

Appendix B. Town Wetland Inventories

Wetland GIS Data Source Comparison Table.

Town	Mapping Methods & Functions Values Assessment	Year of Map & Report	Map Meets VT GIS Standards
Barnard	Cathy O'Brien Wetland Consulting: April 27, 1992 Color Infrared Aerial Photography at a 1:40,000 scale, NWI Maps, USGS Topographic Maps, soil surveys, and site-specific wetland information. Field visits were done for representative sites. Polygons were labeled in accordance with the Cowardin Wetland classification system. Functions & Values weren't assessed.	June, 1999	Yes
I-89 Berlin	Arrowwood: VSWI Map, Washington & Chittenden County SCS soil survey maps, USGS Topographic maps, 1999 Digital Orthophotography 1:5,000, NWI Maps, F & W Natural Heritage Maps, and Town parcel maps. Functions & values assessed using ACOE Highway Methodology VT Wetland Eval. Form Golet Wetland Eval. Form: water quality, flood storage, erosion control, wildlife habitat, fisheries habitat, open space, education, and recreation. No T&E or hydrophytic veg.	Dec., 2002	Yes
Berlin Pond (Water Source Study) 6661 Acre Watershed included areas in Berlin, Northfield & Williamstown	Brett Engstrom & Marc Lapin: 1963 Black & White orthophotos 1:18,000, 1999 Digital orthophotos 1:5,000, 1997 NRCS Soil maps, 2004 Geologic Map, 2003 Color Orthophotos, NWI Map, plus prior Audubon reptile survey 2001. "Proposed Steps for Mapping & Ranking Natural Communities on State Land, 2000, Sorenson & Cadmus" used for mapping protocol.	June, 2005	Yes
Bradford	Arrowwood: 1:40,000 CIR aerial Photographs, NRCS Soil Survey maps, 1990's 1:5,000 Black & White Orthophotography, VSWI, and USGS Topographic maps. Functions & values assessed using ACOE Highway Methodology, VT Wetland Evaluation Form Golet Model Wetland Evaluation Form for: flood control, water quality, sediment retention, wildlife habitat, fisheries habitat, erosion control, open space, recreation, and education**, no T&E or hydro vegetation.	June, 2005	Yes

Brattleboro	Jerry Jenkins: NWI Maps, 1:25,000 USGS Topographic maps, 1:40,000 CIR aerial photographs, and transferred to acetate overlays for each orthophoto quad (1:5,000).	1994	Yes
Burlington	Jay Appleton: 1:5000 orthophotos and 1:24000 NWI maps. Data developed through Planning and Zoning personnel and wetlands consultant. Used NWI maps 1:24000, Chittenden County soil survey 1:15840, and 1:5000 orthophotos. Jay Appleton, Burlington Planning and Zoning No note stating Functions and values had been assessed.	2005	Yes
Cambridge	UVM Spatial Lab: Vermont Mapping Program's 1:5,000 Panchromatic Aerial Digital Orthophotographs, USDA 2003 NAIP Digital Orthophotographs 1:40,000, NRCS Hydric Soils, VSWI, and other VCGI info.	2003	Yes
Charlotte	Sweeney & Morrissey: Wetlands were delineated from 1992-94 color infrared aerial photography by Janice Stone, University of Massachusetts. Areas drawn onto acetate overlays with a thin pen; the pen width equals about 20 feet of ground on the 1:40,000 photos. Minimum wetland mapping unit generally less than 1 acre in size. The overlays were rectified using ERDAS Imagine Orthomax software and registered to E911 roads coverage. All of the wetlands were hand digitized from the RF 1:40000 overlays imbedded in the photos by scanning at 450 dpi. No note stating Functions and values had been assessed.	1999	Yes
I-89 Colchester	Arrowwood: : VSWI Map, Chittenden County SCS soil survey maps, USGS Topographic maps, 1999 Digital Orthophotography, NWI Map, F & W Natural Heritage Maps, and Town parcel maps. Functions & values assessed using ACOE Highway Methodology Golet Model Wetland Eval. Form VT Wetland Eval. Form for: water quality, flood storage, erosion control, wildlife habitat, fisheries habitat, open space, education, and recreation. No T&E or hydrophytic veg.	Dec., 2002	Yes
Enosburg	Arrowwood: 1996 Orthophotography 1:5,000, 1990's CIR Aerial Photography, NRCS soil survey maps, NWI Maps, VSWI Map, USGS Topographic Maps, NNHP Database, and State Land Use Maps. Functions & Values were assessed for some wetlands, and denoted relative to the wetland visited or remotely visited.	April, 2004	Yes

Essex	Arrowwood: 1:40,000 CIR aerial photographs, NRCS Soil Survey maps, 1990 B & W Orthophotos, VSWI Map, USGS Topographic maps, 2004 Chittenden Co. Color Orthophotos, and 2003 NAIP 1 m pixel. Functions & values assessed using ACOE Highway Methodology Golet Model Wetland Evaluation VT Wetland Evaluation Form for: water quality, flood storage, erosion control, wildlife habitat, fisheries habitat, open space, education, recreation. No T&E or hydrophytic veg.	October, 2007	Yes
Fayston	Arrowwood: 1:40,000 CIR aerial photographs flown 1992 & 1993, NRCS Soil Survey maps* VSWI, NAIP 1993 & 2003 Orthophotos, and Digital Color Orthophotographs 2003 1:5000 Functions & Values assessed with: Golet Model Wetland Eval. Form, ACOE Highway Methodology, Vermont Wetland Evaluation Form, Flood water retention, water quality, wildlife habitat, fisheries habitat, sediment stabilization, open space, recreation, and education. Hydrophytic vegetation & Rare, T & E species were not evaluated for this mapping project.	April, 2007	Yes
Hartford	Arrowwood: USGS topographic maps, Black and White Orthophotographs, NRCS soil survey data, and NWI digital data. Color Infra-red (CIR) 1:40,000 Photographs. The Hartford inventory was for Vernal Pool habitat, and included other wetland as follows: conifer, old oxbow, swamp, emergent marsh, hardwood swamp, pond, shrub swamp. There was no field component to this mapping inventory. Metadata is lacking information on year of data used. Functions & Values weren't assessed	April, 2006	Yes
Hinesburg:	University of MA Department of Forestry & Wildlife Management: Hinesburg CIR aerial photography (no year given), 1:40,000 NAPP CIR photography 1993, and 1:24,000 USGS Topographic maps. See also Shelburne below. Functions & Values weren't assessed for this project	1997	Yes
Jericho	George Springston: 1993 – 1994 CIR aerial photos 1:40,000, and USGS topographic maps 1:24,000. Functions & Values weren't assessed for the project	1999	Yes

Middlebury	<p>George Springston: Town of Middlebury Custom 1:12,000 CIR aerial photographs (2000) flown for the project & wetlands were delineated on the maps using stereoscope, also reviewed USGS Topographic maps, VSWI, NRCS Soils, digital orthophotography 1:40,000 NAPP CIR Photos 1990's, Black & White Aerial Photographs 1960's.</p> <p>Field visits were made to representative wetlands to confirm id of types, and wetlands with unusual signatures on maps he examined. Functions & Values were not assessed in this study. Method cited for this study: Springston, George, 1993, Manual for wetland inventory projects in Vermont: ANR, Waterbury, 19; & appendix.</p>	Jan., 2001	Yes
Montpelier	<p>Brett Engstrom & John DeLeo: 1999 Surficial Geologic Map 1:24,000, 2003 Color Orthophotographs, 1963 B & W aerial photos 1:18,000, 1942 B & W aerial photos 1:20,000, Arrowwood Shape files from City of Montpelier phase II study, USGS topographic maps, NRCS Soil data, NWI, FEMA statistical 100 year floodplain map.</p> <p>"Proposed Steps for Mapping & Ranking Natural Communities on State Land, 2000, Sorenson & Cadmus" used for mapping protocol.</p>	May, 2007	Yes
Mt. Holly	<p>Arrowwood: 1:40,000 CIR Aerial Photographs, NRCS Soil Survey Maps, 1990's B & W Orthophotography, VSWI maps, and U.S. Geological Survey Maps, USGS Topographic Maps, 1:40,000 NAPP 1992 - 1993 (likely the CIR).</p> <p>Functions and Values remotely determined: (no reference of evaluation method given) Flood water retention, water quality, wildlife habitat, fisheries habitat, sediment stabilization, open space, recreation, and education. Vernal Pool mapping was done using Arrowwood's Vernal Pool Report, 2004.</p> <p>Hydrophytic vegetation & Rare, T & E species were not evaluated.</p>	May 30, 2007	Yes
Norwich	<p>Arrowwood: 1:40,000 CIR Photographs 1992 - 1993, USGS Topographic Maps, NWI Map, Field verification for vernal pools was conducted with volunteers.</p>	2006	Yes
Putney	<p>Jeff Nugent WRPC: VSWI 2003, 1:40,000 NWI 1983, 1:5,000 Orthophotos 2000, 1:12,000 NAIP 2003</p> <p>Functions & Values weren't assessed for this project</p>	2008	Yes

I-89 Randolph	Arrowwood: VSWI Map, Orange County SCS soil survey maps, USGS Topographic maps, 1996 Digital Orthophotos 1:5,000, NWI maps, F & W Natural Heritage Maps, and Town parcel maps. Functions & values assessed using ACOE Highway Methodology Golet Model Wetland Eval. Form VT Wetland Eval. Form for: water quality, flood storage, erosion control, wildlife habitat, fisheries habitat, open space, education, and recreation. No T&E or hydrophytic veg.	Dec., 2002	Yes
Richmond	George Springston: 1993 – 1994 CIR Map sent with no report identifying the wetlands by Cowardin type or NNHP type.	1999	Yes
I-89 Richmond	Arrowwood: VSWI Map, Chittenden County SCS soil survey maps, USGS Topographic maps, 1999 Digital Orthophotos 1:5,000, NWI maps, F & W Natural Heritage Maps, and Town parcel maps. Functions & values assessed using ACOE Highway Methodology Golet Model Wetland Evaluation Form VT Wetland Eval. Form for: water quality, flood storage, erosion control, wildlife habitat, fisheries habitat, open space, education, and recreation. No T&E or hydrophytic veg.	Dec., 2002	Yes
Rutland	Cathy O'Brien and George Springston: Map sent by Peter Keibel, wetlands are VSWI maps	1993	No
Shelburne, St. George, Hinesburg, Essex, So. Burlington, and Williston	NRCS (Grand Isle, VT 05458): Wetlands were identified using 1:20,000 enlargements of 1:58,000 1986 color infrared aerial photos interpreted onto 1:5,000 1988 orthophotos using a detection threshold of 0.25 acres. The photography is owned by the Soil Conservation Service (Winooski, VT 05404). Data are derived from air photo interpretation & there was no field checking of wetlands identified.	March, 2005	Yes
So. Burlington	Cathy O'Brien: 1:5,000 digital orthophotos, 1:40,000 CIR photos 1992, all data in NAD83. Functions & Values weren't assessed for this project	2000	Yes

Springfield	George Springston & Jerry Jenkins: 1988 B & W Orthophotographs, NWI Maps, 1:25,000 USGS Topographic maps, 1:40,000 CIR aerial photographs. Report gives Cowardin types for all wetlands remotely identified.	1994	Yes
Stowe	Arrowwood: VT Mapping Projects Digital Aerial Photography 1:5000, VSWI Map, NRCS Soil Survey for Lamoille County, and 1:40,000 NAPP Color Infrared Aerial Photographs.	June, 2003	Yes
Waitsfield	Arrowwood: 1:40,000 CIR aerial photographs flown 1992 & 1993, NRCS Soil Survey maps* VSWI, NAIP 1993 & 2003 Orthophotos, and Digital Color Orthophotographs 2003 1:5000 Functions & Values assessed with: Golet Model Wetland Eval. Form, ACOE Highway Methodology, Vermont Wetland Evaluation Form, Flood water retention, water quality, wildlife habitat, fisheries habitat, sediment stabilization, open space, recreation, and education. Hydrophytic vegetation & Rare, T & E species were not evaluated for this mapping project.	April, 2007	Yes
Warren	Arrowwood: 1:40,000 NAPP CIR aerial photographs, NRCS soil maps, 1990's orthophotography, VSWI, USGS Topographic maps, and 1:5,000 digital orthophotographs, Functions & Values assessed with: Golet Model Wetland Eval. Form, ACOE Highway Methodology, Vermont Wetland Evaluation Form, Flood water retention, water quality, wildlife habitat, fisheries habitat, sediment stabilization, open space, recreation, and education. Hydrophytic vegetation & Rare, T & E species were not evaluated.	April, 2008	Yes
West Fairlee	Arrowwood: NWI Map, VSWI Map, 1:40,000 Color Infrared Aerial Photographs 1992 – 1993, NRCS Soil Survey Maps, 1990 Black & White Orthophotos, USGS Topographic Maps, 1:5,000 Digital Orthophotos. Functions and Values assessed remotely: Flood control, water quality, wildlife habitat, fisheries habitat, open space, recreation, and education. Functions and Values were assessed at selected field sites using Golet Model Wetland Eval. Form, ACOE Highway Methodology, and Vermont Wetland Evaluation Form, and included rare or threatened or endangered species, and hydrophytic vegetation.	December, 2008	Yes

Williston	UVM Spatial Lab: B & W Digital Orthophotographs 1:5000, 1999, 1:40,000 NAIP. NAD 1983. Functions & Values weren't assessed for this project	June, 2005	Yes
Woodstock	Arrowwood: 1:40,000 1992 & 1993 CIR aerial photographs, VSWI map, USGS Topographic maps, 1:5,000 digital orthophotographs, and NRCS soil data. Functions & Values assessed with: Golet Model Wetland Eval. Form, ACOE Highway Methodology, VT Wetland Evaluation Form, Flood water retention, water quality, wildlife habitat, fisheries habitat, sediment stabilization, open space, recreation, and education. Hydrophytic vegetation & Rare, T & E species were not evaluated.	July, 2004	Yes
Worcester	Arrowwood: USGS topographic maps, 1996 Digital Orthophotographs, NRCS soil survey maps, VSWI Map, NWI Map, F&W Natural Heritage Maps, 1992 Color Infrared Photographs, 1996 Digital Orthophotographs 1:5,000. Functions & Values assessed with: Golet Model Wetland Eval. Form, ACOE Highway Methodology, VT Wetland Evaluation Form, Flood water retention, water quality, wildlife habitat, fisheries habitat, sediment stabilization, open space, recreation, and education. Hydrophytic vegetation & Rare, T & E species were not evaluated. Some field investigation of wetlands was accomplished when permission was granted & by use of windshield survey method.	January, 2003	Yes

VT GIS Standards:

Use 1:12000 (1 meter resolution) or better imagery for digitizing wetlands. This includes the NAIP 2003 (and 2008 NAIP when released), 1:5000 black and white orthophotos, 1:1250 black and white and 1:1250 color orthophotos where available, and CIR infrared imagery if available.

1. Digitize at a scale equivalent to or larger than the imagery scale. For instance if using the 1:12000 NAIP imagery, zoom to at least 1:12000 in ArcView and digitize the identified wetlands at that scale.
2. Additional map products may be used to assist in wetland identification and quality assurance checking. These include:
 - a. USGS 1:24000 topographic maps
 - b. NRCS Soils data including hydric soils derived from the NRCS Top 20 soils data product.
 - c. Terrain datasets including DEMs and LIDAR derived elevation datasets. NHD/VHD hydrography data layers.

