

February 16, 2016

Ref: 57276.03

Mr. Michael Adams Senior Project Manager USACE / Regulatory Branch / Vermont Project Office 11 Lincoln Street, Room 210 Essex Junction, VT 05452

Re: Jay Peak Resort - Jay, Vermont

Permit Number: NAE-2008-1314

Golf Course Wetland and Stream Mitigation Fifth Annual (2015) and Final Monitoring Report

#### Dear Mike:

On behalf of Jay Peak Resort ("JPR"), VHB has prepared the enclosed report and supporting documentation to summarize the results of the fifth year of monitoring of the wetland and stream features which were restored or created as part of mitigation for the golf course, which was constructed without U.S. Army Corps of Engineer ("USACE") authorization. This monitoring was completed in accordance with Special Condition #4 of the Section 404 Individual Permit ("IP") (Permit Number NAE-2008-1314), which was issued after-the-fact.

As described in the IP application narrative and subsequently approved, the monitoring methods used for this site were developed to determine if the mitigation goals were being met. The goals are described in Special Condition #2 of the IP, and include:

- The restoration of natural vegetation communities in the restored/created wetlands and streams;
- The replacement of the functions and values provided by the impacted wetlands and streams.

Please find enclosed one hardcopy of the complete *Jay Peak Resort, Golf Course Wetland and Stream Mitigation, Fifth Annual (2015) and Final Mitigation Report* and Appendix with supporting documentation, as well as a complete electronic copy on compact disc.

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South Burlington, Vermont 05403

P 802.497.6100

Mr. Michael Adams Ref: 57276.03 Page 2 of 2 February 5, 2016



Please do not hesitate to contact me if you have any questions or comments.

Sincerely,

Patti B. Kallfelz-Werts Environmental Scientist

PBW/jkw

cc: Denise Leonard, U. S. Environmental Protection Agency (one hardcopy)
Policy Analyst/ Technical Support Branch ("PATS"), USACE (one hardcopy)

Walter Elander, JPR (electronic copy only)

#### Enclosure:

• Jay Peak Resort – Golf Course Wetland and Stream Mitigation – Fifth Annual (2015) and Final Mitigation Monitoring Report (one hardcopy and one electronic copy)

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## Fifth Annual (2015) and Final Mitigation Monitoring Report

# JAY PEAK RESORT GOLF COURSE WETLAND AND STREAM MITIGATION Jay, Vermont

Prepared for: Jay Peak Resort

Jay, Vermont

Prepared by: VHB

40 IDX Drive

Building 100, Suite 200 South Burlington, VT 05403





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- Appendix 3: Herbaceous Species and Cover Summary Data from Permanent 1m<sup>2</sup> Plots and Wetland Data Plots
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- Appendix 6: Jay Peak Resort Golf Course Mitigation Monitoring Year 5 Photographs
- Appendix 7: Mitigation Report Transmittal and Self-Certification



#### 1.0 Introduction

On behalf of Jay Peak Resort ("JPR"), VHB has prepared this report to present the findings of the fifth and final year of post-construction monitoring of the restoration work conducted by JPR to mitigate for impacts which resulted from the construction of an 18-hole golf course at the resort between 2004 and 2006 (see JPR Golf Course Site Location Map in the Appendix 1). This mitigation was necessary for JPR to qualify for an after-the-fact Individual Permit ("IP") under Section 404 of the Clean Water Act, for dredge and fill work conducted in jurisdictional waters of the U.S., including wetlands ("Waters"). The IP (Permit Number: NAE-2008-1314) (the "Permit"), was issued June 23, 2011, and required JPR to monitor the restoration and creation areas within the golf course for a period of five years, and included reference to the criteria and success standards which were used to conduct these monitoring activities and evaluate performance (USACE 2011). The purpose of the annual monitoring and reporting is to measure the progress of the mitigation areas relative to the success standards and to offer recommendations to ultimately achieve site success standards.

The mitigation activities, which were completed during the 2009 and 2010 construction seasons (VHBP 2010 and VHB 2010), included the restoration of 19 stream segments and 0.58 acre of wetland; an additional 1.86 acres of wetland was created during construction, as compensatory mitigation (VHB 2010). Previous annual monitoring conducted by VHB in summer from 2011 through 2014, indicate that all performance standards were being met in 2011 and most of the performance standards were being met in 2012, 2013, and 2014 (see Table 1 below). The results of the Year Five (2015) monitoring indicate that all but one of the performance standards are being met at this time. The performance standard which has not been met is the presence of vernal pool indicator amphibian species within a select number of restored or created wetlands. It is important to note that the absence of the vernal pool species within the target wetlands does not indicate a lapse on the part of JPR or failure to comply with the conditions of the IP. JPR has not undertaken any changes to these features or the grounds in the vicinity of these features that would affect their ability to support vernal pool, or any, biota. Since all of the performance standards that are within JPR's ability to influence have been met, and JPR is in compliance with the conditions of the Permit, VHB recommends that mitigation monitoring should not continue after Year Five (2015).



Field activities for the Year Five (2015) monitoring took place on August 13 and 14, 2015, and were conducted by VHB Environmental Scientists. A summary description of each standard and Year Five (2015) monitoring results are provided in Table 1, with greater detail provided in Section 2.0.

	1	Table 1: Perfo	rmance Standard	1		ı	ı
Performance	Success Criteria	Monitoring	Performance Standard Met	Performance Standard Met	Performance Standard Met	Performance Standard Met	Performance Standard Met
Standard	Success Criteria	Method	(?) Year 1 (2011)	(?) Year 2 (2012)	(?) Year 3 (2013)	(?) Year 4 (2014)	(?) Year 5 (2015)
1. Re- establish (or establish in created wetlands) a	Herbaceous vegetation coverage of a minimum 80% of native, wetland plants within the restored and created wetland areas	Monitor herbaceous vegetation from permanent 1 square meter herbaceous vegetation monitoring plots [established in Year One (2011)] within the restored and created wetlands and adjacent to large stream restorations	Yes; based on extrapolation of 1 square meter plots, average coverage within the wetland mitigation areas is 100%	Yes; based on extrapolation of 1 square meter plots, average coverage within the wetland mitigation areas is over 100%	Yes; based on extrapolation of 1 square meter plots, average coverage within the wetland mitigation areas is over 100%	Yes; based on extrapolation of 1 square meter plots, average coverage within the wetland mitigation areas is over 100%	Yes; based on extrapolation of 1 square meter plots, average coverage within the wetland mitigation areas is over 100%
natural wetland vegetation community in restored wetland areas	Survival rate of 80% of the planted native, wetland shrubs	Establish permanent 0.02-acre (5m radius) monitoring plots within the restored and created wetlands	Yes; based on extrapolation of 0.02-acre (5m radius) plots, shrub stem survival within the mitigation wetlands is 93%	Yes; based on extrapolation of 0.02-acre (5m radius) plots, shrub stem survival within the mitigation wetlands is 84%	Yes; based on extrapolation of 0.02-acre (5m radius) plots, shrub stem survival within the mitigation wetlands is 80%	Yes; based on extrapolation of 0.02-acre (5m radius) plots, shrub stem survival within the mitigation wetlands is 79%; average shrub survival for restored stream floodplains is 81%; total average shrub survival rate for all plantings is 80%	Yes; based on extrapolation of 0.02-acre (5m radius) plots, shrub stem survival within the mitigation wetlands is 78%; average shrub survival for restored stream floodplains is 83%; total average shrub survival rate for all plantings is 80%



		I able 1. Peff	rmance Standard			D (	D (
			Performance	Performance	Performance	Performance	Performance
Performance	Success Criteria	Monitoring	Standard Met	Standard Met	Standard Met	Standard Met	Standard Met
Standard		Method	(?)	(?)	(?)	(?)	(?)
			Year 1 (2011)	Year 2 (2012)	Year 3 (2013)	Year 4 (2014)	Year 5 (2015)
	Wetlands develop a natural community, which blends into the adjacent, undisturbed features	Establish at least one permanent photograph monitoring station within each restored or created wetland which shows the adjacent undisturbed feature	Yes; permanent photograph stations were established in each wetland feature which shows the restored or created feature, and the adjacent undisturbed features	Yes; photographs recorded from permanent photograph stations (established in 2011); photos illustrate the restored or created feature, & the adjacent undisturbed features	Yes; photographs recorded from permanent photograph stations (established in 2011); photos illustrate the restored/ created features & the adjacent undisturbed features	Yes; photographs recorded from permanent photograph stations (established in 2011); photos illustrate the restored/ created features & the adjacent undisturbed features	yes; photographs recorded from permanent photograph stations (established in 2011); photos illustrate the restored/ created features & the adjacent undisturbed features
2. Re- establish (or establish in the created wetlands) wetland hydrology	Clear evidence of hydrology based on the criteria in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Regional Supplement) (USACE 2011)	Visual assessment of restored or created wetlands for evidence hydrology indicators	Yes; all but one feature (H15-WT1) of the restored/created wetlands show evidence of persistent wetland hydrology	Yes; despite the below average precipitation during July & August 2012, all mitigation wetlands show evidence of persistent wetland hydrology	Yes; all restored and created wetlands show evidence of persistent wetland hydrology	Yes; all restored and created wetlands show evidence of persistent wetland hydrology	Yes; all restored and created wetlands show evidence of persistent wetland hydrology
3. Re- establish (or establish in the created wetlands) the functions and values provided by the wetlands within and adjacent to the golf course.	Clear evidence of the functions and values are being performed by the restored and created wetlands (previously identified as Groundwater Recharge/ Discharge and Wildlife Habitat)	Assess each wetland using methods in the Highway Methodology (USACE 1999)	Yes; all but one (H15-WT1) of the restored wetlands are showing evidence of performing the function of groundwater recharge; some of the restored/ created wetlands are functioning as wildlife habitat	Yes; all of the restored wetlands are showing evidence of performing the function of groundwater recharge; some of the restored/ created wetlands are functioning as wildlife habitat	Yes; all of the restored wetlands are showing evidence of performing the function of groundwater recharge; some of the restored/ created wetlands are functioning as wildlife habitat	Yes; all of the restored wetlands are showing evidence of performing the function of groundwater recharge; some of the restored/ created wetlands are functioning as floodflow alteration and as wildlife habitat	Yes; all of the restored/ created wetlands are showing evidence of groundwater recharge; some of the restored/ created wetlands are functioning as floodflow alteration and as wildlife habitat



	T	Table 1: Perfo	rmance Standard	Outline and Suc	cess Measure	T	T
			Performance	Performance	Performance	Performance	Performance
Performance	Success Criteria	Monitoring	Standard Met	Standard Met	Standard Met	Standard Met	Standard Met
Standard	0	Method	(?) Year 1 (2011)	(?) Year 2 (2012)	(?) Year 3 (2013)	(?) Year 4 (2014)	(?) Year 5 (2015)
		Investigate the selected restored wetlands	<b>Yes</b> ; all of the	<b>No</b> ; none of the previously identified	No; none of the wetlands identified in 2011 as potential vernal pools	<b>No</b> ; based on the results of	<b>No</b> ; based on data from previous years,
	Evidence of breeding use by vernal pool indicator species	(WH-WT1, H13-WT2, & H14-WT1) at the appropriate time of year for signs of breeding use by vernal pool indicator species	selected wetlands showed evidence of breeding use by vernal pool indicator species	wetlands contained evidence of breeding use by vernal pool indicator species (H13- WT2 did contain other breeding amphibians)	contained evidence of breeding use by vernal pool indicator species during a site visit conducted in June 2013 (H13-WT2 did contain other breeding amphibians)	2012 and 2013 vernal pool surveys for the wetlands identified in 2011, no vernal pool survey was conducted in 2014	the original target wetlands have not been functioning as vernal pools, therefore no vernal pool survey was conducted in 2015
4. Visually assess each restored stream segment for evidence of natural channel development and stability	Restored stream segments show signs of naturalization, and minimal evidence of erosion	Visually assess each restored stream segment for signs of natural stream development; permanent photograph stations established to record progress throughout the monitoring period	Yes; the restored stream segments showed signs of ongoing substrate sorting, minimal erosion or undercutting of banks, and use of created floodplains (where applicable)	Yes; the restored streams continue to show evidence of naturalization. New areas of erosion in 2 restored streams (P2-TB1 & H16-SC1) have been repaired in 2012, or will be early in 2013.	Yes; the restored streams continue to show evidence of naturalization & have stabilized. Streams repaired in 2012 & 2013 remained stable in late 2013.	Yes; the restored streams continue to show evidence of naturalization & have stabilized. Streams repaired in 2012 & 2013 have remained stable through 2014. Bank sloughing repair was performed on a segment of Stream P2-TB1, during 2014, and bank stability will be monitored during 2015	Yes; the restored streams have naturalized & have achieved a stabilized state. Bank sloughing repair was performed on a segment of Stream P2-TB1, during 2014, and the repaired bank has remained stable in 2015
	Vegetation communities in the adjacent re-created floodplain areas are developing with native, wetland vegetation	Same as with restored/ created wetlands (1 square meter and 0.02-acre (5m radius) plots)	Yes; average herbaceous vegetation cover is 95%; average planted shrub survival is 91%	Yes; TOTAL average herbaceous vegetation cover is over 100%; average planted shrub survival is 84%	ves; TOTAL average herbaceous vegetation cover is over 100%; average planted shrub survival is 82% in the restored floodplains	ves; TOTAL average herbaceous vegetation cover is over 100%; average planted shrub survival is 82% in the restored floodplains	Yes; TOTAL average herbaceous vegetation cover is over 100%; average planted shrub survival is 83% in the restored floodplains



#### 2.0 Summary and Monitoring Methodologies

The mitigation features have performed consistent with expectations. The vegetation communities in both the wetlands and adjacent to streams have developed, from both the planted species and from native volunteer species which have colonized from adjacent previously undisturbed areas. All of the mitigation wetland features show evidence of wetland hydrology and all of the wetland features demonstrate the groundwater recharge/ discharge function; at the time of the Year Five monitoring data collection, the restored streams are stable and have developed natural stream channel characteristics. The following sections detail the mitigation goals and the methods used to assess adherence to the success criteria.

 Re-establish a native wetland vegetation community within the restored wetlands and adjacent to restored stream segments; establish a native wetland vegetation community within created wetlands.

In order to ensure a consistent data collection approach which could be compared throughout the five-year monitoring period, VHB conducted the Year Five monitoring in the same locations (using the same data plot designations) and methodologies that were established in Year One. As stated above, the Year Five data collection was completed in early August, at the height of the growing season, which is consistent with procedures outlined in the Mitigation Plan, and with the previous years of monitoring. A full description of data collection methodologies is included in the Jay Peak Resort – Golf Course Wetland and Stream Mitigation - First Annual (2011) Mitigation Monitoring Report ("Year One Report") (VHB 2012). Data collection to determine overall herbaceous coverage was conducted using one-meter square plots or wetland determination data plots, established during the Year One monitoring (see Mitigation Monitoring Map Set in Appendix 2 for plot locations).

VHB also completed USACE Wetland Determination Data Forms for a selection of restored or created wetland features (see Appendix 5). These wetlands, listed below, were determined in consultation with the USACE during field reviews, to need full wetland data collection to monitor the development of the three wetland criteria, prior to the Year One monitoring (2011), and were



again the subject of full wetland data collection during 2015. These features include: H11-Create, H11-WT6, H13-WT1/1a/1b, H15-WT1, H16-Create, H5-Create, H6-WT1, and H8-Create.

The one square meter herbaceous vegetation monitoring plots also served as the centers for the 0.02 acre (five-meter radius) shrub survival monitoring plots. The number of surviving planted shrub stems were counted within the 0.02-acre plots; this number was then extrapolated from the 0.02-acre monitoring plot (or plots) to the size of the restored or created feature and compared to the total number of stems planted within each feature (NEE 2010), to determine the overall survival rate of the planted shrubs. All planted shrubs within a feature were counted if that feature was similar in size or smaller than the 0.02-acre monitoring plots used. It is noteworthy that a number of planted shrubs that had not been located in prior monitoring years, (likely due to grazing by wildlife or temporary die-back due to transplant shock), were found to have re-emerged.

Photographs were also recorded from the permanent photograph locations, established in 2011, in order to continue to provide visual documentation of the restored and created wetlands, as well as the restored stream channels (see Jay Peak Resort Golf Course Year 5 (2015) Monitoring Photographs in Appendix 6) to ensure the restored and created features are developing naturally and blending with the adjacent, undisturbed features.

Based on the presence of native wetland vegetation communities within all of the restored and created wetlands, and adjacent to all of the restored stream segments, as summarized in the Herbaceous Species and Cover Summary Data from 1m<sup>2</sup> Plots and Wetland Data Plots table (see Appendix 3), this performance standard has been be met.

2. Re-establish (or establish in created wetlands) wetland hydrology (and hydrologic connections) through earthwork within restored and created wetlands to connect to existing Waters.

The purpose of establishing wetland hydrology and hydrologic connections was not only to ensure the development of functioning wetlands, but to ensure that the restored and created features meet USACE jurisdictional parameters. Evidence of hydrology was assessed within each



restored/created wetland during the visual assessment conducted within each feature, and the wetland determination data collection was conducted in a selection of features, based on guidance found from Regional Supplement indicators, and is summarized in Table 2, in Section 4.0 below. Based on the presence of hydrology indicators within all of the restored and created wetlands, this performance standard has been met.

# 3. Re-establish (or establish in created wetlands) the wetland functions and values within restored and created wetlands previously provided by the wetlands within and adjacent to the golf course.

Using the methods described in the USACE's Highway Methodology, VHB assessed each restored and created wetland during the Year Five monitoring activities. VHB previously identified the functions and values of Groundwater Recharge/ Discharge and Wildlife Habitat as the target functions to be restored. In addition to these principal functions, VHB observed evidence of other functions being provided by the restored and created wetlands, including floodflow alteration. The results of this assessment are provided in Table 2, below in Section 4.0.

Because no evidence of use by vernal pool indicator species was found after monitoring in Year One (2011), monitoring in the original target wetlands, WH-WT1, H13-WT2, and H14-WT1, has not been conducted since Year Two (2012). Although no evidence of use by vernal pool species has been found since 2011, other amphibian species were observed using these wetlands, including pickerel frogs (*Rana palustris*), green frogs (*Lithobates clamitans*), and northern leopard frog (*Lithobates pipiens*).

Because the functions previously identified as the targets (Groundwater Recharge/ Discharge and Wildlife Habitat) are being provided by the restored and created wetlands, in addition to other functions, this performance standard has been met.

### 4. Visually assess each restored stream segment for evidence of natural channel development and stability.

During the monitoring activities, VHB walked the length of each stream channel to observe the development of the stream channel naturalization, and to look for potential areas of concern to



be addressed, such as bank erosion, grade control structure instability, disturbance by golfers, course maintenance operations, etc. VHB did not observe any areas of concern that required repair in 2015. Signs of channel naturalization included stream bed material sorting, natural sediment deposition, floodplain use, and the development of in-stream habitats (i.e., riffles, and step/pools). Streams that had areas requiring repairs in 2012, 2013, and 2014, were found to have remained stable during the fifth year of monitoring. Based on VHB's observations of stable, restored stream channels and lack of areas requiring repair, this performance standard is met.

#### 3.0 Vegetation Data Results

#### 3.1 Herbaceous

During monitoring efforts in 2015, VHB found that the total average relative herbaceous cover within the wetlands and within the floodplains of the restored streams is approximately 104 percent overall (see Herbaceous Species and Cover Summary Data from 1m² Plots and Wetland Data Plots table in Appendix 3), exceeding the performance standards of 80 percent coverage by non-invasive wetland herbaceous species. It is noteworthy that additional, native wetland species were recorded during the monitoring, which were not part of the wetland seed mix applied to the mitigation areas; this suggests the surrounding, undisturbed features are contributing seed, and therefore increased species richness and diversity to the vegetation communities.

#### 3.2 Shrub Species

Four shrub species were planted within the restored and created wetlands and adjacent to the large stream restoration segments after the completion of restoration activities in 2010; the species include:

- Winterberry Holly (Ilex verticillata),
- Elderberry (Sambucus canadensis),
- American cranberrybush (Viburnum trilobum)<sup>1</sup>, and
- Red-osier dogwood (Cornus sericea).

<sup>&</sup>lt;sup>1</sup>The accepted scientific name for American cranberry bush was *Viburnum trilobum* at the time of the restoration activities; the currently accepted name for this species is *V. opulus var. americanum* (USDA 2014).



Willow (*Salix* spp.) and dogwood (*Cornus* sp.) tubelings were planted at the same time as the shrubs, adjacent to all restored stream segments in order to increase bank stability. Since these tubelings were planted for the purposes of enhancing stream bank stability and not as vegetation community enhancement, they were not included in the shrub survival assessments.

Based on the data obtained from the permanent vegetation monitoring plots in 2015, the average shrub survival rate within the restored and created wetlands is approximately 78 percent, and the average shrub survival rate for the larger stream segment restorations is approximately 83 percent, resulting in an overall average survival rate of all planted shrubs of 80 percent. The performance standards of 80 percent survival rate of planted shrubs has been met in 2015 (see Woody Stem Survival Assessment Based on 0.02-acre Permanent Vegetation Monitoring Plots and Wetland Data Plots summary table in Appendix 4). Although this performance standard was just met in 2015, it is noteworthy that none of the restored or created feature were proposed to have a shrub cover type. The planted shrubs were included to provide structural diversity within the vegetation communities, and to provide a natural barrier to incursions by golfers.

#### 3.3 Natural Woody Recruitment

Based on observations made in the field, natural woody recruitment within the restored and created wetlands and adjacent to restored stream segments has increased compared to conditions in previous years. It is anticipated that additional species will continue to "volunteer" from the surrounding, undisturbed woodlands. During 2015, VHB noted such natural recruit species as yellow birch (*Betula alleghaniensis*), pin cherry (*Prunus pensylvanica*), choke cherry (*Prunus virginiana*), red maple (*Acer rubrum*), balsam fir (*Abies balsamea*), steeplebush (*Spiraea tomentosa*), and Bebb willow (*Salix bebbiana*), within a number of the restored and created wetlands, and adjacent to restored stream segments. It is expected that these and other volunteer species will continue to naturally propagate and may be represented within the permanent vegetation monitoring plots during future monitoring efforts.



#### 4.0 Hydrology

Based on the results summarized in Table 2 below, all of the restored and created wetlands show evidence of at least one primary, principal hydrology indicator, which would indicate hydrology is present within all of these features, and therefore that this performance standard is being met. The results of the assessment of hydrology within each restored or created wetland are detailed in Table 2.

Table 2: Summary of Hydrology Indicators and Functions and Values in the Restored and Created Wetlands

Feature	Hole #	VHB Map #	Evidence of Hydrology <sup>2</sup>	Principal Functions and Values <sup>3</sup>
H5-Create	5	1	A2 (High water Table); A3 (Saturation); B10 (Drainage Patterns); C3 (Oxidized Rhizospheres on Living Roots)	Groundwater recharge/ discharge and Floodflow alteration (evidence of water retention and adjacent to perennial stream); Wildlife habitat (pickerel frogs and green frog) and various songbirds observed
H6-WT1	6	1	A1 (Surface Water); A2 (High Water Table); A3 (Saturation)	Groundwater recharge/ discharge (evidence of water retention)
WH-WT1	6	1	A1 (Surface water); A2 (High water table); A3 (Saturation); B13 (Aquatic fauna)	Groundwater recharge/ discharge (standing water at time of monitoring); Wildlife habitat (pickerel frogs)
WH-WT2	6	1	A2 (High water table); A3 (Saturation);B1 (Water marks); B4 (Algal mat or crust); B10 (Drainage patterns)	Groundwater recharge/ discharge (evidence of water retention and ground water discharge)
H4-WT1/2	4	2	A1 (Surface water); A2 (High water table); A3 (Saturation); B10 (Drainage patterns)	Groundwater recharge/ discharge and Floodflow alteration (groundwater discharge present; adjacent to small perennial stream with very dense vegetation)
H4-WT3	4	2	A2 (High Water Table); A3 (Saturation); B9 (Water-stained leaves); B10 (Drainage patterns)	Groundwater recharge/ discharge (groundwater discharge present, evidence of standing water)
H8-Create	8	3	A3 (Saturation); B9 (Water-Stained Leaves); B10 (Drainage Patterns)	Groundwater recharge/ discharge and Floodflow alteration (adjacent to intermittent stream with dense vegetation)

<sup>&</sup>lt;sup>2</sup> Alpha-numeric codes representing Evidence of Hydrology are from Regional Supplement (Section 4). "A" indicators represent direct observations of surface or groundwater; "B" indicators represent evidence an area is subject to regular ponding or flooding; "C" indicators include other evidence and area is normally saturated; and "D" indicators include other landscape/soil/vegetation features that indicate contemporary (not historic) wet conditions.

<sup>&</sup>lt;sup>3</sup> Principal Functions and Values are from the USACE Highway Methodology (1999).



Table 2: Summary of Hydrology Indicators and Functions and Values in the Restored and Created Wetlands

Feature	Hole #	VHB Map #	Evidence of Hydrology <sup>2</sup>	Principal Functions and Values <sup>3</sup>
H1-WT1	1	4	A3 (Saturation); B9 (Water-stained leaves); B10 (Drainage patterns)	Groundwater recharge/ discharge and Floodflow alteration (adjacent to two perennial streams with little capacity up-gradient)
H11- WT2/3	11	6	A2 (High Water Table); A3 (Saturation); B10 (Drainage patterns)	Groundwater recharge/ discharge and Floodflow Alteration (adjacent to small perennial stream)
H11- Create	11	6	A2 (High Water Table); A3 (Saturation); B9 (Water-Stained Leaves)	Groundwater recharge/ discharge (evidence of water retention)
H11-WT6	11	6	B9 (Water-Stained Leaves); C3 (Oxidized Rhizospheres on Living Roots)	Groundwater recharge/ discharge (evidence of water retention and ground water discharge)
H16-WT1/ H11-WT1	16	6	A2 (High Water Table); A3 (Saturation);); B9 (Water-stained leaves); B10 (Drainage patterns)	Groundwater recharge/ discharge and Floodflow alteration (evidence of water retention; adjacent to small perennial stream with limited capacity up-gradient)
H16- Create	16	6	A2 (High Water Table); A3 (Saturation); B9 (Water Stained Leaves); B10 (Drainage Patterns)	Groundwater recharge/ discharge and Floodflow alteration (evidence of water retention and groundwater discharge; large wetland adjacent to perennial stream)
H13- WT1/1a/1b	13	7	A3 (Saturation); B9 (Water-Stained Leaves); B10 (Drainage Patterns); C3 (Oxidized Rhizospheres on Living Roots)	Groundwater recharge/ discharge and Floodflow alteration (groundwater discharge points found; adjacent to small perennial stream with little capacity up-gradient)
H13-WT2	13	7	A1 (Surface water); A2 (High water table); A3 (Saturation); B1 (Water marks); B9 (Water-stained leaves); B13 (Aquatic fauna)	Groundwater recharge/ discharge, Floodflow Alteration (outlets to small perennial stream) and Wildlife habitat (groundwater discharge points observed; pickerel frog and green frog (Lithobates clamitans) tadpoles observed
H13-WT3	13	7	A2 (High water table); A3 (Saturation); B9 (Water-stained leaves); B10 (Drainage patterns)	Groundwater recharge/ discharge
H14- WT2/3	14	7	A1 (Surface Water); A2 (High Water Table); A3 (Saturation); B9 (Water- stained leaves)	Groundwater recharge/ discharge and Floodflow Alteration (evidence of water retention and adjacent to small perennial stream)
H14-WT1	14	7	A1 (Surface water); A2 (High water table); A3 (Saturation); B2 (Sediment deposits); B9 (Water-stained leaves); B10 (Drainage patterns)	Groundwater recharge/ discharge (groundwater discharge points observed)
H15-WT1	15	7	A3 (Saturation); B9 (Water stained leaves)	Groundwater recharge/ discharge



#### 5.0 Functions and Values Assessment

VHB conducted an assessment of wetland functions and values during the Year Five monitoring efforts, using the methods outlined in the Highway Methodology, in order to ensure that the wetland functions and values impacted by golf course construction were restored. It was determined during the mitigation planning process that the principal functions and values provided by the impacted wetlands were groundwater recharge/discharge and wildlife habitat. Each wetland feature was visually assessed during the monitoring efforts to determine if these previously identified functions and values (or any additional functions) were being provided. Based on this assessment, VHB determined that as of 2015 (the final year of monitoring), all of the restored and created wetlands are providing the function of Groundwater Recharge/Discharge; in addition, several of the restored or created wetlands showed evidence of functioning as Floodflow Alteration and/or Wildlife Habitat. The results of this assessment are listed, by feature, above in Table 2.

#### 5.1 Vernal Pool Biology Assessment

In Year One (2011), use of three wetlands (WH-WT1, H13-WT2, and H14-WT1) by vernal pool indicator species for breeding was observed during the appropriate season. These wetlands were identified as potential breeding habitat for vernal pool species prior to the start of mitigation monitoring in 2011. Based on the negative results of a vernal pool assessment for biological indicator species conducted in Year Two, VHB did not conduct similar assessments in Years Three through Five. During Years Two through Five, observations of other amphibian species in three wetlands were made (H5-Create, WH-WT1, and H13-WT2), and included such species as northern leopard frog (*Rana pipiens*) and pickerel frog (*Rana palustris*).

#### 6.0 Stream Assessments

In addition to the assessment of the herbaceous and shrub vegetation communities within the restored floodplains of the larger stream restoration sites, VHB conducted a visual assessment of



the stream conditions within the restored stream segments. In order to assess stream condition, VHB observed and noted such characteristics as signs of erosion and evidence of channel development (including substrate sorting, occupation of the floodplain, and sediment deposition). Overall, the restored streams have developed and naturalized in a stable manner. Several streams show evidence of accessing the created floodplains during high precipitation events, with minimal erosion occurring; signs include sediment deposits in the floodplain and continued healthy vegetation (herbaceous and woody) growth after the high precipitation events. Evidence was observed that significant substrate sorting has taken place in all of the restored streams. Additionally, streams repaired during 2012, 2013, and 2014 were observed to be stable during 2015. As part of the normal photograph collection for monitoring, each restored stream was photographed to show representative conditions (see Golf Course Mitigation Monitoring – Year Four Photographs in Appendix 6).

#### 7.0 Invasive Plant Species

During prior monitoring years, VHB observed a small population (approximately 10 feet by 10 feet) of common reed (*Phragmites australis*) within Wetland H4-WT1/2. This population has previously been hand cut and treated with herbicide at various times during the growing seasons of 2009 through 2013, prior to which time it is was approximately the same dimensions. During the Year Four monitoring, this population of common reed was not observed. However it reemerged in 2015 although far smaller and less dense than the originally observed condition; VHB recommended following the established treatment protocol in the future if this population persists. No other occurrences of common reed has been observed.

During the 2015 monitoring, a population of reed canary grass (*Phalaris arundinacea*) was observed in Wetland H11-WT2/3. This population was hand removed, bagged, and disposed of off-site. VHB identified the reed canary grass with JPR staff and recommended hand-pulling and spraying with herbicide, similar to the previously approved method for common reed, if this population re-emerges, in order to prevent it from spreading to other features.



#### 8.0 Remedial Actions

Remedial actions undertaken in 2015 were limited to the removal of reed canary grass in Wetland H11-WT2/3 (described above). No other restored/ created wetlands or stream required repair or other additional work.

#### 9.0 Conclusions/Recommendations

Overall, the JPR golf course mitigation areas have met or exceeded the performance standards set out in the Mitigation Plan. Field monitoring efforts identified average, overall herbaceous vegetation cover of over 100 percent; and overall, average shrub survival rates of approximately 80 percent. Both of these results meet or exceed the 80 percent herbaceous cover and the 80 percent shrub survival rate performance standards which were set in the Mitigation Plan.

In addition to the discussion of the performance standards above, VHB also field-checked the boundaries of the restored and created wetlands to determine if there were any significant changes that would require re-mapping the mitigation areas and recalculating the total wetland areas restored or created as part of the mitigation efforts undertaken by JPR. Based on this assessment, the wetland boundaries, and therefore wetland areas, have not changed significantly since the completion of construction in 2010.

Based on the 2015 monitoring results, VHB anticipates that the restored and created wetlands and restored streams will continue to perform the functions that were impacted by golf course construction and then restored for mitigation. Vegetation cover is in general, above the established performance standards, and has developed into a native herbaceous community; and while the overall planted shrub survival rate was found to be at the lower end of the acceptable 80 percent survival performance standard in this final year of monitoring, this is not a concern, since the shrubs were planted to provide minimal structural diversity in the vegetation community and soil stability, and not to develop into shrub wetlands. Additionally, since the shrubs that have survived into 2015, including new observations of planted stems, have been observed to be thriving with natural recruits emerging in a number of features, the overall goal of shrubs



providing structure to the vegetation communities, and prevention of soil erosion, have been met should the survival rate fall below the performance standard.

Additionally, VHB observed evidence of the restored and created wetlands providing the functions that were originally described as the goals in the Mitigation Plan, including groundwater recharge/ discharge and wildlife habitat.

Since the restored/ created wetlands and restored streams have met or exceeded the Performance Standards described in the Mitigation Plan, VHB recommends annual monitoring be concluded after Year Five (2015).

Finally, the signed *Mitigation Report Transmittal and Self-Certification* form as provided by the USACE's 7-20-10 New England District Compensatory Mitigation Guidance is provided in Appendix 7.

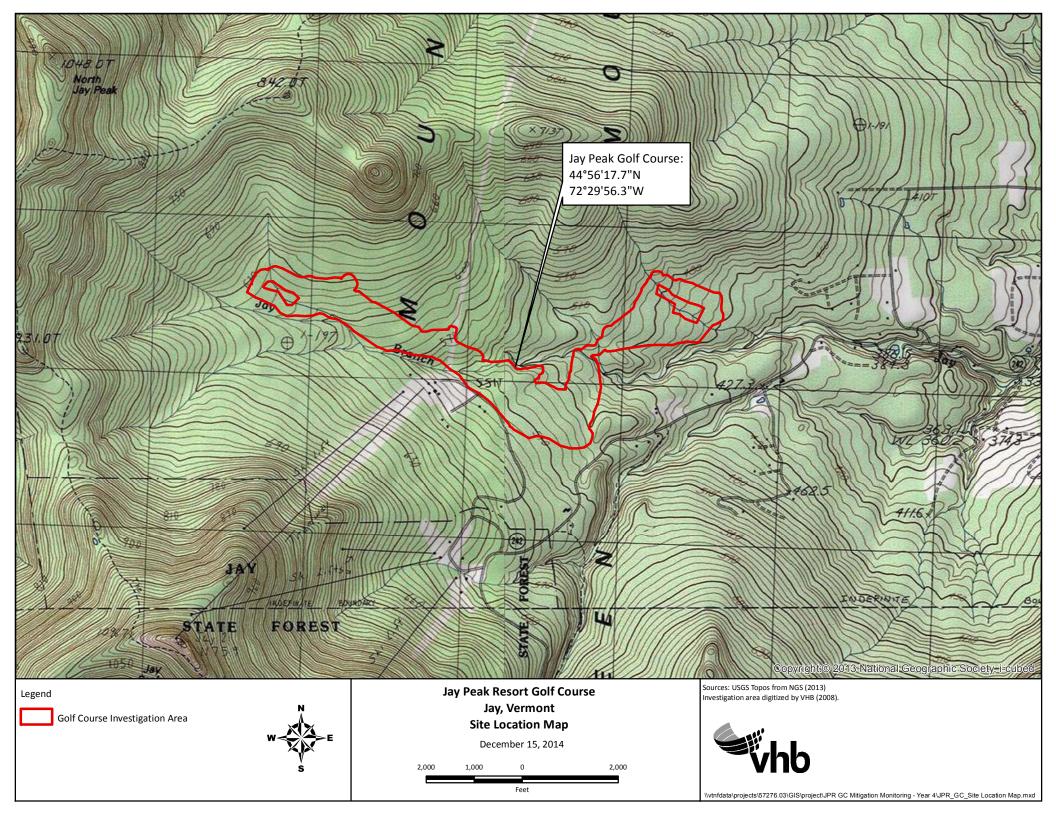
#### 10.0 References

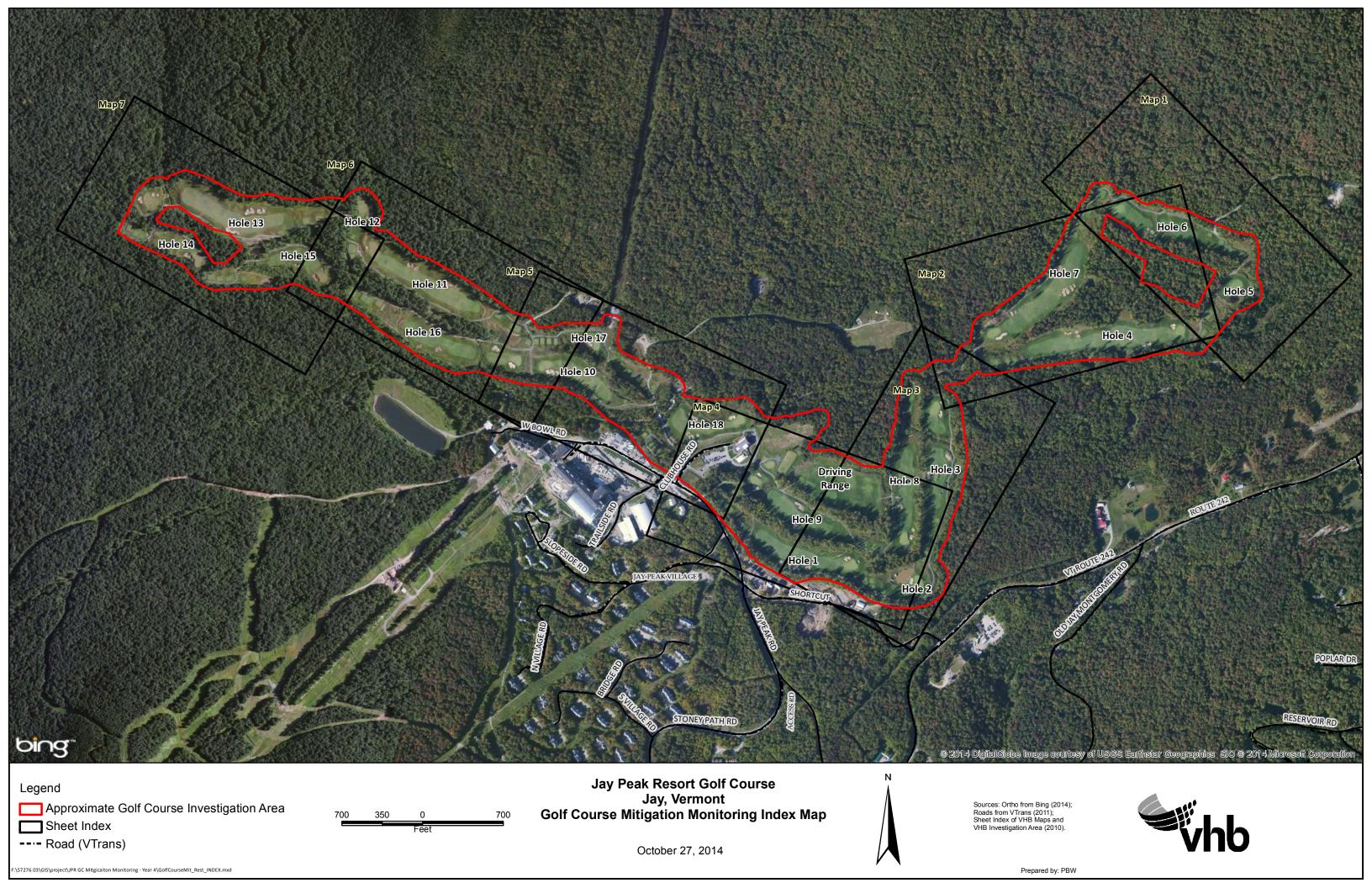
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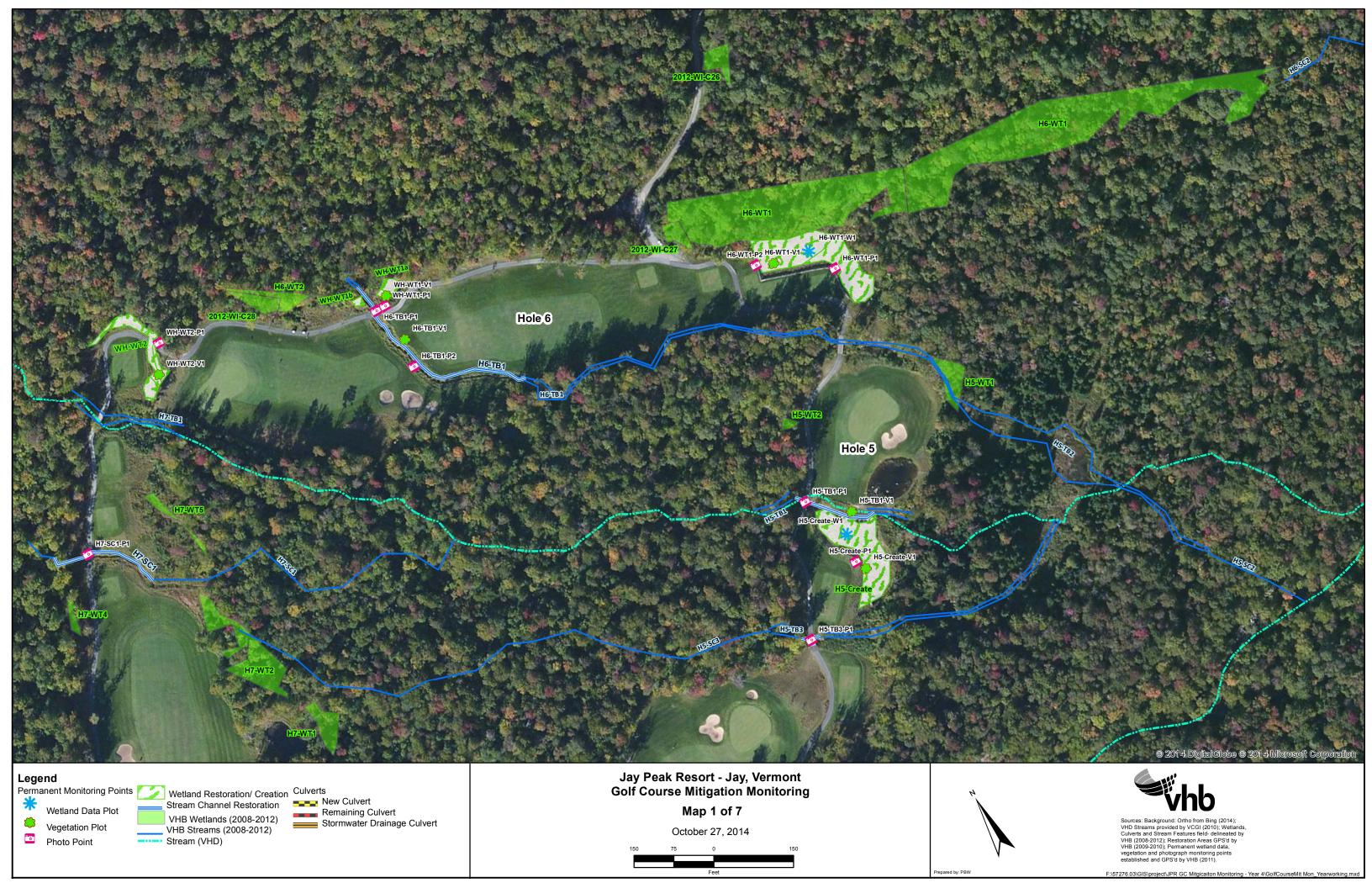
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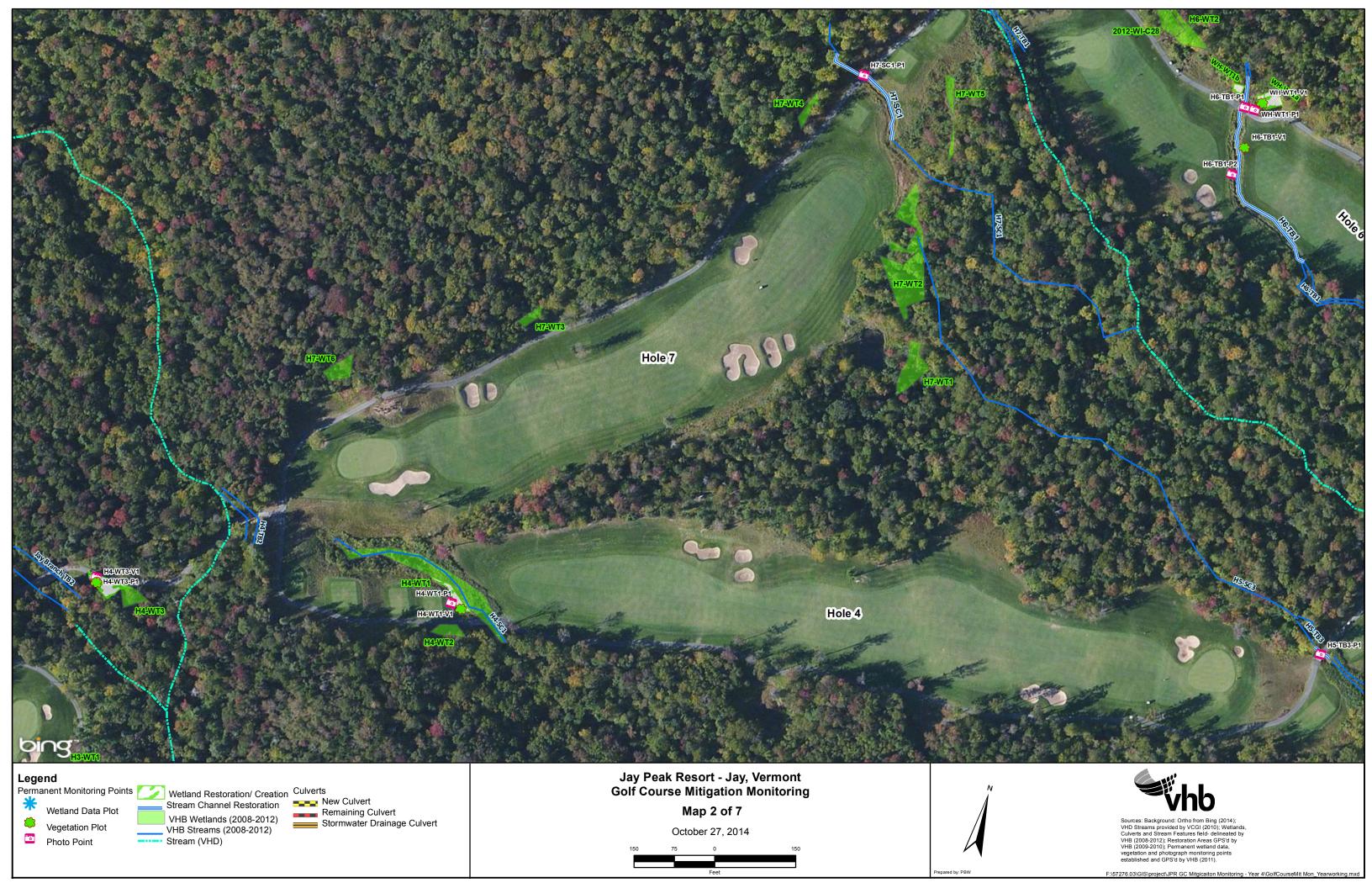


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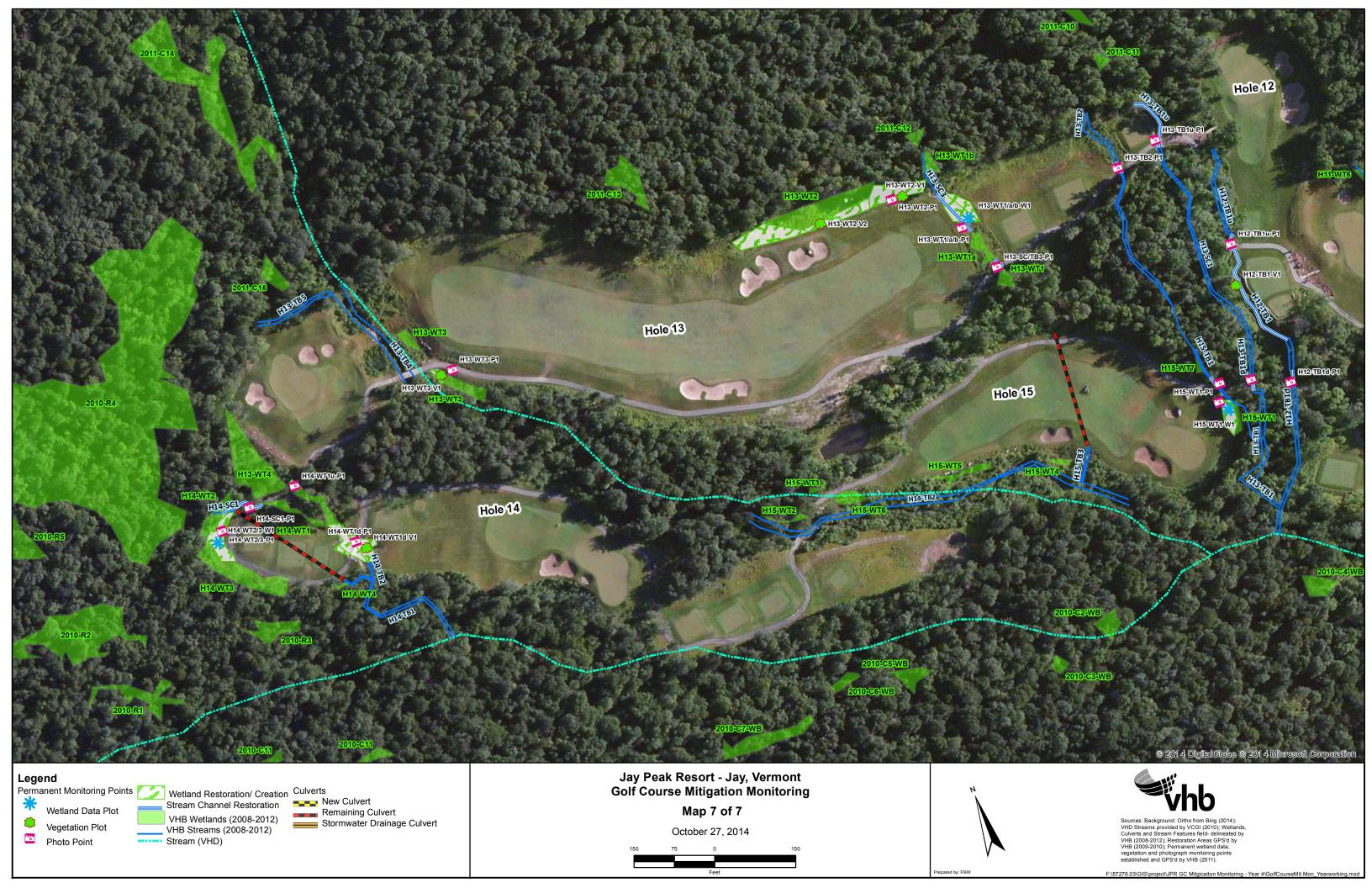














					VHB Mitig	jation Moi	nitoring M	1ap 1 of 7 <sup>5</sup>	5		Мар	2 of 7	Map 3 of		Map 4 of 7	7	Map 5 of					Map 6 o	f 7							Map 7 of 7	7		
Scientific Name <sup>1,2</sup>	Common Name	Indicator	Н5-ТВ1	H5-4	Create	Н6-	-WT1	WH-WT1	H6-TB1	WH-WT2	H4-WT1	H4-WT3	H8- Create	H1-WT1	P2-	TB1	H11- WT2/3	H11-TB2	H11-Create		111-WT6	H12-TB1	H16- u WT1/ H11-WT1	H16-Cı	eate	H16-S	H13- C1 WT1/1a		113-WT2	H13-WT3	H14- WT2/3	H14-WT1	H15-WT1
Scientific Name	Common Name	Status <sup>3</sup>	Stream	We	etland	We	tland	Wetland	Stream	Wetland	Wetland	Wetland	Wetland	Wetland	Stre	eam	Wetland	Stream	Wetland		Wetland	Stream		Wetla	nd	Stream		t	Wetland	Wetland	Wetland	Wetland	Wetland
			H5-TB1- V1 <sup>6</sup>	H5-Create V1	H5-Create- W1 <sup>6</sup>	H6-WT1- V1	H6-WT1- W1	WH-WT1- V1	H6-TB1- V1	WH-WT2- V1	H4-WT1/2	2· H4-WT3- V1	H8-Create W1	H1-WT1- V1	GC) -V1	(off GC)- V1	H11- WT2/3-V1		H11- H1: Create-W1 Create	e-V1 W1	V1		H11-VT1	/ H16- H16 Create-W1 Create				/1 H13-W	T2- H13-WT2 V2	- H13-WT3- V1	H14- WT2/3- W1	H14- WT1d-V1	H15-WT1- W1
Ageratina altissima (L.) King & H.E. Robins	s. white snakeroot	FACU																												1	1		1
Anaphalis margaritacea (L.) Benth.	pearly everlasting	FACU																						1									3
Asclepias incarnata L.	swamp milkweed	OBL		1			1	3	1																	3							3
Calamagrostis canadensis (Michx.) Beauv.	bluejoint	OBL				38													15								3						
Carex comosa Boott	longhair sedge	OBL		1				15		3	3		3	1	15							38											
Carex crinita Lam.	fringed sedge	OBL	15			3					15	63								15	3	15			3	15			15	3	3		15
Carex lurida Wahlenb.	shallow sedge	OBL		3		3	15	15			3			3			15	15			38	3 15	3				15	15			3	15	38
Carex scoparia Schkuhr ex Willd.	broom sedge	FACW		1	3	3		15			3			3			3				15	3	38			38	3	15	15		3	15	
Carex vulpinoidea Michx.	fox sedge	OBL	38	3	15	15	38		38	15			15	38			38	15	15	5		15	15	38 38	15	5					63	3	
Chelone glabra L.	white turtlehead	OBL																								3					3		
Dactylis glomerata L.	orchardgrass	FACU														38																	
Digitaria ischaemum (Schreb.) Schreb. ex	smooth crabgrass	FACU	15																														
Muhl.  Eleocharis obtusa (Willd.) J.A. Schultes	blunt spikerush	OBL																												3			
Elymus virginicus L.	Virginia wildrye	FACW																	3									+					
Equisetum arvense L.	field horsetail	FAC				15																											
Epilobium coloratum Biehler	purpleleaf willowherb	OBL																											3			3	3
Eupatorium perfoliatum L.	common boneset	FACW	15	3	15	15	15	3	3	3	3		3	3	15		15	15	38 15	5 15	15	5	15	38 15	3	15	15	15		3	3	3	
Euthamia graminifolia (L.) Nutt.	flat-top goldentop	FAC	3			1			3		1			15	1				15 3					3					3				
Eutrochium maculatum (L.) E.E. Lamont	spotted joepyeweed	OBL		1		1	3	3	3		3	1		1			3	3		3	3	3	3	3	1	1	3	1	3	15	3	1	15
Festuca rubra L.	red fescue	FACU															1		3												1		
Fragaria virginiana Duchesne	Virginia strawberry	FACU																3															
Galium mollugo	false baby's breath	FACU													1			3										+					
Galium palustre L.	common marsh bedstraw	OBL								3									1					3				+					
Glyceria canadensis (Michx.) Trin.	rattlesnake mannagrass	OBL									3																3	+					
Glyceria grandis S. Wats.	American mannagrass	OBL		3																							38	38		15			
Glyceria melicaria (Michx.) F.T. Hubbard	melic mannagrass	OBL														3												+					
Glyceria striata (Lam.) A.S. Hitchc.	fowl mannagrass	OBL																										+					
Helonias bullata L.	swamppink	OBL																										+					
Hypericum perforatum L.	common St. Johnswort	UPL																															
Impatiens capensis Meerb.	jewelweed	FACW								3						38	15					15		15			15					3	
Juncus effusus L.	common rush	OBL	15	38	15	15	15	15	3	15			38		38		3	3	38	3	15		38	15 38		3 15			3		15	38	
Juncus tenuis Willd.	poverty rush	FAC							15	15				3							1		3								3		
Leersia oryzoides (L.) Sw.	rice cutgrass	OBL																											15				
200.5.0 01 y 2010 C5 (E./ 500.	cc catgrass	ODL																											13				

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					VHB Mitig	ation Mor	nitoring M	lap 1 of 7 <sup>5</sup>	5		Мар	2 of 7	Map 3 of 7	N	Map 4 of 7	7	Map 5 of 7				Мар	of 7								Map 7 of 7			
Scientific Name <sup>1,2</sup>	Common Name	Indicator	Н5-ТВ	Ц Н5-	Create	Н6-	WT1	WH-WT1	H6-TB1	WH-WT2	H4-WT1	H4-WT3	H8- Create	H1-WT1	P2-	TB1	H11- WT2/3	H11-TB2	H11-Create	H11-	WT6 H12-	H16- FB1u WT1 H11-W	,	H16-Creat	e	H16-SC1	H13- 1 WT1/1a/ 1b	H13-1	WT2	H13-WT3	H14- WT2/3	H14-WT1	H15-V
		Status	Stream	We	etland	We	tland	Wetland	Stream	Wetland	Wetland	Wetland	Wetland	Wetland	Stre		Wetland	Stream	Wetland	Wetl	land Stre	am Wetlar	id	Wetland		Stream		Wetl	land	Wetland	Wetland	Wetland	Wetla
			H5-TB1 V1 <sup>6</sup>	- H5-Create V1	H5-Create- W1 <sup>6</sup>	H6-WT1- V1	H6-WT1- W1	WH-WT1- V1	H6-TB1- V1	WH-WT2- V1	H4-WT1/2 V1	H4-WT3- V1	H8-Create- W1		GC) -V1	(off GC)- V1	H11- WT2/3-V1		H11- H11- Create-W1 Create-V1	W1	V1 H12- V1 V	1 H11-V		- H16- W1 Create-V1	H16- Create-V2	H16-SC1 V1	- H13- WT1/1a/1 b-W1	H13-WT2- V1	H13-WT2- V2	H13-WT3- V1	H14- WT2/3- W1	H14- WT1d-V1	H15-W W1
eucanthemum vulgare Lam.	oxeye daisy	FACU																															
otus corniculatus L.	Bird's-foot trefoil	FACU																															
ycopus americanus Muhl. ex W. Bart.	American water horehound	OBL																															
ycopus uniflorus Michx.	northern bugleweed	OBL			1																												
Mimulus ringens L.	Allegheny monkeyflower	OBL	3		3		1	1	3	1			38					1	38		3	3									3	1	
Onoclea sensibilis L.	sensitive fern	FACW										1																					
Phalaris arundinacea L.	reed canarygrass	FACW															3																
Poa compressa L.	Canada bluegrass	FACU																															
Polygonum sagittatum L.	arrowleaf tearthumb	OBL								3			15				1																
Potentilla simplex Michx.	common cinquefoil	FACU																															
Prenanthes altissima L.	tall rattlesnakeroot	FACU														1																	
Ranunculus acris L.	tall buttercup	FAC																1															
Schoenoplectus tabernaemontani (K.C. Gmel.) Palla	softstem bulrush	OBL		1				38																			1			15		15	
Scirpus atrovirens Willd.	green bulrush	OBL		3		1	3	1		1							1	1		1		3	3		3			3	38			3	
Scirpus cyperinus (L.) Kunth	woolgrass	OBL		3		3	3			15	15	15	3								3							15	3			1	
Solidago altissima L.	tall goldenrod	FACU														1																	
Solidago gigantea	giant goldenrod	FACW					3						3	15	15			3							38								
Solidago rugosa P. Mill.	wrinkleleaf goldenrod	FAC									15	3	3							38	3				3			3			15		
Symphyotrichum novae-angliae (L.) Neso	m New England aster	FACW			1	3	3		15		15	15			38	15	3	38	15					15	3							1	1
Thelypteris palustris Schott	eastern marsh fern	FACW	1																						1								
Trifolium pratense L.	red clover	FACU													3																		
Trifolium repens L.	white clover	FACU																3															
Typha angustifolia L.	narrowleaf cattail	OBL		15																													
Гурha latifolia L.	broadleaf cattail	OBL						3		15	38																			3			
Verbena hastata L.	swamp verbena	FACW	1	3	3	1				1	3		15	15	1		15		15 15	15	1	5	3	3	3	15		3		3		1	
/icia sativa L.	garden vetch	FACU																1															
viola sororia Willd.	common blue violet	FAC																1															
	% Cover	r/Sampling Plot	106	79	56	117	100	112	84	93	120	98	136	97	127	96	116	106	105 124	87	96 12	2 121	100	131	111	105	111	108	98	61	119	103	79
	Average %	6 Cover/ Feature	106		68	1	09	112	84	93	120	98	136	97	11	12	116	106	115	9.	2 12	2 121		114	•	105	111	10	)3	61	119	103	79

106

104

Total Average % Cover for Restored Stream Floodplain

TOTAL Average % Herbaceous Cover:

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<sup>&</sup>lt;sup>1</sup>Species nomenclature follows the USDA Plants Database (USDA - NRCS 2015)

<sup>&</sup>lt;sup>2</sup> Species identification follows Haines, Arthur. 2011. Flora Novae Angliae: A Manual for the Identification of Native and Naturalized Higher Vascular Plants of New England . New England Wildflower Society.

<sup>&</sup>lt;sup>3</sup> Indicator status follows: 2014 National Wetland Plant List (Lichvar, R.W., M. Bufferwick, N.C. Melvin, and W.N. Kirchner. 2014. The National Wetland Plant List: 2014 Update of Wetland Ratings. Phytoneuron 2014-41: 1-42.

<sup>&</sup>lt;sup>4</sup> Cover class percentages from visual assessment of 1m<sup>2</sup> quadrats (including those within wetland data plots) and represents approximate coverage within the quadrat. Approximate mid-point cover classes have been used to report data.

<sup>&</sup>lt;sup>5</sup> Mapping refers to Jay Peak Resort Golf Course Mitigation Monitoring Set, prepared by VHB, and dated **December 4, 2015** 

<sup>&</sup>lt;sup>6</sup> Plot names including "V" refer to 1m2 plots used to assess herbaceous vegetation only; plot names incluing "W" refer to data from wetland data plots.

<sup>7</sup> Italics indicate invasive species per the Vermont Class A or B Noxious Weed list (Quarantine #3-Noxious Weeds) (2012) or Vermont Invasive Species Watch List (2005).



#### Jay Peak Resort Golf Course Mitigation Year Five (2015) Mitigation Monitoring Report

#### Woody Stem Survival Assessment Based on 0.02-acre (5-meter radius) Permanent Vegetation Monitoring Plots and Wetland Data Plots

#### December 28, 2015

Mitigation Feature	Feature Type	Mitigation Feature Size (acres)	Mitigation Feature Plot	Planted Shrubs within 0.02-acre (5m- radius) Plots	Total Found Planted Shrubs Within Feature	Total Shrubs Planted <sup>1</sup>	Approximate Survival Rate of Shrubs/ Feature (%)
H6-WT1		0.31	H6-WT1-V1	6	100	150	67%
110-4411		0.31	H6-WT1-W1	7	100	130	0776
WH-WT2		0.10	WH-WT2-V1	4	20	20	98%
WH-WT1		0.03	WH-WT1-V1	14	23	35	64%
H5-Create		0.24	H5-Create-V1	10	116	152	76%
no-Create		0.24	H5-Create-W1	9	110	132	70%
H14-WT2/3		0.05	H14-WT2/4-W1	12	32	46	69%
H14-WT1		0.07	H14-WT1-V1	2	7	8	93%
			H16-WT1/H11-WT1-V1	4			
H16-WT1/Create/ H11-		0.55	H16-Create-W1	3	407	450	74.0/
WT1 <sup>2</sup>		0.66	H16-Create-V1	4	107	150	71%
	S		H16-Create-V2	2			
H1-WT1	WETLANDS	0.06	H1-WT1-V1	9	25	37	69%
	Ë		H11-WT6-V1	7			
H11-WT6	₹	0.09	H11-WT6-W1	7	30	41	74%
H11-WT2/3		0.03	H11-WT2/3-V1	12	16	25	63%
			H11-Create-W1	7			
H11-Create		0.36	H11-Create-V1	8	135	185	73%
H4-WT1/2		0.02	H4-WT1/2-V1	8	8	10	75%
H4-WT3		0.04	H4-WT3-V1	5	9	10	89%
H8-Create		0.13	H8-Create-W1	4	26	30	85%
H13-WT1/1a/1b		0.06	H13-WT1/1a/1b-W1	5	14	16	87%
			H13-WT2-V1	3			
H13-WT2		0.18	H13-WT2-V2	4	31	45	69%
H13-WT3		0.01	H13-WT3-V1	12	15	16	94%
H15-WT1		0.03	H15-WT1-W1	11	23	25	92%
H6-TB1		0.26	H6-TB1-V1	5	65	75	86%
H5-TB1		0.17	H5-TB1-V1	9	75	81	92%
H16-SC1	٩S	0.18	H16-SC1-V1	4	35	55	64%
H11-TB2	STREAMS	0.19	H11-TB2-V1	6	56	80	70%
H12-TB1u	STR	0.15	H12-TB1u-V1	6	44	45	97%
			P2-TB1-V1	4			
P2-TB1		0.25	P2-TB1-V2	4	50	54	92%
				AVERAGE SURVIVAL RA	ATE OF PLANTED SHRUE	S WITHIN WETLANDS:	78%
			AVERAGE SURVIVAL R		BS WITHIN RESTORED S		83%
					AGE SURVIVAL RATE O		80%

<sup>&</sup>lt;sup>1</sup>Total plantings as reported in the *Post Construction Report - Wetland/Stream Restoration - Jay Peak Golf Course*, by New England Environmental, Inc. (NEE), dated August 23, 2010; this assessment of planted shrub survival includes those shrubs planted for wetland and stream enhancement (winterberry holly *(lex verticillata )*, elderbery (*Sambucus canadensis*), American cranberry (*Viburnum trilobum*), and red-osier dogwood (*Cornus sericea*)), but does not include the additional *Salix* sp. and *Cornus* sp. tublelings planted as part of the streambank stabilization plan.

<sup>&</sup>lt;sup>2</sup> The shrub planting summary provided by NEE combined the wetlands areas H16-WT1/H11-WT1 and H16-Create, although for permitting purposes these were considered separate features.



#### WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project	Site:	JPR Golf Co	urse Wetland	Mitigation	City/County:	Jay/Orlo	eans		Samp. Date: 8/1	13/2015
•	int/Owner:	Jay Peak Re		Willigation	, ,		VERMONT	Sampling Point:		I5-Create
	gator(s):	O. McEnroe			Section		nip, Range:			
Landfor	rm (hillslope, terrace, et	tc.):	Terrace				convex, none):		Slope (%):	
Subregi	ion (LRR or MLRA)	):	LRR	Lat:	44°56'32.63	32"N	Long:	72°29'0.229"W	Datum:	NAD 83
Soil Ma		Cabot							NWI Class:	PEM
	. , .		, ,	I for this time of year?		YES	(If no, e	xplain in Remarks.)		
	getation, Soil, or Hy	0, 0	,						cumstances?	YES
Are Veg	getation, Soil, or Hy	drology natu	irally problem	natic? <u>NO</u>				(If needed, e	xplain any answe	ers in Remarks.)
SUMN	MARY OF FINDI	NGS - Atta	ach site ma	np showing sample p	oint locati	ions, tra	nsects, in	nportant features	s, etc.	
Hydrop	hytic Vegetation Pr	resent?		YES						
Hydric S	Soil Present?		-	YES			Is This :	Sample Area Within	a Wetland?	YES
	d Hydrology Preser	nt?		YES						
Remar	ks:									
	OLOGY									
	d Hydrology Indicat		and the state of the state of	ali all that are did				Secondary Indicator		wo required)
	y Indicators (minim	um of one is	required; che				_	Surface Soil Cr	. ,	
	Surface Water (A1)	.\	-	Water-Stained Leave				Drainage Patte		
	High Water Table (A2 Saturation (A3)	)	-	Aquatic Fauna (B13) Marl Deposits (B13)				Moss Trim Line Dry-Season W		
	Water Marks (B1)			Hydrogen Sulfide Oc				Crayfish Burro		
	Sediment Deposits (B	(2)	-	X Oxidized Rhizospher		nots (C3)			ble on Aerial (C9)	
	Drift Deposits (B3)	2)	-	Presence of Reduce	-	70t3 (C3)			essed Plants (D1)	
	Algal Mat or Crust (B4	4)	-	Recent Iron Reduction		ls (C6)		Geomorphic P		
	Iron Deposits (B5)	-,	-	Thin Muck Surface (		()		Shallow Aquita	` '	
	Inundation Visible on	Aerial (B7)	-	Other (Explain in Re				Microtopogra		
	Sparsely Vegetated Co	oncave Surfac	ie (B8)					FAC-Neutral To		
Field O	bservations:							<u> </u>		
	Water Present?			Depth (inches):						
	Table Present?	•	X	Depth (inches):		-	Wetland	d Hydrology Present?		YES
	ion Present?	•	X	Depth (inches):		-		7		
Describ	e Recorded Data (s	tream gauge	e, monitoring	well, aerial photos, previo	ous inspection	ns), if avail	lable:			
Remark										
SOIL Profile	Description: (Descr	ibe to the de	pth needed to	o document the indicator	or confirm th	he absenc	e of indicato	rs.)		
Depth		Matrix		Rec	dox Features					
(in)	Color (mo	ist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks
0-3	5Y 3/1		98	7.5YR 4/6	2	С	M, PL	SANDY LOAM	Redox - Co	ommon, Prominent
3-8	2.5Y 4/3	3	90	7.5YR 4/6	10	С	М	VERY FINE SANDY LOAM	Redox - Co	ommon, Prominent
						- —		VERY FINE SANDY		
8-12+	2.5Y 4/1	1	98	10YR 3/6	2	<u> </u>	M	LOAM	Redox - Co	ommon, Prominent
						- ——				
¹Type: C=	Concentration, D=Deple	tion, RM=Reduc	ed Matrix, MS=M	lasked Sand Grains.				<sup>2</sup> Location: PL=Pore Lining	, M=Matrix.	
Hydric S	Soil Indicators:							Indicators for Proble	ematic Hydric Soi	ils <sup>3</sup> :
	Histosol (A1)			Polyvaluo Pr	elow Surface (S	(9) (I DD D			LO) (LRR K, L, MLRA	
	Histic Epipedon (A2)			MLRA 149	•	oj (LINI II,			edox (A16) (LRR K,	•
	Black Histic (A3)				ırface (S9) (LRR	R. MLRA 1	.49B)		eat or Peat (S3) (LR	
	Hydrogen Sulfide (A4)	)			ky Mineral (F1)		- ,		S9) (LRR K, L, M)	, , ,
	Stratified Layers (A5)	•			ed Matrix (F2)	. , ,			w Surface (S8) (LR	R K, L)
	Depleted Below Dark	Surface (A11)	,	X Depleted Ma	atrix (F3)			Thin Dark Surf	ace (S9) (LRR K, L)	
1	Thick Dark Surface (A:	12)		Redox Dark S	Surface (F6)				se Masses (F12) (LI	
	Sandy Mucky Mineral				irk Surface (F7)	ł		Piedmont Floo	dplain Soils (F19) (	(MLRA 149B)
	Sandy Gleyed Matrix	(S4)		Redox Depre	essions (F8)				TA6) (MLRA 144A,	145, 149B)
	Sandy Redox (S5)			2				Red Parent Ma		
	Stripped Matrix (S6) Dark Surface (S7) (LRF	R R, MLRA 149	)B)		licators of hydr and hydrology n		-	Very Shallow I Other (Explain	Park Surface (TF12) in Remarks)	)
Restrict	tive Layer (if observ	/ed):			dis	turbed or p	problematic.			
	Type:							Hydric	Soil Present?	YES
	Depth (inches):									
Remark	s:									



Sampling Point: H5-Create

	(Dist size)	Absolute	Dom.	Indicator	
Tree	Stratum (Plot size:)	% Cover	Sp?	Status	Dominance Test Worksheet:
1.					# Dominants OBL, FACW, FAC: 4 (A)
2.					
3.					# Dominants across all strata: 4 (B)
4.					
5.					% Dominants OBL, FACW, FAC: <b>100</b> % (A/B)
6.					
7.					Prevalence Index Worksheet:
			= Tota	l Cover	Total % Cover of: Multiply By:
Sanlir	ng Stratum (Plot size:)				OBL 34 x 1 = 34
1.					FACW 37 x 2 = 74
2.					FAC x3=
3.					FACU x 4 =
4.					UPL x 5 =
5.					Sum:(A)(B)
6.					
7.					Prevalence Index = B/A = 1.52
			= Tota	l Cover	Hydrophytic Vegetation Indicators:
Shrub	Stratum (Plot size: <b>15'RAD</b> )				X Dominance Test is > 50%
1.	Cornus alba	15	Х	FACW	X Prevalence Index is <= 3.0
2.		-			Problematic Hydrophytic Vegetation <sup>1</sup> (explain)
3.					Rapid Test for Hydrophytic Vegetation
4.					Morphological Adaptations
5.					<del></del>
					¹Indicators of hydric soil and wetland hydrology must be present, unless
6.					disturbed or problematic.
7.					Definitions of Vegetation Strata:
	-1	15	= Tota	l Cover	
	Stratum (Plot size: <b>5' RAD</b> )				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or
1.	Juncus effusus	15	X	OBL	more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2.	Carex vulpinoidea	15	Х	OBL	
	•				
3.	Eupatorium perfoliatum	15	Х	FACW	
3. 4.	Eupatorium perfoliatum Verbena hastata	15 3	Х	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m)
			<u>X</u>		Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
4.	Verbena hastata	3	X	FACW	· · ·
4. 5.	Verbena hastata Mimulus ringens Carex scoparia	3 3	<u>x</u>	FACW OBL	· · ·
4. 5. 6. 7.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus	3 3 3	<u>x</u>	FACW OBL FACW OBL	or more in height and less than 3in (7.6cm) DBH.
4. 5. 6. 7. 8.	Verbena hastata Mimulus ringens Carex scoparia	3 3 3 1	x	FACW OBL FACW	· · ·
4. 5. 6. 7. 8. 9.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus	3 3 3 1	x	FACW OBL FACW OBL	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1
4. 5. 6. 7. 8. 9.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus	3 3 3 1	x	FACW OBL FACW OBL	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
4. 5. 6. 7. 8. 9. 10.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus	3 3 3 1	x	FACW OBL FACW OBL	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines,
4. 5. 6. 7. 8. 9.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus	3 3 3 1 1		FACW OBL FACW OBL FACW	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
4. 5. 6. 7. 8. 9. 10. 11.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae	3 3 3 1		FACW OBL FACW OBL	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines,
4. 5. 6. 7. 8. 9. 10. 11.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus	3 3 3 1 1		FACW OBL FACW OBL FACW	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
4. 5. 6. 7. 8. 9. 10. 11.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae	3 3 3 1 1		FACW OBL FACW OBL FACW	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
4. 5. 6. 7. 8. 9. 10. 11. 12.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae	3 3 3 1 1		FACW OBL FACW OBL FACW	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
4. 5. 6. 7. 8. 9. 10. 11. 12. Wood	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae	3 3 3 1 1		FACW OBL FACW OBL FACW	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae	3 3 3 1 1		FACW OBL FACW OBL FACW	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae	3 3 3 1 1		FACW OBL FACW OBL FACW	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.
4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae	3 3 3 1 1	= Tota	FACW OBL FACW OBL FACW	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic
4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae	3 3 3 1 1	= Tota	FACW OBL FACW OBL Cover	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation
4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4. 5.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae  dy Vines (Plot size:)	3 3 3 1 1	= Tota	FACW OBL FACW OBL Cover	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation
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4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4. 5.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae  dy Vines (Plot size:)	3 3 3 1 1	= Tota	FACW OBL FACW OBL Cover	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation
4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4. 5.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae  dy Vines (Plot size:)	3 3 3 1 1	= Tota	FACW OBL FACW OBL Cover	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation
4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4. 5.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae  dy Vines (Plot size:)	3 3 3 1 1	= Tota	FACW OBL FACW OBL Cover	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation
4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4. 5.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae  dy Vines (Plot size:)	3 3 3 1 1	= Tota	FACW OBL FACW OBL Cover	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation
4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4. 5.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae  dy Vines (Plot size:)	3 3 3 1 1	= Tota	FACW OBL FACW OBL Cover	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation
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4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4. 5.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae  dy Vines (Plot size:)	3 3 3 1 1	= Tota	FACW OBL FACW OBL Cover	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation
4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4. 5.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae  dy Vines (Plot size:)	3 3 3 1 1	= Tota	FACW OBL FACW OBL Cover	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation
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4. 5. 6. 7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4. 5.	Verbena hastata Mimulus ringens Carex scoparia Lycopus uniflorus Symphyotrichum novae-angliae  dy Vines (Plot size:)	3 3 3 1 1	= Tota	FACW OBL FACW OBL Cover	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation



Vhb		WEILAN	ID DETERMINATION DA	IA FOR	ivi - North	icentrai	i and ivortr	ieast Region			10-44 I T
Project Site:			d Mitigation		City/County:				Samp. Date: 8/		
Applicant/Owner:	Jay Peak R				C+:-		VERMONT	Sampling Point:		H6-WT1	
Investigator(s): Landform (hillslope, t	P. Werts-K	alifeiz Terrace					ship, Range: _ convex, none):	Jay Concave	Slope (%):		
Subregion (LRR or		LRR		Lat:	44°56'40.7		_	72°29'7.534"W	Datum:	NAD 83	
Soil Map Unit:	Cabot	Litti			44 30 4017			72 23 7.334 11	NWI Class:	PEM	
		ns on the site	typical for this time of year?			YES	(If no, ex	plain in Remarks.)			
Are Vegetation, Soi	il, or Hydrolo	gy significant	y disturbed?	NO			_	Normal Cir	rcumstances?	YES	
Are Vegetation, Soi	il, or Hydrolo	gy naturally p	roblematic?	NO				(If needed, ex	xplain any answe	rs in Remarks.)	
								_			
			te map showing sample	point l	ocations, t	transec	ts, importa	nt features, etc.			
Hydrophytic Vegeta		?	YES								
Hydric Soil Present			YES				Is This	Sample Area Within	a Wetland?	YES	
Wetland Hydrology	/ Present?		YES								
Remarks:											
HYDROLOGY											
Wetland Hydrology								Secondary Indicator	•	vo required)	
		one is requir	ed; check all that apply)				_	Surface Soil Cr			
X Surface Wate	. ,		Water-Stai		s (B9)			Drainage Patte	` '		
X High Water To X Saturation (A			Aquatic Fa					Moss Trim Line			
X Saturation (A Water Marks			Marl Depo Hydrogen		or (C1)			Dry-Season Wa			
Sediment Dep					es on Living Ro	nts (C3)			ble on Aerial (C9)		
Drift Deposits			Presence of		_	010 (00)			essed Plants (D1)		
Algal Mat or 0					n in Tilled Soils	s (C6)		Geomorphic P	. ,		
Iron Deposits			Thin Muck	Surface (C	7)			Shallow Aquita			
			small pockets of								
Inundation Vi	isible on Aerial	(B7)	standing water (1- Other (Exp	lain in Rem	narks)			Microtopograp	ohic Relief (D4)		
Sparsely Vege	etated Concave	Surface (B8)						FAC-Neutral Te	est (D5)		
Field Observations:											
Surface Water Pres	sent?	X	Depth	(inches):	1-2	_					
Water Table Preser		Х		(inches):	Surface	_	Wetland	d Hydrology Present?		YES	
Saturation Present		Х	•	(inches):	Surface						
	•		itoring well, aerial photos, prev	ious inspe	ections), if av	ailable:					
	last 5 days at	Jay Peak (N	DAA)								
Remarks:											
SOIL											
	•	the depth ne	eded to document the indicato			nce of ind	icators.)				
Depth	Matrix			Redox Fea		_ 1	. 2	_			
· /	(moist)	<b>100</b>	Color (moist)		%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks	
0-4 10Y	'R 3/1	100	· ————				· <del></del> ·	SANDY LOAM GRAVELLY SANDY	коск retusal a	ιτ 8"; κεαοx - cor	mmon,
4-8 10Y	'R 4/1	90	10YR 4/6		10	С	М	LOAM		Prominent	-
	<u> </u>	-									
							·				
1			-				· <del></del> ·	2			
Type: C=Concentration,	, D=Depletion, R	M=Reduced Mat	rix, MS=Masked Sand Grains.					<sup>2</sup> Location: PL=Pore Lining			
Hydric Soil Indicato	ors:							Indicators for Proble	matic Hydric Soi	ls <sup>3</sup> :	
Histosol (A1)			Po	lyvalue Bel	ow Surface (S8	3) (LRR R,		2 cm Muck (A1	.0) (LRR K, L, MLRA	149B)	
Histic Epipedo	on (A2)			MLRA 149E					edox (A16) (LRR K,		
Black Histic (A	A3)		Thi	in Dark Sur	face (S9) (LRR	R, MLRA 1	49B)	5 cm Mucky Pe	eat or Peat (S3) (LR	R K, L, R)	
Hydrogen Sul	fide (A4)		Los	amy Mucky	Mineral (F1)	(LRR K, L)		Dark Surface (S	S9) (LRR K, L, M)		
Stratified Lay	ers (A5)		Los	amy Gleye	d Matrix (F2)			Polyvalue Belo	w Surface (S8) (LRF	R K, L)	
	ow Dark Surfac	e (A11)		pleted Ma					ace (S9) (LRR K, L)		
Thick Dark Su					urface (F6)				se Masses (F12) (LF		
Sandy Mucky				•	k Surface (F7)				dplain Soils (F19) (I	•	
Sandy Gleyed			Ke	dox Depres	ssions (F8)				TA6) (MLRA 144A, :	145, 1498)	
Sandy Redox				3,	diantaur - f I- 1	ua nh. +! -	a makakin	Red Parent Ma			
Stripped Mat	rıx (S6) (S7) (LRR R, MI	RΔ 1/10R\			dicators of hyd		-	Other (Explain	Dark Surface (TF12) in Remarks)		
Daik Surface	(27) (LININ IN, IVII	-IVO 1+30)		wetla	and hydrology di		resent, unless r problematic.	Other (Expidin	nemarks)		
Restrictive Layer (if	observed):				uı	Jun DEU UI	PLODICITION.				
	Gravel							Hydric	Soil Present?	YES	
Depth (inches)								,			
Remarks:											-

	Absolute	Dom.	Indicator	
Tree Stratum (Plot size:)	% Cover	Sp?	Status	Dominance Test Worksheet:
1.				# Dominants OBL, FACW, FAC: <b>4</b> (A)
2.				
3.				# Dominants across all strata: <b>4</b> (B)
1				
г				% Dominants OBL, FACW, FAC: <b>100</b> % (A/B)
				(14 s)
7				Prevalence Index Worksheet:
<i>1.</i>		= Total	Cover	Total % Cover of: Multiply By:
Sapling Stratum (Plot size: )		- 10tai	COVCI	OBL 79 x 1 = 79
· · · · · · · · · · · · · · · · · · ·				FACW 21 x 2 = 42
1.				FAC
2. 3.	<del></del>			
· · ·	<del></del>			
4				
5.				Sum: <u>100</u> (A) <u>121</u> (B)
6				2/2
7				Prevalence Index = B/A = 1.21
			_	
al la l		= Total	cover	Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15'RAD )				X Dominance Test is > 50%
1.				X Prevalence Index is <= 3.0
2				Problematic Hydrophytic Vegetation <sup>1</sup> (explain)
3				Rapid Test for Hydrophytic Vegetation
4				Morphological Adaptations
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless
6				disturbed or problematic.
7				Definitions of Vegetation Strata:
		= Total	Cover	
Herb Stratum (Plot size: 5' RAD )				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or
1. Carex vulpinoidea	38	X	OBL	more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Eupatorium perfoliatum	15	Х	FACW	
3. Carex comosa	15	Х	OBL	
4. Juncus effusus	15	Х	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or
5. Solidago gigantea	3	·	FACW	more in height and less than 3in (7.6cm) DBH.
6. Symphyotrichum novae-angliae	3		FACW	
7. Scirpus atrovirens	3		OBL	
8. Scirpus cyperinus	3		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to
9. Eutrochium maculatum	3		OBL	6m) in height.
10. Mimulus ringens	1		OBL	
11. Asclepias incarnata	1		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines,
12.				regardless of size. Includes woody plants, except woody vines, less than
<del></del>	100	= Total	Cover	approximately 3ft (1m) in height.
Woody Vines (Plot size:				
1.				
2.				Woody vine - All woody vines, regardless of height.
3.				
4.				Hydrophytic
5.				Vegetation
· · ·		= Total	Cover	Present? YES
	_		Cover	
Remarks: (If observed, list morphological adaptations below).				
nemarks. (II observed, list morphological adaptations below).				



Project Si		IDD Calf C	\A/-+l	d Baltication Ci	ty/County:	In. /Oule		J	Samo Dato: 0/	14/2015
Project Si Applicant		Jay Peak F	ourse Wetland	d Wiltigation C	ity/County: _		VERMONT	Sampling Point:	Samp. Date: 8/	14/2015 18-Create
Investigat	-	P. Werts-			Section		nip, Range:		-	
Landform	(hillslope, te		Terrace	_	Local relief (			Concave	Slope (%):	
Subregior	n (LRR or	MLRA):	LRR	Lat: 4	14°56'21.345	5"N	Long:	72°29'37.266"W	Datum:	NAD 83
Soil Map		Dixfield							NWI Class:	PEM
		U		typical for this time of year?		YES	(If no, e	xplain in Remarks.)		
_		-	gy significantly						cumstances?	YES
Are veget	tation, Soil,	, or Hyarolo	gy naturally pi	oblematic? NO				(If needed, ex	plain any answe	rs in Remarks.)
SUMM	ARY OF F	FINDINGS	S - Attach s	te map showing samp	le point lo	ocation	s, transed	cts, important feat	ures, etc.	
	_	tion Presen	t?	YES						
•	il Present?			YES			Is This	Sample Area Within	a Wetland?	YES
	Hydrology	Present?		YES						
Remarks	·.									
LIVERO	1.067									
HYDRO								Cdldit	(antintanian after	·- ·- · · · · · · · · · · · · · · · · ·
	Hydrology I		f ana is raquire	ed; check all that apply)				Secondary Indicators Surface Soil Cra	•	o required)
	rface Water		one is require	Water-Stained Leaves	(DO)		-	X Drainage Patte		
	gh Water Ta			Aquatic Fauna (B13)	(69)			Moss Trim Line		
	turation (A3			Marl Deposits (B13)				Dry-Season Wa		
	ater Marks (	•		Hydrogen Sulfide Odor	(C1)			Crayfish Burrov		
	diment Dep			X Oxidized Rhizospheres		ts (C3)			ole on Aerial (C9)	
	ift Deposits			Presence of Reduced Ir	_	( - <del>-</del> /			ssed Plants (D1)	
	gal Mat or C			Recent Iron Reduction		(C6)		Geomorphic Po		
Iro	n Deposits (	(B5)		Thin Muck Surface (C7)	)			Shallow Aquita	rd (D3)	
Inc	undation Vis	ible on Aeria	l (B7)	Other (Explain in Rema	ırks)			Microtopograp	hic Relief (D4)	
Spa	arsely Veget	tated Concav	e Surface (B8)					FAC-Neutral Te	st (D5)	
Field Obs	ervations:									
Surface W	Vater Prese	ent?		Depth (inches):						
Water Tal	ble Present	t?		Depth (inches):			Wetlan	d Hydrology Present?		YES
Caturatia			X	Donth (inches)	Surface					
	n Present?			Depth (inches):						
		•		toring well, aerial photos, pre	vious inspec	tions), if	available:			
		ast 5 days a	t Jay Peak (NC	DAA)						
Remarks:										
COII										
SOIL Profile De	scrintion.	(Describe +c	the denth no	eded to document the indicat	or or confirm	n the ahr	ence of indi	cators )		
Depth	sscription.	Matrix	the depth he		x Features	ii tiie abs	serice of illui	cators.		
(in)	Color (		%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks
0-4	10YR		97	10YR 4/6	3	C	PL	SILT LOAM	Redox - Co	ommon, Prominent
4-12+	2.5YF		93	10YR 5/6	7	C	M	FINE SANDY LOAM		ommon, Prominent
¹Type: C=Co	oncentration,	D=Depletion,	RM=Reduced Ma	trix, MS=Masked Sand Grains.				<sup>2</sup> Location: PL=Pore Lining,	M=Matrix.	
Hydric So	il Indicator	s:						Indicators for Proble	matic Hydric Soi	s <sup>3</sup> :
⊔ic	stosol (A1)			Polyvalue Belo	w Surface (SQ)	(I DD D		2 cm Muck (A1	0) (LRR K, L, MLRA	140P)
	stic Epipedo	n (Δ2)		MLRA 149B)	w Juliace (36)	(LINIX IX,			edox (A16) (LRR K,	
	ack Histic (A			Thin Dark Surfa	ice (S9) (LRR F	R. MLRA 14	49B)		at or Peat (S3) (LR	
	drogen Sulfi	•		Loamy Mucky I			,	Dark Surface (S		, <del>-, ,</del>
	atified Laye			Loamy Gleyed		, =,			v Surface (S8) (LRI	R K, L)
		w Dark Surfa	ce (A11)	X Depleted Matr					ce (S9) (LRR K, L)	
	ick Dark Sur		. ,	Redox Dark Sui					e Masses (F12) (LI	RR K, L, R)
	ndy Mucky I			Depleted Dark					dplain Soils (F19) (	
	ndy Gleyed I			Redox Depress	ions (F8)				A6) (MLRA 144A,	
	ndy Redox (			<del></del>				Red Parent Ma		
Str	ripped Matri	ix (S6)		<sup>3</sup> Indic	ators of hydro	phytic ve	getation and	Very Shallow D	ark Surface (TF12)	
Da	rk Surface (S	S7) (LRR R, N	ILRA 149B)		d hydrology m		-	Other (Explain		
							problematic.	<del></del>		
Restrictiv	e Layer (if o	observed):								
	Type:							Hydric	Soil Present?	YES
	h (inches):							<u> </u>		
Remarks:										
								Morthcontrol	and Northoast	Region - Version 2.0
								ואטו עוועצוועו מו	<del></del>	

H8-Create

		Absolute	Dom.	Indicator		
Tree Stratum (Plot s	size:)	% Cover	Sp?	Status	Dominance Test Worksheet:	
1.	·		<u> </u>		# Dominants OBL, FACW, FAC:	<b>2</b> (A)
		·				
3.		<del></del>			# Dominants across all strata:	<b>2</b> (B)
-					# Dominants across an strata.	<b>2</b> (B)
4						
5					% Dominants OBL, FACW, FAC:	<b>100%</b> (A/B)
6						
7.					Prevalence Index Worksheet:	
			= Total	Cover	Total % Cover of:	Multiply By:
Sapling Stratum (Plot s	size:)		•		OBL <b>112</b> x 1 =	112
1					FACW <b>21</b> x 2 =	42
					FAC <b>3</b> x 3 =	9
					FACU	
-						
						463 (2)
					Sum: <b>136</b> (A)	<b>163</b> (B)
6						
7					Prevalence Index = B/A =	1.20
			= Total	Cover	Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot s	size: <b>15'RAD</b> )		-		X Dominance Test is > 50%	
1					X Prevalence Index is <= 3.0	
			. ——		Problematic Hydrophytic Ve	getation (explain)
2			· ——		Rapid Test for Hydrophytic V	=
-					<del></del>	regetation
					Morphological Adaptations	
					<sup>1</sup> Indicators of hydric soil and wetland hydro	ology must be present, unless
6					disturbed or problematic.	
7					Definitions of Vegetation Strata:	
			= Total	Cover		
Herb Stratum (Plot s	size: <b>5' RAD</b> )				Tree - Woody plants, excluding woody vin	es, approximately 20ft (6m) or
1. Mimulus ringens	<u></u>	38	Х	OBL	more in height and 3in (7.6cm) or larger in	diameter at breast height (DBH).
2. Juncus effusus		38	X	OBL		
3. Verbena hastata		15		FACW		
4. Carex vulpinoide		15		OBL	Sapling - Woody plants, excluding woody	vines approximately 20ft (6m)
5. Persicaria sagitta		15	. ——	OBL	or more in height and less than 3in (7.6cm)	
				OBL		
	<u> </u>					
7. Solidago rugosa		3		FAC		
8. Solidago gigante	a	3		FACW	Shrub - Woody plants, excluding woody w	ines, approximately 3 to 20ft (1
9. Carex comosa		3		OBL	to 6m) in height.	
10. Eupatorium perf	oliatum	3		FACW		
11.					Herb - All herbaceous (non-woody) plants	, including herbaceous vines,
12.					regardless of size. Includes woody plants, e	xcept woody vines, less than
		136	= Total	Cover	approximately 3ft (1m) in height.	
					1	
Woody Vines (Plot o	size:		·	0010.		
Woody Vines (Plot s	size:)			<b>30</b> TC.		
1.					Woody vine - All woody vines, regardless	s of height
1. 2.	size:)		· ——		Woody vine - All woody vines, regardles	s of height.
1. 2. 3.						s of height.
1. 2. 3. 4.					Hydrophytic	s of height.
1. 2. 3.						s of height.
1. 2. 3. 4.			= Total		Hydrophytic	s of height.  YES
1. 2. 3. 4.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	
1. 2. 3. 4. 5.					Hydrophytic Vegetation	



Project Site: Applicant/Owner:		Course Wetland Resort	Mitigation Ci	ity/County:	State:	VERMONT	Sampling Point:	Samp. Date: <u>8/1</u>	13/2015 H11-Create
Investigator(s):	P. Werts-	Kallfelz				nip, Range:			
Landform (hillslope,		Terrace		Local relie	f (concave, c	onvex, none):		Slope (%):	
Subregion (LRR o		LRR	Lat:	44°56'29.8	49"N	Long:	72°30'25.141"W	Datum:	NAD 83
Soil Map Unit:	Cabot					445		NWI Class:	PEM
	-		typical for this time of year?		YES	(If no, ex	cplain in Remarks.)		VE0
Are Vegetation, So								rcumstances?	YES
Are Vegetation, So	ii, or Hydroid	ogy naturally pro	oblematic? <u>NO</u>				_ (II needed, e	xplain any answer	'S III Remarks.)
			te map showing samp	le point	location	s, transec	ts, important fea	itures, etc.	
Hydrophytic Vege		it?	YES			Is This (	Cample Area Within	Charland?	VEC
Hydric Soil Presen			YES			IS ITIIS :	Sample Area Within	a welland?	YES
Wetland Hydrolog Remarks:	y Present?		YES						
nemarks.									
HYDROLOGY									
Wetland Hydrolog							Secondary Indicator		o required)
•	•	f one is required	d; check all that apply)			-	Surface Soil Cr		
Surface Wat			X Water-Stained Leaves (	(B9)			Drainage Patte	. ,	
X High Water			Aquatic Fauna (B13)				Moss Trim Lin		
X Saturation (			Marl Deposits (B13)	()				ater Table (C2)	
Water Mark			Hydrogen Sulfide Odor		. (62)		Crayfish Burro		
Sediment De			Oxidized Rhizospheres	_	oots (C3)			ible on Aerial (C9)	
Drift Deposited Algal Mat or	. ,		Presence of Reduced Ir Recent Iron Reduction	. ,	lc (C6)		Geomorphic P	essed Plants (D1)	
Iron Deposit			Thin Muck Surface (C7)		15 (CO)		Shallow Aquit		
	Visible on Aeria	al (B7)	Other (Explain in Rema	•				phic Relief (D4)	
		ve Surface (B8)	other (Explain in Rema				FAC-Neutral T		
Field Observations									
Surface Water Pre	esent?		Depth (inches):						
Water Table Prese	ent?	X	Depth (inches):	6	_	Wetland	d Hydrology Present?		YES
Saturation Present	t?	X	Depth (inches):	Surface					
		at Jay Peak (NO	oring well, aerial photos, pre AA)						
COIL									
SOIL	<u> </u>					ć · 1·			
	•	o the depth nee	ded to document the indicat		rm the abs	sence of indic	cators.)		
Depth	Matrix		-	x Features	1	. 2	_		
	r (moist)		Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks
	YR 3/1 5Y 5/2	93	2.5Y 5/6	<del></del>	<del></del>	М	SILT LOAM FINE SANDY LOAM	Redox - (	Common, Prominent
					- —				
			<del></del>						
<sup>1</sup> Type: C=Concentratio	n, D=Depletion,	RM=Reduced Mate	rix, MS=Masked Sand Grains.				<sup>2</sup> Location: PL=Pore Lining	g, M=Matrix.	
Hydric Soil Indicate	ors:						Indicators for Proble	ematic Hydric Soil	s <sup>3</sup> :
, Historal (A1)	١		Dalumalua Dalar	Cumfooo /C	:0) /I DD D			•	
Histosol (A1 Histic Epiped	•		Polyvalue Belov MLRA 149B)		8) (LKK K,			10) (LRR K, L, MLRA Redox (A16) (LRR K,	•
Black Histic			Thin Dark Surfa		R MIRA 1	10R)		eat or Peat (S3) (LRI	• •
Hydrogen St			Loamy Mucky			430)		S9) (LRR K, L, M)	N K, L, N)
Stratified La			Loamy Gleyed I		(LITTICITY, L)			ow Surface (S8) (LRR	8 K T)
	low Dark Surfa	ace (A11)	X Depleted Matri					face (S9) (LRR K, L)	, _,
	Surface (A12)	(* 122)	Redox Dark Sur					ese Masses (F12) (LR	RR K, L, R)
	y Mineral (S1)		Depleted Dark		)			odplain Soils (F19) (I	
Sandy Gleye	ed Matrix (S4)		Redox Depressi	ions (F8)			Mesic Spodic	(TA6) (MLRA 144A,	145, 149B)
Sandy Redox	x (S5)						Red Parent M	aterial (F21)	
Stripped Ma	itrix (S6)		<sup>3</sup> Indica	ators of hyd	rophytic ve	getation and	Very Shallow I	Dark Surface (TF12)	
Dark Surface	e (S7) (LRR R, N	1LRA 149B)	wetland			esent, unless problematic.	Other (Explain	in Remarks)	
Restrictive Layer (				u	Star Dea Of	problematic.			
Тур							Hydric	Soil Present?	YES
Depth (inches	s):								
Remarks:									

	Absolute	Dom.	Indicator		
Tree Stratum (Plot size:	% Cover	Sp?	Status	Dominance Test Worksheet:	
	70 00001		Julia		
1.				# Dominants OBL, FACW, FAC: 6 (A)	
2					
3				# Dominants across all strata: 7 (B)	
4					
				0.00	
5				% Dominants OBL, FACW, FAC: 86% (A/B)	
6					
7.				Prevalence Index Worksheet:	
		= Tota	Cover	Total % Cover of: Multiply By:	
		- 10ta	Cover		
Sapling Stratum (Plot size:)				OBL <b>16</b> x 1 = <b>16</b>	
1. Prunus pensylvanica	3	Х	FACU	FACW <b>83</b> x 2 = <b>166</b>	
2				FAC 15 x 3 = 45	
3				FACU 9 x 4 = 36	
4				UPL x 5 =	
E				Sum: <b>123</b> (A) <b>263</b> (B)	
				(5)	
6					
7				Prevalence Index = B/A = 2.14	
	3	= Tota	l Cover	Hydrophytic Vegetation Indicators:	
		- 10ta	Cover		
Shrub Stratum (Plot size: 15'RAD )				X Dominance Test is > 50%	
1. Cornus alba	15	Х	FACW	X Prevalence Index is <= 3.0	
				Problematic Hydrophytic Vegetation <sup>1</sup> (explain)	
3				Rapid Test for Hydrophytic Vegetation	
4				Morphological Adaptations	
				<del></del>	
				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless	;
6				disturbed or problematic.	
7.				Definitions of Vegetation Strata:	
	15	= Tota	l Cover		
U. L.C (DL: FIRAD. )		- 1014	COVCI	Tree W.	
Herb Stratum (Plot size: 5' RAD )				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) of	or more
1. Eupatorium perfoliatum	38	Х	FACW	in height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
2. Verbena hastata	15	X	FACW		
-		<u> </u>			
3. Euthamia graminifolia			FAC		
4. Calamagrostis canadensis	15	Х	OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6	m) or
5. Symphyotrichum novae-angliae	15	Х	FACW	more in height and less than 3in (7.6cm) DBH.	
6. Lolium perenne	3		FACU		
7. Festuca rubra	3		FACU		
8. Galium palustre	1		OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft	(1 to
o. Ganain palastic	_			6m) in height.	
9.					
9.				Herb - All herbaceous (non-woody) plants, including herbaceous vines,	
9. 10. 11.		·		Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than	
9.					
9. 10. 11. 12.	105	= Tota	l Cover	regardless of size. Includes woody plants, except woody vines, less than	
9. 10. 11.	105	= Tota	l Cover	regardless of size. Includes woody plants, except woody vines, less than	
9.	105	= Tota	l Cover	regardless of size. Includes woody plants, except woody vines, less than	
9.	105	= Tota	l Cover	regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
9.	105	= Tota	l Cover	regardless of size. Includes woody plants, except woody vines, less than	
9.	105	= Tota	l Cover	regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
9.	105	= Tota	l Cover	regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
9.	105	= Tota	l Cover	regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic	
9.	105			regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation	
9.	105	= Tota		regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic	
9.	105			regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation	
9. 10. 11. 12.  Woody Vines (Plot size:) 1. 2. 3. 4. 5.	105			regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation	
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## **Whb**

Project Site:	JPR Golf C	ourse Wetland	d Mitigation	City/County				Samp. Date: <b>8/</b> 2	•
Applicant/Owner:	Jay Peak F			C4:		VERMONT	Sampling Point:		H11-WT6
Investigator(s): Landform (hillslope, to	P. Werts-I					nip, Range: onvex, none):		Slone (9/):	
		Terrace	Lat:			_	Concave	Slope (%): Datum:	NAD 83
Subregion (LRR or Soil Map Unit:		LRR	Lat	44°56'37.8	12 N	Long:	72°30'40.383"W	NWI Class:	PEM
•	Cabot	one on the cite	typical for this time of year	)	YES	(If no. o	xplain in Remarks.)	INVVI Class.	PEIVI
	-				TES	(11 110, e.		cumstances?	YES
Are Vegetation, Soil							_		
Are Vegetation, Soil	, or Hydroid	igy naturally pr	oblematic? <u>NO</u>				(II needed, ex	plain any answer	is in Remarks.)
SUMMARY OF	FINDING:	S - Attach si	te map showing sam	ple point	location	ıs, transec	cts, important fea	tures, etc.	
Hydrophytic Vegeta	tion Presen	t?	YES						
Hydric Soil Present?	•		YES			Is This	Sample Area Within	a Wetland?	YES
Wetland Hydrology	Present?		YES						
Remarks:									
HYDROLOGY									
Wetland Hydrology				_		_	Secondary Indicators		o required)
Primary Indicators (	minimum o	f one is require	d; check all that apply)				Surface Soil Cra		
Surface Water	r (A1)		Water-Stained Leaves	s (B9)		-	Drainage Patte	rns (B10)	
High Water Ta			Aquatic Fauna (B13)	•			Moss Trim Line		
Saturation (A3			Marl Deposits (B13)				Dry-Season Wa		
Water Marks			Hydrogen Sulfide Odd	or (C1)			Crayfish Burro		
Sediment Dep			X Oxidized Rhizosphere		oots (C3)			ble on Aerial (C9)	
Drift Deposits			Presence of Reduced	_	. ,			essed Plants (D1)	
Algal Mat or C			Recent Iron Reduction		ils (C6)		Geomorphic Po		
Iron Deposits			Thin Muck Surface (C	.7)			Shallow Aquita	ird (D3)	
Inundation Vis		I (B7)	Other (Explain in Rem				Microtopograp		
Sparsely Vege				,			FAC-Neutral Te		
						1			
Field Observations:			5 11 (1 1 )						
Surface Water Prese			Depth (inches):		_				
Water Table Presen			Depth (inches):		_	Wetlan	d Hydrology Present?		YES
Saturation Present?			Depth (inches): oring well, aerial photos, pr						
SOIL									
	/Doscribo to	the death no	eded to document the indicate	ator or conf	irm the abo	onco of indi	cators \		
•	Matrix	the depth het		ox Features		sence or man	Laturs.)		
Depth						12	<b>-</b> .		<b>D</b>
(in) Color (		<u>%</u>	Color (moist)		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Daday C	Remarks
0-4 10YI	R 3/2	98	10YR 5/8	2	_ <u> </u>	PL	SANDY LOAM		ommon, Prominent t 10"; Redox - Common,
4-10 2.5	5/2	97	10YR 5/4	3	С	М	FINE SANDY LOAM	nock rerusur u	Distinct
	3/2		101113/4				TINE SANDT LOAW		Distinct
¹Tuna C-Canaantratian	D-Doulation	DNA-Dadusad Mat	rix, MS=Masked Sand Grains.				<sup>2</sup> Location: PL=Pore Lining	. D.AD.Motriy	
		miri=neuuceu iVIdi	, IVID-IVIASREU SAIIU GLAIIIS.					-	3
Hydric Soil Indicator	rs:						Indicators for Proble	matic Hydric Soil	s~:
Histosol (A1)			Polyvalue Bel	ow Surface (S	S8) (LRR R,		2 cm Muck (A1	.0) (LRR K, L, MLRA	149B)
Histic Epipedo	n (A2)		MLRA 149B					edox (A16) (LRR K,	
Black Histic (A			Thin Dark Sur	-	R R, MLRA 1	49B)		eat or Peat (S3) (LR	
Hydrogen Sulf	•		Loamy Mucky					69) (LRR K, L, M)	
Stratified Laye			Loamy Gleyed	, , ,	, ,			w Surface (S8) (LRF	R K, L)
Depleted Belo		ce (A11)	X Depleted Mat					ace (S9) (LRR K, L)	•
Thick Dark Sur		. ,	Redox Dark S					se Masses (F12) (LF	RR K, L, R)
Sandy Mucky			Depleted Dar		)			dplain Soils (F19) (I	
Sandy Gleyed			Redox Depres		,			TA6) (MLRA 144A,	
Sandy Redox (				()			Red Parent Ma		, - ,
Stripped Matr			31	icators of hyd	dronhytic ve	getation and		oark Surface (TF12)	
Dark Surface (		11 RA 149R\				-	Other (Explain		
Dalk Sullace (	JI) (LNN K, IV	ILINA 1430)	wetla	nd hydrology d		esent, unless problematic.	Other (Explain	III NEIIIdIKS)	
Restrictive Layer (if	observed):			0	isturbed Of	problematic.			
, ,	Rock						Hydric	Soil Present?	YES
Depth (inches):							,		· <del></del>
Remarks:							1		
Ì									
							Northcentra	al and Northeast	Region - Version 2.0

Tree Chapture / Diet size.	Absolute	Dom.	Indicator Status	Dominanas Tast Warlahast.	
Tree Stratum (Plot size:)	% Cover	Sp?	Status	Dominance Test Worksheet:	(4)
1. 2.				# Dominants OBL, FACW, FAC: 4	(A)
2. 3.	<del></del>	· —— -		# Dominants across all strata: 4	(B)
4.	<u> </u>	· —— -		# Dominants across an strata.	(6)
				% Dominants OBL, FACW, FAC: 100	<b>)%</b> (A/B)
				70 Bollinants 652, 17(eV), 17(e).	(,,,,,
_		· —— -		Prevalence Index Worksheet:	
/	<del></del>	= Total (	Cover	Total % Cover of: Multip	lv Bv:
Sapling Stratum (Plot size:)				OBL 19 x 1 = 19	
				FACW 30 x 2 = 60	<u> </u>
3				FAC 38 x 3 = 11	4
3.				FACU x 4 =	
4.				UPL x 5 =	
5.				Sum: <b>87</b> (A) <b>19</b>	<b>3</b> (B)
6.					
7.				Prevalence Index = B/A = 2.2	2
		= Total (	Cover	Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 15'RAD )				X Dominance Test is > 50%	
1				X Prevalence Index is <= 3.0	4
2				Problematic Hydrophytic Vegetatio	
3				Rapid Test for Hydrophytic Vegetat	ion
4.				Morphological Adaptations	
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology mus	st be present, unless
6.		·		disturbed or problematic.	
7				Definitions of Vegetation Strata:	
Harb Charter (District)	<del></del>	= Total (	Lover	Troo Washington and discount discount	206 (6)
Herb Stratum (Plot size: 5' RAD )	20	v	FAC	Tree - Woody plants, excluding woody vines, appro more in height and 3in (7.6cm) or larger in diameter	
1. Solidago rugosa	38	Х	FAC	1 , ,	. ,
2 Francisco nonfeliation			EACIA!		
2. Eupatorium perfoliatum	15	X	FACW		
3. Verbena hastata	15	Х	FACW	Soding west start what is	206 (Cm)
<ul><li>3. Verbena hastata</li><li>4. Carex crinita</li></ul>	15 15		FACW OBL	Sapling - Woody plants, excluding woody vines, apmore in height and less than 3in (7.6cm) DBH.	pproximately 20ft (6m) or
<ul> <li>3. Verbena hastata</li> <li>4. Carex crinita</li> <li>5. Eutrochium maculatum</li> </ul>	15 15 3	Х	FACW OBL OBL	Sapling - Woody plants, excluding woody vines, apmore in height and less than 3in (7.6cm) DBH.	oproximately 20ft (6m) or
<ol> <li>Verbena hastata</li> <li>Carex crinita</li> <li>Eutrochium maculatum</li> <li>Scirpus atrovirens</li> </ol>	15 15	Х	FACW OBL		oproximately 20ft (6m) or
<ul> <li>3. Verbena hastata</li> <li>4. Carex crinita</li> <li>5. Eutrochium maculatum</li> <li>6. Scirpus atrovirens</li> <li>7.</li> </ul>	15 15 3	Х	FACW OBL OBL	more in height and less than 3in (7.6cm) DBH.	
<ul> <li>3. Verbena hastata</li> <li>4. Carex crinita</li> <li>5. Eutrochium maculatum</li> <li>6. Scirpus atrovirens</li> <li>7.</li> <li>8.</li> </ul>	15 15 3 1	Х	FACW OBL OBL		
<ul> <li>3. Verbena hastata</li> <li>4. Carex crinita</li> <li>5. Eutrochium maculatum</li> <li>6. Scirpus atrovirens</li> <li>7.</li> <li>8.</li> <li>9.</li> </ul>	15 15 3 1	Х	FACW OBL OBL	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, app	
<ul> <li>3. Verbena hastata</li> <li>4. Carex crinita</li> <li>5. Eutrochium maculatum</li> <li>6. Scirpus atrovirens</li> <li>7.</li> <li>8.</li> <li>9.</li> <li>10.</li> </ul>	15 15 3 1	Х	FACW OBL OBL	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, app 6m) in height.	roximately 3 to 20ft (1 to
3. Verbena hastata 4. Carex crinita 5. Eutrochium maculatum 6. Scirpus atrovirens 7. 8. 9. 10. 11.	15 15 3 1	Х	FACW OBL OBL	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, app	proximately 3 to 20ft (1 to
<ul> <li>3. Verbena hastata</li> <li>4. Carex crinita</li> <li>5. Eutrochium maculatum</li> <li>6. Scirpus atrovirens</li> <li>7.</li> <li>8.</li> <li>9.</li> <li>10.</li> </ul>	15 15 3 1	<u>х</u> х	OBL OBL OBL	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, app 6m) in height.  Herb - All herbaceous (non-woody) plants, including	proximately 3 to 20ft (1 to
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#### WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

H13-WT1/a/b

Project Site:		Course Wetland	Mitigation	City/County:				Samp. Date: 8/13/2	2015	W11/a/D
Applicant/Owner:	Jay Peak			Continu		VERMONT	Sampling Point:	H13-W	/T1/a/b	
Investigator(s):	P. Werts-			Local relief (		ip, Range:		Clama (0/):		
Landform (hillslope,		Terrace	Lat:	_		_	Concave	Slope (%): Datum:	NAD 83	<u> </u>
Subregion (LRR or Soil Map Unit:		LRR	Ldl.	44°56'40.283	3"N	Long.	72°30'51.467"W	NWI Class:	PEM	3
	Cabot	ons on the site t	typical for this time of yea	r?	YES	(If no. ex	xplain in Remarks.)	INVII Class.	PEIVI	
Are Vegetation, So	-		· ·	"· <u></u>		(11 110, 6)		rcumstances?	YES	
Are Vegetation, So							_	xplain any answers in		
_							<del>_</del>		,	
SUMMARY OF Hydrophytic Veget			te map showing san	nple point lo	ocations	s, transec	ts, important fea	tures, etc.		
Hydric Soil Present			YES			Is This	Sample Area Within	a Wetland? Y	'ES	
Wetland Hydrology			YES			10 11110	oumpro / ii cu i vii iii i		<del></del>	
Remarks:	,				1					
HADBOLOCA										
HYDROLOGY							C 1 1 1 1 1			- 1
Wetland Hydrology	•	f and is require	di chack all that anniv					s (minimum of two re	equired)	
		one is require	d; check all that apply)	(DO)			Surface Soil Cr			
Surface Water			Water-Stained Leav	. ,			X Drainage Patte			
High Water T  X Saturation (A			Aquatic Fauna (B13)				Moss Trim Line			
X Saturation (A Water Marks			Marl Deposits (B13) Hydrogen Sulfide O				Dry-Season Wa			
Sediment De			X Oxidized Rhizosphe		ts (C3)			ble on Aerial (C9)		
Drift Deposit			Presence of Reduce	-	(03)			essed Plants (D1)		
Algal Mat or			Recent Iron Reducti		(C6)		Geomorphic P			
Iron Deposits			Thin Muck Surface (		()		Shallow Aquita			
	isible on Aeri	al (B7)	Other (Explain in Re				Microtopograp			
Sparsely Veg	etated Conca	ve Surface (B8)		•			FAC-Neutral Te			
Field Observations							<del></del>			
Surface Water Pres			Depth (inches):							
Water Table Prese			Depth (inches):			Wetland	d Hydrology Present?	v	'ES	
Saturation Present		x	Depth (inches):			vv Ctiain	a riyarology r resent.			
Describe Recorded	Data (strea		oring well, aerial photos, p		tions), if a	vailable:				
		at Jay Peak (NO		•	•					
Remarks:		,								
SOIL										
	· (Describe t	n the denth nee	ded to document the indi	cator or confirm	n the abse	ence of indic	rators )			
Depth	Matrix	o the depth nee		dox Features	ii tiit abs	crice or man				
-	(moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc²	Texture	Ron	marks	
	/R 2/1	98	10YR 5/6	2	<u>C</u> -	PL	SILT LOAM	Redox - Comm		inent
	,-				<u> </u>				,	
		- <u></u>								
*Type: C=Concentration	n, D=Depletion,	RM=Reduced Mat	rix, MS=Masked Sand Grains.				<sup>2</sup> Location: PL=Pore Lining	,, M=Matrix.		
Hydric Soil Indicate	ors:						Indicators for Proble	ematic Hydric Soils <sup>3</sup> :		
Histosol (A1)			Polyvalue Br	elow Surface (S8)	\ (I RR R		2 cm Muck (A1	10) (LRR K, L, MLRA 149	IB)	
Histic Epiped			MLRA 149		, (LIXIX IX,			edox (A16) (LRR K, L, R)	,	
Black Histic (				urface (S9) (LRR F	R MIRA 14	9B)		eat or Peat (S3) (LRR K,		
Hydrogen Su	-			ky Mineral (F1) (l		55,		S9) (LRR K, L, M)	-,,	
Stratified Lay				ed Matrix (F2)	, ,			w Surface (S8) (LRR K, L	L)	
	ow Dark Surf	ace (A11)	X Depleted M					ace (S9) (LRR K, L)	,	
Thick Dark Su		, ,	Redox Dark					se Masses (F12) (LRR K,	, L, R)	
Sandy Mucky	Mineral (S1)		Depleted Da	ark Surface (F7)				dplain Soils (F19) (MLR		
Sandy Gleyed	d Matrix (S4)		Redox Depr	essions (F8)			Mesic Spodic (	TA6) (MLRA 144A, 145,	, 149B)	
Sandy Redox	(S5)						Red Parent Ma	iterial (F21)		
Stripped Mat	trix (S6)		<sup>3</sup> In	dicators of hydro	phytic veg	etation and	Very Shallow D	Oark Surface (TF12)		
Dark Surface	(S7) (LRR R, N	ЛLRA 149B)	wetl	and hydrology m			Other (Explain	in Remarks)		
Restrictive Layer (if	f observed).			dist	urbed or p	roblematic.	Ī			
Type							Hvdric	Soil Present? Y	'ES	
Depth (inches)							,unc			
Remarks:							<del> </del>	-		

		Absolute	Dom.	Indicator	
Tree	Stratum (Plot size:)	% Cover	Sp?	Status	Dominance Test Worksheet:
		70 00 001	<u> </u>		
1.					# Dominants OBL, FACW, FAC: 7 (A)
2.					
3.					# Dominants across all strata: <b>7</b> (B)
4.					
5.		- ·			% Dominants OBL, FACW, FAC: <b>100</b> % (A/B)
	-				70 Bollimants GB2, 171610, 1716.
6.					
7.					Prevalence Index Worksheet:
			= Total	Cover	Total % Cover of: Multiply By:
Saplii	ng Stratum (Plot size:)				OBL <b>81</b> x 1 = <b>81</b>
1.	· · · · · · · · · · · · · · · · · · ·				FACW <b>83</b> x 2 = <b>166</b>
2.					FAC x 3 =
3.					FACU x 4 =
4.					UPL x 5 =
5.					Sum: <b>164</b> (A) <b>247</b> (B)
6.					
	-				Dravalance Index — D/A — 1 F1
7.					Prevalence Index = B/A = 1.51
			= Total	Cover	Hydrophytic Vegetation Indicators:
Shrul	Stratum (Plot size: <b>15'RAD</b> )				X Dominance Test is > 50%
1.	Salix bebbiana	38	Х	FACW	X Prevalence Index is <= 3.0
2.	<del>-</del>				Problematic Hydrophytic Vegetation (explain)
3.					Rapid Test for Hydrophytic Vegetation
4.					Morphological Adaptations
5.					<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless
6.					disturbed or problematic.
7.					Definitions of Vegetation Strata:
, ,		38	- Total	Cover	Jemmaons of Vegetation Strata
	out the state of t		= Total	Cover	T
	Stratum (Plot size: 5' RAD )				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or
1.	Glyceria grandis	38	X	OBL	more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2.	Eupatorium perfoliatum	15	Х	FACW	
3.	Juncus effusus	15	X	OBL	
	Carex scoparia	15	X	FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m)
		13			_ · · - · · · · · · · · · · · · · · · ·
5.		4.5	v		or more in height and less than 3in (7 6cm) DBH
	Carex lurida	15	X	OBL	or more in height and less than 3in (7.6cm) DBH.
6.	Impatiens capensis	15 15	X X	FACW	or more in height and less than 3in (7.6cm) DBH.
6. 7.					or more in height and less than 3in (7.6cm) DBH.
	Impatiens capensis	15		FACW	or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1
7. 8.	Impatiens capensis Glyceria canadensis Eutrochium maculatum	15 3 3		FACW OBL OBL	
7. 8. 9.	Impatiens capensis Glyceria canadensis Eutrochium maculatum Carex comosa	15 3 3 3		OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1
7. 8. 9. 10.	Impatiens capensis Glyceria canadensis Eutrochium maculatum Carex comosa Calamagrostis canadensis	15 3 3 3 3		OBL OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
7. 8. 9.	Impatiens capensis Glyceria canadensis Eutrochium maculatum Carex comosa	15 3 3 3		OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines,
7. 8. 9. 10. 11.	Impatiens capensis Glyceria canadensis Eutrochium maculatum Carex comosa Calamagrostis canadensis	15 3 3 3 3		OBL OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
7. 8. 9. 10. 11.	Impatiens capensis Glyceria canadensis Eutrochium maculatum Carex comosa Calamagrostis canadensis Schoenoplectus tabernaemontani	15 3 3 3 3		OBL OBL OBL OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines,
7. 8. 9. 10. 11.	Impatiens capensis Glyceria canadensis Eutrochium maculatum Carex comosa Calamagrostis canadensis Schoenoplectus tabernaemontani	15 3 3 3 3 1	X	OBL OBL OBL OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
7. 8. 9. 10. 11. 12.	Impatiens capensis Glyceria canadensis Eutrochium maculatum Carex comosa Calamagrostis canadensis Schoenoplectus tabernaemontani	15 3 3 3 3 1	X	OBL OBL OBL OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
7. 8. 9. 10. 11. 12. Wood	Impatiens capensis Glyceria canadensis Eutrochium maculatum Carex comosa Calamagrostis canadensis Schoenoplectus tabernaemontani	15 3 3 3 3 1	X	OBL OBL OBL OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
7. 8. 9. 10. 11. 12. Wood 1. 2.	Impatiens capensis Glyceria canadensis Eutrochium maculatum Carex comosa Calamagrostis canadensis Schoenoplectus tabernaemontani	15 3 3 3 3 1	X	OBL OBL OBL OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
7. 8. 9. 10. 11. 12. Wood	Impatiens capensis  Glyceria canadensis  Eutrochium maculatum  Carex comosa  Calamagrostis canadensis  Schoenoplectus tabernaemontani  dy Vines (Plot size:)	15 3 3 3 3 1	X	OBL OBL OBL OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
7. 8. 9. 10. 11. 12. Wood 1. 2.	Impatiens capensis  Glyceria canadensis  Eutrochium maculatum  Carex comosa  Calamagrostis canadensis  Schoenoplectus tabernaemontani  dy Vines (Plot size:)	15 3 3 3 3 1	X	OBL OBL OBL OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
7. 8. 9. 10. 11. 12. Wood 1. 2. 3.	Impatiens capensis  Glyceria canadensis  Eutrochium maculatum  Carex comosa  Calamagrostis canadensis  Schoenoplectus tabernaemontani  dy Vines (Plot size:)	15 3 3 3 3 1	X	OBL OBL OBL OBL OBL	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.
7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4.	Impatiens capensis  Glyceria canadensis  Eutrochium maculatum  Carex comosa  Calamagrostis canadensis  Schoenoplectus tabernaemontani  dy Vines (Plot size:)	15 3 3 3 3 1	= Total	FACW OBL OBL OBL OBL Cover	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation
7. 8. 9. 10. 11. 12. Wood 1. 2. 3. 4.	Impatiens capensis  Glyceria canadensis  Eutrochium maculatum  Carex comosa  Calamagrostis canadensis  Schoenoplectus tabernaemontani  dy Vines (Plot size:)	15 3 3 3 3 1	X	FACW OBL OBL OBL OBL Cover	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.
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(Adapted By: Douglas A. DeBerry, PhD, PWS, PWD)



Project Sit			Course Wetland	Mitigation	City/County:				Samp. Date: 8/13/2015
Applicant/		Jay Peak			Continu	_	VERMONT	Sampling Point:	H14-WT2/3
Investigate Landform	` '	P. Werts-	Terrace		Local relief (		nip, Range:		Slope (%):
Subregion			LRR	lat: 44	°56'39.392"N	concave, co		72°31'12.522"W	Datum: NAD 83
Soil Map L	•	Cabot	LINIX		30 39.392 N		LONG.	72 31 12.322 W	NWI Class: PEM
-			ions on the site t	ypical for this time of year?		YES	(If no, e	xplain in Remarks.)	
			ogy significantly				, ,	•	rcumstances? YES
			ogy naturally pro						xplain any answers in Remarks.)
								_	
SUMMA	ARY OF F	INDING	S - Attach site	e map showing sample	point locations, tr	ansect	s, import	ant features, etc.	
Hydrophyt				YES				<u> </u>	
Hydric Soil	l Present?			YES			Is This	Sample Area Within	a Wetland? YES
Wetland H	lydrology I	Present?		YES					
Remarks:					•				
HYDROL	_OGY								
Wetland H		Indicators:						Secondary Indicator	s (minimum of two required)
				d; check all that apply)				Surface Soil Cra	, ,
X Surf	face Water	(A1)		X Water-Stained Leaves (B	9)			Drainage Patte	erns (B10)
X High	h Water Tal	ble (A2)		Aquatic Fauna (B13)				Moss Trim Line	es (B16)
X Satu	uration (A3)	)		Marl Deposits (B13)				Dry-Season Wa	ater Table (C2)
Wat	ter Marks (I	B1)		Hydrogen Sulfide Odor (C	(1)			Crayfish Burro	ws (C8)
Sed	iment Depo	osits (B2)		Oxidized Rhizospheres or	Living Roots (C3)			Saturation Visi	ble on Aerial (C9)
Drif	t Deposits (	(B3)		Presence of Reduced Iron	n (C4)			Stunted or Stre	essed Plants (D1)
	al Mat or Cr	, ,		Recent Iron Reduction in	Tilled Soils (C6)			Geomorphic Po	
	Deposits (	•		Thin Muck Surface (C7)				Shallow Aquita	
		ible on Aeria		Other (Explain in Remark	s)			Microtopograp	
Spa	rsely Veget	ated Conca	ve Surface (B8)					FAC-Neutral Te	est (D5)
Field Obse	rvations:								
			Х	P	onded areas with				
Surface W	ater Prese	ent?	^	Depth (inches):	water depth of 1"				
Water Tab		t?	Х	Depth (inches):	6"		Wetlan	d Hydrology Present?	YES
Saturation	Present?		X	Depth (inches):	Surface				
Describe R	Recorded D	Data (strea	m gauge, monito	oring well, aerial photos, previ	ous inspections), if avai	ilable:			
1.3	3" in the la	ast 5 days	at Jay Peak (NO	AA)					
Remarks:									
SOIL									
Profile Des	scription: (	(Describe t	o the depth nee	ded to document the indicato	r or confirm the absenc	ce of indi	cators.)		
Depth		Matrix		R	edox Features				
(in)	Color (		%	Color (moist)		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-3	5Y 4	4/2	99	10YR 4/6	1	С	M	SANDY LOAM	Redox - Few, Prominent
2.10	107	4/1	07	10VP 4/C	2	•		SANDY LOAM	Rock refusal at 10"; Redox - Common,  Prominent
3-10	10Y	4/1	97	10YR 4/6	3	С	M	SANDY LUAIVI	Prominent
								-	
<del></del>								-	
-									
¹Type: C=Con	ncentration, [	D=Depletion,	RM=Reduced Matrix	, MS=Masked Sand Grains.				<sup>2</sup> Location: PL=Pore Lining,	, M=Matrix.
Hydric Soil	Indicator	s:						Indicators for Proble	ematic Hydric Soils <sup>3</sup> :
	1 (04)			Daharaha Dalam	Cf (CO) (LDD D				,
	tosol (A1)	~ (A2)			Surface (S8) (LRR R,				LO) (LRR K, L, MLRA 149B)
	tic Epipedor ck Histic (A3			MLRA 149B)	e (S9) (LRR R, MLRA 149B)				ledox (A16) (LRR K, L, R) eat or Peat (S3) (LRR K, L, R)
	Irogen Sulfi				neral (F1) (LRR K, L)				S9) (LRR K, L, M)
	atified Layer			Loamy Gleyed M					w Surface (S8) (LRR K, L)
		พ Dark Surfa	ace (A11)	X Depleted Matrix					ace (S9) (LRR K, L)
	ck Dark Surf		200 (7.121)	Redox Dark Surfa					se Masses (F12) (LRR K, L, R)
		Mineral (S1)		Depleted Dark Su	• •				odplain Soils (F19) (MLRA 149B)
	dy Gleyed N			Redox Depression					TA6) (MLRA 144A, 145, 149B)
	dy Redox (S							Red Parent Ma	
	pped Matri	•		<sup>3</sup> In	dicators of hydrophytic ve	egetation a	and wetland		Dark Surface (TF12)
Dar	k Surface (S	57) (LRR R, N	ИLRA 149B)		hydrology must be preser	-		Other (Explain	in Remarks)
							oroblematic.		
Restrictive	, ,		·	<del></del>			-		
		Rock						Hydric	Soil Present? YES
	(inches):	10							
Remarks:									
								Northcentral and	d Northeast Region - Version 2 0



Sampling Point: H14-WT2/3

T 6:		,	Absolute 0/ Cours	Dom.	Indicator		
Tree Stratum (Plot s	ize:	)	Absolute % Cover	Sp?	Status	Dominance Test Worksheet:	
1						# Dominants OBL, FACW, FAC: 1 (A)	
3.						# Dominants across all strata: (B)	
4							
5						% Dominants OBL, FACW, FAC: 100% (A/B)	
6.							
7.						Prevalence Index Worksheet:	
				= Total	Cover	Total % Cover of: Multiply By:	
Sapling Stratum (Plot s	ize:	)		-		OBL 93 x 1 = 93	
1.						FACW 6 x 2 = 12	
2						FAC 18 x 3 = 54	
2						FACU <b>1</b> x 4 = <b>4</b>	
						UPL x 5 =	
						Sum: <b>118</b> (A) <b>163</b> (B)	
						Sum(5)	
7.						Prevalence Index = B/A = 1.38	
··						rievalence index = b/A = 1.36	
				= Total	Cover	Hydrophytic Vegetation Indicators:	
Chruh Ctratum /DI-+-	ize: <b>15'RAD</b>	١		- 10tal	Cover	Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot s		/				X Dominance Test is > 50%	
•						Y Prevalence Index is <= 3.0	
						Problematic Hydrophytic Vegetation <sup>1</sup> (explain)	
3						Rapid Test for Hydrophytic Vegetation	
4						Morphological Adaptations	
5						<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless dis	turbed
6.						or problematic.	
7						Definitions of Vegetation Strata:	
				= Total	Cover		
Herb Stratum (Plot s	ize: 5' RAD	)				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or n	ore in
<ol> <li>Carex vulpinoide</li> </ol>	a		63	X	OBL	height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
2. Juncus effusus			15		OBL		
3. Solidago rugosa		_	15		FAC		
4. Eupatorium perfo	oliatum		3		FACW	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m)	or
5. Eutrochium macu	ulatum		3		OBL	more in height and less than 3in (7.6cm) DBH.	
6. Carex comosa			3		OBL		
7. Mimulus ringens			3		OBL		
8. Carex scoparia			3		FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1	o 6m)
9. Juncus tenuis			3		FAC	in height.	
10. Carex crinita			3		OBL		
11. Chelone glabra		_	3		OBL	Herb - All herbaceous (non-woody) plants, including herbaceous vines,	
12. Ageratina altissin	ma		1		FACU	regardless of size. Includes woody plants, except woody vines, less than	
12. Ageratina artissii	110		118	= Total		approximately 3ft (1m) in height.	
Woody Vinos (Plot s	izo:	١		- 10tai	COVE		
Woody Vines (Plot s	-						
						Woody vino All was deviced as a small as of height	
2						Woody vine - All woody vines, regardless of height.	
				- ——			
						Hydrophytic	
5		_				Vegetation	
				= Total	Cover	Present? YES	
emarks: (If observed, list n	norphological adaptation	ns below).					
Festuca rubra obs	erved at 1%						



Project Site: Applicant/Owner:	Jay Peak F		litigation	City/County:	State:	VERMONT	Sampling Point:	Samp. Date: 8/:	13/2015 115-WT1
Investigator(s):	P. Werts-I	Callfelz	_			nip, Range:			
Landform (hillslope, ter		Terrace		Local relief		_	Concave	Slope (%):	
Subregion (LRR or	•	LRR	Lat:	44°56'35.358	3"N	Long:	72°30'46.838"W	Datum:	NAD 83
Soil Map Unit:	Cabot	+b	sical fau this times of ward	,	VEC	/If no o	unlain in Damaulus \	NWI Class:	PEM
	-	* * *	oical for this time of year?	•	YES	(IT no, e	xplain in Remarks.)		VEC
Are Vegetation, Soil,								cumstances?	YES
Are Vegetation, Soil,	-			la	4:		_ ` `	xplain any answe	is iii keilidiks.)
			map showing samp	ie point io	cations	, transect	s, important feati	ires, etc.	
Hydrophytic Vegetat	tion Presen	<u> </u>	YES			to This	C	- 144-4112	VEC
Hydric Soil Present?	D	_	YES			is inis	Sample Area Within	a wetland?	YES
Wetland Hydrology I Remarks:	Present?		YES						
HYDROLOGY									
Wetland Hydrology I	Indicators:						Secondary Indicators	s (minimum of tw	o required)
Primary Indicators (r	minimum o	fone is required;	check all that apply)				Surface Soil Cra	acks (B6)	
Surface Water	(A1)		x Water-Stained Leaves	(B9)		•	Drainage Patte	rns (B10)	
High Water Tal	ble (A2)		Aquatic Fauna (B13)				Moss Trim Line	s (B16)	
X Saturation (A3)	)		Marl Deposits (B13)				Dry-Season Wa	iter Table (C2)	
Water Marks (I	B1)	_	Hydrogen Sulfide Odo	r (C1)			Crayfish Burrov	vs (C8)	
Sediment Depo	osits (B2)	_	Oxidized Rhizospheres	on Living Root	s (C3)		Saturation Visil	ble on Aerial (C9)	
Drift Deposits (	(B3)	_	Presence of Reduced I	ron (C4)			Stunted or Stre	essed Plants (D1)	
Algal Mat or Cr		_	Recent Iron Reduction		C6)		Geomorphic Po		
Iron Deposits (	-	<del>_</del>	Thin Muck Surface (C7	-			Shallow Aquita		
Inundation Visi		· · · —	Other (Explain in Rema	arks)			Microtopograp		
Sparsely Veget	ated Concav	e Surface (B8)					FAC-Neutral Te	st (D5)	
Field Observations:									
Surface Water Prese	ent?		Depth (inches):						
Water Table Present	t?		Depth (inches):			Wetlan	d Hydrology Present?		YES
Saturation Present?		Х	Depth (inches):	6					
Describe Recorded D	Data (strear	n gauge, monitori	ng well, aerial photos, pro	evious inspec	tions), if	available:			
1.3" in the la Remarks:	ast 5 days a	t Jay Peak (NOAA	<u>\)</u>						
SOIL									
	Describe to	the depth needs	ed to document the indica	tor or confirn	n the abs	ence of indi	cators.)		
Depth	Matrix		Redo	ox Features					
(in) Color (	moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks
	•							Additional Red	lox Color - 5Y 4/1 - D/M
0-8 10YR	2/1	97	7.5YR 3/4	3	С	M	FINE SANDY LOAM	at 3%; Redox	- Common, Prominent
8-14+ 5Y 5	5/2	95	10YR 3/6	5	С	M	FINE SANDY LOAM	Redox - Co	ommon, Prominent
<del></del>		· <del></del>							
¹Type: C=Concentration, [	D=Depletion, F	M=Reduced Matrix, N	MS=Masked Sand Grains.				<sup>2</sup> Location: PL=Pore Lining,	M=Matrix.	
									_3.
Hydric Soil Indicators	3.						Indicators for Proble	matic Hyunc 30ii	5.
Histosol (A1)				w Surface (S8)	(LRR R,			0) (LRR K, L, MLRA	·
Histic Epipedor			MLRA 149B)					edox (A16) (LRR K,	
Black Histic (A3	-			ace (S9) (LRR R,		9B)		at or Peat (S3) (LRI	R K, L, R)
Hydrogen Sulfi				Mineral (F1) (L	RR K, L)			9) (LRR K, L, M)	
Stratified Layer		oo (A11)	Loamy Gleyed					w Surface (S8) (LRR	( K, L)
Depleted Below Thick Dark Surf		,e (A11)	X Depleted Mate Redox Dark Su					ice (S9) (LRR K, L) se Masses (F12) (LR	ען אַ מ
Sandy Mucky N			Depleted Dark					dplain Soils (F19) (F	
Sandy Gleyed N			Redox Depress					гA6) (MLRA 144A, 1	
Sandy Redox (S				(. 0)			Red Parent Ma		-,,
Stripped Matri:			3Indi	cators of hydro	nhytic ve	getation and		ark Surface (TF12)	
Dark Surface (S		LRA 149B)		nd hydrology m	ust be pre	esent, unless	Other (Explain		
Restrictive Layer (if o	observed):			dist	urbed or I	problematic.	1		
Type:							Hvdric	Soil Present?	YES
Depth (inches):								-	
Remarks:									

	Absolute	Dom.	Indicator	
Tree Stratum (Plot size:	% Cover	Sp?	Status	Dominance Test Worksheet:
	70 COVCI	<u> </u>	Status	
1				# Dominants OBL, FACW, FAC: 6 (A)
2				
3				# Dominants across all strata: 6 (B)
			<del></del>	# Dominants across an strata.
4				
5				% Dominants OBL, FACW, FAC: 100% (A/B)
6				
	_			
7				Prevalence Index Worksheet:
		= Total	Cover	Total % Cover of: Multiply By:
Sapling Stratum (Plot size:				OBL <b>71</b> x 1 = <b>71</b>
1. Betula alleghaniensis	3	<u> </u>	FAC	FACW 31 x 2 = 62
2.				FAC <b>3</b> x3 = <b>9</b>
3.	_			FACU 1 x 4 = 4
5				
4				UPL x 5 =
E				Sum: <b>106</b> (A) <b>146</b> (B)
6				
7.				Prevalence Index = B/A = 1.38
	-	T-4-1	C	Hadaaala di Maadaliaa ladisahaaa
	3	= Total	Cover	Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15'RAD )				X Dominance Test is > 50%
1. Cornus alba	15	Х	FACW	X Prevalence Index is <= 3.0
-				
2. Salix bebbiana	15	X	FACW	Problematic Hydrophytic Vegetation <sup>1</sup> (explain)
3				Rapid Test for Hydrophytic Vegetation
4.	_			Morphological Adaptations
				INIOI PHOTOGICAL Adaptations
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless
				disturbed or problematic.
				·
7				Definitions of Vegetation Strata:
	30	= Total	Cover	
Herb Stratum (Plot size: 5' RAD )				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or
				more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
1. Carex comosa	38	X	OBL	more in neight and sin (7.0cm) or larger in diameter at breast neight (DBH).
2. Carex crinita	15	Х	OBL	
2. Carex crinita				
3. Eutrochium maculatum	15	X	OBL	
				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or
<ul><li>3. Eutrochium maculatum</li><li>4. Asclepias incarnata</li></ul>	15 3		OBL OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
<ul> <li>3. Eutrochium maculatum</li> <li>4. Asclepias incarnata</li> <li>5. Ageratina altissima</li> </ul>	15 3 1		OBL OBL FACU	1
<ul> <li>3. Eutrochium maculatum</li> <li>4. Asclepias incarnata</li> <li>5. Ageratina altissima</li> <li>6. Symphyotrichum novae-angliae</li> </ul>	15 3		OBL OBL	1
<ul> <li>3. Eutrochium maculatum</li> <li>4. Asclepias incarnata</li> <li>5. Ageratina altissima</li> </ul>	15 3 1		OBL OBL FACU	1
<ul> <li>3. Eutrochium maculatum</li> <li>4. Asclepias incarnata</li> <li>5. Ageratina altissima</li> <li>6. Symphyotrichum novae-angliae</li> <li>7.</li> </ul>	15 3 1		OBL OBL FACU	more in height and less than 3in (7.6cm) DBH.
3. Eutrochium maculatum  4. Asclepias incarnata  5. Ageratina altissima  6. Symphyotrichum novae-angliae  7. 8.	15 3 1		OBL OBL FACU	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to
<ul> <li>3. Eutrochium maculatum</li> <li>4. Asclepias incarnata</li> <li>5. Ageratina altissima</li> <li>6. Symphyotrichum novae-angliae</li> <li>7.</li> </ul>	15 3 1		OBL OBL FACU	more in height and less than 3in (7.6cm) DBH.
3. Eutrochium maculatum  4. Asclepias incarnata  5. Ageratina altissima  6. Symphyotrichum novae-angliae  7. 8.	15 3 1		OBL OBL FACU	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10.	15 3 1		OBL OBL FACU	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10. 11.	15 3 1		OBL OBL FACU	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines,
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10.	15 3 1		OBL OBL FACU	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10. 11.	15 3 1		OBL OBL FACU FACW	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines,
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10. 11. 12.	15 3 1 1	X	OBL OBL FACU FACW	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10. 11. 12. Woody Vines (Plot size:)	15 3 1 1	X	OBL OBL FACU FACW	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10. 11. 12.	15 3 1 1	X	OBL OBL FACU FACW	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10. 11. 12. Woody Vines (Plot size:) 1	15 3 1 1	X	OBL OBL FACU FACW	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10. 11. 12. Woody Vines (Plot size:) 1. 2.	15 3 1 1	X	OBL OBL FACU FACW	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10. 11. 12. Woody Vines (Plot size:) 1	15 3 1 1	X	OBL OBL FACU FACW	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10. 11. 12. Woody Vines (Plot size:) 1	15 3 1 1	X	OBL OBL FACU FACW	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
3. Eutrochium maculatum 4. Asclepias incarnata 5. Ageratina altissima 6. Symphyotrichum novae-angliae 7. 8. 9. 10. 11. 12. Woody Vines (Plot size:) 1. 2. 3. 4.	15 3 1 1	X	OBL OBL FACU FACW	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.
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Project Site: Applicant/Owner:	JPR Golf Course Wetland Mitigation Jay Peak Resort				City/County: Jay/Orleans State: VERMONT Section, Township, Range:					/13/2015 H16-Create	
Investigator(s): P. Werts-Kallfelz Landform (hillslope, terrace, etc.): Terrace			Section, Townshi Local relief (concave, co					Slana (0/)	Slone (9/):		
		Terrace					-		Slope (%): _ Datum:	NAD 83	
Subregion (LRR or		LRR		Lat: 44°	56 32.12	1"N	Long.	72°30'40.583"W	NWI Class:	PEM	
Soil Map Unit: Are climatic/hydrological	Cabot	one on the cite	typical for this tim	o of year?		YES	(If no e	xplain in Remarks.)	INVVI CIASS.	PEIVI	
Are Vegetation, Soil	-			· -		1123	. (11 110, e	. ,	rcumstances?	YES	
Are Vegetation, Soil			•	NO NO					_	vers in Remarks.)	
		. , ,			noint l	ocation	s transec	cts, important fe		vers in Remarks.)	
Hydrophytic Vegeta			YES	8 sample	роше	1	5, (141150)	oto, important re	atares, etc.		
Hydric Soil Present?			YES				Is This	Sample Area Withii	n a Wetland?	YES	
Wetland Hydrology			YES					ouripie / ii eu Trieiii	_		
Remarks:											
HYDROLOGY	In diantaus.							Casandaniladiaata	ua (mainima uma af	(Accordancias d)	
Wetland Hydrology Primary Indicators (		of one is requir	ed: check all that a	nnly)				Secondary Indicate Surface Soil 0		two required)	
X Surface Water		one is requir	•	ppiy) ed Leaves (B9	2)			Drainage Pat	. ,		
High Water Ta				•	")			Moss Trim Li			
X Saturation (A3	. ,		Aquatic Fau Marl Deposi						vater Table (C2)		
Water Marks (	-			ılfide Odor (C	:1)			Crayfish Burr			
Sediment Dep				izospheres on		ots (C3)			sible on Aerial (C	9)	
Drift Deposits				Reduced Iror	-	200 (00)			ressed Plants (D1		
Algal Mat or C				Reduction in		s (C6)		Geomorphic	•	•	
Iron Deposits (			Thin Muck S			,		Shallow Aqui			
Inundation Vis		al (B7)		in in Remark	s)				aphic Relief (D4)		
Sparsely Veget	tated Conca	ve Surface (B8)						FAC-Neutral	Test (D5)		
Field Observations:											
Surface Water Presen	t?	x 	Depth (ii Depth (ii	nches):	Small onded areas		Wetland	d Hydrology Present?	_	YES	
Saturation Present?  Describe Recorded I		X	Depth (in		urface						
1.3" in the la Remarks:	ast 5 days a	it Jay Peak (NC	AA)								
Profile Description:	•	o the depth ne	eded to document			firm the a	bsence of ir	ndicators.)			
Depth	Matrix			Redox F		_ 1	. 2	_			
(in) Color (		%	Color (moist	t)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks	
0-8 10YR		100 97	10VD 1/6		3		М	SILT LOAM FINE SANDY LOAM	Podov	- Common, Prominent	
8-14+ 2.5Y	3/2		10YR 4/6		•		IVI	FINE SANDT LUAIVI	Redux	- Common, Prominent	
<u> </u>		<del></del>							-		
<del></del> -		· <del></del>									
		·						_			
¹Type: C=Concentration, I	D=Depletion, I	RM=Reduced Matr	x, MS=Masked Sand Gr	ains.				<sup>2</sup> Location: PL=Pore Linin	g, M=Matrix.		
Hydric Soil Indicator	rs:							Indicators for Prob	lematic Hudric 9	inils <sup>3</sup> ·	
•									•		
Histosol (A1)				value Below S	Surface (S	8) (LRR R,			10) (LRR K, L, ML	·	
Histic Epipedon (A2)			MLRA 149B)					Coast Prairie Redox (A16) (LRR K, L, R)			
Black Histic (A3)			Thin Dark Surface (S9) (LRR R, MLRA 149B)					5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
Hydrogen Sulfide (A4)  Loamy Mucky Mineral (F1) (LRR K,					(LRR K, L)	Dark Surface (S9) (LRR K, L, M)					
Stratified Layers (A5)  Depleted Relow Dark Surface (A11)  Depleted Matrix (F3)  V Depleted Matrix (F3)							Polyvalue Below Surface (S8) (LRR K, L) Thin Dark Surface (S9) (LRR K, L)				
Depleted Below Dark Surface (A11)  Thick Dark Surface (A12)  X Depleted Matrix (F3) Redox Dark Surface (F6)							Thin Dark Surface (S9) (LRR K, L)  Iron-Manganese Masses (F12) (LRR K, L, R)				
Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Redox Dark Surface (F6)  Depleted Dark Surface (F7)											
Sandy Mucky Mineral (S1)  Sandy Gleyed Matrix (S4)  Redox Depressions (F8)							Piedmont Floodplain Soils (F19) (MLRA 149B)  Mesic Spodic (TA6) (MLRA 144A, 145, 149B)				
Sandy Gleyed Matrix (S4)  Sandy Redox (S5)  Redox Depressions (F8)							Red Parent Material (F21)				
Sandy Redox (SS)  Stripped Matrix (S6)  Stripped Matrix (S6)						rotation and		Dark Surface (TF:	12)		
					tland hydrology must be present, unless disturbed or problematic.				n in Remarks)	·- <i>,</i>	
Restrictive Layer (if					uis	tar Deu Of	n obicilidlit.	الربطية.	Coil Present?	VEC	
Type: Depth (inches):				_				Hydri	Soil Present?	YES	
Remarks:								<u> </u>			
								Northcer	ntral and North	east Region - Version 2.0	

	A l l	D	Local Sanakana	
	Absolute	Dom.	Indicator	
Tree Stratum (Plot size:)	% Cover	Sp?	Status	Dominance Test Worksheet:
1.				# Dominants OBL, FACW, FAC: <b>2</b> (A)
2.				<u>———</u>
3.				# Dominants across all strata: <b>3</b> (B)
				# Dominants across all strata: (B)
4				
5				% Dominants OBL, FACW, FAC: <b>67%</b> (A/B)
				Describer on the description of
7				Prevalence Index Worksheet:
		= Total	Cover	Total % Cover of: Multiply By:
Sapling Stratum (Plot size:)				OBL <b>59</b> x 1 = <b>59</b>
<u> </u>				FACW 41 x 2 = 82
				·
2				FAC x 3 =
3				FACU x 4 =
4				UPL <b>3</b> x 5 = <b>15</b>
				·
5				Sum:(A)(B)
6				
7.				Prevalence Index = B/A = 1.51
				· ———
		T-4-1	C	the decode at a Manager to disease
		= Total	Cover	Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: <b>15'RAD</b> )				X Dominance Test is > 50%
1. Viburnum acerifolium	3	Х	UPL	X Prevalence Index is <= 3.0
				Problematic Hydrophytic Vegetation <sup>1</sup> (explain)
2				·   ——
3				Rapid Test for Hydrophytic Vegetation
4.				Morphological Adaptations
F				·   <del></del>
				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless
6				disturbed or problematic.
7.				Definitions of Vegetation Strata:
-	3	= Total	Cover	
II I C (DI		Total	Cover	Table 111   1   1   1   1   1   1   1   1
Herb Stratum (Plot size: 5' RAD )				Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more
1. Eupatorium perfoliatum	38	Х	FACW	in height and 3in (7.6cm) or larger in diameter at breast height (DBH).
2. Carex vulpinoidea	38		OBL	
2 Inners officers	4.5		ODI	
3. Juncus effusus	15		OBL	
Juncus effusus     Scirpus atrovirens			OBL OBL	Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or
				Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.
<ul> <li>4. Scirpus atrovirens</li> <li>5. Verbena hastata</li> </ul>	3		OBL FACW	.1 - 7
<ul> <li>4. Scirpus atrovirens</li> <li>5. Verbena hastata</li> <li>6. Galium palustre</li> </ul>	3		OBL	.1 - 7
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<ul> <li>4. Scirpus atrovirens</li> <li>5. Verbena hastata</li> <li>6. Galium palustre</li> <li>7.</li> </ul>	3 3 3		OBL FACW	.1 - 7
<ul> <li>4. Scirpus atrovirens</li> <li>5. Verbena hastata</li> <li>6. Galium palustre</li> <li>7.</li> <li>8.</li> </ul>	3 3 3		OBL FACW OBL	more in height and less than 3in (7.6cm) DBH.
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<ul> <li>4. Scirpus atrovirens</li> <li>5. Verbena hastata</li> <li>6. Galium palustre</li> <li>7.</li> <li>8.</li> <li>9.</li> <li>10.</li> <li>11.</li> </ul>	3 3 3		OBL FACW OBL	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
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4. Scirpus atrovirens 5. Verbena hastata 6. Galium palustre 7. 8. 9. 10. 11. 12. Woody Vines (Plot size:) 1. 2.	3 3 3		OBL FACW OBL	more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than
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Photograph 1: H5-TB3 from Station H5-TB3-P1, facing east (P. Werts, 8/14/15)



Photograph 2: H5-TB1 from Station H5-TB1-P1, facing south (P. Werts, 8/14/15)





Photograph 3: H5-Create from Station H5-Create-P1, facing northeast (P. Werts, 8/14/15)



Photograph 4: H6-WT1, from Station H6-WT1-P1, facing southeast (P. Werts, 8/14/15)



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Photograph 5: H6-WT1, from Station H6-WT1-P2, facing east (P. Werts, 8/14/15)



Photograph 6: H6-TB1 from Station H6-TB1-P1, facing south (P. Werts, 8/14/15)





Photograph 7: H6-TB1 from Station H6-TB1-P2, facing northwest (P. Werts, 8/14/15)



Photograph 8: WH-WT1 from Station WH-WT1-P1, facing northeast (P. Werts, 8/14/15)





Photograph 9: WH-WT2 from Station WH-WT2-P1, facing southwest (P. Werts, 8/14/15)



Photograph 10: H7-SC1 from Station H7-SC1-P1, facing southeast (P. Werts, 8/14/15)





Photograph 11: H4-WT1/2 from Station H4-WT1-P1, facing southeast (P. Werts, 8/14/15)



Photograph 12: H4-WT3 from Station H4-WT3-P1, facing east (P. Werts, 8/14/15)



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Photograph 13: H8-SC3 from Station H8-SC3-P1, facing east (P. Werts, 8/14/15)



Photograph 14: H8-SC1 from Station H8-SC1-P1, facing northeast (P. Werts, 8/14/15)





Photograph 15: H8-Create from Station H8-Create-P1, facing northeast (P. Werts, 8/14/15)



Photograph 16: H1-WT1 from Station H1-WT1-P1, facing north (P. Werts, 8/14/15)





Photograph 17: P2-TB1 looking upstream from Station P2-TB1-P1, facing southwest (P. Werts, 8/14/15)



Photograph 18: P2-TB1 looking downstream from Station P2-TB1-P1, facing northeast (P. Werts, 8/14/15)





Photograph 19: P2-TB1 looking upstream from Station P2-TB1-P2, facing southwest (P. Werts, 8/14/15)



Photograph 20: P2-TB1 looking upstream from Station P2-TB1-P3, facing southwest (P. Werts, 8/14/15)





Photograph 21: H11-WT2/3 from Station H11-WT2/3-P1, facing southwest (P. Werts, 8/13/15)

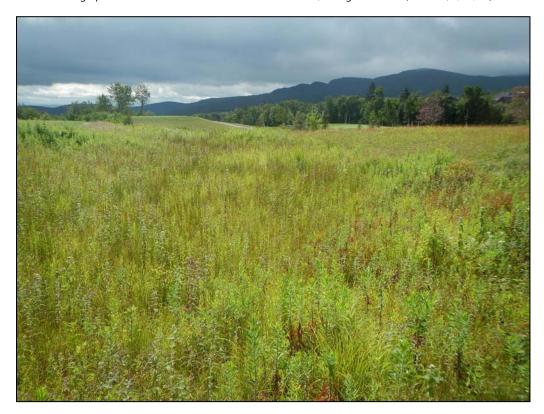


Photograph 22: H11-TB1 from Station H11-TB1-P1, facing northwest (P. Werts, 8/13/15)





Photograph 23: H11-Create from Station H11-Create-P1, facing northwest (P. Werts, 8/13/15)



Photograph 24: H11-Create from Station H11-Create-P2, facing southeast (P. Werts, 8/13/15)





Photograph 25: H11-TB2 from Station H11-TB2-P1 facing north (P. Werts, 8/13/15)



Photograph 26: H11-WT6 from Station H11-WT6-P1, facing northeast (P. Werts, 8/13/15)





Photograph 27: H12-TB1u from Station H12-TB1u-P1, facing south (P. Werts, 8/13/15)



Photograph 28: H13-TB1u from Station H13-TB1u-P1, facing north (P. Werts, 8/13/15)





Photograph 29: H13-TB2 from Station H13-TB2-P1, facing south (P. Werts, 8/13/15)



Photograph 30: H13-SC/TB3 from Station H13-SC/TB3-P1, facing north (P. Werts, 8/13/15)





Photograph 31: H13-WT1/a/b from Station H13-WT1/a/b-P1, facing north (P. Werts, 8/13/15)



Photograph 32: H13-WT2-from Station H13-WT2-P1, facing west (P. Werts, 8/13/15)





Photograph 33: H13-WT3 from Station H13-WT3-P1, facing southwest (P. Werts, 8/13/15)



Photograph 34: H14-WT1u from Station H14-WT1u-P1, facing southeast (P. Werts, 8/13/15)



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Photograph 35: H14-SC1 from Station H14-SC1-P1, facing northwest (P. Werts, 8/13/15)



Photograph 36: H14-WT2/3 from Station H14-WT2/3-P1, facing west (P. Werts, 8/13/15)





Photograph 37: H14-WT1d from Station H14-WT1d-P1, facing southeast (P. Werts, 8/13/15)



Photograph 38: H15-TB1 from Station H15-TB1-P1, facing south (P. Werts, 8/13/15)





Photograph 39: H15-WT1 from Station H15-WT1-P1, facing south (P. Werts, 8/13/15)



Photograph 40: H13-TB1d from Station H15-TB1d-P1, facing north (P. Werts, 8/13/15)





Photograph 41: H12-TB1d from Station H12-TB1d-P1, facing south (P. Werts, 8/13/15)



Photograph 42: H16-Create from Station H16-Create-P1, facing southwest (P. Werts, 8/13/15)





Photograph 43: H16-Create from Station H16-Create-P2, facing northwest (P. Werts, 8/13/15)



Photograph 44: H16-SC1 from Station H16-SC1-P1, facing northwest (P. Werts, 8/13/15)



#### APPENDIX E

DEPARTMENT OF THE ARMY PERMIT NUMBER: NAE-2008-1314

# MITIGATION REPORT TRANSMITTAL AND SELF-CERTIFICATION

CERTIFICATION OF COMPLIANCE: I certify that the attached report is accurate and discloses that the mitigation required by the Department of the Army Permit [is] [is not] in full compliance with the terms and conditions of that permit.  CORRECTIVE ACTION: A need for corrective action [is] [is not] identified in the attached	PROJECT TITLE: Jay Pe	eak Resort Golf Course					
MAILING ADDRESS: Jay, VT 05859  TELEPHONE: 802-988-2726  AUTHORIZED AGENT: Vanasse Hangen Brustlin, Inc. MAILING ADDRESS: 40 IDX Drive, Building 100, Suite 200 South Burlington, VT 05403  TELEPHONE: 802-497-6100  ATTACHED MITIGATION REPORT Jay Peak Resort Golf Course Mitigation - Fifth Annual (2015) Mitigation Monitoring Report  PREPARERS: Vanasse Hangen Brustlin, Inc.  DATE: February 4, 2015  CERTIFICATION OF COMPLIANCE: I certify that the attached report is accurate and discloses that the mitigation required by the Department of the Army Permit [ist] is not] in full compliance with the terms and conditions of that permit.  CORRECTIVE ACTION: A need for corrective action [ist] [ist not] identified in the attached report.	DEDMITTEE:						
AUTHORIZED AGENT: Vanasse Hangen Brustlin, Inc.  MAILING ADDRESS: 40 IDX Drive, Building 100, Suite 200 South Burlington, VT 05403  TELEPHONE: 802-497-6100  ATTACHED MITIGATION REPORT Jay Peak Resort Golf Course Mitigation - Fifth Annual (2015) Mitigation Monitoring Report  PREPARERS: Vanasse Hangen Brustlin, Inc.  DATE: February 4, 2015  CERTIFICATION OF COMPLIANCE: I certify that the attached report is accurate and discloses that the mitigation required by the Department of the Army Permit [ist] [is not] in full compliance with the terms and conditions of that permit.  CORRECTIVE ACTION: A need for corrective action [ist] [is not] identified in the attached report.							
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South Burlington, VT 05403  TELEPHONE: 802-497-6100  ATTACHED MITIGATION REPORT Jay Peak Resort Golf Course Mitigation - Fifth Annual (2015) Mitigation Monitoring Report  PREPARERS: Vanasse Hangen Brustlin, Inc.  DATE: February 4, 2015  CERTIFICATION OF COMPLIANCE: I certify that the attached report is accurate and discloses that the mitigation required by the Department of the Army Permit [is] [is not] in full compliance with the terms and conditions of that permit.  CORRECTIVE ACTION: A need for corrective action [is] [is not] identified in the attached report.		Vanasse Hangen Brustlin, Inc.					
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PREPARERS: Vanasse Hangen Brustlin, Inc.  DATE: February 4, 2015  CERTIFICATION OF COMPLIANCE: I certify that the attached report is accurate and discloses that the mitigation required by the Department of the Army Permit [is] [is not] in full compliance with the terms and conditions of that permit.  CORRECTIVE ACTION: A need for corrective action [is] [is not] identified in the attached report.	TELEPHONE:	802-497-6100					
PREPARERS: Vanasse Hangen Brustlin, Inc.  DATE: February 4, 2015  CERTIFICATION OF COMPLIANCE: I certify that the attached report is accurate and discloses that the mitigation required by the Department of the Army Permit [is] [is not] in full compliance with the terms and conditions of that permit.  CORRECTIVE ACTION: A need for corrective action [is] [is not] identified in the attached report.	A TOTAL CLUED DA COMMON CALON						
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discloses that the mitigation required by the Department of the Army Permit [is] [is not] in full compliance with the terms and conditions of that permit.  CORRECTIVE ACTION: A need for corrective action [is] [is not] identified in the attached report.	DATE: Febru	uary 4, 2015					
discloses that the mitigation required by the Department of the Army Permit [is] [is not] in full compliance with the terms and conditions of that permit.  CORRECTIVE ACTION: A need for corrective action [is] [is not] identified in the attached report.							
report.	discloses that the mitigation	on required by the Department of the Army Permi [is][is not] in full					
CONSULTATION: I do ont request consultation with the Corps of Engineers to discuss	CORRECTIVE ACTION report.	: A need for corrective action [is] [is not identified in the attached					
	CONSULTATION: I do	[do not] request consultation with the Corps of Engineers to discuss					
a corrective strategy or permit modification.	a corrective strategy or pe	rmit modification.					
CERTIFIED: (Signature of permittee) Date	CERTIFIED: (Signature	of remittee)  Date					
(Signature of perimeter)	(Signature	Orperimeter) / Date					