	3			lulc09_natcover_xxx					Values: 41-43, 71, 91-92								
	119	ImpervWet	0	NLCD Impervious surface	nlcd2006_impervious_2-14-11.img	nlcd06_imp_xxx	USGS	2/16/2011	2/18/2011	raster	Imperviousness	Negative	%	Mean % imperviousness wetland buffer	>10%	10%			Literature Review
	120	ImpervCatch	1											Mean % imperviousness wetland catchment					
Water Quality (WWQ) Weight=1	121	RoadsRRCatch	1	Roads/rail	Routes feature class; Railroads_fromDNR100511.shp							Negative	Miles	# miles/sq mi wetland catchment					
	122	NPDESCatch	0	NPDES sites	ownpdes_outlets.shp	npdes_outlt_xxx	DEP		8/24/2011	point	perm_type: Industrial, Sewage; iut_code: OUTLT	Negative	#	#/sq mi wetland catchment					
	123	ActiveSurfaceWet1	0	Active Surface mining	active_surface_mine	active_surface_mine_xxx	Varies (multiple datasets)	12/2011	Varies	polygon	Merge mining polygons: LULC 2009 Mined lands, Valley Fills, Refuse Structures	Negative	sq mi	% wetland buffer					
	124	ActiveSurfaceCatch	2											% wetland catchment					
	125	SurfaceCoalProd	0	Coal production (2000-2010)	CoalProdCumulative.xlsx	NA	US EIA	Varies	12/2011	Excel	Cumulative Surface Production	Negative	thousand short tons	surface coal production per sq mi planning unit					
	126	DistAllWells	0	AllWells	Wells_20111129	allwells_xxx	DEP	11/29/2011	11/29/2011	point	WELL_STATU: PL, ABODR, AC, AB, CONST	Positive	Miles	Avg distance in miles per planning unit					
	127	AllWellsCatch	1									Negative	#	#/sq mi wetland catchment					
	128	SepticWet	0	Septic systems	structurePoints_SAMB_utm83.shp	septic_xxx	WVFO generated	09/2011	09/2011		Structure points which fall outside of sewer area boundaries (digitized from WV IJDC GIS Data Portal)	Negative	#	#/sq mi wetland buffer					
	129	SepticCatch	0									Negative	#	#/sq mi wetland catchment					
	130	LandfillCatch	0	Landfills	solidWasteFacilities_WVDEP_200202_utm83.shp	landfills_xxx	DEP	2002		point	any	Negative	#	#/sq mi wetland catchment	>1	1	0		Best Guess
	131	MinOpsCatch	0	Mineral operations	mineralOperations_USGS_200204_ut	mineral_ops_xxx	USGS	2002		point	any	Negative	#	#/sq mi wetland catchment					
	132	TimberCatch	0	Timber harvest	WVDOF_Harvest.shp	timber_xxx	WVDOF		6/21/2011	point	any	Negative	sq mi	% wetland catchment					
	133	WetSize	0	NWI	CONUS_wet_poly	wetlands_xxx	FWS	2011	8/31/2011	polygon	Type: Freshwater emergent wetland, Freshwater forested/shrub wetland	Positive	sq mi	Mean size/sq mi planning unit					
	134	WetArea	2									Positive	sq mi	% of planning unit					
	135	RatioCatchWet	0	NWI/Catchments	planning_unit_edit.shp	wet_catch_xxx	WVFO generated	2011	NA	polygon	any	Positive	sq mi	Wet area/catchment area					
Hydrology (WHY) Weight=1	136	DistNearWtr	0	Surface water features	NHDFlowline (24k)		USGS/WVU	07/2011	11/4/2011	line	any	Negative	Miles	Distance in miles	> 0.06	> 0.06	0.03-0.06	<0.03	Literature Review (modified to miles)
	137	ForestHdwtrWet2	1	Headwater wetlands		headwtrs_xxx					Headwaters	Positive	sq mi	% of planning unit					
	138	FldForestWet	1	Floodplain	wvStatewideFloodPoly_WVGISTC_20101101_utm83.shp	flood_xxx	FEMA				Floodplain, forested wetland buffer	Positive	sq mi	sq mi/planning unit					
	139	FloodArea	1								Floodplain	Positive	sq mi	% of planning unit					
	140	Hydricsoils	1.5	Hydric soils	Soils_xxx	hydricsoils_xxx	SSURGO	Varies	Varies	polygon	hydric, partially hydrics	Positive	sq mi	% of planning unit with hydric soils					
	141	AllSGNCWet	1.5	SGCNs - ALL	EOs_All_wPartnerRTEdata_Feb2011_wEllInfo	ALL_SGNC_xxx	DNR/ researchers	2/14/2011	2/14/2011	point	G1-G3, S1-S3, Federally listed	Positive	#	# species/sq mi wetland buffer					
	142	SpeciesPredict	0	Species diversity prediction (ELUs)	wvelu1108	elu_xxx	TNC - ERO			raster	ology classes, elevation range, hectares calcareous bedr	Positive	Index	Index of predicted species diversity					
	143	CalcBedWet	1	Calcareous bedrock	wvelu1108	calcbed_xxx	TNC - ERO			raster	GEOL_DESC = Calcareous sed/metased; Mod calcareous sed/metased	Positive	sq mi	% of wetland buffer					
Biodiversity (WBD) Weight=0.5	144	KarstWet	0	Percent Karst	geologyKarstFormations_WVGES_1968_utm83.shp	Karst_xxx	WV GES	1968	5/10/2010	polygon	any	Positive	sq mi	% wetland buffer					
	145	NEHabWet	1	NE terrestrial habitat types	syst_ne110714	nehab_xxx	TNC - ERO	7/14/2011	8/8/2011	raster	any	Positive	#	# types in wet buffer/planning unit					
	146	NNISWet	1.5	Non-native invasive species	Invasive_plants_AgDNR.shp	invasive_plants_xxx	WVDA/WVDNR	8/30/2011; 11/18/2011	11/18/2011	point	any	Negative	#	# species/sq mi wetland buffer					
	147	Infected	0	Quarantined/Infested/ Infected counties	2011_Infested_Counties_WVDA_PID_GCS_NAD_83.shp	infected_xxx	WVDA	2011	8/31/2011	polygon	any (# of pests per county)	Negative	#	# of pests/county/planning unit					
	148	NatcoverWet	2	LULC 2009	wv_lulc_09_10	natcover09_xxx	WVU NRAC		11/14/2011	raster	Natural Cover: Codes 41, 42, 43, 52, 71, 90, 95	Positive	sq mi	% of wetland buffer with natural cover	<60	60-80	80-90	>90	Literature Review
	148.1	AgWet2	1																
	148.2	GrazeWet2	1																
	148.3	DevelopedWet2*	2																
	149	WetForestPatchMax	0	Forest Patch	centralapps_forest_patches_gt100acres_Wvclip	forest_patches_xxx	TNC	5/18/2011	10/29/2010 (sic)	polygon	>100 acres	Positive	sq mi	largest forest block in wetland buffer/planning unit					
	150	WetForestPatchMean	1											mean forest block size in wetland buffer/planning unit					
	151	AllWellsWet	1.5	AllWells	Wells_20111129	allwells_wet_xxx	DEP	11/29/2011	11/29/2011	point	All of the wells selections (see Water Quality)	Negative	#	#/wetland buffer					
Wetland Habitat (WWH) Weight=1	152	ActiveSurfaceWet2*	2	Active Surface mining	active_surface_mine	active_surface_mine_xxx	Varies (multiple datasets)	12/2011	Varies	polygon	Merge mining polygons: LULC 2009 Mined lands, Valley Fills, Refuse Structures	Negative	sq mi	% wetland buffer					
	153	LegacySurfaceWet	1	Legacy Surface mining	legacy_surface_mine	legacy_surface_mine_xxx	Varies (multiple datasets)	12/2011	Varies	polygon	Merge mining polygons: non-active WVFO generated mining from aerials/topo; LULC 2009 reclaimed mine lands; abandoned mine lands	Negative	sq mi	% wetland buffer					
	154	RoadsRRWet	1	Roads/Railroads	Routes feature class; Railroads_fromDNR100511.shp	roads_xxx;rail_xxx	WVDOT; DNR			line	any	Negative	miles	miles/sq mi in wetland buffer					
	155	CulvertsWet	0	Road/rail crossings		roadrrXwet_xxx	WVFO generated	2011		point	any	Negative	#	#/ sq mi wetland buffer					
	156	EnergyWet	0	Energy transmission lines	Ventyx_Existing_201110	energy_xxx	Ventyx	10/2011	NA	line	any	Negative	miles	miles/sq mi wetland buffer					
	157	PipeWet	0	Pipelines	Ventyx_Existing_201110	pipe_xxx	Ventyx	10/2011	NA	line	any	Negative	miles	miles/sq mi wetland buffer					
	158	BldgsWet	0	Buildings	structurePoints_SAMB_utm83.shp	bldgs_xxx	SAMB	2003	8/29/2011	point	any	Negative	#	#/sq mi wetland buffer					

WVWAPP: Uplands   Last updated: 3/8/2013

Index	MetricID	Metric	Weight	Data	Shapefile (original)	Shapefile (Project)	Source	Date of data	Date Downloaded	GIS type	Selection of features	Positive/ Negative	Units	Normalization	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Source
CONDITION/FUNCTION																			
Habitat Connectivity (UHC) Weight=1	163	LgstForest	0	Largest intersecting forest block	centralapps_forest_patches_gt100 acres_Wvclip	forest_patches_xxx	TNC	5/18/2011	10/29/2010 (sic)	polygon	>100 acres	Positive	sq mi	largest forest block/planning unit	<5,000-15,000	5-15,000 (7.8125 sq mi)	15-25,000 acres (23.4375 sq mi)	>25,000 acres (39.0625 sq mi)	Literature Review
	164	ForestSize	2	Mean intersecting forest block	centralapps_forest_patches_gt100 acres_Wvclip	forest_patches_xxx	TNC	May-11	10/29/2010 (sic)	polygon	>100 acres	Positive	sq mi	mean forest block size/planning unit					
	165	LocInt	1.5	Local integrity	locintgrty_rk	locintgrty_xxx	ERO/PAFO	Mar-11	3/21/2011	raster	local integrity score (grid_code)	Positive	score	avg score/planning unit	0-40	40-60	60-80	80-100	Literature Review
	166	Developed1*	1.5	LULC 2009	wv_lulc_09_10	urban_xxx	WVU NRAC		11/14/2011	polygon	Values: 20	Negative	sq mi	sq mi/planning unit					
	167	AllRdRail	1	Roads/railroads	Routes feature class; Railroads_fromDNR100511.shp	roads_xxx;rail_xxx	WVDOT; DNR			line	Nlane = 2, >=4; All roads/rail	Negative	miles	miles/sq mi planning unit	>1.7	0.7-1.7	.1-.7	<0.1	Literature Review
	168	Energy	0.5	Energy transmission lines	Ventyx_Existing_201111	energy_xxx	Ventyx	11/2011	NA	line	any	Negative	miles	miles/sq mi planning unit					
	169	Pipe	0.5	Pipelines	Ventyx_Existing_201111	pipe_xxx	Ventyx	11/2011	NA	line	any	Negative	miles	miles/sq mi planning unit					
	170	Wind	0.5	Wind turbines	FAA_CentralApps_asof25dec2010.shp	wind_xxx	PAFO	12/25/2010	5/4/2011	point	any	Negative	#	#/sq mi planning unit					
	171	Bldgs	0	Buildings	structurePoints_SAMB_utm83.shp	bldgs_xxx	SAMB	2003	8/29/2011	point	any	Negative	#	#/sq mi planning unit					
	172	Towers	0	FCC Towers	am_Merge1.shp	towers_xxx	WVGESTC	2008		point	any	Negative	#	#/sq mi planning unit					
	173	AllWells	1	All Wells	Wells_20111129	allwells_xxx	DEP	11/29/2011	11/29/2011	point	WELL_STATU: PL, ABODR, AC, AB, CONST, ABPL	Negative	#	#/sq mi planning unit					
	174	ActiveSurface1*	1.5	Active Surface mining	active_surface_mine	active_surface_mine_xxx	Varies (multiple datasets)	12/2011	Varies	polygon	Merge mining polygons: LULC 2009 Mined lands, Valley Fills, Refuse Structures	Negative	sq mi	% planning unit					
	175	SurfaceCoalProd	0	Coal production (2000-2010)	CoalProdCumulative.xlsx	NA	US EIA	Varies	12/2011	Excel	Cumulative Surface Production	Negative	thousand short tons	surface coal production/sq mi planning unit					
	176	MinOps	0	Mineral operations	mineralOperations_USGS_200204 ut	mineral_ops_xxx	USGS	2002		point	any	Negative	#	#/sq mi planning unit					
	177	Timber1	0.5	Timber harvest	WVDOF_Harvest.shp	timber_xxx	WVDOF		6/21/2011	point	any	Negative	sq mi	sq mi/planning unit					
	178	Landfill	0	Landfills	solidWasteFacilities_WVDEP_2002 02_utm83.shp	landfills_xxx	DEP	2002		point	any	Negative	#	#/sq mi planning unit			1	0	
Habitat Quality (UHQ) Weight=1	179	Hetero	2	Heterogeneity	heterog_elvlf	heterog_xxx	ERO/PAFO	Mar-11	3/21/2011	raster	heterogeneity score (grid_code)	Positive	score	avg score/planning unit					
	180	FRCC	0	Vegetation altered from reference condition		frcc_xxx	LANDFIRE			raster	Condition Class I	Positive	sq mi	% planning unit					
	181	NatCover	2	LULC 2009	wv_lulc_09_10	natcover_xxx	WVU NRAC		11/14/2011	polygon	Values: 41-43, 71, 91-92	Positive	sq mi	% planning unit					
	182	Karst	0	Percent Karst	geologyKarstFormations_WVGES_ 1968_utm83.shp	Karst_xxx	WV GES	1968	5/10/2010	polygon	Any	Positive	sq mi	% planning unit					
	183	ActiveSurface2*	1.5	Active Surface mining	active_surface_mine	active_surface_mine_xxx	Varies (multiple datasets)	12/2011	Varies	polygon	Merge mining polygons: LULC 2009 Mined lands, Valley Fills, Refuse Structures	Negative	sq mi	% planning unit					
	184	LegacySurface	1	Legacy Surface mining	legacy_surface_mine	legacy_surface_mine_xxx	Varies (multiple datasets)	12/2011	Varies	polygon	Merge mining polygons: non-active WVFO generated mining from aerials/topo; abandoned mine lands	Negative	sq mi	% planning unit					
	185	Timber2	1	Timber harvest	WVDOF_Harvest.shp	timber_xxx	WVDOF		6/21/2011	point	any	Negative	sq mi	sq mi/sq mi planning unit					
	186	Ag	1	LULC 2009	wv_lulc_09_10	wvu_ag_xxx	WVU			raster	Value: 82	Negative	sq mi	% planning unit					
	187	Graze	1			wvu_graze_xxx					Value: 81	Negative							
	188	Developed2*	1.5			wvu_urban_xxx					Value: 20	Negative							
Biodiversity (UBD) Weight=0.5	189	AllSGNCUp	1.5	SGCNs - Upland	EOs_All_wPartnerRTEdata_Feb201 1_wEInfo	AllSGNCUp_xxx	DNR/ researchers	2/14/2011	2/14/2011	point	G1-G3, S1-S3, Federally listed	Positive	#	# Species/sq mi planning unit		none	1 or more		Best Guess
	190	NEHab	1	NE Terrestrial habitat types	syst_ne110714	NEHab_xxx.lyr	ERO	7/14/2011	8/8/2011		Vegetation types	Positive	#	#/planning unit	1-3	4-6	6-8	>8	Literature Review
	191	SpeciesPredict	0	Species diversity prediction (ELUs)	wvelu1108	elu_xxx	TNC - ERO			raster	any	Positive	Index	Index of predicted species diversity					
	192	CalcBed	1	Calcareous bedrock	wvelu1108	calcbed_xxx	TNC - ERO			raster	GEOL_DESC = Calcareous sed/metased; Mod calcareous sed/metased	Positive	sq mi	% of planning unit					
	193	NNIS	1.5	Non-native invasive species	Invasive_plants_AgDNR.shp	invasive_plants_xxx	WVDA/WVD NR	8/30/2011; 11/18/2011	11/18/2011	point	any	Negative	#	#/sq mi planning unit					
	194	PctLoss	2	Pests and Pathogens	pct_baloss	pct_baloss_xxx	USFS	2007	2011	raster	any	Negative	%	% of planning unit					
	195	GypsyMoth	0		gm_baloss	gm_baloss_xxx	USFS	2007	2011	raster	any	Negative	sq ft/acre	sq ft/acre per planning unit					
	196	HrdDecline	0		hd_baloss	hd_baloss_xxx	USFS	2007	2011	raster	any	Negative	sq ft/acre	sq ft/acre per planning unit					
	197	RdOakDecline	0		odc_baloss	odc_baloss_xxx	USFS	2007	2011	raster	any	Negative	sq ft/acre	sq ft/acre per planning unit					
	198	Infected	0	Quarantined/Infested/Infected counties	2011_Infested_Counties_WVDA_P ID_GCS_NAD_83.shp	infected_xxx	WVDA	2011	8/31/2011	polygon	any (# of pests per county)	Negative	#	# of pests/county/plannin g unit					

WVWAPP: CONSOLIDATED ANALYSIS

Index	MetricID	Metric	Weight	Data	Shapefile (original)	Shapefile (Project)	Source	Date of data	Date Downloaded	GIS type (original)	Selection of features	Positive/ Negative	Classification
ENERGY	213	UnminedPerbd	2	Mining permit boundary (minus active surface mine areas)	perbd.shp	perbd_eraseactivemines	DEP	8/23/2011	8/24/2011	polygon	Erase active surface mines from DEP perbd shapefile		presence (0)/absence (100)
	214	UnminedCoal	2	Unmined coal formations		unminedcoal_xxx	GES	6/30/2011			Sum all coal beds, normalize from 0-1		Ten classes, 0-100
	215	MSWellPot	2	Marcellus Shale thickness	WVMarcellus_ThicknessPolygons_11162011.shp	marshale_thick_xxx					Normalize Value (Value = Thickness, 0-120)		Classes by thickness, 0-100
	216	WindPot	2	Wind potential	windEnergyResource_nationalRenewableEnergyLab_200901_utm83.shp	windpot_xxx	National Renewable Energy Lab (NREL)	2003	5/10/2010	polygon	Normalize GRIDCODE (GRIDCODE = Wind power class, 1-7)	Negative	Classes by potential wind power, 0-100
	217	PropWind	1	Proposed wind turbines	FAA_PA_Data_asof_Dec2010	prop_wind_xxx				point	any		presence (0)/absence (100)
	218	PropEnergy	1	Proposed energy transmission lines	e_transln_polyline	prop_transln_xxx				line	any		presence (0)/absence (100)
	219	PropPipe	1	Proposed gas pipelines	ng_pipe_polyline	prop_pipe_xxx	Ventyx	01/2012	01/2012	line	any		presence (0)/absence (100)
	220	PropPower	1	Proposed power plants	e_plants_point	powplants_xxx				point	any		presence (0)/absence (100)
	221	Geothermal	1	Geothermal potential	geothermal_7.shp (digitized by TNC-WVFO)	geothermal_xxx	SMU Geothermal Lab (Google Earth)	2011	10/27/2011	kmz	Normalize Value (Value = Temperature at depth 7.5 km,100-250)		Classes by temperature, 0-100
POPULATION/ DEVELOPMENT	222	PopProject	1	Population projections (by county)									
	224	DevelopPot	1	Zoning/economic development plans	N/A (digitized by TNC_WVFO)	morgantown_growth.shp					Normalize ZONE (ZONE = development intensity, 1-3)	Negative	Classes by zone, 0-100
	225	PropDam	1	Dams								Negative	
	226	FutureRds	1	Road projects	WV_Proposed_Routes.shp		WVDOT					Negative	
	227	PropWWTP	1	Water (WWTP, withdrawals)									
CLIMATE CHANGE	228	Resiliency	1	Resiliency	res_est_unst	resiliency_xxx	ERO/PAFO			raster	resiliency score	Positive	Ten classes, 0-100
	229	CurrDens	1	Regional flow	prmrf_stdnrm	regionalflow_xxx	ERO/PAFO			raster	regional flow score	Positive	Ten classes, 0-100
	230	ClimateWizPrec	1	TNC Climate Wizard	med_2050_precipchange_wv.asc						Medium Emissions, 2050s, precipitation change, annual		
	231	ClimateWizTemp	1		med_2050_tempchange_wv.asc						Medium Emissions, 2050s, temperature change, annual		