



Spring Wetland Flora Inventory – Curecanti National Recreation Area

Survey Report



A wetland surveyed at Curecanti National Recreation Area.
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Spring wetland flora inventory—Curecanti National Recreation Area: Survey report

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Abstract

This report provides the results from the 2021 spring wetland flora inventory at Curecanti National Recreation Area. In total, seven National Park Service units within the Northern Colorado Plateau Network determined the need to evaluate and map spring and wetland condition based on the presence/absence of perennial obligate and facultative wetland plant species known to occur in the parks. Mapping spring and wetland areas for each park provides a baseline measure of areas sensitive to drying that can be used to monitor change over time. The overall objective of the project was to establish a baseline for the area and condition of wetlands, seeps, and springs to provide supporting evidence for any future claims of impairment resulting from groundwater management actions.

Survey results at Curecanti National Recreation Area identified and inventoried springs and wetlands at 11 of 27 surveyed sites. Additionally, seven Neversink cottonwood gallery survey sites were visited, with associated wetlands mapped and wetland vegetation sampled. This report summarizes the results at these 18 total sites, including spring type identification, dominant herbaceous plant species present, average plant cover, wildlife sign frequency and observation, and wetland feature map figures.

List of Terms or Acronyms

°: degrees

%: percent

ac: acre

BLCA: Black Canyon of the Gunnison National Park

BRCA: Bryce Canyon National Park

CARE: Capitol Reef National Park

CEBR: Cedar Breaks National Monument

cm: centimeters

CNHP: Colorado Natural Heritage Program

COLM: Colorado National Monument

CURE: Curecanti National Recreation Area

DINO: Dinosaur National Monument

FAC: facultative plant

FACU: facultative upland plant

FACW: facultative wetland plant

ft: feet

GDE: Groundwater-Dependent Ecosystem

GIS: Geographic Information Systems

GPS: Global Positioning System

m: meter

NCPN: Northern Colorado Plateau Network

NPS: National Park Service

OBL: obligate wetland plant

m²: square meter

UDAF: Utah Department of Agriculture and Food

UPL: upland plant

USACE: U.S. Army Corps of Engineers

USDA: U.S. Department of Agriculture

Introduction

Project Background

Small water sources, such as springs and wetlands in intermountain parks, are often of resource management concern. This is because they provide unique resources and habitat for plants and wildlife, and they may be vulnerable to developments outside of park boundaries and to climate change. Some of these resources also have or could have special protections through water rights agreements with states. However, measuring the hydrology of these water sources can be difficult because they often have diffuse to low flow.

Seven National Park Service (NPS) units (or parks) within the Northern Colorado Plateau Network (NCPN) determined the need to evaluate and map spring and wetland conditions based on the presence/absence of perennial obligate (OBL) and facultative wetland (FACW) plant species known to occur in the parks. Mapping spring and wetland areas for each park provides a baseline measurement of areas sensitive to drying that can be used to monitor change over time.

Project Objective, Goals, and Parameters

The overall objective of the project was to establish baseline conditions for the area and condition of wetlands, seeps, and springs to provide supporting evidence for future water rights filings and/or claims of impairment resulting from groundwater management actions. While impairment is determined by state engineers, establishing a baseline where decreases in OBL and FACW species can be measured will help the NPS and its co-managers document impairment. The approach used during the surveys described in this report was developed as an indicator of impairment in coordination with the NPS Water Resources Division.

The project's goals included:

- Document the presence/absence of wetland vascular plant species (OBL and FACW) within seven NCPN parks.
- Map spring and wetland areas defined as those with more than 50 percent (%) perennial wetland (OBL and FACW) herbaceous and shrub plant cover.
- Take representative photos of the spring and wetland areas. When provided by the parks, these may have included rematches of historic photos.

Project parameters that defined the scope of the work and specified criteria for data collection and deliverables included:

- Conducting standardized fixed-area surveys for target species using standard sampling techniques that sufficiently detected target species and measured percent cover.
- Sampling ensured all prioritized sites were investigated.
- Plot placement included replication and was sufficient to detect the presence of targeted wetland species and determine the perimeter of wetlands as defined by >50% cover of target species.

- When conditions allowed, the perimeter of the area with greater than 50% perennial wetland (OBL and FACW) herbaceous and shrub plant cover was mapped with sub-meter accuracy. However, there were areas in canyons that did not have sufficient sky view to receive a satellite signal for sub-meter accuracy, and these were mapped using the best Global Positioning System (GPS) accuracy available.
- Cover of wetland trees, such as cottonwoods without underlying wetland herbs and shrubs, was excluded from the perimeter.
- In spring systems feeding an extensive stream-type riparian area, the survey area was capped at 50 meters (m) downstream from the spring orifice for the purposes of this inventory.
- For sites too large to sample effectively or efficiently, or if more than one wetland polygon was present at a site, only a portion of the site was selected for sampling. This was typically the largest wetland polygon, the most mesic polygon, and/or the polygon that included a spring orifice.
- Observation data were summarized and reported by site (i.e., wetland area, perimeter length, and wetland species diversity).
- Specimens were not collected, unless necessary to verify plant species identification. When collected, they were destroyed during analysis.
- Ancillary data at each site were related to specific park needs (determined prior to commencing field work). Some of the parks requested additional simple metrics be collected at a site that did not require additional expertise and were not expected to require a significant amount of additional time to record. The NCPN identified three preliminary data categories to be included in the data collection: (a) presence of animal use at sites; (b) impacts from recreation; and (c) presence of spring development structures.

Project Locations

Mapping took place at seven parks and national monuments in Utah and Colorado served by the NCPN, including:

- Black Canyon of the Gunnison National Park (BLCA)
- Bryce Canyon National Park (BRCA)
- Capitol Reef National Park (CARE)
- Cedar Breaks National Monument (CEBR)
- Colorado National Monument (COLM)
- Curecanti National Recreation Area (CURE)
- Dinosaur National Monument (DINO)

This report describes the approach and summarizes the results of mapping and surveys at CURE. The priority survey sites were identified by CURE staff, and most required verification to inform the

potential for adjudication of diligence rights on their sources. The priority sites are found in Figure 1 and Table 1.

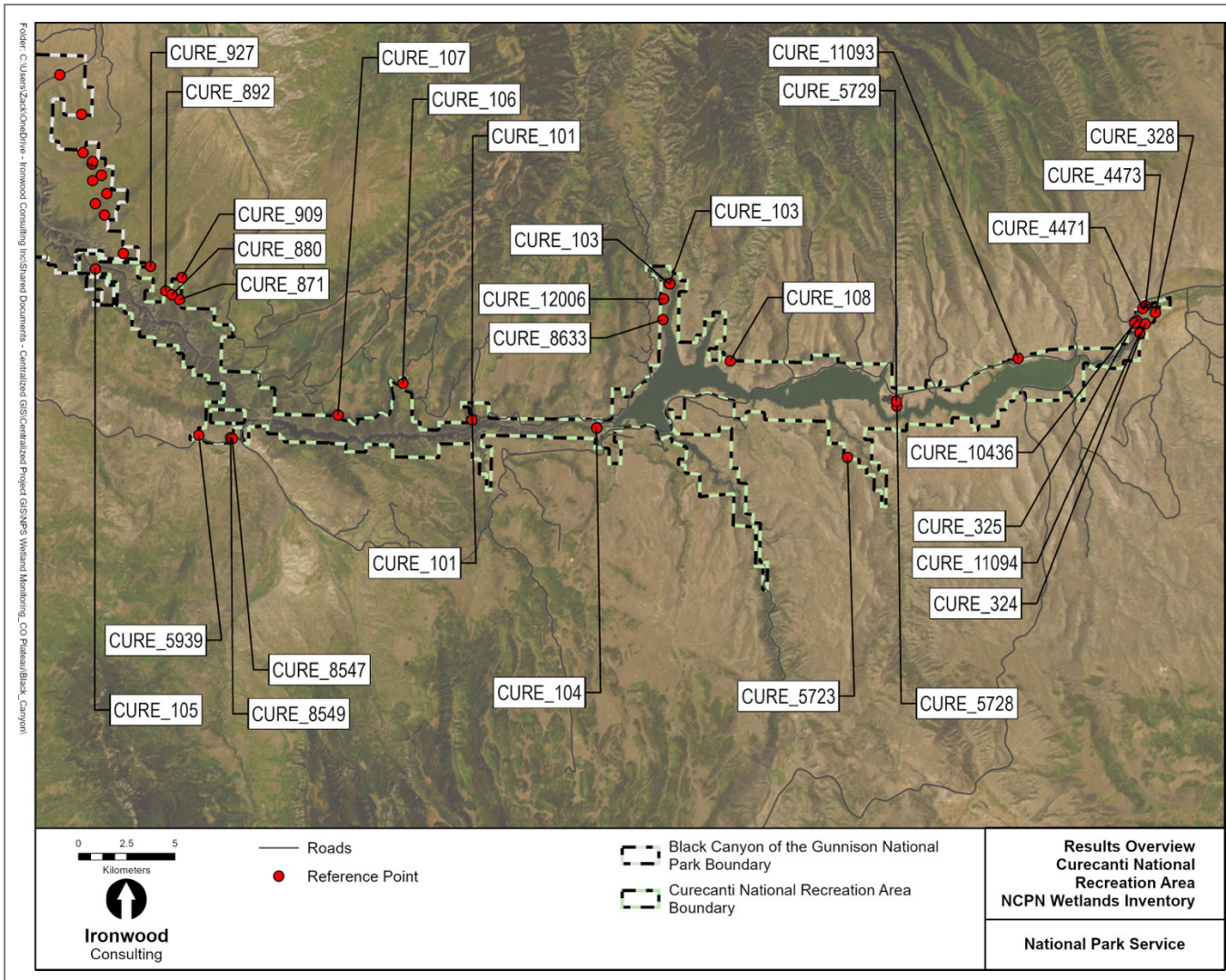


Figure 1. Curecanti National Recreation Area overview with priority survey areas.

Table 1. Curecanti National Recreation Area priority survey sites.

Site ID	Area/Name	Priority	Area (ac)
CURE 101	Curecanti Spring	1	Point
CURE 107	FS Road 720 Spring 2	1	Point
CURE 108	Dillon Pinnacles	1	Point
CURE 871	–	1	0.17
CURE 880	–	1	0.19
CURE 892	–	1	0.12
CURE 909	–	1	0.12
CURE 927	–	1	0.18
CURE 5723	–	1	1.72
CURE 5728	–	1	0.46
CURE 5729	–	1	0.64
CURE 5939	–	1	0.18
CURE 8547	–	1	0.08
CURE 8549	–	1	0.19
CURE 8633	Soap Creek #2	1	Point
CURE 12006	Soap Creek #3	1	Point
CURE 102	Hidden MP Falls	2	Point
CURE 103	Ponderosa Springs	2	Point
CURE 104	Pine Creek #1	2	Point
CURE 105	Crystal Spring 1	2	Point
CURE 106	Fitti Spring 1	2	Point
CURE 324	Neversink Cottonwood Gallery	2	0.23
CURE 325	Neversink Cottonwood Gallery	2	1.38
CURE 327	Neversink Cottonwood Gallery	2	0.48
CURE 328	Neversink Cottonwood Gallery	2	0.12
CURE 331	Neversink Cottonwood Gallery	2	0.09
CURE 4471	Neversink Cottonwood Gallery	2	0.15
CURE 4472	Neversink Cottonwood Gallery	2	0.17
CURE 4473	Neversink Cottonwood Gallery	2	0.10
CURE 5737	Neversink Cottonwood Gallery	2	21.89
CURE 10434	Neversink Cottonwood Gallery	2	1.49
CURE 10436	Neversink Cottonwood Gallery	2	4.43
CURE 10443	Neversink Cottonwood Gallery	2	47.78
CURE 10445	Neversink Cottonwood Gallery	2	3.26
CURE 10446	Neversink Cottonwood Gallery	2	10.36
CURE 10448	Neversink Cottonwood Gallery	2	84.47

Table 1 (continued). Curecanti National Recreation Area priority survey sites.

Site ID	Area/Name	Priority	Area (ac)
CURE 10449	Neversink Cottonwood Gallery	2	131.55
CURE 10450	Neversink Cottonwood Gallery	2	14.01
CURE 10452	Neversink Cottonwood Gallery	2	0.58
CURE 10457	Neversink Cottonwood Gallery	2	8.76
CURE 11093	Neversink Cottonwood Gallery	2	0.49
CURE 11094	Neversink Cottonwood Gallery	2	7.84
CURE 11183	Neversink Cottonwood Gallery	2	1.11
CURE 11228	Neversink Cottonwood Gallery	2	0.38
CURE 11229	Neversink Cottonwood Gallery	2	0.22
CURE 11233	Neversink Cottonwood Gallery	2	3.02
CURE 11234	Neversink Cottonwood Gallery	2	0.80
CURE 11235	Neversink Cottonwood Gallery	2	0.44
CURE 11237	Neversink Cottonwood Gallery	2	4.22
CURE 11292	Neversink Cottonwood Gallery	2	4.33
CURE 11293	Neversink Cottonwood Gallery	2	2.45
CURE 11294	Neversink Cottonwood Gallery	2	2.64
CURE 11295	Neversink Cottonwood Gallery	2	4.55
CURE 11296	Neversink Cottonwood Gallery	2	0.60
CURE 11297	Neversink Cottonwood Gallery	2	2.90
CURE 11298	Neversink Cottonwood Gallery	2	3.67
CURE 11299	Neversink Cottonwood Gallery	2	6.32
CURE 11300	Neversink Cottonwood Gallery	2	1.58
CURE 11943	Neversink Cottonwood Gallery	2	0.39
CURE 11944	Neversink Cottonwood Gallery	2	0.41
CURE 11948	Neversink Cottonwood Gallery	2	1.04
CURE 11956	Neversink Cottonwood Gallery	2	0.19
CURE 11957	Neversink Cottonwood Gallery	2	0.64
CURE 11959	Neversink Cottonwood Gallery	2	2.22
CURE 11960	Neversink Cottonwood Gallery	2	0.51
CURE 11963	Neversink Cottonwood Gallery	2	1.44
CURE 12653	Neversink Cottonwood Gallery	2	0.68
CURE 12654	Neversink Cottonwood Gallery	2	0.38

Methods and Materials

Ironwood completed a project work plan (Ironwood 2021a) that detailed the survey methods, including project locations, staffing roles, project schedules, equipment and materials, pre-field coordination and geospatial analyses, data management protocols, and injury and illness prevention plans. Field methods, data management practices, and analysis methods are outlined below.

Pre-Survey Geospatial Analysis and Preparation

Geographic information systems (GIS) data provided by the NPS were used to analyze the location, number, and, if possible, the rough size of seeps, springs, and wetlands to be mapped and evaluated (Figure 1, Table 1). Each survey site was assigned a unique general identification code.

Prior to field work, project maps and tables identifying priority wetlands/springs were prepared using GIS data provided by the NPS. Maps were prepared at a scale of 1:1000 and included topographic lines, labels for prominent landmarks and geographic features, waterbodies, roads, and recent aerial photograph backgrounds. Large (24 inch x 36 inch) printed maps were provided to field staff for navigation and field planning. Digital maps were also created in ArcGIS Field Maps.

Ironwood created a data collection interface using ArcGIS Field Maps and Pendragon that was compatible with cell phones and tablets in the field for all data points outlined in the Data Management Section of this report. Field crews used tablets in the field that stored data locally and connected to cloud storage when in cellular service, so data were regularly backed-up and available for initial review and quality assurance/quality control.

Goal 1: Documenting Wetland Species

The field procedure for documenting wetland species at each survey site was a modified version of the U.S. Department of Agriculture (USDA) Groundwater-Dependent Ecosystem (GDE) Level II Methodology (used whenever a groundwater-dependent wetland was present; USDA and USFS 2012). The protocol was intended to describe a site's general condition, monitor major changes over time, and make comparisons among sites of a certain type or within a specific region. The protocol was not intended for evaluating certain wetlands within the floodplains of surface water bodies, such as hanging gardens and riparian areas.

The full protocol, with redlined non-applicable text, is available in the Ironwood Work Plan (Ironwood 2021a); modifications are described below.

Groundwater-Dependent Ecosystem Level II Methodology

The vegetation components of the GDE Level II protocol were used when collecting associated vegetation data for sites identified as groundwater-dependent wetlands.

During the site evaluation, collected data included location, slope, aspect, elevation, surrounding (non-wetland) vegetation, geologic setting, surface material (no soil samples were taken), groundwater source characterization, and plant species composition. The GDE type was determined using the dichotomous key from Stevens et al. 2021. Photos of the site were taken per the GDE Level

II protocol, and a detailed, scaled map of the wetland was subsequently completed in the office using sub-meter GPS data collected in the field.

Transects to evaluate species composition were established following the methods outlined in the GDE Level II protocol, with modifications described below.

The wetland perimeter was mapped (see Goal 2: Mapping Springs and Wetlands) and the area and long axis of the wetland were determined. Each end of the long axis was marked using a sub-meter GPS and labeled “Long Axis Start” and “Long Axis End.” A fiberglass measuring tape was run between these two points, with the origin at the Long Axis Start. Transects were oriented perpendicular to the bearing of the long axis, with the transect origin placed on the left side of the long axis, as viewed from standing at the Long Axis Start and facing the Long Axis End. Compass bearings were determined at all sites using a declination of 10 degrees (°) east. The first transect began near the Long Axis Start and was placed perpendicular to the long axis line. Quadrats were then placed at regular intervals along each transect. Transect and quadrat intervals are outlined in Table 2.

Table 2. Criteria for determining quadrat number and interval using the GDE Level II protocol.

Size of GDE (m²) ^A	Transect Interval (m)	Quadrat Interval (m)
< 20	1.5	1.0
20 to 40	2.0	2.0
40 to 80	3.0	2.0
80 to 150	3.0	2.0
150 to 250	4.0	3.0
250 to 500	5.0	4.0
500 to 750	6.0	5.0
750 to 1,000	7.0	6.0
1,000 to 1,500	8.0	7.0
1,500 to 2,500	10.0	9.0
2,500 to 4,000	12.0	10.0
4,000 to 6,000	16.0	12.0
6,000 to 8,000	18.0	14.0
8,000 to 10,000	20.0	16.0
> 10,000 ^B	—	Divide into smaller units

^A Square meter (m²)

^B Sites larger than 10,000 m² required too many quadrats to sample during a single day. Depending on the purpose of the inventory, these sites may need to be divided to facilitate inventory.

In each quadrat, visual cover was measured for each plant species using a 0.5 square meter (m^2) quadrat at a quantity and interval determined by the area of the wetland after mapping the wetland boundary (Table 2). A cut-level was used when recording visual cover estimates. Plants within the quadrat with visually estimated cover below the 1% cut-level were not recorded. Quadrats were placed along the left side of the perpendicular transect tape, as determined by looking down the transect from its origin. A random number generator was used to determine a value between 0.0 m and the quadrat interval distance (minus 0.5 m) when placing the first quadrat. The quadrat started at the point corresponding to the distance number along the transect and extended 0.5 m beyond this point. After the first quadrat was randomly located, the set interval was used for all subsequent quadrats until the entire quadrat could no longer fit inside the wetland boundary along that transect. This process was repeated for each transect. The total number of transects at CURE survey sites using this methodology ranged from 4 to 12, and the total number of quadrats at each site ranged from 4 to 24. Details about the number of transects and quadrats used at each GDE site are found in the CURE data deliverable.

A combination of line intercept and spherical densiometer methods were implemented to determine woody species cover and composition. When present, live woody plant cover was collected using line intercept sampling along each transect as described in the GDE Level II protocol. Overstory cover of live and dead woody plants greater than 4 ft in height and other cover (e.g., canyon walls) were recorded using a spherical densiometer at 3 locations along each transect: 1) at the transect origin, 2) at the transect end, and 3) at the center quadrat of the transect for transects longer than 15 m, or in the center of the transect line for transects less than 15 m. Non-plant groundcover was visually estimated within the quadrat. Additional plant species observed within the wetland that were not captured in the quadrats or the line intercept were noted on the data form. If more than one wetland polygon was mapped at a site, a single polygon was selected to establish a GDE transect, which was typically the largest polygon, the most mesic polygon, and/or the polygon that included a spring orifice.

Goal 2: Mapping Springs and Wetlands

To meet Goal 2, wetland boundaries were mapped using the vegetation section of the U.S. Army Corps of Engineers (USACE) Wetland Vegetation Dominance Test (USACE 2008). The data form provided a rubric for determining if hydrophytic vegetation (defined as having a wetland indicator status of OBL and/or FACW according to the 2020 USACE Wetland Indicator Status [USACE 2020] for the Western Mountains, Valleys, and Coast Region) met or surpassed the absolute cover threshold to be considered a wetland through a quantitative dominance test.

The dominance test was used to determine where hydrophytic vegetation transitioned to upland vegetation cover, and thus to identify the boundary of the wetland. Wetland and upland species at the wetland boundaries were identified, and absolute cover composition was quantitatively determined in the field. If more than one wetland polygon was present at a site, each was mapped separately. A gap in wetland vegetation cover greater than 5 m^2 was used to determine when a wetland ended, and another began.

The following guidelines were observed when mapping wetlands:

- The site was assessed upon arrival to determine how to minimize damage to soils, plants, and hydrologic processes during the survey. If necessary, an approach to collecting data was devised to avoid damaging soils.
- Upon arrival at each site, a polygon was mapped with sub-meter accuracy (when possible) within ArcGIS Field Maps along the boundary between the wetland and upland vegetation communities using the USACE Dominance Test. Wetland areas were represented by having greater than 50% OBL and/or FACW absolute plant cover by herbaceous and shrub species. Upland areas included greater than 50% facultative (FAC), facultative upland (FACU), and/or upland (UPL) absolute plant cover. Cover of wetland trees such as cottonwoods without underlying wetland herbs and shrubs were excluded from the perimeter.
- Each crew mapped the wetland boundary using an Eos Arrow 100 sub-meter GPS receiver connected to a Bluetooth-enabled device to input field data into the data dictionary. The ArcGIS Field Maps application was used to calculate the area (in m²) and the length of the long axis of the wetland. This determined the perpendicular transect locations and microplot quantity and placement using the USDA Forest Service GDE Level II protocol. The polygon also served as the wetland delineation deliverable required of all sampled seeps/springs/wetlands under this contract.
- If a site failed the USACE Dominance Test (i.e., less than or equal to 50% OBL and/or FACW absolute plant cover) and no wetland characteristics were observed, a walk-through of the site with photos was conducted. In addition, a single transect with three herbaceous vegetation cover quadrats using the modified GDE Level II Protocol through the most mesic part of the feature was carried out; no delineation was performed.
- At CEBR and BRCA, each end of the long axis of the polygon determined where the capped aluminum conduit permanent plot pins were set. Additional monuments were added if the long axis distance exceeded 100 m or if there were distinct bends (“doglegs”). An additional monument was added for every additional 100 m the transect extended and/or when the long axis trajectory changed at the bend. Each aluminum conduit cap was scribed with the site name. The depth of the monument below ground was between 12 and 18 inches. The height of the monument above ground did not exceed 12 inches.
- At all other parks (BLCA, CARE, COLM, CURE, and DINO), no permanent monuments were used at the sites. Sub-meter GPS data were collected according to the specifications at each end of the long axis (Table 3). Additional points were taken if the long axis exceeded 100 m, or if there were distinct doglegs.

Table 3. GPS settings and accuracy parameters.

Parameter	Setting
Accuracy	75 centimeters (cm)
GPS Averaging	OFF; (If averaging a non-monumented point, turn ON and average 30 points)
95% Confidence	OFF
Streaming	46 cm
Photo Upload Size	Large
Related Type	Filtered; Show Related Type set to "OFF"
Offset	None
Snapping	OFF
Provider	EOS Positioning Systems # 1830#### (series specific to the device)
Antenna Ht.	1.5 m
Profile	Default (GCS WGS 1984)
Units	Metric
Coordinates	UTM
Distance	Meters
Area	Square meters

Non-wetland Negative Data

At sites where the absolute plant cover of OBL or FACW species was less than 50% and wetland characteristics were not present, field staff did not complete the GDE Level II survey protocol. If hydrologic features were present (e.g., spring orifices or flowing channels), these features were mapped; however, no wetland delineation was conducted.

If neither wetland characteristics nor other evidence of a spring were present, then the site was documented as negative data and no GDE Level II survey occurred. Instead, field staff took photos facing each cardinal direction standing at the center of the site. At non-GDE sites that were identified survey as potential springs, a single transect was placed running through the most mesic part of the site. Three 0.5 m² quadrats were spaced evenly along the transect and herbaceous cover data were visually estimated within each quadrat. No wetland delineation was conducted.

GPS Settings and Accuracy

Sub-meter GPS mapping was acquired for mapped wetlands whenever adequate satellite reception was available, with a few exceptions. The GPS parameters listed in Table 3 were used to ensure accurate and consistent boundary mapping. Eos Arrow 100 receivers were used to achieve sub-meter accuracy whenever possible. The mapping interface used was the ArcGIS Field Maps app with the data parameter setting options indicated in Table 3. When difficult satellite constellation or topography (e.g., a narrow canyon) precluded sub-meter data collection, an accuracy setting

requirement was modified, as necessary. In these instances, a less accurate polyline or point was achieved.

Goal 3: Representative Photos

As part of the methods discussed above, multiple photos were taken at each wetland following guidance outlined in the respective methods found in the GDE Level II protocol (Ironwood 2021b). Additional photos may have included overall landscape context photos and a representative photo along the wetland boundary. All photos were taken using the geo-referencing application Solocator, which provided a copy of each photo with Universal Transverse Mercator (UTM) location, aspect, elevation, date, time, project name, and a brief description. The description field described anything notable about the subject of the photo.

All photos were saved in jpeg format, labeled, and backed up each evening. Photo labels included:

- Park abbreviation
- Survey site name abbreviation
- Description of photo
- Date of photo
- Project description

An example of a labeled photo is “CURE_ID123_Description_MMDD2021_NCPN Seeps and Springs Inventory.jpeg.”

Other Park Specific Metrics

In addition to completing one of the methodologies previously described, this section includes the metrics that were evaluated and the data that were collected during the site visits.

Wildlife and Livestock Usage Metric

The presence of target animal scat and/or tracks observed within the quadrats was recorded and the frequency of each type was calculated. Target animal species included moose, elk, deer, sheep, bear, mountain lion, bison, and recent cattle signs. Incidental observations of target species, humans, and aquatic vertebrates were noted.

Wildlife usage data were collected at all six park units using the methodology in the work plan (Ironwood 2021a).

Recreation Impacts Metric

Any campsites, vehicle tracks, and human footpaths (social trails) within 100 ft of the site were also noted. After the site was evaluated, qualitative management indicator tools for recreation impacts were used to assess the site.

Recreation impact data were collected using the qualitative management indicator tool for recreation outlined in the GDE Level II protocol in the work plan (Ironwood 2021a).

Spring Development Metric

The data collection methods included categorical data for spring development, if present. Categories included fences, tanks, pipes, dams, windmills, pumps, spring boxes, trenches and ditches, and others (described). Point data were taken at the approximate center point for each structure or development encountered. Spring development data were collected at all park units.

BLCA and CURE Specific Metrics

BLCA and CURE requested additional analysis of collected data. The Colorado Natural Heritage Program's (CNHP) Ecological Integrity Assessment for Colorado Wetlands Field Manual, Version 2.1 provided a ranking system for plot data that broadly scores wetland integrity (Lemly et al. 2016). This protocol was used to assign two separate metrics, each producing a rank score that shows wetland integrity (shown in Table 4 and Table 5).

- Metric V1: Native Plant Species Cover (Relative) – From plot data, this is simply calculated by dividing the total cover of native species by the total cover of all species.
- Metric V2: Invasive Nonnative Plant Species Cover (Absolute) – From plot data, this is simply calculated by summing the total cover of invasive nonnative species in the sample unit. CNHP uses the Colorado Noxious Weed list in addition to burning bush (*Kochia scoparia*) and Russian thistle (*Salsola tragus*) to define “invasive nonnative species.”

Table 4. Ranking system for metric V1: native plant species relative cover.

Rank	Score	State
Excellent (A)	4.0	Assessment area contains > 99% relative cover of native plant species
Good (B)	3.0	Assessment area contains 95–99% relative cover of native plant species
Fair (C)	2.0	Assessment area contains 85–95% relative cover of native plant species
Fairly Poor (C-)	1.5	Assessment area contains 60–85% relative cover of native plant species
Poor (D)	1.0	Assessment area contains < 60% relative cover of native plant species

Table 5. Ranking system for metric V2: invasive nonnative species absolute cover.

Rank	Score	State
Excellent (A)	4.0	Invasive nonnative species are absent from all strata
Good (B)	3.0	Invasive nonnative species present, but sporadic (< 4% absolute cover)
Fair (C)	2.0	Invasive nonnative species somewhat abundant (4–10% absolute cover)

Table 5 (continued). Ranking system for metric V2: invasive nonnative species absolute cover.

Rank	Score	State
Fairly Poor (C-)	1.5	Invasive nonnative species abundant (11–30% absolute cover)
Poor (D)	1.0	Invasive nonnative species very abundant (> 30% absolute cover)

Large riparian cottonwoods are present near the eastern extent of CURE in the Neversink cottonwood gallery. This area provides potential habitat for yellow-billed cuckoo and other riparian bird species, as well as riparian wetland species habitat. The size and characteristics of these riparian wetland sites exceeded the scope of the survey protocols and resources available for this project. These sites were assigned a lower sampling priority, and a subset of sites within the cottonwood gallery were surveyed with the remaining field time after the highest priority springs and seep sites were completed. The modified GDE Level II and wetland mapping protocols described above were used to map and characterize these Neversink riparian wetland sites; however, no GDE type was assigned. Further, mapping of the extensive wetlands in Neversink was limited to the area indicated by survey site polygon boundaries and the wetlands immediately adjacent.

Data Management

All data were recorded electronically on the application interface designed for the project using ArcGIS Field Maps and Pendragon on field tablets. Data were uploaded to cloud storage at the end of the workday or when cellular or internet service was available. All photos were saved, labeled, and backed-up each evening.

Spatial Data

Spatial data collected during the surveys included wetland boundary mapping, site evaluations, and photos. Spatial field data collection equipment included:

- **Recreational-grade GPS units:** Each crew member carried a GPS unit that was capable of 5 m or greater accuracy, such as a handheld Garmin unit or smartphone GPS application, that was used to navigate to sites and collect tracks.
- **Sub-meter GPS units:** Each team had an Eos Arrow 100 sub-meter GPS receiver that was used with a Bluetooth-enabled device to input field data into the data dictionary. The Eos Arrow 100 is a mapping-grade GPS unit that can achieve accuracy at the sub-meter scale.
- **Data collection interface:** ArcGIS Field Maps was used to collect spatial data and transfer it to cloud storage. An interface was created for cell phones and tablets in the field for all data collection. The data collection interface was available offline when cell service was not available, and data were uploaded to the cloud storage upon re-entering cell service.

Tabular Data

Tabular data included species lists, photo lists, and geospatial metadata. Tabular data included all fields necessary, so data were broadly useful, including dates, UTM coordinates, descriptions, associated files,

data types, observers, survey sites, species, etc. All plant species lists included USDA PLANTS database codes (USDA and NRCS 2023). Tabular data were compiled after the field data collection was completed from digital data forms.

Data Accuracy and Quality

To ensure data were collected accurately, all botanists and botany technicians were trained in data collection methodology. A botanist or botany technician was assigned the role of Data Collection Lead for each team. This person was tasked with reviewing the data fields for accuracy and completeness. A different crew member was assigned the role of filling out and keeping the species list.

The Project Manager and/or the Assistant Project Manager was present in the field during all data collection activities to help ensure that the workplan was followed and that data documentation adhered to the NPS requirements. At the end of each field day, data were reviewed in the field by the Project Manager or Assistant Project Manager to ensure completeness, accuracy, and quality. If data errors were detected, the GIS/Data Lead contacted the Project Manager and/or Assistant Project Manager, and the data were corrected and re-reviewed by the GIS/Data Lead.

Results

Surveys took place between July 24 and August 3, 2021. All Priority 1 sites (16 total) and 11 Priority 2 sites were surveyed. Priority 2 site CURE 104 was not surveyed due to steep and potentially dangerous survey conditions. Of the 27 surveyed areas, 11 were identified as GDE sites, with evidence of springs present (Table 6, Appendix A). Seven of the sites in the Neversink cottonwood gallery were visited, with associated wetlands mapped and wetland vegetation sampled.

Table 6. List of surveyed sites identifying site type and primary GDE type (if applicable).

Site ID	Site Name	Site Type	Primary GDE Type
CURE 101	Curecanti Spring	GDE	Rheocrene
CURE 103	Ponderosa Springs	GDE	Helocrene
CURE 105	Crystal Spring 1	GDE	Rheocrene
CURE 106	Fitti Spring 1	GDE	Rheocrene
CURE 108	Dillon Pinnacles	GDE	Hypocrene
CURE 5723	–	GDE	Hypocrene
CURE 5728	–	GDE	Hypocrene
CURE 5729	–	GDE	Hypocrene
CURE 8549	–	GDE	Hypocrene
CURE 8633	Soap Creek #2	GDE	Helocrene
CURE 12006	–	GDE	Hillslope
CURE 324	Neversink Cottonwood Gallery	Riparian wetland	–
CURE 325	Neversink Cottonwood Gallery	Riparian wetland	–
CURE 328	Neversink Cottonwood Gallery	Riparian wetland	–
CURE 4471	Neversink Cottonwood Gallery	Riparian wetland	–
CURE 4473	Neversink Cottonwood Gallery	Riparian wetland	–
CURE 10436	Neversink Cottonwood Gallery	Riparian wetland	–
CURE 11094	Neversink Cottonwood Gallery	Riparian wetland	–
CURE 107	FS Road 720 Spring 2	Non-GDE	–
CURE 871	–	Non-GDE	–
CURE 880	–	Non-GDE	–
CURE 892	–	Non-GDE	–
CURE 909	–	Non-GDE	–
CURE 927	–	Non-GDE	–
CURE 5939	–	Non-GDE	–
CURE 8547	–	Non-GDE	–
CURE 11093	–	Non-GDE	–

The dominant herbaceous species reported in the GDE herbaceous vegetation quadrat summary tables were determined using the USACE Dominance Test. Only OBL and FACW plants were considered vegetative wetland indicators for this project.

CURE 101 (Curecanti Spring)

CURE 101 (Curecanti Spring) was located at an elevation of approximately 2,210 m with an overall southeast (138°) aspect and high slope variability across the site. Flow from a spring orifice and wetland vegetation provided evidence of groundwater. The spring type was characterized as rheocrene. This GDE site included a total wetland area of 0.004 acre (ac; 17.3 m²) and 21.1 m of wetland perimeter (Appendix B, Figure 2).

Twenty plant taxa were recorded during the GDE Level II survey, including 16 taxa captured in herbaceous vegetation quadrats (Appendix D, Table 7). Total average herbaceous cover was 76.2%. The dominant herbaceous plants were giant angelica (*Angelica ampla*) and cutleaf coneflower (*Rudbeckia laciniata* var. *ampla*) with 29.3% and 15.2% average absolute cover, respectively. Ground cover included stone, litter, water, boulder, and soil with 27.8%, 22.2%, 22.2%, 19.4%, and 8.3% average corner hits, respectively (Table 8). There was no woody line intercept cover.

The non-native plants alsike clover (*Trifolium hybridum*), Kentucky bluegrass (*Poa pratensis*), and stinging nettle (*Urtica dioica*) were present at this site. No noxious weeds were recorded.

According to the herbaceous vegetation quadrat data, this site includes 90.4% average relative cover of native plants and would be ranked as Fair by the CNHP Ecological Integrity Assessment Metric V1 (Table 7). Since no noxious plants were detected, it would rank as Excellent for Metric V2.

Recreation impacts at this site included a sanctioned trail, boardwalks, and bridges. No spring developments or wildlife sign were observed (Appendix C).

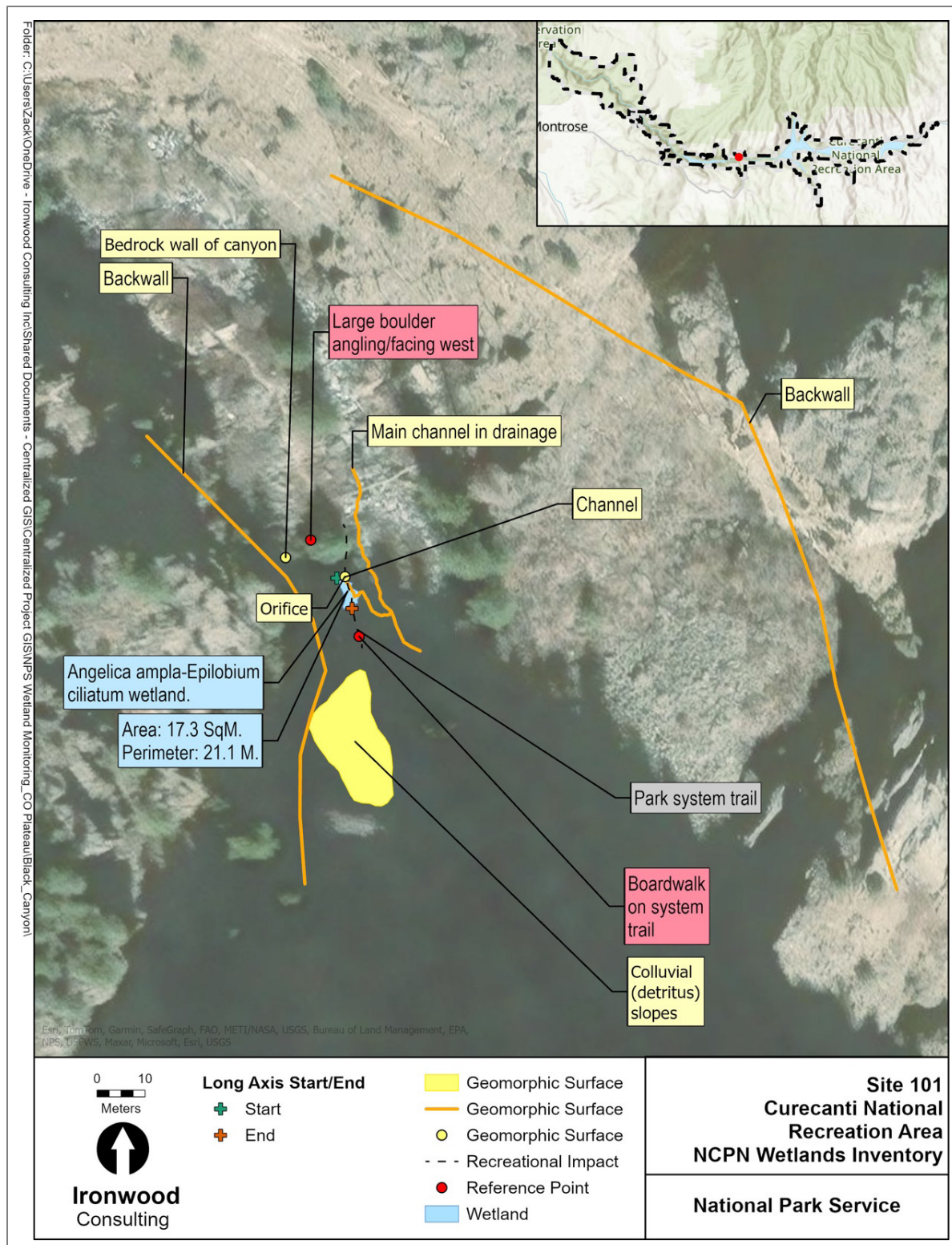


Figure 2. Wetland mapping for CURE 101 (Curecanti Spring).

Table 7. Herbaceous vegetation quadrat data for CURE 101 (Curecanti Spring). Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Angelica ampla</i>	giant angelica	N	FACW	29.3	38.5	78
<i>Rudbeckia laciniata</i> var. <i>ampla</i>	cutleaf coneflower	N	FAC	15.2	20.0	78
<i>Epilobium ciliatum</i>	fringed willowherb	N	FACW	11.7	15.3	67
<i>Poa palustris</i>	fowl bluegrass	N	FAC	7.0	9.2	89
<i>Urtica dioica</i>	stinging nettle	I, N	FAC	4.7	6.1	56
<i>Humulus lupulus</i>	common hop	N	FACU	2.6	3.4	22
<i>Poa pratensis</i>	Kentucky bluegrass	I, N	FAC	2.3	3.1	33
<i>Cirsium clavatum</i>	Fish Lake thistle	N	UPL	0.9	1.2	11
<i>Mentha arvensis</i>	field mint	N	FACW	0.7	0.9	11
<i>Equisetum hyemale</i>	scouringrush horsetail	N	FACW	0.4	0.6	11
<i>Rosa woodsii</i>	Woods' rose	N	FACU	0.4	0.6	11
<i>Geum macrophyllum</i>	largeleaf avens	N	FAC	0.3	0.4	11
<i>Carex pachystachya</i>	thick-head sedge	N	FAC	0.2	0.3	11
<i>Trifolium hybridum</i>	alsike clover	I	FAC	0.2	0.3	22
<i>Galium</i> sp.	bedstraw	–	–	0.1	0.1	11
<i>Glyceria elata</i>	fowl mannagrass	N	FACW	0.1	0.1	11
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	76.2	–	–
50% of Total	–	–	–	38.1	–	–
20% of Total	–	–	–	15.2	–	–
Total Native Plant (Metric V1)	–	–	–	–	90.4	–
Total Noxious Weed (Metric V2)	–	–	–	–	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 8. Groundcover quadrat data for CURE 101 (Curecanti Spring).

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	27.8
Boulder	19.4
Bedrock	–
Basal	–
Litter	22.2
Water	22.2
Wood	–
Soil	8.3
Total	100.0

CURE 103 (Ponderosa Springs)

CURE 103 (Ponderosa Springs) was located at an elevation of approximately 2,309 m, with an overall southeast (108°) aspect and low slope variability across the site. Flow from a spring source and wetland vegetation provided evidence of groundwater at this site. The spring type was characterized as helocrene. This GDE site included a total wetland area and perimeter of 0.09 ac (353.9 m²) and 158.6 m, respectively (Appendix B, Figure 3).

Thirty-four plant taxa were encountered during the GDE Level II survey, including 23 taxa captured in herbaceous vegetation quadrats and woody vegetation line intercept transects (Appendix D, Table 9, Table 10). The total average herbaceous cover was 71.2%. The dominant herbaceous plants were Baltic rush (*Juncus balticus* var. *montanus*) and blackcreeper sedge (*Carex praegracilis*) with 30.8% and 19.8% average absolute cover, respectively. Groundcover included litter, soil, basal, and water with 90.4%, 5.8%, 1.9%, and 1.9% average corner hits, respectively (Table 11). The total average woody line intercept cover was 15.2%. Shrubby cinquefoil (*Dasiphora floribunda*), willow (*Salix* sp.), strapleaf willow (*Salix ligulifolia*), Bebb's willow (*Salix bebbiana*), skunkbush sumac (*Rhus trilobata*), and whitestem gooseberry (*Ribes inerme*) had average woody line intercept covers of 5.2%, 5.1%, 3.9%, 0.7%, 0.1%, and 0.1%, respectively.

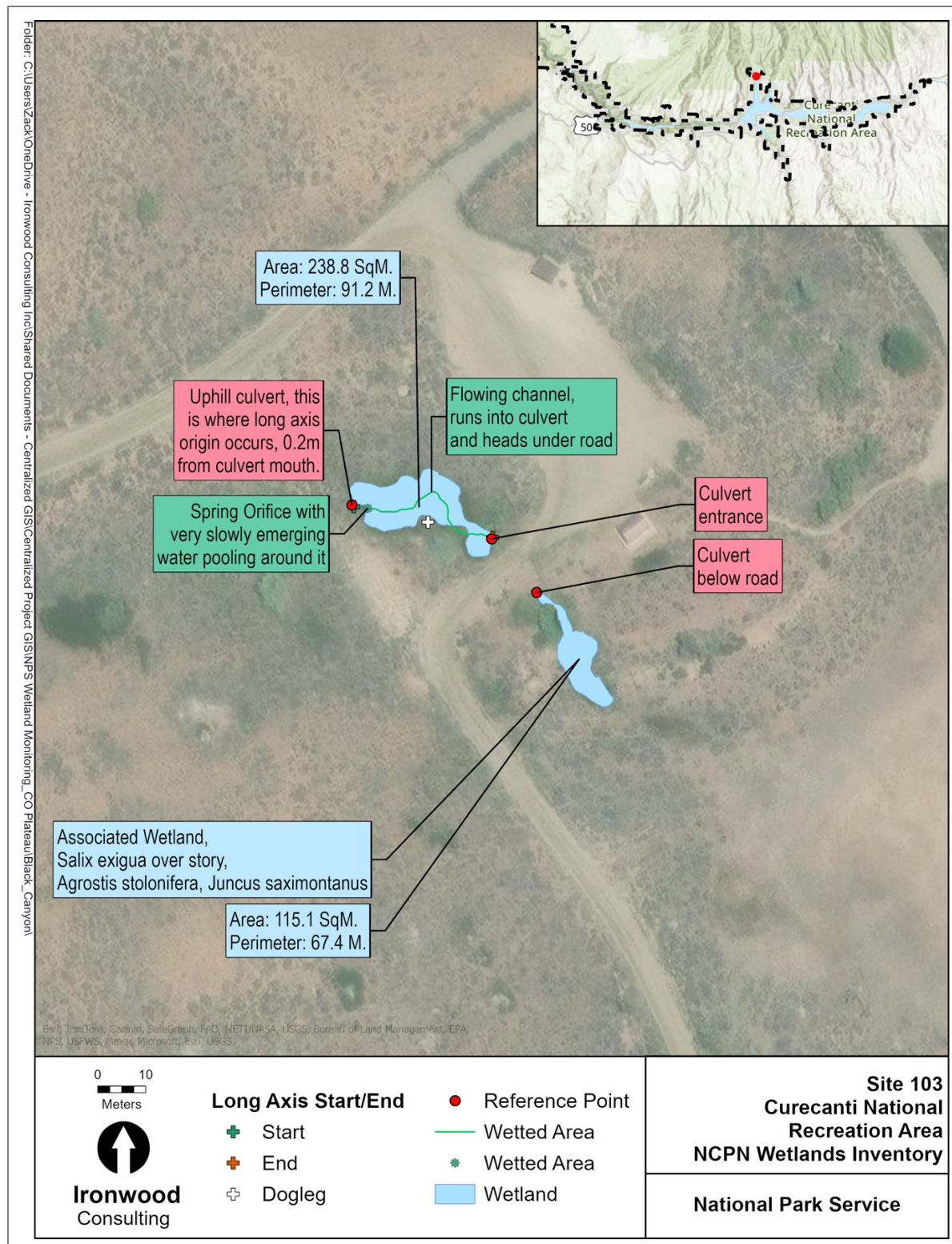


Figure 3. Wetland mapping for CURE 103 (Ponderosa Springs).

Table 9. Herbaceous vegetation quadrat data for CURE 103 (Ponderosa Springs). Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Juncus balticus</i> var. <i>montanus</i>	Baltic rush	N	FACW	30.8	43.2	92
<i>Carex praegracilis</i>	blackcreeper sedge	N	FACW	19.8	27.8	62
<i>Viola</i> sp.	violet	–	–	5.7	8.0	31
<i>Carex</i> sp.	sedge	–	–	2.7	3.8	8
<i>Eleocharis palustris</i>	common spikerush	N	OBL	2.3	3.2	8
<i>Sidalcea neomexicana</i>	New Mexico checker-mallow	N	FACW	2.0	2.8	54
<i>Symphyotrichum</i> sp.	aster	–	–	1.8	2.6	23
<i>Cirsium arvense</i>	Canada thistle	NOX	FAC	1.7	2.4	23
<i>Poa pratensis</i>	Kentucky bluegrass	I, N	FAC	1.0	1.4	23
<i>Equisetum arvense</i>	field horsetail	N	FAC	0.9	1.3	15
<i>Agrostis stolonifera</i>	redtop	I	FAC	0.7	1.0	15
<i>Epilobium ciliatum</i>	fringed willowherb	N	FACW	0.7	1.0	23
<i>Juncus saximontanus</i>	mountain rush	N	FACW	0.5	0.8	23
<i>Achillea millefolium</i>	common yarrow	N	FACU	0.2	0.3	8
<i>Thlaspi arvense</i>	field pennycress	I	UPL	0.2	0.2	8
<i>Hypericum scouleri</i>	western St. John's-wort	N	FACW	0.1	0.1	8
<i>Polemonium occidentale</i>	western Jacob's-ladder	N	FACW	0.1	0.1	8
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	71.2	–	–
50% of Total	–	–	–	35.6	–	–
20% of Total	–	–	–	14.2	–	–
Total Native Plant (Metric V1)	–	–	–	–	95.0	–
Total Noxious Weed (Metric V2)	–	–	–	1.7	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 10. Woody vegetation line intercept summary data for CURE 103 (Ponderosa Springs).

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Dasiphora floribunda</i>	shrubby cinquefoil	N	FAC	5.2
<i>Salix</i> sp.	willow	–	–	5.1
<i>Salix ligulifolia</i>	strapleaf willow	N	FAC	3.9
<i>Salix bebbiana</i>	Bebb's willow	N	FACW	0.7
<i>Rhus trilobata</i>	skunkbush sumac	N	UPL	0.1
<i>Ribes inerme</i>	whitestem gooseberry	N	FAC	0.1
Total	–	–	–	15.2

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 11. Groundcover quadrat data for CURE 103 (Ponderosa Springs).

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	1.9
Litter	90.4
Water	1.9
Wood	–
Soil	5.8
Total	100.0

The non-native plants recorded at this site were crested wheatgrass (*Agropyron cristatum*), field pennycress, Kentucky bluegrass, and redtop. The noxious weeds Canada thistle and musk thistle (*Carduus nutans*) were also present.

According to the herbaceous vegetation quadrat data, this site included 95.0% average relative cover of native plants and would be ranked as Fair/Good for the CNHP Ecological Integrity Assessment Metric V1 (Table 9). Unidentified taxa that were probable native species were included in the total tally for relative plant cover. Noxious weeds had an average absolute cover of 1.7%, resulting in a Good rank for Metric V2. The density of noxious weeds appeared to be greater adjacent to the wetland; however, no cover data were collected outside of the wetland boundary.

No recreational impacts or spring developments were observed. Deer sign was observed outside the herbaceous quadrats (Appendix C).

CURE 105 (Crystal Spring 1)

CURE 105 (Crystal Spring 1) occurs at an elevation of approximately 2,004 m with an overall northeast (17°) aspect and moderate slope variability across the site. Flow from a spring source and wetland vegetation provided evidence of groundwater. The spring type was characterized as rheocrene. This site included a total wetland area and perimeter length of 0.02 ac (93.8 m²) and 51.3 m, respectively (Appendix B, Figure 4).

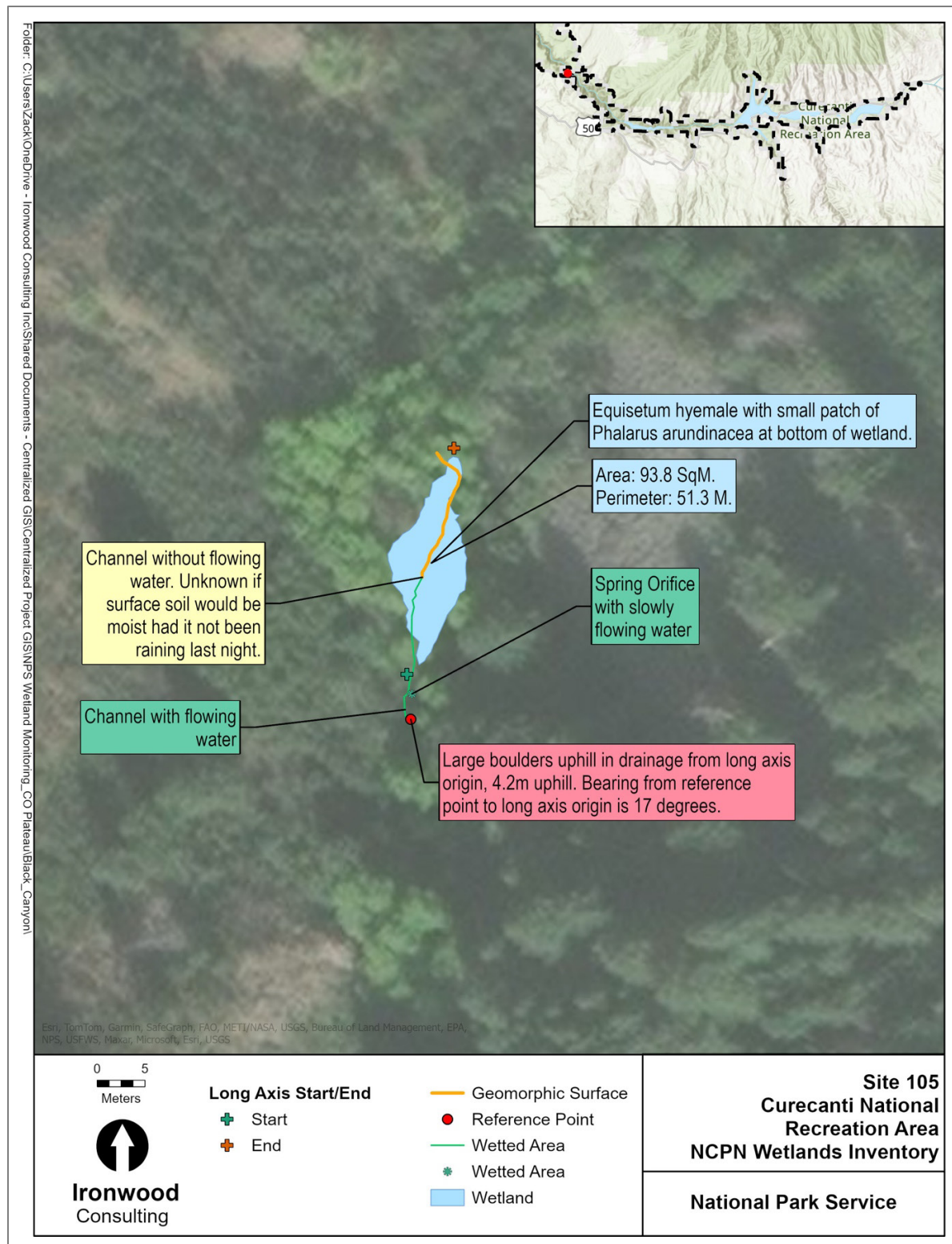


Figure 4. Wetland mapping for CURE 105 (Crystal Spring 1).

A total of 18 plant taxa were documented, including 14 taxa captured by the herbaceous vegetation quadrats and woody vegetation line intercept transects (Appendix D, Table 12, Table 13). Total herbaceous cover averaged 58.8%. The dominant herbaceous plant was scouringrush horsetail (*Equisetum hyemale*) with 47.4% average absolute cover. The average groundcover included litter, wood, boulder, basal, and bedrock with 82.4%, 7.4%, 5.9%, 2.9%, and 1.5% average corner hits, respectively (Table 14). The total average woody line intercept cover was 3.3%. Boxelder (*Acer negundo*), chokecherry (*Prunus virginiana*), Douglas-fir (*Pseudotsuga menziesii*), and gray alder (*Alnus incana*) had average woody line intercept covers of 1.9%, 0.9%, 0.4%, and 0.1%, respectively.

The non-native plant species American red raspberry (*Rubus idaeus*), stinging nettle, and woolly mullein (*Verbascum thapsus*) occurred at this site. There were no noxious weeds detected.

According to the herbaceous vegetation quadrat data, this site includes 99.3% average relative cover of native plants and would be ranked as Good for the CNHP Ecological Integrity Assessment Metric V1 (Table 12). Unidentified taxa that were probable native species were included in the total tally for relative plant cover. Since no noxious plants were detected, it would rank as Excellent for Metric V2.

No recreation impacts were observed. There was an old, disconnected pipe lying along the wetland channel. This site historically functions as a stock pond when water pools seasonally below the dam. No wildlife sign was observed at this site (Appendix C).

Table 12. Herbaceous vegetation quadrat data for CURE 105 (Crystal Spring 1). Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Equisetum hyemale</i>	scouringrush horsetail	N	FACW	47.4	80.6	94
<i>Carex deweyana</i>	Dewey's sedge	N	FAC	4.4	7.5	24
<i>Phalaris arundinacea</i>	reed canary grass	N	FACW	3.8	6.5	6
<i>Viola</i> sp.	violet	–	–	1.0	1.7	18
<i>Maianthemum racemosum</i>	feathery false lily of the valley	N	FAC	0.8	1.4	6
<i>Urtica dioica</i>	stinging nettle	I, N	FAC	0.4	0.7	6
<i>Achillea millefolium</i>	common yarrow	N	FACU	0.3	0.5	6
<i>Osmorhiza berteroi</i>	Chilean sweet-cicely	N	FACU	0.3	0.5	12
<i>Piptatherum micranthum</i>	littleseed ricegrass	N	UPL	0.3	0.5	6
<i>Geum aleppicum</i>	erect avens	N	FACW	0.1	0.1	6
Bryophytes	moss	–	–	0.7	–	12
Total	–	–	–	58.8	–	–
50% of Total	–	–	–	29.4	–	–
20% of Total	–	–	–	11.8	–	–
Total Native Plant (Metric V1)	–	–	–	–	99.3	–
Total Noxious Weed (Metric V2)	–	–	–	–	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 13. Woody vegetation line intercept summary data for CURE 105 (Crystal Spring 1).

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Acer negundo</i>	boxelder	N	FAC	1.9
<i>Prunus virginiana</i>	chokecherry	N	FACU	0.9
<i>Pseudotsuga menziesii</i>	Douglas-fir	N	FACU	0.4
<i>Alnus incana</i>	gray alder	N	FACW	0.1
Total	–	–	–	3.3

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 14. Groundcover quadrat data for CURE 105 (Crystal Spring 1).

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	–
Boulder	5.9
Bedrock	1.5
Basal	2.9
Litter	82.4
Water	–
Wood	7.4
Soil	–
Total	100.0

CURE 106 (Fitti Spring 1)

CURE 106 (Fitti Spring 1) was located at an elevation of approximately 2,654 m with an overall northeast (82°) aspect and moderate slope variability across the site. Flow from spring sources, peat/muck accumulation, standing water, and wetland vegetation provided evidence of groundwater. The spring type was characterized as rheocrene. This GDE site included a total wetland area and perimeter of 0.46 ac (1,875.8 m²) and 853.5 m, respectively (Appendix B, Figure 5).

Fifty-one plant taxa were documented during the GDE Level II survey, including 36 taxa captured in herbaceous vegetation quadrats and woody vegetation line intercept transects (Appendix D, Table 15, Table 16). Total average herbaceous cover was 88.7%. The dominant herbaceous plants were giant angelica (*Angelica ampla*), fowl bluegrass (*Poa palustris*), and Columbian monkshood (*Aconitum columbianum*) with 31.5%, 9.0%, and 6.8% average absolute cover, respectively. Groundcover included litter, wood, water, soil, basal, and stone with 30.2%, 24.0%, 21.9%, 18.8%, 4.2%, and 1.0% average corner hits, respectively (Table 17). The total average woody line intercept cover was 23.4%. Whitestem gooseberry, Bebb's willow, mountain willow (*Salix monticola*), gray alder, American red raspberry, and wax current (*Ribes cereum*) had average woody line intercept covers of 8.7%, 6.6%, 4.0%, 2.7%, 1.1%, and 0.3% respectively.

The non-native plant species detected at this site included alsike clover, American red raspberry, black bent (*Agrostis gigantea*), common dandelion, common plantain (*Plantago major*), Kentucky bluegrass, orchard grass (*Dactylis glomerata*), quackgrass (*Elymus repens*), shepherd's-purse (*Capsella bursa-pastoris*), stinging nettle, timothy (*Phleum pratense*), yellow salsify (*Tragopogon dubius*). The noxious plants musk thistle and Canada thistle were also present.

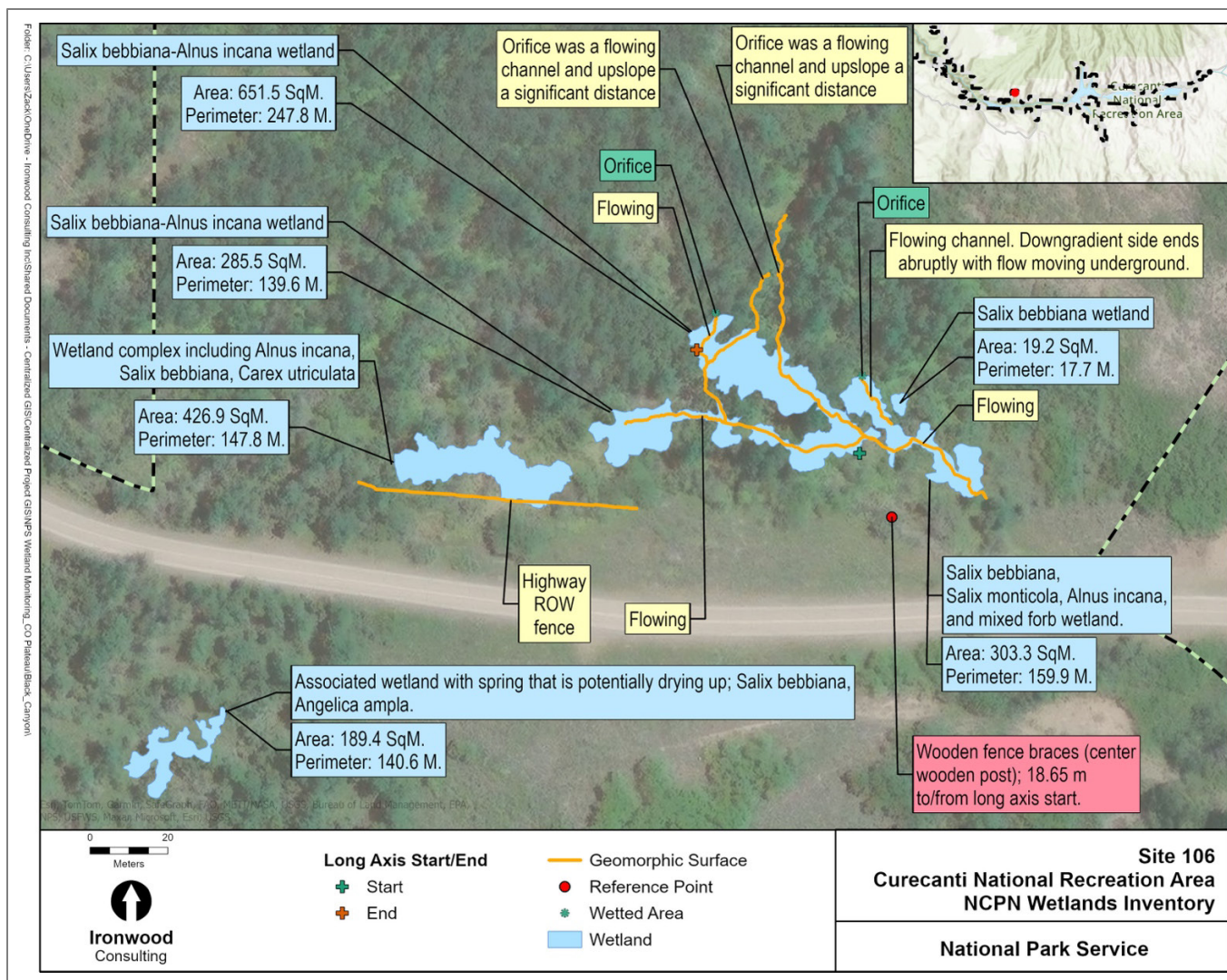


Figure 5. Wetland mapping for CURE 106 (Fitti Spring 1).

Table 15. Herbaceous vegetation quadrat data for CURE 106 (Fitti Spring 1). Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Angelica ampla</i>	giant angelica	N	FACW	31.5	35.5	58
<i>Poa palustris</i>	fowl bluegrass	N	FAC	9.0	10.2	71
<i>Aconitum columbianum</i>	Columbian monkshood	N	FACW	6.8	7.6	29
<i>Veronica anagallis-aquatica</i>	water speedwell	N	OBL	5.2	5.9	29
<i>Glyceria elata</i>	fowl mannagrass	N	FACW	4.3	4.9	17
<i>Carex</i> sp.	sedge	–	–	4.3	4.8	13
<i>Senecio triangularis</i>	arrowleaf groundsel	N	FACW	4.2	4.7	33
<i>Veratrum californicum</i>	false hellebore	N	FAC	3.2	3.6	17
<i>Carex disperma</i>	soft-leaved sedge	N	FACW	2.7	3.1	4
<i>Carex pachystachya</i>	thick-head sedge	N	FAC	2.5	2.8	17
<i>Epilobium ciliatum</i>	fringed willowherb	N	FACW	1.9	2.2	25
<i>Agrostis gigantea</i>	black bent	I	FAC	1.7	1.9	13
<i>Heracleum maximum</i>	cow parsnip	N	FAC	1.7	1.9	8
<i>Galium triflorum</i>	sweet-scented bedstraw	N	FACU	1.3	1.5	38
<i>Hydrophyllum fendleri</i>	Fendler's waterleaf	N	FAC	1.1	1.3	4
<i>Urtica dioica</i>	stinging nettle	I, N	FAC	1.0	1.1	21
<i>Maianthemum stellatum</i>	starry false Solomon's-seal	N	FAC	0.8	0.9	13
<i>Sidalcea candida</i>	white checker-mallow	N	FACW	0.7	0.8	8
<i>Carex praegracilis</i>	blackcreeper sedge	N	FACW	0.6	0.7	4
<i>Cirsium arvense</i>	Canada thistle	NOX	FAC	0.6	0.7	8
<i>Pteridium aquilinum</i>	western brackenfern	N	FACU	0.6	0.7	4
<i>Veronica americana</i>	American brooklime	N	OBL	0.5	0.6	8
<i>Deschampsia caespitosa</i>	tufted hairgrass	N	FACW	0.4	0.5	8
<i>Osmorhiza berteroi</i>	Chilean sweet-cicely	N	FACU	0.4	0.5	4

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 15 (continued). Herbaceous vegetation quadrat data for CURE 106 (Fitti Spring 1). Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Taraxacum officinale</i>	common dandelion	I	FACU	0.4	0.4	8
<i>Catabrosa aquatica</i>	brookgrass	N	OBL	0.3	0.4	4
<i>Dactylis glomerata</i>	orchard grass	I	FACU	0.3	0.4	4
<i>Platanthera sparsiflora</i>	sparse-flowered bog orchid	N	FACW	0.3	0.4	4
<i>Elymus glaucus</i>	blue wildrye	N	FACU	0.2	0.2	4
<i>Mimulus guttatus</i>	yellow monkeyflower	N	OBL	0.1	0.1	4
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	88.7	–	–
50% of Total	–	–	–	44.4	–	–
20% of Total	–	–	–	17.7	–	–
Total Native Plant (Metric V1)	–	–	–	–	95.5	–
Total Noxious Weed (Metric V2)	–	–	–	0.6	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 16. Woody vegetation line intercept summary data for CURE 106 (Fitti Spring 1).

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Ribes inerme</i>	whitestem gooseberry	N	FAC	8.7
<i>Salix bebbiana</i>	Bebb's willow	N	FACW	6.6
<i>Salix monticola</i>	mountain willow	N	OBL	4.0
<i>Alnus incana</i>	gray alder	N	FACW	2.7
<i>Rubus ideaus</i>	American red raspberry	I, N	FACU	1.1

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 16 (continued). Woody vegetation line intercept summary data for CURE 106 (Fitti Spring 1).

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Ribes cereum</i>	wax currant	N	UPL	0.3
Total	–	–	–	23.4

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 17. Groundcover quadrat data for CURE 106 (Fitti Spring 1).

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	1.0
Boulder	–
Bedrock	–
Basal	4.2
Litter	30.2
Water	21.9
Wood	24.0
Soil	18.8
Total	100.0

According to the herbaceous vegetation quadrat data, this site includes 95.5% average relative cover of native plants and would be ranked as Good for the CNHP Ecological Integrity Assessment Metric V1 (Table 15). Unidentified taxa that were probable native species were included in the total tally for relative plant cover. Canada thistle had an average absolute cover of 0.6%, resulting in a rank of Good for Metric V2. The density of noxious weeds appeared to be greater adjacent to the wetland.

No recreation impacts or spring developments were observed. Historic livestock, deer, and elk sign were observed outside the vegetation quadrats (Appendix C).

CURE 108 (Dillon Pinnacles)

CURE 108 (Dillon Pinnacles) was located at an elevation of approximately 2,405 m with an overall southwest (242°) aspect and low slope variability across the site. Wetland vegetation provided evidence of groundwater. The spring type was characterized as hypocrene. This GDE site included a total wetland area and perimeter of 0.004 ac (15.2 m²) and 21.2 m, respectively (Appendix B, Figure 6).

Ten plant taxa were documented during the GDE Level II survey, including seven taxa captured in herbaceous vegetation quadrats (Appendix D, Table 18). Total average herbaceous cover was 46.7%. The dominant herbaceous plant was Baltic rush with 40.9% average absolute cover. Groundcover included litter, cobble, and soil with 93.2%, 4.5%, and 2.3% average corner hits, respectively (Table 19). There was no woody line intercept cover.

No non-native plants or noxious weeds were detected.

According to the herbaceous vegetation quadrat data, this site includes 100.0% average relative cover of native plants and would be ranked as Excellent for the CNHP Ecological Integrity Assessment Metric V1 (Table 18). Unidentified taxa that were probable native species were included in the total tally for relative plant cover. Since there were no noxious weeds detected, this site received a rank of Excellent for Metric V2.

No recreation impacts, spring developments, or wildlife sign were observed (Appendix C).

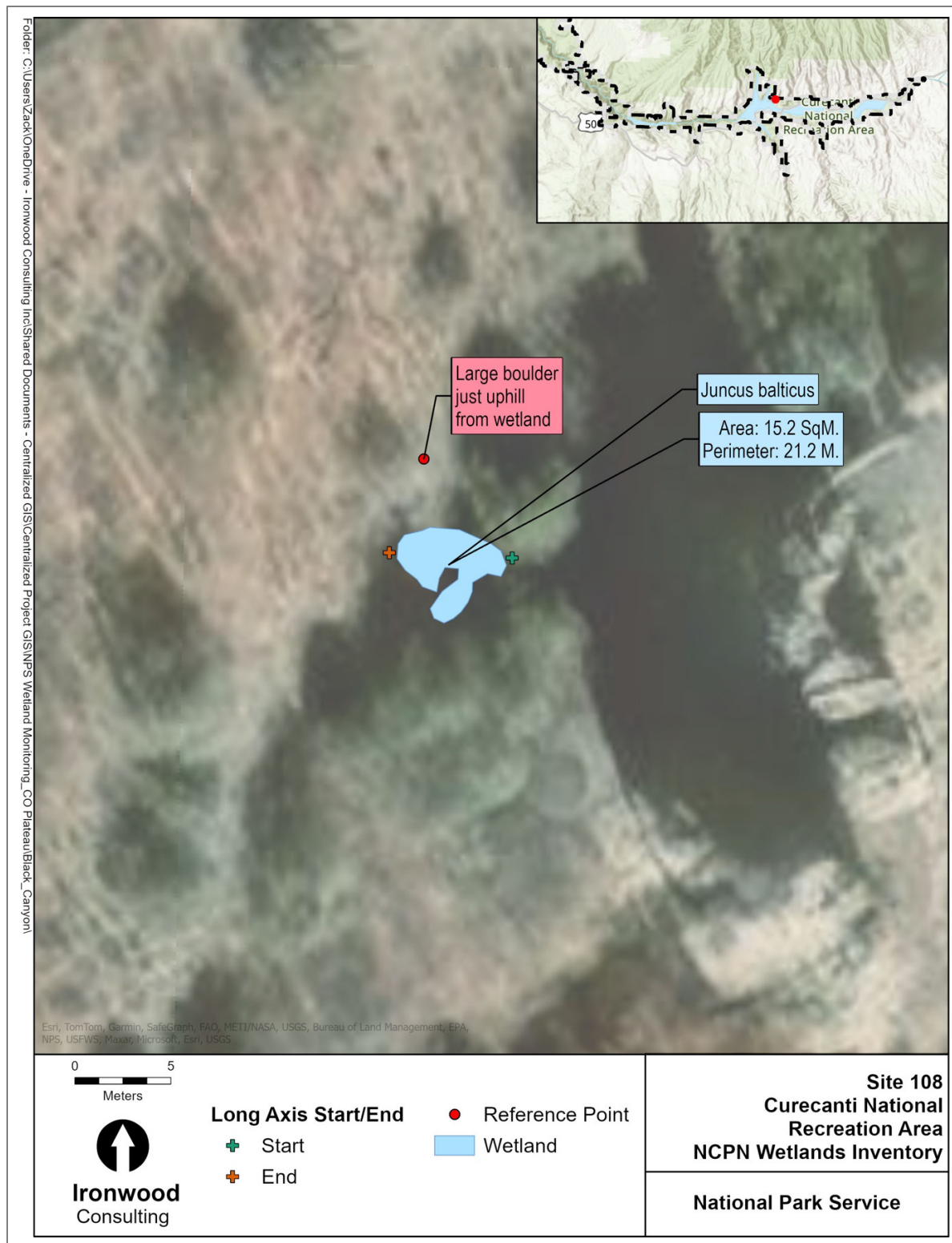


Figure 6. Wetland mapping for CURE 108 (Dillon Pinnacles).

Table 18. Herbaceous vegetation quadrat data for CURE 108 (Dillon Pinnacles). Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Juncus balticus</i> var. <i>montanus</i>	Baltic rush	N	FACW	40.9	87.5	100
<i>Carex</i> sp.	sedge	–	–	4.0	8.6	73
<i>Hesperostipa comata</i>	needle-and-thread	N	UPL	0.6	1.4	18
<i>Maianthemum</i> sp.	mayflower	–	–	0.5	1.0	27
<i>Chamerion angustifolium</i>	fireweed	N	FACU	0.3	0.6	9
<i>Cirsium</i> sp.	thistle	–	–	0.3	0.6	9
<i>Solidago velutina</i>	three-nerve goldenrod	N	UPL	0.2	0.4	9
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	46.7	–	–
50% of Total	–	–	–	23.4	–	–
20% of Total	–	–	–	9.3	–	–
Total Native Plant (Metric V1)	–	–	–	–	100.0	–
Total Noxious Weed (Metric V2)	–	–	–	–	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 19. Groundcover quadrat data for CURE 108 (Dillon Pinnacles).

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	4.5
Stone	–
Boulder	–
Bedrock	–
Basal	–
Litter	93.2
Water	–
Wood	–
Soil	2.3
Total	100.0

CURE 5723

CURE 5723 was located at an elevation of approximately 2,373 m with an overall northwest (349°) aspect and low slope variability across the site. Wetland vegetation provided evidence of groundwater. The spring type was characterized as hypocrene. This GDE site included a total wetland area and perimeter of 1.06 ac (4,296.6 m²) and 1,199.4 m, respectively (Appendix B, Figure 7, Table 20).

Twenty-two plant taxa were documented during the GDE Level II survey, including eight taxa captured in herbaceous vegetation quadrats (Appendix D, Table 21). Total average herbaceous cover was 33.4%. The dominant herbaceous plant was beaked sedge (*Carex utriculata*) with 31.5% average absolute cover. Groundcover included litter and soil with 91.2% and 8.8% average corner hits, respectively (Table 22). There was no woody line intercept cover.

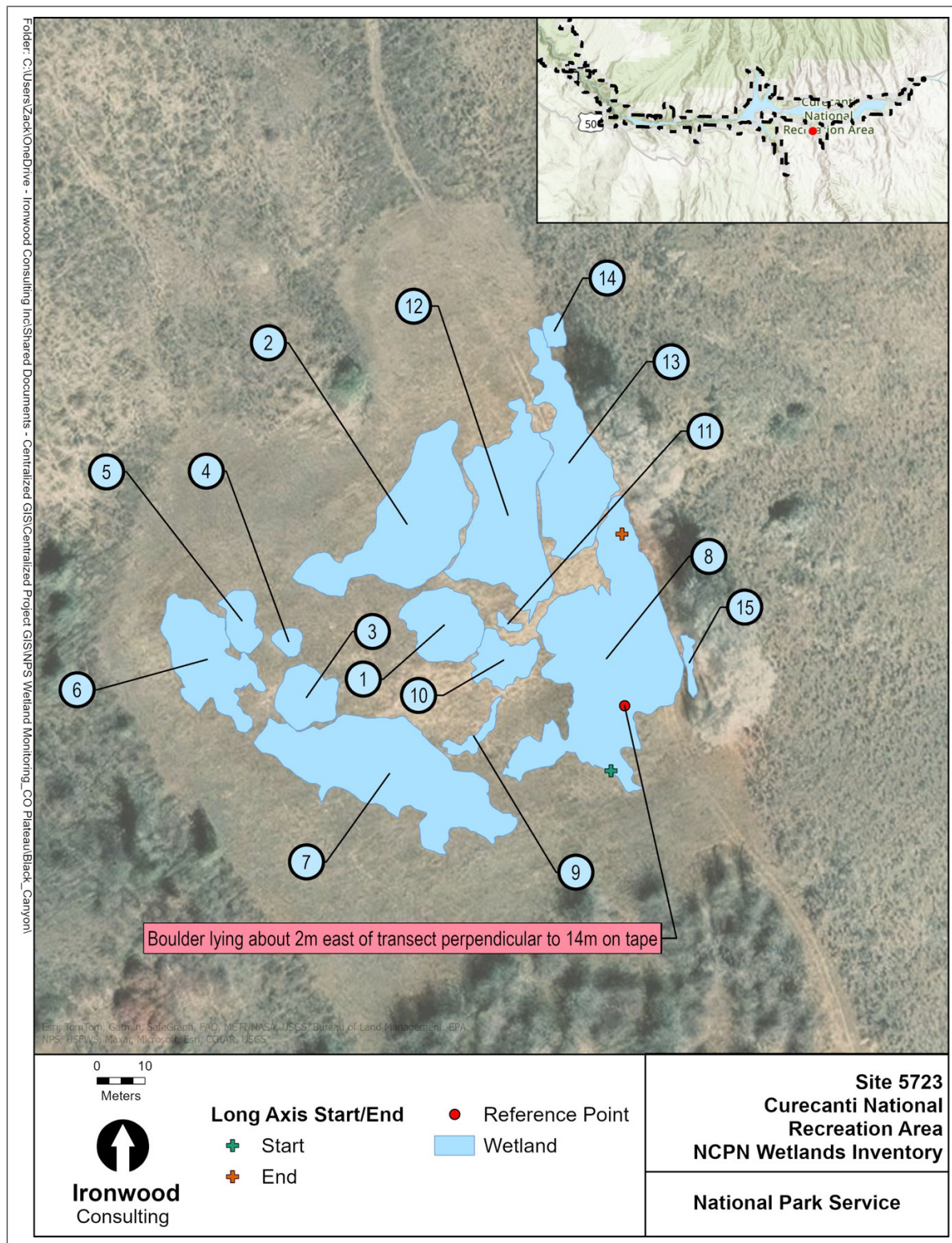


Figure 7. Wetland mapping for CURE 5723. See Table 20 for continued legend.

Table 20. Continued legend for Figure 7, CURE 5723.

Wetland ID	Site Name	Comments	Area (m ²)	Perimeter (m)
1	5723	Former <i>Typha</i> wetland. No mature plants present, very few young plants, all under 50 cm. Living vegetation dominated by weeds such as <i>Artemisia biennis</i> and <i>Cirsium arvense</i> .	203.5	55.5
2	5723	Former <i>Typha latifolia</i> wetland. Mainly dead, very few young plants. Dominated by <i>Artemisia biennis</i> with <i>Cirsium arvense</i> also present.	581.9	127.2
3	5723	Former <i>Typha latifolia</i> wetland. Mainly dead, very few young plants. Dominated by <i>Artemisia biennis</i> with <i>Cirsium arvense</i> also present.	133.8	44.8
4	5723	Former <i>Typha latifolia</i> wetland. Mainly dead, very few young plants. Dominated by <i>Artemisia biennis</i> with <i>Cirsium arvense</i> also present.	28.9	20.9
5	5723	Former <i>Typha latifolia</i> wetland. Mainly dead, very few young plants. Dominated by <i>Artemisia biennis</i> with <i>Cirsium arvense</i> also present.	81.0	38.5
6	5723	Dominated by <i>Carex utriculata</i> .	314.5	104.1
7	5723	Dominated by <i>Carex utriculata</i> .	730.6	159.7
8	5723	Dominated by <i>Carex utriculata</i> , scattered <i>Eleocharis palustris</i> .	1,034.6	225.0
9	5723	Dominated by <i>Carex utriculata</i> .	35.1	43.1
10	5723	Dominated by <i>Carex utriculata</i> .	112.2	51.1
11	5723	Dominated by <i>Carex utriculata</i> .	11.3	16.2
12	5723	Dominated by <i>Carex athrostachya</i> , <i>Eleocharis palustris</i> , and <i>Artemisia biennis</i> .	545.1	133.3
13	5723	Dominated by <i>Carex athrostachya</i> and <i>Eleocharis palustris</i> .	432.6	128.3
14	5723	Dominated by <i>Juncus balticus</i> and <i>Equisetum laevigatum</i> .	28.1	21.1
15	5723	<i>Juncus balticus</i> at toe of slope.	23.4	30.4

Table 21. Herbaceous vegetation quadrat data for CURE 5723. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Carex utriculata</i>	beaked sedge	N	OBL	31.5	94.4	100
<i>Salix exigua</i>	coyote willow	N	FACW	0.4	1.2	6
<i>Achillea millefolium</i>	common yarrow	N	FACU	0.4	1.1	12
<i>Rorippa curvipes</i>	bluntleaf yellowcress	N	FACW	0.4	1.1	6
<i>Cirsium arvense</i>	Canada thistle	NOX	FAC	0.3	0.9	18
<i>Thlaspi arvense</i>	field pennycress	I	UPL	0.2	0.7	6
<i>Populus angustifolia</i>	narrow-leaved cottonwood	N	FACW	0.2	0.5	6
<i>Chenopodium</i> sp.	goosefoot	–	–	0.1	0.2	6
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	33.4	–	–
50% of Total	–	–	–	16.7	–	–
20% of Total	–	–	–	6.7	–	–
Total Native Plant (Metric V1)	–	–	–	–	98.2	–
Total Noxious Weed (Metric V2)	–	–	–	0.3	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 22. Groundcover quadrat data for CURE 5723.

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	–
Litter	91.2
Water	–
Wood	–
Soil	8.8
Total	100.0

The non-native plant species detected at this site included biennial wormwood (*Artemisia biennis*), common dandelion, field pennycress, wormseed wallflower (*Erysimum cheiranthoides*), and yellow salsify (*Tragopogon dubius*). The noxious plants Canada thistle and musk thistle were also present.

According to the herbaceous vegetation quadrat data, this site includes 98.2% average relative cover of native plants and would be ranked as Good for the CNHP Ecological Integrity Assessment Metric V1 (Table 21). Canada thistle had an average absolute cover of 0.3%, resulting in a rank of Good for Metric V2. The density of noxious weeds appeared to be greater adjacent to the wetland; however, no cover data were collected outside of the wetland boundary.

No recreation impacts or spring developments were observed. Elk sign was observed inside the vegetation quadrats with 64% frequency (Appendix C). Elk sign was also observed outside the vegetation quadrats.

CURE 5728

CURE 5728 was located at an elevation of approximately 2,279 m with an overall southeast (161°) aspect. Wetland vegetation provided evidence of groundwater. The spring type was characterized as hypocrene. This GDE site included a total wetland area and perimeter of 0.19 ac (783.4 m²) and 338.6 m, respectively (Appendix B, Figure 8).

Eighteen plant taxa were documented during the GDE Level II survey, including 11 taxa captured in herbaceous vegetation quadrats and woody vegetation line intercept transects (Appendix D, Table 23, Table 24). The total average herbaceous cover was 28.1%. The dominant herbaceous plant was Baltic rush with 23.0% average absolute cover. Groundcover included litter, soil, basal, and stone with 86.9%, 9.5%, 2.4%, and 1.2% average corner hits, respectively (Table 25). The total average woody line intercept cover was 0.6%. Rubber rabbitbrush (*Ericameria nauseosa*) and Utah juniper (*Juniperus osteosperma*) had average woody line intercept covers of 0.4% and 0.2%, respectively.

The non-native plant species field pennycress, Kentucky bluegrass, smooth brome (*Bromus inermis*), and woolly mullein were detected at this site. The noxious plants Canada thistle and musk thistle were also present.

According to the herbaceous vegetation quadrat data, this site includes 90.5% average relative cover of native plants and would be ranked as Fair for the CNHP Ecological Integrity Assessment Metric V1 (Table 23). Canada thistle and musk thistle had a combined average absolute cover of 0.9%, resulting in a rank of Good for Metric V2.

No spring developments were observed. Scattered trash occurred in the area, likely due to the proximity to the Elk Creek campground. Deer sign occurred inside the vegetation quadrats with 5% frequency and was also observed outside the vegetation quadrats (Appendix C).

Table 23. Herbaceous vegetation quadrat data for CURE 5728. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Juncus balticus</i> var. <i>montanus</i>	Baltic rush	N	FACW	23.0	81.6	100
<i>Carex praegracilis</i>	blackcreeper sedge	N	FACW	1.7	5.9	52
<i>Poa pratensis</i>	Kentucky bluegrass	I, N	FAC	0.9	3.2	19
<i>Cirsium arvense</i>	Canada thistle	NOX	FAC	0.7	2.4	14
<i>Bromus inermis</i>	smooth brome	I	UPL	0.6	2.0	19
<i>Achillea millefolium</i>	common yarrow	N	FACU	0.5	1.7	14
<i>Potentilla biennis</i>	biennial cinquefoil	N	FACW	0.4	1.4	5
<i>Verbascum thapsus</i>	woolly mullein	I	FACU	0.3	1.0	5
<i>Carduus nutans</i>	musk thistle	NOX	UPL	0.2	0.8	10
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	28.1	–	–
50% of Total	–	–	–	14.1	–	–
20% of Total	–	–	–	5.6	–	–
Total Native Plant (Metric V1)	–	–	–	–	90.5	–
Total Noxious Weed (Metric V2)	–	–	–	0.9	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 24. Woody vegetation line intercept summary data for CURE 5728.

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Ericameria nauseosa</i>	rubber rabbitbrush	N	UPL	0.4
<i>Juniperus osteosperma</i>	Utah juniper	N	UPL	0.2
Total	–	–	–	0.6

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 25. Groundcover quadrat data for CURE 5728.

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	1.2
Boulder	–
Bedrock	–
Basal	2.4
Litter	86.9
Water	–
Wood	–
Soil	9.5
Total	100.0

CURE 5729

CURE 5729 was located at an elevation of approximately 2,290 m with an overall northeast (10°) aspect. Wetland vegetation provided evidence of groundwater. The spring type was characterized as hypocrene. This GDE site included a total wetland area and perimeter of 0.06 ac (230.5 m²) and 106.4 m, respectively (Appendix B, Figure 9).

Twelve plant taxa were documented during the GDE Level II survey, including 10 taxa captured in herbaceous vegetation quadrats and woody vegetation line intercept transects (Appendix D, Table 26, Table 27). Total average herbaceous cover was 29.5%. The dominant herbaceous plant was Baltic rush with 24.8% average absolute cover. Groundcover included litter, soil, gravel, and basal with 84.2%, 13.2%, 1.3%, and 1.3% average corner hits, respectively (Table 28). The total average woody line intercept cover was 0.1%, with rubber rabbitbrush (*Ericameria nauseosa*) as the only intercepted species.

The non-native plant species Kentucky bluegrass, smooth brome, and tall tumbled mustard (*Sisymbrium altissimum*) were detected at this site. The noxious weed Canada thistle was also present.

According to the herbaceous vegetation quadrat data, this site includes 88.2% average relative cover of native plants and would be ranked as Fair for the CNHP Ecological Integrity Assessment Metric V1 (Table 26). While Canada thistle was not captured in the herbaceous vegetation quadrats, it was present at the site, resulting in a rank of Good for Metric V2.

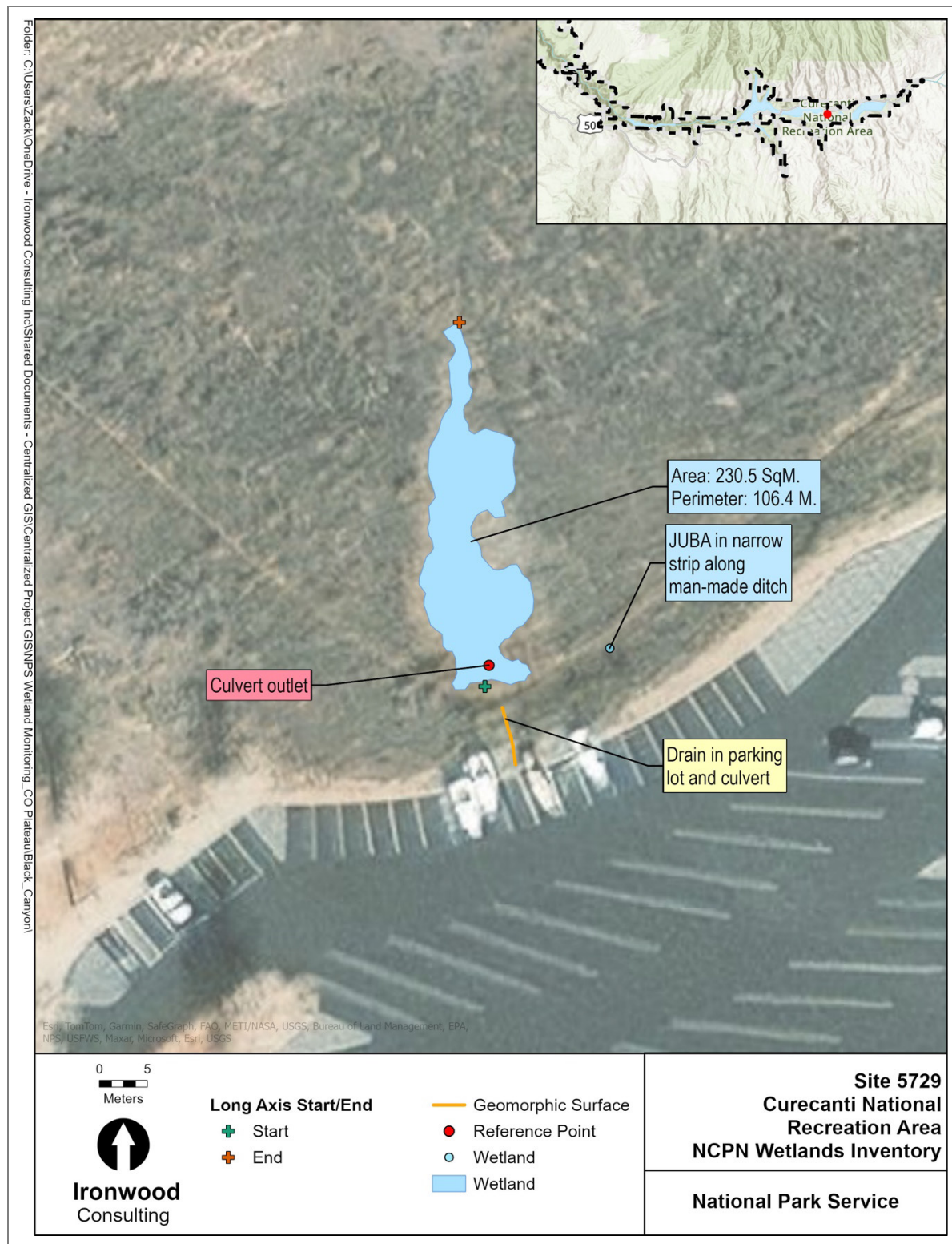


Figure 9. Wetland mapping for CURE 5729.

Table 26. Herbaceous vegetation quadrat data for CURE 5729. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Juncus balticus</i> var. <i>montanus</i>	Baltic rush	N	FACW	24.8	84.0	100
<i>Poa pratensis</i>	Kentucky bluegrass	I, N	FAC	2.3	7.8	32
<i>Bromus inermis</i>	smooth brome	I	UPL	0.8	2.9	11
<i>Lappula occidentalis</i>	western stickseed	N	UPL	0.8	2.7	5
<i>Sisymbrium altissimum</i>	tumble mustard	I	FACU	0.3	1.1	16
<i>Conyza canadensis</i>	Canadian horseweed	N	FACU	0.3	0.9	16
<i>Ericameria nauseosa</i>	rubber rabbitbrush	N	UPL	0.1	0.4	5
<i>Carex praegracilis</i>	blackcreeper sedge	N	FACW	0.1	0.2	5
<i>Potentilla biennis</i>	biennial cinquefoil	N	FACW	0.1	0.2	5
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	29.5	–	–
50% of Total	–	–	–	14.8	–	–
20% of Total	–	–	–	5.9	–	–
Total Native Plant (Metric V1)	–	–	–	–	88.2	–
Total Noxious Weed (Metric V2)	–	–	–	–	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 27. Woody vegetation line intercept summary data for CURE 5729.

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Ericameria nauseosa</i>	rubber rabbitbrush	N	UPL	0.1
Total	–	–	–	0.1

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 28. Groundcover quadrat data for CURE 5729.

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	1.3
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	1.3
Litter	84.2
Water	–
Wood	–
Soil	13.2
Total	100.0

No recreation impacts or spring developments were observed. Deer and rabbit sign occurred inside the vegetation quadrats with 5% and 11% frequency, respectively (Appendix C). Deer sign was also observed outside the vegetation quadrats.

CURE 8549

CURE 8549 was located at an elevation of approximately 2,124 m with an overall southwest (244°) aspect. Wetland vegetation provided evidence of groundwater. The spring type was characterized as hypocrene. This GDE site included a total wetland area and perimeter of 0.01 ac (23.8 m²) and 26.4 m, respectively (Appendix B, Figure 10).

Nine plant taxa were documented during the GDE Level II survey, including four taxa captured in herbaceous vegetation quadrats (Appendix D, Table 29). Total average herbaceous cover was 9.8%. The dominant herbaceous plant was Baltic rush with 9.3% average cover. Groundcover included litter and soil with 95.8% and 4.2% average corner hits, respectively (Table 30). There was no woody line intercept cover.

The non-native plant species detected at this site included herb sophia (*Descurainia sophia*) and pale madwort (*Alyssum alyssoides*). The noxious weeds hardheads (*Acroptilon repens*) and musk thistle were also present.

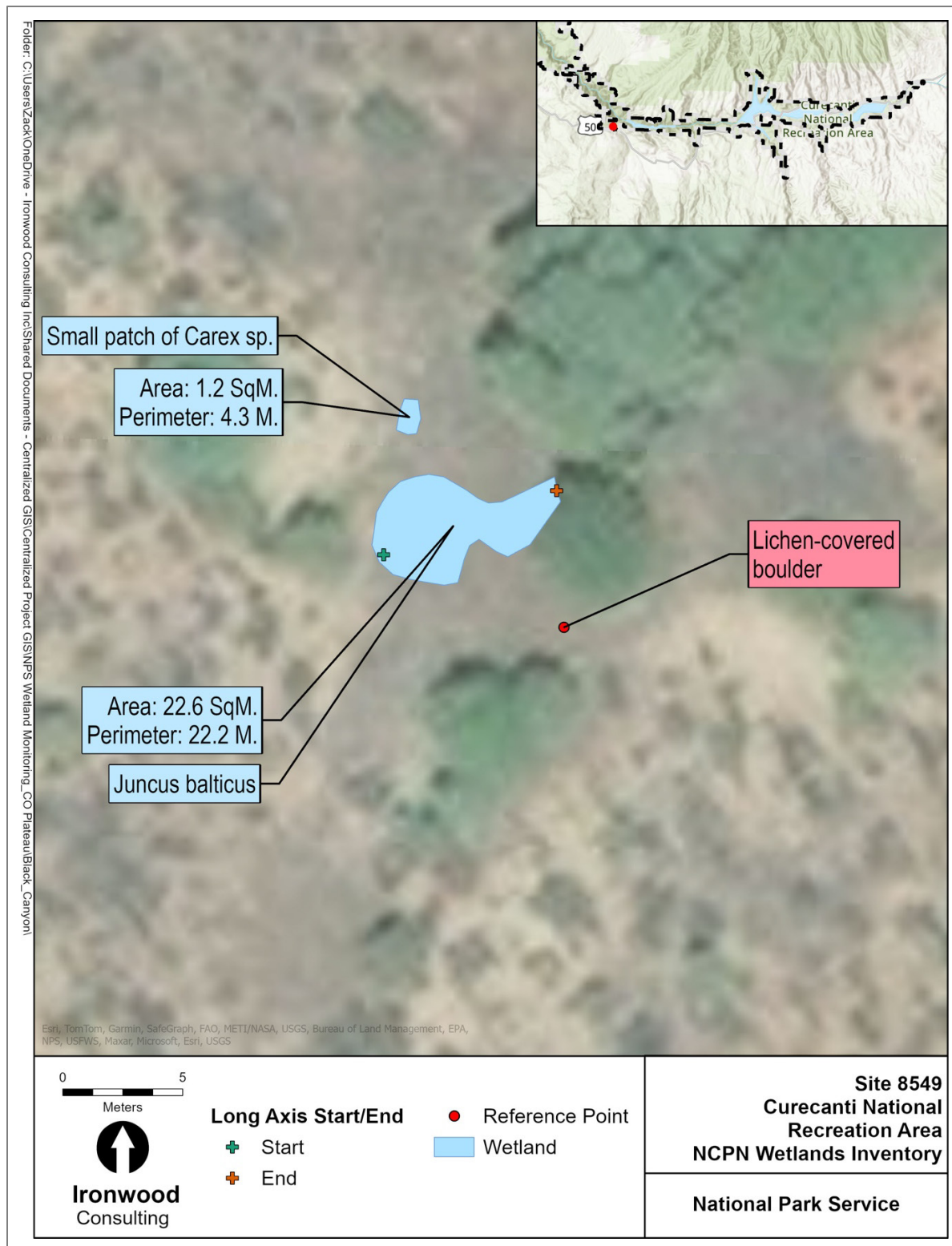


Figure 10. Wetland mapping for CURE 8549.

Table 29. Herbaceous vegetation quadrat data for CURE 8549. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Juncus balticus</i> var. <i>montanus</i>	Baltic rush	N	FACW	9.3	94.9	100
<i>Carduus nutans</i>	musk thistle	NOX	UPL	0.2	1.7	17
<i>Carex praegracilis</i>	blackcreeper sedge	N	FACW	0.2	1.7	17
<i>Iva axillaris</i>	poverty-weed	N	FACU	0.2	1.7	17
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	9.8	–	–
50% of Total	–	–	–	4.9	–	–
20% of Total	–	–	–	2.0	–	–
Total Native Plant (Metric V1)	–	–	–	–	98.3	–
Total Noxious Weed (Metric V2)	–	–	–	0.2	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 30. Groundcover quadrat data for CURE 8549.

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	–
Litter	95.8
Water	–
Wood	–
Soil	4.2
Total	100.0

According to the herbaceous vegetation quadrat data, this site includes 98.3% average relative cover of native plants and would be ranked as Good for the CNHP Ecological Integrity Assessment Metric V1 (Table 29). Musk thistle had an average absolute cover of 0.2%, resulting in a rank of Good for Metric V2. The density of noxious weeds appeared to be greater adjacent to the wetland; however, no cover data were collected outside of the wetland boundary.

No recreation impacts or spring developments were observed. Bighorn sheep, deer, and elk sign was observed outside the vegetation quadrats (Appendix C).

CURE 8633

CURE 8633 was located at an elevation of approximately 2,298 m with an overall northeast (100°) aspect and moderate slope variability across the site. Flow from spring sources and wetland vegetation provided evidence of groundwater. The spring type was characterized as helocrene. This GDE site included a total wetland area and perimeter of 0.67 ac (2,731.2 m²) and 522.0 m, respectively (Appendix B, Figure 11).

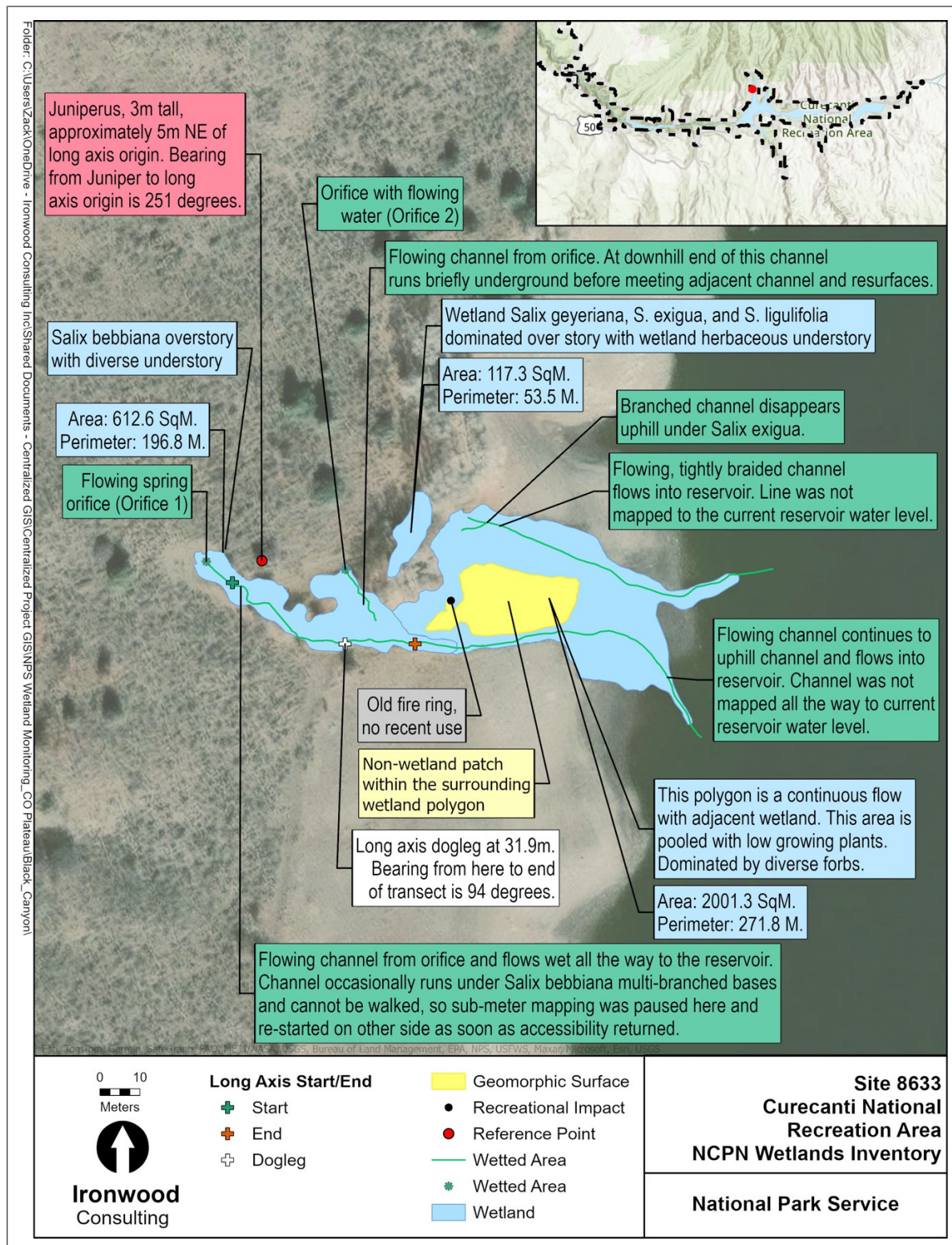


Figure 11. Wetland mapping for CURE 8633.

Fifty-nine plant taxa were documented during the GDE Level II survey, including 33 taxa captured in herbaceous vegetation quadrats and woody vegetation line intercept transects (Appendix D, Table 31, Table 32). The total average herbaceous cover was 87.3%. The dominant herbaceous plants were Baltic rush, beaked sedge, fringed willowherb, and common spikerush (*Eleocharis palustris*) with 14.4%, 12.7%, 9.3%, and 8.2% average absolute cover, respectively. Groundcover included litter, basal, water, soil, and bryophyte with 63.5%, 11.5%, 11.5%, 11.5%, and 1.9% average corner hits, respectively (Table 33). The total average woody line intercept cover was 1.6%. Bebb's willow and Woods' rose (*Rosa woodsii*) had average woody line intercept covers of 0.9% and 0.7% respectively.

The non-native plant species detected at this site included biennial wormwood, black bent (*Agrostis gigantea*), common dandelion, field pennycress, Kentucky bluegrass, meadow fescue (*Lolium pratense*), ox-eye daisy (*Leucanthemum vulgare*), prickly lettuce, redtop, and timothy. The noxious weeds Canada thistle and musk thistle were also present.

According to the herbaceous vegetation quadrat data, this site includes 93.0% average relative cover of native plants and would be ranked as Good for the CNHP Ecological Integrity Assessment Metric V1 (Table 31). Unidentified taxa that were probable native species were included in the total tally for relative plant cover. Canada thistle had an average absolute cover of 0.6%, resulting in a rank of Good for Metric V2. The density of noxious weeds appeared to be greater adjacent to the wetland; however, no cover data were collected outside of the wetland boundary.

An old fire ring was observed at this site. No spring developments were present. Deer and elk sign were observed inside the vegetation quadrats at 15% and 8% frequency, respectively (Appendix C). Deer, elk, and horse sign were also present outside the vegetation quadrats and small, unidentified snails were observed on rocks in the channels.

Table 31. Herbaceous vegetation quadrat data for CURE 8633. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Juncus balticus</i> var. <i>montanus</i>	Baltic rush	N	FACW	14.4	16.5	38
<i>Carex utriculata</i>	beaked sedge	N	OBL	12.7	14.5	62
<i>Epilobium ciliatum</i>	fringed willowherb	N	FACW	9.3	10.7	46
<i>Eleocharis palustris</i>	common spikerush	N	OBL	8.2	9.4	23
<i>Lemna</i> sp.	duckweed	–	–	5.4	6.2	23
<i>Mentha arvensis</i>	field mint	N	FACW	4.2	4.8	15
<i>Carex praeegracilis</i>	blackcreeper sedge	N	FACW	4.0	4.6	23
<i>Polemonium occidentale</i>	western Jacob's-ladder	N	FACW	4.0	4.6	8
<i>Equisetum laevigatum</i>	smooth scouring-rush	N	FACW	3.2	3.6	31
<i>Achillea millefolium</i>	common yarrow	N	FACU	2.8	3.2	15
<i>Agrostis stolonifera</i>	redtop	I	FAC	2.3	2.6	15
<i>Leucanthemum vulgare</i>	ox-eye daisy	I	FACU	2.0	2.3	15
<i>Helianthus nuttallii</i>	Nuttall's sunflower	N	FACW	1.7	1.9	8
<i>Cardamine cordifolia</i>	heartleaf bittercress	N	FACW	1.5	1.8	38
<i>Argentina anserina</i>	silverweed	N	OBL	1.5	1.7	15
<i>Catabrosa aquatica</i>	brookgrass	N	OBL	1.5	1.7	15
<i>Juncus saximontanus</i>	mountain rush	N	FACW	1.5	1.7	15
<i>Viola</i> sp.	violet	–	–	1.1	1.2	23
<i>Sidalcea neomexicana</i>	New Mexico checker-mallow	N	FACW	0.9	1.1	15
<i>Poa pratensis</i>	Kentucky bluegrass	I, N	FAC	0.8	0.9	8
<i>Symphyotrichum</i> sp.	aster	–	–	0.7	0.8	23
<i>Cirsium arvense</i>	Canada thistle	NOX	FAC	0.6	0.7	8
<i>Deschampsia caespitosa</i>	tufted hairgrass	N	FACW	0.5	0.6	8
<i>Agrostis gigantea</i>	redtop	I	FAC	0.5	0.5	15

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 31 (continued). Herbaceous vegetation quadrat data for CURE 8633. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Stellaria longifolia</i>	long-leaved starwort	N	FACW	0.5	0.5	8
<i>Cerastium</i> sp.	mouse-ear chickweed	–	–	0.4	0.4	8
<i>Ranunculus</i> sp.	buttercup	–	–	0.4	0.4	15
<i>Poa glauca</i>	interior bluegrass	N	UPL	0.3	0.4	8
<i>Ranunculus acriformis</i>	sharp-leaf buttercup	N	FACW	0.3	0.4	8
<i>Glyceria striata</i>	fowl mannagrass	N	OBL	0.2	0.2	8
<i>Hypericum scouleri</i>	western St. John's-wort	N	FACW	0.2	0.2	8
Bryophytes	moss	–	–	14.4	16.5	38
Total	–	–	–	87.3	–	–
50% of Total	–	–	–	43.7	–	–
20% of Total	–	–	–	17.5	–	–
Total Native Plant (Metric V1)	–	–	–	–	93.0	–
Total Noxious Weed (Metric V2)	–	–	–	0.6	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 32. Woody vegetation line intercept summary data for CURE 8633.

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Salix bebbiana</i>	Bebb's willow	N	FACW	0.9
<i>Rosa woodsii</i>	Woods' rose	N	FACU	0.7
Total	–	–	–	1.6

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 33. Groundcover quadrat data for CURE 8633.

Groundcover Type	Average Corner Hits (%)
Bryophyte	1.9
Gravel	–
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	11.5
Litter	63.5
Water	11.5
Wood	–
Soil	11.5
Total	100.0

CURE 12006

CURE 12006 was located at an elevation of approximately 2,335 m with an overall southeast (75°) aspect and moderate slope variability across the site. Flow from a spring source and wetland vegetation provided evidence of groundwater. The spring type was characterized as hillslope. This GDE site included a total wetland area and perimeter of 0.04 ac (180.3 m²) and 153.0 m, respectively (Appendix B, Figure 12).

Thirty-three plant taxa were documented during the GDE Level II survey, including 31 taxa captured in herbaceous vegetation quadrats and woody vegetation line intercept transects (Appendix D, Table 34, Table 35). Total average herbaceous cover was 68.3%. The dominant herbaceous plants were beaked sedge and heartleaf bittercress (*Cardamine cordifolia*) with 24.9% and 10.3% average absolute cover, respectively. Groundcover included litter, water, soil, and wood with 56.7%, 21.7%, 15.0%, and 6.7% average corner hits, respectively (Table 36). The total average woody line intercept cover was 16.4%. Whitestem gooseberry, shrubby cinquefoil, and Bebb's willow had average woody line intercept covers of 10.6%, 5.5%, and 0.3% respectively.

The non-native plant species detected at this site included curly dock (*Rumex crispus*), field pennycress, Kentucky bluegrass, ox-eye daisy, redtop, stinging nettle, and timothy. The noxious weed Canada thistle was also present.

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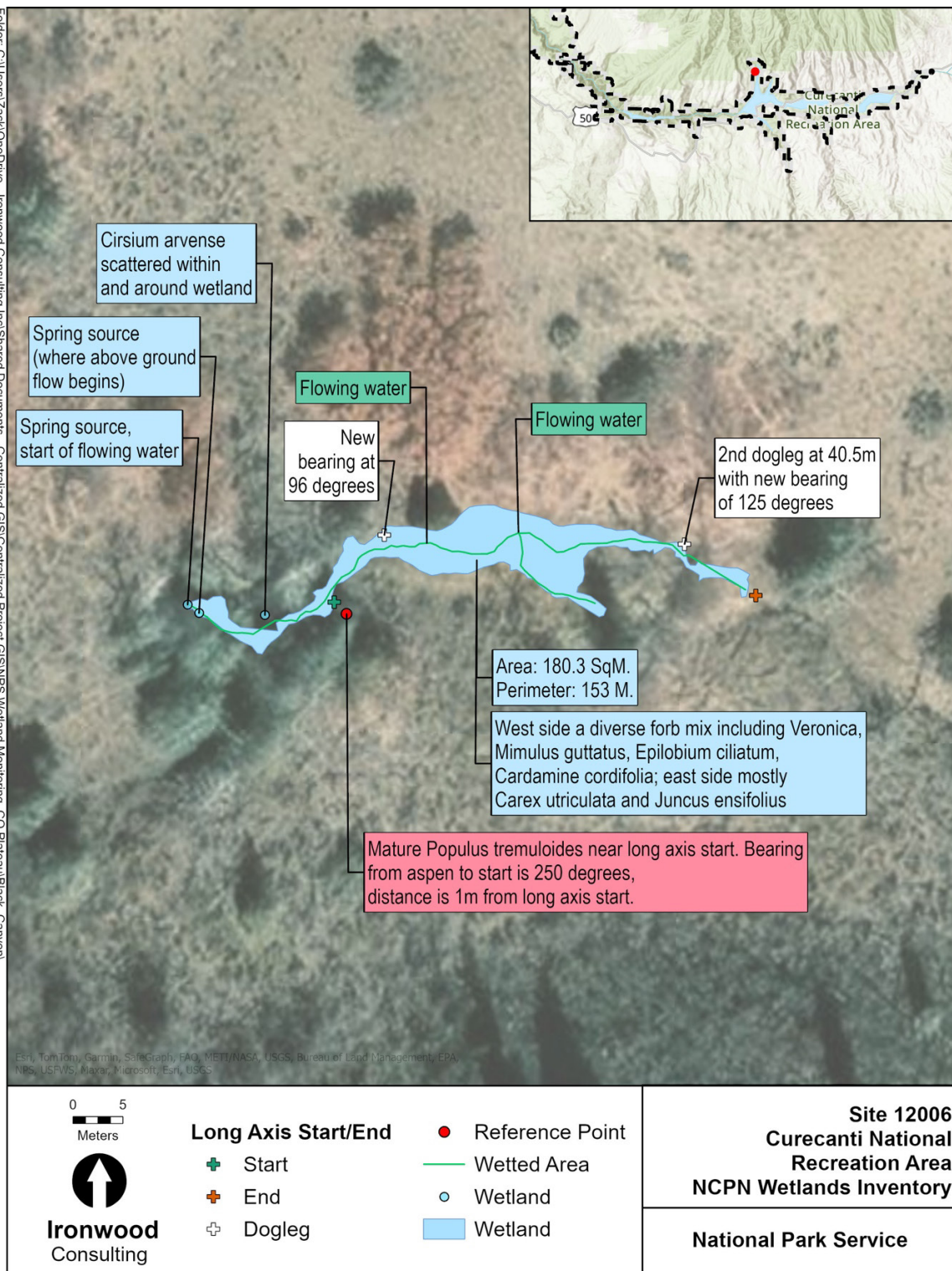


Figure 12. Wetland mapping for CURE 12006.

Table 34. Herbaceous vegetation quadrat data for CURE 12006. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Carex utriculata</i>	beaked sedge	N	OBL	24.9	36.5	47
<i>Cardamine cordifolia</i>	heartleaf bittercress	N	FACW	10.3	15.0	33
<i>Epilobium ciliatum</i>	fringed willowherb	N	FACW	5.1	7.4	47
<i>Mentha arvensis</i>	field mint	N	FACW	4.5	6.5	27
<i>Agrostis stolonifera</i>	redtop	I	FAC	4.1	6.0	27
<i>Heracleum maximum</i>	cow parsnip	N	FAC	3.2	4.7	7
<i>Poa glauca</i>	interior bluegrass	N	UPL	2.9	4.2	20
<i>Achillea millefolium</i>	common yarrow	N	FACU	1.9	2.7	7
<i>Veronica anagallis-aquatica</i>	water speedwell	N	OBL	1.6	2.3	13
<i>Polygonum ramosissimum</i>	bushy knotweed	N	FAC	1.3	2.0	7
<i>Thlaspi arvense</i>	field pennycress	I	UPL	1.0	1.5	13
<i>Eleocharis palustris</i>	common spikerush	N	OBL	0.9	1.4	7
<i>Poa pratensis</i>	Kentucky bluegrass	I, N	FAC	0.9	1.4	7
<i>Viola adunca</i>	hook-spur violet	N	FAC	0.8	1.2	7
<i>Poa palustris</i>	fowl bluegrass	N	FAC	0.7	1.0	7
<i>Leucanthemum vulgare</i>	ox-eye daisy	I	FACU	0.6	0.9	13
<i>Veronica americana</i>	American brooklime	N	OBL	0.6	0.9	13
<i>Juncus saximontanus</i>	mountain rush	N	FACW	0.5	0.8	7
<i>Rumex crispus</i>	curly dock	I	FAC	0.5	0.8	7
<i>Glyceria striata</i>	fowl mannagrass	N	OBL	0.5	0.7	33
<i>Symphyotrichum</i> sp.	aster	–	–	0.4	0.6	7
<i>Rorippa palustris</i>	bog yellowcress	N	OBL	0.3	0.5	7
<i>Ranunculus acriformis</i>	sharp-leaf buttercup	N	FACW	0.2	0.3	13
<i>Rumex salicifolius</i>	willow dock	N	FACW	0.2	0.3	7

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 34 (continued). Herbaceous vegetation quadrat data for CURE 12006. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Hackelia floribunda</i>	showy stickseed	N	FACU	0.1	0.2	7
<i>Urtica dioica</i>	stinging nettle	I, N	FAC	0.1	0.2	7
<i>Conioselinum scopulorum</i>	rock lovage	N	FACW	0.1	0.1	7
<i>Phleum pratense</i>	timothy	I	FAC	0.1	0.1	7
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	68.3	–	–
50% of Total	–	–	–	34.2	–	–
20% of Total	–	–	–	13.7	–	–
Total Native Plant (Metric V1)	–	–	–	–	89.2	–
Total Noxious Weed (Metric V2)	–	–	–	–	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 35. Woody vegetation line intercept summary data for CURE 12006.

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Ribes inerme</i>	whitestem gooseberry	N	FAC	10.6
<i>Dasiphora floribunda</i>	shrubby cinquefoil	N	FAC	5.5
<i>Salix bebbiana</i>	Bebb's willow	N	FACW	0.3
Total	–	–	–	16.4

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 36. Groundcover quadrat data for CURE 12006.

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	–
Litter	56.7
Water	21.7
Wood	6.7
Soil	15.0
Total	100.0

According to the herbaceous vegetation quadrat data, this site includes 89.2% average relative cover of native plants and would be ranked as Fair for the CNHP Ecological Integrity Assessment Metric V1 (Table 34). Unidentified taxa that were probable native species were included in the total tally for relative plant cover. Canada thistle occurred at this site, although it was not captured by the herbaceous vegetation quadrats, resulting in a ranking of Good for Metric V2.

No recreation impacts or spring developments were observed. Livestock, deer, and elk sign were observed outside the vegetation quadrats (Appendix C).

Neversink Cottonwood Gallery – CURE 324

CURE 324 in the Neversink cottonwood gallery was located at an elevation of approximately 2,282 m with an overall northwest (246°) aspect and had low slope variability across the site. The mapped wetland area and perimeter were 0.06 ac (230.2 m²) and 88.0 m, respectively (Appendix B, Figure 13).

Twenty-three plant taxa were documented during the GDE Level II survey, including 17 taxa captured in herbaceous vegetation quadrats (Appendix D, Table 37). Total average herbaceous cover was 53.2%. The dominant herbaceous plants were water smartweed (*Polygonum amphibium*) and beaked sedge with 21.7% and 13.7% average absolute cover, respectively. Groundcover included litter, water, basal, and soil with 84.8%, 13.0%, 1.1%, and 1.1% average corner hits, respectively (Table 38). There was no woody line intercept cover.

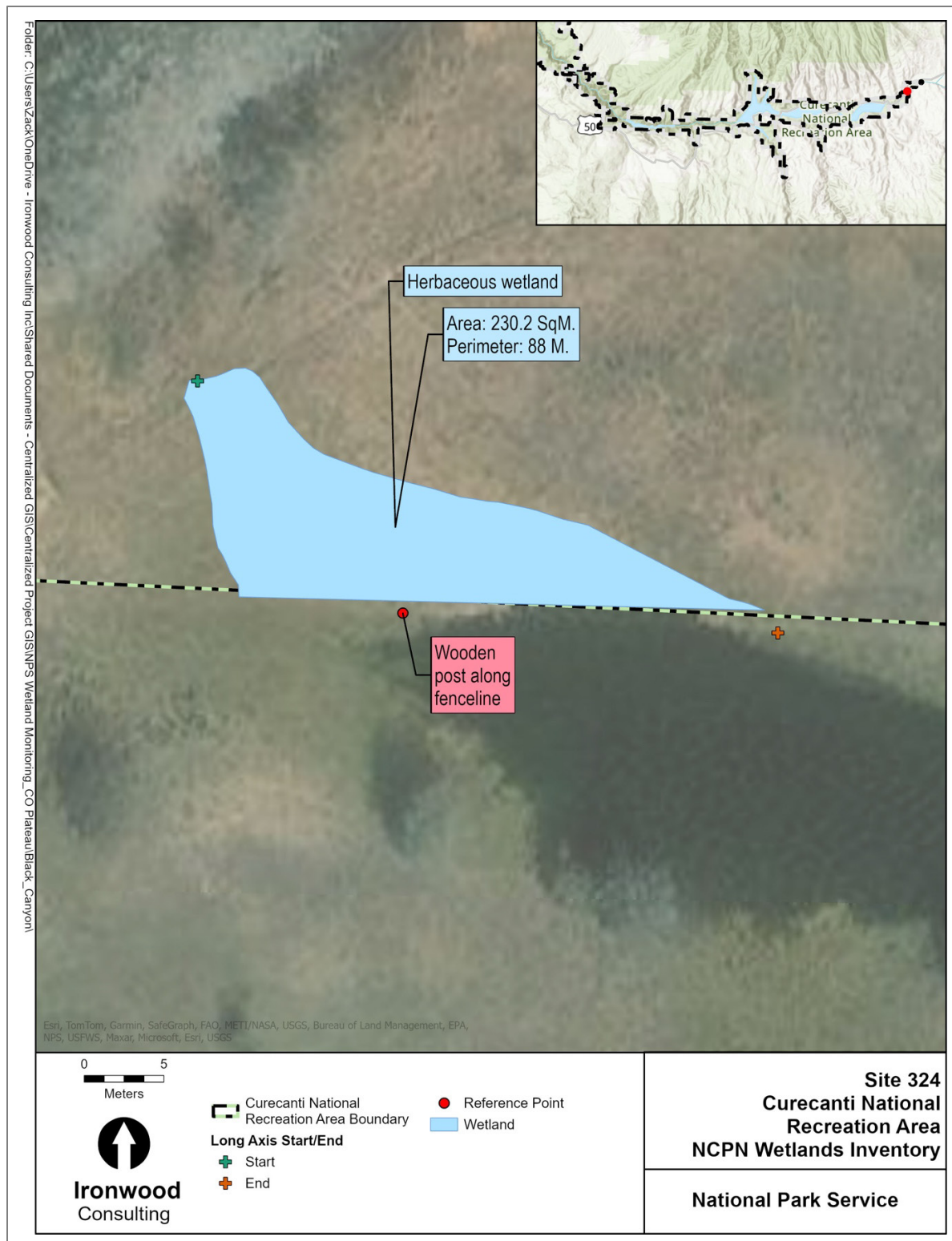


Figure 13. Wetland mapping for Neversink Cottonwood Gallery - CURE 324.

Table 37. Herbaceous vegetation quadrat data for CURE 324. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Polygonum amphibium</i>	water smartweed	N	OBL	21.7	40.8	91
<i>Carex utriculata</i>	beaked sedge	N	OBL	13.7	25.8	52
<i>Potamogeton pusillus</i>	dwarf pondweed	N	OBL	5.6	10.5	9
<i>Rorippa palustris</i>	bog yellowcress	N	OBL	3.8	7.2	48
<i>Thlaspi arvense</i>	field pennycress	I	UPL	2.0	3.8	22
<i>Epilobium ciliatum</i>	fringed willowherb	N	FACW	1.4	2.6	39
unknown perennial graminoid	unknown perennial graminoid	–	–	1.4	2.6	30
<i>Carex</i> sp.	sedge	–	–	0.9	1.6	13
<i>Ranunculus gmelinii</i>	lesser yellow water buttercup	N	FACW	0.8	1.6	13
<i>Barbarea vulgaris</i>	European wintercress	I	FAC	0.6	1.1	4
<i>Carex hystericina</i>	bottlebrush sedge	N	OBL	0.3	0.7	4
<i>Lemna minuta</i>	tiny duckweed	N	OBL	0.3	0.7	4
<i>Veronica anagallis-aquatica</i>	water speedwell	N	OBL	0.3	0.7	9
<i>Cardamine pensylvanica</i>	quaker bittercress	N	FACW	0.04	0.1	4
<i>Cirsium arvense</i>	Canada thistle	NOX	FAC	0.04	0.1	4
<i>Galium trifidum</i>	small bedstraw	N	FACW	0.04	0.1	4
<i>Sium suave</i>	water parsnip	N	OBL	0.04	0.1	4
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	53.2	–	–
50% of Total	–	–	–	26.6	–	–
20% of Total	–	–	–	10.6	–	–
Total Native Plant (Metric V1)	–	–	–	–	92.4	–
Total Noxious Weed (Metric V2)	–	–	–	0.04	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 38. Groundcover quadrat data for CURE 324.

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	1.1
Litter	84.8
Water	13.0
Wood	–
Soil	1.1
Total	100.0

The non-native plant species detected at this site included European wintercress (*Barbarea vulgaris*), field pennycress, lambsquarter (*Chenopodium album*), and yellow salsify. The noxious weed Canada thistle was also present.

According to the herbaceous vegetation quadrat data, this site includes 92.4% average relative cover of native plants and would be ranked as Fair for the CNHP Ecological Integrity Assessment Metric V1 (Table 37). Unidentified taxa that were probable to be native species were included in the total tally for relative plant cover. Canada thistle had an average absolute cover of 0.5%, resulting in a rank of Good for Metric V2. There was no average absolute cover of noxious weeds; however, since Canada thistle was present at this site, Metric V2 would receive a ranking of Good.

There were no recreation impacts, spring developments, or wildlife sign observed (Appendix C).

Neversink Cottonwood Gallery – CURE 325

CURE 325 in the Neversink cottonwood gallery was located at an elevation of approximately 2,296 m with an overall southeast (134°) aspect and had low slope variability across the site. The mapped wetland area and perimeter were 1.03 ac (4,183.9 m²) and 1,438.1 m, respectively (Appendix B, Figure 14, Table 39).

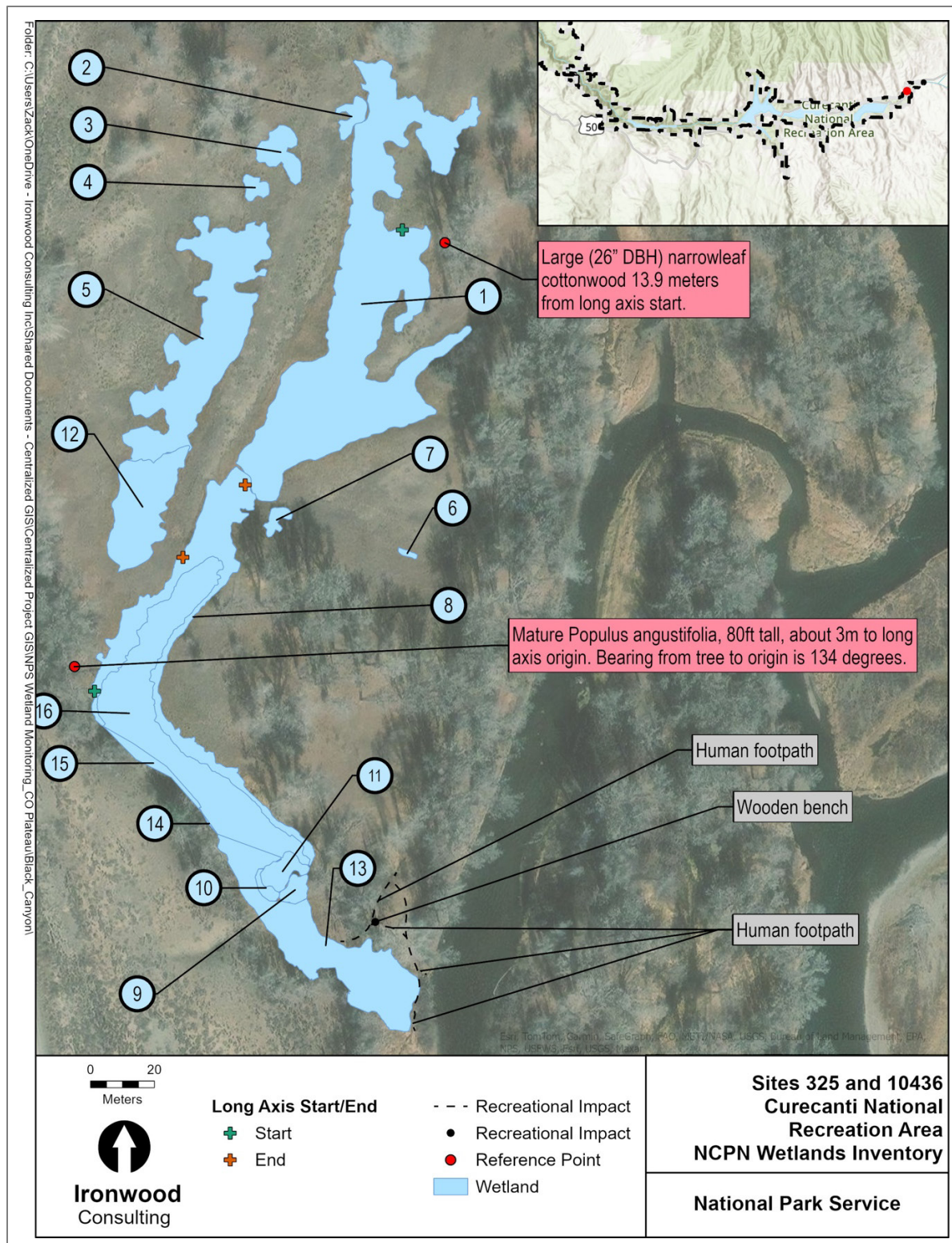


Figure 14. Wetland mapping for Neversink Cottonwood Gallery - CURE 325 and 10436.

Table 39. Continued legend for Figure 7, CURE 325 and 10436.

Wetland ID	Site Name	Comments	Area (m ²)	Perimeter (m)
1	10436	—	3,301.7	603.3
2	10436	<i>Juncus balticus</i> is dominant wetland species.	69.5	47.2
3	10436	<i>Juncus balticus</i> is dominant wetland species.	146.6	61.7
4	10436	<i>Juncus balticus</i> is dominant wetland species.	47.2	30.0
5	10436	Dominant wetland species <i>Juncus balticus</i> , <i>Carex utriculata</i> , and <i>Carex aquatilis</i> with invading weedy species.	1,332.8	326.3
6	325	<i>Juncus balticus</i> is dominant wetland species.	10.7	15.4
7	325	<i>Juncus balticus</i> is dominant wetland species.	42.5	34.3
8	325	<i>Typha latifolia</i> , <i>Carex utriculata</i> , and <i>Carex nebrascensis</i> are dominant wetland species. The gap in the middle of this polygon represents pooled water with wetland plants and should be included in the polygon rather than represented as a gap.	959.8	520.3
9	325	Dominant wetland species are <i>Polygonum amphibium</i> , <i>Carex utriculata</i> , and <i>Mentha arvensis</i> .	60.8	33.1
10	325	Dominant wetland species are <i>Phalaris arundinacea</i> and <i>Polygonum amphibium</i> .	36.7	29.0
11	325	<i>Salix exigua</i> - <i>Salix lucida</i> complex.	99.6	47.0
12	325	Associated wetland. Dominant wetland plants are <i>Carex nebrascensis</i> , <i>Thlaspi arvense</i> , and <i>Lepidium latifolium</i> .	561.8	120.9
13	325	Dominant wetland plants are <i>Typha latifolia</i> , <i>Salix lucida</i> , <i>Salix monticola</i> , <i>Crataegus saligna</i> , and <i>Carex utriculata</i> .	1,006.2	235.5
14	325	Dominant wetland plants are <i>Typha latifolia</i> , <i>Salix lucida</i> , <i>Salix monticola</i> , <i>Crataegus saligna</i> , and <i>Carex utriculata</i> .	2.1	16.3
15	325	Dominant wetland plants are <i>Typha latifolia</i> , <i>Salix lucida</i> , <i>Salix monticola</i> , <i>Crataegus saligna</i> , and <i>Carex utriculata</i> .	210.6	95.6
16	325	This polygon represents pooled water with wetland plants within the pool.	1,326.8	301.0

Twenty-four plant taxa were documented during the GDE Level II survey, including 14 taxa captured in herbaceous vegetation quadrats (Appendix D, Table 40). Total average herbaceous cover was 68.9%. The dominant herbaceous plants were beaked sedge, Baltic rush, and water smartweed with 19.1%, 13.1%, and 10.5% average absolute cover, respectively. Groundcover included litter, water, soil, and basal with 80.8%, 7.7%, 7.7%, and 3.8% average corner hits, respectively (Table 41). There was no woody line intercept cover.

Table 40. Herbaceous vegetation quadrat data for CURE 325. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Carex utriculata</i>	beaked sedge	N	OBL	19.1	27.7	54
<i>Juncus balticus</i> var. <i>montanus</i>	Baltic rush	N	FACW	13.1	19.0	46
<i>Polygonum amphibium</i>	water smartweed	N	OBL	10.5	15.3	54
<i>Typha latifolia</i>	broad-leaved cattail	N	OBL	10.4	15.1	23
<i>Lemna</i> sp.	duckweed	–	–	6.0	8.7	31
<i>Carex nebrascensis</i>	Nebraska sedge	N	OBL	5.2	7.6	23
<i>Bromus inermis</i>	smooth brome	I	UPL	2.8	4.1	31
<i>Mentha arvensis</i>	field mint	N	FACW	0.4	0.6	8
<i>Polygonum persicaria</i>	lady's-thumb	I	FACW	0.4	0.6	8
<i>Agrostis stolonifera</i>	redtop	I	FAC	0.2	0.3	8
<i>Cirsium arvense</i>	Canada thistle	NOX	FAC	0.2	0.3	8
<i>Ranunculus gmelinii</i>	lesser yellow water buttercup	N	FACW	0.2	0.3	15
<i>Erigeron lonchophyllus</i>	longleaf daisy	N	FACW	0.2	0.2	8
<i>Myriophyllum sibiricum</i>	Siberian water-milfoil	N	OBL	0.2	0.2	8
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	68.9	–	–
50% of Total	–	–	–	34.5	–	–
20% of Total	–	–	–	13.8	–	–
Total Native Plant (Metric V1)	–	–	–	–	94.6	–
Total Noxious Weed (Metric V2)	–	–	–	0.2	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 41. Groundcover quadrat data for CURE 325.

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	–
Boulder	–
Bedrock	3.8
Basal	80.8
Litter	7.7
Water	–
Wood	7.7
Soil	–
Total	100.0

The non-native plant species detected at this site included field pennycress, redtop, smooth brome, and lady's-thumb. The noxious weeds broadleaved pepperweed (*Lepidium latifolium*), Canada thistle, and cheatgrass were also present.

According to the herbaceous vegetation quadrat data, this site includes 94.6% average relative cover of native plants and would be ranked as Fair for the CNHP Ecological Integrity Assessment Metric V1 (Table 40). Unidentified taxa that were probable native species were included in the total tally for relative plant cover. Canada thistle had an average absolute cover of 0.2%, resulting in a rank of Good for Metric V2.

There were no spring developments. Recreation impacts at this site included foot trails and a wooden bench. Unidentified fish and aquatic snails were observed (Appendix C).

Neversink Cottonwood Gallery – CURE 328

CURE 328 in the Neversink cottonwood gallery was located at an elevation of approximately 2,284 m with an overall southwest (214°) aspect and had low slope variability across the site. The mapped wetland area and perimeter were 0.13 ac (522.1 m²) and 99.8 m, respectively (Appendix B, Figure 15).

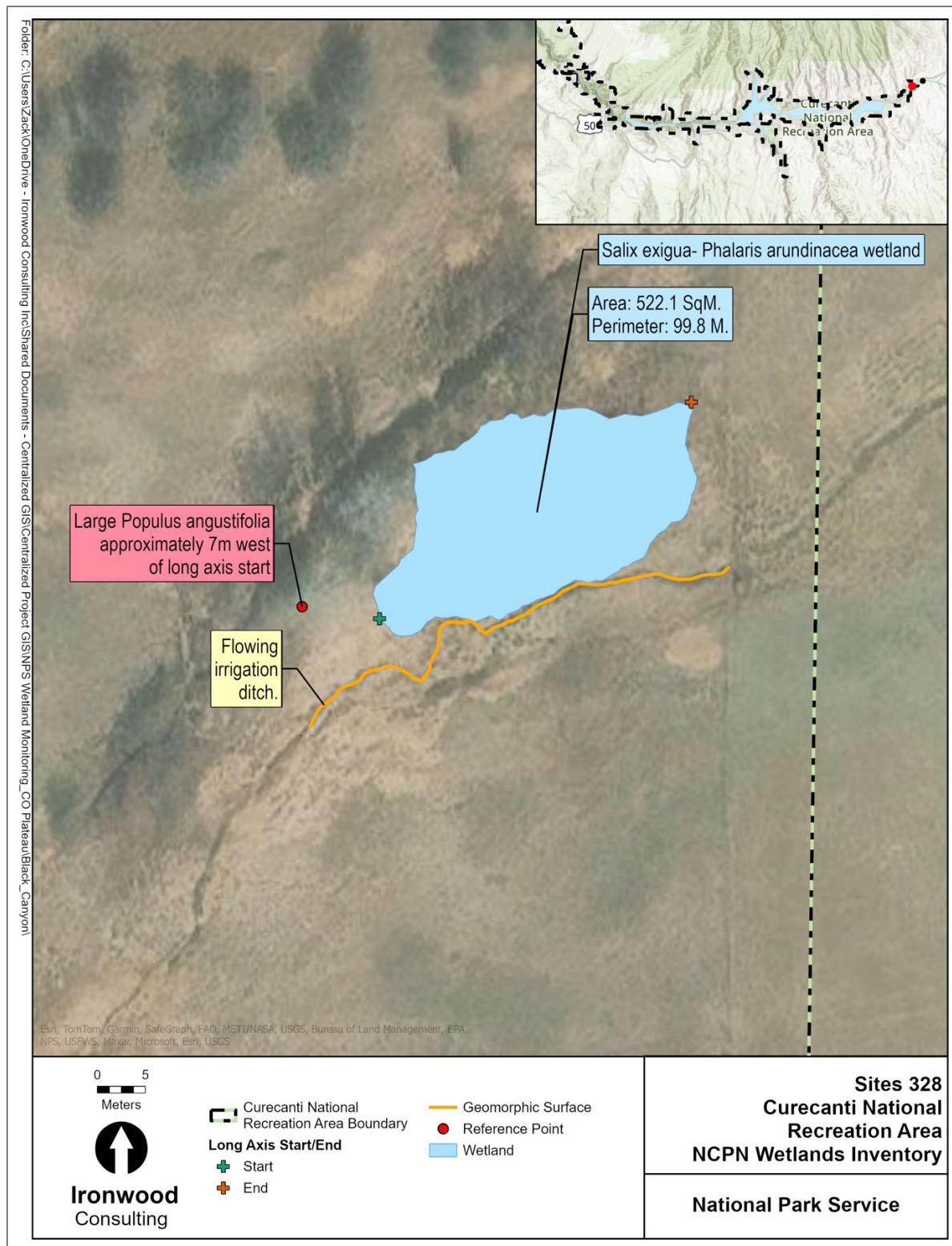


Figure 15. Wetland mapping for Neversink Cottonwood Gallery - CURE 328.

Thirty-two plant taxa were documented during the GDE Level II survey, including 26 taxa captured in herbaceous vegetation quadrats and woody vegetation line intercept transects (Appendix D, Table 42, Table 43). Total average herbaceous cover was 65.3%. The dominant herbaceous plants were water bluegrass (*Poa* sp.), reed canary grass, and beaked sedge with 17.4%, 10.8%, and 8.3% average absolute cover, respectively. Groundcover included litter, water, basal, and soil with 84.8%, 13.0%, 1.1%, and 1.1% average corner hits, respectively (Table 44). The total average woody line intercept cover was 24.0%. Coyote willow, Geyer's willow, and shining willow had an average cover of 13.8%, 9.6%, and 0.6%, respectively.

The non-native plant species detected at this site included field pennycress, Kentucky bluegrass, and smooth brome. The noxious weed Canada thistle was also present.

According to the herbaceous vegetation quadrat data, this site includes 92.9% average relative cover of native plants and would be ranked as Fair for the CNHP Ecological Integrity Assessment Metric V1 (Table 42). Unidentified taxa that were probable native species were included in the total tally for relative plant cover. While Canada thistle was not captured in the herbaceous vegetation quadrats, it was present, resulting in a rank of Good for Metric V2.

There were no recreation impacts or spring developments. Elk sign was observed outside the herbaceous vegetation quadrats (Appendix C).

Table 42. Herbaceous vegetation quadrat data for CURE 328. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Poa</i> sp.	bluegrass (sp).	–	–	17.4	26.6	44
<i>Phalaris arundinacea</i>	reed canary grass	N	FACW	10.8	16.6	28
<i>Carex utriculata</i>	beaked sedge	N	OBL	8.3	12.8	39
unknown perennial graminoid	unknown perennial graminoid	–	–	4.2	6.4	6
<i>Glyceria grandis</i>	American mannagrass	N	OBL	4.1	6.2	17
<i>Argentina anserina</i>	silverweed	N	OBL	3.7	5.7	22
<i>Carex pellita</i>	woolly sedge	N	OBL	3.7	5.6	22
<i>Polygonum amphibium</i>	water smartweed	N	OBL	3.3	5.0	50
<i>Carex praegracilis</i>	blackcreeper sedge	N	FACW	2.6	4.0	11
<i>Rumex aquaticus</i>	western dock	N	FACW	1.8	2.7	11
<i>Mentha arvensis</i>	field mint	N	FACW	1.0	1.5	17
<i>Potentilla</i> sp.	cinquefoil	–	–	0.8	1.3	6
<i>Galium boreale</i>	northern bedstraw	N	FACU	0.6	0.9	6
<i>Senecio bigelovii</i>	nodding ragwort	N	UPL	0.5	0.8	11
<i>Teucrium canadense</i>	Canada germander	N	FAC	0.5	0.8	11
<i>Thlaspi arvense</i>	field pennycress	I	UPL	0.5	0.8	6
<i>Scirpus microcarpus</i>	panicked bulrush	N	OBL	0.4	0.7	11
<i>Geum macrophyllum</i>	largeleaf avens	N	FAC	0.3	0.5	11
<i>Stellaria longifolia</i>	long-leaved starwort	N	FACW	0.2	0.3	11
<i>Epilobium ciliatum</i>	fringed willowherb	N	FACW	0.2	0.3	6
<i>Thermopsis montana</i>	montane golden pea	N	FAC	0.2	0.3	6
<i>Sium suave</i>	water parsnip	N	OBL	0.1	0.2	6
<i>Lycopus americanus</i>	American bugleweed	N	OBL	0.1	0.1	6
Bryophytes	moss	–	–	–	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 42 (continued). Herbaceous vegetation quadrat data for CURE 328. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
Total	–	–	–	65.3	–	–
50% of Total	–	–	–	32.6	–	–
20% of Total	–	–	–	13.1	–	–
Total Native Plant (Metric V1)	–	–	–	–	92.9	–
Total Noxious Weed (Metric V2)	–	–	–	–	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 43. Woody vegetation line intercept summary data for CURE 328.

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Salix exigua</i>	coyote willow	N	FACW	13.8
<i>Salix geyeriana</i>	Geyer's willow	N	FACW	9.6
<i>Salix lucida</i>	shining willow	N	FACW	0.6
Total	–	–	–	24.0

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 44. Groundcover quadrat data for CURE 328.

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	1.4
Litter	75.0
Water	20.8
Wood	–
Soil	2.8
Total	100.0

Neversink Cottonwood Gallery – CURE 4471

CURE 4471 in the Neversink cottonwood gallery was located at an elevation of approximately 2,283 m with an overall southwest (198°) aspect and had low slope variability across the site. The mapped wetland area and perimeter were 0.49 ac (1,985.1 m²) and 698.3 m, respectively (Appendix B, Figure 16).

Twenty-two plant taxa were documented during the GDE Level II survey, including 16 taxa captured in herbaceous vegetation quadrats and woody vegetation line intercept transects (Appendix D, Table 45, Table 46). Total average herbaceous cover was 14.7%. The dominant herbaceous plants were Canada goldenrod, Kentucky bluegrass, and field mint with 3.6%, 2.9%, and 1.4% average absolute cover, respectively. Groundcover included litter, water, gravel, basal, and soil with 82.1%, 7.1%, 3.6%, 3.6%, and 3.6% average corner hits, respectively (Table 47). Total average woody line intercept cover was 39.0%. Coyote willow and twinberry honeysuckle (*Lonicera involucrata*) had average cover values of 36.8% and 2.2%, respectively.

The non-native plant species detected at this site included Kentucky bluegrass, ox-eye daisy, redtop, and smooth brome. The noxious weed Canada thistle was also present.

According to the herbaceous vegetation quadrat data, this site includes 92.4% average relative cover of native plants and would be ranked as Fairly Poor for the CNHP Ecological Integrity Assessment Metric V1 (Table 45). Although Canada thistle was not captured by the herbaceous vegetation quadrats, it was present, resulting in a Metric V2 ranking of Good.

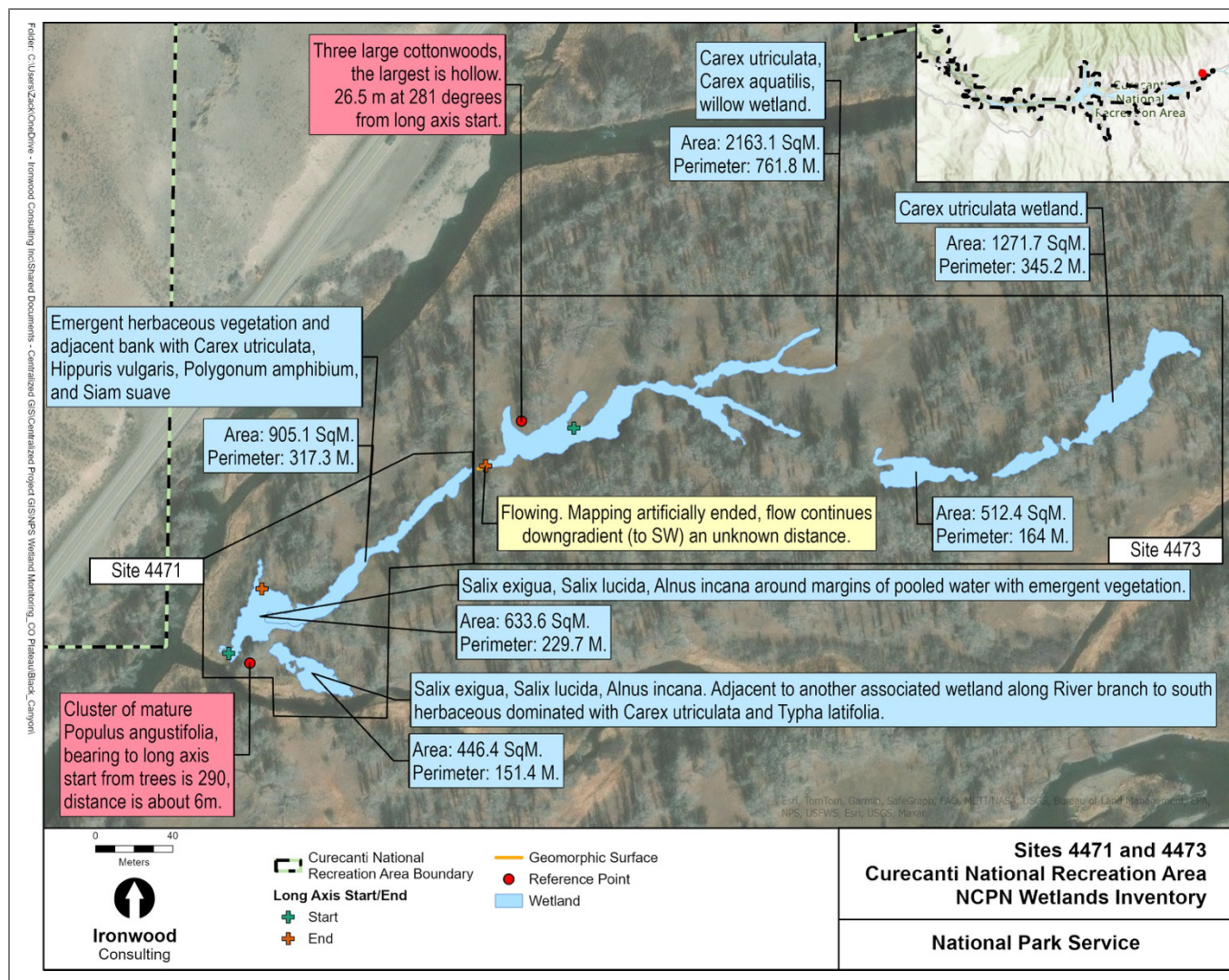


Figure 16. Wetland mapping for Neversink Cottonwood Gallery - CURE 4471 and 4473.

Table 45. Herbaceous vegetation quadrat data for CURE 4471. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Solidago canadensis</i>	Canada goldenrod	N	FACU	3.6	24.3	43
<i>Poa pratensis</i>	Kentucky bluegrass	I, N	FAC	2.9	19.4	71
<i>Mentha arvensis</i>	field mint	N	FACW	1.4	9.7	14
<i>Agrostis stolonifera</i>	redtop	I, N	FAC	1.1	7.8	43
<i>Pascopyrum smithii</i>	western wheatgrass	N	FACU	1.1	7.8	57
<i>Cirsium arvense</i>	Canada thistle	NOX	FAC	1.0	6.8	43
<i>Phalaris arundinacea</i>	reed canary grass	N	FACW	1.0	6.8	29
<i>Achillea millefolium</i>	common yarrow	N	FACU	0.9	5.8	14
<i>Galium boreale</i>	northern bedstraw	N	FACU	0.6	3.9	14
<i>Bromus inermis</i>	smooth brome	I	UPL	0.4	2.9	29
<i>Vicia americana</i>	American vetch	N	FAC	0.3	1.9	14
<i>Carex pellita</i>	woolly sedge	N	OBL	0.1	1.0	14
<i>Equisetum arvense</i>	field horsetail	N	FAC	0.1	1.0	14
<i>Thermopsis montana</i>	montane golden pea	N	UPL	0.1	1.0	14
Bryophytes	moss	–	–	0.7	–	43
Total	–	–	–	14.7	–	–
50% of Total	–	–	–	7.4	–	–
20% of Total	–	–	–	2.9	–	–
Total Native Plant (Metric V1)	–	–	–	–	63.1	–
Total Noxious Weed (Metric V2)	–	–	–	1.0	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 46. Woody vegetation line intercept summary data for CURE 4471.

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Salix exigua</i>	coyote willow	N	FACW	36.8
<i>Lonicera involucrata</i>	twinberry honeysuckle	N	FAC	2.2
Total	–	–	–	39.0

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 47. Groundcover quadrat data for CURE 4471.

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	3.6
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	3.6
Litter	82.1
Water	7.1
Wood	–
Soil	3.6
Total	100.0

Scattered trash was observed at this site. There were no spring developments or wildlife sign observed (Appendix C).

Neversink Cottonwood Gallery – CURE 4473

CURE 4473 in the Neversink cottonwood gallery was located at an elevation of approximately 2,282 m with an overall southwest (255°) aspect and had low slope variability across the site. The mapped wetland area and perimeter were 0.98 ac (3,947.2 m²) and 1,271.1 m, respectively (Appendix B, Figure 17).

Twenty-nine plant taxa were documented during the GDE Level II survey, including 17 taxa captured in herbaceous vegetation quadrats and woody vegetation line intercept transects (Appendix D, Table 48, Table 49). Total average herbaceous cover was 76.2%. The dominant herbaceous plants were beaked sedge, Siberian water-milfoil, and tiny duckweed with 22.7%, 13.6%, and 12.0% average absolute cover, respectively. Groundcover included litter, bryophyte, basal, litter, and soil with 80.8%, 11.5%, 3.8%, 1.9%, and 1.9% average corner hits, respectively (Table 50). The total average woody line intercept cover was 4.6%. Mountain willow and gray alder had average woody line intercept covers of 4.3% and 0.3%, respectively.

The non-native plant species detected at this site included Kentucky bluegrass and redtop. No noxious weeds were documented.

According to the herbaceous vegetation quadrat data, this site includes 100.0% average relative cover of native plants and would be ranked as Excellent for the CNHP Ecological Integrity Assessment Metric V1 (Table 48). Since there were no noxious weeds documented; the Metric V2 would also receive a ranking of Excellent.

There were no recreation impacts or spring developments at this site. Deer sign was observed outside of the herbaceous vegetation quadrats (Appendix C).

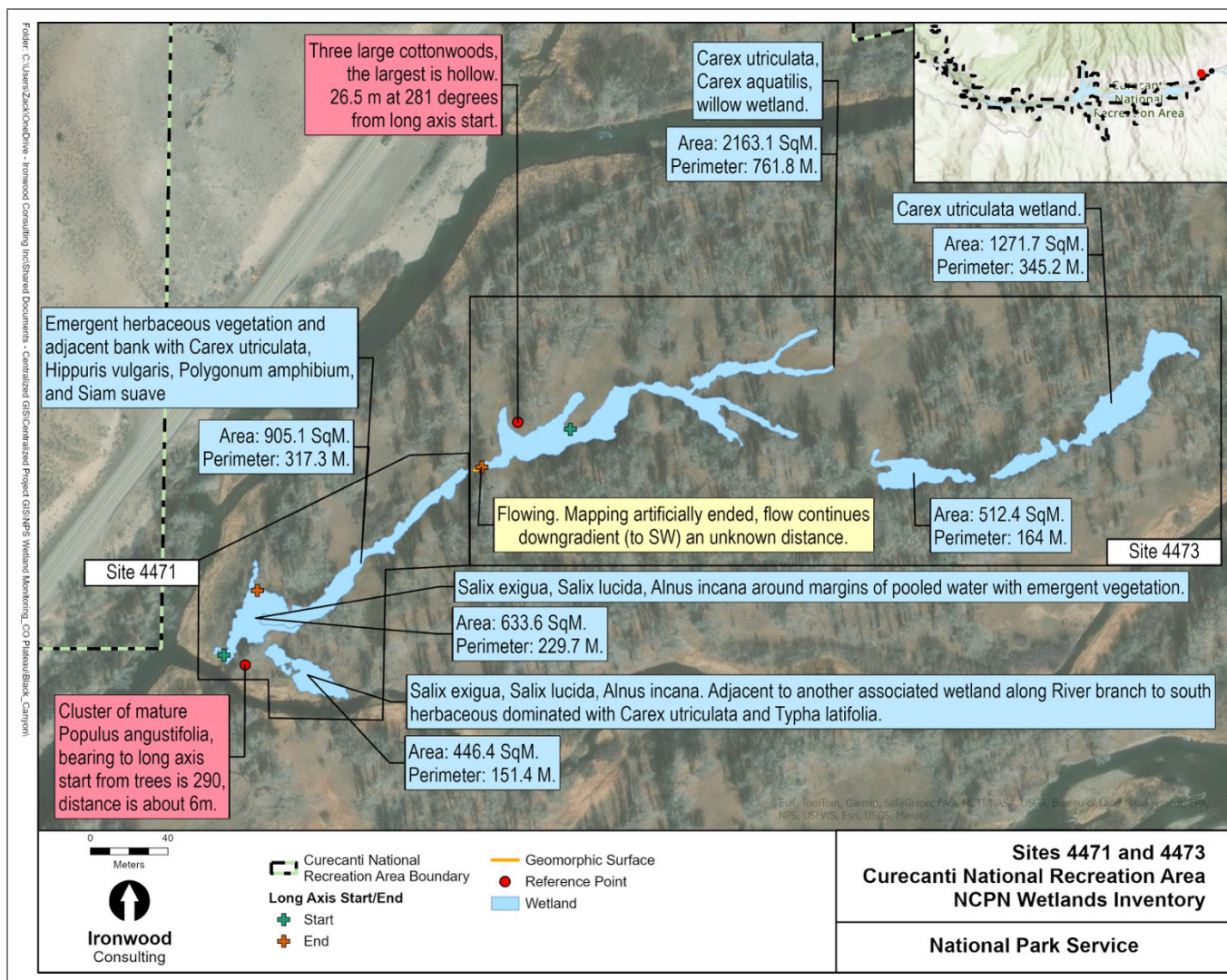


Figure 17. Wetland mapping for Neversink Cottonwood Gallery - CURE 4473.

Table 48. Herbaceous vegetation quadrat data for CURE 4473. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Carex utriculata</i>	beaked sedge	N	OBL	22.7	29.8	38
<i>Myriophyllum sibiricum</i>	Siberian water-milfoil	N	OBL	13.6	17.9	46
<i>Lemna minuta</i>	tiny duckweed	N	OBL	12.0	15.7	54
<i>Potamogeton foliosus</i>	leafy pondweed	N	OBL	10.8	14.2	46
<i>Utricularia macrorhiza</i>	common bladderwort	N	OBL	5.4	7.1	23
<i>Polygonum amphibium</i>	water smartweed	N	OBL	2.8	3.6	23
<i>Hippuris vulgaris</i>	common mare's-tail	N	OBL	2.7	3.5	23
<i>Deschampsia caespitosa</i>	tufted hairgrass	N	FACW	2.2	2.8	8
<i>Carex aquatilis</i>	water sedge	N	OBL	1.9	2.5	8
<i>Ranunculus gmelinii</i>	lesser yellow water buttercup	N	FACW	1.4	1.8	8
<i>Epilobium palustre</i>	marsh willow-herb	N	OBL	0.2	0.3	8
<i>Galium trifidum</i>	small bedstraw	N	FACW	0.2	0.2	8
<i>Mimulus</i> sp.	monkeyflower	–	–	0.2	0.2	8
<i>Sparganium angustifolium</i>	narrowleaved burr-reed	N	OBL	0.2	0.2	8
<i>Epilobium ciliatum</i>	fringed willowherb	N	FACW	0.1	0.1	8
Bryophytes	moss	–	–	4.2	–	23
Total	–	–	–	76.2	–	–
50% of Total	–	–	–	38.1	–	–
20% of Total	–	–	–	15.2	–	–
Total Native Plant (Metric V1)	–	–	–	–	100.0	–
Total Noxious Weed (Metric V2)	–	–	–	–	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 49. Woody vegetation line intercept summary data for CURE 4473.

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Salix monticola</i>	mountain willow	N	OBL	4.3
<i>Alnus incana</i>	gray alder	N	FACW	0.3
Total	–	–	–	4.6

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 50. Groundcover quadrat data for CURE 4473.

Groundcover Type	Average Corner Hits (%)
Bryophyte	11.5
Gravel	–
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	3.8
Litter	1.9
Water	80.8
Wood	–
Soil	1.9
Total	100.0

Neversink Cottonwood Gallery – CURE 10436

CURE 10436 was located at an elevation of approximately 2,280 m with an overall southwest (208°) aspect and had low slope variability across the site. The mapped wetland area and perimeter were 1.21 ac (4,897.9 m²) and 1,068.5 m, respectively (Appendix B, Figure 18, Table 51).

Twenty-eight plant taxa were documented during the GDE Level II survey, including 21 taxa captured in herbaceous vegetation quadrats and woody vegetation line intercept transects (Appendix D, Table 52, Table 53). Total average herbaceous cover was 54.2%. The dominant herbaceous plants were water wedge (*Carex aquatilis*) and beaked sedge with 22.9% and 9.8% average absolute cover, respectively. Groundcover included litter, soil, and basal with 86.9%, 8.3%, and 4.8% average corner hits, respectively (Table 54). The total average woody line intercept cover was 5.8%. Shining willow, coyote willow, and narrow-leaved cottonwood (*Populus angustifolia*) had average covers of 5.6%, 0.1%, and 0.02%, respectively.

The non-native plant species detected at this site included common dandelion, European wintercress, field pennycress, herb sophia, Kentucky bluegrass, prickly lettuce, and smooth brome. The noxious weed Canada thistle was also present.

According to the herbaceous vegetation quadrat data, this site includes 90.6% average relative cover of native plants and would be ranked as Fair for the CNHP Ecological Integrity Assessment Metric V1 (Table 52). Unidentified taxa that were probable native species were included in the total tally for relative plant cover. Canada thistle had an average absolute cover of 0.5%, resulting in a rank of Good for Metric V2.

There were no recreation impacts or spring developments. Deer sign was observed outside of the herbaceous vegetation quadrats (Appendix C).

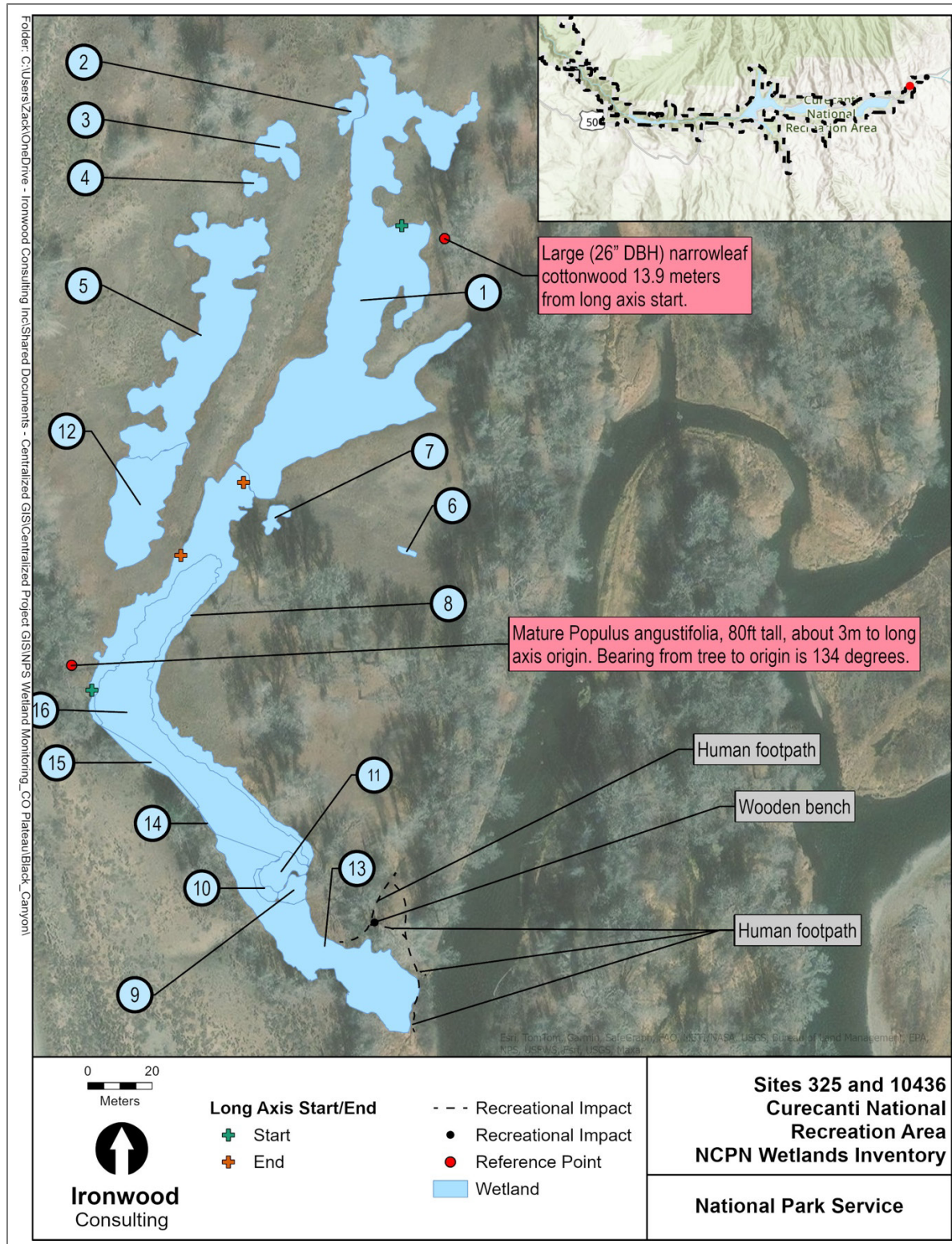


Figure 18. Wetland mapping for Neversink Cottonwood Gallery - CURE 325 and 10436.

Table 51. Continued legend for Figure 18, for CURE 325 and 10436.

Wetland ID	Site Name	Comments	Area (m ²)	Perimeter (m)
1	10436	—	3,301.7	603.3
2	10436	<i>Juncus balticus</i> is dominant wetland species.	69.5	47.2
3	10436	<i>Juncus balticus</i> is dominant wetland species.	146.6	61.7
4	10436	<i>Juncus balticus</i> is dominant wetland species.	47.2	30.0
5	10436	Dominant wetland species <i>Juncus balticus</i> , <i>Carex utriculata</i> , and <i>Carex aquatilis</i> with invading weedy species.	1,332.8	326.3
6	325	<i>Juncus balticus</i> is dominant wetland species.	10.7	15.4
7	325	<i>Juncus balticus</i> is dominant wetland species.	42.5	34.3
8	325	<i>Typha latifolia</i> , <i>Carex utriculata</i> , and <i>Carex nebrascensis</i> are dominant wetland species. The gap in the middle of this polygon represents pooled water with wetland plants and should be included in the polygon rather than represented as a gap.	959.8	520.3
9	325	Dominant wetland species are <i>Polygonum amphibium</i> , <i>Carex utriculata</i> , and <i>Mentha arvensis</i> .	60.8	33.1
10	325	Dominant wetland species are <i>Phalaris arundinacea</i> and <i>Polygonum amphibium</i> .	36.7	29.0
11	325	<i>Salix exigua</i> - <i>Salix lucida</i> complex.	99.6	47.0
12	325	Associated wetland. Dominant wetland plants are <i>Carex nebrascensis</i> , <i>Thlaspi arvense</i> , and <i>Lepidium latifolium</i> .	561.8	120.9
13	325	Dominant wetland plants are <i>Typha latifolia</i> , <i>Salix lucida</i> , <i>Salix monticola</i> , <i>Crataegus saligna</i> , and <i>Carex utriculata</i> .	1,006.2	235.5
14	325	Dominant wetland plants are <i>Typha latifolia</i> , <i>Salix lucida</i> , <i>Salix monticola</i> , <i>Crataegus saligna</i> , and <i>Carex utriculata</i> .	2.1	16.3
15	325	Dominant wetland plants are <i>Typha latifolia</i> , <i>Salix lucida</i> , <i>Salix monticola</i> , <i>Crataegus saligna</i> , and <i>Carex utriculata</i> .	210.6	95.6
16	325	This polygon represents pooled water with wetland plants within the pool.	1,326.8	301.0

Table 52. Herbaceous vegetation quadrat data for CURE 10436. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Carex aquatilis</i>	water sedge	N	OBL	22.9	42.2	100
<i>Carex utriculata</i>	beaked sedge	N	OBL	9.8	18.1	29
<i>Polygonum amphibium</i>	water smartweed	N	OBL	5.4	9.9	24
<i>Juncus balticus</i> var. <i>montanus</i>	Baltic rush	N	FACW	4.7	8.7	33
<i>Thlaspi arvense</i>	field pennycress	I	UPL	2.4	4.5	38
<i>Taraxacum officinale</i>	common dandelion	I	FACU	1.9	3.5	5
<i>Senecio eremophilus</i>	desert ragwort	N	FACU	1.7	3.2	19
<i>Carex praeegracilis</i>	blackcreeper sedge	N	FACW	1.5	2.8	24
<i>Epilobium ciliatum</i>	fringed willowherb	N	FACW	0.9	1.7	10
<i>Cirsium scariosum</i>	meadow thistle	N	FAC	0.6	1.1	5
<i>Cirsium arvense</i>	Canada thistle	NOX	FAC	0.5	0.9	10
<i>Mentha arvensis</i>	field mint	N	FACW	0.5	0.9	14
<i>Phalaris arundinacea</i>	reed canary grass	N	FACW	0.4	0.8	10
<i>Potentilla</i> sp.	cinquefoil	–	–	0.4	0.7	5
<i>Poa pratensis</i>	Kentucky bluegrass	I, N	FAC	0.3	0.5	10
<i>Pascopyrum smithii</i>	western wheatgrass	N	FACU	0.1	0.3	5
<i>Rorippa palustris</i>	bog yellowcress	N	OBL	0.1	0.2	5
<i>Thalictrum occidentale</i>	western meadow-rue	N	FACU	0.1	0.2	5
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	54.2	–	–
50% of Total	–	–	–	27.1	–	–
20% of Total	–	–	–	10.8	–	–
Total Native Plant (Metric V1)	–	–	–	–	90.6	–
Total Noxious Weed (Metric V2)	–	–	–	0.5	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 53. Woody vegetation line intercept summary data for CURE 10436.

Species	Common Name	Native Status ^A	Wetland Code	Average Woody Plant Cover (%)
<i>Salix lucida</i>	shining willow	N	FACW	5.6
<i>Salix exigua</i>	coyote willow	N	FACW	0.1
<i>Populus angustifolia</i>	narrow-leaved willow	N	FACW	0.02
Total	–	–	–	5.8

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2023; USDA and NRCS 2023).

Table 54. Groundcover quadrat data for CURE 10436.

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	4.8
Litter	86.9
Water	–
Wood	–
Soil	8.3
Total	100.0

Neversink Cottonwood Gallery – CURE 11094

CURE 11094 at the Neversink cottonwood gallery was located at an elevation of approximately 2,279 m with an overall southwest (220°) aspect and had low slope variability across the site. The mapped wetland area and perimeter were 0.20 ac (825.0 m²) and 501.4 m, respectively (Appendix B, Figure 19).

Twelve plant taxa were documented during the GDE Level II survey, including seven taxa captured in herbaceous vegetation quadrats (Appendix D, Table 55). The total average herbaceous cover was 33.8%. The dominant herbaceous plant was Baltic rush with 19.7% average absolute cover. Groundcover included litter and soil with 91.7% and 8.3% average corner hits, respectively (Table 56). There was no woody line intercept cover.

The non-native plant species detected at this site included smooth brome. The noxious weeds broadleaved pepperweed and Canada thistle were also present.

According to the herbaceous vegetation quadrat data, this site includes 99.5% average relative cover of native plants and would be ranked as Excellent for the CNHP Ecological Integrity Assessment Metric V1 (Table 55). Although the noxious weeds were not captured by the herbaceous vegetation quadrats, they were present; therefore, this site received a Metric V2 of Good.

No recreation impacts or spring developments were observed. Rabbit and cow sign occurred within the herbaceous vegetation quadrats at 8% and 33% frequency, respectively (Appendix C). Cow sign was also observed outside of the quadrats.

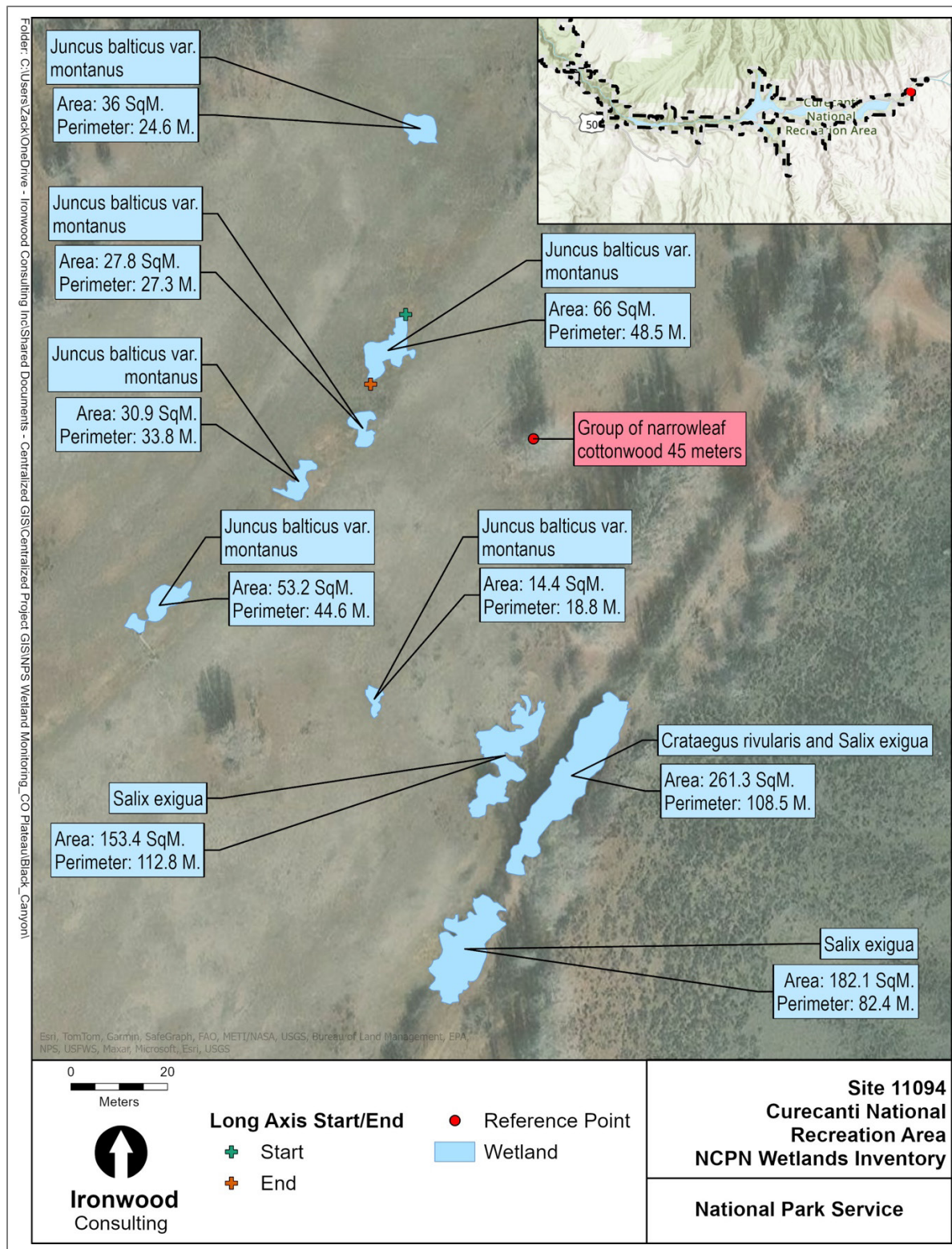


Figure 19. Wetland mapping for Neversink Cottonwood Gallery – CURE 11094.

Table 55. Herbaceous vegetation quadrat data for CURE 11094. Bryophytes not included in totals.

Species	Common Name	Native Status ^A	Wetland Code	Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
<i>Juncus balticus</i> var. <i>montanus</i>	Baltic rush	N	FACW	19.7	58.1	100
<i>Phalaris arundinacea</i>	reed canary grass	N	FACW	5.3	15.5	58
<i>Cirsium arvense</i>	Canada thistle	NOX	FAC	4.1	12.1	50
<i>Carex praeegracilis</i>	blackcreeper sedge	N	FACW	3.4	10.1	42
<i>Argentina anserina</i>	silverweed	N	OBL	1.2	3.4	25
<i>Rumex</i> sp.	dock	–	–	0.2	0.5	8
<i>Carex douglasii</i>	Douglas' sedge	N	FAC	0.1	0.2	8
Bryophytes	moss	–	–	–	–	–
Total	–	–	–	33.8	–	–
50% of Total	–	–	–	16.9	–	–
20% of Total	–	–	–	6.8	–	–
Total Native Plant (Metric V1)	–	–	–	–	99.5	–
Total Noxious Weed (Metric V2)	–	–	–	4.1	–	–

^A I - Introduced, N - Native, NOX - Colorado Noxious Weed (CDA 2024; USDA and NRCS 2023).

Table 56. Groundcover quadrat data for CURE 11094.

Groundcover Type	Average Corner Hits (%)
Bryophyte	–
Gravel	–
Cobble	–
Stone	–
Boulder	–
Bedrock	–
Basal	–
Litter	91.7
Water	–
Wood	–
Soil	8.3
Total	100.0

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Appendix A: GDE Site Summary Table Locality Details

Table 57 shows the details of each GDE site.

Table 57. GDE Site Summary Table Locality Details.

Site Name	Datum	UTM Zone	Long Axis Start Easting	Long Axis Start Northing	Long Axis End Easting	Long Axis End Northing	Dogleg Easting	Dogleg Northing	Reference Point Easting	Reference Point Northing	Aspect at Reference Point (°)	Elevation at Reference Point (m)	Reference Point/Dogleg Notes	Vegetation Quadrat Cut-Level
101	NAD83	13	288927	4258971	288930	4258965	–	–	1) 288931, 2) 288921	1) 4258959, 2) 4258979	138	2,210	Two reference points were created; 1) on the boardwalk along the trail to the south (easting 288931, northing 4258959) and 2) on a large boulder west of the wetland and off the trail (easting 288921, northing 4258979).	< 1% not recorded
103	NAD83	13	299172	4265979	299201	4265973	299188	4265976	299172	4265979	108	2,309	Reference point is uphill culvert, this is where long axis origin occurs, 0.2 m from culvert mouth. Long axis dogleg occurs at 16.3 m along long axis, bearing from dog leg to long axis end is 102 degrees.	< 1% not recorded
105	NAD83	13	269438	4266887	269443	4266911	–	–	269438	4266882	17	2,004	Reference point is large boulders uphill in drainage center, distance from long axis origin, 4.2 m uphill. Bearing from reference point to long axis origin is 17 degrees.	< 1% not recorded
106	NAD83	13	285335	4260872	285293	4260899	–	–	285343	4260856	82	2,654	Highway ROW fence has a triple wooden brace near long axis start. Reference point is the center pole.	< 1% not recorded
108	NAD83	13	302337	4261951	302331	4261951	–	–	302332	4261956	242	2,406	Reference point is large boulder just uphill from wetland.	< 1% not recorded
5723	NAD83	13	308376	4256891	308379	4256940	–	–	308379	4256905	349	2,374	Reference point is pale Reddish Boulder 2 m east perpendicular to 14 m on transect tape.	< 1% not recorded
5728	NAD83	13	310953	4259560	310964	4259528	–	–	310947	4259553	161	2,279	Reference point is culvert outlet less than 10 m from long axis start.	< 1% not recorded
5729	NAD83	13	310922	4259823	310919	4259861	–	–	310922	4259825	10	2,290	Reference point is culvert outlet.	< 1% not recorded
8549	NAD83	13	276400	4258114	276408	4258117	–	–	276408	4258111	244	2,124	Reference point is lichen-covered boulder. Orange, green, gray.	< 1% not recorded
8633	NAD83	13	298838	4264104	298884	4264089	298866	4264089	298845	4264110	100	2,298	Reference point is Juniperus, 3 m tall, approximately 5 m NE of long axis origin. Bearing from Juniper to long axis origin is 251 degrees.	< 1% not recorded
12006	NAD83	13	298890	4265178	298932	4265179	298895	4265185	298891	4265177	75	2,335	Reference point is mature aspen near long axis start. Bearing from aspen to start of long axis is 250 degrees, distance is 1 m from long axis start. Bearing of first dogleg toward long axis end is 96 degrees. Second dogleg at: easting 298925, northing 4265184. Second dogleg occurs at 40.5 m on long axis, with bearing of 125 facing long axis end.	< 1% not recorded
324 Neversink	NAD83	13	323826	4263776	323862	4263760	–	–	323838	4263761	246	2,282	Reference point is wooden fence post.	< 1% not recorded

Table 57 (continued). GDE Site Summary Table Locality Details.

Site Name	Datum	UTM Zone	Long Axis Start Easting	Long Axis Start Northing	Long Axis End Easting	Long Axis End Northing	Dogleg Easting	Dogleg Northing	Reference Point Easting	Reference Point Northing	Aspect at Reference Point (°)	Elevation at Reference Point (m)	Reference Point/Dogleg Notes	Vegetation Quadrat Cut-Level
325 Neversink	NAD83	13	323288	4263789	323316	4263830	–	–	323282	4263796	134	2296	Reference point is mature Populus angustifolia tree, approximately 80 ft tall, about 3 m to long axis origin. Bearing from tree to origin is 134 degrees.	< 1% not recorded
328 Neversink	NAD83	13	324370	4264340	324402	4264363	–	–	324362	4264342	214	2284	Reference point is large Populus angustifolia approximately 7 m from long axis start.	< 1% not recorded
4471 Neversink	NAD83	13	323703	4264568	323720	4264602	–	–	323714	4264563	198	2283	Reference point is mature Populus angustifolia tree cluster (6 trees in cluster, about 40 ft height range).	< 1% not recorded
4473 Neversink	NAD83	13	323882	4264684	323836	4264665	–	–	323855	4264688	255	2282	Reference point is three large cottonwoods - it is 26.5 m at 281 degrees from long axis start.	Complete - All species recorded
10436 Neversink	NAD83	13	323386	4263933	323336	4263853	–	–	323399	4263928	208	2280	Reference point is large (about 26 dbh) cottonwood 13.9 m from transect start.	< 1% not recorded
11094 Neversink	NAD83	13	323534	4263316	323527	4263302	–	–	323560	4263290	220	2279	Reference point is Populus angustifolia to the east.	< 1% not recorded

Appendix B: GDE Site Summary Table Wetland Feature

Table 58 shows the wetland features of each GDE site.

Table 58. GDE Site Summary Table Wetland Features.

Site Name	Site Type	Primary GDE Type	Secondary GDE Type	Total Wetland Area (ac)	Total Wetland Area (m²)	Total Wetland Perimeter Length (m)	Number of Mapped Orifices	Number of Mapped Channels	Length of Mapped Channels (m)	Mapped Channel Type (if observed)	Wetland/Channel Description
101	GDE	Rheocrene	–	0.004	17.3	21.1	1	2	59.1	Spring discharge dominated	Channel flows from spring orifice and connects with Curecanti Creek downstream. Accuracy was variable from 0.6 to 2.0 m due to canyon walls closely located. Wetland plants are on both sides of the park trail. UTM's are listed for the boardwalk reference point.
103	GDE	Helocrene	–	0.090	353.9	158.6	1	1	33.2	Mixed discharge	This receives some runoff via culvert, but likely receives most water from the spring orifice.
105	GDE	Rheocrene	–	0.020	93.8	51.3	1	1	30.3	Mixed discharge	Water trickling from spring orifice and along channel. About 7 m uphill from orifice are also small pools of water in the drainage but these are not flowing and appear to be residual water from rainstorm and subsequent runoff.
106	GDE	Rheocrene	–	0.460	1,875.8	853.5	2	5	271.7	Spring discharge dominated	Very little mineral soil exposed - high muck cover and forb and willow. All mapped channels are flowing. Extensive wetland complex with some polygons and channels not mapped.
108	GDE	Hypocrene	–	0.004	15.2	21.2	–	–	–	–	–
5723	GDE	Hypocrene	–	1.060	4,296.6	1,199.4	–	–	–	–	Typha latifolia wetlands with apparent decline due in part to drying habitat. Large noxious weed patches invading and dominating the margins of these wetlands prevent the mapped OBL/FACW-dominated wetland area from being larger.
5728	GDE	Hypocrene	–	0.190	783.4	338.6	–	1	317.1	Runoff dominated	Some head cutting noted in small areas. Drainage interrupted by parking lot, this is on downslope side of drainage. Two culvert outlets deliver additional moisture to area.
5729	GDE	Hypocrene	–	0.060	230.5	106.4	–	1	6.2	Runoff dominated	Channel is a culvert providing drainage from parking lot. Some small (less than 3 m²) non-wetland vegetation included in polygon.
5939	GDE	Hypocrene	–	0.010	24.0	28.5	–	–	–	Runoff dominated	Sharp 2–3 m drop from upland to head of Salix wetland.
8549	GDE	Hypocrene	–	0.010	23.8	26.4	–	–	–	–	–
8633	GDE	Helocrene	–	0.670	2,731.2	522.0	2	4	256.1	Spring discharge dominated	Three main channels and one small branch.
12006	GDE	Hillslope	–	0.040	180.3	153.0	1	2	76.2	Spring discharge dominated	Main valley channel continues above the spring confluence and is dry. Two doglegs in Long Axis. Vegetation throughout wetland varies.

Table 58 (continued). GDE Site Summary Table Wetland Features.

Site Name	Site Type	Primary GDE Type	Secondary GDE Type	Total Wetland Area (ac)	Total Wetland Area (m²)	Total Wetland Perimeter Length (m)	Number of Mapped Orifices	Number of Mapped Channels	Length of Mapped Channels (m)	Mapped Channel Type (if observed)	Wetland/Channel Description
324 Neversink	Riparian cottonwood gallery	–	–	0.060	230.2	88.0	–	–	–	–	–
325 Neversink	Riparian cottonwood gallery	–	–	1.030	4,183.9	1,438.1	–	–	–	–	Long axis runs along water margin of river overflow channel. Perpendicular transects only extended to edge of emergent aquatic vegetation, not into channel because too deep.
328 Neversink	Riparian cottonwood gallery	–	–	0.130	522.1	99.8	–	1	53.4	Runoff dominated	Channel braided, channel continues in both directions
4471 Neversink	Riparian cottonwood gallery	–	–	0.490	1,985.1	698.3	–	–	–	–	Slough, with standing water separated from flowing river by mass of rocks and woody debris, emergent vegetation growing within. Old sign of beaver activity throughout area. This GDE-sampled polygon follows wetland where Salix exigua, Salix lucida, and Alnus incana dominate. Much of herbaceous understory not immediately adjacent to channel comprised of upland species.
4473 Neversink	Riparian cottonwood gallery	–	–	0.980	3,947.2	1,271.1	–	1	3.9	Runoff dominated	Heavily vegetated on the Downgradient side of pond. Only four meters were mapped although it continues downgradient. Wetland includes a pond - its outlet is flowing.
10436 Neversink	Riparian cottonwood gallery	–	–	1.210	4,897.9	1,068.5	–	–	–	–	Exotic species (mostly Thlaspi arvense) are excluding wetland plants on margin.
11094 Neversink	Riparian cottonwood gallery	–	–	0.200	825.0	501.4	–	–	–	–	–

Appendix C: GDE Site Wildlife Summary Tables

Tables 59 and 60 describe animal sign found at sites.

Table 59. Percent frequency of scat or tracks found inside vegetation quadrats.

Animal Category	Animal Type	101	103	105	106	108	5723	5728	5729	8549	8633	12006	Neversink -324	Neversink -325	Neversink -328	Neversink -4471	Neversink -4473	Neversink -10436	Neversink -11094	Total Sites
Wildlife	Deer	–	–	–	–	–	–	5	5	–	15	–	–	–	–	–	–	–	–	3
	Elk	–	–	–	–	–	64	–	–	–	8	–	–	–	–	–	–	–	–	2
	Rabbit	–	–	–	–	–	–	–	11	–	–	–	–	–	–	–	–	–	8	1
Livestock	Cow	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	33	1

Table 60. Animal sign (scat or tracks) observed outside vegetation transects. X indicates a presence.

Animal Category	Animal Type	101	103	105	106	108	5723	5728	5729	8549	8633	12006	Neversink -324	Neversink -325	Neversink -328	Neversink -4471	Neversink -4473	Neversink -10436	Neversink -11094	Total Sites
Wildlife	Bighorn sheep	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	X	X	–	3
	Deer	–	X	–	X	–	–	X	X	X	X	X	–	–	–	–	–	–	–	7
	Elk	–	–	–	X	–	X	–	–	X	X	X	–	X	–	–	–	–	–	7
	Fish (Unidentified)	–	–	–	–	–	–	–	–	–	–	–	–	X	–	X	–	–	–	2
	Snail (Unidentified)	–	–	–	–	–	–	–	–	–	X	–	–	X	–	–	–	–	–	2
Livestock	Cow	–	–	–	X	–	–	–	–	–	–	X	–	–	–	–	–	–	X	3
	Horse	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	1

Appendix D: GDE Site Vascular Plant Inventory List

Table 61 shows the vascular plant list found at sites.

Table 61. GDE Site Vascular Plant Inventory List. X indicates a presence.

Species	Common Name	Wetland Code	Native Status ^A	101	103	105	106	108	5723	5728	5729	8549	8633	12006	Neversink -324	Neversink -325	Neversink -328	Neversink -4471	Neversink -4473	Neversink -10436	Neversink -11094
<i>Acer negundo</i>	boxelder	FAC	N	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Achillea millefolium</i>	common yarrow	FACU	N	–	X	X	X		X	X	–	–	X	X	–	–	–	X	X	–	–
<i>Aconitum columbianum</i>	Columbian monkshood	FACW	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Acroptilon repens</i>	hardheads	UPL	NOX-B	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–
<i>Actaea rubra</i>	red baneberry	FACU	N	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Agropyron cristatum</i>	crested wheatgrass	UPL	I	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Agrostis gigantea</i>	black bent	FAC	I	–	–	–	X	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Agrostis stolonifera</i>	redtop	FAC	I	–	X	–	–	–	–	–	–	–	X	X	–	X	–	X	X	–	–
<i>Alnus incana</i>	gray alder	FACW	N	–	–	X	X	–	–	–	–	–	X	–	–	–	–	X	X	–	–
<i>Alyssum alyssoides</i>	pale madwort	UPL	I	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–
<i>Amelanchier alnifolia</i>	Saskatoon serviceberry	FACU	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Angelica ampla</i>	giant angelica	FACW	N	X	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Arctium minus</i>	burdock	UPL	I	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Argentina anserina</i>	silverweed	OBL	N	X	–	–	–	–	X	–	–	–	X	–	–	–	X	–	X	–	X
<i>Artemisia biennis</i>	biennial wormwood	FACW	I, N	–	–	–	–	–	X	–	–	–	X	–	–	–	–	–	–	–	–
<i>Artemisia ludoviciana</i>	Louisiana wormwood	FACU	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
<i>Artemisia tridentata</i>	big sagebrush	UPL	N	–	X	–	X	–	X	X	–	–	–	–	–	–	–	–	–	–	–
<i>Barbarea vulgaris</i>	European wintercress	FAC	I	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	X	–
<i>Bromus inermis</i>	smooth brome	UPL	I	–	–	–	–	–	–	X	X	–	–	–	–	X	X	X	–	X	X
<i>Bromus tectorum</i>	cheatgrass	UPL	NOX-C	–	–	–	–	–	–	–	X	–	–	–	–	X	–	–	–	–	–
<i>Campanula rotundifolia</i>	Harebell	FACU	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–
<i>Capsella bursa-pastoris</i>	shepherd's-purse	FACU	I	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Cardamine cordifolia</i>	heartleaf bittercress	FACW	N	–	–	–	–	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Cardamine pensylvanica</i>	Quaker bittercress	FACW	N	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
<i>Carduus nutans</i>	musk thistle	UPL	NOX-B	–	X	–	X	–	X	X	–	X	X	–	–	–	–	–	–	–	–
<i>Carex aquatilis</i>	Water sedge	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–
<i>Carex atherodes</i>	wheat sedge	OBL	N	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
<i>Carex athrostachya</i>	slenderbeak sedge	FACW	N	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
<i>Carex aurea</i>	golden sedge	FACW	N	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–
<i>Carex deweyana</i>	Pennsylvania sedge	FAC	N	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Carex disperma</i>	soft-leaved sedge	FACW	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Carex douglasii</i>	Douglas' sedge	FAC	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X
<i>Carex hystericina</i>	Bottlebrush sedge	OBL	N	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
<i>Carex interior</i>	Inland sedge	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–
<i>Carex nebrascensis</i>	Nebraska sedge	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–
<i>Carex pachystachya</i>	thick-head sedge	FAC	N	X	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Carex pellita</i>	woolly sedge	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–	X	–
<i>Carex praegracilis</i>	blackcreeper sedge	FACW	N	–	X	–	X	–	–	X	X	X	X	–	–	–	X	–	–	X	X
<i>Carex sp.</i>	sedge	–	–	–	X	–	X	X	–	–	–	X	–	–	X	–	–	–	–	–	–
<i>Carex utriculata</i>	beaked sedge	OBL	N	–	–	–	–	–	X	–	–	–	X	X	X	X	X	–	X	X	–
<i>Carex vesicaria</i>	blister sedge	OBL	N	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Catabrosa aquatica</i>	brookgrass	OBL	N	–	–	–	X	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Cerastium sp.</i>	mouse-ear chickweed	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Chamerion angustifolium</i>	fireweed	FACU	N	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Chenopodium album</i>	Lambsquarter	FACU	I, N	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
<i>Chenopodium sp.</i>	lambsquarter	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
<i>Chrysothamnus viscidiflorus</i>	green rabbitbrush	UPL	N	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–
<i>Cicuta maculata</i>	spotted water hemlock	OBL	N	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Cirsium arvense</i>	Canada thistle	FAC	NOX-B	–	X	–	X	–	X	X	X	–	X	X	X	X	X	X	–	X	X
<i>Cirsium clavatum</i>	Fish Lake thistle	UPL	N	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Cirsium scariosum</i>	meadow thistle	FAC	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–
<i>Conioselinum scopulorum</i>	rock lovage	FACW	N	–	–	–	–	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Conyza canadensis</i>	Canadian horseweed	FACU	N	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–
<i>Cornus sericea</i>	redosier dogwood	FACW	N	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Crataegus saligna</i>	Willow hawthorn	FACW	N	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–
<i>Dactylis glomerata</i>	orchard grass	FACU	I	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Dasiphora floribunda</i>	shrubby cinquefoil	FAC	N	–	X	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–
<i>Deschampsia caespitosa</i>	tufted hairgrass	FACW	N	–	X	–	X	–	–	–	–	–	X	–	–	–	–	–	X	–	–

^AI - Introduced, N - Native, NOX-B - Colorado Noxious Weed List B, NOX-C - Colorado Noxious Weed List C (CDA 2023; USDA and NRCS 2023).

Table 61 (continued). GDE Site Vascular Plant Inventory List. X indicates a presence.

Species	Common Name	Wetland Code	Native Status ^A	101	103	105	106	108	5723	5728	5729	8549	8633	12006	Neversink -324	Neversink -325	Neversink -328	Neversink -4471	Neversink -4473	Neversink -10436	Neversink -11094
<i>Descurainia sophia</i>	herb sophia	UPL	I	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	X	–
<i>Eleocharis palustris</i>	common spikerush	OBL	N	–	X	–	–	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Elodea canadensis</i>	Canadian waterweed	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–
<i>Elymus glaucus</i>	blue wildrye	FACU	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Elymus repens</i>	quackgrass	FAC	I	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Elymus</i> sp.	wildrye	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–
<i>Epilobium ciliatum</i>	glandular willow-herb	FACW	N	X	X	–	X	–	–	–	–	–	–	X	X	–	X	–	X	X	–
<i>Epilobium palustre</i>	Marsh willow-herb	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–
<i>Equisetum arvense</i>	field horsetail	FAC	N	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Equisetum hyemale</i>	scouringrush horsetail	FACW	N	X	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Ericameria nauseosa</i>	rubber rabbitbrush	UPL	N	–	–	–	–	–	–	X	X	–	–	–	–	–	–	–	–	–	–
<i>Erigeron lonchophyllus</i>	shortray fleabane	FACW	N	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–
<i>Erysimum cheiranthoides</i>	wormseed wallflower	FACU	I	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
<i>Galium boreale</i>	northern bedstraw	FACU	N	–	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–	–	–
<i>Galium</i> sp.	bedstraw	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Galium trifidum</i>	Small bedstraw	FACW	N	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	X	–	–
<i>Galium triflorum</i>	sweet-scented bedstraw	FACU	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Geranium richardsonii</i>	Richardson's crane's-bill	FAC	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Geum aleppicum</i>	erect avens	FACW	N	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Geum macrophyllum</i>	largeleaf avens	FAC	N	X	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–
<i>Glyceria borealis</i>	Northern mannagrass	OBL	N	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
<i>Glyceria elata</i>	fowl mannagrass	FACW	N	X	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Glyceria grandis</i>	American mannagrass	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–
<i>Glyceria striata</i>	fowl mannagrass	OBL	N	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Gnaphalium palustre</i>	lowland cudweed	FACW	N	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Hackelia floribunda</i>	showy stickseed	FACU	N	–	–	–	–	–	X	–	–	–	X	X	–	–	–	–	–	–	–
<i>Helianthus nuttallii</i>	Nuttall's sunflower	FACW	N	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	X	–	–
<i>Heracleum maximum</i>	cow parsnip	FAC	N	–	–	–	X	–	–	–	–	–	–	X	–	–	–	–	–	–	–
<i>Hesperostipa comata</i>	needle-and-thread	UPL	N	–	–	–	–	X	–	X	–	–	–	–	–	–	–	–	–	–	–
<i>Hippuris vulgaris</i>	Common mare's-tail	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–
<i>Hordeum jubatum</i>	foxtail barley	FAC	N	–	–	–	–	–	X	–	–	–	X	–	–	–	–	–	–	–	X
<i>Humulus lupulus</i>	common hop	FACU	N	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Hydrophyllum fendleri</i>	Fendler's waterleaf	FAC	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Hypericum scouleri</i>	western St. John's-wort	FACW	N	–	X	–	–	–	–	–	–	–	X	–	–	–	–	–	X	–	–
<i>Iva axillaris</i>	povertyweed	FACU	N	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–
<i>Juncus balticus</i> var. <i>montanus</i>	Baltic rush	FACW	N	–	X	–	–	X	–	X	X	X	X	–	–	X	–	X	–	X	X
<i>Juncus bufonius</i>	toad rush	FACW	N	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Juncus longistylis</i>	longstyle rush	FACW	N	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Juncus saximontanus</i>	mountain rush	FACW	N	–	X	–	–	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Juniperus monosperma</i>	juniper	UPL	N	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Juniperus osteosperma</i>	Utah juniper	UPL	N	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–
<i>Juniperus scopulorum</i>	Rocky Mountain juniper	UPL	N	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–
<i>Lactuca serriola</i>	prickly lettuce	FACU	I	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	X	–
<i>Lepidium latifolium</i>	broadleaved pepperweed	FAC	NOX-B	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	X
<i>Lappula occidentalis</i>	flatspine stickseed	UPL	N	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–
<i>Lemna minuta</i>	Tiny duckweed	OBL	N	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	X	–	–
<i>Lemna</i> sp.	duckweed	–	–	–	–	–	–	–	–	–	–	–	X	–	–	X	–	–	–	–	–
<i>Leucanthemum vulgare</i>	ox-eye daisy	FACU	I	–	–	–	–	–	–	–	–	–	X	X	–	–	–	X	–	–	–
<i>Lolium pratense</i>	meadow fescue	FACU	I	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Lonicera involucrata</i>	twinberry honeysuckle	FAC	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
<i>Lupinus</i> sp.	lupine	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–
<i>Lycopus americanus</i>	American bugleweed	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–
<i>Mahonia repens</i>	Oregon-grape	UPL	N	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Maianthemum racemosum</i>	feathery false lily of the valley	FAC	N	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Maianthemum stellatum</i>	starry false Solomon's-seal	FAC	N	–	–	–	X	X	–	–	–	–	–	–	–	–	–	X	–	–	–
<i>Mentha arvensis</i>	field mint	FACW	N	X	–	–	–	–	X	–	–	–	X	X	–	X	X	X	X	X	–
<i>Mimulus guttatus</i>	yellow monkeyflower	OBL	N	–	–	–	X	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Mimulus</i> sp.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–
<i>Myriophyllum sibiricum</i>	Siberian water-milfoil	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	X	–	–
<i>Osmorhiza berteroi</i>	Chilean sweet-cicely	FACU	N	–	–	X	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Pascopyrum smithii</i>	western wheatgrass	FACU	N	–	–	–	–	–	–	–	X	X	–	–	–	–	–	X	–	X	X
<i>Pedicularis crenulata</i>	Purple-flower lousewort	FACW	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–

^AI - Introduced, N - Native, NOX-B - Colorado Noxious Weed List B, NOX-C - Colorado Noxious Weed List C (CDA 2023; USDA and NRCS 2023).

Table 61 (continued). GDE Site Vascular Plant Inventory List. X indicates a presence.

Species	Common Name	Wetland Code	Native Status ^A	101	103	105	106	108	5723	5728	5729	8549	8633	12006	Neversink -324	Neversink -325	Neversink -328	Neversink -4471	Neversink -4473	Neversink -10436	Neversink -11094
<i>Petasites frigidus</i> var. <i>sagittatus</i>	arrowleaf sweet coltsfoot	FACW	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–
<i>Phalaris arundinacea</i>	reed canary grass	FACW	N	–	–	X	–	–	–	–	–	–	–	–	–	–	X	X	–	X	X
<i>Pheum pratense</i>	timothy	FAC	I	–	–	–	X	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Piptatherum micranthum</i>	littelseed ricegrass	UPL	N	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Plantago major</i>	common plantain	FAC	I	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Platanthera</i> sp.	fringed orchid	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–
<i>Platanthera sparsiflora</i>	sparse-flowered bog orchid	FACW	N	–	–	–	X	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Poa glauca</i>	interior bluegrass	UPL	N	–	–	–	–	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Poa palustris</i>	fowl bluegrass	FAC	N	X	–	–	X	–	–	–	–	–	–	X	–	–	–	–	–	–	–
<i>Poa pratensis</i>	Kentucky bluegrass	FAC	I, N	X	X	–	X	–	–	X	X	–	X	X	–	–	X	X	X	X	–
<i>Poa</i> sp.	bluegrass	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–
<i>Polemonium occidentale</i>	western Jacob's-ladder	FACW	N	–	X	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Polygonum amphibium</i>	water smartweed	OBL	N	–	–	–	–	–	–	–	–	–	–	–	X	X	X	–	X	X	–
<i>Polygonum douglasii</i>	Douglas' knotweed	FACU	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Polygonum persicaria</i>	Lady's-thumb	FACW	I	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–
<i>Polygonum ramosissimum</i>	bushy knotweed	FAC	N	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–
<i>Populus angustifolia</i>	narrow-leaved cottonwood	FACW	N	–	–	–	–	–	X	–	–	–	X	–	X	X	X	–	–	–	–
<i>Populus tremuloides</i>	quaking aspen	UPL	N	–	–	–	X	–	–	–	–	–	–	X	–	–	–	–	–	–	–
<i>Potamogeton foliosus</i>	leafy pondweed	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–
<i>Potamogeton pusillus</i>	Dwarf pondweed	OBL	N	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
<i>Potentilla biennis</i>	biennial cinquefoil	FACW	N	–	–	–	–	–	–	X	X	–	–	–	–	–	–	–	–	–	–
<i>Potentilla norvegica</i>	Norwegian cinquefoil	FAC	N	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Potentilla</i> sp.	cinquefoil	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	X	–
<i>Prunus virginiana</i>	chokecherry	FACU	N	X	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Pseudotsuga menziesii</i>	Douglas-fir	FACU	N	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Pteridium aquilinum</i>	western brackenfern	FACU	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Puccinellia nuttalliana</i>	Nuttall's alkaligrass	FACW	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Quercus gambelii</i>	gambel oak	UPL	N	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Ranunculus acriflorus</i>	sharpleaf buttercup	FACW	N	–	–	–	–	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Ranunculus gmelinii</i>	Lesser yellow water buttercup	FACW	N	–	–	–	–	–	–	–	–	–	–	–	X	X	–	–	X	–	–
<i>Ranunculus</i> sp.	buttercup	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Rhus trilobata</i>	skunkbush sumac	UPL	N	–	X	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Ribes cereum</i>	wax currant	UPL	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Ribes inerme</i>	whitestem gooseberry	FAC	N	X	X	–	–	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Rorippa curvipes</i>	bluntleaf yellowcress	FACW	N	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–
<i>Rorippa palustris</i>	bog yellowcress	OBL	N	–	–	–	–	–	–	–	–	–	–	X	X	–	–	–	–	X	–
<i>Rosa woodsii</i>	Woods' rose	FACU	N	X	X	–	–	X	–	X	–	–	X	–	–	–	–	X	–	–	X
<i>Rubus idaeus</i>	American red raspberry	FACU	I, N	–	–	X	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Rudbeckia laciniata</i> var. <i>ampla</i>	cutleaf coneflower	FAC	N	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Rumex aquaticus</i>	western dock	FACW	N	–	–	–	X	–	–	–	–	–	X	–	–	–	X	–	–	–	–
<i>Rumex crispus</i>	curly dock	FACW	I	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–
<i>Rumex densiflorus</i>	denseflowered dock	FACW	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–
<i>Rumex salicifolius</i>	willow dock	FACW	N	–	–	–	–	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Salix bebbiana</i>	Bebb's willow	FACW	N	–	–	–	X	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Salix exigua</i>	coyote willow	FACW	N	–	–	–	–	–	X	–	–	–	X	–	–	X	X	X	–	X	X
<i>Salix geyeriana</i>	Geyer's willow	FACW	N	–	X	–	–	–	–	–	–	–	X	–	–	–	X	–	–	–	–
<i>Salix ligulifolia</i>	strapleaf willow	FAC	N	–	X	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
<i>Salix lucida</i>	shining willow	FACW	N	–	–	–	–	–	–	–	–	–	–	–	–	X	X	X	–	X	–
<i>Salix monticola</i>	mountain willow	OBL	N	–	X	–	X	–	–	–	–	–	–	–	–	–	–	–	X	–	–
<i>Salix</i> sp.	willow	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Scirpus microcarpus</i>	panicked bulrush	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–
<i>Senecio bigelovii</i>	nodding ragwort	UPL	N	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–
<i>Senecio eremophilus</i>	desert ragwort	FACU	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–
<i>Senecio triangularis</i>	arrowleaf groundsel	FACW	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Sidalcea candida</i>	white checker-mallow	FACW	N	–	X	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Sidalcea neomexicana</i>	New Mexico checker-mallow	FACW	N	–	X	–	–	–	X	–	–	–	X	–	X	–	–	–	–	X	–
<i>Sisymbrium altissimum</i>	tall tumbled mustard	FACU	I	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–
<i>Sium suave</i>	water parsnip	OBL	N	–	–	–	–	–	–	–	–	–	–	–	X	–	X	–	–	–	–
<i>Solidago canadensis</i>	Canada goldenrod	FACU	N	–	X	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–
<i>Solidago velutina</i>	three-nerve goldenrod	UPL	N	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Sparganium angustifolium</i>	Narrowleaved burr-reed	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–
<i>Stellaria longifolia</i>	long-leaved starwort	FACW	N	–	–	–	–	–	–	–	–	–	X	–	–	–	X	–	–	–	–

^AI - Introduced, N - Native, NOX-B - Colorado Noxious Weed List B, NOX-C - Colorado Noxious Weed List C (CDA 2023; USDA and NRCS 2023).

Table 61 (continued). GDE Site Vascular Plant Inventory List. X indicates a presence.

Species	Common Name	Wetland Code	Native Status ^A	101	103	105	106	108	5723	5728	5729	8549	8633	12006	Neversink -324	Neversink -325	Neversink -328	Neversink -4471	Neversink -4473	Neversink -10436	Neversink -11094
<i>Stuckenia pectinata</i>	Fennel-leaf pondweed	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–
<i>Symphytotrichum lanceolatum</i>	white panicle aster	OBL	N	–	–	–	–	–	X	–	–	–	X	–	–	–	–	–	–	–	–
<i>Symphytotrichum sp.</i>	aster	–	–	–	X	–	–	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Taraxacum officinale</i>	common dandelion	FACU	I	–	–	–	X	–	X	–	–	–	X	–	–	–	–	–	–	X	–
<i>Teucrium canadense</i>	Canada germander	FAC	N	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–
<i>Thalictrum occidentale</i>	Western meadow-rue	FACU	N	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–
<i>Thermopsis montana</i>	montane golden pea	FAC	N	–	–	–	–	–	–	–	–	–	–	–	–	–	X	X	X	–	–
<i>Thlaspi arvense</i>	field pennycress	UPL	I	–	X	–	–	–	X	X	–	–	X	X	X	X	X	–	–	X	–
<i>Tragopogon dubius</i>	yellow salsify	UPL	I	–	–	–	X	–	X	–	–	–	–	–	X	–	–	–	–	–	–
<i>Trifolium hybridum</i>	alsike clover	FAC	I	X	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Typha latifolia</i>	broadleaf cattail	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–
unknown perennial graminoid	unknown perennial graminoid	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	X	–	–	–	–
<i>Urtica dioica</i>	stinging nettle	FAC	I, N	X	–	X	X	–	–	–	–	–	–	X	–	–	–	–	–	–	–
<i>Utricularia macrorhiza</i>	Common bladderwort	OBL	N	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	X	–	–
<i>Veratrum californicum</i>	false hellebore	FAC	N	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Verbascum thapsus</i>	woolly mullein	FACU	I	–	–	X	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–
<i>Veronica americana</i>	American brooklime	OBL	N	–	–	–	X	–	–	–	–	–	X	X	–	–	–	–	–	–	–
<i>Veronica anagallis–aquatica</i>	water speedwell	OBL	N	–	X	–	X	–	–	–	–	–	X	X	X	–	–	–	–	–	–
<i>Vicia americana</i>	American vetch	FAC	N	–	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–	–	–
<i>Viola adunca</i>	hook–spur violet	FAC	N	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–
<i>Viola sp.</i>	violet	–	–	–	X	X	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–

^A I - Introduced, N - Native, NOX-B - Colorado Noxious Weed List B, NOX-C - Colorado Noxious Weed List C (CDA 2023; USDA and NRCS 2023).

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