# Wetlands and Waterbodies Report for the Arkwright Summit Wind Farm Towns of Arkwright and Pomfret Chautauqua County, New York

**September 2015**

**Prepared for:**

**EDP RENEWABLES NORTH AMERICA, LLC.**

**Prepared by:**

**ECOLOGY AND ENVIRONMENT, INC.**
368 Pleasant View Drive
Lancaster, New York 14086

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# List of Abbreviations and Acronyms

| | |
|---|---|
| Arkwright Summit | Arkwright Summit LLC |
| AA | adjacent area |
| CFR | Code of Federal Regulations |
| CWA | Clean Water Act |
| E & E | Ecology and Environment, Inc. |
| ECL | Environmental Conservation Law |
| GIS | geographic information system |
| GPS | global positioning system |
| JD | Jurisdictional Determination |
| kV | kilovolt |
| MW | megawatt |
| NHD | National Hydrographic Dataset |
| NWI | National Wetland Inventory |
| NYSDEC | New York State Department of Environmental Conservation |
| OHWM | ordinary high water mark |
| PEM | palustrine emergent wetland |
| PFO | palustrine forested wetland |
| PJD | Preliminary Jurisdictional Determination |
| POW | palustrine open water |
| Project | Arkwright Summit Wind Farm |
| PSS | palustrine scrub-shrub wetland |
| QA/QC | quality assurance/quality control |
| USACE | United States Army Corps of Engineers |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |

# 1 Introduction

EDP Renewables North America, LLC is proposing to construct and operate the Arkwright Summit Wind Farm (the Project), formerly named the New Grange Wind Farm, in the towns of Arkwright and Pomfret in Chautauqua County, New York. The Project includes construction of 36 wind turbines, various above-ground facilities, and temporary and permanent access roads. Figure 1-1 identifies the locations of the proposed Project facilities.

This wetlands and waterbodies delineation report describes wetland and waterbody resources associated with Project facilities located in Chautauqua County, New York. The report also provides the related information necessary for the United States Army Corps of Engineers (USACE) and New York State Department of Environmental Conservation (NYSDEC) to verify wetland delineations and to make and document Jurisdictional Determinations (JD) of the wetlands within the area for each wetland where a new/updated JD is being requested.

## 1.1 Project Description

Proposed Project facilities include wind turbines, access roads, electrical collection lines, overhead lead generator line, an operation and maintenance building, substation, and meteorological towers within an approximately 5,961-acre area in the towns of Arkwright and Pomfret. The following is a description of each component:

- Thirty-six wind turbines with a maximum capacity of 78.6 megawatts (MW);
- Approximately 13.61 miles of 16-foot-wide gravel access roads connecting each wind turbine to a town or county roadway for construction purposes. Following construction, these roads will be narrowed to the extent practicable for ongoing maintenance and operation of the turbines. A total of 2.43 miles of access road alternatives were surveyed;
- Approximately 24.84 miles of electrical collection and transmission line to allow the delivery of electricity to a substation in the town of Pomfret. This will consist of 5.50 miles of overhead transmission line and approximately 18.34 miles of underground collection line that will be co-located with access roads where practicable;
- One permanent meteorological tower in the town of Arkwright; and

- A Project construction laydown yard in the town of Arkwright. The footprint will be approximately 6.72 acres; and
- An interconnect with a 100- by 170-foot footprint. This interconnect will deliver electricity to an existing 115-kilovolt (kV) transmission line.

To facilitate field review and preparation of JDs, this report presents the wetland delineation results organized by clusters. Each cluster includes turbines, access roads, and collection lines that are in geographic proximity to each other (e.g., the Southeast Cluster includes all facilities south of Route 83 and east of Meadows Road). The transmission line and interconnect are found in the northwest and southwest quadrants. Figure 1-1 and Table 1-1 identify the layout and location of each cluster and all associated facilities. These divisions are for the sole purpose of organizing work flow and discussion and do not imply any separation of facilities.

## 1.2 Project History

E & E has delineated and evaluated wetlands and waterbodies within the Project Area multiple times since 2008. A *Wetland and Waterbodies Report for the Arkwright Summit Windfarm* (E & E 2009) was prepared after these surveys. In a letter dated March 15, 2010, the USACE issued a Preliminary JD (PJD) within an approximate 926.79-acre area. Approximately 178 wetland areas (totaling approximately 37.77 acres), six ponds (totaling approximately 1.11 acres), and 56 stream segments (totaling approximately 21,260 linear feet) were identified.

After the PJD was completed, the project was put on hold until 2012 when it was put back on-line with a different alignment. Surveys were conducted in 2012 and 2013 on this alignment before the project was put on hold again. In late 2014, development of the Arkwright Summit Wind Farm restarted and additional surveys were initiated in May 2015 with another new alignment.

The following terms are used throughout this document to describe the proposed action.

- **Project.** "Project" refers to all activities associated with the construction, operation, and individual components of the Arkwright Summit Wind Farm, including, but not limited to, turbines (including blades, towers, nacelle, foundations, etc.), electrical collection lines, access roads, crane pads, laydown yard, meteorological towers, and other facilities.
- **Project Area.** The Project Area refers to the larger geographic study area including the Study Area and immediate vicinity. The Project Area is bordered at its northern extent by the Arkwright-Sheridan town line and Straight Road; at its eastern extent by the Arkwright-Villenova town line; at its southern extent by the Arkwright-Charlotte town line; and at its western extent by State Highway 60 (located in the town of Pomfret, approximately 0.5 miles west of the Arkwright-Pomfret town line).

- **Study Area.** The area in which wetlands and waterbodies were identified and delineated. This generally included a 250-foot-wide corridor centered on access roads, a 100-foot-wide corridor centered on collection lines not associated with access roads, and a circular area with a 250-foot radius surrounding each turbine. In some areas, surveys were restricted or expanded (i.e., restricted because of property access or expanded to ensure that regulated buffers adjacent to NYSDEC wetlands were identified). Everything within the Study Area is being included in the JD request.

**Table 1-1 Turbine Clusters**

| Cluster | Facilities Included | Municipality |
|---|---|---|
| Northwest | Turbines 110, 69, 50, 47, 101, 43, 41, 112, 115, 51, 111, and 49 | Towns of Arkwright and Pomfret[1] |
| | Transmission line and interconnect | |
| Northeast | Turbines 103, 36, 32, 100, 30, 33, 29, 28, 27, and 102 | Town of Arkwright |
| | Laydown Area | |
| Southeast | Turbines 19, 66, 57, 105, 10, 114, 16, 15, 93, 12, 11, 95, 96, and 97 | Town of Arkwright |
| | Permanent meteorological tower | |
| Southwest | Turbines 21 and 22 | Towns of Arkwright and Pomfret[1] |
| | Transmission line and substation | |

Note:
1. No turbines are located in the town of Pomfret.

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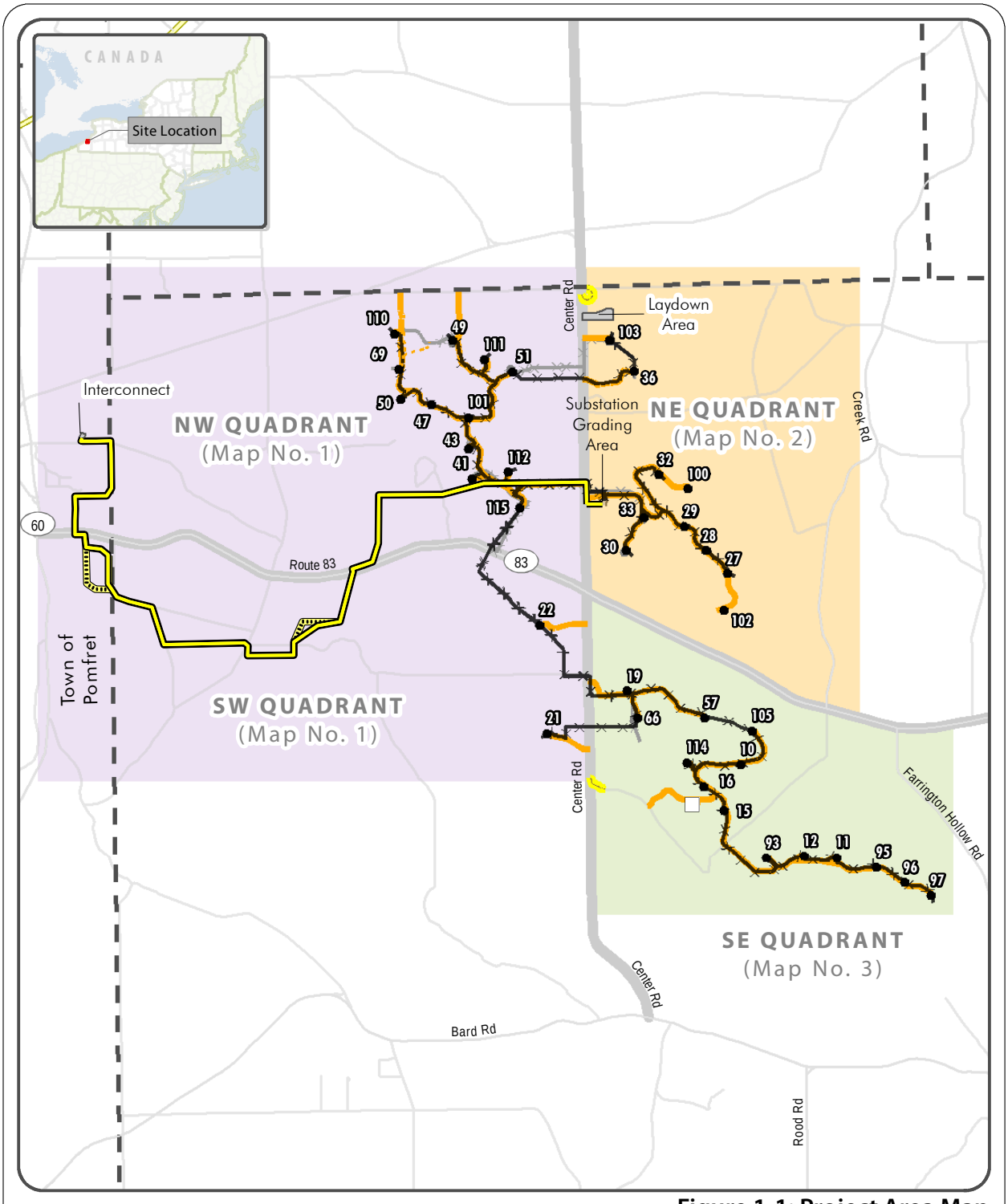


Met Tower
Turbine
Turbine Alternative
Collection Line
Collection Lines Alternative
Access Road
Access Road Alternative

Transmission Line
Transmission Line Alternative
Laydown Area
Substation Grading Limit
Intersection Improvement
Quadrant Boundary
Other Major Road
Local Road

Map Frames
Frame 1
Frame 2
Frame 3
Town Boundary

**Figure 1-1: Project Area Map**
Page 1 of 4
Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

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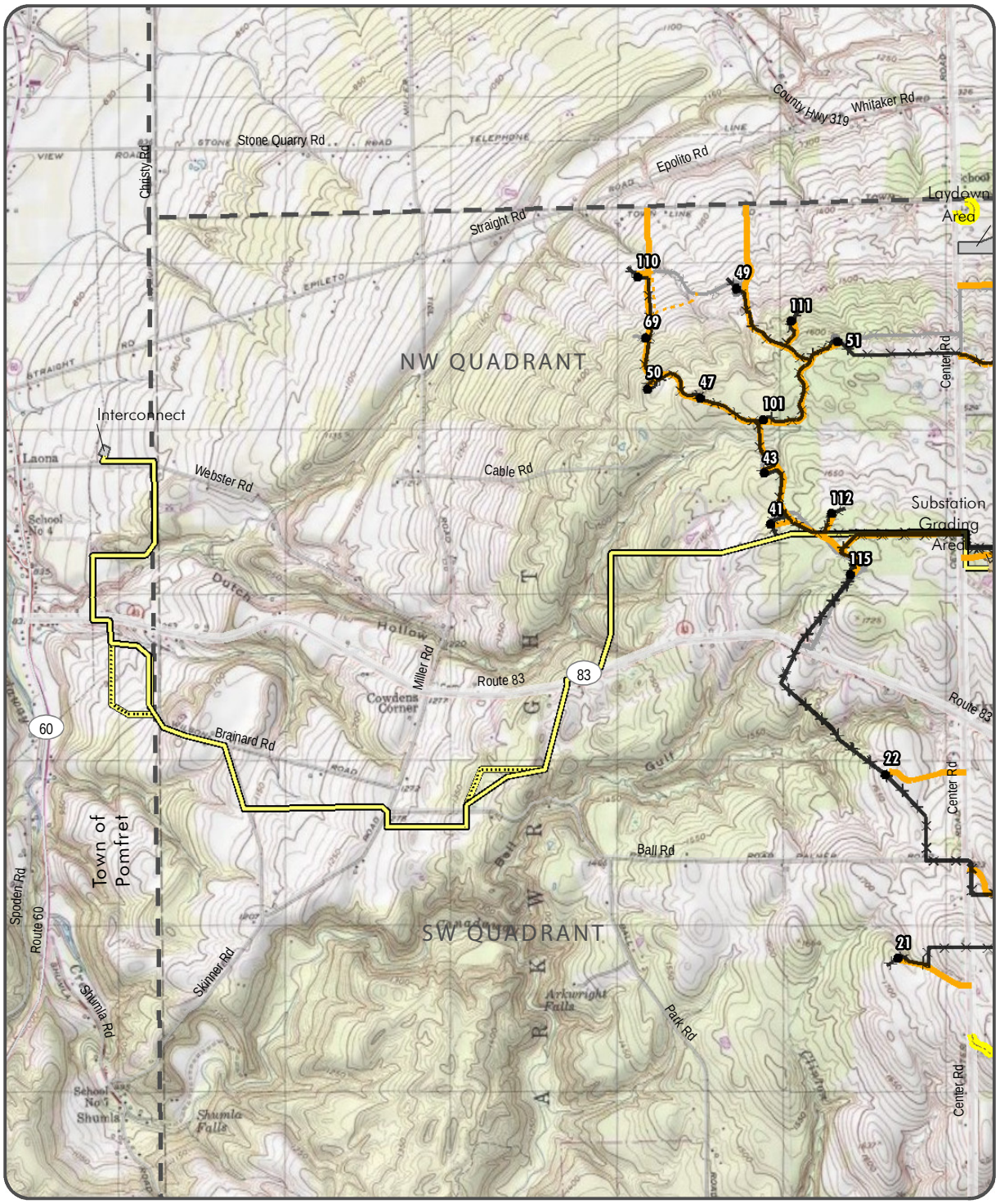


Met Tower
Turbine
Turbine Alternative
Collection Line
Collection Line Alternative
Access Road
Access Road Alternative
Intersection Improvement
Transmission Line
Transmission Line Alternative
Laydown Area/Interconnect
Substation Grading Limit
Town Boundary
Local Road
Quadrant Boundary

**Figure 1-1. Project Area Map**: Page 2 of 4
Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

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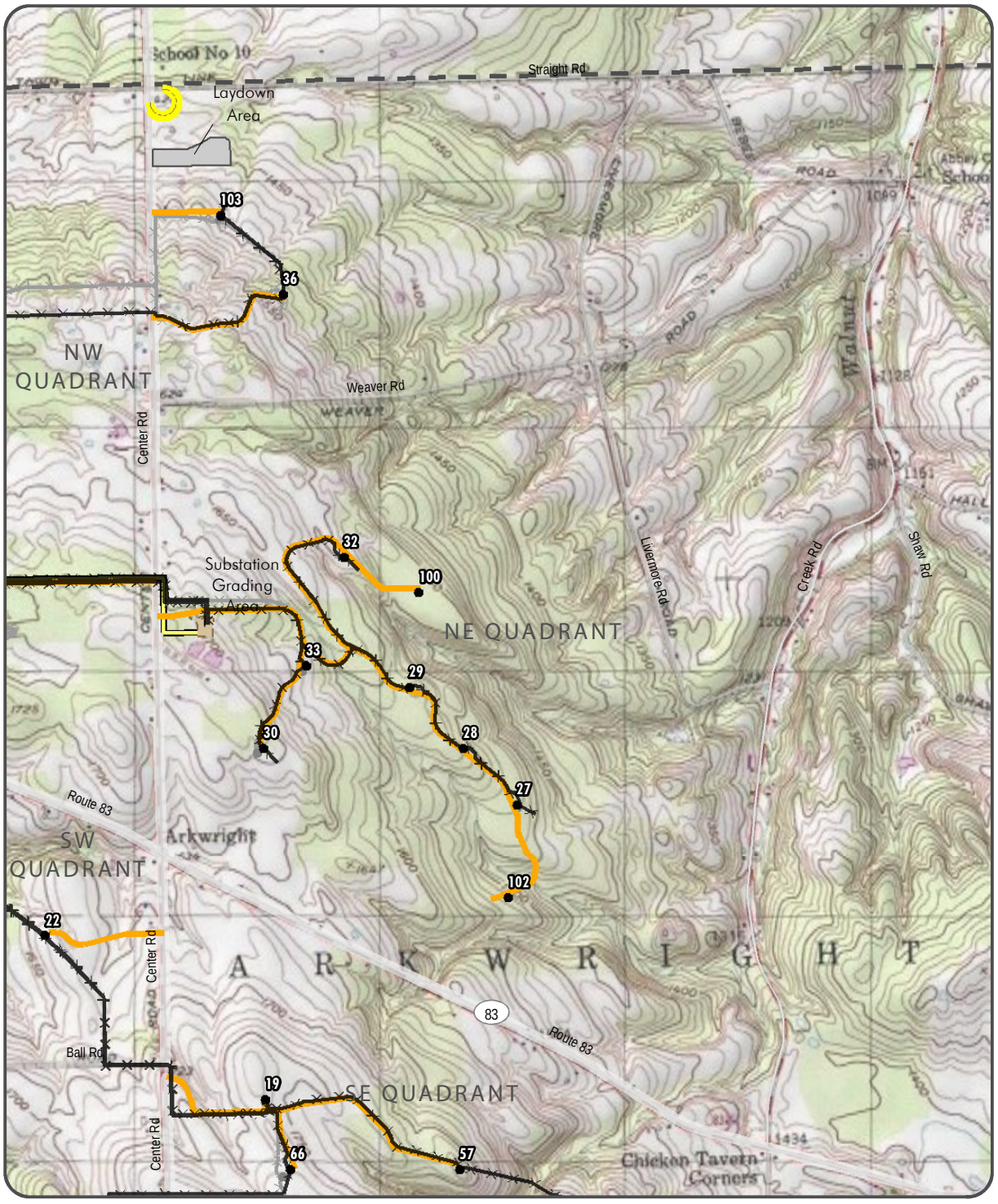


Met Tower
Turbine
Turbine Alternative
Collection Line
Collection Line Alternative
Access Road
Access Road Alternative
Intersection Improvement
Transmission Line
Transmission Line Alternative
Laydown Area/Interconnect
Substation Grading Limit
Town Boundary
Local Road
Quadrant Boundary

**Figure 1-1. Project Area Map**: Page 3 of 4
Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

Scale:
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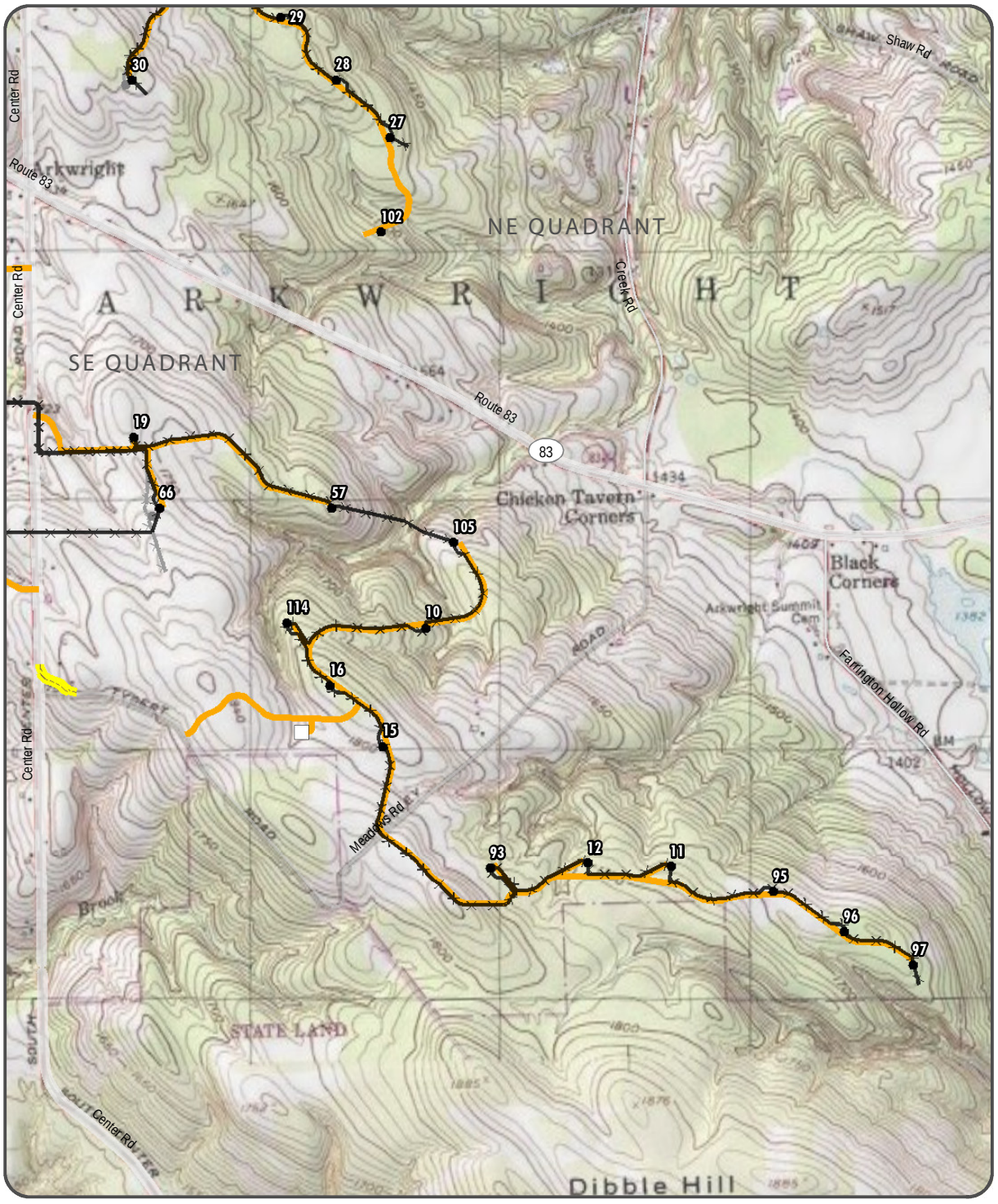


- Met Tower
- Turbine
- Turbine Alternative
- Collection Line
- Collection Line Alternative
- Access Road
- Access Road Alternative
- Intersection Improvement
- Transmission Line
- Transmission Line Alternative
- Laydown Area/Interconnect
- Substation Grading Limit
- Town Boundary
- Local Road
- Quadrant Boundary

**Figure 1-1. Project Area Map**: Page 4 of 4
Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

Scale:
0 0.125 0.25 0.5 Miles

# 2 Regulatory Review and Permit Requirements

This report was prepared to address the requirements of the Clean Water Act (CWA); New York State Article 15, Title 5; and New York State Article 24. Each of these requirements is discussed below.

## 2.1 Clean Water Act

The CWA was implemented to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Under Sections 401 and 404 of the CWA, permits must be issued for certain activities that may impact wetlands and waterways. Section 401 of the CWA requires state water quality certification or waiver for any federally permitted action involving discharges into waters of the United States to ensure that the permitted action will not violate the state's water quality standards or impair designated uses. The New York State agency responsible for administering the Section 401 program is NYSDEC. Section 404 of the CWA requires that a permit be obtained for the discharge of dredged or fill material into waters of the United States, including wetlands and streams. Waters of the United States are defined under 33 Code of Federal Regulations (CFR), and wetlands are specifically defined under 33 CFR Part 328.3(b). The permitting agency responsible for Section 404 permits is the USACE. The Project falls within the jurisdiction of the USACE Buffalo District and within the jurisdiction of Region 9 of NYSDEC.

## 2.2 New York State Environmental Conservation, Law Article 15, Title 5

The regulations of the New York State Environmental Conservation Law (ECL), also known as the "Protection of Waters" Program, are designed to regulate any activities that could impact protected watercourses within New York State. Protected waters include all waters classified as C(t), C(ts), B, or A, as well as all navigable waters. Article 15 covers disturbances of streambeds and banks and disposal of fill material and excavation in protected waterbodies. Application for a permit under Article 15 is completed jointly with the USACE permit application. The Project Area falls within the jurisdiction of NYSDEC Region 9.

## 2.3 New York State Environmental Conservation Law, Article 24

Article 24 of the New York State ECL is titled the New York Freshwater Wetland Act. This law provides for regulation of certain activities that could adversely affect wetlands of 5 hectares (12.4 acres) or more as well as smaller wetlands identified as having an unusually significant local value. Activities that occur within 30.5 meters (100 feet) of the wetland boundary are also regulated. NYSDEC maintains a database (both in map form and electronic) identifying regulated state wetland complexes. While the NYSDEC database provides the basis for state regulation of wetland complexes, the actual extent of field jurisdiction is based on the actual boundaries of the wetlands, which can be expanded or modified based on in-field review and delineation of existing wetland boundaries. Application for a permit under Article 24 is completed jointly with the USACE permit application.

# 3 Study Area

## 3.1 Description of Study Area

The boundaries of wetlands and waterbodies were identified and delineated within the Study Area. This generally included a circular area with a 250-foot radius surrounding each turbine, a 250-foot-wide corridor centered on access roads, and a 100-foot-wide corridor centered on collection lines not associated with access roads. In some areas, surveys were restricted or expanded (i.e., restricted because of property access or expanded to ensure that regulated buffers adjacent to NYSDEC wetlands were identified). These areas are collectively referred to as the "Study Area" throughout this report.

Surveys have been conducted on more than one layout since publication of the *Wetland and Waterbodies Report for the Arkwright Summit Windfarm* (E & E 2009). However, this report only deals with those features that are found within the current Study Area.

The Study Area is located within the Chautauqua-Conneaut and Conewango watersheds. The Chautauqua-Conneaut watershed (United States Geological Survey [USGS] Hydrologic Unit 04120101) drains generally north along Walnut Creek to Silver Creek and west along Canadaway Creek before emptying into Lake Erie. The Conewango watershed (USGS Hydrologic Unit 05010002) generally flows east along West Branch Conewango Creek and Conewango Creek to the Allegheny River (see Section 4.1). The Alleghany River drains to the Ohio River and ultimately to the Mississippi River. The Chautauqua-Conneaut and Conewango watersheds have been designated as Category II watersheds by the New York Unified Watershed Assessment Program. Category II watersheds are defined as those currently meeting water quality goals (NYSDEC 1998).

## 3.2 Siting

Arkwright Summit Wind Farm has taken a multi-phased siting approach in order to minimize impacts to wetlands and waterbodies to the extent practicable. The layout design went through multiple changes in response to the wetlands found during the previous delineations from 2008 through 2013. In addition, the design team utilized the initial results of the 2015 delineations, to further refine turbine and collection line layouts, minimizing impacts to wetlands. Additionally, layout siting was informed by a desktop review of existing wetland location information and mapping and reconnaissance level wetland surveys. Each phase of the wet-

land study was used to refine siting for the Project facilities for this layout to minimize impacts on wetlands while balancing impacts on other resources.

# 4 Methodology

This section references and describes the regulatory manuals, definitions, and methodologies used to field delineate wetlands and waterbody features within the Study Area. Field surveys were conducted from May to August on land parcels for which access permission had been granted. Where potential wetland indicators were observed, data were collected at sample plot locations to determine whether a dominance of hydrophytic vegetation indicators, hydric soil indicators, and hydrology indicators were present. If each of these indicators was present within the sample plot, a wetland boundary was delineated, and upland and wetland data plot locations were established. This section also describes the methodology used to site the turbines and other project facilities.

## 4.1 Preliminary Data Review

United States Fish and Wildlife Service (USFWS) NWI maps NYSDEC Freshwater Wetlands maps, the USGS National Hydrographic Dataset (NHD), Chautauqua County soil survey, aerial photographs, and previous wetland delineations were reviewed prior to field work to determine potential locations of wetlands and waterbodies within the Study Area. Figure 4-1 identifies the watersheds, NWI and NYSDEC mapped wetlands, and NHD and NYSDEC mapped streams. Figure 4-2 presents the hydric soils for the Project Area.

### 4.1.1 Review of Existing Wetland Information

The data sources indicate the presence of numerous wetlands in the Project Area. Based on the results of the desktop review, along with prior consultation with both the USACE and NYSDEC, E & E determined that additional field verification would be required to determine and quantify the presence and extent of any additional wetlands in the Project Area.

#### Wetlands under State Jurisdiction

Based on analysis of NYSDEC mapping, four wetlands under the jurisdiction of New York State (totaling approximately 488.86 acres) were found within the Project Area. Table 4-1 provides a listing of the NYSDEC-mapped wetlands within the Project Area along with the wetland class. These wetlands were avoided during the siting process and not located within the Study Area.

Data provided by NYSDEC indicates that the previously mapped state jurisdictional wetlands within the Project Area are Class I and Class II wetlands.

During the Project's previous wetland delineations, a wetland exceeding the 12.4-acre size requirement was discovered within the Project Area and was named FO-13. NYSDEC confirmed that they would take jurisdiction of this newly named freshwater wetland. The class of this wetland has not yet been determined because NYSDEC has yet to update the Freshwater Wetland Maps for Chautauqua County, and the jurisdictional determination letter gave no additional information. As this Project's layout and design has evolved over numerous years and has been re-sited numerous times, the current layout avoids impacts to portions of FO-13 and the regulated Adjacent Area (AA) which have been previously identified. The Project does impact one wetland that is contiguous with FO-13 and will likely be considered jurisdictional by NYSDEC.

### 4.1.2 Review of Existing Stream Information

USGS 7.5-Minute Series topographic maps and 2-foot LiDAR was reviewed to determine the potential location and names of streams in the Project Area. NYSDEC Stream Classification data was reviewed to determine the presence of streams protected by New York State under ECL Article 15 (see Figure 4-1). In addition, state 303(d) and 305(b) databases were reviewed to determine the water quality of waterbodies in the Project Area.

#### Watersheds and Water Quality

No waterbodies within the Project Area are listed on the New York State Section 303(d) List of Impaired Waters, and no impaired waters or priority listed waters are located within the Project Area (NYSDEC 2014).

#### NYSDEC Stream Classification

NYSDEC stream classification data were reviewed to determine whether streams in the Project Area are protected by New York State under Article 15 of the ECL. NYSDEC uses a stream classification system in order to identify the value and uses of watercourses in the state. A protected stream is any stream or particular portion of a stream for which any of the following classifications or standards have been adopted by the department or any of its predecessors: AA, AA(t), A, A(t), B, B(t), or C(t). Streams designated as (t) (trout) also include those more specifically designated as (ts) (trout spawning). Class D streams are the lowest level of classification and are not subject to protection under the NYSDEC Protection of Waters program. Disturbance to the bed or banks of protected streams requires a permit under Article 15 of the New York ECL.

The watercourses mapped within the Project Area are identified as Class D, Class C, Class C(t), Class B, and Class AA. Class C streams support fishing and fish propagation and primary- and secondary-contact recreation. Class B streams support primary and secondary contact recreation and fishing. Class AA streams are a water supply used for drinking, culinary or food processing purposes, primary and secondary contact recreation, and fishing. Both Class AA and Class B streams are also considered "protected streams," requiring permitting under Article 15.

Stream classifications were identified by overlaying a shapefile with stream classifications from NYSDEC onto the mapped streams. If the field data matched the NYSDEC shapefile, that classification was used. If the field data did not match the NYSDEC shapefile, perennial streams were assigned the class of the stream into which it flows, while intermittent and ephemeral streams were assigned to Class D (NYSDEC 2015).

## 4.2 Wetland Delineation Methodology

Field biologists conducted wetland surveys within the Study Area from May to August 2015. The wetland delineation methodologies outlined in the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the Northcentral and Northeast Regional Supplement (USACE 2012) were used to identify and delineate wetlands.

Wetland boundaries were marked with pink "Wetland" survey flagging and data points were marked by pink and black striped survey flagging. Wetland flagging tape was not used in agricultural fields or pastures where only a Global Positioning System (GPS) point was taken.

Each wetland was given a unique alphanumeric designation to assist in documentation. An example of the unique identifier used is "W-T01-003-002," using the feature identification nomenclature in Table 4-2.

Flag positions and data plot locations were collected by field biologists using a GPS hand-held Trimble GeoXT loaded with ESRI ArcPad 10.0 software. Photographs were taken and a Wetland Determination Data Form from the applicable Regional Supplement and a Wetland Jurisdictional Field Data Sheet were completed for each delineated wetland and associated upland data point.

All previously delineated areas were reviewed to ensure the accuracy of earlier delineations. Any wetlands that had not been delineated in the original surveys were also mapped. If the formerly delineated wetlands were found to have the same wetland class, no additional documentation was taken.

According to the 1987 USACE Manual (Environmental Laboratory 1987), wetlands are characterized by the following three distinct environmental characteristics:

(1) *Vegetation*. The prevalent vegetation consists of macrophytes that are typically adapted to life in hydric soil conditions. These hydrophytic species, due to morphological, physiological, and/or reproductive adaptations, can and do persist in anaerobic soil conditions.

(2) *Soils*. Soils are present and have been classified as hydric, or they possess redoximorphic characteristics that are associated with anaerobic soil conditions.

(3) *Hydrology*. The area must be inundated either permanently or periodically at mean water depths less than 6.6 feet, or the soil is saturated at the surface for some time during the growing season of the prevalent vegetation.

The specific methods used to characterize and evaluate vegetation, soils, and hydrology are described below.

### 4.2.1 Vegetation

The location of each wetland and upland paired sampling point was selected based on vegetation community homogeneity and because the location was considered representative of the community. Species abundance in both the upland and wetland communities was visually estimated by percent cover within each vegetation stratum. Field biologists identified plant species using botanical references for the region. Dominant trees, shrubs/saplings, non-woody herbaceous plants, and woody vines were recorded within 30-foot-, 15-foot-, 5-foot-, and 30-foot-radius sample plots, respectively, centered on the survey plot. In cases where the plot radius extended beyond the wetland boundary, the plot terminated at the wetland boundary line for each respective stratum. The dominant species of each stratum of the community was identified according to the 50/20 rule, described as follows:

> "…dominants are the most abundant species that individually or collectively account for more than 50% of the total coverage of vegetation in the stratum, plus any other species that, by itself, accounts for 20% of the total. For the purposes of this regional supplement, absolute percent cover is the recommended abundance measure for plants in all vegetation strata" (USACE 2012).

The hydrophytic indicator status of each species was identified using *The National Wetland Plant List: 2014 Update of Wetland Ratings (*Lichvar et al. 2014). An area is considered to have hydrophytic vegetation if any of the following indicators is present at the sample site (USACE 2012):

- All dominant species across all strata are rated as OBL or FACW (Indicator 1);
- The results of the dominance test is greater than 50% (Indicator 2);
- The prevalence index is less than or equal to 3.0 (Indicator 3); or
- The plant community passes either the dominance test or the prevalence index after reconsideration of the indicator status of certain plant species that exhibit morphological adaptations for life in wetlands (Indicator 4).

The wetland classification system developed by Cowardin et al. (1979) was used to classify delineated wetland vegetation community cover types.

### 4.2.2 Soils

For each observation plot, the soil profile was characterized to determine whether hydric soil indicators were present. A hydric soil is defined as follows: a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA Soil Conservation Service 1991).

Soil borings were collected with a hand-held auger or sharp-shooter shovel to depths of approximately 20 inches, unless otherwise restricted, to observe the soil profile and evaluate redoximorphic features, if present. Information collected for each soil profile included horizon depth, texture, color, and the presence or absence of redoximorphic features. Colors of the soil matrix and redoximorphic features were identified using Munsell® soil color charts (Munsell Color 2009). All hydric soil determinations were based on criteria established in the 1987 USACE Manual (Environmental Laboratory 1987) and the applicable Regional Supplement (USACE 2012). Soils were considered hydric if at least one primary indicator or at least one indicator for problematic hydric soils was met. Table 4-3 lists the primary and secondary wetland soil indicators for the Northcentral and Northeast Region (USACE 2012).

### 4.2.3 Hydrology

The potential for wetland hydrology was evaluated by determining whether hydrologic indictors were present. A site was determined to contain wetland hydrology if at least one primary indicator was observed or at least two secondary indicators were observed. Field biologists noted the presence and depth of surface water, the water table, and saturation, if encountered, within the soil profile. Table 4-4 lists the primary and secondary wetland hydrology indicators for and the Northcentral and Northeast Region (USACE 2012).

### 4.2.4 Wetland Function and Value Assessment

Field biologists performed functional assessments of wetlands within the Study Area using the USACE Highway Methodology (USACE 1999). A Wetland Function-Value Evaluation Form was completed for each wetland complex, and the results were used to determine functions and values of each wetland within the Study Area.

The eight wetland functions and five wetland values evaluated by the USACE Highway Methodology are described below.

- Wetland Functions:
  - Groundwater Recharge/Discharge: the relationship between the wetland and the underlying aquifer and groundwater quality;
  - Flood-flow Alteration: the ability of a wetland to retain floodwater after major rain events and to reduce potential flood damage;
  - Fish and Shellfish Habitat: the effectiveness of potential fish and shellfish habitat in the wetland and any associated waterbodies;

- Sediment/Toxicant/Pathogen Retention: the ability of the wetland to prevent water quality degradation;
- Nutrient Removal/Retention/Transformation: the ability of the wetland to inhibit excess nutrients from entering nearby aquifers or surface waters;
- Production Export (Nutrient): the effectiveness of the wetland to produce food or other usable products;
- Sediment/Offshore Stabilization: the means by which the wetland is preventing erosion; and
- Wildlife Habitat: the ability of the wetland to provide habitat for animal species.

■ Wetland Values:

- Recreation (Consumptive and Non-Consumptive): evaluates whether the wetland can be utilized for active and passive recreation activities;
- Educational/Scientific Value: evaluates whether the wetland could be considered adequate for use as an "outdoor classroom" or for scientific study/research;
- Uniqueness/Heritage: evaluates special values of the wetland, including unique or unusual attributes, history, and aesthetics;
- Visual Quality/Aesthetic: analyzes the visual and aesthetic quality of the wetland; and
- Threatened or Endangered Species Habitat: the ability of the wetland to support threatened or endangered species.

## 4.3 Waterbody Identification Methodology

The waterbody field survey methodology used for determining the locations and characteristics of waterbodies crossing or adjoining the Study Area was similar to the methodology used in the wetland survey. Waterbody boundaries were established using guidelines presented in 33 CFR 328.4(c), which states, "the limits of federal jurisdiction for non-tidal waters of the United States in the absence of adjacent wetlands is the ordinary high water mark [OHWM]. The OHWM is established by observations of water fluctuation, physical characteristics, such as a clear natural line impressed on the bank, shelving, changes in the soil character, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR 328.3(e)).

Perennial waterbodies were defined as those that flow throughout the year and are supplied by groundwater. Intermittent watercourses were categorized as waterbodies that carry water during portions of the year and may be supplied by ground water part of the year. During other times during the year, intermittent streams do not contain any water flow. Ephemeral waterbodies were categorized as those that flow only during or subsequent to a runoff event.

## 4.4 Training and Organization

Each field team was comprised of at least one experienced wetland biologist. Experienced wetland biologists have taken one or more courses in wetland delineations and have extensive knowledge of the area.

## 4.5 Quality Assurance/Quality Control

Field data, including GPS data, field data sheets, photos, and log books, were subject to an initial daily quality assurance/quality control (QA/QC) review by each team in the field. Further, data sheets and GPS data were subject to a weekly QA/QC review by each field team and the geographic information system (GIS) support team. A final QA/QC review of the data was performed in the office by select field biologists and the GIS team. Senior level biologists field reviewed the boundary and flag placement for select wetlands.

**Table 4-1 Mapped NYSDEC Wetlands in the Project Area**

| NYSDEC Wetland ID | Class | Acreage within Project Area |
|---|---|---|
| FO-1 | I | 390.48 |
| FO-10 | II | 30.11 |
| CS-3 | II | 35.17 |
| CS-4 | II | 33.10 |
| FO-13[a] | Unknown | Unknown |
| **Total** | | **488.86** |

Note:
a. FO-13 was a previously unmapped NYSDEC wetland identified in the *Wetland and Waterbodies Report for the Arkwright Summit Windfarm* (E & E 2009), and later confirmed by NYSDEC (See Section 2.3).

**Table 4-2 Wetland Feature Identification Nomenclature**

| Feature | Team | Wetland Number | Flag Number |
|---|---|---|---|
| W – Wetland | T01 – T25 | 001, 002, 003, etc. | 001, 002, 003, etc. |

**Table 4-3 Wetland Soil Indicators the Northcentral and Northeast Region**

| Hydric Soil Indicators | | Indicators for Problematic Hydric Soils |
|---|---|---|
| Histosol (A1) | Stripped Matrix (S6) | 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| Histic Epipedon (A2) | Dark Surface (S7) (LRR R, MLRA 149B) | Coast Prairie Redox (A16) (LRR K, L, R, MLRA 149B) |
| Black Histic (A3) | Polyvalue Below Surface (S8) (MLRA 147, 148) | 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| Hydrogen Sulfide (A4) | Thin Dark Surface (S9) (LRR R, MLRA 149B) | Dark Surface (S7) (LRR K, L, R) |
| Stratified Layers (A5) | Loamy Mucky Mineral (F1) (LRR K, L) | Polyvalue Below Surface (S8) (LRR K, L, R) |
| Depleted Below Dark Surface (A11) | Loamy Gleyed Matrix (F2) | Thin Dark Surface (S9) (LRR K, L, R) |
| Thick Dark Surface (A12) | Depleted Matrix (F3) | Fe-Mg Masses (F12) (LRR K, L, R) |
| Sandy Mucky Mineral (S1) | Redox Dark Surface (F6) | Piedmont Floodplain Soils (F19) (MLRA 149B) |
| Sandy Gleyed Matrix (S4) | Depleted Dark Surface (F7) | Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| Sandy Redox (S5) | Redox Depressions (F8) | Red Parent Material (F21) |
| | | Very Shallow Dark Surface (TF12) |

Sources: USACE 2012

Key:
cm = centimeter

**Table 4-4 Wetland Hydrology Indicators for the Northcentral and Northeast Region**

| Primary Indicators (minimum of one is required) | | Secondary Indicators (minimum of two is required) |
|---|---|---|
| Surface Water (A1) | Water-Stained Leaves (B9) | Surface Soil Cracks (B6) |
| High Water Table (A2) | Aquatic Fauna (B13) | Drainage Patterns (B10) |
| Saturation (A3) | Marl Deposits (B15) | Moss Trim Lines (B16) |
| Water Marks (B1) | Hydrogen Sulfide Odor (C1) | Dry-Season Water Table (C2) |
| Sediment Deposits (B2) | Oxidized Rhizospheres on Living Roots (C3) | Crayfish Burrows (C8) |
| Drift Deposits (B3) | Presence of Reduced Iron (C4) | Saturation Visible on Aerial Imagery (C9) |
| Algal Mat or Crust (B4) | Recent Iron Reduction in Tilled Soils (C6) | Stunted or Stressed Plants (D1) |
| Iron Deposits (B5) | Thick Muck Surface (C7) | Geomorphic Position (D2) |
| Inundation Visible on Aerial Imagery (B7) | | Shallow Aquitard (D3) |
| | | Microtopographic Relief (D4) |
| | | FAC-Neutral Test (D5) |

Source: USACE 2012

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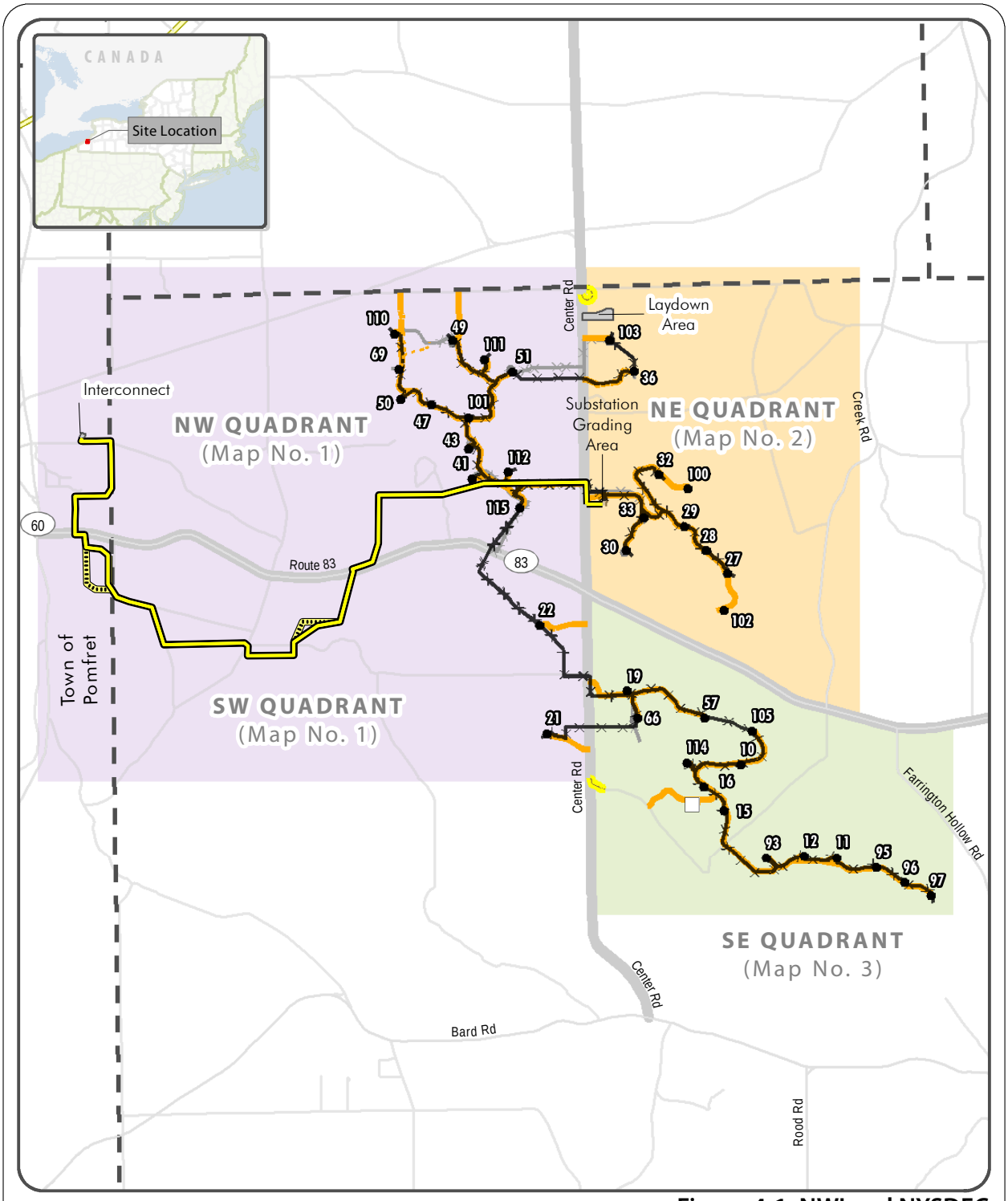


**Figure 4-1: NWI and NYSDEC Mapped Streams and Wetlands**

Page 1 of 4

Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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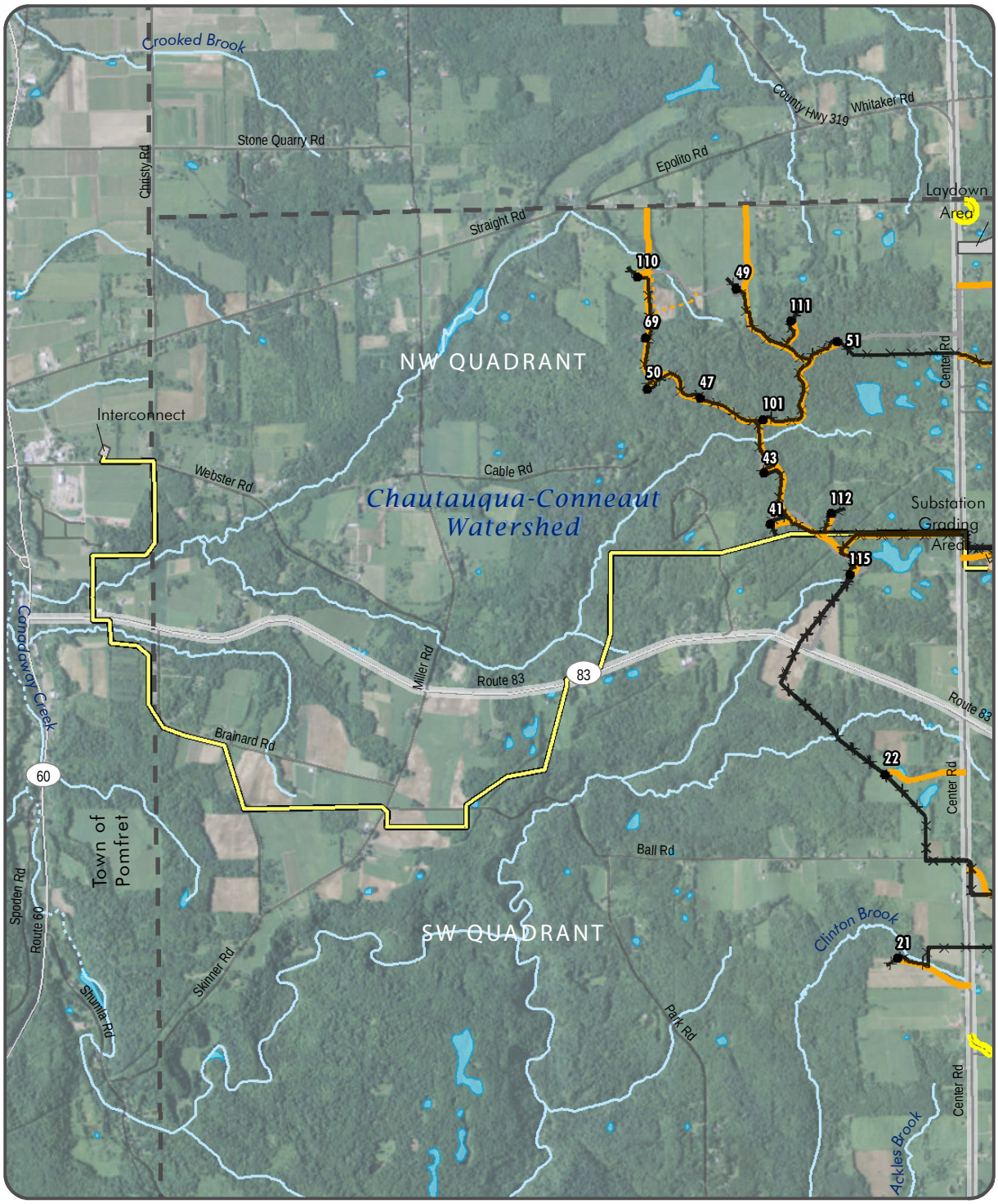


## Figure 4-1: NWI and NYSDEC Mapped Streams and Wetlands

Page 2 of 4

Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

- Met Tower
- Turbine
- Turbine Alternative
- Collection Line
- Collection Lines Alternative
- Access Road
- Access Road Alternative
- Intersection Improvement
- Transmission Line
- Laydown Area/Interconnect
- Substation Grading Limit
- NYSDEC Wetland
- NWI Wetland
- HUC-8 Watershed Boundary
- Town Boundary
- Local Road
- Quadrant Boundary
- ArtificialPath
- StreamRiver

Scale: 0 0.125 0.25 0.5 Miles

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Source: New York State Department of Environmental Conservation, 1999; U.S. Fish and Wildlife Service, 2012; U.S. Geological Survey in cooperation with U. S. Environmental Protection Agency and State Cooperators, 2004.

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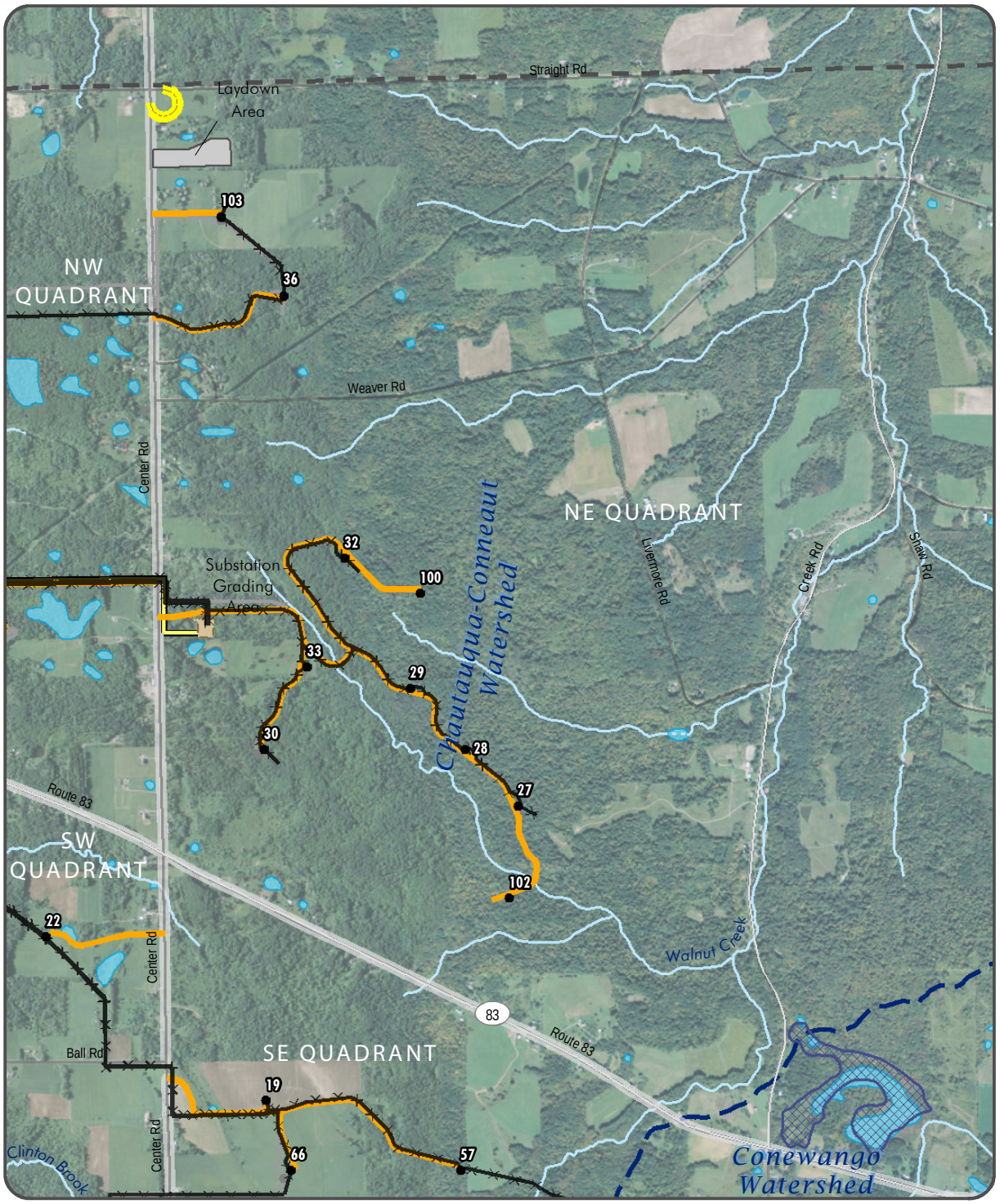


## Figure 4-1: NWI and NYSDEC Mapped Streams and Wetlands

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Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

- Met Tower
- Turbine
- Turbine Alternative
- Collection Line
- Collection Lines Alternative
- Access Road
- Access Road Alternative
- Intersection Improvement
- Transmission Line
- Laydown Area/Interconnect
- Substation Grading Limit
- NYSDEC Wetland
- NWI Wetland
- HUC-8 Watershed Boundary
- Town Boundary
- Local Road
- Quadrant Boundary
- ArtificialPath
- StreamRiver

Scale: 0 0.125 0.25 0.5 Miles

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Source: New York State Department of Environmental Conservation, 1999; U.S. Fish and Wildlife Service, 2012; U.S. Geological Survey in cooperation with U. S. Environmental Protection Agency and State Cooperators, 2004.

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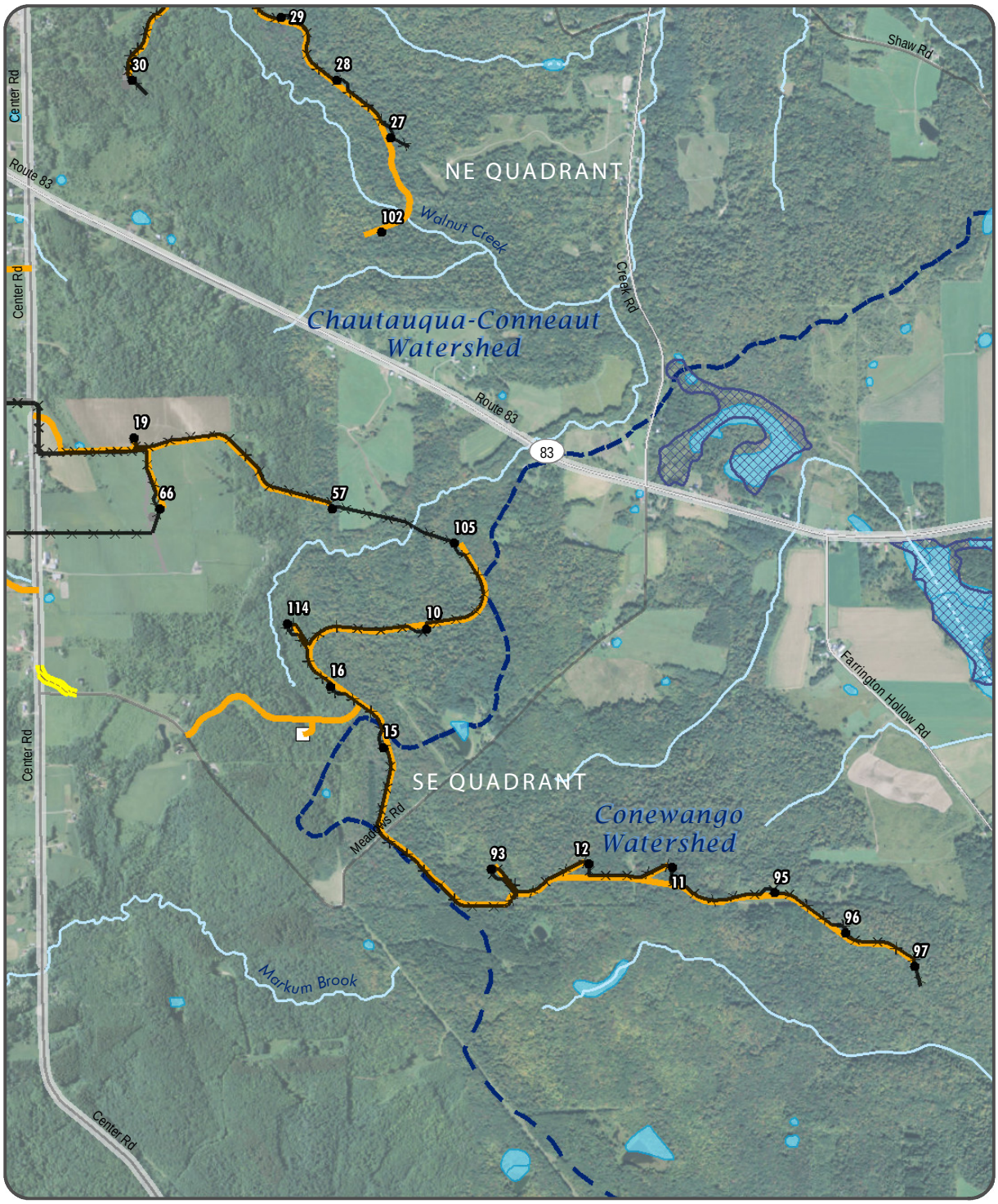


## Figure 4-1: NWI and NYSDEC Mapped Streams and Wetlands

Page 4 of 4

Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

- Met Tower
- Turbine
- Turbine Alternative
- Collection Line
- Collection Lines Alternative
- Access Road
- Access Road Alternative
- Intersection Improvement
- Transmission Line
- Laydown Area/Interconnect
- Substation Grading Limit
- NYSDEC Wetland
- NWI Wetland
- HUC-8 Watershed Boundary
- Town Boundary
- Local Road
- Quadrant Boundary
- ArtificialPath
- StreamRiver

Scale: 0 0.125 0.25 0.5 Miles

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Source: New York State Department of Environmental Conservation, 1999; U.S. Fish and Wildlife Service, 2012; U.S. Geological Survey in cooperation with U. S. Environmental Protection Agency and State Cooperators, 2004.

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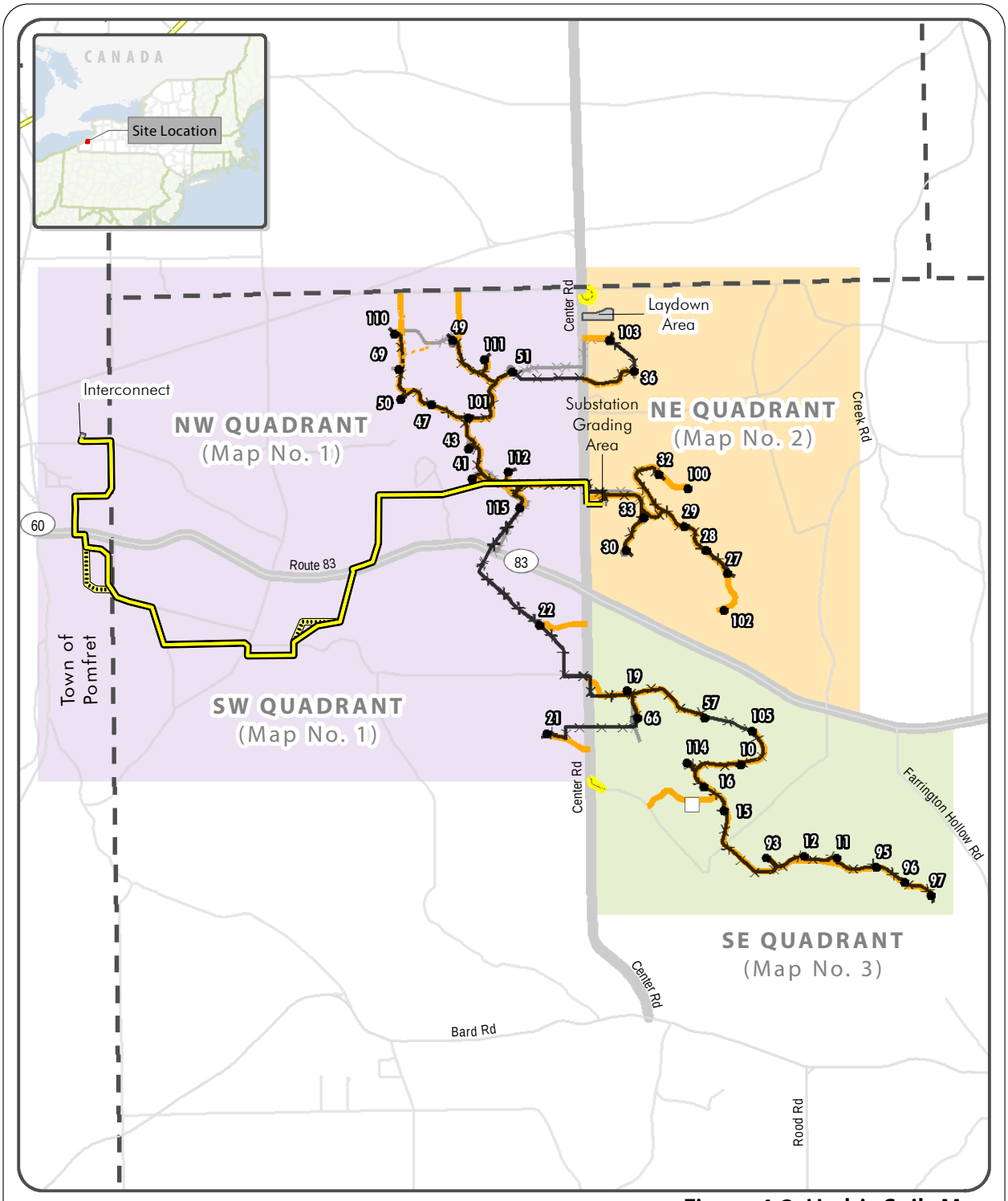


Met Tower
Turbine
Turbine Alternative
Collection Line
Collection Lines Alternative
Access Road
Access Road Alternative

Transmission Line
Transmission Line Alternative
Laydown Area
Substation Grading Limit
Intersection Improvement
Quadrant Boundary
Other Major Road
Local Road

Map Frames
Frame 1
Frame 2
Frame 3
Town Boundary

**Figure 4-2: Hydric Soils Map**
Page 1 of 4
Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

Scale:
0 0.25 0.5 1 Miles

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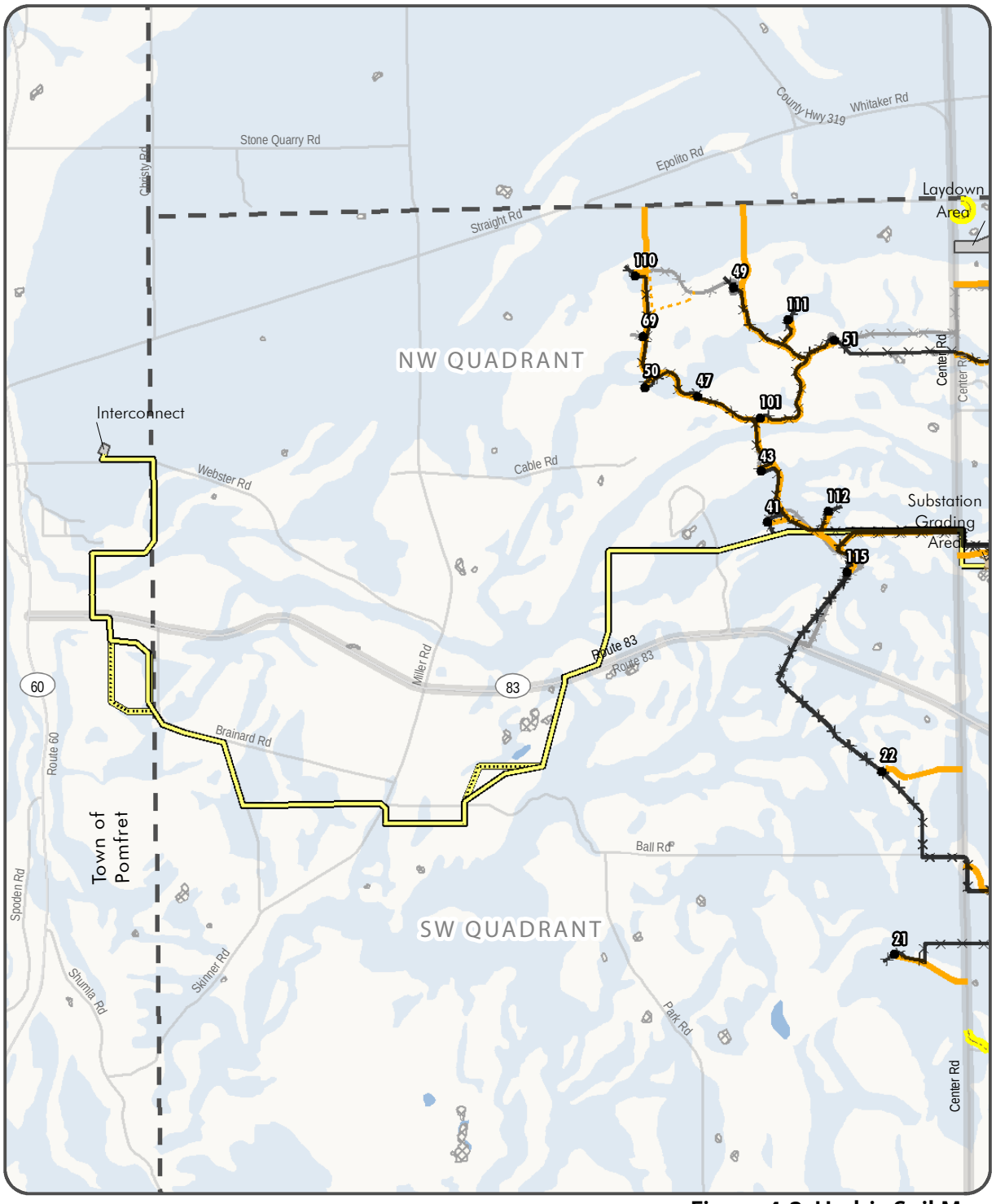



- Met Tower
- Turbine
- Turbine Alternative
- Collection Line
- Collection Lines Alternative
- Access Road
- Access Road Alternative
- Intersection Improvement
- Transmission Line
- Transmission Line Alternative
- Substation Grading Limit
- Laydown Area/Interconnect
- Town Boundary
- Local Road
- Quadrant Boundary

Hydric Soils
- All hydric
- Partially hydric
- Not hydric
- Unknown

**Figure 4-2. Hydric Soil Map**

Page 2 of 4

Arkwright Wind Farm

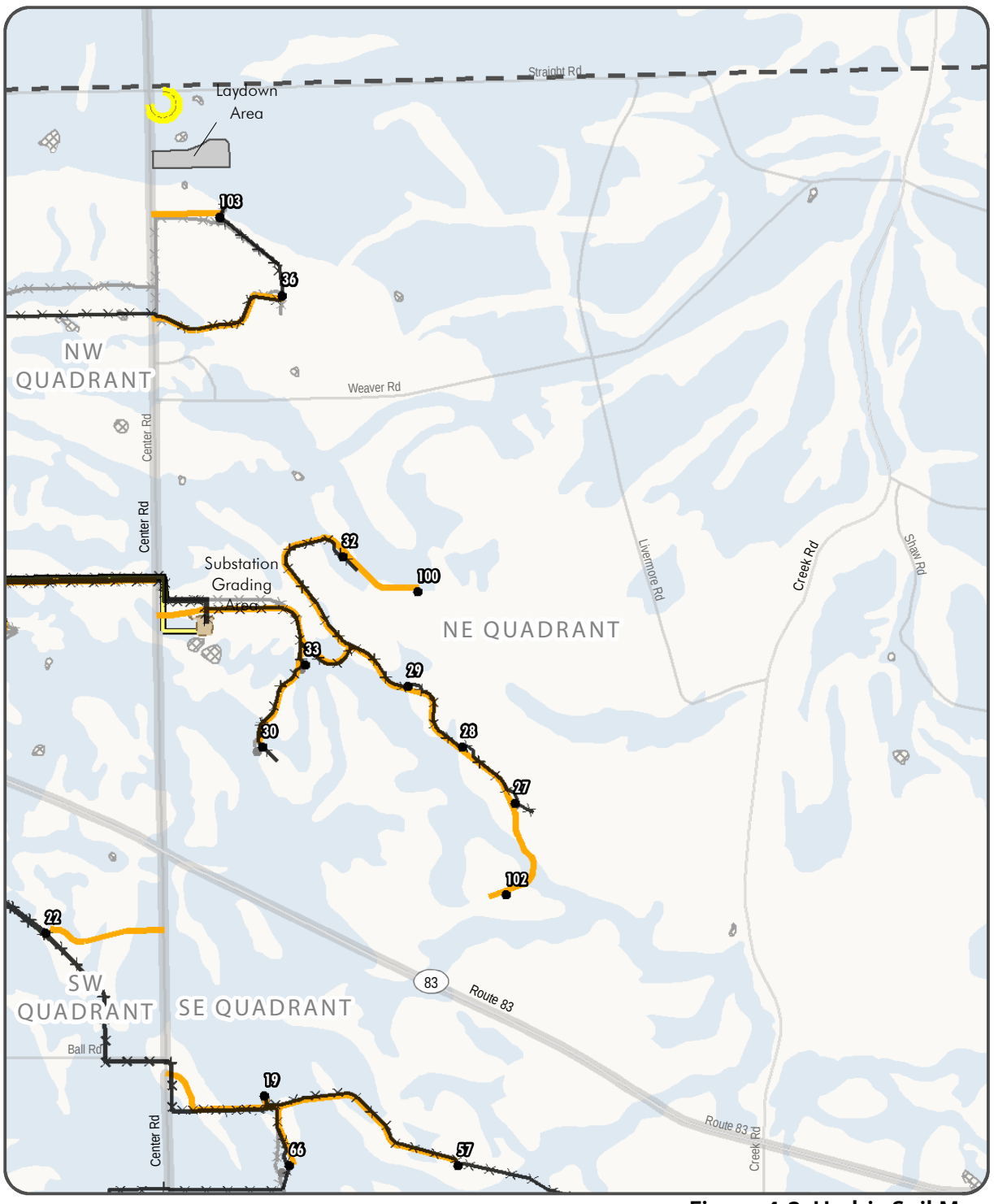
Town of Arkwright

Chautauqua County, New York

Scale:

0 0.125 0.25 0.5 Miles

Service Layer Credits:




Met Tower
Turbine
Turbine Alternative
Collection Line
Collection Lines Alternative
Access Road
Access Road Alternative

Intersection Improvement
Transmission Line
Transmission Line Alternative
Substation Grading Limit
Laydown Area/Interconnect
Town Boundary
Local Road
Quadrant Boundary

Hydric Soils
All hydric
Partially hydric
Not hydric
Unknown

**Figure 4-2. Hydric Soil Map**
Page 3 of 4
Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

Scale:
0 0.125 0.25 0.5 Miles

Service Layer Credits:

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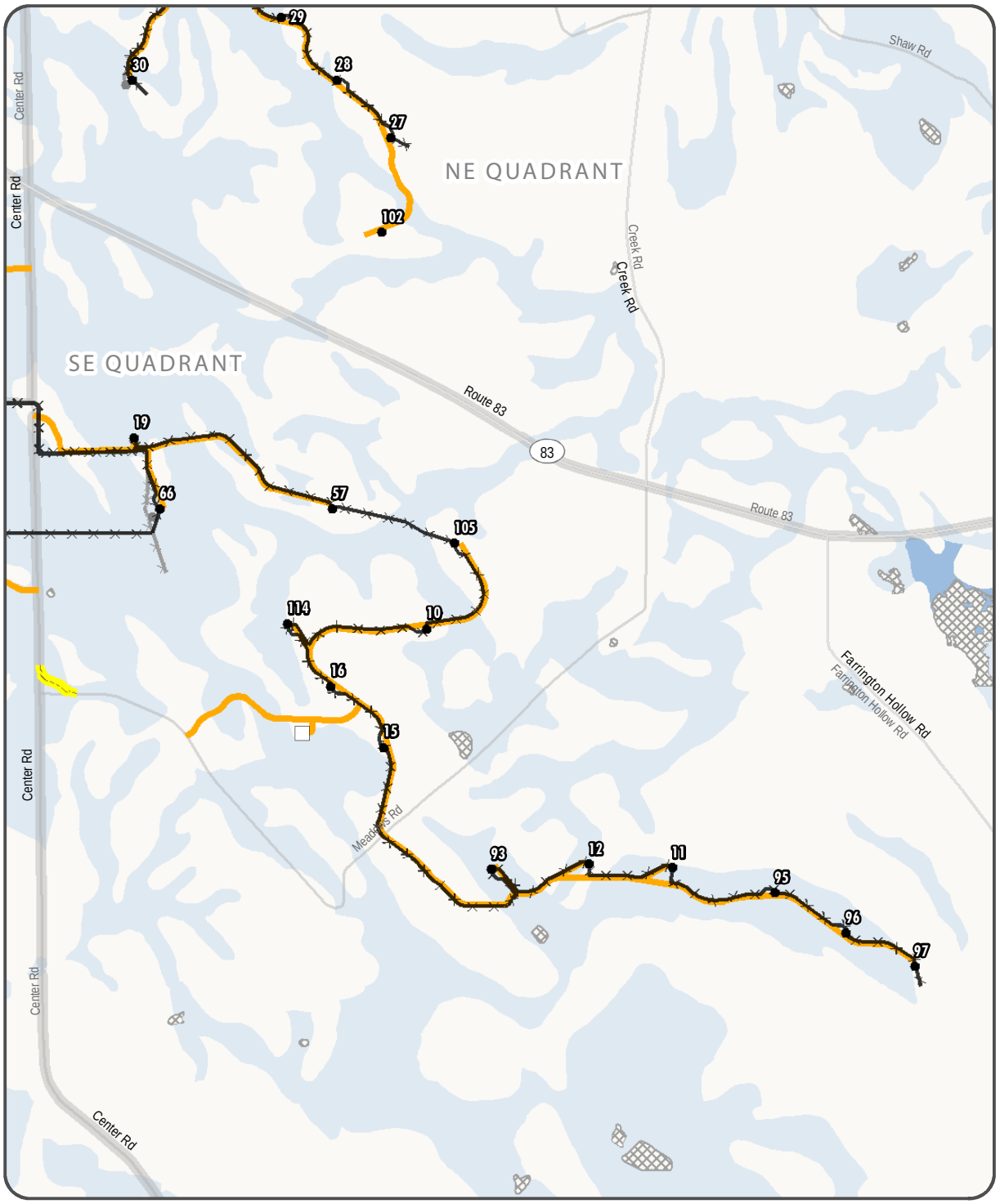


Met Tower
Turbine
Turbine Alternative
Collection Line
Collection Lines Alternative
Access Road
Access Road Alternative
Intersection Improvement
Transmission Line
Transmission Line Alternative
Substation Grading Limit
Laydown Area/Interconnect
Town Boundary
Local Road
Quadrant Boundary

Hydric Soils
All hydric
Partially hydric
Not hydric
Unknown

**Figure 4-2. Hydric Soil Map**
Page 4 of 4
Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

Scale:
0 0.125 0.25 0.5 Miles

Service Layer Credits:

# 5 Results

A map book showing the location of all delineated features is presented in Appendix A.

Tables 5-1 and 5-2 summarize, by cluster, the field survey results for wetlands delineated in the Study Area. A data package with wetland field survey results is provided in Appendix B, which includes the following information:

- Wetland table;
- Wetland jurisdictional field data sheets;
- Wetland function and values data sheets; and
- Wetland photographs.

Table 5-3 summarizes, by cluster, the field survey results for waterbodies delineated in the Study Area. A data package with waterbody field survey results is provided in Appendix C, which includes the following information:

- Waterbody table;
- Waterbody data sheets; and
- Waterbody photographs.

Table 5-3 summarizes, by cluster, the field survey results for waterbodies delineated in the Study Area. A data package with waterbody field survey results is provided in Appendix C, which includes the following information:

- Waterbody table;
- Waterbody data sheets; and
- Waterbody photographs.

## 5.1 Wetlands

A total of 258 wetlands were delineated within the Study Area, totaling approximately 134.82 acres. See Table 5-4 for a full list and description of all delineated wetlands. One wetland, W-T02-023, is part of previously mapped wetland FO-13, which NYSDEC claimed jurisdiction over during a previous iteration of the Project.

### 5.1.1 NYSDEC Wetlands

No wetlands delineated in association with the Project are within 100 feet of NYSDEC mapped wetlands. Field teams delineated two wetland complexes over 12.4 acres in size and one which is contiguous with previously mapped FO-13, which are presumed to fall under the jurisdiction of NYSDEC. In addition, there are seven wetland complexes that are not mapped as greater than 12.4 acres in the Study Area, but have the potential to fall under the jurisdiction of NYSDEC because they extend outside the Study Area. Table 5-5 lists these seven complexes, the two complexes over 12.4 acres, and the wetland contiguous with FO-13.

### 5.1.2 Wetland Habitat

Several wetland community types exist within the Study Area. During surveys, wetland community type was recorded using the Cowardin classification system (Cowardin et al. 1979). In order to provide a better assessment of wetland habitat within the Study Area, the survey information was reviewed subsequent to the completion of field work, and descriptions of the wetland communities were written based on the classification system presented in Edinger et al. (2002). Based on field observations and the classification system presented in Edinger et al., six general palustrine and lacustrine wetland communities were identified in the Study Area: deep emergent marsh, shallow emergent marsh, shrub swamps, red maple hardwood swamp, hemlock hardwood swamp, and artificial ponds. A detailed description of vegetation associated with each community type, as observed during field surveys, is provided below. These descriptions are listed by the Cowardin classification used during field surveys for the specific wetland type.

#### 5.1.2.1 Palustrine Emergent Wetland (PEM)

Wetlands classified under the Cowardin system as palustrine emergent wetlands (PEM) are dominated by herbaceous vegetation with little or no woody plant material present (Cowardin et al. 1979). These are further described using the classification system presented in Edinger et al. (2014) as either Deep Emergent Marshes or Shallow Emergent Marshes.

#### Deep Emergent Marshes

**Description:** According to Edinger et al. (2014), these marshes occur on mineral soil or fine-grained organic soils and have less than 50% canopy cover. These marshes have standing water that fluctuates seasonally but is persistent with substrate that is almost always inundated.

**Distribution:** Deep emergent marshes with persistent inundation were scattered throughout the Study Area. These wetlands are listed as PEM in the wetland summary table.

**Vegetation:**

- **Overstory:** Trees found in surrounding forest communities sometimes occur around the perimeter of the wetland but are not included in the deep emergent marsh component of these wetlands. None of the deep emergent marshes delineated was surrounded by trees.
- **Understory/Shrub Layer:** Hydrophytic understory or shrub species that were found to occur around the perimeter of the delineated deep emergent wetlands include American elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), northern arrowwood (*Viburnum recognitum*) and willow species (*Salix* spp.).
- **Herbaceous Layer:** Emergent hydrophytes found in deep emergent marshes included jewelweed (*Impatiens capensis*), larger blue flag (*Iris versicolor*), sedges (*Carex* spp.), rice cutgrass (*Leersia oryzoides*), spikerush (*Eleocharis* spp.), duckweed (*Lemna valdiviana*), reed canary grass (*Phalaris arundinacea*), and cattail (*Typha spp.*).

## Shallow Emergent Marshes

**Description:** These marshes have less than 50% cover and occur on saturated mineral soils or deep muck soils. They are rarely inundated, but almost always saturated, and are more well drained than deep emergent marshes. Standing water may disappear completely after the wet season.

**Distribution:** Shallow emergent marshes occur throughout the Study Area in successional fields and in openings in forested areas. Wetlands listed as PEM are shallow emergent marshes unless there is an indication of persistent or permanent inundation.

**Vegetation:**

- **Overstory:** Tree species may occur around the perimeter of the wetland but do not occur within the wetland boundary.
- **Understory/Shrub Layer:** If present, shrubs or saplings occur in isolated patches or individuals and include northern arrowwood, meadow-sweet (*Spiraea latifolia*), and willow.
- **Herbaceous Layer:** Herbaceous species in these wetlands vary throughout the Study Area with the following species commonly appearing as dominants or co-dominants: sensitive fern (*Onoclea sensibilis*), jewelweed, rough stemmed goldenrod (*Solidago rugosa*), soft rush (*Juncus effuses*), sedges, giant goldenrod (*Solidago gigantea*), false hellebore (*Veratrum viride*), woolgrass (*Scirpus cyperinus*), horsetail (*Equestrium* spp.), cinnamon fern (*Osmunda cinnamomea*) and mannagrasses (*Glyceria* sp.*).*

#### 5.1.2.2 Palustrine Scrub-Shrub Wetland (PSS)

Palustrine scrub-shrub wetlands (PSS) are dominated by woody vegetation (i.e., trees or shrubs) less than 6 meters (20 feet) tall. Wetlands classified under the Cowardin system as PSS wetlands are further described using the classification system presented in Edinger et al. (2014) as scrub-shrub swamps.

### Scrub-shrub Swamps

**Description:** These wetlands occur on mineral soil or muck and are variable in structure and distribution. They can be found near ponds and/or stream sides, in transitional areas between forest and open land, and in isolated depressional areas.

**Distribution:** Scrub-shrub wetlands are found intermittently in the Study Area as portions of larger wetlands that typically also have an emergent or forested component.

**Vegetation:**

- **Overstory:** Tree species may occur around the perimeter of the wetland but do not occur within the boundary of a scrub-shrub wetland.
- **Understory/Shrub Layers:** The shrub species found in the Study Area as dominants or co-dominants include northern arrowwood, willow, spicebush (*Lindera benzoin*), red osier dogwood (*Cornus sericea*), and meadow-sweet.
- **Herbaceous Layers:** Herbaceous and emergent species are less dominant than shrub species and include mannagrasses, soft rush, rice cutgrass, and rough stemmed goldenrod.

#### 5.1.2.3 Palustrine Forested Wetland (PFO)

Within the Project Area, palustrine forested wetlands (PFO) are dominated by deciduous tree species, which lose their leaves during the cold season or by a mix of broad-leaved deciduous and needle-leaved evergreen trees. These are further described using the classification system presented in Edinger et al. (2014) as either red maple-hardwood swamps or hemlock-hardwood swamps.

### Red Maple-Hardwood Swamps

**Description:** This is a hardwood swamp that occurs in poorly drained depressions, normally underlain by inorganic soils. Red maple is either dominant or co-dominant in these swamps in the Study Area.

**Distribution:** Most forested wetland communities found within the Study Area are red maple-hardwood swamps. These communities occur in beech-maple, successional northern hardwood forests throughout the Study Area. PFO wetlands are red maple-hardwood swamps unless there is a comment indicating that they are dominated by hemlock.

**Vegetation:**

- **Overstory:** Red maple (*Acer rubrum*) is usually the dominant species. Other co-dominants and common overstory trees include green ash and American elm.
- **Understory/Shrub Layers:** The shrub layer, when present, is dominated by saplings of overstory species, northern arrowwood and willow.
- **Herbaceous Layers:** Dominant species include jewelweed, sensitive fern, and fringe sedge. Other common species include false hellebore, mannagrasses, and other sedges (*Carex* spp.).

### Hemlock-Hardwood Swamp

**Description:** These closed canopy swamps occur on mineral soils and deep muck in depressions within hemlock-northern hardwood forests. Species diversity is usually poor with few shrub and herbaceous species growing beneath the canopy.

**Distribution:** Hemlock-hardwood swamps were observed within hemlock northern hardwood communities in the Study Area. These wetlands occurred in depressions and hummocky areas in higher elevations.

**Vegetation:**

- **Overstory:** Eastern hemlock (*Tsuga canadensis*) is the dominant species in these wetlands. Common species include yellow birch (*Betula alleghaniensis*) and red maple.
- **Understory/Shrub Layers:** The understory is composed primarily of saplings of overstory trees, spicebush, and musclewood (*Carpinus caroliniana*).
- **Herbaceous Layers:** Skunk cabbage (*Symplocarpus foetidus*) and sensitive fern are typical dominants. Cinnamon fern (*Osmunda cinnamomea*) was also common in canopy openings.

### 5.1.2.4 Artificial Ponds (POW)

Wetlands classified under the Cowardin system as palustrine open water (POW) are included in the artificial pond classification presented in Edinger et al. (2014).

**Description:** These man-made ponds are constructed in farm fields, residential areas, or recreational properties for agricultural, recreational, or aesthetic purposes. They could potentially be stocked with fish and contain little or no aquatic vegetation.

**Distribution:** Artificial ponds occur intermittently within the Study Area.

**Vegetation:**

- **Overstory:** There is no overstory vegetation.
- **Understory/Shrub Layers:** There is no understory/shrub vegetation.
- **Herbaceous Layers:** Many of these ponds were stocked with aquatic plants, and were frequently ringed with cattail.

## 5.2 Waterbodies

Table 5-6 provides a description of each perennial, intermittent, or ephemeral stream that was identified within the Study Area during field surveys. The streams range from well-defined stream channels to poorly defined headwater channels. The locations of these streams are depicted in relation to Project facilities on the mapping included for each sector in Appendix A.
In addition, numerous other geographic features were delineated within the Study Area and are depicted on the wetland mapping as ponds and drainages. Drainages include features that appear to be man-made ditches through upland soils (typically for agricultural use), small swales and natural drainageways which lack a defined bed and bank and are not federally or state jurisdictional streams.

These features have been identified in order to characterize the hydrology of the Study Area and in many cases to document the hydrologic connection or lack of connection between delineated wetlands and traditional navigable waters.

### 5.2.1 Streams

A total of 105 streams were identified in the Study Area. Table 5-7 summarizes stream classifications.

### 5.2.2 Surface Water Use

Surface water features in the Study Area are utilized for recreational, wildlife, and agricultural uses.

Perennial streams that have been classified for fishing in the vicinity of the Study Area may provide fishing opportunities for the public. According to NYSDEC, public fishing right easements are accessible at various locations along the Canadaway Creek and West Branch Conewango Creek, both of which lie outside of the Study Area (NYSDEC 2008). Most of the streams within the Study Area are tributaries to one of these two waterbodies.

All of the streams within the Study Area may be used to some extent by wildlife and livestock as a source of drinking water. Although regulated as protected streams, most of the streams overlapping the Study Area are intermittent in nature, or comprise headwaters within the watershed. As such, water availability is intermittent and may be present only during periods of continuous or heavy precipitation or during the snowmelt period in the spring. Furthermore, because the streams in the Study Area are intermittent in nature, the conditions in these streams are usually unsuitable for fish species. Amphibians and macro-

invertebrates have greater flexibility in adapting to intermittent stream flow and are likely to inhabit streams in the Project Site when water is present. Perennial Class C streams are suitable for supporting fish species.

Natural and man-made ponds are scattered throughout the Study Area. Ponds vary in size, but are typically less than 1 acre with depths ranging from 2 to 10 feet. Natural ponds exist in both forests and fields and in some cases result from beaver activity. Man-made ponds used for agricultural purposes are located in farm fields, and recreational ponds are located in open or forested residential areas and private camping areas. Wildlife may also utilize these resources.

### 5.2.3 Ponds

A total of six ponds are found within the Study Area for a total of 1.26 acres. Table 5-8 lists and describes each pond identified.

### 5.2.4 Drainages

A total of two drainages considered to be jurisdictional were mapped within the Study Area. Table 5-9 identifies each drainage and location.

**Table 5-1 Summary of Field-Delineated Wetlands within the Study Area**

| | Type and Number of Wetlands Crossed | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Cluster | PEM | PSS | PFO | PFO/ PEM | PSS/PEM | PFO/PSS | PFO/PSS/ PEM | Total |
| Northeast | 79 | 4 | 11 | 5 | 1 | 0 | 0 | 100 |
| Northwest | 54 | 9 | 15 | 12 | 3 | 0 | 1 | 94 |
| Southeast | 28 | 0 | 6 | 5 | 0 | 1 | 1 | 41 |
| Southwest | 15 | 2 | 3 | 3 | 0 | 0 | 0 | 23 |
| **Project Total** | **176** | **15** | **35** | **25** | **4** | **1** | **2** | **258** |

Key:
PEM = Palustrine emergent
PSS = Palustrine scrub-shrub
PFO = Palustrine forested

**Table 5-2 Acreage of Wetland Cover by Type in each Cluster**

| Cluster | PEM | PSS | PFO | Total |
|---|---|---|---|---|
| Northeast | 22.05 | 0.62 | 3.82 | 26.49 |
| Northwest | 20.84 | 7.83 | 29.54 | 58.21 |
| Southeast | 21.40 | 0.50 | 9.24 | 31.14 |
| Southwest | 9.57 | 0.14 | 9.27 | 18.98 |
| **Project Total** | **73.86** | **9.09** | **51.87** | **134.82** |

Key:
PEM = Palustrine emergent
PSS = Palustrine scrub-shrub
PFO = Palustrine forested

**Table 5-3 Summary of Field Delineated Streams within the Study Area**

| Cluster | Perennial | Intermittent | Ephemeral | Total |
|---|---|---|---|---|
| Northeast | 5 | 15 | 5 | 25 |
| Northwest | 10 | 34 | 0 | 44 |
| Southeast | 5 | 8 | 0 | 13 |
| Southwest | 9 | 10 | 4 | 23 |
| **Project Total** | **29** | **67** | **9** | **105** |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| **Northeast (NE) Cluster** | | | | | | | | | | |
| W-T02-087 | 42.405502 | -79.217992 | Arkwright | Forestville | 0.80 | PEM | No | Chautauqua-Conneaut | W-T02-087 is a large PEM depressional wetland. Inflow to the wetland is via stream S-T03-021, that flows into the northern edge of the wetland and joins with stream S-T02-032 in the middle of the wetland. Outflow is to stream S-T02-032 to the west. Characteristics of the wetland include a high water table, soil saturation, drainage patterns, oxidized rhizospheres and redox of a dark soil matrix. Dominant vegetation is melic manna grass (*Glyceria melicaria* ) and sensitive fern (*Onoclea sensibilis* ). The principle functions of the wetland are wildlife habitat, nutrient removal, sediment retention, floodflow alteration and groundwater recharge/discharge. | 97, 98 |
| W-T02-088 | 42.405257 | -79.219805 | Arkwright | Forestville | 0.37 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-088 is a large PEM depressional wetland in a drainage way and old logging road. Characteristics of the wetland include a surface water, high water table, soil saturation, an aquitard at 12 inches, and a depleted dark soil matrix. Dominant vegetation is Japanese primrose (*Primula japonica* ), spotted touch-me-not (*Impatiens capensis* ) and wrinkle-leaf goldenrod (*Solidago rugosa* ). The principle functions of the wetland are wildlife habitat, floodflow alteration, nutrient removal, sediment retention and groundwater recharge/discharge. | 97 |
| W-T03-001 | 42.432491 | -79.234374 | Arkwright | Forestville | 5.41 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-001 is a large PEM wetland on a hillslope in an agricultural field. Wetland flows downslope to the north to a pond, and is also connected to the pond by drainage that runs along Center road. Wetland extends from road on west to forest edge on the east. Wetland characteristics include oxidized rhizospheres, hydrogen sulfide, and depleted soils below a dark surface. Dominant vegetation includes reed canary grass (*Phalaris arundinacea* ), and sensitive fern (*Onoclea sensibilis* ). The principle functions of the wetland are wildlife habitat, floodflow alteration, sediment retention and nutrient removal. | 62, 63 |
| W-T03-002 | 42.430323 | -79.232531 | Arkwright | Forestville | 1.60 | PEM | No | Chautauqua-Conneaut | W-T03-002 is a large transitional PEM wetland on a slight hillslope pasture. Entire wetland is made up of three different mapped polygons. Wetland hydrology includes high water table, saturation and oxidized rhizospheres. Soils contain redox. Vegetation includes blunt broom sedge (*Carex tribuloides* ) and black bent (*Agrostis gigantea* ). Wetland is very large and extends beyond the study area on the north, east and southern edges. | 61 |
| W-T03-003 | 42.430179 | -79.234138 | Arkwright | Forestville | 0.08 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-003 is a small PEM wetland on a hillslope in an old agricultural field. Southern section of wetland extends beyond study area. Wetland has similar hydrologic, vegetative and soil characteristics as W-T03-004. Hydrologic isolation/jurisdiction is undetermined due to wetland extending beyond study area and has the potential of connecting up with W-T03-004. | 60 |
| W-T03-004 | 42.430282 | -79.234492 | Arkwright | Forestville | 0.13 | PEM | No | Chautauqua-Conneaut | W-T03-004 is a broad swale PEM wetland following stream S-T03-002. Wetland outflow is to the north via stream S-T03-004 across the dirt road connecting it to another portion of the wetland north of the road. Wetland characteristics include high water table, saturation, and depleted matrix soil. Common fox sedge (*Carex vulpinoidea* ), reed canary grass (*Phalaris arundinacea* ), stalk-grain sedge (Carex stipata) and common timothy (*Phleum pratense* ) are some of the dominant species found in the wetland. | 60 |
| W-T03-005 | 42.430671 | -79.235753 | Arkwright | Forestville | 0.23 | PEM | No | Chautauqua-Conneaut | W-T03-005 is a PEM/PSS wetland complex. PEM wetland parcels are located along stream floodplain in cow pasture. Ditch DD-T03-002 and Center Road border wetland on the west. Inflow from overland sheet flow and outflow is downslope to S-T03-003. Inflow from groundwater and stream S-T03-003 along southern edge, stream flows through middle of wetland and exits on the northern edge. Outflow of wetland is to groundwater recharge and perennial surface flow in a confined channel via stream S-T03-003. Wetland characteristics include oxidized rhizospheres, and depleted soil matrix. Dominant vegetation include tall false rye grass (*Schedonorus arundinaceus* ), lamp rush (*Juncus effusus* ), and black bent (*Agrostis gigantea* ). Principle wetland functions include groundwater recharge/discharge, and floodwater alteration. | 59, 60 |
| W-T03-005 | 42.428499 | -79.235948 | Arkwright | Forestville | 0.07 | PSS | No | Chautauqua-Conneaut | Small PSS component of large W-T03-005 wetland complex. Forest borders eastern edge and main road (Center Road) borders the western edge. Wetland contains redox characteristics and oxidized rhizospheres. Dominant vegetation includes smooth arrow-wood (*Viburnum recognitum* ), sensitive fern (*Onoclea sensibilis* ), fowl manna grass (*Glyceria striata* ), flat-top goldentop (*Euthamia graminifolia* ), arrow-leaf turtlethumb (*Persicaria sagittata* ), and Canadian goldenrod (*Solidago canadensis* ). Outflow is to the south through ditch DD-T03-003, which follows Center Road and drains into W-T03-036 further south. Principle functions include groundwater recharge/discharge, floodwater alteration and wildlife habitat. | 59, 60 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T03-006 | 42.426516 | -79.235399 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-006 is a small isolated PEM wetland in an old trail. There is a berm in the middle of the wetland formed by tire tracks on either side. Wetland hydrology includes high water table, saturation, water stained leaves, hydrogen sulfide, algal mat/crust, a shallow aquitard and oxidized rhizospheres. Uptight sedge (*Carex stricta* ) and flat-top goldentop (*Euthamia graminifolia* ) were found as dominant vegetation. The principle functions of the wetland are floodflow alteration and wildlife habitat. | 65 |
| W-T03-007 | 42.426752 | -79.235256 | Arkwright | Forestville | 0.04 | PFO | Yes | Chautauqua-Conneaut | W-T03-007 is a small isolated PFO wetland on a terrace. Wetland characteristics include high water table, saturation of soil, drainage patterns, geomorphic positioning, and depleted soil matrix. Dominant vegetation include red maple (*Acer rubrum* ), cultivated apple (*Malus domestica* ), green ash (*Fraxinus pennsylvanica* ) and crooked-stem american aster (*Symphyotrichum prenanthoides* ). Wetland functions as wildlife habitat. | 65 |
| W-T03-008 | 42.426229 | -79.235439 | Arkwright | Forestville | 0.22 | PSS | Undetermined | Chautauqua-Conneaut | W-T03-008 is a large PEM wetland in depression surrounded by forest. Wetland extends beyond survey boundary to the south, and the hydrologic connectivity is undetermined. | 65, 66 |
| W-T03-009 | 42.426320 | -79.234828 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-009 is a small isolated PEM wetland in a depression of a grassy old road. Wetland characteristics include water stained leaves, soil redox of a dark surface and sensitive fern (*Onoclea sensibilis* ). Principle wetland functions are wildlife habitat and floodflow alteration. | 65, 66 |
| W-T03-010 | 42.429073 | -79.230801 | Arkwright | Forestville | 0.02 | PEM | No | Chautauqua-Conneaut | W-T03-010 is a small PEM wetland abutting perennial stream S-T03-004 in transitional zone between forest and pasture. Wetland inflow is from overland sheet flow, and drains out through stream S-T03-004. Wetland contains a shallow clay aquitard, fowl manna grass (*Glyceria striata* ), and has hydrogen sulfide present. Wetland is suitable for wildlife habitat. | 69 |
| W-T03-011 | 42.428676 | -79.229922 | Arkwright | Forestville | 0.05 | PEM | No | Chautauqua-Conneaut | W-T03-011 is a small PEM wetland located in depression n a forest gap. Multiple segments of wetland that are connected by stream S-T03-006. The wetland extends on the eastern and southern edges beyond the study area. Inflow is from overland sheet flow and stream S-T03-006 from the southwest corner. Wetland contains a high water table, soil saturation and hydrogen sulfide. Dominant vegetation is marsh blue violet (*Viola cucullata* ), fowl manna grass (*Glyceria striata* ), sensitive fern (*Onoclea sensibilis* ), and spotted touch-me-not (*Impatiens capensis* ). Principle functions of the wetlands are floodflow alteration and habitat for wildlife. | 69 |
| W-T03-012 | 42.427999 | -79.229365 | Arkwright | Forestville | 0.01 | PFO | Undetermined | Chautauqua-Conneaut | W-T03-012 is a small isolated PFO wetland in a forested depression with no trees rooted in the actual wetland. Surface water is present in some spots up to 1 inch in depth. Dominant vegetation include sensitive fern (*Onoclea sensibilis* ) and marsh blue violet (*Viola cucullata* ). The wetland is suitable for wildlife habitat. | 68, 69 |
| W-T03-013 | 42.427748 | -79.230432 | Arkwright | Forestville | 0.04 | PFO | No | Chautauqua-Conneaut | W-T03-013 is a small PFO wetland on a forested hillslope, with trees rooted within the wetland. It has a high water table and soil saturation, and soil redox characteristics. Vegetation found here include spotted touch-me-not (*Impatiens capensis* ) and Canadian clearweed (*Pilea pumila* ). Wetland hydrology connectivity undetermined due to wetland extending beyond study area along the northern edge. | 68, 69 |
| W-T03-014 | 42.427141 | -79.229112 | Arkwright | Forestville | 0.04 | PFO | No | Chautauqua-Conneaut | W-T03-014 is a small PFO wetland in a forested floodplain that extends beyond the study area to the southeast. Stream S-T03-007 flows into the wetland from the northwestern edge, through the center of the wetland and then out at the southeastern edge. Wetland characterized by surface water, oxidized rhizospheres, soil redox, green ash (*Fraxinus pennsylvanica* ), and common reed (*Phragmites australis* ). The wetland is suitable for wildlife habitat and floodflow alteration. | 68 |
| W-T03-014A | 42.426955 | -79.229328 | Arkwright | Forestville | 0.02 | PEM | No | Chautauqua-Conneaut | W-T03-014A is a small PEM wetland in a forested depression dominated by green ash (*Fraxinus pennsylvanica* ), drooping sedge (*Carex prasina* ), and fowl manna grass (*Glyceria striata* ). Wetland collects overland sheet flow and drains through DD-T03-004 to the north, which flows into S-T03-007 and connects to W-T03-014. wetland contains hydrogen sulfide, a high water table, soil saturation, a depleted matrix and soil redox. Wetland functions as a habitat for wildlife. | 68 |
| W-T03-015 | 42.426779 | -79.230103 | Arkwright | Forestville | 0.31 | PFO | No | Chautauqua-Conneaut | W-T03-015 is a large PFO wetland with 3 separate polygons that each continue beyond the study area and join together. Stream S-T03-008 starts outside of the wetland at the south and flows north towards the center of the wetland. Stream S-T03-009 flows east starting at the western edge of the wetland and ending in the north providing water inflow and outflow. Stream S-T03-009 connects wetland W-T03-015 to wetland W-T03-018. The wetland is characterized by a high water table, soil saturation, a depleted soil matrix, green ash (*Fraxinus pennsylvanica* ), sensitive fern (*Onoclea sensibilis* ) and Canadian goldenrod (*Solidago canadensis* ). The wetland provides functions such as wildlife habitat ad floodflow alteration. Water flows into the wetland from stream S-T03-007 at the northeast, S-T03-008 at the southwest and S-T03-009 on the west. | 67, 68 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T03-016 | 42.426493 | -79.233394 | Arkwright | Forestville | 0.07 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-016 is a small PEM wetland in a depression along an old logging road. Wetland extends beyond the study area to the north, inflow is from groundwater and overland sheet flow an outflow is to the north downslope via drain DD-T03-005. Hydrogen sulfide and a depleted soil matrix are present in the wetland, along with green ash (*Fraxinus pennsylvanica* ) and sensitive fern (*Onoclea sensibilis* ). Wetland functions as a good source of wildlife habitat. | 66, 67 |
| W-T03-017 | 42.426529 | -79.233697 | Arkwright | Forestville | 0.07 | PFO | No | Chautauqua-Conneaut | W-T03-017 is a small PFO wetland in a forested depression along the floodplain of stream S-T03-010. Inflow is from groundwater and stream S-T03-010 at the southwestern edge, outflow is through stream S-T03-010 in the northeast. Wetland characteristics include high water table, saturation, drainage patterns, oxidized rhizospheres, and soil redox. Dominant vegetation found include allegheny blackberry (*Rubus allegheniensis* ), sensitive fern (*Onoclea sensibilis* ), and river-bank grape (*Vitis riparia* ). Principle functions that the wetland provides are wildlife habitat, fish and shellfish habitat, and floodflow alteration. | 66, 67 |
| W-T03-018 | 42.426934 | -79.231945 | Arkwright | Forestville | 0.34 | PFO | No | Chautauqua-Conneaut | W-T03-018 is a large PFO wetland located in a forested depression. The wetland extends beyond the study area on the western edge. Water outflow is to the north via stream S-T03-011. It contains some areas of standing/surface water averaging 2 inches deep. Red maple (*Acer rubrum* ), american elm (*Ulmus americana* ), sensitive fern (*Onoclea sensibilis* ), arrow-leaf tearthumb (*Persicaria sagittata* ), and gray dogwood (*Cornus racemosa* ) were found here. The area functions as wildlife habitat. | 67 |
| W-T03-019 | 42.417515 | -79.236104 | Arkwright | Forestville | 0.04 | PSS | Undetermined | Chautauqua-Conneaut | W-T03-019 is a PSS/PEM depressional wetland bordering Center Road to the west, forest to the south and mowed yard to the north and east. Water inflow from overland sheet flow and groundwater, outflow is to drain DD-T03-006 to the south that follows the road. Wetland contains a high water table, soil saturation, and a depleted soil matrix. Dominant vegetation includes field horsetail (Equisetum arvense) reed canary grass (Phalaris arundinacea), Canadian goldenrod (Solidago canadensis), creeping-jenny (Lysimachia nummularia)white panicled american-aster (Symphyotrichum lanceolatum), and smooth arrow-wood (Viburnum recognitum). Principle functions of the wetland include floodwater alteration and habitat for wildlife. | 78 |
| W-T03-020 | 42.416177 | -79.235612 | Arkwright | Forestville | 0.42 | PFO | Undetermined | Chautauqua-Conneaut | W-T03-020 is a large wetland complex with both PFO and PEM components. The PFO component is located in the south of the complex in a forested depression, and connects to the PEM component outside the study area to the northeast. Inflow is from groundwater and overland sheet flow. Wetland characteristics involve oxidized rhizospheres along living roots, hydrogen sulfide odor, microtopographic relief, and redox of a dark soil matrix/surface. Green ash (*Fraxinus pennsylvanica* ), white panicled american-aster (*Symphyotrichum lanceolatum* ) and black willow (*Salix nigra* ) are among the dominant plant species. Principle functions of the wetland include floodwater alteration and habitat for wildlife. | 78, 79, 80 |
| W-T03-020 | 42.417000 | -79.235823 | Arkwright | Forestville | 0.32 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-020 is a large wetland complex with both PFO and PEM components. The PEM component is located in the northern section of the complex in forest. Wetland expands to the east outside of the survey area. Inflow from overland sheet flow, with no visible outflow within the survey area. Wetland characteristics include hydrogen sulfide odor, depleted soil matrix, and redox of a dark soil matrix. Vegetation includes green ash (*Fraxinus pennsylvanica* ), crooked-stem american-aster (*Symphyotrichum prenanthoides* ), and creeping-jenny (*Lysimachia nummularia* ). | 78, 79, 80 |
| W-T03-021 | 42.415312 | -79.234982 | Arkwright | Forestville | 0.41 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-021 is a large PEM/PFO wetland complex. This is the PEM portion dominated by common fox sedge (*Carex vulpinoidea* ) which loops around the northern edge of pond PD-T03-001. Wetland is connected to wetland W-T03-023 via drain DD-T03-010. Water inflow is from overland sheet flow and outflow is to the pond. The wetland indicators are oxidized rhizospheres of living roots and depleted soil matrix. The principle functions of the wetland are floodflow alteration, fish and shellfish habitat, sediment/toxicant retention, nutrient removal, production export, sediment/shoreline stabilization and habitat for wildlife. | 79, 80 |
| W-T03-021 | 42.415090 | -79.235414 | Arkwright | Forestville | 0.34 | PFO | Undetermined | Chautauqua-Conneaut | W-T03-021 is a large PEM/PFO wetland complex. This is the PFO portion dominated by brittle willow (*Salix fragilis* ) which loops around the southwestern finger of pond PD-T03-001. The wetland indicators are high water table, soil saturation, hydrogen sulfide odor, loamy gleyed soil matrix and redox of a dark soil matrix. The principle functions of the wetland are floodflow alteration, fish and shellfish habitat, sediment/toxicant retention, nutrient removal, production export, sediment/shoreline stabilization and habitat for wildlife. | 79, 80 |
| W-T03-022 | 42.415209 | -79.236024 | Arkwright | Forestville | 0.03 | PEM | Yes | Chautauqua-Conneaut | W-T02-022 is a small depressional PEM wetland in a forest with small depressional channels in forest with bare saturated ground in the center. Water inflow is from overland sheet flow. Characteristics of the wetland are hydrogen sulfide odor, oxidized rhizospheres along living roots, and redox of a dark soil surface. Fowl manna grass (*Glyceria striata* ), white panicled american-aster (*Symphyotrichum lanceolatum* ), and flat-top goldenrod (*Euthamia graminifolia* ) are the dominant species. The principle function of the wetland is habitat for wildlife. | 79 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T03-023 | 42.415840 | -79.233505 | Arkwright | Forestville | 0.49 | PEM | No | Chautauqua-Conneaut | W-T03-023 is a large PEM/PFO wetland complex, that is hydrologically connected to wetland W-T03-021 via drain DD-T03-010 on the western edge. PFO section starts at drain on the west and slopes east, with inflow from overland sheet flow and has mound topography with vegetative slash on top of wetland. Wetland indicators include high water table, soil saturation, a depleted soil matrix and redox of a dark soil surface.The PFO portion is dominated by white ash (*Fraxinus americana* ), sensitive fern (*Onoclea sensibilis* ), and spotted touch-me-not (*Impatiens capensis* ). The principle functions of the wetland are floodflow alteration and habitat for wildlife. | 80, 81 |
| W-T03-023 | 42.415813 | -79.233619 | Arkwright | Forestville | 0.08 | PFO | No | Chautauqua-Conneaut | W-T03-023 is a large PEM/PFO wetland complex, that is hydrologically connected to wetland W-T03-021 via drain DD-T03-010 on the western edge. Wetland indicators include high water table, soil saturation, oxidized rhizospheres, shallow aquitard, and a histic epipedon. Canadian goldenrod (*Solidago canadensis),* wrinkle-leaf goldenrod (*Solidago rugosa* ), and flat-top goldentop (*Euthamia graminifolia* ) are the dominant species in the PEM section. e principle functions of the wetland are floodflow alteration and habitat for wildlife. | 80, 81 |
| W-T03-024 | 42.416298 | -79.234094 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-024 is a small isolated PEM wetland dominated by fowl manna grass (*Glyceria striata* ) in a forest depression. Water inflow is from overland sheet flow and groundwater, outflow was not observable. Wetland is surrounded by upland with 20% tree canopy, or 20% shrub/sapling canopy cover. Wetland indicators include water table, soil saturation, hydrogen sulfide odor, and redox of a dark soil surface. The principle function of the wetland is habitat for wildlife. | 80 |
| W-T03-025 | 42.416494 | -79.233264 | Arkwright | Forestville | 0.02 | PFO | Yes | Chautauqua-Conneaut | W-T03-025 is a small isolated PFO depressional. Inflow from overland sheet flow and outflow was not observable. The wetland is characterized by soil saturation, high water table, and redox of a dark surface. Red maple (*Acer rubrum* ), quaking aspen (*Populus tremuloides* )green ash (*Fraxinus pennsylvanica* ), spotted touch-me-not (*Impatiens capensis* ) and bristly dewberry (*Rubus hispidus* )are dominant. The principle function of the wetland is habitat for wildlife. | 80, 81 |
| W-T03-026 | 42.416437 | -79.232698 | Arkwright | Forestville | 0.22 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-026 is a PEM/PFO wetland complex. The PEM portion is on the west on a terrace in a forest opening, and extends beyond the survey area to the north. The wetland is characterized by a high water table, soil saturation, and redox of a dark soil surface. Dominant vegetation includes flat-top goldentop (*Euthamia graminifolia* ), Canadian goldenrod (*Solidago canadensis* ), and wrinkle-leaf goldenrod (*Solidago rugosa* ). The principle function of the wetland is habitat for wildlife. | 80, 81 |
| W-T03-026 | 42.416436 | -79.231866 | Arkwright | Forestville | 0.13 | PFO | Undetermined | Chautauqua-Conneaut | W-T03-026 is a PEM/PFO wetland complex. The PFO portion is on the east in a floodplain, and extends beyond the survey area to the north to connect to the PEM portion. The wetland is characterized by a high water table, soil saturation, hydrogen sulfide odor, oxidized rhizospheres, and a depleted soil matrix. Dominant vegetation includes Canadian goldenrod (*Solidago canadensis* ), wrinkle-leaf goldenrod (*Solidago rugosa* ), black locus (*Robinia pseudoacacia* ) and green ash (*Fraxinus pennsylvanica* ). The principle function of the wetland is habitat for wildlife. | 80, 81 |
| W-T03-027 | 42.415319 | -79.231548 | Arkwright | Forestville | 0.82 | PEM | No | Chautauqua-Conneaut | W-T03-027 is a large PEM in a forest opening on a small hillslope. The surrounding area is upland forest and grassland with few trees. There are a few trees rooted within the wetland, but it is less than 5%. Inflow from overland sheet flow and groundwater. Outflow to stream S-T03-012 to the east. Wetland is represented by high water table, soil saturation, drainage patterns, hydrogen sulfide odor, cottongrass bulrush (*Scirpus cyperinus* ) and fowl manna grass (*Glyceria striata* ). The principle functions of the wetland are floodwater alteration and habitat for wildlife. | 80, 81, 82 |
| W-T03-028 | 42.414916 | -79.229966 | Arkwright | Forestville | 0.20 | PEM | No | Chautauqua-Conneaut | W-T03-028 is a small PEM wetland along banks of a stream in a forest with no trees rooted in the wetland, dominated by drooping sedge (*Care prasina* ). There are two sections of this wetland connected by stream S-T02-013. Stream S-T02-012 connects this wetland with wetland W-T02-027. Inflow from overland sheet flow and groundwater, outflow to stream at the northeast edge. Characteristics of the wetland include a high water table, soil saturation, a depleted soil matrix, and redox of a dark soil/surface. The principle functions of the wetland are floodwater alteration and habitat for wildlife. | 82, 83 |
| W-T03-029 | 42.415589 | -79.229103 | Arkwright | Forestville | 1.59 | PEM | No | Chautauqua-Conneaut | W-T03-029 is a large PEM wetland in a relic stream channel and forest opening/depression. There are two parcels of this wetland, and it extends beyond the survey area on its northern and southern edges. Stream S-T03-014 connects this section with the southern section of the wetland. The wetland has many streams winding in and out of it, which is part of both the inflow and outflow of the wetland. The wetland contains a high water table, soil saturation, drainage pattern, and a loamy mucky mineral hydric soil in some locations and depleted soil matrix below a dark surface in other spots. Dominant species include northern spicebush (*Lindera benzoin* ), fowl manna grass (*Glyceria striata* ), lamp rush (*Juncus effusus* ), and field horsetail (*Equisetum arvense* ), with upland hummocks of eastern hemlock (*Tsuga canadensis* ) and sugar maple (*Acer saccharum* ). The principle function of the wetland is habitat for wildlife, with the potential of also providing sediment/shoreline stabilization. | 82, 83, 88, 89 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T03-030 | 42.414975 | -79.231260 | Arkwright | Forestville | 0.23 | PEM | No | Chautauqua-Conneaut | W-T03-030 is a large PEM wetland in a depressional area at the base of a slope and berm/hummock area. Inflow is from groundwater and overland sheet flow, and outflow is to drain DD-T03-012 in the west. Drain DD-T03-012 becomes stream S-T03-013A on the eastside of the wetland and hydrologically connects it to wetland W-T03-028. Wetland characteristics include a high water table, soil saturation, hydrogen sulfide odor, fowl manna grass (*Glyceria striata* ), spotted touch-me-not (*Impatiens capensis* ) and arrow-leaf tearthumb (*Persicaria sagittata* ). The principle function of the wetland is habitat for wildlife. | 81, 82 |
| W-T03-031 | 42.415030 | -79.232531 | Arkwright | Forestville | 0.08 | PFO | No | Chautauqua-Conneaut | W-T03-031 is a small PFO wetland in a forested depression. Water inflow is from overland sheet flow, and outflow is to the east via stream S-T03-017. Westland area contains a high water table, soil saturation, water-stained leaves and redox of a dark soil surface. Dominant vegetation includes green ash (*Fraxinus pennsylvanica* ), rambler rose (*Rosa multiflora* ) , and fowl manna grass (*Glyceria striata* ). The principle function of the wetland is habitat for wildlife. | 81 |
| W-T03-032 | 42.415122 | -79.233569 | Arkwright | Forestville | 0.16 | PEM | Yes | Chautauqua-Conneaut | W-T03-032 is an isolated PEM wetland with a very sparse tree canopy. Area is a mixed pit and hummock topography with 50% of the total area being wetland (transects were completed). Water inflow is from groundwater with no visible outflow. Area appears to be in an old logging area with rutted path and cut trees. The wetland contains a high water table, soil saturation, a depleted soil matrix, fowl manna grass (*Glyceria striata* ) and wrinkle-leaf goldenrod (*Solidago rugosa* ). The principle function of the wetland is habitat for wildlife. | 80, 81 |
| W-T03-033 | 42.414881 | -79.234314 | Arkwright | Forestville | 0.03 | PFO | Yes | Chautauqua-Conneaut | W-T03-033 is a small isolated PFO wetland in a forest depressional. There is a potential subsurface connection to an NWI pond at the south on the other side of the berm. The wetland contains a high water table, soil saturation, hydrogen sulfide odor and redox of a dark soil surface. Dominant vegetation includes fowl manna grass (*Glyceria striata* ) and black willow (*Salix nigra* ). The principle function of the wetland is habitat for wildlife. | 80 |
| W-T03-036 | 42.427323 | -79.236116 | Arkwright | Forestville | 0.01 | PEM | No | Chautauqua-Conneaut | W-T03-036 is a small PEM wetland along drain DD-T03-003 and Center Road on the western side of the wetland. Inflow to the wetland is from overland sheet flow and outflow is to drain DD-T03-003 and groundwater recharge. The area contains problematic soils due to its close proximity to the road. Hydrophytic vegetation present includes sensitive fern (*Onoclea sensibilis* ) and white panicled american-aster (*Symphyotrichum lanceolatum* ). wetland does not appear to provide any suitable functions to the ecosystem. | 65 |
| W-T03-037 | 42.415773 | -79.231323 | Arkwright | Forestville | 0.06 | PEM | Yes | Chautauqua-Conneaut | W-T03-037 is a small isolated PEM wetland dominated by drooping sedge (*Carex prasina* ) in a depression along an access road. Inflow to the wetland is from overland sheet flow and outflow is to groundwater recharge. Primary wetland indicators include high water table, soil saturation, hydrogen sulfide, and redox of a dark surface. The principle functions of the wetland are floodflow alteration, and habitat for wildlife. | 81, 82 |
| W-T03-038 | 42.414652 | -79.228808 | Arkwright | Forestville | <0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-038 is small isolated depressional PEM wetland in transitional zone between forest and grassland, dominated by fowl manna grass (*Glyceria striata* ). Water inflow is from overland sheet flow and groundwater and outflow is to groundwater recharge. Primary wetland indicators include high water table, soil saturation, hydrogen sulfide, and a depleted soil matrix. The principle functions of the wetland are floodflow alteration, and habitat for wildlife. | 82, 83, 89 |
| W-T03-039 | 42.413951 | -79.229492 | Arkwright | Forestville | 0.18 | PEM | No | Chautauqua-Conneaut | W-T03-039 is a PEM/PFO complex. The PEM portion is located in the southern part of the wetland along stream S-T03-016. Inflow to the wetland is from groundwater and overland sheet flow, and outflow is to stream S-T03-016 along the northeastern edge of the wetland. Wetland characteristic include a high water table, soil saturation, and hydrogen sulfide. Dominant vegetation present in the wetland includes fowl manna grass (*Glyceria striata* ), common fox sedge (*Carex vulpinoidea* ) and sweet wood-reed (*Cinna arundinacea* ). The principle function of the wetland is habitat for wildlife. | 83. 89. 90 |
| W-T03-040 | 42.414482 | -79.229465 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-040 is an isolated depressional PEM wetland at the top of a small hill. Water inflow is from groundwater and small amount of overland sheet flow. Water outflow is to groundwater recharge. Characteristics of the wetland include a high water table, soil saturation, and a depleted soil matrix. Dominant vegetation includes sensitive fern (*Onoclea sensibilis* ) and lamp rush (*Juncus effusus* ). The principle function of the wetland is habitat for wildlife. | 82, 89 |
| W-T03-041 | 42.413535 | -79.229198 | Arkwright | Forestville | 0.15 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-041 is a PEM wetland at the base of a small slope. Water inflow is from groundwater and small amount of overland sheet flow. Water outflow is to groundwater recharge and overland sheet flow over a small berm and downslope. Characteristics of the wetland include a high water table, soil saturation, hydrogen sulfide, and redox of a dark soil surface. Dominant vegetation includes dudley's rush (*Juncus dudleyi* ), nerveless woodland sedge (*Carex leptonervia* ), and lamp rush (*Juncus effusus* ). The principle functions of the wetland are floodflow alteration, and habitat for wildlife. | 89, 90 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T03-042 | 42.413812 | -79.228096 | Arkwright | Forestville | 0.03 | PEM | No | Chautauqua-Conneaut | W-T03-042 is a PEM depressional wetland. Water inflow is from groundwater and overland sheet flow. Water outflow is to groundwater recharge and stream S-T03-016 when water levels are high. Characteristics of the wetland include a high water table, soil saturation, and hydrogen sulfide. Dominant vegetation includes sensitive fern (*Onoclea sensibilis* ) and spotted touch-me-not (*Impatiens capensis* ). The principle functions of the wetland are floodflow alteration, sediment/toxicant retention and habitat for wildlife. | 89 |
| W-T03-043 | 42.413819 | -79.228696 | Arkwright | Forestville | 0.07 | PEM | No | Chautauqua-Conneaut | W-T03-041 is a PEM wetland on a hillslope that continues into a forest on the east. Water inflow is from groundwater and overland sheet flow. Water outflow is to groundwater recharge and into the forest. Characteristics of the wetland include a high water table, soil saturation, and redox of a dark soil surface. Dominant vegetation includes lamp rush (*Juncus effusus* ), wrinkle-leaf goldenrod (*Solidago rugosa* ), and graceful sedge (*Carex gracillima* ). The principle functions of the wetland are floodflow alteration, and habitat for wildlife. | 89, 90 |
| W-T03-044 | 42.413491 | -79.228649 | Arkwright | Forestville | 0.22 | PEM | No | Chautauqua-Conneaut | W-T03-044 is a large PEM wetland on a hillslope. Water inflow is from groundwater and overland sheet flow. Water outflow is to the east. The wetland continues into the forest at the southeastern edge. Characteristics of the wetland include a drainage patterns, oxidized rhizospheres along living roots, and a depleted dark soil matrix. Dominant vegetation includes lamp rush (*Juncus effusus* ), common fox sedge (*Carex vulpinoidea* ), and old field cinquefoil (*Potentilla simplex* ). The principle functions of the wetland are floodflow alteration, and habitat for wildlife. | 89, 90 |
| W-T03-045 | 42.413240 | -79.228471 | Arkwright | Forestville | 0.02 | PEM | No | Chautauqua-Conneaut | W-T03-045 is a small PEM wetland, dominated by uptight sedge (*Carex stricta* ), located primarily in a logging road and a small amount in a forest. Water inflow is from overland sheet flow. Water outflow is to the east to a stream outside of the survey area. Characteristics of the wetland include a drainage patterns, and hydrogen sulfide odor. The principle functions of the wetland are floodflow alteration, and habitat for wildlife. | 89 |
| W-T03-046 | 42.409913 | -79.231470 | Arkwright | Forestville | <0.01 | PEM | No | Chautauqua-Conneaut | W-T03-046 is a small depressional PEM wetland on a hillslope in a forest opening. Water inflow is from overland sheet flow. Water outflow is to groundwater recharge. Characteristics of the wetland include a high water table, soil saturation, and hydrogen sulfide odor. Fowl manna grass (*Glyceria striata* ), wrinkle-leaf goldenrod (*Solidago rugosa* ), and arrow-leaf tearthumb (*Persicaria sagittata* ) are the dominant plants present. The principle function of the wetland is to provide habitat for wildlife. | 92 |
| W-T03-047 | 42.410614 | -79.231434 | Arkwright | Forestville | 0.83 | PEM | No | Chautauqua-Conneaut | W-T03-047 is a large PEM wetland with two separate segments, primarily located in an old logging road and also small areas of forest. Water inflow is from overland sheet flow. Water outflow is through drain DD-T03-013 that continues outside of the survey area to the southwest. The area has some pits, hummocks and minor rutting, with small berms present along part of the logging road. Characteristics of the wetland include a high water table, soil saturation, hydrogen sulfide, oxidized rhizospheres, and a depleted soil matrix. Leafy bulrush (*Scirpus polyphyllus* ), green ash (*Fraxinus pennsylvanica* ), and melic manna grass (*Glyceria melicaria* ) are the dominant plants. The principle function of the wetland is to provide habitat for wildlife. | 91, 92 |
| W-T03-048 | 42.411124 | -79.231787 | Arkwright | Forestville | 0.14 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-048 is a depressional PEM wetland in an old logging road in a forest. Water inflow is from overland sheet flow. Water outflow is to groundwater recharge. Characteristics of the wetland include a high water table, soil saturation, hydrogen sulfide odor, and a depleted dark soil matrix. Sensitive fern (*Onoclea sensibilis* ) and rice cut grass (*Leersia oryzoides* ) are the dominant plants present. The principle function of the wetland is to provide habitat for wildlife. | 91, 92 |
| W-T03-049 | 42.411499 | -79.231639 | Arkwright | Forestville | 0.02 | PEM | Yes | Chautauqua-Conneaut | W-T03-049 is a PEM wetland fringe around pond PD-T03-002. Water inflow is from overland sheet flow and groundwater. Water outflow is to groundwater recharge. Characteristics of the wetland include a high water table, soil saturation, hydrogen sulfide odor, and redox of a dark soil matrix. Arrow-leaf tearthumb (*Persicaria sagittata* ), brownish sedge (*Carex brunnescens* ) and sweet wood-reed (*Cinna arundinacea* ) are the dominant plants present. The principle function of the wetland is to provide habitat for wildlife. | 91, 92 |
| W-T03-050 | 42.412125 | -79.230800 | Arkwright | Forestville | 0.58 | PEM | Yes | Chautauqua-Conneaut | W-T03-050 is a large PEM wetland complex that starts in a depression at the top of a slope and continues downslope to be fed by additional hillside seeps. The wetland complex is broken down into parcels due to the survey boundary. Water inflow is from overland sheet flow and groundwater. Water outflow is to groundwater recharge and overland sheet flow downslope during high flow events. Characteristics of the wetland include a surface water, high water table, soil saturation, hydrogen sulfide odor, and redox of a dark soil matrix. Sensitive fern (*Onoclea sensibilis* ), rice cut grass (*Leersia oryzoides* ), cut-leaf water-horehound (*Lycopus americanus* ), and climbing nightshade (*Solanum dulcamara* ) are the dominant plants present. Another portion of the PEM wetland has characteristics of the wetland include a drainage patterns, oxidized rhizospheres, and redox of a dark soil matrix. Drooping sedge (Carex prasina) and creeping-jenny (Lysimachia nummularia) are the dominant plants present. The principle functions of the wetland are floodflow alteration and to provide habitat for wildlife. | 89, 90, 91 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T03-051 | 42.412860 | -79.229854 | Arkwright | Forestville | 0.01 | PEM | No | Chautauqua-Conneaut | W-T03-051 is a small PEM wetland within secondary high banks of stream S-T03-018. Inflow is from overland sheet flow and groundwater, whereas outflow is to stream S-T03-018 to the east. Primary indicators of the wetland include a high water table, soil saturation, and hydrogen sulfide odor. The wetland is dominated by melic manna grass (*Glyceria melicaria* ), spotted touch-me-not (*Impatiens capensis* ), and climbing nightshade (*Solanum dulcamara* ). The principle function of the wetland is to provide habitat for wildlife. | 90 |
| W-T03-052 | 42.412992 | -79.228869 | Arkwright | Forestville | 0.03 | PEM | No | Chautauqua-Conneaut | W-T03-052 is a small depressional PEM wetland located between and access road berm and stream S-T03-019. Inflow is from overland sheet flow and groundwater, and outflow is to groundwater recharge. Primary indicators of the wetland include a high water table, soil saturation, and redox of a dark soil surface. The wetland is dominated by melic manna grass (*Glyceria melicaria* ), sensitive fern (*Onoclea sensibilis* ) and rice cut grass (*Leersia oryzoides* ). The principle function of the wetland is to provide habitat for wildlife. | 89, 90 |
| W-T03-053 | 42.413096 | -79.228732 | Arkwright | Forestville | 0.05 | PEM | No | Chautauqua-Conneaut | W-T03-053 is a small PEM with deeply incised bends of an old logging road. Inflow is from overland sheet flow and groundwater, with the potential influence from hillside seeps on the west side. Outflow is to drain DD-T03-017 that flows through the center of the wetland and then continues beyond the survey area to the southeast. Primary indicators of the wetland include surface water, a high water table, soil saturation, hydrogen sulfide, and a depleted soil matrix. The wetland is dominated by melic manna grass (*Glyceria melicaria* ), and rice cut grass (*Leersia oryzoides* ). The principle function of the wetland is to provide habitat for wildlife. Their are two parcels to the wetland connected to one another by drain DD-T03-017. | 89, 90 |
| W-T03-054 | 42.414140 | -79.226407 | Arkwright | Forestville | 0.32 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-054 is a large PEM complex in an old logging road and in forest openings. Inflow is from overland sheet flow and groundwater. Outflow is to groundwater recharge and possibly to an area outside of the survey area in the southeast corner of the wetland. Primary indicators of the wetland include a high water table, soil saturation, and a depleted soil matrix. The wetland is dominated by cinnamon fern (*Osmundastrum cinnamomeum* ), spotted touch-me-not (*Impatiens capensis* ) and northern spicebush (*Lindera benzoin* ). The principle function of the wetland is to provide habitat for wildlife. | 83, 88 |
| W-T03-055 | 42.415281 | -79.227662 | Arkwright | Forestville | 0.16 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-055 is a large PEM wetland complex with four separate parcels in forest openings. Inflow is from overland sheet flow and groundwater. Outflow is to groundwater recharge. Primary indicators of the wetland include a high water table, soil saturation, loamy mucky mineral material, a depleted soil matrix, and a depleted matrix below a dark surface. The wetland is dominated by lamp rush (*Juncus effusus* ), rice cut grass (Leersia oryzoides) and cottongrass bulrush (*Scirpus cyperinus* ). The principle function of the wetland is to provide habitat for wildlife. | 83 |
| W-T03-056 | 42.414354 | -79.227175 | Arkwright | Forestville | 0.21 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-056 is a large depressional PEM wetland. Inflow is from overland sheet flow and groundwater. Outflow is to groundwater recharge. Their are some small upland hummocks inside the wetland perimeter. Primary indicators of the wetland include surface water, a high water table, soil saturation, hydrogen sulfide, and a black histic soil/material. The wetland is dominated by rice cut grass (Leersia oryzoides). The principle function of the wetland is to provide habitat for wildlife. | 83, 88, 89 |
| W-T03-057 | 42.415926 | -79.227503 | Arkwright | Forestville | 0.11 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-057 is a large depressional PEM wetland that extends beyond the survey area to the east. Hydrologic connectivity is undetermined due to extension of wetland. The wetland is an opening of a sugar and maple forest (*Acer saccharum* and *Acer rubrum* respectively). Primary indicators of the wetland include surface water, a high water table, soil saturation, and a loamy gleyed soil matrix. The wetland is dominated by rice cut grass (Leersia oryzoides). The principle function of the wetland is to provide habitat for wildlife. | 83, 86 |
| W-T03-058 | 42.415802 | -79.228562 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-058 is a small isolated PEM depressional wetland in a forested area. Inflow is from overland sheet flow and outflow is to groundwater recharge. Primary indicators of the wetland include surface water, a high water table, soil saturation, a depleted soil matrix, and redox of a dark soil matrix. The wetland is dominated by cinnamon fern (*Osmundastrum cinnamomeum* ) and false lily-of-the-valley (*Maianthemum canadensis* ). The principle function of the wetland is to provide habitat for wildlife. | 83 |
| W-T03-059 | 42.415821 | -79.223420 | Arkwright | Forestville | 0.12 | PEM | No | Chautauqua-Conneaut | W-T03-059 is a large inundated PEM wetland. Inflow is from overland sheet flow and outflow is to groundwater recharge and the road to the southwest. The wetland has many cut and fallen trees and branches, as well as very small upland hummocks. Primary indicators of the wetland include surface water, a high water table, soil saturation, hydrogen sulfide, drainage patterns, and an aquitard at 8 inches deep. The wetland is dominated by rice cut grass (*Leersia oryzoides* ), lamp rush (*Juncus effusus* ), and black-gridle bulrush (*Scirpus atrocinctus* ). The principle function of the wetland is to provide habitat for wildlife. | 87 |
| W-T03-060 | 42.416516 | -79.222682 | Arkwright | Forestville | 0.35 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-060 is a large PEM wetland in an upland forest with no trees rooted in the perimeter of the wetland. Hydrologic connectivity of the wetland is undetermined because the wetland extends beyond the survey area to the east. The principle function of the wetland is to provide habitat for wildlife. | 87 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T03-061 | 42.416846 | -79.223513 | Arkwright | Forestville | 0.05 | PEM | Yes | Chautauqua-Conneaut | W-T03-061 is a small isolated PEM wetland complex broken down into parcels. Primary indicators of the wetland include surface water, a high water table, soil saturation, and a depleted soil matrix. The wetland is dominated lamp rush (*Juncus effusus* ), and red maple (*Acer rubrum* ). The principle function of the wetland is to provide habitat for wildlife. | 87 |
| W-T03-062 | 42.416550 | -79.224288 | Arkwright | Forestville | 0.27 | PEM | Yes | Chautauqua-Conneaut | W-T03-062 is a PEM wetland. The entire wetland is inundated with up to six (6) inches of water, soil characteristics were taken with auger. Primary indicators of the wetland include surface water, a high water table, soil saturation, and a histosol for soil. Vegetation is naturally problematic due to early survey date, but what was identifiable was cinnamon fern (*Osmundastrum cinnamomeum* ). The principle function of the wetland is to provide habitat for wildlife. | 87 |
| W-T03-063 | 42.418081 | -79.228269 | Arkwright | Forestville | 1.27 | PFO | No | Chautauqua-Conneaut | W-T03-063 is a large PEM/PFO wetland complex. The PFO sector is the northern half of the wetland. Inflow is from overland sheet flow and groundwater seeps, and outflow is to stream S-T03-020 to the southeast (into the PEM section). Characteristics of the wetland consist of a high water table, soil saturation, hydrogen sulfide odor, drainage patterns, and a histic epipedon. Green ash (*Fraxinus pennsylvanica* ), red maple (*Acer rubrum* ), sensitive fern (*Onoclea sensibilis* ) and rice cut grass (*Leersia oryzoides* ) are plant species that are dominant within the wetland. The principle functions of the wetland are floodflow alteration, fish and shellfish habitat, sediment/toxicant retention, nutrient removal, production export, sediment/shoreline stabilization and habitat for wildlife. | 84, 85, 86 |
| W-T03-063 | 42.416725 | -79.226075 | Arkwright | Forestville | 0.46 | PEM | No | Chautauqua-Conneaut | W-T03-063 is a large PEM/PFO wetland complex. The PEM sector is the southern half of the wetland. Inflow is from overland sheet flow and groundwater seeps, and outflow is to stream S-T03-020 to the southeast. Characteristics of the wetland consist of a high water table, soil saturation, hydrogen sulfide odor, drainage patterns, and redox of a dark soil surface. Northern spicebush (*Lindera benzoin* ), uptight sedge (*Carex stricta* ), and spotted touch-me-not (*Impatiens capensis* ) are plant species that are dominant within the wetland. The principle functions of the wetland are floodflow alteration, fish and shellfish habitat, sediment/toxicant retention, nutrient removal, production export, sediment/shoreline stabilization and habitat for wildlife. | 84, 85, 86 |
| W-T03-064 | 42.418458 | -79.227541 | Arkwright | Forestville | 0.02 | PEM | No | Chautauqua-Conneaut | W-T03-064 is a small PEM wetland that is sparsely vegetated. Inflow is from overland sheet flow and groundwater, and outflow is to groundwater recharge. Characteristics of the wetland consist of a high water table, soil saturation, and hydrogen sulfide. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, and habitat for wildlife. | 85 |
| W-T03-065 | 42.418072 | -79.229735 | Arkwright | Forestville | 0.08 | PEM | Yes | Chautauqua-Conneaut | W-T03-065 is a small PEM wetland in a forested depression. Inflow is from overland sheet flow and groundwater, and outflow is to groundwater recharge. Characteristics of the wetland consist of a high water table, soil saturation, a sparsely vegetated concave surface, a depleted soil matrix and redox of a dark soil surface. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, and habitat for wildlife. | 84, 85 |
| W-T03-066 | 42.414309 | -79.225827 | Arkwright | Forestville | 0.03 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-066 is a small PEM wetland in an old logging road. Inflow is from overland sheet flow and groundwater, and outflow is to groundwater recharge. Characteristics of the wetland consist of a high water table, soil saturation, a black histic soil layer and redox of a dark soil surface. Melic manna grass (Glyceria melicaria) and new york fern (Parathelypteris noveboracensis) are both dominant plant species. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, and habitat for wildlife. | 88 |
| W-T03-067 | 42.413688 | -79.225588 | Arkwright | Forestville | 0.25 | PEM | No | Chautauqua-Conneaut | W-T03-067 is a large PEM wetland dominated by sensitive fern (*Onoclea sensibilis* ). Inflow is from overland sheet flow and groundwater. Outflow is in two different areas outside of the corridor in the north and east. The wetland is associated with drain DD-T03-018 in the south, and extends beyond the survey area at the western edge. Characteristics of the wetland consist of surface water, a high water table, soil saturation, hydrogen sulfide, and a depleted soil matrix. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, and habitat for wildlife. | 88 |
| W-T03-068 | 42.413150 | -79.224223 | Arkwright | Forestville | 0.30 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-068 is a PEM wetland dominated by sweet wood-reed (*Cinna arundinacea* ) along old logging roads in a forested area. Inflow is from overland sheet flow and groundwater. Outflow is to groundwater recharge. Characteristics of the wetland consist of a high water table, soil saturation, hydrogen sulfide and a depleted soil matrix. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 88, 93 |
| W-T03-069 | 42.413450 | -79.223635 | Arkwright | Forestville | 0.04 | PEM | Yes | Chautauqua-Conneaut | W-T03-069 is a PEM wetland in a forested opening, dominated by cottongrass bulrush (*Scirpus cyperinus* ). The wetland extends beyond the survey area to the north, causing the hydrologic connectivity to be undetermined. Characteristics of the wetland consist of a high water table, soil saturation, and redox of a dark soil matrix. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 93 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T03-070 | 42.412969 | -79.225156 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-070 is an isolated, sparsely vegetated, PEM wetland. Inflow is from overland sheet flow and groundwater. Outflow is to groundwater recharge. Characteristics of the wetland consist of surface water, a high water table, soil saturation, and hydrogen sulfide odor. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and habitat for wildlife. | 88 |
| W-T03-071 | 42.412641 | -79.222630 | Arkwright | Forestville | 0.02 | PEM | Yes | Chautauqua-Conneaut | W-T03-071 is a small isolated PEM wetland. Inflow is from overland sheet flow and groundwater. Outflow is to groundwater recharge. Characteristics of the wetland consist of soil saturation, hydrogen sulfide, and water-stained leaves. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and habitat for wildlife. | 93 |
| W-T03-072 | 42.412282 | -79.223689 | Arkwright | Forestville | 0.07 | PEM | Yes | Chautauqua-Conneaut | W-T03-072 is a PEM wetland partially located in an old logging road. The wetland continues south outside of the survey area. Inflow is from overland sheet flow and groundwater. Outflow is to the south beyond the survey area. Characteristics of the wetland consist of soil saturation, hydrogen sulfide, and water-stained leaves. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, and habitat for wildlife. | 93, 94 |
| W-T03-073 | 42.412670 | -79.224069 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-073 is an isolated PEM wetland in a forested depression dominated by cinnamon fern (*Osmundastrum cinamomeum* ). Inflow is from overland sheet flow and groundwater. Outflow is to groundwater recharge. Characteristics of the wetland consist of surface water, a high water table, soil saturation, and redox of a dark soil surface. The principle function of the wetland is to provide habitat for wildlife. | 93 |
| W-T03-074 | 42.412708 | -79.224249 | Arkwright | Forestville | <0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-074 is a small isolated PEM wetland in a forested depression dominated by melic manna grass (*Glyceria melicaria* ). Inflow is from overland sheet flow. Outflow is to groundwater recharge. Characteristics of the wetland consist of surface water, a high water table, soil saturation, and hydrogen sulfide. The principle function of the wetland is to provide habitat for wildlife. | 93 |
| W-T03-075 | 42.412684 | -79.224368 | Arkwright | Forestville | <0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-075 is a small isolated PEM wetland in a forested depression dominated by cut-leaf water-horehound (*Lycopus americanus* ). Inflow is from overland sheet flow and groundwater recharge. Outflow is to groundwater recharge. Characteristics of the wetland consist of surface water, a high water table, soil saturation, hydrogen sulfide, and a depleted soil matrix. The principle function of the wetland is to provide habitat for wildlife. | 93 |
| W-T03-076 | 42.412622 | -79.224499 | Arkwright | Forestville | <0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-076 is a small isolated PEM wetland in a forested depression dominated by cut-leaf water-horehound (*Lycopus americanus* ). Inflow is from overland sheet flow and groundwater recharge. Outflow is to groundwater recharge. Characteristics of the wetland consist of surface water, a high water table, soil saturation, hydrogen sulfide, and a depleted soil matrix. The principle function of the wetland is to provide habitat for wildlife. | 93 |
| W-T03-077 | 42.412132 | -79.222270 | Arkwright | Forestville | <0.01 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-077 is a small PEM wetland seep in a forested clearing dominated by sensitive fern (*Onoclea sensibilis* ). Inflow is from groundwater discharge. Outflow is downslope towards the east. Characteristics of the wetland consist of a high water table, soil saturation, and redox of a dark soil matrix. The principle function of the wetland is to provide habitat for wildlife. | 94 |
| W-T03-078 | 42.411470 | -79.222367 | Arkwright | Forestville | 0.03 | PEM | Yes | Chautauqua-Conneaut | W-T03-078 is a small isolated PEM wetland depression. Inflow is from groundwater discharge and overland sheet flow. Outflow to groundwater recharge. Characteristics of the wetland consist of a high water table, soil saturation, hydrogen sulfide, and a depleted soil matrix. Dominant vegetation present includes sensitive fern (Onoclea sensibilis), rice cut grass (*Leersia oryzoides* ), and melic manna grass (*Glyceria melicaria* ). The principle function of the wetland is to provide habitat for wildlife. | 94 |
| W-T03-079 | 42.411052 | -79.222689 | Arkwright | Forestville | 0.05 | PEM | Yes | Chautauqua-Conneaut | W-T03-079 is an isolated PEM wetland depression. Inflow is from groundwater discharge and overland sheet flow. Outflow to groundwater recharge. Characteristics of the wetland consist of surface water, a high water table, soil saturation, hydrogen sulfide, oxidized rhizospheres, and redox of a dark soil matrix. Dominant vegetation present includes rice cut grass (*Leersia oryzoides* ), and melic manna grass (*Glyceria melicaria* ). The principle function of the wetland is to provide habitat for wildlife. | 94 |
| W-T03-080 | 42.411060 | -79.222340 | Arkwright | Forestville | 0.01 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-080 is an isolated PEM wetland depression. Inflow is from groundwater discharge and overland sheet flow. Outflow to groundwater recharge. Characteristics of the wetland consist of surface water, a high water table, soil saturation, and a depleted soil matrix. Dominant vegetation present includes new york fern (*Parathelypteris noveboracensis* ) and deer-tongue rosette grass (*Dichanthelium clandestinum* ). The principle function of the wetland is to provide habitat for wildlife. | 94 |
| W-T03-081 | 42.410987 | -79.222298 | Arkwright | Forestville | <0.01 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-081 is an isolated PEM wetland depression. Inflow is from groundwater discharge and overland sheet flow. Outflow to groundwater recharge. Characteristics of the wetland consist of surface water, a high water table, soil saturation, and a depleted soil matrix. Dominant vegetation present includes new york fern (*Parathelypteris noveboracensis* ) and deer-tongue rosette grass (*Dichanthelium clandestinum* ). The principle function of the wetland is to provide habitat for wildlife. | 94 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T03-082 | 42.411228 | -79.222131 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-082 is an isolated PEM wetland depression in an old logging road. Inflow is from overland sheet flow. Their are indistinct drainage patterns for water outflow to the east that appear to head towards wetland W-T03-083. Characteristics of the wetland consist of a high water table, soil saturation, aquatic fauna, algal mat or crust, and hydrogen sulfide. Dominant vegetation present includes japanese stilt grass (*Microstegium vimineum* ) and deer-tongue rosette grass (*Dichanthelium clandestinum* ). The principle function of the wetland is to provide habitat for wildlife. | 94 |
| W-T03-083 | 42.411028 | -79.221812 | Arkwright | Forestville | 0.09 | PEM | No | Chautauqua-Conneaut | W-T03-083 is a PEM wetland, dominated by rice cut grass (*Leersia oryzoides* ), in a depressional area between two slopes in an upland forest. The wetland extends beyond the survey area to the north. Inflow is from overland sheet flow and groundwater discharge. Outflow is to groundwater recharge and possibly to the north when water levels are exceptionally high. Characteristics of the wetland consist of surface water, a high water table, soil saturation, a histosol and hydrogen sulfide. The principle function of the wetland is to provide habitat for wildlife. | 94 |
| W-T03-084 | 42.409036 | -79.219262 | Arkwright | Forestville | 0.02 | PEM | Yes | Chautauqua-Conneaut | W-T03-084 is a small isolated PEM wetland, dominated by sweet wood-reed (*Cinna arundinacea* ), in a partially cut upland forest. No trees are rooted in the wetland, but their are downed trees lying across it. Inflow is from overland sheet flow. Outflow is to groundwater recharge. Characteristics of the wetland consist of surface water, a high water table, soil saturation, hydrogen sulfide, and a depleted soil matrix. The principle function of the wetland is to provide habitat for wildlife. | 95 |
| W-T03-085 | 42.408189 | -79.218305 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-085 is a small isolated PEM wetland, in and along the edges of an existing access logging road. Vegetation is only present along the edges of the wetland. Inflow is from overland sheet flow. Outflow is to groundwater recharge. Characteristics of the wetland consist of hydrogen sulfide, and a depleted soil matrix. The principle function of the wetland is to provide habitat for wildlife. | 95, 96 |
| W-T03-087 | 42.407881 | -79.219000 | Arkwright | Forestville | 0.28 | PEM | Undetermined | Chautauqua-Conneaut | W-T03-087 is a large PEM wetland, mostly in a depressional forest opening. Characteristics of the wetland consist of surface water, a high water table, soil saturation, aquatic fauna, hydrogen sulfide, and a depleted soil matrix. Dominant plant species includes melic manna grass (*Glyceria melicaria* ), green ash (*Fraxinus pennsylvanica* ) and northern water-horehound (*Lycopus uniflorus* ). The principle function of the wetland is to provide habitat for wildlife. | 95, 96 |
| W-T03-088 | 42.408324 | -79.218798 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-088 is a small isolated PEM wetland in an upland forest with no trees rooted in the actual wetland. Characteristics of the wetland consist of drainage patterns, oxidized rhizospheres along living roots, and a depleted soil matrix. Dominant plant species includes dark-green bulrush (*Scirpus atrovirens* ) and pointed broom sedge (*Cares scoparia* ). The principle function of the wetland is to provide habitat for wildlife. | 95, 96 |
| W-T03-089 | 42.407562 | -79.218361 | Arkwright | Forestville | 0.22 | PFO | No | Chautauqua-Conneaut | W-T03-089 is a PFO depression in a hemlock-birch (*Tsuga-Betula* ) forest. Inflow is from overland sheet flow and groundwater discharge. Outflow of the wetland is to groundwater recharge. The wetland is dominated by cinnamon fern (*Osmundastrum cinnamomeum* ) and royal fern (*Osmunda spectabilis)* , with some trees and shrubs present throughout. Wetland indicators include surface water, a high water table, soil saturation, hydrogen sulfide, and histosol. The principle function of the wetland is to provide habitat for wildlife. | 96 |
| W-T03-090 | 42.407057 | -79.218716 | Arkwright | Forestville | 0.02 | PEM | Yes | Chautauqua-Conneaut | W-T03-090 is a small isolated PEM wetland in an upland forest with no trees rooted in the wetland. Inflow is from overland sheet flow and groundwater discharge. Water outflow is to groundwater recharge. Wetland indicators include a high water table, soil saturation, aquatic fauna, and a depleted soil matrix. Dominant vegetation found includes melic manna grass (*Glyceria melicaria* ), northern water-horehound (*Lycopus uniflorus* ) and drooping sedge (*Carex prasina* ). The principle function of the wetland is to provide habitat for wildlife. | 96 |
| W-T03-091 | 42.406841 | -79.218656 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-091 is a small isolated PEM wetland in an upland forest with no trees rooted in the wetland. Inflow is from overland sheet flow and groundwater discharge. Water outflow is to groundwater recharge. Wetland indicators include a high water table, soil saturation, aquatic fauna, and a depleted soil matrix. Dominant vegetation found includes melic manna grass (*Glyceria melicaria* ), northern water-horehound (*Lycopus uniflorus* ) and drooping sedge (*Carex prasina* ). The principle function of the wetland is to provide habitat for wildlife. | 96 |
| W-T03-092 | 42.407136 | -79.218097 | Arkwright | Forestville | 0.01 | PEM | No | Chautauqua-Conneaut | W-T03-092 is a PEM wetland in a small forest clearing in a possibly an old logging road. Inflow is from overland sheet flow. Water outflow is to the east outside of the survey area. Wetland indicators include a high water table, soil saturation, and hydrogen sulfide. Dominant vegetation found includes northern water-horehound (*Lycopus uniflorus* ), green ash (*Fraxinus pennsylvanica* ), yellow birch (*Betula alleghaniensis* ), spotted lady's-thumb (*Persicaria maculosa* ), and hay scented fern (*Dennstaedtia punctilobula* ). The principle function of the wetland is to provide habitat for wildlife. | 96, 99 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T03-093 | 42.406989 | -79.218217 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-093 is an isolated PEM wetland in a logging road with two small ponded areas connected by visible overland sheet flow. Inflow is from overland sheet flow and groundwater discharge. Water outflow is to the lower pool and groundwater recharge. Wetland indicators include a high water table, soil saturation, hydrogen sulfide, and a depleted soil matrix. Dominant vegetation found includes northern water-horehound (*Lycopus uniflorus* ), virginia water-horehound (*Lycopus virginicus* ) and dark-green bulrush (*Scirpus atrovirens* ). The principle function of the wetland is to provide habitat for wildlife. | 96 |
| W-T03-094 | 42.406623 | -79.217619 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T03-094 is an isolated PEM depression wetland with sparse vegetation. Inflow is from overland sheet flow and groundwater discharge. Water outflow is to the lower pool and groundwater recharge. Wetland indicators include surface water, a high water table, soil saturation, hydrogen sulfide, and redox of a dark soil matrix. The principle function of the wetland is to provide habitat for wildlife. | 98, 99 |
| W-T03-095 | 42.406319 | -79.217595 | Arkwright | Forestville | 0.05 | PSS | Yes | Chautauqua-Conneaut | W-T03-095 is an isolated PSS wetland with sparse vegetation. Inflow is from overland sheet flow and groundwater discharge. Water outflow is to the lower pool and groundwater recharge. Wetland indicators include surface water, a high water table, soil saturation, hydrogen sulfide, and a depleted soil matrix. The principle function of the wetland is to provide habitat for wildlife. | 98 |
| W-T05-003 | 42.434807 | -79.235746 | Arkwright | Forestville | 0.31 | PEM | No | Chautauqua-Conneaut | W-T05-003 is a PEM wetland in an old hay field. The wetlands northern and western edges abut drain DD-T05-001 and Center and Straight Roads. Properties of the wetland include oxidized rhizospheres, and redox of a dark soil matrix. Dominant vegetation includes white panicled american-aster (*Symphyotrichum lanceolatum* ) and common fox sedge (*Carex vulpinoidea* ). The principle function of the wetland is nutrient removal. | 64 |
| W-T06-019 | 42.407519 | -79.216701 | Arkwright | Forestville | 0.38 | PFO | No | Chautauqua-Conneaut | W-T06-019 is a large PFO wetland, with small non-vegetated concave surface components in a drainage way. The wetland extends beyond the survey area to the north. The wetland ends at the road, their was no culvert found, possible sub-surface flow under road and then wetland re-emerges on the south side of the road outside of the study area. Properties of the wetland include surface water, a high water table, saturation, hydrogen sulfide, and a histosol soil. Dominant vegetation includes sensitive fern (*Onoclea sensibilis* ) and yellow birch (*Betula alleghaniensis* ). Principle functions of the wetland include floodflow alteration, sediment/toxicant retention, and nutrient removal. | 99 |
| W-T06-020 | 42.407578 | -79.215078 | Arkwright | Forestville | 0.04 | PEM | No | Chautauqua-Conneaut | W-T06-020 is a PEM wetland, dominated by rice cut grass (*Leersia oryzoides* ), in a mowed road fringe. Drainage swale DD-T06-004 abuts wetland in the south. Properties of the wetland include hydrogen sulfide, and redox of a dark soil surface. The principle function of the wetland is to provide habitat for wildlife. | 100 |
| W-T06-021 | 42.408368 | -79.213854 | Arkwright | Forestville | 0.02 | PEM | Undetermined | Chautauqua-Conneaut | W-T06-021 is a PEM wetland depression in an old field. The wetland extends beyond the survey area to the north. Properties of the wetland include oxidized rhizospheres, and a depleted matrix. Dominant vegetation found includes common fox sedge (*Carex vulpinoidea* ) and dark-green bulrush (*Scirpus atrovirens* ). The principle function of the wetland is to provide habitat for wildlife. | 100 |
| W-T06-022 | 42.408227 | -79.211684 | Arkwright | Forestville | 0.68 | PEM | Undetermined | Chautauqua-Conneaut | W-T06-022 is a large PEM wetland complex. Properties of the wetland include oxidized rhizospheres, and redox of a dark soil matrix. Dominant vegetation found includes shallow sedge (*Carex lurida* ) and spreading bent grass (*Agrostis stolonifera* ). The principle function of the wetland is to provide habitat for wildlife. | 101, 102 |
| W-T06-023 | 42.407828 | -79.210519 | Arkwright | Forestville | 0.23 | PSS | Undetermined | Chautauqua-Conneaut | W-T06-023 is a PSS wetland complex. The wetland extends beyond the survey area along its southwestern edge. Properties of the wetland include oxidized rhizospheres, and redox of a dark soil matrix. Dominant vegetation found includes black willow (*Salix nigra* ) and black elderberry (*Sambucus nigra* ). Principle functions of the wetland include groundwater recharge/discharge, nutrient removal, and wildlife habitat. | 101, 102 |
| W-T06-024 | 42.408139 | -79.208352 | Arkwright | Forestville | 1.88 | PEM | Undetermined | Chautauqua-Conneaut | W-T06-024 is a large PEM wetland complex in an old field. Wetland is presumably fed by seepage off adjacent hillslope. The landowner informed field crew that the entire field is underlain by a failed drain tile. Properties of the wetland include oxidized rhizospheres, and redox of a dark soil matrix. Dominant vegetation found includes common fox sedge (*Carex vulpinoidea* ) and spreading bent grass (*Agrostis stolonifera* ). The principle function of the wetland is to groundwater recharge/discharge. | 102, 103 |
| **Northwest (NW) Cluster** | | | | | | | | | | |
| W-T01-005 | 42.420471 | -79.295552 | Arkwright/ Pomfret | Dunkirk | 0.29 | PEM | No | Chautauqua-Conneaut | W-T01-005 is a small PEM wetland along a gentle slope, that extends into an old agricultural field on the west and borders forest on the east. Wetland characteristics include histic epipedon, oxidized rhizospheres, high water table, surface water and reed canary grass (*Phalaris arundinacea* ). Outflow is through ditch DD-T01-005 that flows within the wetlands southern portion and then out on the west edge. Primary functions of the wetland include groundwater recharge/discharge and habitat for wildlife. | 3 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T01-011 | 42.409721 | -79.265269 | Arkwright | Dunkirk | 0.71 | PFO | No | Chautauqua-Conneaut | W-T01-011 is a large PFO wetland on a forested hillslope. Wetland far beyond the study area to the north where it links up with W-T01-011A. Characteristics of the wetland include oxidized rhizospheres, shallow aquitard, depleted soil matrix and redox of a dark soil matrix. Vegetation present includes green ash (*Fraxinus pennsylvanica* ), sensitive fern (*Onoclea sensibilis* ), and field horsetail (*Equisetum arvense* ). Principle functions that the wetland provides are habitat for wildlife and groundwater recharge/discharge. | 20, 21 |
| W-T01-011A | 42.409939 | -79.264287 | Arkwright | Dunkirk | 0.29 | PFO | No | Chautauqua-Conneaut | W-T01-011A is a PFO wetland extension of W-T01-011 off to the east. Wetland is fed by water coming from drain DD-T01-011 from the southeastern edge. Drain receives runoff from Route 83 and there is a culvert under the road flowing from the south. Wetland extends beyond the study area to the north. | 21 |
| W-T01-012 | 42.410507 | -79.262375 | Arkwright | Dunkirk | 0.13 | PFO | No | Chautauqua-Conneaut | W-T01-012 is a small PFO wetland located along the forest edge that borders Route 83. Wetland outflow is to the north via stream S-T01-018. Hydrologic indicators found include surface water averaging 1 inch deep, high water table, soil saturation, water-stained leaves and drainage patterns. Hydric soils were identified through redox in a dark matrix. Dominant vegetation present includes green ash (*Fraxinus pennsylvanica* ), american elm (*Ulmus americana* ), red maple (*Acer rubrum* ), sensitive fern (*Onoclea sensibilis* ) and river-bank grape (*Vitis riparia* ). Principle functions that the wetland provides are habitat for wildlife and groundwater recharge/discharge. | 22 |
| W-T01-013 | 42.411947 | -79.262200 | Arkwright | Dunkirk | 0.11 | PEM | No | Chautauqua-Conneaut | W-T01-013 is a PEM wetland on a hillslope in a mixed eastern hemlock (*Tsuga canadensis* ) and maple (*Acer ssp.* ) forest with no trees rooted in the mapped wetland. Drain DD-T01-012 runs from the southeast to northwestern edge of the wetland, becoming stream S-T01-021 and connecting wetland W-T01-013 to wetland W-T01-013A. Wetland characteristics include high water table, saturation, oxidized rhizospheres along living roots, a histic epipedon, and redox of a dark matrix. Dominant vegetation includes northern spicebush (*Lindera benzoin* ), marsh blue violet (*Viola cucullata* ), northern lady fern (*Athyrium angustum* ), and heart-leaf foamflower (*Tiarella cordifolia* ). Principle functions of the wetland include groundwater recharge/discharge and habitat for wildlife. | 22 |
| W-T01-013A | 42.412111 | -79.262585 | Arkwright | Dunkirk | 0.01 | PEM | No | Chautauqua-Conneaut | W-T01-013A is a PEM wetland extension of W-T01-013 located to the northwest of W-T01-013 and hydrologically connected to it via stream S-T01-021. Wetland is located on a hillslope in an eastern hemlock (*Tsuga canadensis* ) forest. | 22 |
| W-T01-014 | 42.412862 | -79.262203 | Arkwright | Dunkirk | 0.17 | PSS | Undetermined | Chautauqua-Conneaut | W-T01-014 is a small PSS wetland in a forested depression. The wetland extends beyond the survey area to the west, thus causing its hydrologic connectivity is undetermined. Wetland characteristics include high water table, saturation, water marks, water-stained leaves, oxidized rhizospheres, microtopographic relief, and redox of a dark soil matrix. The area contains northern spicebush (*Lindera benzoin* ), green ash (*Fraxinus pennsylvanica* ), and drooping sedge (*Carex prasina* ). Principle functions of the wetland include groundwater recharge/discharge, nutrient removal and habitat for wildlife. | 23 |
| W-T01-015 | 42.413687 | -79.261910 | Arkwright | Dunkirk | 0.05 | PEM | No | Chautauqua-Conneaut | W-T01-015 is a small seepage PEM wetland in a depression of an eastern hemlock (*Tsuga canadensis* ) forest. Wetland extends beyond the survey area at its eastern edge. Stream S-T01-022 directly abuts the wetland on the northern edge. The wetlands primary functions include groundwater recharge, and wildlife habitat. | 23 |
| W-T01-016 | 42.413872 | -79.262328 | Arkwright | Dunkirk | 0.08 | PEM | No | Chautauqua-Conneaut | W-T01-016 is a small PEM wetland located at the toe slope of a mixed hemlock (*Tsuga canadensis* ), beech (*Fagus grandifolia* ) and maple (*Acer ssp.* ) forest. Wetland characterized by water-stained leaves, geomorphic positioning, and a loamy gleyed matrix. Lamp rush (*Juncus effusus* ) and bulrush (*Scirpus sp.* ) were found to be dominant. The wetlands primary functions include groundwater recharge, and wildlife habitat. | 23 |
| W-T01-021 | 42.416213 | -79.253570 | Arkwright | Dunkirk | 0.48 | PEM | Undetermined | Chautauqua-Conneaut | W-T01-021 is a large PEM wetland in an agricultural field/pasture. The wetland extends beyond the survey area to the south and most likely joins up with wetlands W-T01-021A and W-T01-028 beyond the survey area. Characteristics of the wetland include surface water up to two inches deep, a high water table, soil saturation, hydrogen sulfide odor, and redox of a dark soil matrix/surface. Common vegetation found include lamp rush (*Juncus effusus* ), sensitive fern (*Onoclea sensibilis* ), and black bent (*Agrostis gigantea* ). The wetlands primary functions include floodflow alteration, nutrient removal, and wildlife habitat. | 27, 28 |
| W-T01-021A | 42.416143 | -79.254854 | Arkwright | Dunkirk | 0.47 | PEM | Undetermined | Chautauqua-Conneaut | W-T01-021A is a large PEM wetland in an agricultural field/pasture. This wetland is an extension of W-T01-021 with a road running in between the two of them. W-T01-021A extends beyond the survey area on the southern and northern edges. Hydrologic connectivity is undetermined because it extends beyond the survey area but most likely it is connected to the pond directly north of it (PD-T01-001) and wetlands W-T01-021, W-T01-022, and W-T01-028. | 26, 27, 28 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T01-022 | 42.416245 | -79.256606 | Arkwright | Dunkirk | 0.44 | PEM | No | Chautauqua-Conneaut | W-T01-022 is a large PEM/PFO wetland complex that extends beyond the survey area along the southern and northern edges. The PEM portion of the wetland complex wraps around the PFO component along the west and northern edges of the wetland. Wetland drains to the west via DD-T01-015 towards stream S-T01-023. Wetland characteristics include oxidized rhizospheres, a shallow aquitard, a depleted soil matrix, and bulrush (*Scirpus sp.* ). The wetlands primary functions include floodflow alteration, nutrient removal, and wildlife habitat. | 26, 27 |
| W-T01-022 | 42.416253 | -79.256447 | Arkwright | Dunkirk | 0.34 | PFO | No | Chautauqua-Conneaut | W-T01-022 is a large PEM/PFO wetland complex that extends beyond the survey area along the southern and northern edges. This is Wetland characteristics include surface water, a high water table, soil saturation, water-stained leaves, hydrogen sulfide odor, and redox of a dark soil matrix/surface. Green ash (*Fraxinus pennsylvanica* ), northern spicebush (*Lindera benzoin* ), and spotted touch-me-not (*Impatiens capensis* ) are among the dominant plant species in the wetland. | 26, 27 |
| W-T01-023 | 42.416457 | -79.260814 | Arkwright | Dunkirk | 0.26 | PSS | No | Chautauqua-Conneaut | W-T01-023 is a large PSS seepage wetland on a steep forested hillslope. Wetland joins with wetland W-T01-023A on eastern edge at flag points W-T01-023-14 and W-T01-023-13 (all one wetland just flagged in two stages). Wetland drains to the west via stream S-T01-024. Primary hydrologic indicators are surface water up to an inch deep, a high water table, soil saturation, water-stained leaves, and microtopographic relief. The wetland did not meet hydric soils. Some of the dominant vegetation includes green ash (*Fraxinus pennsylvanica* ), red maple (*Acer rubrum* ), northern spicebush (*Lindera benzoin* ), and cinnamon fern (*Osmundastrum cinnamomeum* ). Their are small upland hummocks enclosed within the wetland boundary with american beech (*Fagus grandifolia* ) on them. Primary wetland function is groundwater discharge/recharge. | 24, 25 |
| W-T01-023A | 42.416411 | -79.260250 | Arkwright | Dunkirk | 0.12 | PSS | No | Chautauqua-Conneaut | W-T01-023A is a large PSS seepage wetland on a steep forested hillslope. This is an extension of wetland W-T01-023 to the east, and extends beyond the survey area to the north. | 25 |
| W-T01-024 | 42.415395 | -79.261827 | Arkwright | Dunkirk | 0.03 | PEM | Undetermined | Chautauqua-Conneaut | W-T01-024 is a small PEM wetland on a maple forest hillslope with no trees rooted in the wetland. Hydrologic connectivity is undetermined because the wetland extends beyond the survey area to the east. Wetland hydrology indicators include a high water table, soil saturation, water-stained leaves and oxidized rhizospheres. Hydric soils determined by a depleted soil matrix. Northern spicebush (*Lindera benzoin* ), drooping sedge (*Carex prasina* ) and spotted touch-me-not (*Impatiens capensis* ) are dominant. The wetlands primary functions include groundwater recharge, floodflow alteration, nutrient removal, and wildlife habitat. | 24 |
| W-T01-025 | 42.414801 | -79.261977 | Arkwright | Dunkirk | 0.05 | PSS | No | Chautauqua-Conneaut | W-T01-025 is a small PSS wetland on a forested hillslope. The wetland drains to the west via stream S-T01-025. Characteristics of the wetland include surface water, high water table, soil saturation drainage patters, and water-stained leaves. The wetland does not have hydric soils. Red maple (*Acer rubrum* ), and northern spicebush (*Lindera benzoin* ) are dominant. Principle functions of the wetland include groundwater recharge, nutrient removal, and wildlife habitat. | 24 |
| W-T01-026 | 42.416120 | -79.259727 | Arkwright | Dunkirk | 0.05 | PEM | Undetermined | Chautauqua-Conneaut | W-T01-026 is a small PEM wetland on a forested hillslope, with no trees rooted in the wetland. Hydrologic connectivity of the wetland is undetermined due to the wetland extending beyond the survey area on the southern edge. Characteristics of the wetland include a high water table, soil saturation, oxidized rhizospheres along living roots, a depleted soil matrix, and redox of a dark soil surface. Northern spicebush (*Lindera benzoin* ), drooping sedge (*Carex prasina* ) and white grass (*Leersia virginica* ) are dominant. The wetlands primary functions include groundwater recharge/discharge, and wildlife habitat. | 25 |
| W-T01-027 | 42.417693 | -79.250612 | Arkwright | Dunkirk/Forestville | 5.99 | PFO | No | Chautauqua-Conneaut | W-T01-027 is a large PFO wetland on a forested hillslope. Hydrologic connectivity is undetermined because the wetland extends beyond the survey area along the western and northern edges. The wetland is characterized by a high water table, soil saturation, oxidized rhizospheres along living roots, and redox of a dark soil surface. Red maple (*Acer rubrum* ), green ash (*Fraxinus pennsylvanica* ), american beech (*Ulmus americana* ), and sensitive fern (*Onoclea sensibilis* ) are dominant. The principle functions of the wetland are groundwater recharge/discharge and habitat for wildlife. | 29, 30, 31, 70 |
| W-T01-028 | 42.416541 | -79.252459 | Arkwright | Dunkirk | 1.39 | PSS | No | Chautauqua-Conneaut | W-T01-028 is a large PSS wetland on a forested hillslope. The wetland is hydrologically connected to pond PD-T01-002 and wetland W-T01-021 by groundwater and proximity. The wetland extends beyond the survey area to the north and south and most likely joins with wetland W-T01-021 outside the survey corridor. Characteristics of the wetland include oxidized rhizospheres along living roots, drainage patterns, inundation visible on aerial imagery, a depleted soil matrix, and redox of a dark soil surface. Dominant vegetation includes green ash (*Fraxinus pennsylvanica* ), red osier dogwood (*Cornus alba* ), and field horsetail (*Equisetum arvense* ). The principle functions of the wetland are groundwater recharge/discharge and habitat for wildlife. | 28, 29 |
| W-T01-029 | 42.416660 | -79.249634 | Arkwright | Forestville | 0.03 | PFO | Undetermined | Chautauqua-Conneaut | W-T01-029 is a PFO wetland in a forest that extends beyond the survey area at its southern edge. Hydrologic connectivity is undetermined due to small portion being within study area. Wetland characterized by presence of surface water, high water table, soil saturation, hydrogen sulfide odor, and a histic epipedon. Red maple (*Acer rubrum* ) and cinnamon fern (*Osmundastrum cinnamomeum* ) are dominant. The principle function of the wetland is habitat for wildlife. | 29, 30 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T02-001 | 42.431147 | -79.259430 | Arkwright | Dunkirk | 1.56 | PEM | No | Chautauqua-Conneaut | W-T02-001 is a large PEM/PSS wetland in a cow pasture. Wetland characteristics include high water table, soil saturation, depleted soil matrix and soil redox. Reed canary grass (*Phalaris arundinacea* ) is the dominant vegetation found in the wetland. Wetland functions include groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 39, 40, 41, 42, 43 |
| W-T02-001 | 42.430726 | -79.259349 | Arkwright | Dunkirk | 3.72 | PSS | No | Chautauqua-Conneaut | W-T02-001 is a large PEM/PSS wetland in a cow pasture. Wetland characteristics include high water table, soil saturation, depleted soil matrix and soil redox. Wetland functions include groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 39, 40, 41, 42, 43 |
| W-T02-002 | 42.431729 | -79.258113 | Arkwright | Dunkirk | 0.01 | PEM | No | Chautauqua-Conneaut | W-T02-002 is a small PEM seepage wetland in opening of forest. Stream S-T02-001 is adjacent to it connecting it to the other two portions of the W-T02-002 complex. Wetland is associated with a high water table, soil saturation, and soil redox of a dark matrix. Dominant species found include green ash (*Fraxinus pennsylvanica* ), reed canary grass (*Phalaris arundinacea* ), and wrinkle-leaf goldenrod (*Solidago rugosa* ). | 41 |
| W-T02-002A | 42.431937 | -79.258138 | Arkwright | Dunkirk | <0.01 | PEM | No | Chautauqua-Conneaut | W-T02-002A is a very small PEM wetland extension of W-T02-002. Stream S-T02-001 is directly abutting the wetland and flows directly through the center of the wetland. Wetland is mostly a seepage wetland from the stream. | 41 |
| W-T02-002B | 42.431512 | -79.257874 | Arkwright | Dunkirk | 0.01 | PEM | No | Chautauqua-Conneaut | W-T02-002B is a small PEM wetland, that is an extension/associated with W-T02-002. It is located southeast of the main wetland W-T02-002. | 41 |
| W-T02-003 | 42.431294 | -79.257182 | Arkwright | Dunkirk | 0.16 | PEM | No | Chautauqua-Conneaut | W-T02-003 is a small PEM wetland in a forested opening along an agricultural/hay field. Inflow from stream S-T02-001 at the south end and outflow is to stream S-T02-001 along the northwestern edge. Stream hydrologically connects wetland to the W-T02-002 and W-T02-006 wetland complexes. Wetland hydrology indicators are high water table and soil saturation at 7 inches deep, and the hydric soil indicator is the presence of redox in a dark matrix. Sensitive fern (*Onoclea sensibilis* ) and melic manna grass (*Glyceria melicaria* ) are present. The wetlands principle function is groundwater recharge/discharge, and although deer tracks were found, the wetland is too small to provide adequate habitat for deer. | 41, 43 |
| W-T02-004 | 42.431656 | -79.257098 | Arkwright | Dunkirk | 0.23 | PEM | Yes | Chautauqua-Conneaut | W-T02-004 is an isolated PEM wetland in an agricultural/hay field. The wetland is dominated by stalk-grain sedge (*Carex stricata* ), and reed canary grass (*Phalaris arundinacea* ). Surface water pooling is the primary hydrologic input. The soils have redox of a dark soil matrix present. Principle wetland functions are groundwater recharge and nutrient removal. | 43 |
| W-T02-005 | 42.430680 | -79.255467 | Arkwright | Dunkirk | 0.15 | PEM | No | Chautauqua-Conneaut | W-T02-005 is a large PEM wetland located in a hillslope depression within a cow pasture. Wetland extends extremely far beyond on the study area to the northeast and connects to a 2012/2013 previously mapped stream beyond the current study area. Hydrologic conditions include surface water, high water table, and saturation of the soil within one inch of surface. Soil redox conditions were found and reed canary grass (*Phalaris arundinacea* ) is the dominant plant species. | 43 |
| W-T02-006 | 42.429652 | -79.256001 | Arkwright | Dunkirk | 0.03 | PEM | No | Chautauqua-Conneaut | W-T02-006 is a small PEM in a drainage way in a forested area. Outflow of wetland is to the north via adjacent stream S-T02-001 that connects the wetland to wetland W-T02-006A and W-T02-006B and W-T02-003. Hydric soils characterized by histosol. Some surface water present in portions of wetland. Dominant vegetation includes yellow birch (*Betula alleghaniensis* ), green ash (*Fraxinus pennsylvanica* ), sensitive fern (*Onoclea sensibilis* ), and white turtlehead (*Chelone glabra* ). Principle functions of the wetland are groundwater recharge/discharge, sediment retention and nutrient removal. | 42 |
| W-T02-006A | 42.429851 | -79.255890 | Arkwright | Dunkirk | 0.01 | PEM | No | Chautauqua-Conneaut | W-T02-006A is a small PEM wetland that is an extension of W-T02-006 directly north. They are hydrologically connected to one another via stream S-T02-001. | 42, 43 |
| W-T02-006B | 42.430141 | -79.256135 | Arkwright | Dunkirk | 0.02 | PEM | No | Chautauqua-Conneaut | W-T02-006B is a small PEM wetland extension of W-T02-006 located north of both W-T02-006 and W-T02-006A. They are hydrologically connected to one another via stream S-T02-001. This wetland extends beyond the study area along its northern edge. | 42, 43 |
| W-T02-007 | 42.428924 | -79.258491 | Arkwright | Dunkirk | 0.01 | PEM | No | Chautauqua-Conneaut | W-T02-007 is a small seepage PEM wetland in an elevated floodplain of stream S-T02-002. wetland drains north/northwest towards the stream. Hydrogen sulfide is present in the wetland along with spotted touch-me-not (*Impatiens capensis* ). Principle functions of the wetland include groundwater recharge/discharge, sediment retention, nutrient removal, and productions export. | 39 |
| W-T02-008 | 42.429027 | -79.258257 | Arkwright | Dunkirk | 0.04 | PEM | No | Chautauqua-Conneaut | W-T02-008 is a small isolated PEM wetland in a pasture along the edge of a forest. Wetland has capability of providing groundwater recharge/discharge and habitat for wildlife. | 39, 42 |
| W-T02-009 | 42.428114 | -79.258255 | Arkwright | Dunkirk | 0.01 | PEM | No | Chautauqua-Conneaut | W-T02-009 is a small PEM wetland in a forested area. Wetland has been significantly disturbed by vehicle traffic from logging, causing both vegetation and soils to e significantly disturbed. Hydrology indicators include high water table, saturation, drainage patters, and oxidized rhizospheres. Due to the presence of a loamy gleyed matrix and redox of a dark soil surface their is hydric soil. The wetland drains to the north via drain DD-T02-001, and provides groundwater recharge/discharge and wildlife habitat. | 38, 39 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T02-010 | 42.426882 | -79.259552 | Arkwright | Dunkirk | 0.05 | PEM | No | Chautauqua-Conneaut | W-T02-010 is a small PEM wetland in a forested area. Inflow is from drain DD-T02-002 at the southern edge (coming from wetland W-T02-010A) and outflow is to drain DD-T02-002 at the north end, which eventually flows into S-T02-003. Principle functions of this wetland are groundwater recharge/discharge and wildlife habitat. | 38 |
| W-T02-010A | 42.426658 | -79.259459 | Arkwright | Dunkirk | 0.04 | PEM | No | Chautauqua-Conneaut | W-T02-010A is a small PEM wetland that is an extension of wetland W-T02-010 to the north. The two wetlands are hydrologically connected to each other via drain DD-T02-002. | 37, 38 |
| W-T02-011 | 42.426953 | -79.258860 | Arkwright | Dunkirk | 0.19 | PEM | No | Chautauqua-Conneaut | W-T02-011 is a large seepage PEM wetland in a forested area. Wetland inflow is from groundwater and outflow is to groundwater and to the north via streams S-T02-003 and S-T02-003A, which hydrologically connects the wetland to wetland W-T02-017 outside of the study area. Primary hydrology indicators are surface water, high water table, soil saturation, drainage patterns and hydrogen sulfide odor. Soils are hydric due to a loamy gley found and hydrogen sulfide odor. Drooping sedge (*Carex prasina* ) and spotted touch-me-not (*Impatiens capensis* ) are the dominant vegetation in this wetland. Principle wetland functions include groundwater recharge/discharge and suitable habitat for wildlife. | 38 |
| W-T02-012 | 42.426474 | -79.259679 | Arkwright | Dunkirk | 0.02 | PEM | No | Chautauqua-Conneaut | W-T02-012 is a small PEM seepage wetland in an opening in the forest. It is adjacent to stream S-T02-004, where outflow is to. Wetland indicators include surface water, high water table, soil saturation, drainage patters, and soil redox of a dark surface. Green ash (*Fraxinus pennsylvanica* ) and spotted touch-me-not (*Impatiens capensis* ) were found to be dominant. Wetland functions as area for groundwater recharge/discharge and habitat for wildlife. | 37, 38 |
| W-T02-013 | 42.426113 | -79.259409 | Arkwright | Dunkirk | 0.04 | PEM | No | Chautauqua-Conneaut | W-T02-013 is s small PEM seepage wetland along stream S-T02-004. Wetland outflow is to the north-northwest via stream S-T02-004. Wetland hydrology indicators include surface water, high water table, soil saturation and drainage patters. It contains a histic epipedon and spotted touch-me-not (*Impatiens capensis* ). Principle wetland functions include groundwater recharge/discharge, sediment retention, and wildlife habitat. | 37, 38 |
| W-T02-014 | 42.425516 | -79.258387 | Arkwright | Dunkirk | 0.08 | PEM | No | Chautauqua-Conneaut | W-T02-014 is a PEM wetland located in a forested depression and swale draining to the northwest via drain DD-T02-004. Wetland characteristics include oxidized rhizospheres and depleted soil matrix. Spotted touch-me-not (*Impatiens capensis* ), melic manna grass (*Glyceria melicaria* ) and northern lady fern (*Athyrium angustum* ) were among the dominant plants found. Principle functions of the wetland are wildlife habitat and sediment/toxicant retention. | 36, 37 |
| W-T02-015 | 42.425799 | -79.259625 | Arkwright | Dunkirk | <0.01 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-015 is a small PEM wetland on a forested slope. Wetland extends beyond the study area on the northwest edge. Hydrologic connectivity is undetermined because wetland extends beyond study area. | 37 |
| W-T02-016 | 42.424856 | -79.259261 | Arkwright | Dunkirk | 0.05 | PSS | Yes | Chautauqua-Conneaut | W-T02-016 is a small isolated PSS wetland in an upland depression along a terrace. Wetland is separated from closest jurisdictional water by small berm and steep upland slope. Area characterized by high water table, saturation, water-stained leaves, and a histic epipedon. Melic manna grass (*Glyceria melicaria* ), spinulose wood fern (*Dryopteris carthusiana* ) and northern spicebush (*Lindera benzoin* ) are the dominant plant species present. Principle functions include habitat for wildlife and sediment/toxicant retention. | 37 |
| W-T02-017 | 42.428494 | -79.259757 | Arkwright | Dunkirk | 0.02 | PFO | No | Chautauqua-Conneaut | W-T02-017 is a PFO wetland located at the base of a hillslope and extends well beyond the study area along the north/northwest edge and abuts stream S-T02-003/003A beyond study area. It contains spots of surface water averaging one inch deep, a shallow clay aquitard, and soil matrix redox. Dominant species found include green ash (*Fraxinus pennsylvanica* ), melic manna grass (*Glyceria melicaria* ) and sensitive fern (*Onoclea sensibilis* ). Principle wetland functions are undetermined at this time due to a majority of the wetland being located outside of the study area. | 39 |
| W-T02-018 | 42.424672 | -79.259518 | Arkwright | Dunkirk | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T02-018 is a small PEM wetland on a forested hillslope. Wetland is hydrologically connected to a mapped stream from 2012/2013 to the west that is outside the current survey area. Wetland is characterized by a depleted soil matrix below a dark surface, high water table and soil saturation. Dominant vegetation includes northern spicebush (*Lindera benzoin* ), spotted touch-me-not (*Impatiens capensis* ) and Canadian wood-nettle (*Laportea canadensis* ). Principle functions that the wetland provides are habitat for wildlife and groundwater recharge/discharge. | 37 |
| W-T02-019 | 42.425501 | -79.257113 | Arkwright | Dunkirk | 0.34 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-019 is a large PEM wetland in forested upland depression. Wetland extends and drains to the southwest outside of the study area. Wetland mapped in two parcels due to extension of study area, flag points are mapped as both W-T02-019 and W-T06-014. Wetland hydrology indicators include surface water, high water table, saturation, water marks, hydrogen sulfide and geomorphic position. Wetland contains histosol soils. wetland provides habitat to local wildlife. | 36 |
| W-T02-020 | 42.425290 | -79.255090 | Arkwright | Dunkirk | 0.06 | PEM | No | Chautauqua-Conneaut | W-T02-020 is a large PEM wetland in forested depression. Wetland extends beyond study area to the north and connects with a another segment of the wetland beyond the study area. Wetland is hydrologically connected to a stream that flows in the woods beyond the study area to the northwest. Wetland provides functions such as groundwater recharge/discharge and habitat for wildlife. | 35, 36 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T02-021 | 42.424964 | -79.256022 | Arkwright | Dunkirk | 0.04 | PEM | No | Chautauqua-Conneaut | W-T02-021 is a small PEM wetland in an upland forested depression. Area is significantly disturbed by ORV's. Water outflow is to the north-northeast and drains along logging road and into an unmapped S-RPW outside of the study area. Wetland contains areas of surface water approximately two inches deep, a high water table, soil saturation, and soil redox. Dominant vegetation is sensitive fern (*Onoclea sensibilis* ), spotted touch-me-not (*Impatiens capensis* ), and crinkleroot (*Cardamine diphylla* ). Even though wetland could provide wildlife habitat, groundwater recharge, sediment retention and nutrient removal its small stature limits its ability to be able to be a good source for these functions. | 35, 36 |
| W-T02-022 | 42.424337 | -79.254433 | Arkwright | Dunkirk | 0.99 | PEM | No | Chautauqua-Conneaut | W-T02-022 is a large PEM/PFO wetland complex. This is the large PEM component of the complex located to the far northwest of the grouping. Wetland extends beyond the survey area at the north-northeastern edge where it joins up with the other segments. Wetland indicators include surface water approximately one inch deep, a high water table, soil saturation, hydrogen sulfide odor, and a histic epipedon. Dominant vegetation in the PEM sections include red maple (*Acer rubrum* ), northern spicebush (*Lindera benzoin* ), cinnamon fern (*Osmundastrum cinnamomeum* ), and sweet wood-reed (*Cinna arundinacea* ). Principle functions of the wetland include floodwater alteration and habitat for wildlife. | 33, 34, 35 |
| W-T02-022 | 42.423417 | -79.251558 | Arkwright | Dunkirk | 0.62 | PFO | No | Chautauqua-Conneaut | W-T02-022 is a large PEM/PFO wetland complex. This is the large PFO component of the complex located to the far southeast of the grouping. Wetland is characterized by presence of surface water, high water table, soil saturation, water-stained leaves, hydrogen sulfide odor, and redox of a dark soil matrix. Green ash (*Fraxinus pennsylvanica* ) and northern spicebush (*Lindera benzoin* ) are a few of the dominant plant species growing in the wetland. | 33, 34, 35 |
| W-T02-023 | 42.423073 | -79.250161 | Arkwright | Dunkirk/Forestville | 2.31 | PFO | No | Chautauqua-Conneaut | W-T02-023 is a large PFO wetland complex in a wide swale and drainage way of streams S-T02-005 and S-T02-005A. Another segment of the W-T02-023 PFO wetland located to the west of the larger segment, where stream S-T02-014 flows through the center. Wetland characteristics include high water table, soil saturation, oxidized rhizospheres along living roots, depleted soil matrix, and redox of a dark soil surface. Common vegetation found in this wetland include green ash (*Fraxinus pennsylvanica* ), red maple (*Acer rubrum* ), yellow birch (*Betula alleghaniensis* ), american elm (*Ulmus americana* ), sensitive fern (*Onoclea sensibilis* ) and spotted touch-me-not (*Impatiens capensis* ). Principle functions of the wetland include floodwater alteration, fish and shellfish habitat, sediment/toxicant retention, nutrient removal, production export, sediment/shoreline stabilization, and habitat for wildlife. | 33, 52, 53 |
| W-T02-024 | 42.424803 | -79.247289 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T02-024 is a small isolated PEM depressional. | 52 |
| W-T02-025 | 42.426126 | -79.247704 | Arkwright | Forestville | 0.33 | PFO | No | Chautauqua-Conneaut | W-T02-025 is a PFO wetland in a hillside swale. The wetland continues beyond the survey area to the east and is connected to another wetland outside of the survey area on the west by drain DD-T02-005. Wetland characteristics include surface water, a high water table, soil saturation, oxidized rhizospheres, a depleted soil matrix below a dark surface and redox of a dark soil surface. Green ash (*Fraxinus pennsylvanica* ) and rice cut grass (*Leersia virginica* ) are dominant. Based on the limited area available of the wetland inside the survey corridor The principle function of the wetland is habitat for wildlife. | 49, 51, 54 |
| W-T02-026 | 42.426692 | -79.246515 | Arkwright | Forestville | 0.06 | PFO | Undetermined | Chautauqua-Conneaut | W-T02-026 is a PFO wetland that extends beyond the survey area along the eastern edge. Wetland indicators found include surface water, a high water table, soil saturation, water-stained leaves, hydrogen sulfide, and a histosol for a soil layer. Dominant vegetation includes red maple (*Acer rubrum* ), yellow birch (*Betula alleghaniensis* ), northern spicebush (*Lindera benzoin* ) and cinnamon fern (*Osmundastrum cinnamomeum* ). The principle function of the wetland is habitat for wildlife. | 51, 54 |
| W-T02-026A | 42.426907 | -79.246579 | Arkwright | Forestville | <0.01 | PFO | No | Chautauqua-Conneaut | W-T02-026A is a very small PFO wetland extension of W-T02-026 to the north. The two are connected by drain DD-T02-006. | 51, 54 |
| W-T02-027 | 42.427115 | -79.246850 | Arkwright | Forestville | 0.24 | PFO | No | Chautauqua-Conneaut | W-T02-027 is a large PFO wetland in a depression a short distance from W-T02-026-PFO-1. The wetland extends beyond the survey area on the northeast edge and connects to wetland W-T02-028 beyond the survey area via stream S-T02-007. There are many dead ash trees present in the wetland. Other dominant species include red maple (*Acer rubrum* ), cinnamon fern (*Osmundastrum cinnamomeum* ), and northern spicebush (*Lindera benzoin* ). The wetland contains properties such as surface water, a high water table, soil saturation, water-stained leaves, oxidized rhizospheres, a depleted soil matrix and mineral soil with a thick muck surface. Based on the limited area available of the wetland inside the survey corridor the principle function of the wetland is habitat for wildlife. | 51, 54 |
| W-T02-028 | 42.427197 | -79.249035 | Arkwright | Forestville | 0.04 | PEM | No | Chautauqua-Conneaut | W-T02-028 is an emergent (PEM) wetland in a well defined topographic drainage way. The wetland is hydrologically connected to W-T02-028A via stream S-T02-007, where the outflow is to. The principle functions of the wetland are groundwater recharge/discharge and habitat for wildlife. | 49, 51 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T02-028A | 42.427372 | -79.250055 | Arkwright | Dunkirk/Forestville | 0.26 | PEM | No | Chautauqua-Conneaut | W-T02-028A is an emergent (PEM) wetland in a well defined topographic drainage way. The far western edge of the wetland is located in the Dunkirk USGS quad, and the eastern and center sections of the wetland are located in the Forestville USGS quad. The wetland is hydrologically connected to W-T02-028 via stream S-T02-007, where the inflow is from. Primary hydrologic indicators of the wetland area surface water of up to two inches deep, a high water table, soil saturation, drainage patterns, a shallow aquitard and hydrogen sulfide odor. Redox of a dark surface and hydrogen sulfide depict hydric soils. Common plants include spotted touch-me-not (Impatiens capensis) and drooping sedge (*Carex prasina* ). The principle functions of the wetland are groundwater recharge/discharge and habitat for wildlife. | 48, 49 |
| W-T02-029 | 42.430680 | -79.254571 | Arkwright | Dunkirk | 0.21 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-029 is a small PEM wetland on a slope in an active hay field dominated by reed canary grass (*Phalaris arundinacea* ). Wetland characteristics include water-stained leaves, oxidized rhizospheres along living root channels, and a depleted soil matrix. The principle function of the wetland is groundwater recharge/discharge. | 44 |
| W-T02-030 | 42.430532 | -79.253855 | Arkwright | Dunkirk | 0.19 | PEM | No | Chautauqua-Conneaut | W-T02-030 is a large PEM wetland on a slope in an active hay field that is in a swale of an excavated drainage/ditch DD-T02-007. The characteristics of the wetland include oxidized rhizospheres along living roots, drainage patterns, and a depleted soil matrix. Reed canary grass (*Phalaris arundinacea* ) and spreading bent (*Agrostis stolonifera* ) are dominant species. The principle function of the wetland is groundwater recharge/discharge. | 44 |
| W-T02-031 | 42.430043 | -79.251410 | Arkwright | Dunkirk | 3.45 | PEM | No | Chautauqua-Conneaut | W-T02-031 is a large PEM wetland complex with five different segments in an active hayfield along a drainage way. The wetland is characterized by surface water approximately one inch deep, a high water table, soil saturation, drainage patterns, oxidized rhizospheres along living roots, and redox of a dark soil matrix. The wetland is dominated by lamp rush (*Juncus effusus* ) and late goldenrod (*Solidago gigantea* ). The wetland has limited function ability due to location. | 44, 46, 47, 48 |
| W-T02-032 | 42.428284 | -79.250353 | Arkwright | Dunkirk/Forestville | 0.65 | PEM | No | Chautauqua-Conneaut | W-T02-032 is a large PEM wetland in a swale. There are two segments of this wetland because the wetland extends beyond the survey area. Outflow is to the north via stream S-T02-008, which then flows into wetland W-T02-032A. Wetland characteristics include a high water table, soil saturation, drainage patterns, oxidized rhizospheres, a depleted soil matrix and a depleted matrix below a dark surface. Sensitive fern (*Onoclea sensibilis* ) and rice cut grass (*Leersia oryzoides* ) are dominant. The principle functions of the wetland are nutrient removal and habitat for wildlife. | 48, 49, 50 |
| W-T02-032A | 42.428904 | -79.249079 | Arkwright | Forestville | 0.01 | PEM | No | Chautauqua-Conneaut | W-T02-032A is a small PEM wetland in a forest opening. Wetland inflow is from stream S-T02-008 (coming from wetland W-T02-032) and outflow is to stream S-T02-008 to the north that flows into wetland W-T02-032B. | 50 |
| W-T02-032B | 42.429043 | -79.249059 | Arkwright | Forestville | 0.04 | PEM | No | Chautauqua-Conneaut | W-T02-032B is a seepage PEM wetland abutting stream S-T02-008, dominated by spotted touch-me-not (*Impatiens capensis* ). Inflow is from the stream. Wetland extends beyond the survey area to the north. Characteristics of the wetland are surface water less than one inch, water-stained leaves, and hydrogen sulfide odor. The principle functions of the wetland are nutrient removal and habitat for wildlife. | 50 |
| W-T02-033 | 42.427893 | -79.250950 | Arkwright | Dunkirk | 0.06 | PFO | Undetermined | Chautauqua-Conneaut | W-T02-033 is a small PFO wetland in a forested depression with deep organic soils that extends beyond the survey area on its western edge. The wetland hydrologic connectivity and functions are undetermined because the portion of the wetland inside of the study area is too small to assess. The characteristics of the wetland include surface water of approximately three inches deep, a high water table, soil saturation and hydrogen sulfide odor. Eastern hemlock (*Tsuga canadensis* ), yellow birch (*Betula alleghaniensis* ), spotted touch-me-not (*Impatiens capensis* ) and cinnamon fern (*Osmundastrum cinnamomeum* ) are dominant. | 48 |
| W-T02-034 | 42.429367 | -79.248319 | Arkwright | Forestville | 0.02 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-034 is a PEM in a well defined drainage way on a slope. The wetland extends beyond the survey area to the north, area inside survey area is too small to assess connectivity and function ability. Overland sheet flow observed in entire wetland. Wetland indicators include surface water, high water table, soil saturation and a histic epipedon. Swamp rose (*Rosa palustris* ), spotted touch-me-not (*Impatiens capensis* ), and green ash (*Fraxinus pennsylvanica* ) are dominant. | 50 |
| W-T02-035 | 42.428703 | -79.247863 | Arkwright | Forestville | 0.10 | PEM | No | Chautauqua-Conneaut | W-T02-035 is a small PEM on a terrace in a forest opening, dominated by rice cut grass (*Leersia oryzoides* ), and abuts stream S-T02-009. Hydrologic connectivity is undetermined because the wetland extends beyond the survey area to the northeast. Characteristics of the wetland include surface water, a high water table, soil saturation, water-stained leaves, drainage patterns, hydrogen sulfide odor, a thick dark surface and oxidized rhizospheres. The principle function of the wetland is habitat for wildlife. | 50 |
| W-T02-036 | 42.426927 | -79.245499 | Arkwright | Forestville | 0.08 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-036 is a sparsely vegetated PEM wetland on a concave surface with up to six inches of water. Hydrologic connectivity is undetermined because the wetland extends beyond the survey area at the southern edge. Wetland contains a high water table, soil saturation, hydrogen sulfide odor and a histic epipedon. The principle function of the wetland is habitat for wildlife. | 54 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T02-037 | 42.427496 | -79.245420 | Arkwright | Forestville | 0.17 | PEM | Yes | Chautauqua-Conneaut | W-T02-037 is a PFO/PEM wetland complex. The PEM section of the wetland is located on the east in a forested depression. The PEM section also contains surface water approximately four inches deep, a high water table, soil saturation, a histic epipedon, and hydrogen sulfide odor. Dominant vegetation includes northern spicebush (*Lindera benzoin* ), and spreading bent (*Agrostis stolonifera* ). The principle functions of the wetland are nutrient removal, and habitat for wildlife. | 54 |
| W-T02-037 | 42.427389 | -79.245775 | Arkwright | Forestville | 0.10 | PFO | Yes | Chautauqua-Conneaut | W-T02-037 is a PFO/PEM wetland complex. The PFO section of the wetland is dominated by yellow birch (*Betula alleghaniensis* ), located on the west in a forested depression with deep organic soils, and extends beyond the survey area on the northwestern edge. The PFO section also contains surface water approximately two inches deep, a high water table, soil saturation and hydrogen sulfide odor. The principle functions of the wetland are nutrient removal, and habitat for wildlife. | 54 |
| W-T02-038 | 42.427913 | -79.245686 | Arkwright | Forestville | 0.10 | PEM | Yes | Chautauqua-Conneaut | W-T02-038 is an isolated depressional PEM wetland along the transitional edge of a forest and grassland, dominated by fowl manna grass (*Glyceria striata* ). Water inflow is from overland sheet flow and groundwater, and outflow is to ground water recharge. The wetland contains a high water table, soil saturation, and hydrogen sulfide odor. The principle functions of the wetland are groundwater recharge and habitat for wildlife. | 54 |
| W-T02-039 | 42.427761 | -79.244364 | Arkwright | Forestville | 0.07 | PEM | No | Chautauqua-Conneaut | W-T02-039 is a small PEM wetland in a drainage way in an upland forest. It is adjacent to a mapped historic drain north-northeast outside of the survey area. Wetland is characterized by surface water approximately one inch deep, a high water table, soil saturation, drainage patterns, hydrogen sulfide odor and a depleted soil matrix. Dominant vegetation includes red maple (*Acer rubrum* ), green ash (*Fraxinus pennsylvanica* ), northern spicebush (*Lindera benzoin* ), melic manna grass (*Glyceria melicaria* ) and smooth white violet (*Viola macloskeyi* ). The principle function of the wetland is habitat for wildlife. | 55 |
| W-T02-040 | 42.427548 | -79.243480 | Arkwright | Forestville | 0.73 | PFO | No | Chautauqua-Conneaut | W-T02-040 is a large PFO wetland in a flat/depressional forested area. The wetland extends beyond the survey area along the southern edge. Stream S-T02-010 provides inflow to the wetland along the southern edge, and outflow is to streams S-T02-010 and S-T02-010A at the northeastern corner. Characteristics of the wetland include surface water, high water table, soil saturation, hydrogen sulfide odor, and a depleted dark matrix. Dominant vegetation includes red maple (*Acer rubrum* ), green ash (*Fraxinus pennsylvanica* ), northern spicebush (*Lindera benzoin* ), and sensitive fern (*Onoclea sensibilis* ). The principle function of the wetland is habitat for wildlife. | 55, 56 |
| W-T02-041 | 42.428077 | -79.242213 | Arkwright | Forestville | 0.04 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-041 is a PEM wetland dominated by *Glyceria sp.* in a forested red maple (*Acer rubrum* ) forest. The wetland extends beyond the study area to the north causing hydrologic connectivity to be undetermined at this time. Characteristics of the wetland include surface water, high water table, soil saturation, hydrogen sulfide odor, and oxidized rhizospheres. The principle functions of the wetland are floodflow alteration, and habitat for wildlife. | 56 |
| W-T02-042 | 42.427985 | -79.241272 | Arkwright | Forestville | 0.13 | PFO | No | Chautauqua-Conneaut | W-T02-042 is a PEM/PFO wetland complex. The PFO portion is dominated by red maple (*Acer rubrum* ) in the northern half of the wetland in a depression on a very slight slope. Stream S-T02-012 abuts wetland where outflow is to along the eastern edge and connects the wetland with wetland W-T02-043. Characteristics of the wetland include surface water, high water table, soil saturation, hydrogen sulfide odor, and a depleted dark matrix. The principle functions of the wetland are nutrient removal, sediment retention, and habitat for wildlife. | 56 |
| W-T02-042 | 42.427586 | -79.241221 | Arkwright | Forestville | 0.03 | PEM | No | Chautauqua-Conneaut | W-T02-042 is a PEM/PFO wetland complex. The PEM portion is in the southern half of the wetland in a depression on a very slight slope. The wetland abuts stream S-T02-012. Characteristics of the wetland include surface water, high water table, soil saturation, hydrogen sulfide odor, oxidized rhizospheres along living roots, and redox of a dark matrix. Spotted touch-me-not (*Impatiens capensis* ), northern lady fern (*Athyrium angustum* ) and small-spike false nettle (*Boehmeria clyindrica* ) are dominant. The principle functions of the wetland are nutrient removal, sediment retention, and habitat for wildlife. | 56 |
| W-T02-043 | 42.428017 | -79.240127 | Arkwright | Forestville | 0.38 | PEM | No | Chautauqua-Conneaut | W-T02-043 is a large PEM in a riverine valley abutting stream S-T02-013. Wetland inflow is from stream S-T02-012 on the western edge (which joins wetland to W-T02-042) and outflow is stream S-T02-013 along the southeastern edge. The wetland also extends beyond the survey area along the northwestern edge. The wetland contains surface water, a high water table, soil saturation, and redox in a dark soil matrix. Dominant vegetation includes sensitive fern (*Onoclea sensibilis* ) and rice cut grass (*Leersia oryzoides* ). The principle functions of the wetland are nutrient removal, sediment retention, and habitat for wildlife. | 56, 57 |
| W-T02-044 | 42.428105 | -79.238401 | Arkwright | Forestville | 0.05 | PEM | No | Chautauqua-Conneaut | W-T02-044 is a PEM seepage wetland in a forested opening , dominated by crooked-stem american aster (*Symphyotrichum prenanthoides* ), with intermittent overland sheet flow to stream S-T02-011. The wetland contains surface water, a high water table, soil saturation, hydrogen sulfide odor, and a depleted dark soil matrix. The principle function of the wetland is floodflow alteration. | 57, 58 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T02-045 | 42.427560 | -79.237410 | Arkwright | Forestville | 0.21 | PSS | No | Chautauqua-Conneaut | W-T02-045 is a PSS wetland that extends beyond the survey area along its southern edge, and is adjacent to stream S-T02-011 on the western edge. Wetland indicators present include surface water, a high water table, soil saturation, oxidized rhizospheres, and redox of a dark surface. Dominant vegetation is wrinkle-leaf goldenrod (*Solidago rugosa* ), rice cut grass (*Leersia oryzoides* ), and manna grass (*Glyceria sp.* ). The principle functions of the wetland are floodflow alteration and sediment removal/stabilization. | 58 |
| W-T02-046 | 42.427543 | -79.236371 | Arkwright | Forestville | 0.05 | PEM | No | Chautauqua-Conneaut | W-T02-046 is a small PEM wetland abutting drain DD-T02-008 running along Center Road on the eastern side of the wetland, and extending beyond the survey area to the south. Wetland indicators present include a high water table, soil saturation, oxidized rhizospheres, and a depleted dark surface. Dominant vegetation is late goldenrod (*Solidago gigantea* ) and northwest territory sedge (*Carex utriculata* ). Due to the small amount of the wetland mapped and its location no major wetland functions were observed. | 65 |
| W-T02-047 | 42.423722 | -79.253284 | Arkwright | Dunkirk | 0.05 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-047 is a small drooping sedge (*Carex prasina* ) PEM in a depression of an upland forest, that is inundated and saturated. Hydric soil characteristics include hydrogen sulfide and redox of a dark soil surface. Wetland appears to extend beyond the survey area at the southwestern edge and connect to a historically mapped wetland (W061). The principle function of the wetland is providing habitat for wildlife. | 34 |
| W-T02-048 | 42.422423 | -79.251037 | Arkwright | Dunkirk | 0.33 | PFO | No | Chautauqua-Conneaut | W-T02-048 is a large PFO wetland in a floodplain and along a slope adjacent to and abutting stream S-T02-015A, which connects up with stream S-T02-015 and connects the wetland to wetland W-T02-048A and W-T02-048B. Wetland indicators found in this wetland include a high water table, soil saturation, water marks, drainage patterns, and redox of a dark soil surface. Vegetation found was yellow birch (*Betula alleghaniensis* ), green ash (*Fraxinus pennsylvanica* ), and melic manna grass (*Glyceria melicaria* ). The principle functions of the wetland are fish/shellfish habitat, and habitat for wildlife. | 33, 53 |
| W-T02-048A | 42.422115 | -79.250535 | Arkwright | Dunkirk | <0.01 | PEM | No | Chautauqua-Conneaut | W-T02-048A is a small PEM wetland in a floodplain and along a slope adjacent to and abutting stream S-T02-015A, which connects up with stream S-T02-015 thus connecting the wetland to wetlands W-T02-048 and W-T02-048B. Wetland indicators found in this wetland include a high water table, soil saturation, a loamy mucky mineral material and redox of a dark soil surface. Vegetation found includes green ash (Fraxinus pennsylvanica), and jack-in-the-pulpit (Arisaema triphyllum). The principle functions of the wetland are groundwater recharge/discharge, fish/shellfish habitat, and habitat for wildlife. | 33 |
| W-T02-048B | 42.422052 | -79.250762 | Arkwright | Dunkirk | 0.02 | PEM | No | Chautauqua-Conneaut | W-T02-048B is a small PEM wetland in a floodplain and along a slope adjacent to and abutting stream S-T02-015A, which connects up with stream S-T02-015 thus connecting the wetland to wetlands W-T02-048 and W-T02-048A. Wetland indicators found in this wetland include a high water table, soil saturation, a loamy mucky mineral material and redox of a dark soil surface. Vegetation found includes green ash (*Fraxinus pennsylvanica* ), and jack-in-the-pulpit (*Arisaema triphyllum* ). The principle functions of the wetland are groundwater recharge/discharge, fish/shellfish habitat, and habitat for wildlife. | 33 |
| W-T02-049 | 42.420889 | -79.251154 | Arkwright | Dunkirk | 0.30 | PEM | No | Chautauqua-Conneaut | W-T02-049 is a PEM wetland, dominated by sensitive fern (*Onoclea sensibilis* ), along a slope in an upland forest. It abuts a small S-RPW stream located outside of the survey area to the north, and the wetland continues beyond the survey area to the north and northwest. The wetland is characterized by surface water, a high water table, soil saturation, water marks, hydrogen sulfide, and redox of a dark soil surface. The principle function of the wetland is providing habitat for wildlife. | 32 |
| W-T02-050 | 42.420020 | -79.250265 | Arkwright | Dunkirk | 0.51 | PFO | Undetermined | Chautauqua-Conneaut | W-T02-050 is a large PFO wetland in a shallow depression of an upland forest dominated by red maple (*Acer rubrum* ) and green ash (*Fraxinus pennsylvanica* ). Wetland outflow is to stream S-T02-017 in the northeast corner, which then flows into wetland W-T02-051. The wetland is characterized by surface water, a high water table, soil saturation, drainage patterns, shallow aquitard, and a histic epipedon. The principle functions of the wetland are floodflow alteration, nutrient removal, and sediment retention. The western half of the wetland is located in the Dunkirk USGS quad and the eastern half of the wetland is located in the Forestville USGS quad. | 31, 32 |
| W-T02-051 | 42.420386 | -79.248954 | Arkwright | Forestville | 0.07 | PEM | No | Chautauqua-Conneaut | W-T02-051 is a PEM seepage wetland in an upland forest with no trees rooted in the wetland, dominated by drooping sedge (*Carex prasina* ). The wetland extends beyond the survey area to the north and the southeast. Wetland inflow is from stream S-T02-017, which flows from wetland W-T02-050) and outflow is to the northeast via the stream. Characteristics of the wetland include the presence of surface water, a high water table, soil saturation, hydrogen sulfide, and a histosol. The principle functions of the wetland are fish/shellfish habitat, and sediment retention. | 31 |
| W-T02-053 | 42.419432 | -79.249540 | Arkwright | Forestville | 0.02 | PSS | Yes | Chautauqua-Conneaut | W-T02-053 is a small isolated PSS wetland in a forested depression with no apparent inflow/outflow. Characteristics of the wetland include surface water, a high water table, soil saturation and a depleted soil matrix. Melic manna grass (*Glyceria melicaria* ), green ash saplings (*Fraxinus pennsylvanica* ) and common red raspberry (*Rubus idaeus* ) are dominant plant species. The principle function of the wetland is providing habitat for wildlife. | 31, 32 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T02-054 | 42.415041 | -79.237809 | Arkwright | Forestville | 0.19 | PSS | Undetermined | Chautauqua-Conneaut | W-T02-054 is a large PSS/PEM wetland. The PSS portion of the wetland is located to the south in a forested depression along the edge of a maintained field. Wetland indicators present include surface water, a high water table, soil saturation, hydrogen sulfide odor, and a loamy mucky mineral soil. Dominant vegetation includes green ash (*Fraxinus pennsylvanica* ), silky willow (*Salix sericea* ), and sensitive fern (*Onoclea sensibilis* ). The principle function of the wetland is providing habitat for wildlife. | 79 |
| W-T02-054 | 42.415305 | -79.237758 | Arkwright | Forestville | 0.10 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-054 is a large PSS/PEM wetland. The PEM portion of the wetland is located to the north in a maintained field. Wetland indicators present include oxidized rhizospheres and redox of a dark soil surface. Dominant vegetation includes reed canary grass (*Phalaris arundinacea* ) and wrinkle-leaf goldenrod (*Solidago rugosa* ). The principle function of the wetland is providing habitat for wildlife. | 79 |
| W-T02-055 | 42.414861 | -79.242279 | Arkwright | Forestville | 4.13 | PFO | Undetermined | Chautauqua-Conneaut | Hydrologic indicators of the wetland include surface water, drainage patterns, oxidized rhizospheres, a shallow aquitard and hydrogen sulfide. Hydric soils are present and contain redox of a dark soil surface. Dominant vegetation in the PFO section of the wetland includes northern spicebush (*Lindera benzoin* ), green ash (*Fraxinus pennsylvanica* ), cock-spur hawthorn (*Crataegus crus-galli* ), and spotted touch-me-not (*Impatiens capensis* ). The principle functions of the wetland are sediment retention, and providing habitat for wildlife. | 72, 74, 104, 105, 106 |
| W-T02-055 | 42.415413 | -79.239511 | Arkwright | Forestville | 1.69 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-055 is a large PFO/PEM wetland complex. Wetland indicators include oxidized rhizospheres along living roots, a shallow aquitard, drainage patterns, a depleted soil matrix, and redox of a dark soil surface. The PEM, dominated by leafy bulrush (Scirpus polyphyllus) in the southern section in a maintained field. The principle functions of the wetland are sediment retention, and providing habitat for wildlife. | 72, 74, 104, 105, 106 |
| W-T02-056 | 42.412243 | -79.246634 | Arkwright | Forestville | 0.33 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-056 is a small PEM wetland in a tilled agricultural field. The wetland extends beyond the survey area on the northwestern edge. Due to the wetlands location there are no foreseeable functions that the wetland provides to the surrounding ecosystem. | 107 |
| W-T02-089 | 42.422878 | -79.298599 | Pomfret | Dunkirk | 1.95 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-089 is a large PEM/PSS wetland complex. The PEM portion is dominated by reed canary grass (*Phalaris arundinacea* ) in an active vineyard and hayfield. The wetland extends beyond the survey area along the northern and eastern edges. Characteristics of the wetland include oxidized rhizospheres and redox of a dark soil matrix. The principle functions of the wetland sediment/toxicant retention and nutrient removal from vineyard operation. | 1, 2 |
| W-T02-089 | 42.423363 | -79.298461 | Pomfret | Dunkirk | 0.33 | PSS | Undetermined | Chautauqua-Conneaut | W-T02-089 is a large PEM/PSS wetland complex. The wetland extends beyond the survey area along the northern and eastern edges. The principle functions of the wetland sediment/toxicant retention and nutrient removal from vineyard operation. | 1, 2 |
| W-T04-001 | 42.416999 | -79.248095 | Arkwright | Forestville | 0.34 | PFO | Undetermined | Chautauqua-Conneaut | W-T04-001 is a large PFO wetland, which extends beyond the survey area along the southern edge. The wetland links up with W-T04-001A, -001B, -001C, -001D to the south beyond the survey area. Wetland contains a high water table, soil saturation, water-stained leaves, hydrogen sulfide odor, and a depleted soil matrix. The area is dominated by green ash (*Fraxinus pennsylvanica* ), red maple (*Acer rubrum* ) and quacking aspen (*Populus tremuloides* ). The principle functions of the wetland are floodflow alteration and habitat for wildlife. | 30, 70 |
| W-T04-001A | 42.416822 | -79.247628 | Arkwright | Forestville | 0.03 | PFO | No | Chautauqua-Conneaut | W-T04-001A is a small PFO wetland, which extends beyond the survey area along the southern edge. The wetland links up with W-T04-001, -001B, -001C, -001D to the south beyond the survey area. Wetland contains a high water table, soil saturation, water-stained leaves, hydrogen sulfide odor, and a depleted soil matrix. The area is dominated by green ash (*Fraxinus pennsylvanica* ), red maple (*Acer rubrum* ) and quacking aspen (*Populus tremuloides* ). The principle functions of the wetland are floodflow alteration and habitat for wildlife. | 30 |
| W-T04-001B | 42.416458 | -79.245312 | Arkwright | Forestville | 1.08 | PFO | No | Chautauqua-Conneaut | W-T04-001B is a large PFO/PEM wetland, which extends beyond the survey area along the southern edge. The wetland links up with W-T04-001, -001A, and -001D to the south beyond the survey area. Stream S-T04-001 and drain DD-T04-001 both abut the wetland providing both inflow and outflow to the wetland. The wetland contains a high water table, soil saturation, water-stained leaves, hydrogen sulfide odor, and a depleted soil matrix. The area is dominated by green ash (*Fraxinus pennsylvanica* ), red maple (*Acer rubrum* ) and quacking aspen (*Populus tremuloides* ). | 72, 73, 74, 75 |
| W-T04-001B | 42.416560 | -79.245328 | Arkwright | Forestville | 0.26 | PEM | No | Chautauqua-Conneaut | W-T04-001B is a large PFO/PEM wetland, which extends beyond the survey area along the southern edge. The wetland links up with W-T04-001, -001A, and -001D to the south beyond the survey area. Stream S-T04-001 and drain DD-T04-001 both abut the wetland providing both inflow and outflow to the wetland. | 72, 73, 74, 75 |
| W-T04-001C | 42.416707 | -79.243998 | Arkwright | Forestville | 0.19 | PFO | No | Chautauqua-Conneaut | W-T04-001C is a small PFO wetland that connects to wetland W-T04-001B along the southern edge. Wetland W-T04-001B links up with W-T04-001, -001A, and -001D to the south beyond the survey area. The wetland contains a high water table, soil saturation, water-stained leaves, hydrogen sulfide odor, and a depleted soil matrix. The area is dominated by green ash (*Fraxinus pennsylvanica* ), red maple (*Acer rubrum* ) and quacking aspen (*Populus tremuloides* ). The principle functions of the wetland are floodflow alteration and habitat for wildlife. | 73, 74, 75 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T04-001D | 42.416704 | -79.243112 | Arkwright | Forestville | 0.08 | PFO | No | Chautauqua-Conneaut | W-T04-001D is a small PFO wetland on a mild hillslope, which extends beyond the survey area along the southern edge. The wetland links up with W-T04-001, -001A, and -001B to the south beyond the survey area. Wetland was determined visually by hydrophylic vegetation (sensitive fern (*Onoclea sensibilis* ) and cordlins-and-cream (*Epilobium hirsutum* )), and soft mucky soils. Wetland contains a high water table, soil saturation, water-stained leaves, hydrogen sulfide odor, a depleted soil matrix, and redox of a dark surface. The principle functions of the wetland are floodflow alteration and habitat for wildlife. | 74, 75 |
| W-T04-028 | 42.417501 | -79.248066 | Arkwright | Forestville | 0.15 | PEM | No | Chautauqua-Conneaut | W-T04-028 is a large PEM wetland in a deeply rutted dirt road/right-of-way. The center of the wetland directly abuts drain DD-T04-002, and the western edge of the wetland joins with wetland W-T01-027. Characteristics of the wetland include a high water table, soil saturation, iron deposits, oxidized rhizospheres along living roots, depleted soil matrix and redox of a dark soil surface. Primary vegetation includes sensitive fern (*Onoclea sensibilis* ), stalk-grain sedge (*Carex stipata* ), gray dogwood (*Cornus racemosa* ) and green ash (*Fraxinus pennsylvanica* ). The principle functions of the wetland are floodflow alteration and habitat for wildlife. | 30, 70 |
| W-T04-029 | 42.417585 | -79.246532 | Arkwright | Forestville | 0.47 | PSS | Undetermined | Chautauqua-Conneaut | W-T04-029 is a large PSS wetland characterized mostly by its very dense fringe cover. Some areas of the wetland have very deep standing water. The wetland is approximately 15 feet south of wetland W-T04-031A, so their is most likely a subsurface connection. Wetland characteristics also include high water table, soil saturation, hydrogen sulfide and a histic epipedon. Red osier dogwood (*Cornus alba* ) and common winterberry (*Ilex verticillata* ) are among the dominant vegetation. The principle functions of the wetland are nutrient removal, production export and habitat for wildlife. | 70, 71, 72 |
| W-T04-030 | 42.417224 | -79.245970 | Arkwright | Forestville | 0.07 | PEM | Undetermined | Chautauqua-Conneaut | W-T04-030 is a small isolated PEM depressional wetland dominated by fowl manna grass (*Glyceria striata* ) and cinnamon fern (*Osmundastrum cinnamomeum* ). Primary indicators of the wetland include high water table, soil saturation, water-stained leaves, hydrogen sulfide, oxidized rhizospheres and a histic epipedon. The principle function of the wetland is to provide habitat for wildlife. | 70, 72, 73, 74 |
| W-T04-031A | 42.418458 | -79.245370 | Arkwright | Forestville | 5.57 | PFO | Undetermined | Chautauqua-Conneaut | W-T04-031A is a large PFO/PEM wetland complex. The wetland extends beyond the survey area to the west where it most likely joins together with wetland W-T01-027. It also borders the southern edge of W-T04-031B. Wetland indicators found in the PFO portion include water marks, moss trim lines, and redox of a dark soil surface. Red maple (*Acer rubrum* ), and green ash (*Fraxinus pennsylvanica* ) were found to be dominant. The principle functions of the wetland are groundwater recharge/discharge, production export, and habitat for wildlife. | 30, 70, 71, 72, 73, 74, 75 |
| W-T04-031A | 42.417177 | -79.244331 | Arkwright | Forestville | 0.29 | PEM | Undetermined | Chautauqua-Conneaut | W-T04-031A is a large PFO/PEM wetland complex. The wetland extends beyond the survey area to the west where it most likely joins together with wetland W-T01-027. It also borders the southern edge of W-T04-031B. The principle functions of the wetland are groundwater recharge/discharge, production export, and habitat for wildlife. | 30, 70, 71, 72, 73, 74, 75 |
| W-T04-031B | 42.419408 | -79.245431 | Arkwright | Forestville | 0.65 | PEM | Undetermined | Chautauqua-Conneaut | W-T04-031B is a large PEM wetland in an open field surrounding a met tower. The wetland extends beyond the survey area to the north, and wetland W-T03-031A borders it along the southern edge. Wetland indicators found in this wetland include oxidized rhizospheres along living roots, a depleted soil matrix, and redox of a dark soil surface. Cottongrass bulrush (*Scirpus cyperinus* ) and wrinkle-leaf goldenrod (*Solidago rugosa* ) were found to be dominant. The principle functions of the wetland are groundwater recharge/discharge, production export, and habitat for wildlife. | 70, 71 |
| W-T04-032 | 42.417054 | -79.244195 | Arkwright | Forestville | 0.03 | PEM | No | Chautauqua-Conneaut | W-T04-032 is a small isolated PEM depressional dominated by cottongrass bulrush (*Scirpus cyperinus* ) and no trees rooted within the wetland. The wetland contains surface water, a high water table, soil saturation, and hydrogen sulfide. The principle functions of the wetland are nutrient removal and habitat for wildlife. | 73, 74 |
| W-T04-033 | 42.417448 | -79.239654 | Arkwright | Forestville | 1.26 | PFO | No | Chautauqua-Conneaut | W-T04-033 is a large PFO wetland in a hillslope. The wetland is most likely hydrologically connected to wetlands W-T06-006 and below the ground surface due to their close proximity. Wetland indicators found in this wetland include the presence of surface water, a high water table, soil saturation, water-stained leaves and redox depressions in the soil profile. Red maple (*Acer rubrum* ), green ash (*Fraxinus pennsylvanica* ) and melic manna grass (*Glyceria melicaria* ) were all found to be dominant. The principle functions of the wetland are floodflow alteration, and habitat for wildlife. | 76, 77 |
| W-T04-034 | 42.417300 | -79.238680 | Arkwright | Forestville | 0.78 | PSS | No | Chautauqua-Conneaut | W-T04-034 is a large PFO/PSS wetland complex. The PSS portion is located in the northern section of the wetland and is dominated by green ash (*Fraxinus pennsylvanica* ) and sensitive fern (*Onoclea sensibilis* ). The PFO portion is in the southwestern finger on a slight hillslope leading directly to a depression, abutting drain DD-T04-003. Vegetation dominant in the PFO section includes red maple (*Acer rubrum* ), green ash (*Fraxinus pennsylvanica* ) northern spicebush (*Lindera benzoin* ) and american elm (*Ulmus americana* ). Hydrology and soil indicators found throughout the wetland include high water table, soil saturation, saturation visible on aerial imagery, and depleted soil matrix. The principle functions of the wetland are groundwater recharge/discharge, and habitat for wildlife. | 76, 77, 78 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T04-035 | 42.416904 | -79.242720 | Arkwright | Forestville | 0.01 | PEM | Yes | Chautauqua-Conneaut | W-T04-035 is a small isolated depressional PEM wetland dominated by cut-lea water-horehound (*Lycopus americanus* ) and northern spicebush (*Lindera benzoin* ), with no trees rooted in the mapped wetland. The wetland also has the potential of acting as a vernal pool. Characteristics of the wetland include a high water table, soil saturation, aquatic fauna, oxidized rhizospheres, a histic epipedon and a depleted soil matrix. The principle function of the wetland is to provide habitat for wildlife. | 75 |
| W-T04-036 | 42.417048 | -79.237584 | Arkwright | Forestville | 0.30 | PFO | No | Chautauqua-Conneaut | W-T04-036 is a large PFO wetland on a hillslope, which extends beyond the survey area along its southern edge. Outflow of the wetland is to the east via stream S-T04-003, connecting the wetland to nearby wetland W-T04-036A. Primary hydrology indicators found in the wetland include surface water, a high water table, soil saturation, and drainage patterns. Hydric soils were not found. Vegetation is dominated by green ash (*Fraxinus pennsylvanica* ) and melic manna grass (*Glyceria melicaria* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, nutrient removal, sediment retention, and habitat for wildlife. | 77, 78 |
| W-T04-036A | 42.417192 | -79.236725 | Arkwright | Forestville | 0.24 | PFO | No | Chautauqua-Conneaut | W-T04-036A is a large PFO/PEM wetland complex. The PFO portion is located in the west fork. Properties of the wetland include drainage patterns, a high water table, soil saturation, and redox of a dark soil surface. The PFO section of the wetland is dominated by green ash (*Fraxinus pennsylvanica* ) and wrinkle-leaf goldenrod (*Solidago rugosa* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, nutrient removal, sediment retention, and habitat for wildlife. | 78 |
| W-T04-036A | 42.417419 | -79.236541 | Arkwright | Forestville | 0.06 | PEM | No | Chautauqua-Conneaut | W-T04-036A is a large PFO/PEM wetland complex. The PEM portion is located in the east fork. Properties of the wetland include drainage patterns, a high water table, soil saturation, and redox of a dark soil surface. The PEM section of the wetland is dominated by reed canary grass (*Phalaris arundinacea* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, nutrient removal, sediment retention, and habitat for wildlife. | 78 |
| W-T04-037 | 42.417607 | -79.237208 | Arkwright | Forestville | 0.07 | PFO | Undetermined | Chautauqua-Conneaut | W-T04-037 is a PFO wetland. Properties of the wetland include a high water table, soil saturation, water marks, and a depleted soil matrix. The wetland is dominated by red maple (*Acer rubrum* ), green ash (*Fraxinus pennsylvanica* ) and allegheny blackberry (*Rubus alleghaniensis* ). The principle functions of the wetland are floodflow alteration, production export, and habitat for wildlife. | 78 |
| W-T04-037A | 42.417813 | -79.237199 | Arkwright | Forestville | 0.50 | PEM | No | Chautauqua-Conneaut | W-T04-037A is a PEM wetland, dominated by sensitive fern (*Onoclea sensibilis* ). Hydrologic properties of the wetland include surface water, a high water table, soil saturation, and drainage patterns. Soils are considered to be significantly disturbed because they are comprised of very dense fill with almost immediate pit refusal. The principle functions of the wetland are floodflow alteration, production export, and habitat for wildlife. | 77, 78 |
| W-T04-039 | 42.416630 | -79.250900 | Arkwright | Dunkirk | 0.02 | PEM | Yes | Chautauqua-Conneaut | W-T04-039 is a small isolated depressional PEM wetland dominated by northern spicebush (*Lindera benzoin* ), with no trees rooted in the mapped wetland. The wetland also has the potential of acting as a vernal pool. Characteristics of the wetland include surface water, a high water table, soil saturation, a depleted soil matrix below a dark surface. The principle function of the wetland is to provide habitat for wildlife. | 29 |
| W-T05-002 | 42.434008 | -79.251372 | Arkwright | Dunkirk | 0.59 | PEM | No | Chautauqua-Conneaut | W-T05-002 is a PEM wetland in a floodplain of stream S-T06-001. The wetlands northern edge borders Straight Street and the western edge borders a dirt road. The southern edge connects to pond PD-T05-001. Properties of the wetland include oxidized rhizospheres, drainage patterns, and a depleted soil matrix. Dominant vegetation includes spotted touch-me-not (*Impatiens capensis* ) and arrow-leaf tearthumb (*Persicaria sagittata* ). The wetland has limited function ability due to location. | 45, 46 |
| W-T06-001 | 42.433478 | -79.251835 | Arkwright | Dunkirk | 0.30 | PEM | Undetermined | Chautauqua-Conneaut | W-T06-001 is a PEM wetland in an active hayfield with a drainage tile recently cut. The wetlands northern and western edges abut drain DD-T05-001 and Center and Straight Roads. Properties of the wetland include oxidized rhizospheres, and a depleted soil matrix. Dominant vegetation includes reed canary grass (*Phalaris arundinacea* ) and spreading bent grass (*Agrostis stolonifera* ). The wetland has limited function ability due to location. | 45, 46 |
| W-T06-003 | 42.432554 | -79.258525 | Arkwright | Dunkirk | 0.05 | PEM | No | Chautauqua-Conneaut | W-T06-003 is a PEM wetland the floodplain of stream S-T06-004. Properties of the wetland include surface water, a high water table, soil saturation, drainage patterns, and redox of a dark soil matrix. Dominant vegetation includes sensitive fern (*Onoclea sensibilis* ) and single-vein sweetflag (*Acorus calamus* ).The primary function of the wetland is nutrient removal. | 40, 41 |
| W-T06-006 | 42.417781 | -79.242043 | Arkwright | Forestville | 2.95 | PFO | Undetermined | Chautauqua-Conneaut | W-T06-006 is a PEM/PFO wetland complex. The PFO portion is on a side slope bordering a mixed deciduous upland forest. Properties of the wetland include water marks, water-stained leaves, hydrogen sulfide odor, and redox of a dark soil matrix. Dominant vegetation includes red maple (*Acer rubrum* ), green ash (*Fraxinus pennsylvanica* ), spotted -touch-me-not (*Impatiens capensis* ) and sensitive fern (*Onoclea sensibilis* ). The primary functions of the wetland are groundwater recharge/discharge, floodflow alteration, and providing habitat for wildlife.. | 73, 75, 76 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T06-006 | 42.418201 | -79.242864 | Arkwright | Forestville | 0.48 | PEM | Undetermined | Chautauqua-Conneaut | W-T06-006 is a PEM/PFO wetland complex. The PEM portion is in the center following a natural gas pipeline right-of-way. Properties of the wetland include a shallow aquitard at 13 inches and a depleted soil matrix. Dominant vegetation includes reed canary grass (*Phalaris arundinacea* ) and spreading bent grass (*Agrostis stolonifera* ). The primary function of the wetland is groundwater recharge/discharge. | 73, 75, 76 |
| W-T06-010 | 42.426744 | -79.244146 | Arkwright | Forestville | 0.18 | PFO | Undetermined | Chautauqua-Conneaut | W-T06-010 is a PFO/PEM wetland complex. The wetland extends beyond the survey area to the north and south. The principle functions of the wetland are floodflow alteration, prouction export, and providing habitat for wildlife. | 55 |
| W-T06-010 | 42.426781 | -79.243948 | Arkwright | Forestville | 0.13 | PEM | Undetermined | Chautauqua-Conneaut | W-T06-010 is a PFO/PEM wetland complex. The PEM portion is dominated by rice cut grass (*Leersia oryzoides* ). This is the emergent portion of previously mapped wetland W-T02-040. The wetland extends beyond the survey area to the north and south. Properties of the wetland include a high water table, soil saturation, hydrogen sulfide, a histic epipedon, and redox of a dark soil matrix. The principle functions of the wetland are floodflow alteration, prouction export, and providing habitat for wildlife. | 55 |
| W-T06-011 | 42.426792 | -79.242305 | Arkwright | Forestville | 0.16 | PEM | Undetermined | Chautauqua-Conneaut | W-T06-011 is a PEM wetland. The wetland extends beyond the survey area to the north and south. The principle functions of the wetland are floodflow alteration, prouction export, and providing habitat for wildlife. | 55, 56 |
| W-T06-012A | 42.426880 | -79.239997 | Arkwright | Forestville | 0.22 | PFO | Undetermined | Chautauqua-Conneaut | W-T06-012A is a PFO/PSS/PEM wetland complex, in a saturated/inundated forest depression with deep organic soils. The wetland extends beyond the survey area to the south. Properties of the PFO section of the wetland include water marks, surface cracks, drainage patterns, and redox of a dark soil surface. Dominant vegetation includes red maple (*Acer rubrum* ), and green ash (*Fraxinus pennsylvanica* ). The principle functions of the wetland are floodflow alteration, sediment retention, nutrient removal, and habitat for wildlife. | 56, 57 |
| W-T06-012A | 42.426711 | -79.240956 | Arkwright | Forestville | 0.09 | PSS | Undetermined | Chautauqua-Conneaut | W-T06-012A is a PFO/PSS/PEM wetland complex, in a saturated/inundated forest depression with deep organic soils. The wetland extends beyond the survey area to the south. Properties of the wetland include surface water, a high water table, soil saturation, hydrogen sulfide, and a histic epipedon. Dominant vegetation includes red maple (*Acer rubrum* ), rice cut grass (*Leersia oryzoides* ) and swamp rose (*Rosa palustris* ). The principle functions of the wetland are floodflow alteration, sediment retention, nutrient removal, and habitat for wildlife. | 56, 57 |
| W-T06-012A | 42.426754 | -79.239008 | Arkwright | Forestville | 0.05 | PEM | Undetermined | Chautauqua-Conneaut | W-T06-012A is a PFO/PSS/PEM wetland complex, in a saturated/inundated forest depression with deep organic soils. The wetland extends beyond the survey area to the south. Properties of the PEM section of the wetland include surface water, a high water table, soil saturation, hydrogen sulfide, and a histosol. It is dominated by rice cut grass (*Leersia oryzoides* ). The principle functions of the wetland are floodflow alteration, sediment retention, nutrient removal, and habitat for wildlife. | 56, 57 |
| W-T06-012C | 42.426806 | -79.237759 | Arkwright | Forestville | 0.40 | PEM | Undetermined | Chautauqua-Conneaut | W-T06-012C is a PEM wetland, dominated by rice cut grass (*Leersia oryzoides* ) that is inundated with deep organic deposits and areas of sparsely vegetated concave surfaces. The wetland extends beyond the survey area to the south. Properties of the wetland include surface water, a high water table, saturation, hydrogen sulfide, and a histosol soil. The principle functions of the wetland are floodflow alteration, sediment retention, nutrient removal, and habitat for wildlife. | 58 |
| W-T06-013 | 42.426832 | -79.236465 | Arkwright | Forestville | 0.07 | PEM | No | Chautauqua-Conneaut | W-T06-013 is a PEM wetland, in a mowed field. The wetlands eastern edge borders Center Road. The principle functions of the wetland include groundwater recharge/discharge and floodflow alteration. | 65 |
| **Southeast (SE) Cluster** | | | | | | | | | | |
| W-T02-064 | 42.396142 | -79.230857 | Arkwright | Forestville | 11.96 | PEM | No | Chautauqua-Conneaut | W-T02-064 is a large PEM wetland in a floodplain and an active hay field. The outflow on the western side of the wetland flows to stream S-T02-024 and into a pond. Drain DD-T02-016 abuts the stream along the northern edge, and the wetland extends beyond the survey along many of its edges. Characteristics of the wetland include a high water table, soil saturation, oxidized rhizospheres and redox of a dark soil surface. Lamp rush (*Juncus effusus* ), dudley's rush (*Juncus dudleyi* ), spreading bent grass (*Agrostis stolonifera* ), and white clover (*Trifolium repens* ) were found to be dominant. The principle functions of the wetland are groundwater recharge/discharge, nutrient removal, and habitat for wildlife. | 117, 118, 119, 120, 135, 136, 137 |
| W-T02-065 | 42.397718 | -79.236277 | Arkwright | Forestville | 0.20 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-065 is a PEM wetland, dominated by reed canary grass (*Phalaris arundinacea* ) in a roadside ditch, however the wetland extends beyond the ditch area and somewhat into the field on the east. Wetland characteristics include a high water table, soil saturation, drainage patterns, and oxidized rhizospheres along living roots. The area sampled does not contain hydric soils. The principle function of the wetland is sediment/shoreline stabilization along the roadside ditch. | 116 |
| W-T02-068 | 42.392332 | -79.229345 | Arkwright | Forestville | 3.10 | PEM | No | Chautauqua-Conneaut | W-T02-068 is a large PEM wetland in an agricultural (corn) field with a road/driveway bi-secting the northern part. The wetland extends beyond the survey area along the western and eastern edges further into the agricultural field. Primary function of the wetland is production export due to its location in a farmed corn field. | 134 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T02-069 | 42.387651 | -79.224445 | Arkwright | Forestville | 0.32 | PFO | No | Chautauqua-Conneaut | W-T02-069 is an extensive wetland associated with drainage ways and mineral flats in an upland forest, with PFO/PS/PEM components. The PFO section is dominated by green ash (*Fraxinus pennsylvanica* ) and is located to the west of the much larger section of the wetland, and extends beyond the survey area in the north. Characteristics of the wetland include surface water, high water table, soil saturation, drainage patterns, a depleted soil matrix, and redox of a dark soil surface. Primary functions of the wetland include groundwater recharge/discharge, floodflow alteration, nutrient removal and wildlife habitat. | 130, 131 |
| W-T02-069 | 42.387275 | -79.223064 | Arkwright | Forestville | 0.94 | PEM | No | Chautauqua-Conneaut | W-T02-069 is an extensive wetland associated with drainage ways and mineral flats in an upland forest, with PFO/PS/PEM components. Streams S-T02-027 and S-T02-027A both abut the wetland. The PEM component is located in the north with rice cut grass (*Leersia oryzoides* ) as the dominant vegetation. Characteristics of the wetland include surface water, high water table, soil saturation, drainage patterns, oxidized rhizospheres, a depleted soil matrix, and redox of a dark soil surface. Primary functions of the wetland include groundwater recharge/discharge, floodflow alteration, nutrient removal and wildlife habitat. | 130, 131 |
| W-T02-069 | 42.387606 | -79.223289 | Arkwright | Forestville | 0.05 | PSS | No | Chautauqua-Conneaut | W-T02-069 is an extensive wetland associated with drainage ways and mineral flats in an upland forest, with PFO/PS/PEM components. Streams S-T02-027 and S-T02-027A both abut the wetland. Dominant vegetation found in the PSS section of the wetland off to the far west are gray dogwood (*Corns racemosa* ), and cock-spur hawthorn (*Crataegus crus-galli* ). Characteristics of the wetland include surface water, high water table, soil saturation, drainage patterns, oxidized rhizospheres, a depleted soil matrix, and redox of a dark soil surface. Primary functions of the wetland include groundwater recharge/discharge, floodflow alteration, nutrient removal and wildlife habitat. | 130, 131 |
| W-T02-070 | 42.389922 | -79.223485 | Arkwright | Forestville | 0.08 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-070 is a compressed PEM wetland along an old logging road. Primary hydrologic indicators include water-stained leaves, drainage patterns and oxidized rhizospheres. Hydric soils were identified through soil redox of a dark surface, though there is potential that the topsoil in the old logging road was removed once. Stalk-grain sedge (*Carex stipata* ) and blunt broom sedge (*Carex tribuloides* ) are both dominant plant species. The primary function of the wetland is providing wildlife habitat. | 128 |
| W-T02-071 | 42.391353 | -79.223451 | Arkwright | Forestville | 0.02 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-071 is a PEM wetland in a small depression of an upland forest. The wetland extends beyond the survey area on the eastern edge. Wetland is characterized by the presence of surface water, a high water table, soil saturation, and redox of a dark soil surface. Dominant vegetation present includes sensitive fern (*Onoclea sensibilis* ) and northern lady fern (*Athyrium angustum* ). The primary function of the wetland is providing wildlife habitat. | 128 |
| W-T02-072 | 42.390663 | -79.222702 | Arkwright | Forestville | 0.32 | PEM | Yes | Chautauqua-Conneaut | W-T02-072 is a large PEM in an old logging road and areas that were disturbed by logging. Wetland is characterized by the presence of drainage patterns, a shallow aquitard, and a depleted soil matrix. Dominant vegetation present includes green ash (*Fraxinus pennsylvanica* ), melic manna grass (*Glyceria melicaria* ), and spotted touch-me-not (*Impatiens capensis* ). The primary function of the wetland is providing wildlife habitat. | 127, 128 |
| W-T02-073 | 42.391009 | -79.221801 | Arkwright | Forestville | 0.12 | PEM | No | Chautauqua-Conneaut | W-T02-073 is a small PEM in a drainage way in an upland forest. Wetland is characterized by the presence of surface water, a high water table, soil saturation, a shallow aquitard, and redox of a dark soil matrix. Dominant vegetation present includes green ash (*Fraxinus pennsylvanica* ), and sensitive fern (*Onoclea sensibilis* ). The primary functions of the wetland are groundwater recharge/discharge, and wildlife habitat. | 127 |
| W-T02-074 | 42.390637 | -79.218858 | Arkwright | Forestville | 0.11 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-074 is a small PEM in a drainage way in an upland forest. The wetland complex has two parcels to it. Stream S-T02-030 abuts the wetland, and outflow is to the east via the stream. Wetland is characterized by the presence of surface water, a high water table, soil saturation, a shallow aquitard, and redox of a dark soil matrix. Dominant vegetation present includes green ash (*Fraxinus pennsylvanica* ), and sensitive fern (*Onoclea sensibilis* ). The primary functions of the wetland are sediment retention, and wildlife habitat. | 126 |
| W-T02-075 | 42.390457 | -79.217833 | Arkwright | Forestville | 0.03 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-075 is a small isolated PEM in an upland forest depression. Wetland is characterized by the presence of surface water, a high water table, soil saturation, and a depleted dark matrix. Dominant vegetation present includes green ash (*Fraxinus pennsylvanica* ), blunt broom sedge (*Carex tribuloides* ) and sensitive fern (*Onoclea sensibilis* ). The primary function of the wetland is wildlife habitat. | 126 |
| W-T02-076 | 42.390908 | -79.216009 | Arkwright | Forestville | 0.01 | PEM | No | Chautauqua-Conneaut | W-T02-076 is a small PEM seepage wetland in an upland forest depression. Wetland is associated with drain DD-T02-027 along the northern edge. Wetland is characterized by the presence of surface water, shallow aquitard, water-stained leaves, drainage patterns, and redox of a dark soil matrix. Dominant vegetation present includes northern lady fern (*Athyrium angustum* ) and sensitive fern (*Onoclea sensibilis* ). The primary functions of the wetland are groundwater recharge/discharge, and wildlife habitat. | 125 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T02-077 | 42.392287 | -79.214961 | Arkwright | Forestville | 0.17 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-077 is a small PEM wetland in an upland forest depression. The wetland extends beyond the survey area to the west. Outflow of the wetland is to the northwest. The primary functions of the wetland are groundwater recharge/discharge, and wildlife habitat. This is the portion of the wetland in the Chautauqua-Conneaut watershed (western side of the wetland). | 125 |
| W-T02-078 | 42.391908 | -79.214239 | Arkwright | Forestville | 0.06 | PEM | Undetermined | Conewango | W-T02-078 is a small PEM wetland on a hillslope of an upland forest. The wetland extends beyond the survey area to the east. The primary functions of the wetland are groundwater recharge/discharge, and wildlife habitat. | 125 |
| W-T02-079 | 42.393597 | -79.216532 | Arkwright | Forestville | 0.07 | PEM | Yes | Chautauqua-Conneaut | W-T02-079 is a small isolated PEM wetland on a hillslope of an upland forest. The primary function of the wetland is wildlife habitat. | 124 |
| W-T02-080 | 42.394078 | -79.215533 | Arkwright | Forestville | 0.27 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-080 is a PEM seepage wetland on a relatively steep hillslope of an upland forest. Outflow of the wetland is via overland sheet flow offsite to the north into an unmapped S-RPW. The wetland extends beyond the survey area along the wetlands northern edge. The primary functions of the wetland are groundwater recharge/discharge, and wildlife habitat. | 124 |
| W-T02-081 | 42.395127 | -79.222814 | Arkwright | Forestville | 0.01 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-081 is a small seepage PEM wetland in an upland forest along a south facing slope. Wetland indicators include surface water, high water table, soil saturation, water-stained leaves, hydrogen sulfide and redox of a dark soil surface. Dominant vegetation includes sensitive fern (*Onoclea sensibilis* ), melic manna grass (*Glyceria melicaria* ) and marsh blue violet (*Viola cucullata* ). The primary functions of the wetland are groundwater recharge/discharge, and wildlife habitat. | 122 |
| W-T02-082 | 42.396970 | -79.225948 | Arkwright | Forestville | 1.06 | PFO | Undetermined | Chautauqua-Conneaut | W-T02-082 is a large wetland complex made up of two separate PFO and PEM components adjacent to a grazing field. The PFO component is a expansive and located to the southeast, extending beyond the survey area to the east and southwest. Characteristics of the wetland include surface water, a high water table, soil saturation, hydrogen sulfide, an aquitard at 4 inches deep, and a depleted soil matrix. Dominant vegetation includes red maple (*Acer rubrum* ), american elm (*Ulmus americana* ), and melic manna grass (*Glyceria melicaria* ). The primary functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment retention, nutrient removal, sediment stabilization, and wildlife habitat. | 120, 121 |
| W-T02-082 | 42.397564 | -79.227141 | Arkwright | Forestville | 0.99 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-082 is a large wetland complex made up of two separate PFO and PEM components adjacent to a grazing field. The PEM component is a expansive and located to the northwest, extending beyond the survey area to the south. Characteristics of the wetland include oxidized rhizospheres along living roots, and redox of a dark soil matrix. Dominant vegetation includes Dudley's rush (*Juncus dudleyi* ), lamp rush (*Juncus effusus* ) and spreading bent grass (*Agrostis stolonifera* ). The primary functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment retention, nutrient removal, sediment stabilization, and wildlife habitat. | 120, 121 |
| W-T02-083 | 42.386500 | -79.220353 | Arkwright | Forestville | 0.51 | PFO | Undetermined | Chautauqua-Conneaut | W-T02-083 is a PFO/PSS wetland complex that extends beyond the survey area off to the west where all three of the wetland parcels connect. Hydrologic connectivity is undetermined since the wetland extends beyond the survey area. The primary functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment retention, nutrient removal, and wildlife habitat. | 129 |
| W-T02-083 | 42.385480 | -79.219355 | Arkwright | Forestville | 0.45 | PSS | Undetermined | Chautauqua-Conneaut | W-T02-083 is a PFO/PSS wetland complex that extends beyond the survey area off to the west where all three of the wetland parcels connect. Hydrologic connectivity is undetermined since the wetland extends beyond the survey area. The PSS portion includes wetland indicators such as drainage patterns, oxidized rhizospheres along living roots and redox of a dark soil surface. Dogwood (*Cornus alba* ) and sensitive fern (*Onoclea sensibilis* ) were found dominant. The primary functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment retention, nutrient removal, and wildlife habitat. | 129 |
| W-T02-084 | 42.381382 | -79.213526 | Arkwright | Forestville | 4.00 | PFO | No | Conewango | W-T02-084 is a large PFO wetland that extends beyond the survey area where all three of the parcels join together. Hydrologic connectivity is undetermined since the wetland extends beyond the survey area. The primary functions of the wetland are groundwater recharge/discharge, floodflow alteration, sediment retention, nutrient removal, and wildlife habitat. | 143, 144 |
| W-T02-085 | 42.387834 | -79.227258 | Arkwright | Forestville | 0.21 | PFO | Undetermined | Chautauqua-Conneaut | W-T02-085 is a PFO/PEM depressional wetland complex in an area that was disturbed for gas production. The larger PFO area is located on the southwest side of the wetland and the smaller PFO section is in the northwest. Characteristics of the wetland include water marks, oxidized rhizospheres and redox of a dark soil surface. Dominant vegetation is quaking aspen (*Populus tremuloides* ), red maple (*Acer rubrum* ) and green ash (*Fraxinus pennsylvanica* ). The primary function of the wetland is wildlife habitat. | 132, 133 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T02-085 | 42.388163 | -79.226913 | Arkwright | Forestville | 0.15 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-085 is a PFO/PEM depressional wetland complex in an area that was disturbed for gas production. The PEM component is located on the east side of the wetland in an open field. Characteristics of the wetland include drainage patterns, oxidized rhizospheres and a depleted soil matrix. Dominant vegetation is dudley's rush (*Juncus dudleyi* ) and dark-green bulrush (*Scirpus atrovirens* ). The primary function of the wetland is wildlife habitat. | 132, 133 |
| W-T02-086A | 42.387555 | -79.228520 | Arkwright | Forestville | 0.20 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-086A is a PEM disturbed wetland along a roadside. Characteristics of the wetland include drainage patterns, oxidized rhizospheres and a depleted soil matrix. Dominant vegetation includes wrinkle-leaf goldenrod (*Solidago rugosa* ) and blunt broom sedge (*Carex tribuloides* ). The primary function of the wetland is wildlife habitat. | 132, 133 |
| W-T04-040 | 42.378639 | -79.193740 | Arkwright | Forestville | 0.12 | PFO | Undetermined | Conewango | W-T04-040 is a PFO wetland. Hydrologic connectivity is undetermined because the wetland extends beyond the survey area to the northeast. Properties of the wetland include a high water table, soil saturation, hydrogen sulfide odor, oxidized rhizospheres, and redox of a dark soil matrix. The wetland is dominated by red maple (*Acer rubrum* ), green ash (*Fraxinus pennsylvanica* ) and melic manna grass (*Glyceria melicaria* ). The principle functions of the wetland are floodflow alteration, production export, and habitat for wildlife. | 152 |
| W-T04-040A | 42.378568 | -79.194256 | Arkwright | Forestville | 0.07 | PEM | No | Conewango | W-T04-040A is a PEM wetland in a depression with upland hummocks. The wetland is associated with W-T04-040 via old road that is acting as a drain. Properties of the wetland include a high water table, soil saturation, oxidized rhizospheres, and redox of a dark soil matrix. The wetland is dominated by red maple (*Acer rubrum* ), green ash (*Fraxinus pennsylvanica* ) and sensitive fern (*Onoclea sensibilis)* . The principle functions of the wetland are floodflow alteration, production export, and habitat for wildlife. | 152 |
| W-T04-041 | 42.377751 | -79.193928 | Arkwright | Forestville | 0.04 | PEM | No | Conewango | W-T04-041 is a PEM wetland in a depression primarily in an old logging road. The wetland is associated with W-T04-041A via drain DD-T04 008. Properties of the wetland include water-stained leaves, oxidized rhizospheres, a shallow aquitard at 12 inches, and redox of a dark soil matrix. The wetland is dominated by northern spicebush (*Lindera benzoin* ) and sensitive fern (*Onoclea sensibilis)* . The principle functions of the wetland are floodflow alteration, production export, and habitat for wildlife. | 152 |
| W-T04-041A | 42.377527 | -79.193723 | Arkwright | Forestville | 0.05 | PEM | No | Conewango | W-T04-041A is a PEM wetland dominated by melic manna grass (*Glyceria melicaria* ). The wetland is associated with W-T04-041 via drain DD-T04-008. Properties of the wetland include water-stained leaves, drainage patterns, oxidized rhizospheres, a shallow aquitard, a depleted soil matrix, and redox of a dark soil matrix. The principle functions of the wetland are floodflow alteration, production export, and habitat for wildlife. | 152 |
| W-T04-042 | 42.378011 | -79.194897 | Arkwright | Forestville | 0.01 | PEM | Undetermined | Conewango | W-T04-042 is a PEM wetland dominated by melic manna grass (*Glyceria melicaria* ). The wetland extends beyond the survey area to the west. Properties of the wetland include water-stained leaves, drainage patterns, oxidized rhizospheres, a shallow aquitard, a depleted soil matrix, and redox of a dark soil matrix. The principle functions of the wetland are floodflow alteration, and habitat for wildlife. | 152 |
| W-T04-043 | 42.377985 | -79.194598 | Arkwright | Forestville | 0.01 | PEM | Undetermined | Conewango | W-T04-043 is a PEM wetland dominated by melic manna grass (*Glyceria melicaria* ). Properties of the wetland include water-stained leaves, drainage patterns, oxidized rhizospheres, a shallow aquitard, a depleted soil matrix, and redox of a dark soil matrix. The principle functions of the wetland are floodflow alteration, and habitat for wildlife. | 152 |
| W-T04-044 | 42.377850 | -79.194408 | Arkwright | Forestville | 0.01 | PEM | Undetermined | Conewango | W-T04-044 is a PEM wetland, in an old logging road, dominated by melic manna grass (*Glyceria melicaria* ). Properties of the wetland include water-stained leaves, drainage patterns, oxidized rhizospheres, a shallow aquitard, a depleted soil matrix, and redox of a dark soil matrix. The principle functions of the wetland are floodflow alteration, and habitat for wildlife. | 152 |
| W-T04-045 | 42.377971 | -79.194214 | Arkwright | Forestville | 0.03 | PEM | No | Conewango | W-T04-045 is a PEM wetland, dominated by sensitive fern (*Onoclea sensibilis* ). Properties of the wetland include a high water table, saturation, drainage patterns, water-stained leaves, oxidized rhizospheres, and redox of a dark soil matrix. The principle functions of the wetland are groundwater recharge/discharge, and habitat for wildlife. | 152 |
| W-T04-045A | 42.377945 | -79.194359 | Arkwright | Forestville | 0.01 | PEM | No | Conewango | W-T04-045A is a PEM wetland, dominated by sensitive fern (*Onoclea sensibilis* ). Properties of the wetland include a high water table, saturation, drainage patterns, water-stained leaves, oxidized rhizospheres, and redox of a dark soil matrix. The principle functions of the wetland are groundwater recharge/discharge, and habitat for wildlife. | 152 |
| W-T04-045B | 42.378028 | -79.194530 | Arkwright | Forestville | 0.01 | PEM | No | Conewango | W-T04-045B is a PEM wetland, dominated by sensitive fern (*Onoclea sensibilis* ). Properties of the wetland include a high water table, saturation, drainage patterns, water-stained leaves, oxidized rhizospheres, and redox of a dark soil matrix. The principle functions of the wetland are groundwater recharge/discharge, and habitat for wildlife. | 152 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T04-046 | 42.378641 | -79.195614 | Arkwright | Forestville | 0.03 | PFO | No | Conewango | W-T04-046 is a PFO wetland complex with 2 separate parcels (this is the smaller of the two). The wetland extends beyond the survey area to the south and joins with wetland W-T04-046A. Properties of the wetland include a high water table, saturation, drainage patterns, water-stained leaves, hydrogen sulfide, and a histosol soil. Dominant vegetation found includes eastern hemlock (*Tsuga canadensis* ), red maple (*Acer rubrum* ), green ash (*Fraxinus pennsylvanica* ) and sensitive fern (*Onoclea sensibilis* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 151, 152 |
| W-T04-046A | 42.378802 | -79.196154 | Arkwright | Forestville | 0.11 | PFO | No | Conewango | W-T04-046A is a PFO wetland located to the west of wetland W-T04-046. The wetland extends beyond the survey area to the south and joins with wetland W-T04-046. Properties of the wetland include a high water table, saturation, drainage patterns, water-stained leaves, hydrogen sulfide, and a histosol soil. Dominant vegetation found includes eastern hemlock (*Tsuga canadensis* ), red maple (*Acer rubrum* ), green ash (*Fraxinus pennsylvanica* ) and sensitive fern (*Onoclea sensibilis* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 151 |
| W-T04-048 | 42.378902 | -79.196927 | Arkwright | Forestville | 0.19 | PEM | Undetermined | Conewango | W-T04-048 is a PEM wetland. The wetland extends beyond the survey area to the south. Properties of the wetland include a high water table, soil saturation, water-stained leaves, drainage patterns, and a depleted soil matrix. Dominant vegetation found includes sensitive fern (*Onoclea sensibilis* ), and field horsetail (*Equisetum arvense* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 151 |
| W-T04-049 | 42.379372 | -79.197801 | Arkwright | Forestville | 0.04 | PEM | Yes | Conewango | W-T04-049 is an isolated PEM wetland, dominated by field horsetail (*Equisetum arvense* ). Properties of the wetland include a high water table, soil saturation, water-stained leaves, hydrogen sulfide, and a depleted soil matrix. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 151 |
| W-T04-050 | 42.379729 | -79.197741 | Arkwright | Forestville | 0.02 | PEM | Yes | Conewango | W-T04-050 is an isolated PEM wetland, dominated by sensitive fern (*Onoclea sensibilis* ) and melic manna grass (*Glyceria melicaria* ). Properties of the wetland include a high water table, soil saturation, water-stained leaves, and a depleted soil matrix. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 151 |
| W-T04-051 | 42.379854 | -79.197233 | Arkwright | Forestville | 0.15 | PFO | Yes | Conewango | W-T04-051 is a PEM wetland, in an old roadway with a relatively new cabin built within the immediate vicinity. Soils are significantly disturbed due to construction and roads, with rock refusal at 14 inches. Hydrologic properties of the wetland include a high water table, and soil saturation. Dominant vegetation includes green ash (*Fraxinus pennsylvanica* ), rice cut grass (*Leersia oryzoides* ), and melic manna grass (*Glyceria melicaria* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 151 |
| W-T04-052 | 42.381483 | -79.200799 | Arkwright | Forestville | 0.08 | PEM | No | Conewango | W-T04-052 is a PEM wetland within a hillside seep. Stream S-T04-005 abuts the wetland along the eastern edge. Properties of the wetland include a high water table, soil saturation, water-stained leaves, and a dark sandy surface. Dominant vegetation includes green ash (Fraxinus pennsylvanica), spotted touch-me-not (*Impatiens capensis* ), and prickly sedge (*Carex spicata* ). The principle function of the wetland is groundwater recharge/discharge. | 150 |
| W-T04-053 | 42.381396 | -79.200294 | Arkwright | Forestville | 0.07 | PEM | No | Conewango | W-T04-053 is a PEM wetland within a hillside seep. Their are two sections of the wetland connected to one another via drain DD-T04-014. Properties of the wetland include a high water table, soil saturation, water-stained leaves, a depleted soil matrix, and redox of a dark surface. Dominant vegetation includes green ash (Fraxinus pennsylvanica), sensitive fern (*Onoclea sensibilis* ), and spinulose wood fern (*Dryopteris carthusiana* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and nutrient removal. | 150 |
| W-T04-054 | 42.380581 | -79.201827 | Arkwright | Forestville | 1.54 | PEM | Undetermined | Conewango | W-T04-054 is a large PEM/PFO wetland complex. The PEM component is located in the southern and eastern sections of the wetland in an old tilled field with approximately 10% of upland hummocks between each row included. Properties of the wetland include surface water, a high water table, soil saturation, oxidized rhizospheres, and a depleted soil matrix. Dominant vegetation includes sensitive fern (*Onoclea sensibilis* ), red osier dogwood (*Cornus alba* ), rice cut grass (*Leersia oryzoides* ) and fringed sedge (*Carex crinita* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 148, 149, 150 |
| W-T04-054 | 42.380803 | -79.204899 | Arkwright | Forestville | 1.46 | PFO | Undetermined | Conewango | W-T04-054 is a large PEM/PFO wetland complex. The PFO component is located to the north and far west. Properties of the wetland include water-stained leaves, drainage patterns, and a depleted soil matrix. Dominant vegetation includes green as (*Fraxinus pennsylvanica* ), cock-spur hawthorn (*Crataegus crus-galli* ), and crooked-stem american-aster (*Symphyotrichum prenanthoides* ). The principle functions of the wetland are groundwater recharge/discharge, and habitat for wildlife. | 148, 149, 150 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T04-055 | 42.381684 | -79.206094 | Arkwright | Forestville | 0.09 | PFO | Yes | Conewango | W-T04-055 is an isolated PFO wetland. Properties of the wetland include a high water table, saturation, water-stained leaves, drainage patterns, and a depleted soil matrix. Dominant vegetation includes green as (*Fraxinus pennsylvanica* ), red maple (*Acer rubrum* ), and northern spicebush (*Lindera benzoin* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 146, 147, 148 |
| W-T04-056 | 42.382217 | -79.205080 | Arkwright | Forestville | 0.17 | PFO | Yes | Conewango | W-T04-056 is a PFO wetland that extends beyond the survey area to the east. Properties of the wetland include a high water table, saturation, water-stained leaves, and a depleted soil matrix. Dominant vegetation includes green as (*Fraxinus pennsylvanica* ), and red maple (*Acer rubrum* ). The principle functions of the wetland are groundwater recharge/discharge, and habitat for wildlife. | 147, 148 |
| W-T04-057 | 42.381393 | -79.206922 | Arkwright | Forestville | 0.74 | PFO | No | Conewango | W-T04-057 is a PFO/PEM wetland complex. The PFO portion of the wetland is associated with drain DD-T04-010. Properties of the PFO section include drainage patterns, a high water table, saturation, water-stained leaves, and a depleted soil matrix. Dominant vegetation includes green as (Fraxinus pennsylvanica), red maple (Acer rubrum), and cock-spur hawthorn (*Crataegus crus-galli* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, production export, and habitat for wildlife. | 146 |
| W-T04-057 | 42.381962 | -79.206871 | Arkwright | Forestville | 0.05 | PEM | No | Conewango | W-T04-057 is a PFO/PEM wetland complex. The PEM portion of the wetland makes up the northeastern fork. Properties of the PEM section include drainage patterns, oxidized rhizospheres, and redox of a dark soil matrix. Rice cut grass (*Leersia oryzoides* ) is the dominant vegetation. The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, production export, and habitat for wildlife. | 146 |
| W-T04-058 | 42.381624 | -79.208028 | Arkwright | Forestville | 0.25 | PFO | Undetermined | Conewango | W-T04-058 is a PFO wetland. The wetland abuts drain DD-T04-017 along the eastern edge. Properties of the wetland include drainage patterns, surface water, a high water table, saturation, water-stained leaves, and a depleted soil matrix. Dominant vegetation includes green as (Fraxinus pennsylvanica), and cock-spur hawthorn (*Crataegus crus-galli* ). The principle functions of the wetland are groundwater recharge/discharge, floodflow alteration, and habitat for wildlife. | 146 |
| W-T04-059 | 42.381474 | -79.211063 | Arkwright | Forestville | 0.16 | PEM | No | Conewango | W-T04-059 is a PEM wetland, dominated by sensitive fern (*Onoclea sensibilis* ), in a riverine along streams S-T04-007 & S-T04-007A. Properties of the wetland include oxidized rhizospheres, and redox of a dark soil matrix. The principle functions of the wetland are groundwater recharge/discharge, and habitat for wildlife. | 145 |
| W-T06-028 | 42.388854 | -79.234939 | Arkwright | Forestville | 0.19 | PEM | Undetermined | Chautauqua-Conneaut | W-T06-028 is a small PEM wetland. Wetland abuts ditch DD-T02-024. | 142 |
| **Southwest (SW) Cluster** | | | | | | | | | | |
| W-T01-001 | 42.408540 | -79.296989 | Pomfret | Dunkirk | 6.63 | PFO | Undetermined | Chautauqua-Conneaut | Wetland W-T01-001 is a large PFO on a hillslope. The wetland complex contains a small PEM component within the northern section, dominated by creeping-jenny (*Lysimachia nummularia* ) and needle spike rush (*Eleocharis acicularis* ). It drains to the northwest via stream S-T01-002. The wetlands primary functions include groundwater recharge, floodflow alteration and wildlife habitat. | 7, 9, 10 |
| W-T01-001 | 42.409265 | -79.296058 | Pomfret | Dunkirk | 0.28 | PEM | Undetermined | Chautauqua-Conneaut | W-T01-001 is a large PEM wetland located along a housing development and agricultural field. The wetland extends beyond the study area to the north and south. Primary indicators of the wetland include oxidized rhizospheres, redox of a dark soil surface and a depleted dark soil surface. Dominant vegetation found includes creeping-jenny (*Lysimachia nummularia* ) and needle spike-rush (*Eleocharis acicularis* ). The wetlands primary functions include groundwater recharge, floodflow alteration and wildlife habitat. | 7, 9, 10 |
| W-T01-002 | 42.411474 | -79.296704 | Pomfret | Dunkirk | 0.09 | PSS | No | Chautauqua-Conneaut | W-T01-002 is a large PSS wetland in a depression that eventually connects to W-T01-001 beyond the study area. The wetland has soil redox characteristics and contains oxidized rhizospheres, and is dominated by alternate-leaf dogwood (*Cornus alba* ), narrow-leaf cattail (*Typha angustifolia* ) and white panicles american-aster (*Symphyotrichum lanceolatum* ). The wetlands primary functions include wildlife habitat, groundwater recharge/discharge, floodwater alteration, and nutrient removal. | 8 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T01-003 | 42.413051 | -79.300019 | Pomfret | Dunkirk | 0.03 | PEM | Yes | Chautauqua-Conneaut | W-T01-003 is a small isolated PEM muck wetland along the edge of a toe slope. Area has a high water table with some surface water present in spots up to an inch deep. Dominant vegetation in the wetland is two-rowed water-cress (*Rorippa nasturium-aquaticum* ). Primary functions of the wetland include groundwater recharge/discharge and sediment retention. | 5 |
| W-T01-006 | 42.405966 | -79.290220 | Arkwright | Dunkirk | 0.37 | PEM | No | Chautauqua-Conneaut | Wetland W-T01-006 is a large PEM wetland on a slope, with Skinner Road adjacent to it on the west. W-T01-006 is hydrologically connected to W-T01-006A (located to the west of the road) via drain DD-T04-009 and stream S-T01-012. Wetland functions include groundwater recharge, floodwater alteration, sedient/toxicant retention, and nutrient removal. | 11 |
| W-T01-006A | 42.405836 | -79.290752 | Arkwright | Dunkirk | 0.20 | PEM | No | Chautauqua-Conneaut | Wetland W-T01-006A is a small PEM wetland in a depression, adjacent to an active agricultural field to the west and a road borders it to the east. Stream S-T01-012 enters the wetland along the northern edge and flows south-southwest along the edge of the wetland. Water flows out of the wetland through groundwater recharge and via stream S-T01-012 to the southwest. W-T01-006A is hydrologically connected to W-T01-006 on the eastern side of the road via stream S-T01-012. Wetland functions include groundwater recharge, floodwater alteration, sedient/toxicant retention, and nutrient removal. | 11 |
| W-T01-007 | 42.403042 | -79.283964 | Arkwright | Dunkirk | 0.03 | PEM | No | Chautauqua-Conneaut | W-T01-007 is a small PEM wetland bordering the edges of perennial stream S-T0-014. Inflow of wetland from stream S-T01-014 from the southeast, and outflow of wetland is overland sheet flow via stream S-T01-014 to the northwest. Wetland can be seen inundated through aerial imagery and soil profile made up of histic epipedon. Principle functions of the wetland include wildlife habitat, sediment retention and floodflow alteration. | 14 |
| W-T01-008 | 42.403940 | -79.271099 | Arkwright | Dunkirk | 1.51 | PFO | No | Chautauqua-Conneaut | W-T01-008 is a large PEM/PFO wetland complex on a hillslope that extends beyond the study area on both the northwestern and southeastern edges. Southeastern edge cuts across an existing gas-line right-of-way. Primary hydrology indicators of the PFO section are high water table, surface water, saturation, drainage patters, shallow aquitard, hydrogen sulfide and geomorphic positioning. Soil indicators include depleted matrix and hydrogen sulfide. yellow birch (*Betula alleghaniensis* ), bitternut hickory (*Carya cordiformis* ) and northern spicebush (*Lindera benzoin* ) are dominant plant species found here. The wetland provides wildlife habitat, groundwater recharge/discharge and floodwater alteration services to the surrounding ecosystem. | 16, 17 |
| W-T01-008 | 42.403694 | -79.271247 | Arkwright | Dunkirk | 0.63 | PEM | No | Chautauqua-Conneaut | W-T01-008 is a large PEM/PFO wetland complex on a hillslope that extends beyond the study area on both the northwestern and southeastern edges. Southeastern edge cuts across an existing gas-line right-of-way. Primary hydrology indicators of the PEM portion are high water table, surface water, saturation, drainage patters, oxidized rhizospheres, shallow aquitard, hydrogen sulfide and geomorphic positioning. Soil indicators include depleted matrix and depleted below dark surface. Reed canary grass (*Phalaris arundinacea* ), crested sedge (*Carex cristatella* ), american elm (*Ulmus americana* )and northern spicebush (*Lindera benzoin* ) are dominant plant species found here. The wetland provides wildlife habitat, groundwater recharge/discharge and floodwater alteration services to the surrounding ecosystem. | 16, 17 |
| W-T01-008B | 42.404117 | -79.269699 | Arkwright | Dunkirk | 0.55 | PEM | No | Chautauqua-Conneaut | W-T01-008B is a large PEM wetland extension of W-T01-008 in a right-of-way. Wetland connects to the large wetland complex W-T01-008 via drain DD-T01-010 on the western side. | 16, 17 |
| W-T01-008D | 42.404218 | -79.268034 | Arkwright | Dunkirk | 0.06 | PEM | No | Chautauqua-Conneaut | W-T01-008D is a small PEM depressional wetland with no trees rooted inside the wetland. It is an extension of W-T01-008B, where both wetlands connect outside of the study area. | 18 |
| W-T01-008E | 42.404910 | -79.270652 | Arkwright | Dunkirk | 0.05 | PEM | No | Chautauqua-Conneaut | W-T01-008E is a small PEM extension of W-T01-008 along edge of grassland in a depression. Wetland outflow is south towards W-T01-008 via drain DD-T01-011. | 16, 17 |
| W-T01-009 | 42.405827 | -79.266784 | Arkwright | Dunkirk | 0.91 | PEM | No | Chautauqua-Conneaut | W-T01-009 is a large PEM wetland on a hillslope in an old farm field. Wetland hydrology consists of high water table, saturation of soil within the top 12 inches and oxidized rhizospheres. Soil characteristics include both a depleted matrix and redox of a dark surface. Dominant vegetation consists of reed canary grass (*Phalaris arundinacea* ) and water horsetail (*Equisetum arvense* ). Wetland outflow is towards the south through streams S-T01-016 and S-T01-017. Primary functions of wetland include wildlife habitat, groundwater recharge/discharge and floodwater alteration. | 18, 19 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T01-010 | 42.408937 | -79.265658 | Arkwright | Dunkirk | 0.44 | PFO | No | Chautauqua-Conneaut | W-T01-010 is a large PFO wetland in a forested depression, dominated by silver maple (*Acer saccharinum* ). The wetland extends beyond the study area to the west and east and borders Route 83 to the north. Hydrologic connectivity is undetermined due to wetland extending beyond study area. Wetland characteristics include high water table, saturation, oxidized rhizospheres along living roots and redox of a dark soil matrix. Principle functions that the wetland provides are habitat for wildlife and groundwater recharge/discharge. | 20, 21 |
| W-T01-017 | 42.404628 | -79.271825 | Arkwright | Dunkirk | 0.31 | PEM | No | Chautauqua-Conneaut | W-T01-017 is PEM wetland in forested depression that extends beyond the survey area to the northwest into a hay field. Wetland characteristics include a high water table, soil saturation, hydrogen sulfide odor, a thin muck surface, and a histic epipedon. Cinnamon fern (Osmundastrum cinnamomeum) and spotted touch-me-not (Impatiens capensis) are present. Principle functions of the wetland include floodwater alteration, groundwater recharge/discharge and habitat for wildlife. | 16 |
| W-T01-018 | 42.404818 | -79.269876 | Arkwright | Dunkirk | 0.06 | PSS | Yes | Chautauqua-Conneaut | W-T01-018 is an isolated PSS wetland in a forested depression. Wetland characteristics include a high water table, soil saturation, water-stained leaves, drainage patters, oxidized rhizospheres along living roots, and a depleted soil matrix. Green ash (Fraxinus pennsylvanica), northern spicebush (Lindera benzoin), allegheny blackberry (Rubus allegheniensis), spotted touch-me-not (Impatiens capensis), and drooping sedge (Carex prasina) are among the dominant plant species. Principle functions of the wetland include floodwater alteration and habitat for wildlife. | 17 |
| W-T01-019 | 42.404856 | -79.268786 | Arkwright | Dunkirk | 0.26 | PFO | Undetermined | Chautauqua-Conneaut | W-T01-019 is a large PFO wetland located mostly in forest, but center of wetland also crosses a right-of-way. Wetland extends beyond survey area to the north. Wetland characterized by a high water table, soil saturation, hydrogen sulfide odor, a histic epipedon, and a depleted soil matrix. A few of the dominant species include yellow birch (Betula alleghaniensis), red maple (Acer rubrum), northern spicebush (Lindera benzoin), cinnamon fern (Osmundastrum cinnamomeum), and spotted touch-me-not (Impatiens capensis). Principle functions of the wetland include floodwater alteration, groundwater recharge/discharge and habitat for wildlife. | 17, 18 |
| W-T01-020 | 42.408284 | -79.265736 | Arkwright | Dunkirk | 0.03 | PEM | Yes | Chautauqua-Conneaut | W-T01-020 is a small isolated PEM wetland in transitional zone of forest and hay field. Wetland characterized by oxidized rhizospheres along living roots, water-stained leaves, redox of a dark matrix, sensitive fern (*Onoclea sensibilis* ), cottongrass bulrush (*Scirpus cyperinus* ), and lamp rush (*Juncus effusus* ). Wetland is not suitable to provide ecosystem functions. | 20 |
| W-T02-057 | 42.408779 | -79.249539 | Arkwright | Forestville | 0.06 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-057 is a small PEM wetland in a tilled agricultural field. Due to the wetlands location there are no foreseeable functions that the wetland provides to the surrounding ecosystem. | 108 |
| W-T02-058 | 42.408411 | -79.249083 | Arkwright | Forestville | 0.04 | PEM | Yes | Chautauqua-Conneaut | W-T02-058 is a small PEM wetland in a tilled agricultural field. The wetland extends beyond the survey area on the western edge. Due to the wetlands location there are no foreseeable functions that the wetland provides to the surrounding ecosystem. | 108 |
| W-T02-059 | 42.408304 | -79.248637 | Arkwright | Forestville | 0.09 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-059 is a small PEM wetland in a depression located adjacent to an agricultural field. The wetland is connected to wetland W-T02-059A via drain DD-T02-013 on the southeastern edge. Primary indicators of the wetland include drainage patterns, oxidized rhizospheres and redox of a dark soil surface. Dominant vegetation includes wrinkle-leaf goldenrod (*Solidago rugosa* ) and reed canary grass (*Phalaris arundinacea* ). The principle functions of the wetland are fish/shellfish habitat, and habitat for wildlife. | 108, 109 |
| W-T02-059A | 42.407896 | -79.248023 | Arkwright | Forestville | 0.09 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-059A is a small well defined drooping sedge (*Carex prasina* ) vegetated PEM swale wetland in a forested area. The wetland extends beyond the survey area to the east and the southwest. Inflow and outflow is to streams S-T02-020 and S-T02-020A. The wetland is connected to wetland W-T02-059 via drain DD-T02-013 on the northwestern edge. Primary indicators of the wetland include drainage patterns, water-stained leaves and a depleted soil matrix. The principle functions of the wetland are fish/shellfish habitat, and habitat for wildlife. | 108, 109 |
| W-T02-060 | 42.405378 | -79.244668 | Arkwright | Forestville | 0.36 | PFO | No | Chautauqua-Conneaut | W-T02-060 is a PFO wetland on a hillslope in a topographic drainage feature. The wetland extends beyond the survey area to the southwest. Characteristics of the wetland include a high water table, saturation, watermarks, drainage patterns, and redox of a dark soil surface. Dominant vegetation includes red maple (*Acer rubrum* ), and green ash (*Fraxinus pennsylvanica* ). The principle function of the wetland is to provide habitat for wildlife. | 110 |
| W-T02-061 | 42.404275 | -79.241392 | Arkwright | Forestville | 0.56 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-061 is a PEM/PFO wetland complex that is north and south of a NWI mapped freshwater pond. The wetland extends beyond the survey area to the north. Wetland characteristics include surface water, a high water table, soil saturation, oxidized rhizospheres along living root channels, and redox of a dark soil surface. Dominant vegetation includes blunt broom sedge (*Carex tribuloides* ) and black-gridle bulrush (*Scirpus atrovirens* ). The principle functions of the wetland are groundwater recharge/discharge, and habitat for wildlife. | 111 |
| W-T02-061 | 42.403915 | -79.240407 | Arkwright | Forestville | 0.06 | PFO | Undetermined | Chautauqua-Conneaut | W-T02-061 is a PEM/PFO wetland complex that is north and south of a NWI mapped freshwater pond. The wetland extends beyond the survey area to the north. The principle functions of the wetland are groundwater recharge/discharge, and habitat for wildlife. | 111 |

**Table 5-4 Summary of Delineated Wetland Characteristics within the Limit of Jurisdictional Determination, Arkwright Summit Wind Farm**

| Wetland ID | Latitude | Longitude | Township | USGS Quad | Acreage | Wetland Community Type | Hydrologically Isolated | Watershed | Wetland Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| W-T02-062 | 42.403877 | -79.237780 | Arkwright | Forestville | 3.41 | PEM | No | Chautauqua-Conneaut | W-T02-062 is a large PEM wetland complex with three separate parcels, located on dense silt clay loam soils in an active hay field. This parcel is the largest and most northern of the three. The wetland extends beyond the survey area to both the north and south. Characteristics of the wetland include oxidized rhizospheres and a depleted soil matrix. Reed canary grass (*Phalaris arundinacea* ) and blunt broom sedge (Carex tribuloides) are both dominant. The principle functions of the wetland are sediment/shoreline stabilization, and habitat for wildlife. | 112, 113, 114, 115 |
| W-T02-063 | 42.399167 | -79.238329 | Arkwright | Forestville | 1.19 | PEM | No | Chautauqua-Conneaut | W-T02-063 is a large PEM wetland, dominated by reed canary grass (*Phalaris arundinacea* ), in a drainage way and an agricultural field. The wetland continues beyond the survey area along its southern and western edges and borders Ball road on its northern edge. Stream S-T02-023 flows through the northern section of the wetland and then cuts across the middle to the south. Wetland outflow is to drain DD-T02-015A, and the culvert in the northwest corner of the wetland, which flows under the road and into wetland W-T02-062. The wetland contains surface water, a high water table, saturated soil, oxidized rhizospheres and a depleted dark soil surface. The principle functions of the wetland are sediment/shoreline stabilization, and habitat for wildlife. | 115 |
| W-T02-066 | 42.394441 | -79.236677 | Arkwright | Forestville | 0.13 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-066 is a small PEM wetland in an agricultural field. The wetland extends beyond the survey area to the north and south and borders Center Road on the east. It could possibly join up with wetland W-T02-067 beyond the survey area to the south. The principle functions of the wetland are floodflow alteration, sediment retention, and nutrient removal. | 138 |
| W-T02-067 | 42.392796 | -79.237496 | Arkwright | Forestville | 0.29 | PEM | No | Chautauqua-Conneaut | W-T02-067 is a PEM seepage wetland that becomes a PFO wetland outside of the survey area to the north. Inflow is from stream S-T02-026 at the east and outflow is to stream S-T02-026 in the west. Characteristics of the wetland include drainage patterns, a shallow aquitard, a depleted soil matrix and redox of a dark soil surface. Dominant vegetation includes Canadian goldenrod (*Solidago canadensis* ) and late goldenrod (*Solidago gigantea* ). Primary functions of the wetland include groundwater recharge/discharge and sediment/shoreline stabilization. | 139 |
| W-T02-090 | 42.394410 | -79.238134 | Arkwright | Forestville | 0.13 | PEM | Undetermined | Chautauqua-Conneaut | W-T02-090 is a small PEM wetland, dominated by reed canary grass (*Phalaris arundinacea* ), in a recently planted agricultural field. The wetland is characterized by a high water table, soil saturation, oxidized rhizospheres along living roots, and a depleted soil matrix. This wetland has limited functionality due to its location in an active agricultural field. | 138, 140 |
| W-T04-047 | 42.403039 | -79.289080 | Arkwright | Dunkirk | 0.12 | PEM | No | Chautauqua-Conneaut | W-T04-047 is a PEM wetland within stream S-T04-004 corridor. The wetland extends beyond the survey area to the north and south, and borders the east side of Skinner Road. Properties of the wetland include a high water table, saturation, aquatic fauna, hydrogen sulfide, oxidized rhizospheres, and a depleted dark soil surface. Dominant vegetation found includes spotted touch-me-not (*Impatiens capensis* ) and rice cut grass (*Leersia oryzoides* ). The principle functions of the wetland are floodflow alteration, sediment/retention, nutrient removal, and habitat for wildlife. | 12 |

**Table 5-5 Potential NYSDEC Wetlands Mapped within the Study Area**

| Wetland ID | Wetland Community Type | Acreage |
|---|---|---|
| W-T02-023[a] | PFO | 2.31 |
| W-T01-021<br>W-T01-021A<br>W-T01-027<br>W-T01-028<br>W-T04-031A<br>W-T04-031B | PFO/PSS/PEM | 14.88 |
| W-T02-064<br>W-T02-068<br>W-T02-082 | PFO/PEM | 16.30 |
| W-T02-055<br>W-T04-001<br>W-T04-001A<br>W-T04-001B<br>W-T04-001C<br>W-T04-001D | PFO | 7.81 |
| W-T01-001<br>W-T01-002 | PFO/PSS/PEM | 7.00 |
| W-T03-001 | PEM | 5.39 |
| W-T02-001 | PEM | 5.28 |
| W-T02-084 | PFO | 4.00 |
| W-T02-031<br>W-T05-002 | PEM | 4.04 |
| W-T04-054 | PFO/PEM | 3.00 |
| | **Total** | **70.01** |

Note:
a. Contiguous with previously mapped wetland FO-13.

Key:
PEM = Palustrine emergent
PSS = Palustrine scrub-shrub
PFO = Palustrine forested

**Table 5-6 Summary of Delineated Stream Characteristics, Arkwright Summit Wind Farm**

| Stream ID | Stream Name | Latitude[2] | Longitude[2] | Linear Feet | Township County | USGS Quad | Flow Direction | OHWM Width | USACE Classification[1] | Flow Type | NYSDEC Classification[3] | Watershed | Stream Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Northeast (NE) Cluster:** | | | | | | | | | | | | | | |
| S-T02-032 | UNT to Walnut Creek | 42.405455 | -79.217970 | 315.14 | Arkwright | Forestville | W | 4.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-032 is a narrow, shallow, intermittent stream in a partially shaded deciduous forest. The stream is a dis-tributary of S-T03-021 that branches off and flows west through wetland W-T02-087. | 97, 98 |
| S-T03-001 | UNT to Walnut Creek | 42.430485 | -79.231969 | 104.00 | Arkwright | Forestville | NNE | 1.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-001 is a narrow, intermittent stream starting in a field and flowing north-northeast with snails present and dense algae. | 61 |
| S-T03-002 | UNT to Walnut Creek | 42.430496 | -79.234454 | 263.04 | Arkwright | Forestville | N | 1.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-002 is a narrow, intermittent stream. Stream starts south of survey area, flows through small created drainage pond, through wetland W-T03-004, and continues north of survey area. Stream is severely tramples fro cattle, has water present but no observable flow. | 60 |
| S-T03-003 | UNT to Walnut Creek | 42.430515 | -79.235721 | 255.78 | Arkwright | Forestville | N | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-003 is a narrow, intermittent stream. Stream starts south of survey area, flows through wetland W-T03-005, and continues north of survey area. Stream is severely tramples fro cattle. | 60 |
| S-T03-004 | UNT to Walnut Creek | 42.429077 | -79.230851 | 155.62 | Arkwright | Forestville | E | 2.00 | P-RPW | Perennial | C(t) | Chautauqua-Conneaut | S-T03-004 is a small perennial stream at the of a forest and pasture. Upstream outside of survey area has a small ponded section with green frogs and tadpoles (possibly wood frogs). | 69 |
| S-T03-005 | UNT to Walnut Creek | 42.428833 | -79.230401 | 107.56 | Arkwright | Forestville | NE | 3.00 | non-RPW | Ephemeral | D | Chautauqua-Conneaut | S-T03-005 is a small ephemeral stream in a deciduous forest. Channel banks are incised upstream outside of the survey area. No connection to other features within survey area. Stream has a braided channel downstream outside of the survey area. | 69 |
| S-T03-006 | UNT to Walnut Creek | 42.428609 | -79.230011 | 110.05 | Arkwright | Forestville | NE | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-006 is a small intermittent stream in a deciduous forest connecting segments of wetland W-T03-011. The stream is partially dry with a moderately-steep gradient. | 69 |
| S-T03-007 | UNT to Walnut Creek | 42.427194 | -79.229575 | 376.46 | Arkwright | Forestville | SSE | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-007 is a narrow, intermittent stream in a forested area. The stream flows from wetland W-T03-015, where water starts in a pile of rocks, to the east into wetland W-T03-014. | 68 |
| S-T03-008 | UNT to Walnut Creek | 42.426203 | -79.231583 | 28.34 | Arkwright | Forestville | NNE | 1.00 | non-RPW | Ephemeral | D | Chautauqua-Conneaut | S-T03-008 is a small, ephemeral channel that dissipates in wetland W-T03-015. There are some small amounts of water present upslope, but otherwise channel was dry during field survey. | 67 |
| S-T03-009 | UNT to Walnut Creek | 42.426470 | -79.231851 | 305.90 | Arkwright | Forestville | E | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-009 is a small, narrow, intermittent stream that flows through wetland W-T03-015. It is channelized outside of wetland, but has no defined bed or banks within. There are small amounts of water present throughout but are not flowing. | 67, 68 |
| S-T03-010 | UNT to Walnut Creek | 42.426513 | -79.233876 | 362.46 | Arkwright | Forestville | NE | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-010 is a large, intermittent, partially shaded stream. It provides inflow and outflow to wetland W-T03-017. | 65, 66, 67 |
| S-T03-010A | UNT to Walnut Creek | 42.426073 | -79.234128 | 55.84 | Arkwright | Forestville | NE | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-010A is a tributary of S-T03-010, that starts in flat area and becomes more incised downstream. | 66 |
| S-T03-011 | UNT to Walnut Creek | 42.427625 | -79.231514 | 59.01 | Arkwright | Forestville | NE | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-011 is a narrow, intermittent fast flowing stream that starts at the edge of wetland W-T03-018 and then goes into a deep ravine between two hills. It flows northeast to a larger stream outside of the survey area. | 67 |
| S-T03-012 | UNT to Walnut Creek | 42.415206 | -79.231238 | 892.17 | Arkwright | Forestville | E | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-012 is a small, narrow, intermittent stream. The stream has a defined bed and bank in most of wetland W-T03-027, but is diffuse in other areas before it channelizes again. | 81, 82 |
| S-T03-013 | UNT to Walnut Creek | 42.415148 | -79.228958 | 565.20 | Arkwright | Forestville | NE | 2.00 | P-RPW | Perennial | AA | Chautauqua-Conneaut | S-T03-013 is a small, narrow, perennial stream in a forest and wetland. It starts near a rocky area of a field, with the water pouring out from under the rocks. Stream S-T03-013A flows into it at the headwaters. It flows into S-T03-014. | 82, 83 |
| S-T03-013A | UNT to Walnut Creek | 42.414864 | -79.230429 | 79.63 | Arkwright | Forestville | SE | 1.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-013A is a very small intermittent stream that starts in wetland W-T03-028 and flows into stream S-T03-013. The bed and banks of the stream are not defines throughout the entire length. | 82 |
| S-T03-014 | UNT to Walnut Creek | 42.416262 | -79.230070 | 1557.23 | Arkwright | Forestville | SE | 9.00 | P-RPW | Perennial | AA | Chautauqua-Conneaut | S-T03-014 is a wide, perennial stream. This section of the creek is mostly shaded in a deciduous forest, composed mostly of gravel and cobbles, flowing through wetland W-T03-029. | 82, 83, 88, 89 |
| S-T03-015 | UNT to Walnut Creek | 42.414709 | -79.227850 | 315.10 | Arkwright | Forestville | S | 4.00 | non-RPW | Ephemeral | C | Chautauqua-Conneaut | S-T03-015 is an ephemeral stream along the base of a slope that flows south picking up water from wetland W-T03-029, and into stream S-T03-014. | 83, 89 |
| S-T03-016 | UNT to Walnut Creek | 42.414185 | -79.228944 | 713.86 | Arkwright | Forestville | E | 2.00 | S-RPW | Intermittent | C | Chautauqua-Conneaut | S-T03-016 is a small intermittent stream in deeply incised banks of a deciduous forest. The headwaters start in a hedgerows of an agricultural field. The stream flows east into S-T03-014. | 83, 89, 90 |
| S-T03-017 | UNT to Walnut Creek | 42.415026 | -79.232258 | 106.53 | Arkwright | Forestville | E | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-017 is a small intermittent stream that flows from wetland W-T03-031 (not channelized within wetland) and dissipates in forest. Stream is fast flowing, with a silt/sand bed, and many overhanging root masses. | 81 |
| S-T03-018 | UNT to Walnut Creek | 42.412835 | -79.230056 | 238.87 | Arkwright | Forestville | E | 1.00 | non-RPW | Ephemeral | D | Chautauqua-Conneaut | S-T03-018 is a small ephemeral, mostly shaded stream that starts on a slope and flows east downhill. It dissipates in wetland W-T03-050. Wetland W-T03-051 is within high banks of the stream channel. | 89, 90 |

**Table 5-6 Summary of Delineated Stream Characteristics, Arkwright Summit Wind Farm**

| Stream ID | Stream Name | Latitude[2] | Longitude[2] | Linear Feet | Township County | USGS Quad | Flow Direction | OHWM Width | USACE Classification[1] | Flow Type | NYSDEC Classification[3] | Watershed | Stream Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S-T03-019 | UNT to Walnut Creek | 42.412965 | -79.229194 | 106.46 | Arkwright | Forestville | NE | 5.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T03-019 is a small, mostly shaded, intermittent stream that starts in wetland W-T03-050 and flows northeast. It appears to be dug out in half of an old logging road. | 89, 90 |
| S-T03-020 | UNT to Walnut Creek | 42.417722 | -79.227730 | 1385.79 | Arkwright | Forestville | SE | 4.00 | P-RPW | Perennial | C(t) | Chautauqua-Conneaut | S-T03-020 is a large perennial stream in a forested ravine with PEM wetland W-T03-063 bordering it. Stream width is between 3-20 feet throughout length of survey corridor. The wetland is not continuous along entire length of stream, so there are areas with little to no bank vegetation present. | 85, 86 |
| S-T03-021 | UNT to Walnut Creek | 42.405755 | -79.217848 | 350.57 | Arkwright | Forestville | SE | 30.00 | P-RPW | Perennial | AA | Chautauqua-Conneaut | S-T03-021 is a perennial stream in a forested area. OHWM is variable throughout, at narrowest point it is 6 feet, and at widest point it is about 35 feet. Banks are also variable, between 1-3 feet high. This stream is associated with wetland W-T03-087. | 97, 98 |
| S-T06-004 | UNT to Walnut Creek | 42.407439 | -79.214902 | 19.82 | Arkwright | Forestville | SSW | 1.00 | non-RPW | Ephemeral | D | Chautauqua-Conneaut | S-T06-004 is a small, ephemeral stream hat drains wetland W-T06-020. The stream starts in an open field and continues into the forest. | 100 |
| **Northwest (NW) Cluster:** | | | | | | | | | | | | | | |
| S-T01-010 | UNT to Canadaway Creek | 42.421967 | -79.299743 | 321.64 | Pomfret | Dunkirk | NW | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T01-010 is a large, intermittent, partially shaded stream. The stream starts at a corrugated steel culvert from drain DD-T04-018 and flows northwest along the edge of a vineyard towards the edge of the survey corridor. | 1 |
| S-T01-011 | Canadaway Creek | 42.414858 | -79.300108 | 333.71 | Pomfret | Dunkirk | NW | 24.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T01-011 is a large, perennial stream flowing over bedrock/shale. The stream is a portion of mapped NHD Canadaway Creek that crosses the study area from east to west. | 4 |
| S-T01-018 | UNT to Canadaway Creek | 42.410953 | -79.262178 | 230.35 | Arkwright | Dunkirk | N | 4.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T01-018 is an intermittent stream in a partially shaded Sugar Maple forest. The stream drains wetland W-T01-012 and flows north to mapped NHD mapped UNT to Canadaway Creek (S-T01-019). | 22 |
| S-T01-019 | UNT to Canadaway Creek | 42.411376 | -79.262593 | 266.05 | Arkwright | Dunkirk | NW | 10.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T01-019 is a large, perennial stream in a birch-maple deciduous forest. The stream is a portion of mapped NHD UNT to Canadaway Creek that crosses the study area from east to west. | 22 |
| S-T01-020 | UNT to Canadaway Creek | 42.411623 | -79.262405 | 277.68 | Arkwright | Dunkirk | S | 5.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T01-020 is a large, intermittent stream that starts outside of the study area and flows south into mapped NHD UNT to Canadaway Creek (S-T01-019). The stream is most likely hydrologically connected to wetland W-T01-013 further north. | 22 |
| S-T01-021 | UNT to Canadaway Creek | 42.412079 | -79.262549 | 84.88 | Arkwright | Dunkirk | NW | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T01-021 is an intermittent stream in a deciduous forest that starts at the end of drain DD-T01-012. The stream drains wetland W-T01-013 and flows west through wetland W-T01-013A and continues on beyond the survey area. | 22 |
| S-T01-022 | UNT to Canadaway Creek | 42.413812 | -79.262199 | 264.17 | Arkwright | Dunkirk | W | 15.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T01-022 is a perennial stream starting and ending outside of the survey corridor. The stream is hydrologically associated with wetlands W-T01-015 and W-T01-016 and drain DD-T01-013. Stream most likely flows into NHD mapped UNT to Canadaway Creek (NYSDEC Class B) approximately 350 feet beyond the survey corridor to the west. | 23 |
| S-T01-023 | UNT to Canadaway Creek | 42.416237 | -79.257353 | 251.80 | Arkwright | Dunkirk | W | 10.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T01-023 is a perennial stream bi-secting the survey corridor. Stream is associated with wetland W-T01-022 via drain DD-T01-015. The stream continues beyond the survey corridor to the south following an opening in a forest. It most likely joins up with S-T01-022 outside of the survey corridor, and ultimately NHD mapped UNT to Canadaway Creek. | 26 |
| S-T01-024 | UNT to Canadaway Creek | 42.416506 | -79.260715 | 234.05 | Arkwright | Dunkirk | W | 6.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T01-024 is a large, intermittent stream in a deciduous forest. Stream starts and ends outside of the survey corridor and flows through the center of wetland W-T01-023. | 24, 25 |
| S-T01-025 | UNT to Canadaway Creek | 42.414700 | -79.262289 | 173.25 | Arkwright | Dunkirk | SSW | 4.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T01-025 is a large, shallow, fast moving, intermittent stream in a deciduous forest. The stream starts in wetland W-T01-025 and flows west outside of the survey corridor. | 24 |
| S-T01-026 | UNT to Canadaway Creek | 42.418040 | -79.249400 | 195.88 | Arkwright | Forestville | N | 4.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T01-026 is a fast flowing, intermittent stream, in a deciduous forest composed mostly of runs. The stream joins together two different segments of wetland W-T01-027. | 29, 30 |
| S-T01-027 | UNT to Canadaway Creek | 42.418487 | -79.249205 | 447.16 | Arkwright | Forestville | NW | 4.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T01-027 is an intermittent stream bi-secting the survey corridor and wetland W-T01-027. The stream continues beyond the survey corridor to the west where it possibly joins with drain DD-T01-017. | 29, 30, 31 |
| S-T02-001 | UNT to Canadaway Creek | 42.431284 | -79.257330 | 823.06 | Arkwright | Dunkirk | N | 5.00 | S-RPW | Intermittent | B | Chautauqua-Conneaut | S-T02-001 is a section of mapped NHD UNT of Canadaway Creek that is intermittent, in a deciduous forest corridor. The stream starts outside of the survey area and flows north through wetlands W-T02-006, W-T02-006A, W-T02-006B, W-T02-003, and W-T02-002. The stream most likely joins with S-T06-002 outside of the survey corridor to the north. | 41, 42, 43 |
| S-T02-001A | UNT to Canadaway Creek | 42.429945 | -79.255935 | 12.53 | Arkwright | Dunkirk | N | 5.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-001A is a small tributary of stream S-T01-001. The stream starts north of wetland W-T02-006A and flows north, ending a few feet before S-T02-001. | 42, 43 |

**Table 5-6 Summary of Delineated Stream Characteristics, Arkwright Summit Wind Farm**

| Stream ID | Stream Name | Latitude[2] | Longitude[2] | Linear Feet | Township County | USGS Quad | Flow Direction | OHWM Width | USACE Classification[1] | Flow Type | NYSDEC Classification[3] | Watershed | Stream Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S-T02-002 | UNT to Canadaway Creek | 42.429093 | -79.258690 | 354.92 | Arkwright | Dunkirk | NNW | 5.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-002 is a small, intermittent stream with discontinuous flow that is fully shaded. Stream starts outside of the survey corridor and flows north feeding wetland W-T02-007 and then continuing beyond the survey area. | 39, 42 |
| S-T02-003 | UNT to Canadaway Creek | 42.427968 | -79.259612 | 595.60 | Arkwright | Dunkirk | NNE | 4.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-003 is a large, intermittent stream with discontinuous flow in a deciduous forest. Stream receives water discharge from wetland W-T02-011 and continues to flow north beyond the survey corridor. | 38, 39 |
| S-T02-003A | UNT to Canadaway Creek | 42.427248 | -79.258825 | 98.90 | Arkwright | Dunkirk | NW | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-003A is a tributary of S-T02-003 that also receives water discharge from another branch of wetland W-T02-011 and flows north into S-T02-003. | 38 |
| S-T02-004 | UNT to Canadaway Creek | 42.426254 | -79.259542 | 196.26 | Arkwright | Dunkirk | NNW | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-004 is a small, intermittent stream flowing northwest from wetland W-T02-013 to outside of the survey corridor. No water was observed where the stream ID was taken, but some was observed at the headwaters. | 37, 38 |
| S-T02-005 | UNT to Canadaway Creek | 42.423046 | -79.248231 | 281.40 | Arkwright | Forestville | W | 7.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T02-005 is a large, fast flowing, perennial portion of mapped NHD UNT to Canadaway Creek. The stream starts outside of the survey corridor and flows west into wetland W-T02-023 and then back out of the survey corridor. There are no fish barrier in this part of the stream and fish and water striders were observed. | 52, 53 |
| S-T02-005A | UNT to Canadaway Creek | 42.423355 | -79.247850 | 106.16 | Arkwright | Forestville | SSW | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-005A is a small, fully shaded, intermittent tributary to Canadaway Creek. The stream starts inside of wetland W-T02-023, receives discharge from the wetland and flows south into S-T02-005. | 52 |
| S-T02-006 | UNT to Canadaway Creek | 42.425585 | -79.247692 | 398.55 | Arkwright | Forestville | NW | 8.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-006 is a large, intermittent stream in a deciduous forest. Wetland fringe was observed up to 3 feet wide along the banks of the stream. The stream also has a culvert associated with it where it flows under a dirt road in the woods, obscured from aerial imagery. | 51 |
| S-T02-007 | UNT to Canadaway Creek | 42.427134 | -79.248673 | 434.45 | Arkwright | Forestville | W | 9.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-007 is a large, intermittent stream in a deciduous forest, with a very mucky bed and discontinuous flow with stagnant pools. Wetland is hydrologically connected to wetland W-T0-028, and W-T02-028A. Stream is approximately 75 feet south from the divide between Canadaway Creek and Scott Creek-Frontal Lake Erie watersheds. | 49, 51 |
| S-T02-008 | UNT to Scott Creek-Frontal Lake | 42.428673 | -79.249024 | 407.43 | Arkwright | Forestville | N | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-008 is a large, intermittent stream, that is partially shaded in a deciduous forest. The stream supports water inflow and outflow for wetland W-T02-032. | 50 |
| S-T02-009 | UNT to Scott Creek-Frontal Lake | 42.428908 | -79.247753 | 106.94 | Arkwright | Forestville | SSW | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-009 is a small, intermittent stream flowing south through PEM wetland W-T02-035. The stream contains a low gradient with a discontinuous OHWM and flow. | 50 |
| S-T02-010 | UNT to Scott Creek-Frontal Lake | 42.427658 | -79.243240 | 288.20 | Arkwright | Forestville | N | 6.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-010 is a large, intermittent, partially shaded stream in a deciduous forest. The stream starts outside of the survey corridor and flows through PFO wetland W-T02-040 providing inflow and outflow. | 55 |
| S-T02-010A | UNT to Scott Creek-Frontal Lake | 42.427962 | -79.243535 | 58.42 | Arkwright | Forestville | E | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-010A is a small tributary of S-T02-010, starting from discharge from PFO wetland W-T02-040 and flowing east into stream S-T02-010. | 55 |
| S-T02-011 | UNT to Scott Creek-Frontal Lake | 42.427818 | -79.237878 | 283.33 | Arkwright | Forestville | N | 4.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-011 is a large, intermittent stream that bi-sects the survey corridor. Stream is adjacent to wetland W-T02-045, and possibly abuts wetland W-T02-044 to the north outside of the survey corridor. The stream is approximately 140 feet west of the divide between the Scott Creek-Frontal Lake Erie and Walnut Creek watersheds. Though their are rocks, and small shelves that act as barriers to fish, their were crayfish and northern two-lined salamander (*Eurycea bislineata* ) observed. | 58 |
| S-T02-012 | UNT to Scott Creek-Frontal Lake | 42.427909 | -79.241199 | 327.60 | Arkwright | Forestville | ESE | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-012 is a large, intermittent, mostly shaded stream in a deciduous forest. The stream flows through PEM/PFO wetland W-T02-042 and then ends in wetland W-T02-043. | 56, 57 |
| S-T02-013 | UNT to Scott Creek-Frontal Lake | 42.427987 | -79.239998 | 488.94 | Arkwright | Forestville | ESE | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-013 is a large, intermittent, partially shaded stream in deciduous forest. The stream starts outside of the survey corridor and flows southeast through wetland W-T02-043 and continues beyond the survey corridor. | 56, 57 |
| S-T02-013 | UNT to Scott Creek-Frontal Lake | 42.426828 | -79.240168 | 121.82 | Arkwright | Forestville | N | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | This is a small section of S-T02-013 that flows through wetland W-T02-012B. This section connects with the other portion of S-T02-013 beyond the survey corridor to the north. | 56, 57 |
| S-T02-014 | UNT to Canadaway Creek | 42.423158 | -79.249602 | 230.88 | Arkwright | Forestville | SSW | 4.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-014 is a large, intermittent, mostly shaded stream with discontinuous flow. The stream starts and receives discharge from wetland W-T0-023 and flows south beyond the survey corridor. | 53 |
| S-T02-015 | UNT to Canadaway Creek | 42.422119 | -79.250873 | 286.55 | Arkwright | Dunkirk | W | 12.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T02-015 is a braid of NHD mapped Canadaway Creek in a deciduous forest. This portion of Canadaway creek braids off to the north and south and then comes back together. This is the southern portion of the braid that flows through wetland W-T02-048A, and W-T02-048B. | 33 |

**Table 5-6 Summary of Delineated Stream Characteristics, Arkwright Summit Wind Farm**

| Stream ID | Stream Name | Latitude[2] | Longitude[2] | Linear Feet | Township County | USGS Quad | Flow Direction | OHWM Width | USACE Classification[1] | Flow Type | NYSDEC Classification[3] | Watershed | Stream Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S-T02-015A | UNT to Canadaway Creek | 42.422406 | -79.251297 | 448.67 | Arkwright | Dunkirk | W | 10.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T02-015A is a braid of NHD mapped UNT to Canadaway Creek in a deciduous forest. This portion of Canadaway creek braids off to the north and south and then comes back together. This is the southern portion of the braid that flows through wetland W-T02-048. | 33 |
| S-T02-016 | UNT to Canadaway Creek | 42.422282 | -79.250537 | 75.43 | Arkwright | Dunkirk | W | 6.00 | S-RPW | Intermittent | B | Chautauqua-Conneaut | S-T02-016 is a section of NHD mapped UNT to Canadaway Creek in a deciduous forest. This is the segment flowing to the west right before the stream braids off and then comes back together. This section has discontinuous flow and cuts across PFO wetland W-T02-048. | 33. 53 |
| S-T02-017 | UNT to Canadaway Creek | 42.420276 | -79.249178 | 200.05 | Arkwright | Forestville | NE | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-017 is a large, intermittent, mostly shaded stream. It receives discharge from wetland W-T02-050 and flows into wetland W-T02-051. The stream is a tributary of stream S-T02-018. | 31, 32 |
| S-T02-018 | UNT to Canadaway Creek | 42.420426 | -79.249021 | 103.06 | Arkwright | Forestville | N | 6.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T02-018 is a perennial, moderately flat, fully shaded stream flowing through PEM wetland W-T02-051. The stream flows north outside of the survey boundary towards a branch of Canadaway Creek (NYSDEC Class B), approximately 750 feet away. | 31 |
| S-T02-019 | UNT to Canadaway Creek | 42.414519 | -79.244637 | 533.66 | Arkwright | Forestville | W | 6.00 | S-RPW | Intermittent | C | Chautauqua-Conneaut | S-T02-019 is a large, intermittent, mostly shaded stream. This is a continuation of an NHD mapped Canadaway Creek branch, showing that the creek starts further to the east. The stream flows through the center of wetland W-T02-065. | 106 |
| S-T04-001 | UNT to Canadaway Creek | 42.415872 | -79.244935 | 417.25 | Arkwright | Forestville | W | 5.00 | P-RPW | Perennial | C(t) | Chautauqua-Conneaut | S-T04-001 is a narrow, mostly shaded perennial stream in a deciduous forest. The stream contains wetland fringe (W-T04-001B). Stream flows southwest beyond the survey area to an UNT of Canadaway Creek. | 72, 74 |
| S-T04-002 | UNT to Walnut Creek | 42.417700 | -79.239131 | 249.11 | Arkwright | Forestville | NNW | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T04-002 is wide, shallow, partially shaded, intermittent stream in a deciduous forest along wetland W-T04-034. The stream is blown out in the center due to a 2-track road running width wise through it. The stream is on the border of two HUC12 watersheds, it starts in Walnut Creek, meanders into Canadaway Creek and then continues beyond the survey area in Walnut Creek. | 77 |
| S-T04-003 | UNT to Walnut Creek | 42.417389 | -79.237065 | 284.01 | Arkwright | Forestville | E | 1.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T04-003 is a large, shallow, groundwater fed intermittent stream n a deciduous forest. The stream starts in wetland W-T04-036 and flows into wetland W-T04-036A, where it also connects with S-T03-003A. | 77, 78 |
| S-T04-003A | UNT to Walnut Creek | 42.417221 | -79.236824 | 199.88 | Arkwright | Forestville | NE | 1.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T04-003A is a large, shallow, groundwater fed intermittent stream n a deciduous forest. The stream flows through a segment of wetland W-T04-036A, where it also connects with S-T03-003A, and ends. | 78 |
| S-T04-008 | UNT to Canadaway Creek | 42.421825 | -79.295387 | 148.71 | Pomfret | Dunkirk | W | 6.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T04-008 is a wide, fast flowing, perennial stream under a mostly shaded canopy. The stream flows southwest into drain DD-T04-019, and receives groundwater from an unmapped pond outside of the survey area. | 3 |
| S-T06-001 | UNT to Scott Creek-Frontal Lake | 42.431694 | -79.251179 | 1576.70 | Arkwright | Dunkirk | W | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T06-001 is a large, intermittent stream in a hay field/pasture. The stream acts as a drainage way for the surrounding agricultural field and wetlands. | 45, 46, 47 |
| S-T06-002 | Canadaway Creek | 42.432585 | -79.258741 | 391.93 | Arkwright | Dunkirk | W | 2.00 | S-RPW | Intermittent | B | Chautauqua-Conneaut | S-T06-002 is a section of NHD mapped Canadaway Creek in a deciduous forest corridor. The stream connects with S-T02-001 outside of the survey corridor to the south, and is hydrologically connected to wetland W-T06-003. | 40, 41 |
| **Southeast (SE) Cluster:** | | | | | | | | | | | | | | |
| S-T02-024 | UNT to Canadaway Creek | 42.397316 | -79.233699 | 376.81 | Arkwright | Forestville | NW | 4.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-024 is a large, intermittent stream that flows through wetland W-T02-064 and an agricultural field. Beyond the survey area to the north the stream flows along pond PD-T02-001. The stream bed is composed mostly of cobbles, and crosses underneath an unpaved farm road. | 117 |
| S-T02-025 | UNT to Canadaway Creek | 42.394345 | -79.231681 | 221.49 | Arkwright | Forestville | NW | 4.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-025 is a large, intermittent stream along the edge of an agricultural field, and in a dirt access road. Wetland W-T02-064 follows the stream fringe along one section. | 135, 136 |
| S-T02-027 | UNT to Walnut Creek | 42.387173 | -79.223682 | 625.84 | Arkwright | Forestville | NNE | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-027 is a large, intermittent stream starting in a partially shaded deciduous forest, and continuing beyond the survey corridor towards an unmapped pond. The stream flows through the center of wetland W-T02-069. The stream could possibly join up with a section of Walnut Creek (S-T02-028) beyond the survey corridor to the north. | 130, 131 |
| S-T02-027A | UNT to Walnut Creek | 42.387351 | -79.222727 | 424.53 | Arkwright | Forestville | NNE | 1.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-027A is a large, intermittent tributary of S-T02-027, starting in a partially shaded deciduous forest, and continuing beyond the survey corridor towards an unmapped pond. The stream flows through the center of wetland W-T02-069. The stream could possibly join up with a section of Walnut Creek (S-T02-028) beyond the survey corridor to the north. | 130, 131 |
| S-T02-028 | Walnut Creek | 42.390848 | -79.224913 | 314.86 | Arkwright | Forestville | N | 5.00 | P-RPW | Perennial | AA | Chautauqua-Conneaut | S-T02-028 is a wide, perennial section of Walnut Creek. It is a shallow, fast flowing, fully shaded, moderately high gradient creek in a steep side ravine. | 128 |

**Table 5-6 Summary of Delineated Stream Characteristics, Arkwright Summit Wind Farm**

| Stream ID | Stream Name | Latitude[2] | Longitude[2] | Linear Feet | Township County | USGS Quad | Flow Direction | OHWM Width | USACE Classification[1] | Flow Type | NYSDEC Classification[3] | Watershed | Stream Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S-T02-029 | UNT to Walnut Creek | 42.390459 | -79.221228 | 81.72 | Arkwright | Forestville | SE | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-029 is a small, intermittent stream with discontinuous flow. Stream receives flow from drain DD-T02-026 and continues southeast beyond the survey corridor. | 127 |
| S-T02-030 | UNT to Walnut Creek | 42.390702 | -79.215727 | 558.96 | Arkwright | Forestville | E | 6.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-030 is a wide and long intermittent stream in a deciduous forest. The stream received discharge from wetland W-T02-074. The two sections of the stream link up to the south of the survey corridor. | 125, 126 |
| S-T02-030A | UNT to Walnut Creek | 42.390901 | -79.215135 | 94.98 | Arkwright | Forestville | N | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-030A is an intermittent, wide, mostly shaded stream with shelving. | 125 |
| S-T02-031 | UNT to Walnut Creek | 42.394444 | -79.218130 | 102.15 | Arkwright | Forestville | NE | 20.00 | P-RPW | Perennial | AA | Chautauqua-Conneaut | S-T02-031 is a small, perennial section of NHD mapped Walnut Creek. The stream is wide but shallow and fast moving, over mostly bedrock and contains steep shelves acting as fish passage barriers. | 123 |
| S-T04-005 | UNT to West Branch of Conewango Creek | 42.381346 | -79.200634 | 214.23 | Arkwright | Forestville | N | 3.00 | P-RPW | Perennial | C | Conewango | S-T04-005 is large, partially shaded, perennial stream. The stream is shallow, with a lot of woody debris acting as barriers to fish passage. The upstream has been impacted due to clearing of a forested area for a met tower. | 150 |
| S-T04-006 | UNT to West Branch of Conewango Creek | 42.381086 | -79.199963 | 85.18 | Arkwright | Forestville | NE | 2.00 | S-RPW | Intermittent | D | Conewango | S-T04-006 is a small, shallow intermittent stream in a deciduous forest. Water input comes mostly from old tilled field upstream (W-T04-054), where water runs between old rows down to the stream. | 150 |
| S-T04-007 | UNT to West Branch of Conewango Creek | 42.381993 | -79.210853 | 593.48 | Arkwright | Forestville | NE | 6.00 | P-RPW | Perennial | C | Conewango | S-T04-007 is a wide, shallow, fast flowing, perennial stream in a deciduous forest. The stream starts outside of the survey area to the sough, flows through a deep ravine and wetland W-T04-059, and the continues north beyond the survey area. | 145 |
| S-T04-007A | UNT to West Branch of Conewango Creek | 42.381373 | -79.211145 | 106.48 | Arkwright | Forestville | NE | 5.00 | P-RPW | Perennial | C | Conewango | S-T04-007A is a tributary of stream S-T04-007, flowing into it within the middle of wetland W-T04-059. | 145 |
| **Southwest (SW) Cluster:** | | | | | | | | | | | | | | |
| S-T01-001 | UNT to Canadaway Creek | 42.4080768 | -79.29675468 | 81.68 | Pomfret | Dunkirk | N | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | Stream S-T01-001 is a small, intermittent stream flowing north. Stream is within the center of wetland W-T01-001. | 10 |
| S-T01-002 | UNT to Canadaway Creek | 42.408599 | -79.298892 | 340.01 | Pomfret | Dunkirk | NW | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | Stream S-T01-002 is a large intermittent stream in a deciduous forest, starting in wetland W-T01-001 and flowing northwest outside of the study area. Stream S-T01-003 is a large branch of it. | 7 |
| S-T01-003 | UNT to Canadaway Creek | 42.408178 | -79.298681 | 53.63 | Pomfret | Dunkirk | N | 6.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | Stream S-T01-003 is a large western branch of stream S-T01-002 flowing north, and has a few different characteristics than the main branch. | 7 |
| S-T01-004 | UNT to Canadaway Creek | 42.408692 | -79.296195 | 405.36 | Pomfret | Dunkirk | N | 3.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | Stream S-T01-004 is a large intermittent, partially shaded stream in a deciduous forest. Stream starts in wetland W-T01-001 and flows to the north outside of the survey area. | 9, 10 |
| S-T01-005 | UNT to Canadaway Creek | 42.411933 | -79.296744 | 43.36 | Pomfret | Dunkirk | N | 5.00 | non-RPW | Ephemeral | D | Chautauqua-Conneaut | Stream S-T01-005 is a small partially shaded, ephemeral stream in a deciduous forest. The stream flows north from wetland W-T01-002 into mapped NHD UNT to Canadaway Creek. | 8 |
| S-T01-006 | UNT to Canadaway Creek | 42.410261 | -79.298978 | 275.12 | Pomfret | Dunkirk | N | 6.00 | non-RPW | Ephemeral | D | Chautauqua-Conneaut | Stream S-T01-006 is a large, partially shaded, ephemeral stream in a deciduous forest composed mostly of runs. The stream flows north along the survey corridor edge and a tilled agricultural field. | 6 |
| S-T01-007 | UNT to Canadaway Creek | 42.412602 | -79.299042 | 72.44 | Pomfret | Dunkirk | N | 3.00 | non-RPW | Ephemeral | D | Chautauqua-Conneaut | Stream S-T01-007 a small, ephemeral stream in a partially shaded deciduous forest. The stream was not flowing during the time of survey. When flowing, the stream flows north into mapped NHD UNT to Canadaway Creek (S-T01-009). | 5 |
| S-T01-008 | UNT to Canadaway Creek | 42.412678 | -79.298720 | 245.75 | Pomfret | Dunkirk | N | 5.00 | non-RPW | Ephemeral | D | Chautauqua-Conneaut | S-T01-008 is an ephemeral stream in a partially shaded deciduous forest. The stream flows north towards mapped NHD Canadaway Creek (S-T01-009), though flow ended approximately 10 feet short. | 5 |
| S-T01-009 | Canadaway Creek | 42.412810 | -79.298984 | 267.46 | Pomfret | Dunkirk | SSW | 15.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T01-009 is a large, perennial stream in a deciduous forest. The stream is a portion of mapped NHD Canadaway Creek that crosses the study area from east to west. | 5 |
| S-T01-012 | UNT to Canadaway Creek | 42.406088 | -79.290701 | 324.67 | Arkwright | Dunkirk | SSW | 3.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T01-012 is a large, perennial stream that begins outside of the survey area to the north and flows southwest along the edge of wetland W-T01-006 and continues beyond the survey area to the south. Stream also intersects drain DD-T04-009 in the east connecting it to another piece of wetland W-T01-006. Stream most likely flows in/out of Canadaway Creek beyond the survey area. | 11 |
| S-T01-013 | UNT to Canadaway Creek | 42.402600 | -79.282876 | 250.90 | Arkwright | Dunkirk | W | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T01-013 is a large, intermittent, discolored stream, flowing along the edge of the survey corridor and forest edge. The stream starts at the end of ditch DD-T01-006 flowing west where it then becomes drain DD-T01-007. S-T01-013 also flows into perennial stream S-T01-014 which flows into wetland W-T01-007. | 14 |

**Table 5-6 Summary of Delineated Stream Characteristics, Arkwright Summit Wind Farm**

| Stream ID | Stream Name | Latitude[2] | Longitude[2] | Linear Feet | Township County | USGS Quad | Flow Direction | OHWM Width | USACE Classification[1] | Flow Type | NYSDEC Classification[3] | Watershed | Stream Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S-T01-014 | UNT to Canadaway Creek | 42.402926 | -79.283844 | 233.89 | Arkwright | Dunkirk | NW | 4.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T01-014 is a large, perennial stream flowing north from stream S-T01-013 along a drainage way/dirt road in a hay field. The stream may connect to NHD mapped UNT to Canadaway Creek (NYSDEC Class B) beyond the survey corridor to the northwest (NHD stream ends outside of the survey area, this could be another section of it). | 14 |
| S-T01-015 | UNT to Canadaway Creek | 42.401618 | -79.275684 | 299.42 | Arkwright | Dunkirk | N | 3.00 | non-RPW | Intermittent | D | Chautauqua-Conneaut | S-T01-015 is a large intermittent between a hay field and an agricultural field. The stream bi-sects the survey corridor from south to north. | 15 |
| S-T01-016 | UNT to Canadaway Creek | 42.404744 | -79.266786 | 527.38 | Arkwright | Dunkirk | S | 6.00 | P-RPW | Perennial | C(t) | Chautauqua-Conneaut | S-T01-016 is a large perennial stream starting in a drainage way of a mowed/agricultural field of wetland W-T01-009. The stream flows south and continues beyond the survey area, most likely flowing into NHD mapped UNT to Canadaway Creek. | 18, 19 |
| S-T01-017 | UNT to Canadaway Creek | 42.405568 | -79.266510 | 113.53 | Arkwright | Dunkirk | W | 5.00 | P-RPW | Perennial | C(t) | Chautauqua-Conneaut | S-T01-017 is a large perennial stream starting along the forest edge inside wetland W-T01-009 and flowing south into stream S-T01-016. | 18, 19 |
| S-T02-020 | UNT to Canadaway Creek | 42.407679 | -79.247569 | 202.90 | Arkwright | Forestville | W | 8.00 | P-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-020 is an intermittent, wide, mostly shaded stream in a deciduous forest. The stream starts outside of the corridor and flows west adjacent to wetland W-T02-059A, and then continues outside of the survey corridor, and has at least one braid associated with it. | 109 |
| S-T02-020A | UNT to Canadaway Creek | 42.407768 | -79.247674 | 86.03 | Arkwright | Forestville | N | 4.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-020A is a small, tributary of stream S-T02-020, with discontinuous flow, receiving water discharge from wetland W-T02-059A. | 109 |
| S-T02-021 | UNT to Canadaway Creek | 42.406041 | -79.245692 | 134.42 | Arkwright | Forestville | SSW | 6.00 | P-RPW | Perennial | C(t) | Chautauqua-Conneaut | S-T02-021 is a small section of NHD mapped UNT to Canadaway Creek that is mostly shaded in a deciduous forest. The creek is composed of runs and riffles on a mostly cobble substrate. | 110 |
| S-T02-022 | UNT to Canadaway Creek | 42.403731 | -79.238297 | 303.54 | Arkwright | Forestville | NE | 8.00 | P-RPW | Perennial | C(t) | Chautauqua-Conneaut | S-T02-022 is a small, perennial stream along the edge of a forest. The stream continues north outside of the survey area where it flows into a section of Canadaway Creek on the other side of the farm. | 112, 113 |
| S-T02-023 | UNT to Canadaway Creek | 42.399283 | -79.239134 | 901.21 | Arkwright | Forestville | N | 2.00 | S-RPW | Intermittent | D | Chautauqua-Conneaut | S-T02-023 is a large, intermittent, partially shaded stream. Stream starts at an outflow culvert of Ball Road, flows through wetland W-T02-052, and then continues beyond the survey corridor to the northeast. The stream opens into wetland sheet flow with no defined bed or banks at certain points, and has a man-made portion at the south side of the road between the drain and the culvert. | 114, 115 |
| S-T02-026 | Clinton Brook | 42.393797 | -79.239823 | 1170.41 | Arkwright | Forestville | W | 6.00 | P-RPW | Perennial | C(t) | Chautauqua-Conneaut | S-T02-026 is a large, perennial fully shaded section of mapped NHD Clinton Brook, which is a tributary of Canadaway Creek. The stream receives water discharge from wetland W-T02-067, has a moderate-severe gradient, and its bed is comprised mostly of cobbles. | 139, 140, 141 |
| S-T02-026A | UNT to Clinton Brook | 42.393689 | -79.240513 | 363.66 | Arkwright | Forestville | NE | 6.00 | S-RPW | Intermittent | C | Chautauqua-Conneaut | S-T02-026A is a large, intermittent tributary of Clinton Brook. The stream acts as a drainage way through an agricultural field and flows northwest into Clinton Brook. | 140, 141 |
| S-T04-004 | UNT to Canadaway Creek | 42.402919 | -79.288276 | 875.75 | Arkwright | Dunkirk | W | 2.00 | P-RPW | Perennial | B | Chautauqua-Conneaut | S-T04-004 is a large, shallow perennial stream in the middle of an agricultural field (tilled and seeded). Stream bed is comprised mostly of gravel and cobbles. | 12, 13 |

Notes:

[1] Stream flow classifications are based on the following definitions:
Perennial Relatively Permanent Water (P-RPW) - The stream flow is evident throughout the year, in most years.
Seasonal Relatively Permanent Water (S-RPW) - The stream channel contains flowing water for at least three months but does not flow throughout the year, in most years.
Non-RPW - The stream channel contains flowing water for less than three months of the year, in most years.

[2] Stream coordinates refer to the datasheet location.

[3] NYCRR Chapter X states that unmapped, non-continuous flowing streams are Class D.

**Table 5-7 Stream Classifications within the Study Area**

| Cluster | AA | B | C | C(t) | D | Total |
|---|---|---|---|---|---|---|
| Northeast | 3 | 0 | 2 | 2 | 18 | 25 |
| Northwest | 0 | 12 | 1 | 1 | 30 | 44 |
| Southeast | 2 | 0 | 3 | 0 | 8 | 13 |
| Southwest | 0 | 4 | 1 | 5 | 13 | 23 |
| **Project Total** | **5** | **16** | **7** | **8** | **69** | **105** |

**Table 5-8: Summary of Delineated Pond Characteristics, Arkwright Summit Wind Farm**

| Pond ID | Latitude | Longitude | Acres | Watershed | Township County | USGS Quad | Pond Description | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|
| **Northeast (NE) Cluster:** | | | | | | | | |
| PD-T03-001 | 42.415309 | -79.235013 | 0.57 | Chautauqua-Conneaut | Arkwright | Forestville | Large pond. Aquatic vegetation is present with approximately 6 ft of cattails and iris at the edge. Associated with W-T03-021. | 80 |
| PD-T03-002 | 42.411570 | -79.231574 | 0.05 | Chautauqua-Conneaut | Arkwright | Forestville | Small, shallow, isolated pond in forested area. Wetland fringe present. Associated with W-T03-049. Inhabited by tadpoles. | 91, 92 |
| **Northwest (NW) Cluster:** | | | | | | | | |
| PD-T01-001 | 42.416417 | -79.255384 | 0.29 | Chautauqua-Conneaut | Arkwright | Dunkirk | Large NWI-mapped pond extending off survey area to the North. Associated with W-T01-021A. | 27 |
| PD-T01-002 | 42.416564 | -79.251570 | 0.06 | Chautauqua-Conneaut | Arkwright | Dunkirk | Manmade pond excavated in an upland area. | 28, 29 |
| PD-T05-001 | 42.432948 | -79.251287 | 0.22 | Chautauqua-Conneaut | Arkwright | Dunkirk | Excavated and bermed pond with 3-6ft wetland fringe. Associated with W-T05-002. | 45, 46 |
| **Southeast (SE) Cluster:** | | | | | | | | |
| PD-T02-001 | 42.397642 | -79.234256 | 0.06 | Chautauqua-Conneaut | Arkwright | Forestville | Pond surrounded by agricultural land. Adjacent to S-T02-024. Extends off survey area to the North. | 117 |

**Table 5-9: Summary of Delineated Jurisdictional Drainage Characteristics, Arkwright Summit Wind Farm**

| Drain ID | Latitude | Longitude | Linear Feet | Drain Type | Flow Type | Drain Width (ft) | Watershed | Township Name | USGS Quad | Appendix A Map Frame |
|---|---|---|---|---|---|---|---|---|---|---|
| **Northwest (NW) Cluster:** | | | | | | | | | | |
| DD-T01-012 | 42.411977 | -79.262268 | 89.64 | Drainage | Perennial | 2 | Chautauqua-Conneaut | Arkwright | Dunkirk | 22 |
| DD-T04-018 | 42.421738 | -79.296038 | 1,099.61 | Ditch | Perennial | 3 | Chautauqua-Conneaut | Pomfret | Dunkirk | 1, 2, 3 |
| DD-T04-018 | 42.421681 | -79.295251 | 27.83 | Ditch | Perennial | 3 | Chautauqua-Conneaut | Arkwright | Dunkirk | 1, 2, 3 |

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# A Wetland and Stream Mapping

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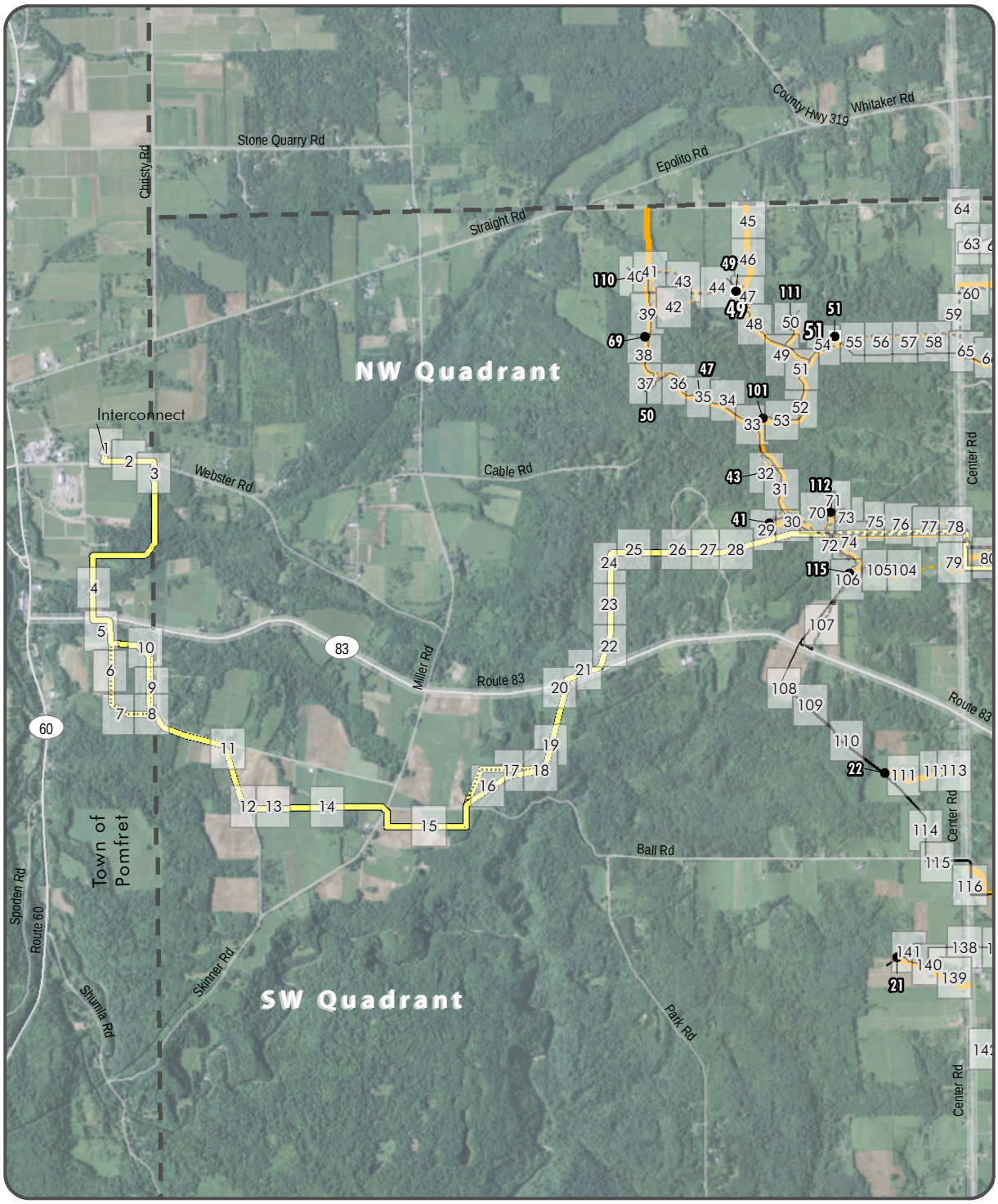


Met Tower
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Turbine Alternative
Collection Line
Collection Line Alternative
Access Road
Access Road Alternative
Transmission Line
Transmission Line Alternative
Laydown Area/Interconnect
Substation Grading Limit
Town Boundary
Local Road
Quadrant Boundary
Map Index

# A-Series Map Index: Page 1 of 3

Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

Scale:
0 0.125 0.25 0.5
Miles

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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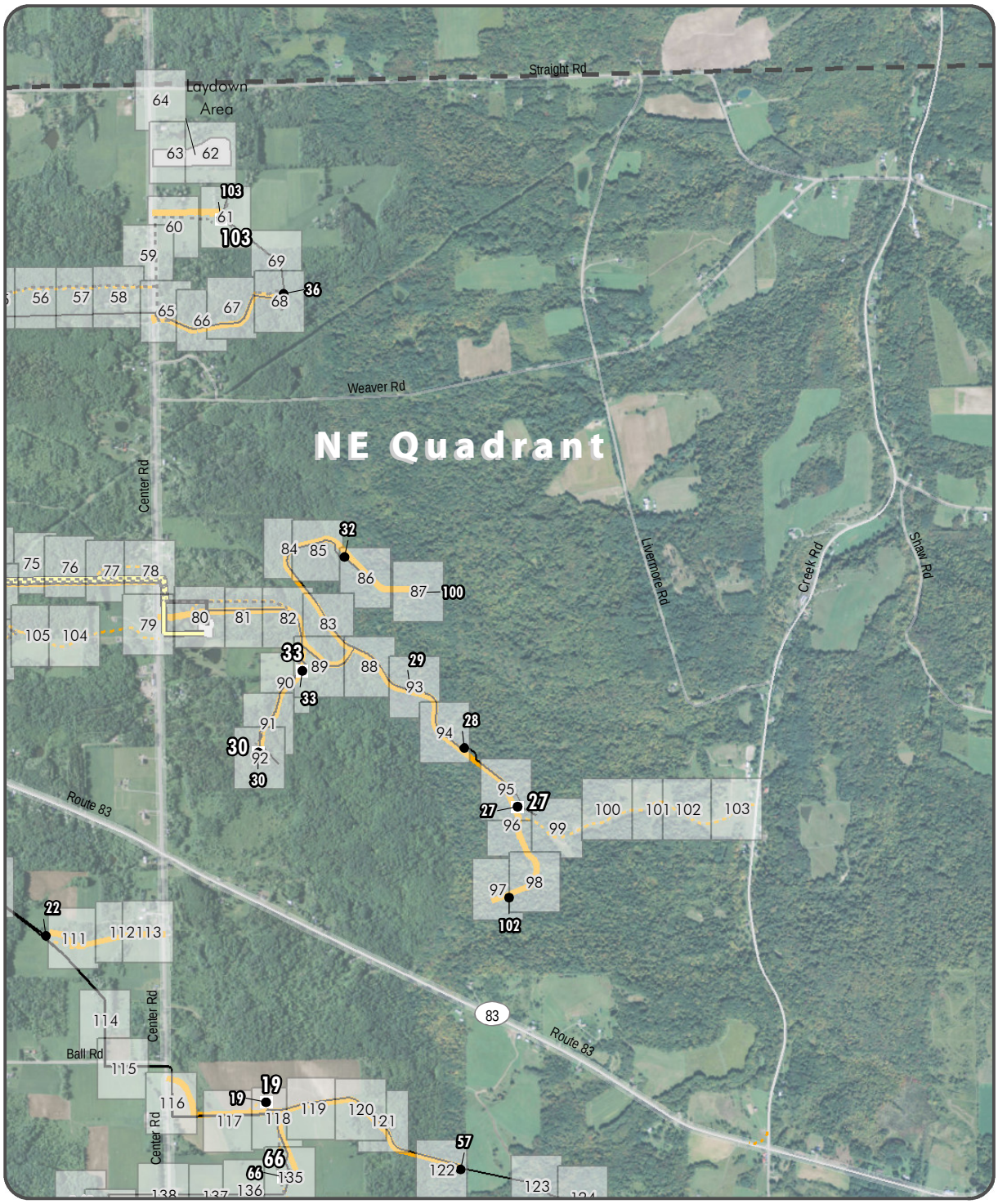


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- Turbine
- Turbine Alternative
- Collection Line
- Collection Line Alternative
- Access Road
- Access Road Alternative
- Transmission Line
- Transmission Line Alternative
- Laydown Area/Interconnect
- Substation Grading Limit
- Town Boundary
- Local Road
- Quadrant Boundary
- Map Index

**A-Series Map Index**: Page 2 of 3

Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

Scale:

0 0.125 0.25 0.5 Miles

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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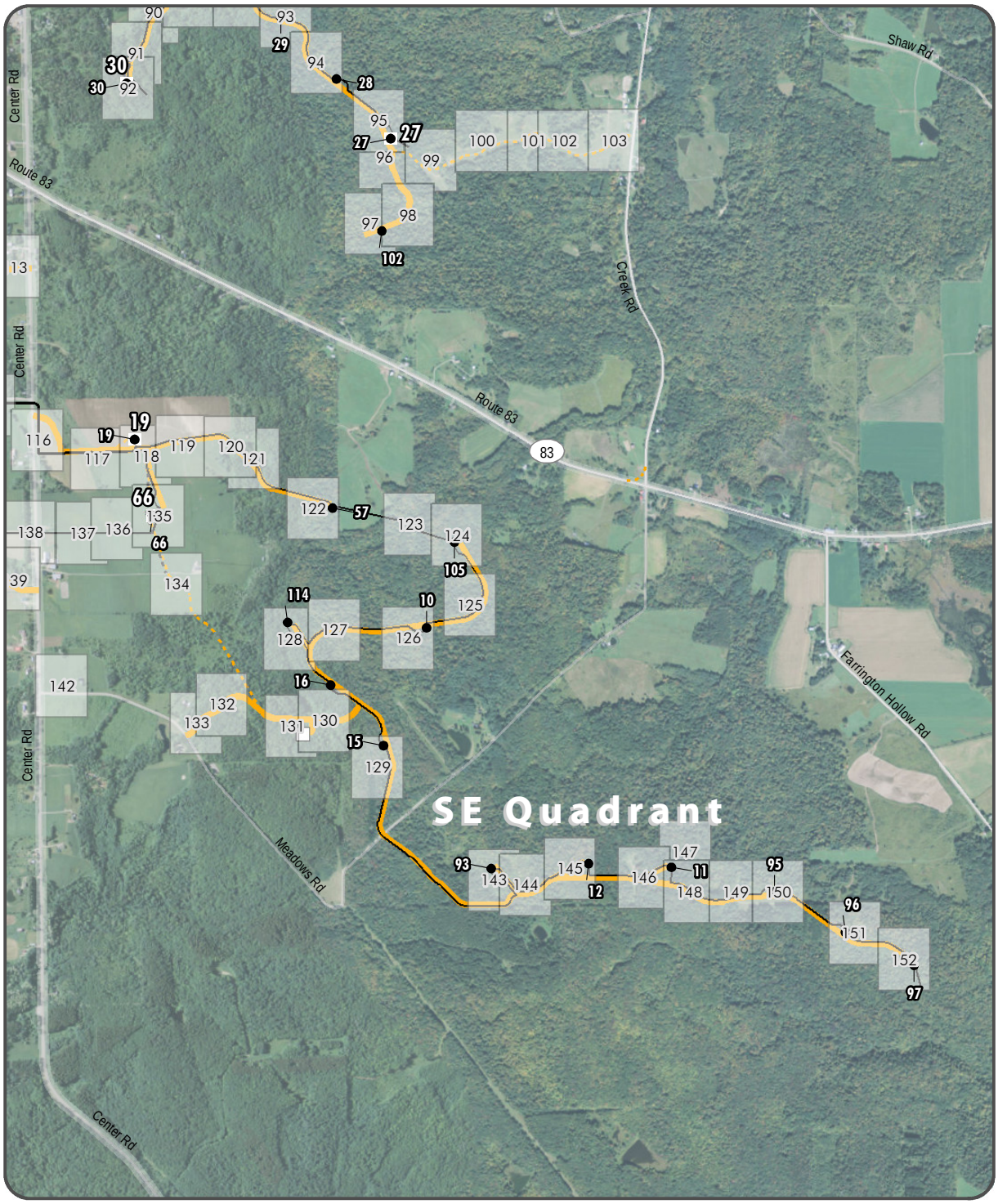


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- Transmission Line
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- Town Boundary
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- Map Index

# A-Series Map Index: Page 3 of 3

Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

Scale:

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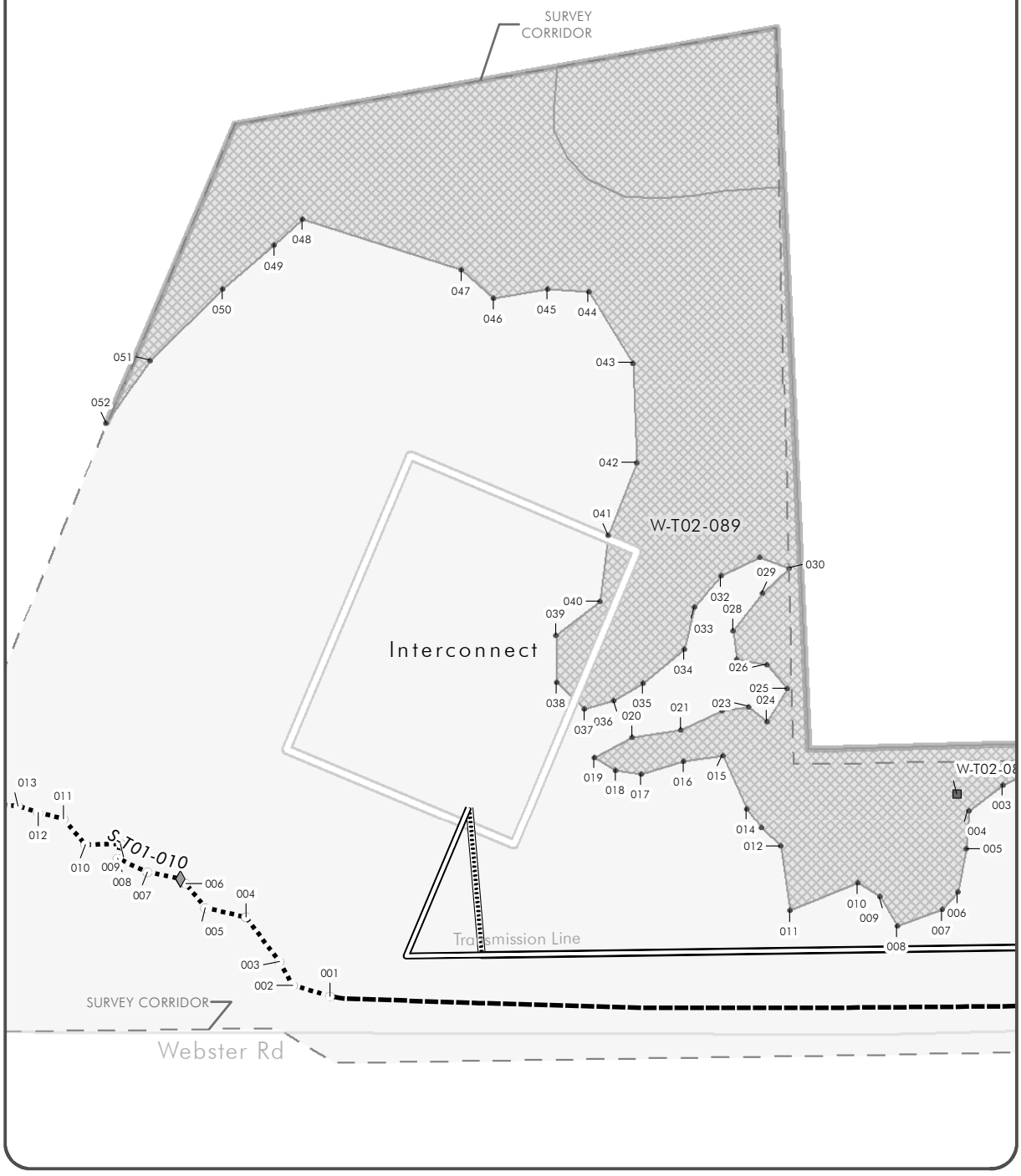


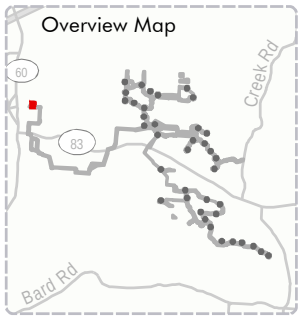


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- Town Boundary

# Wetlands and Streams



Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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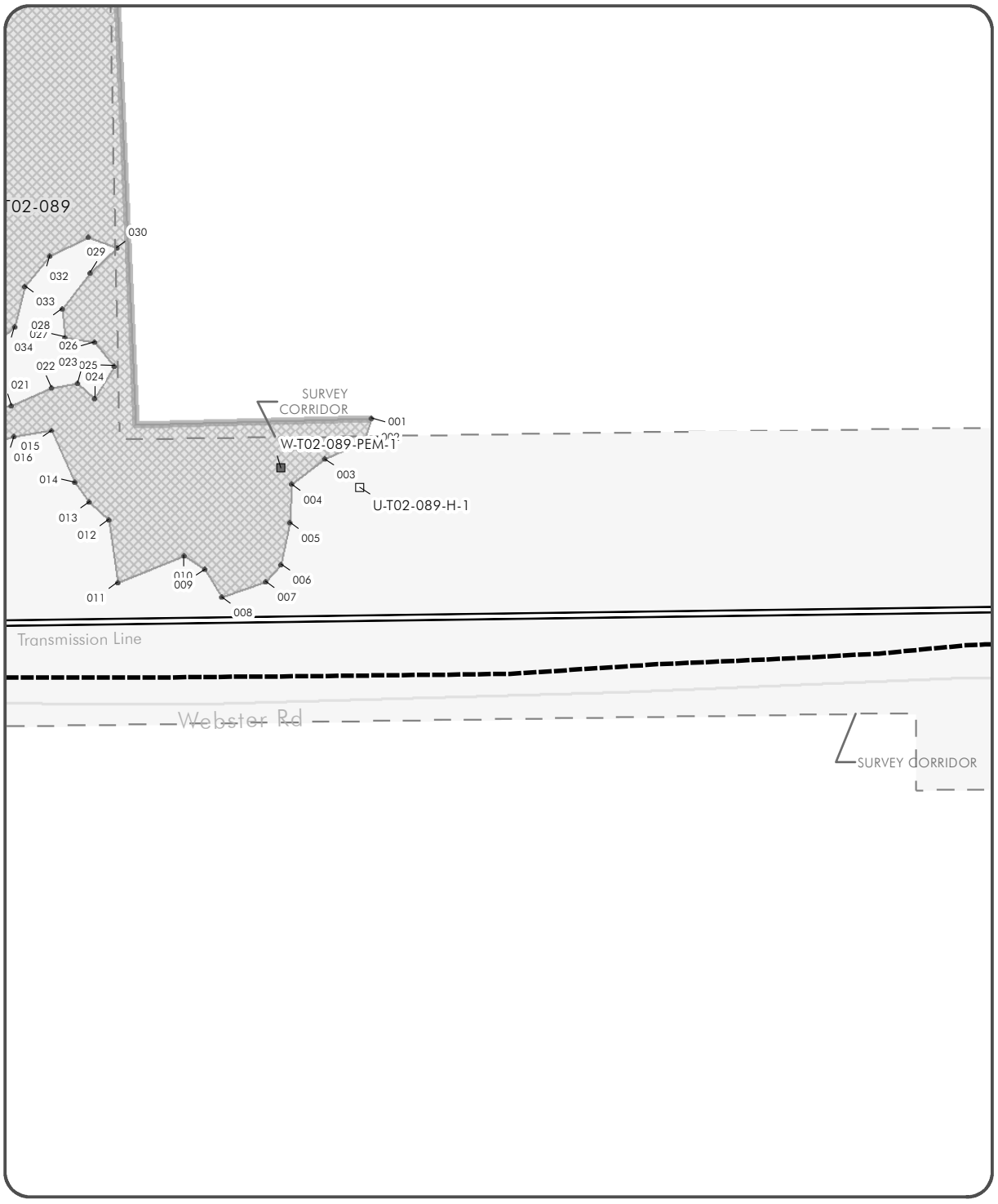


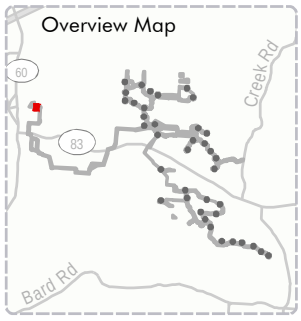


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# Wetlands and Streams



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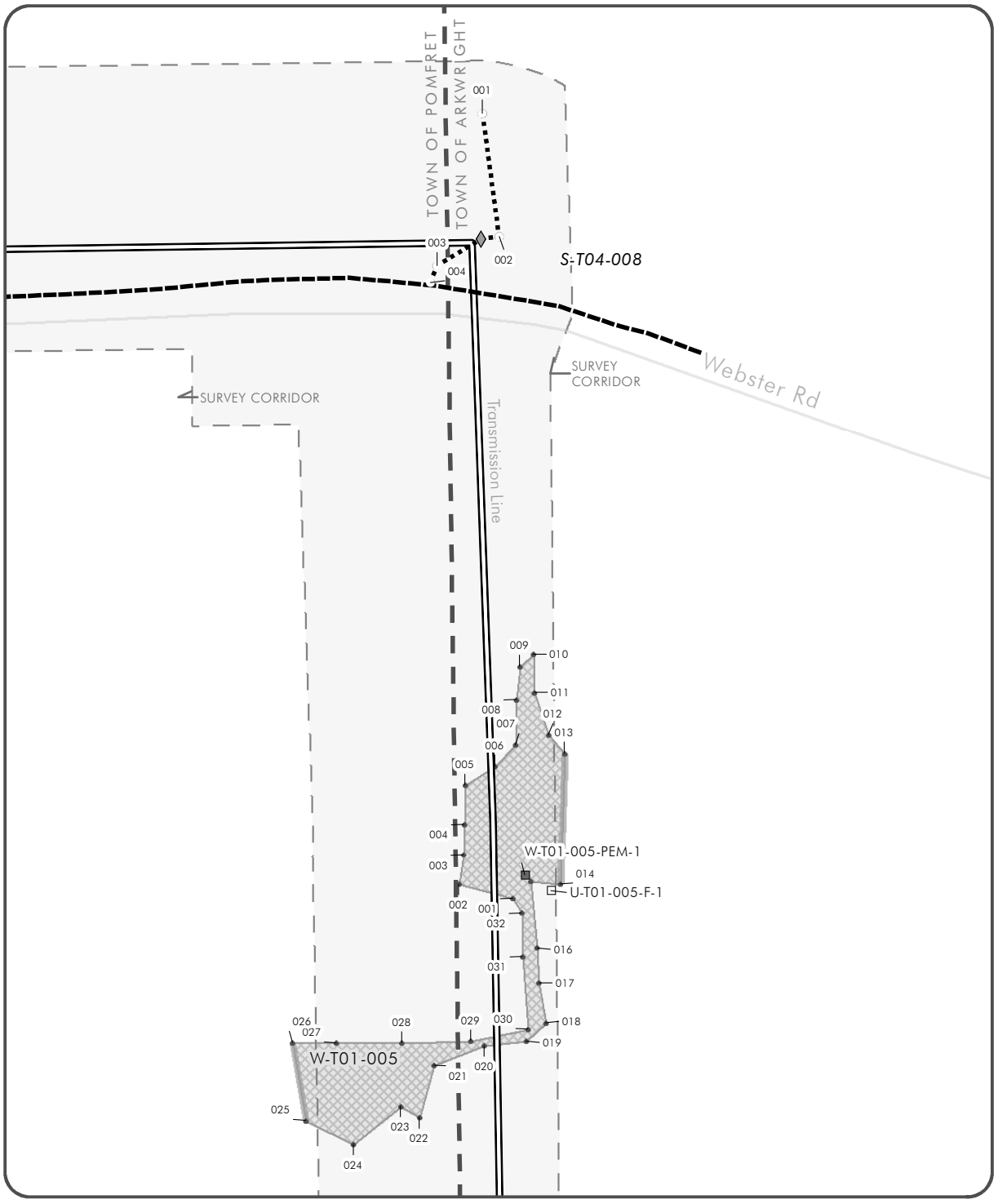


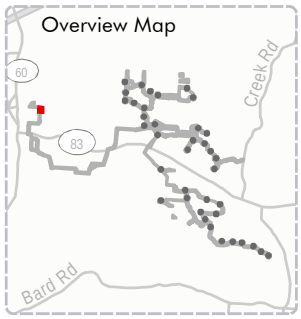


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# Wetlands and Streams



Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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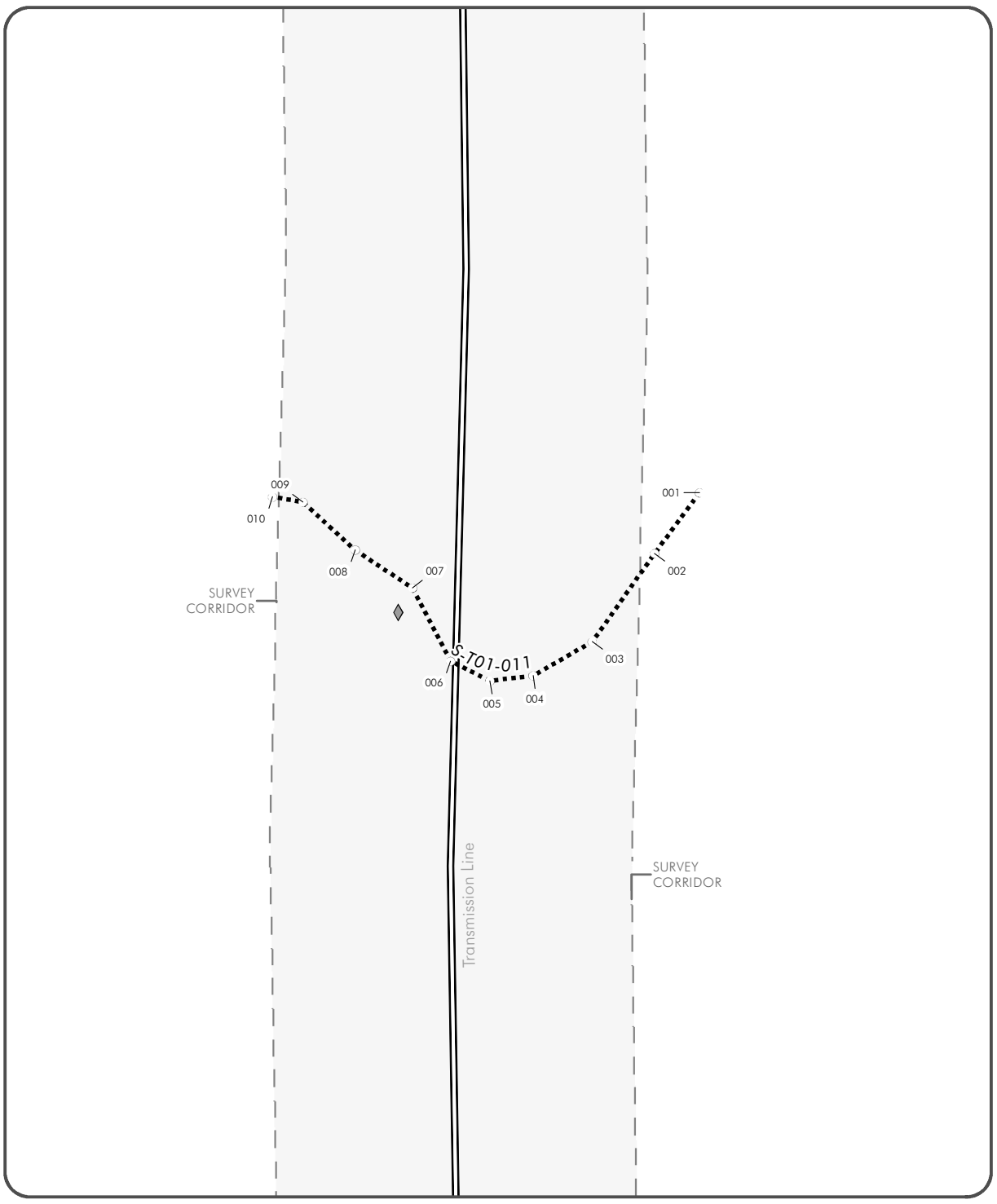


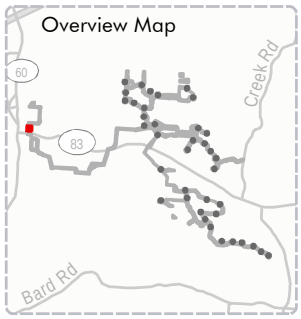


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# Wetlands and Streams



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Chautauqua County, New York

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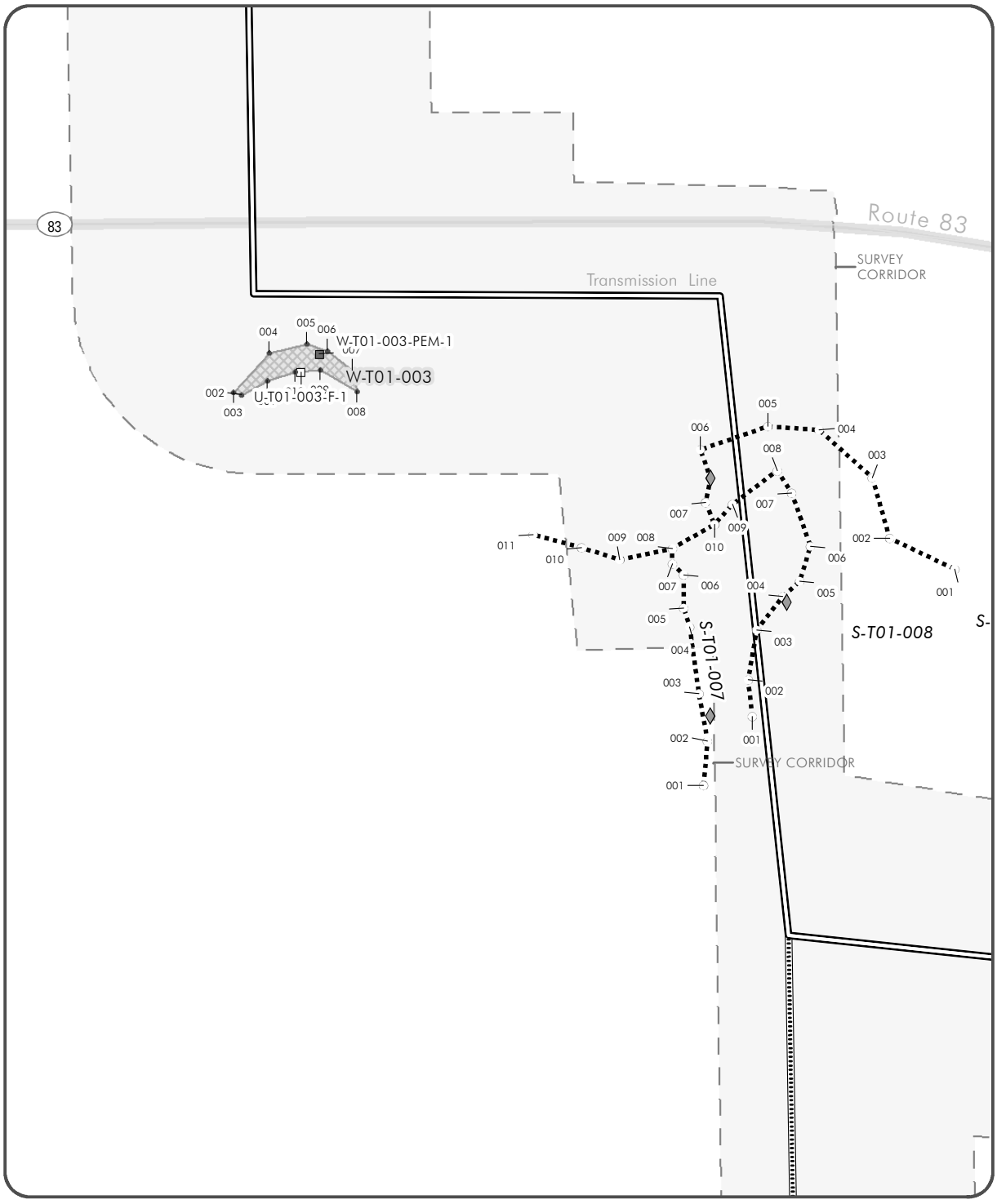


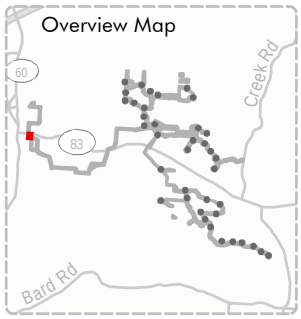


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# Wetlands and Streams



Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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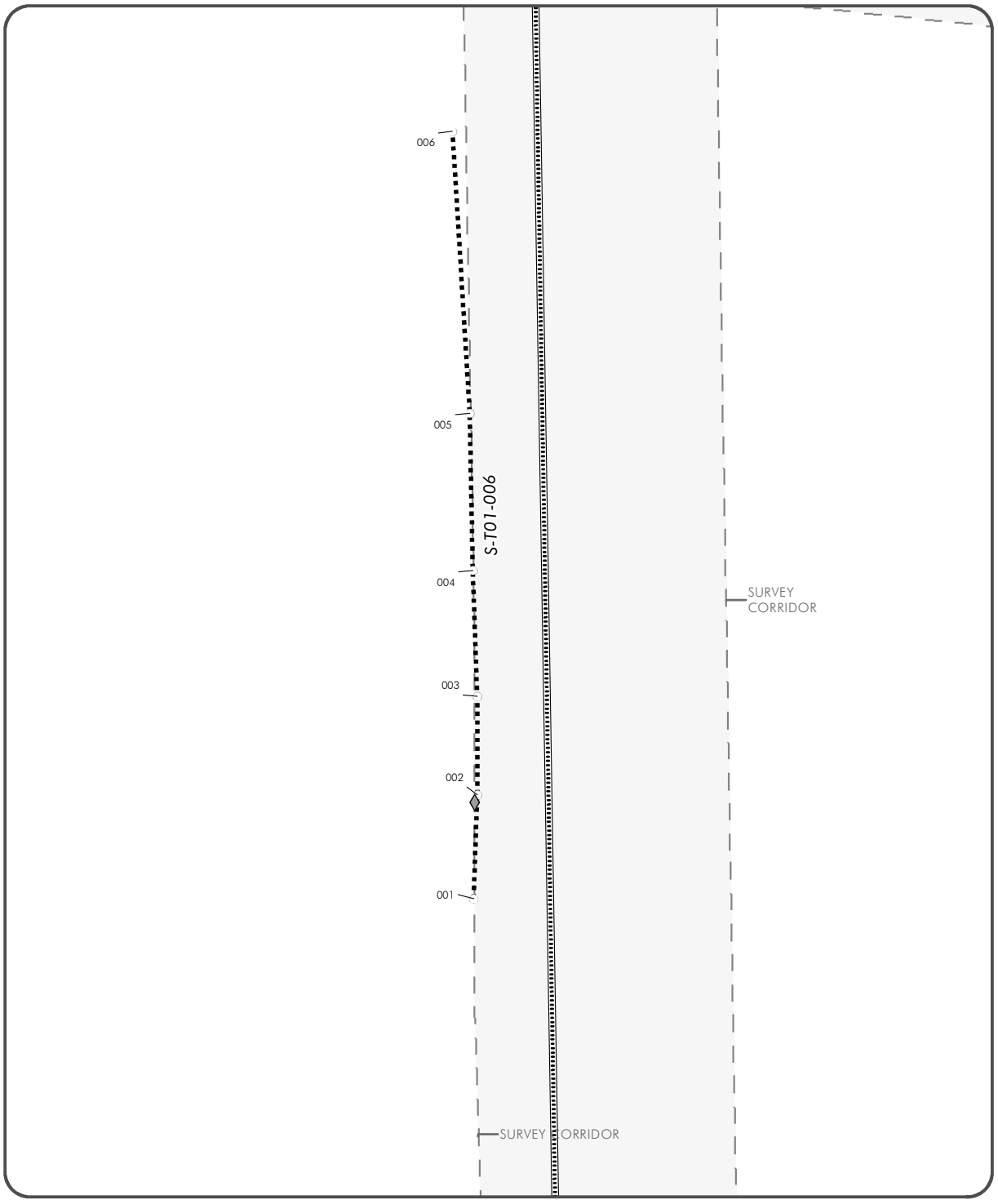


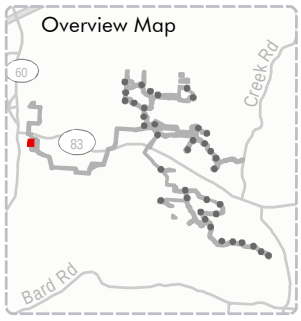


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Stream Flag
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Stream
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Town Boundary

# Wetlands and Streams



Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

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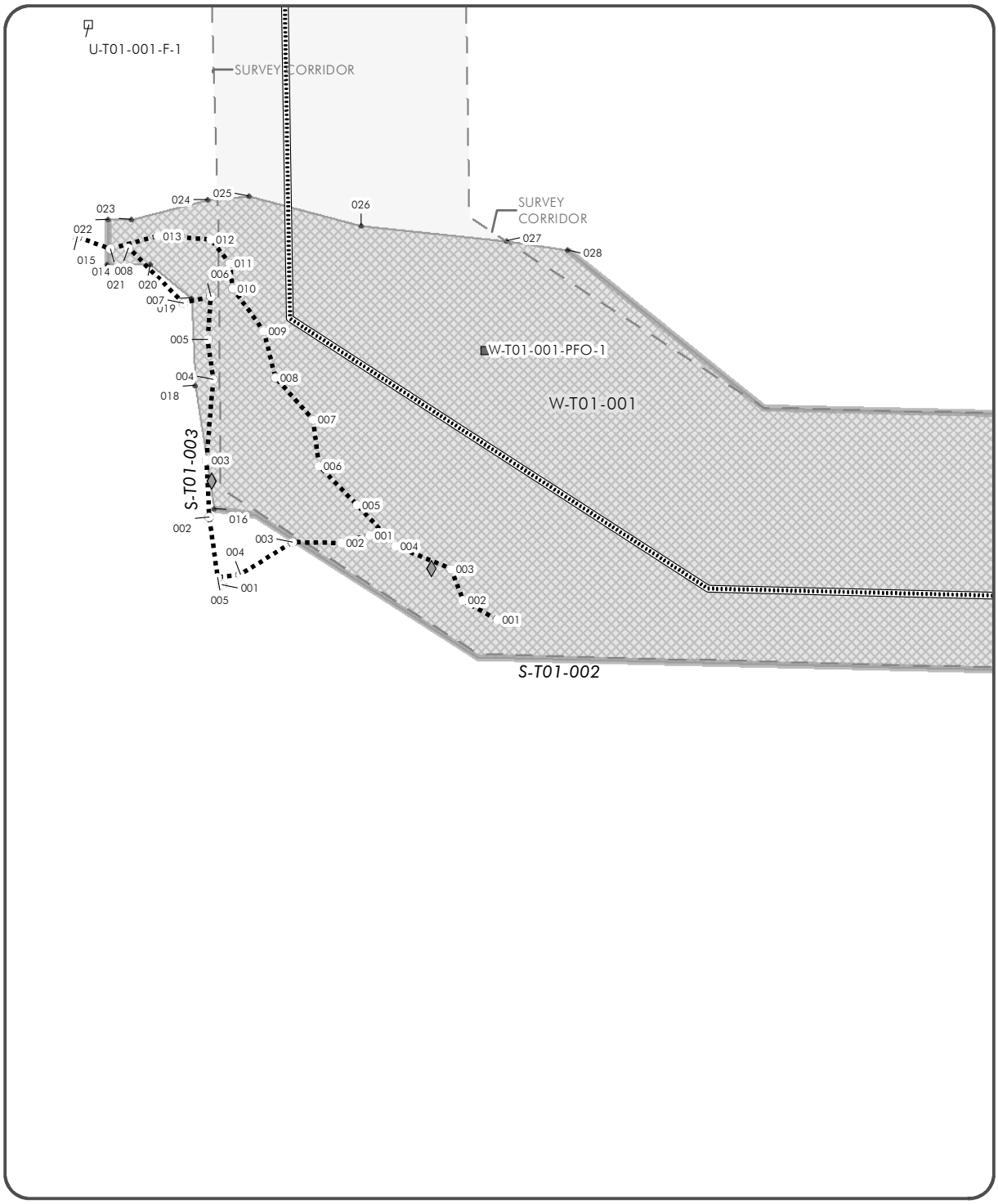


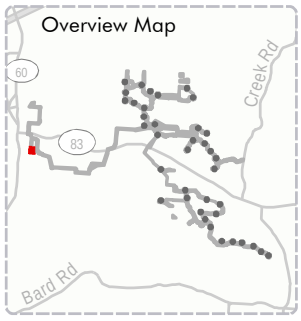


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# Wetlands and Streams



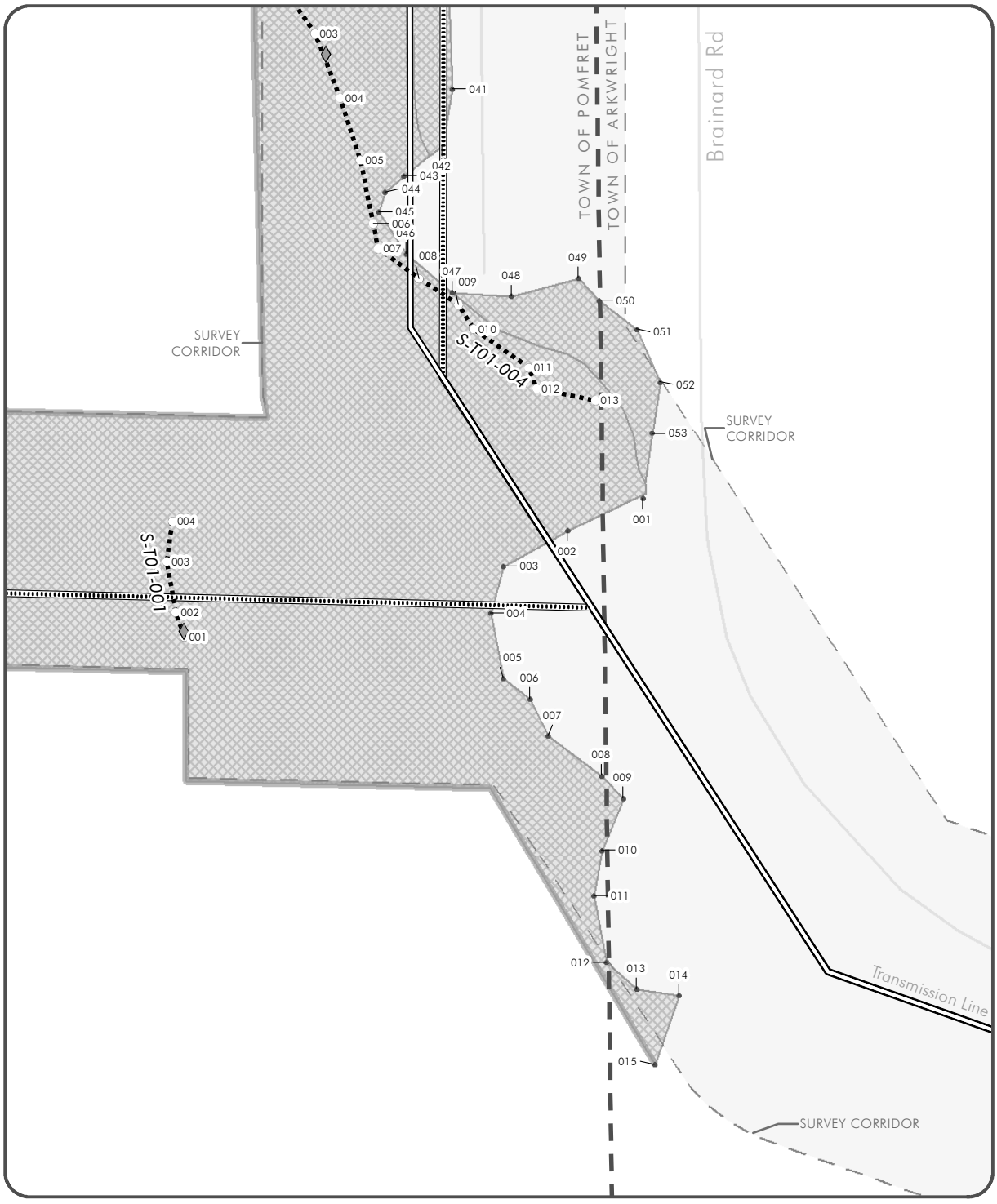
Arkwright Wind Farm

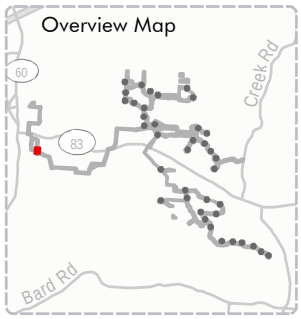
Town of Arkwright

Chautauqua County, New York

Scale:

0 25 50 100 Feet

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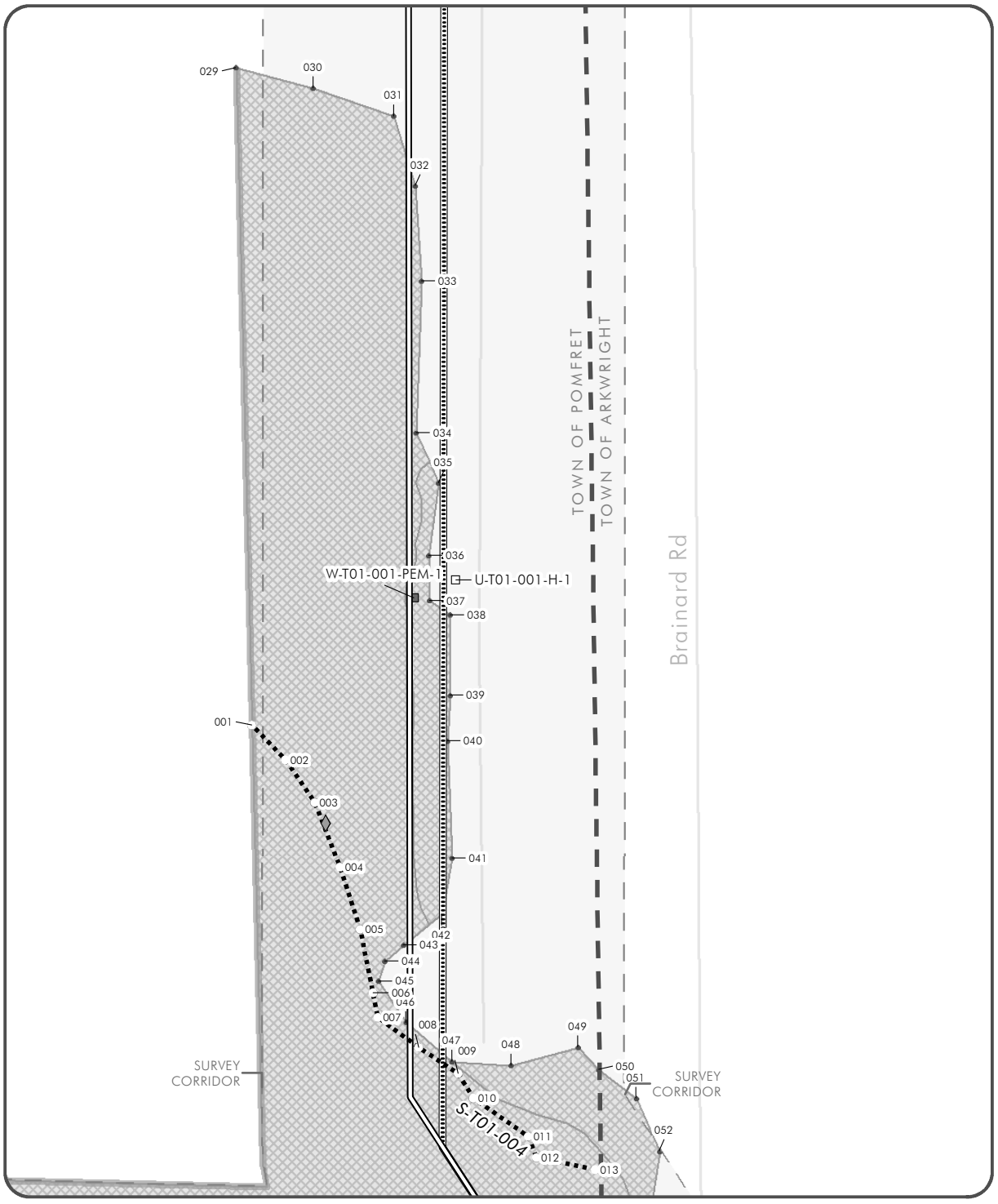


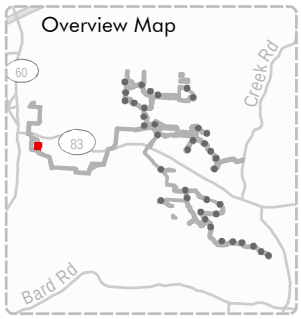


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Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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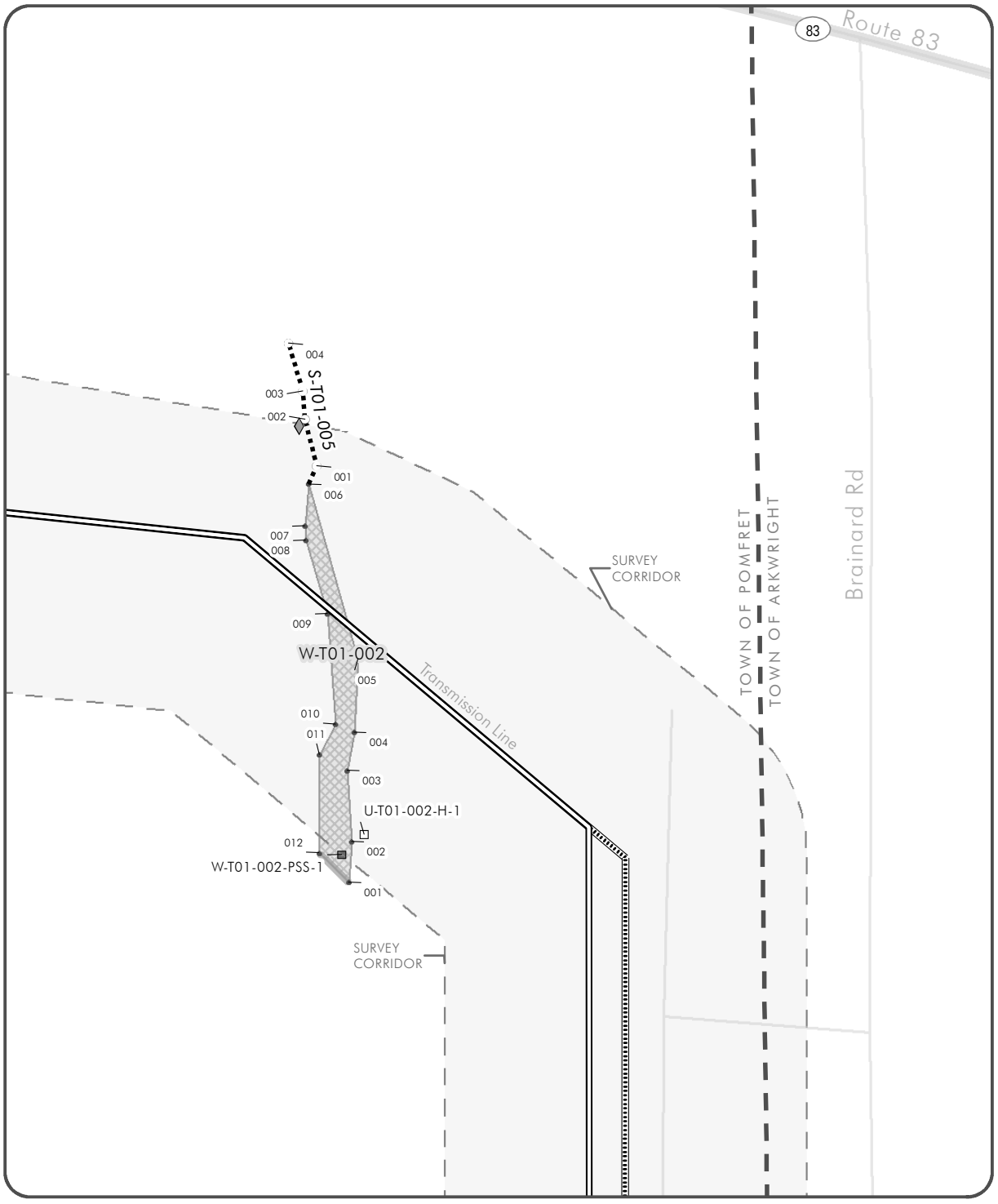


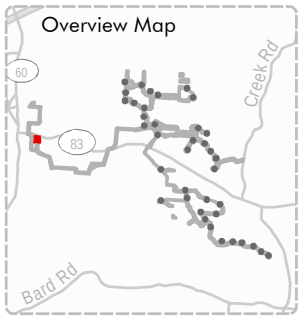


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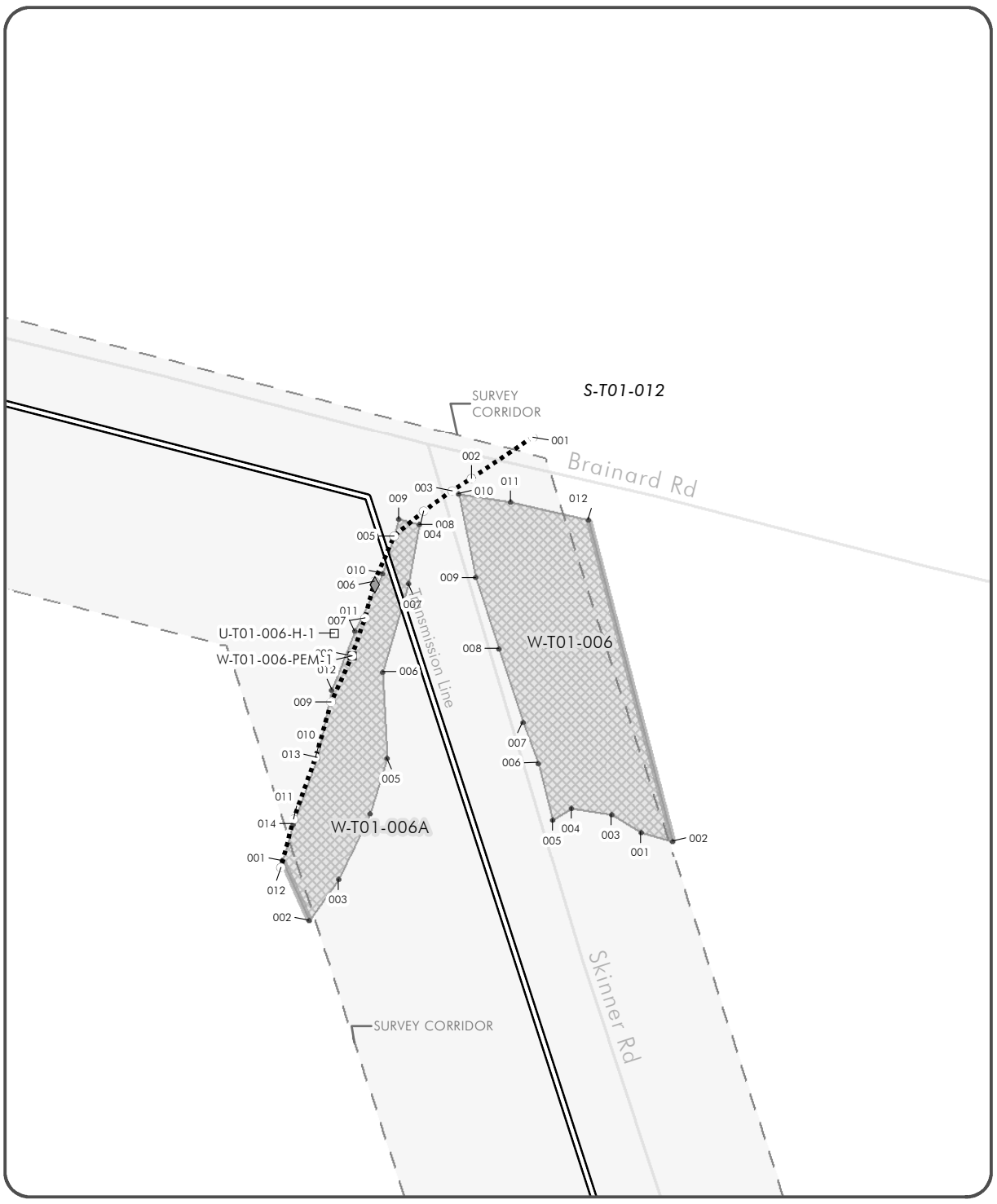


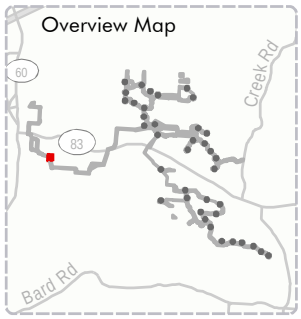


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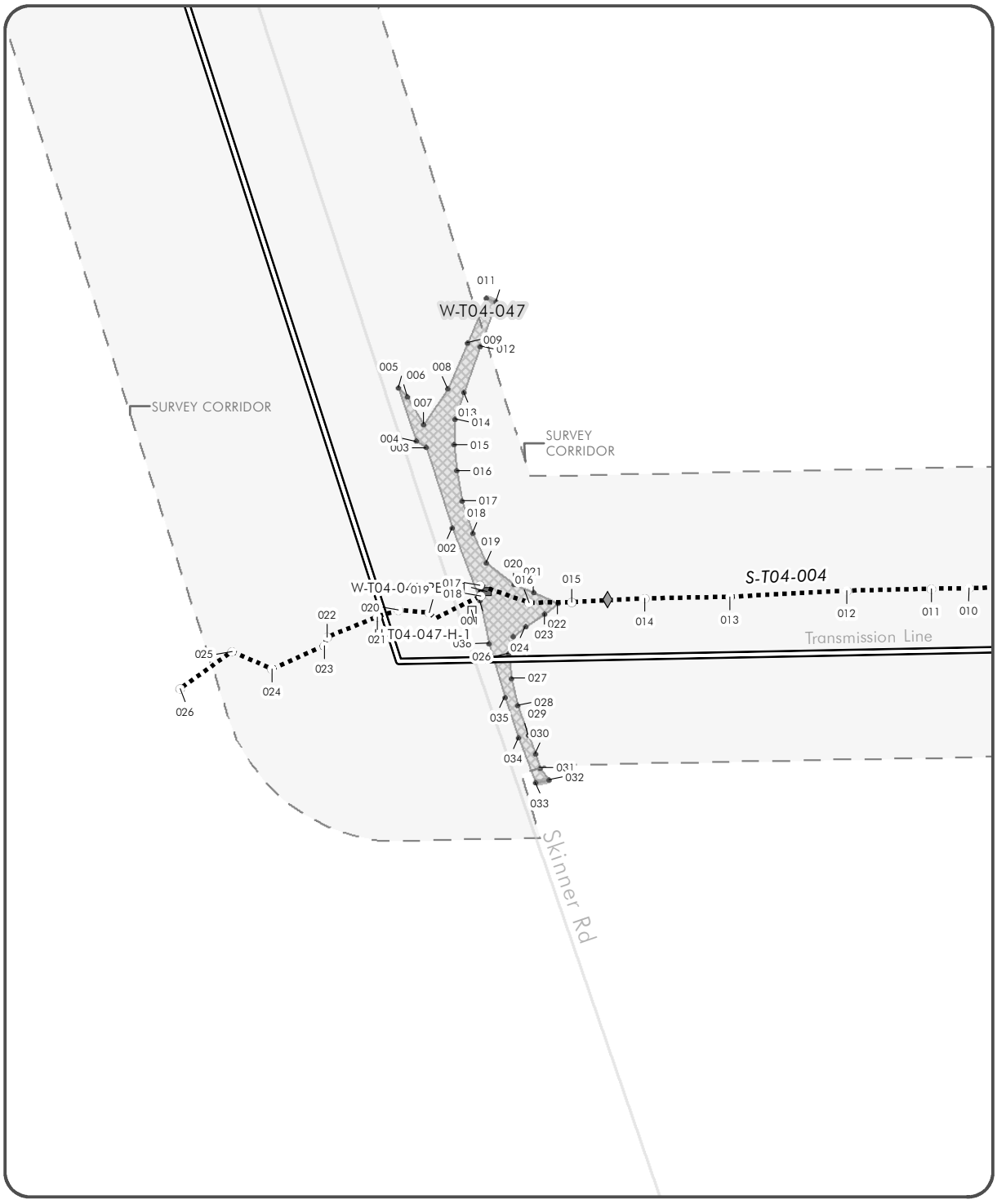


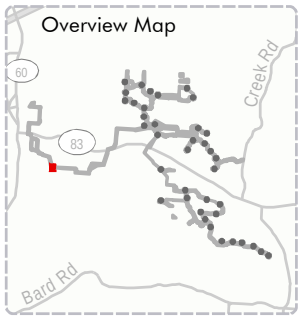


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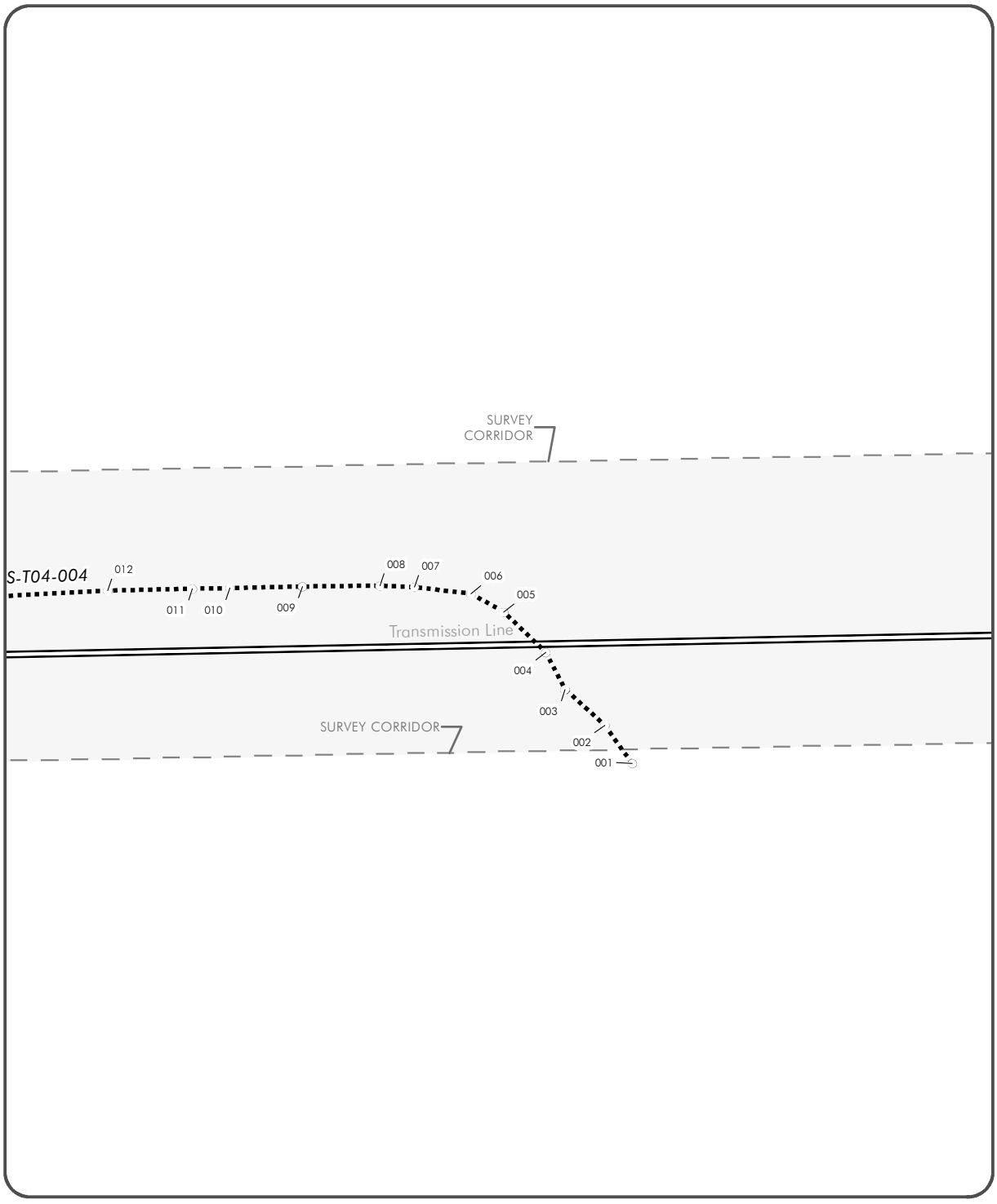


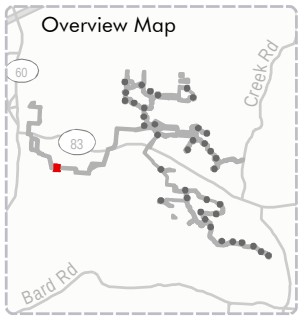


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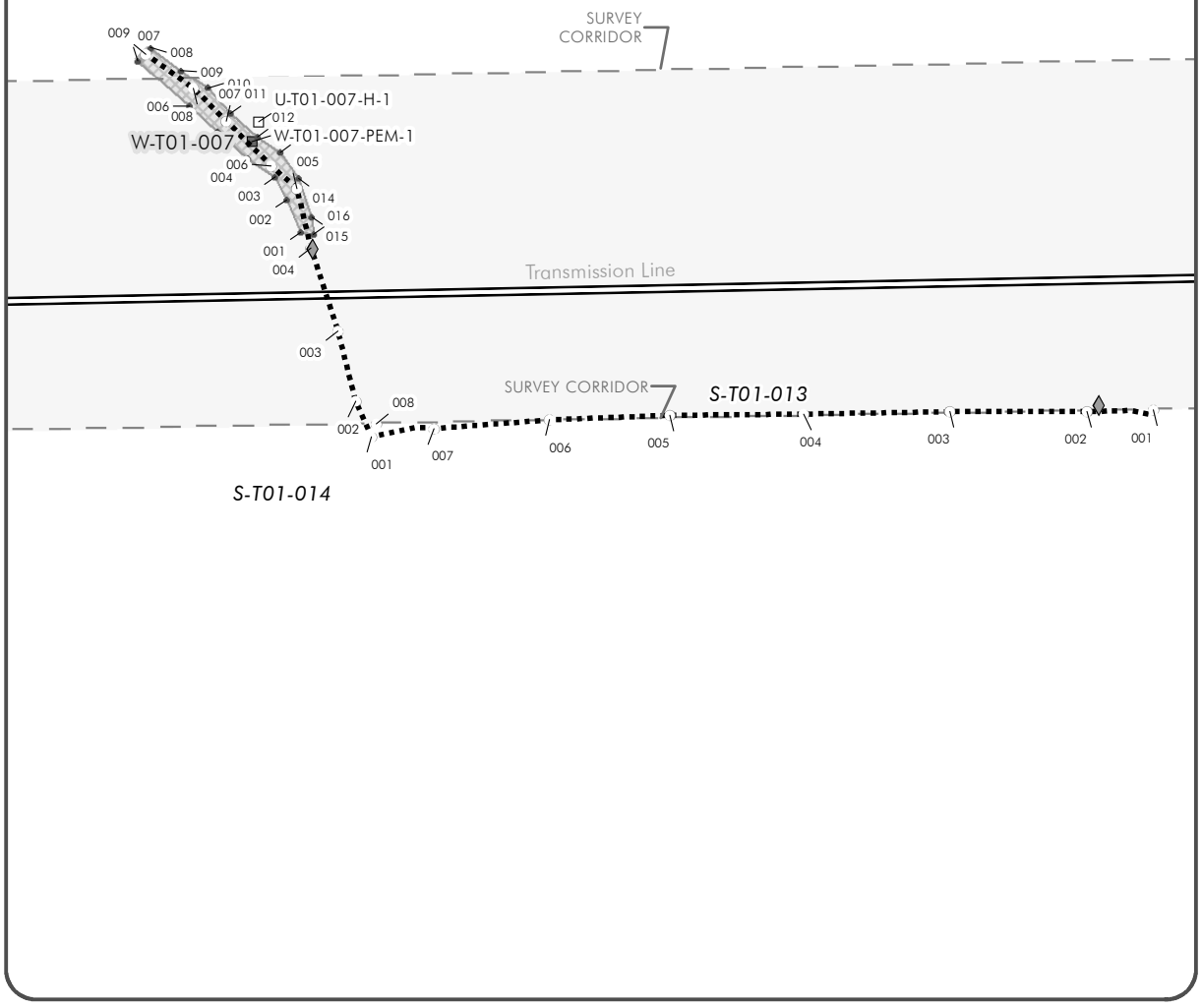


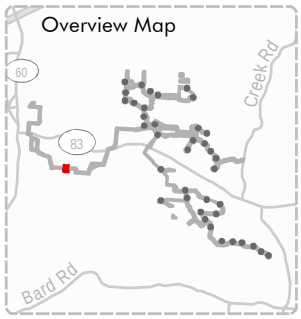


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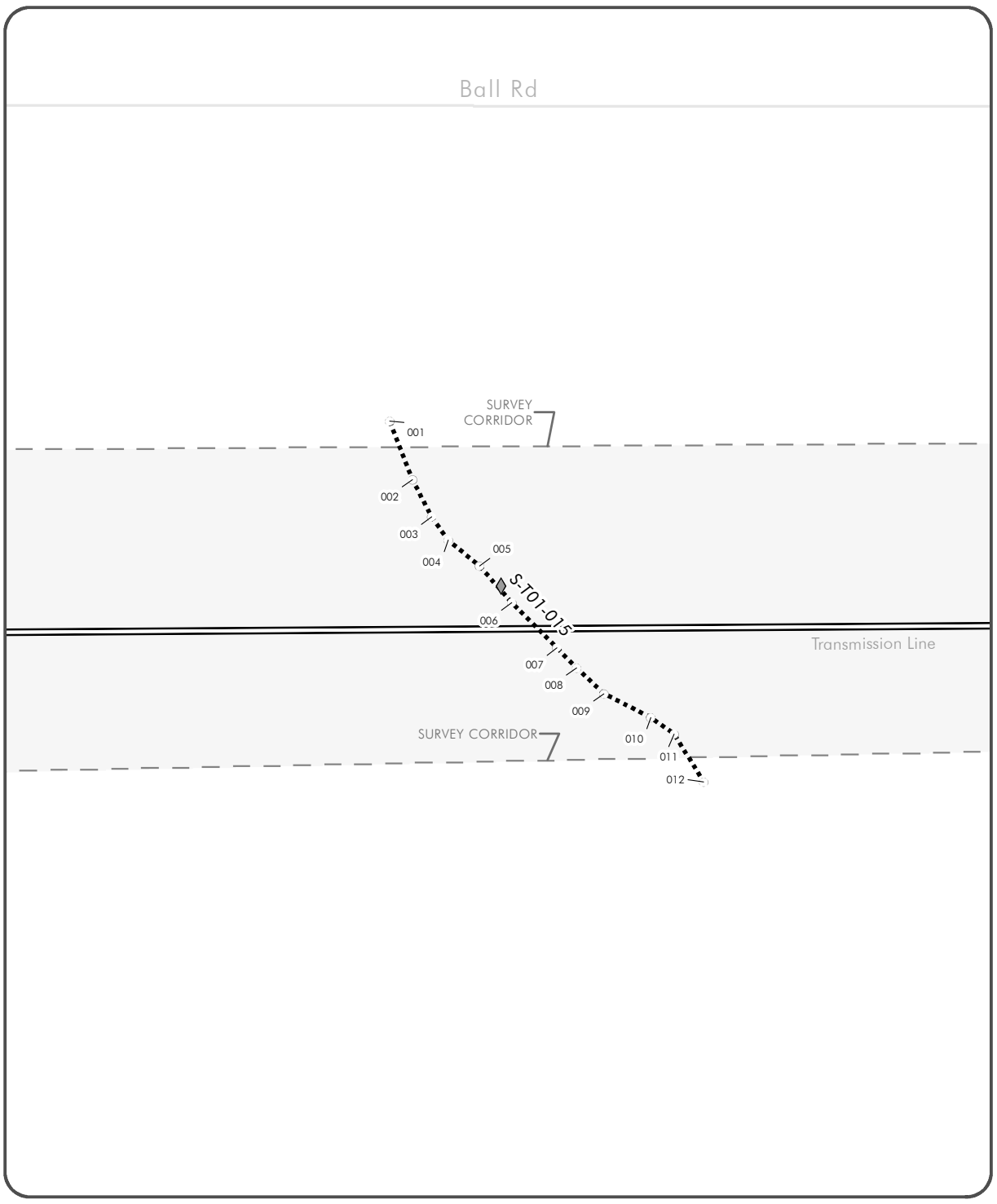


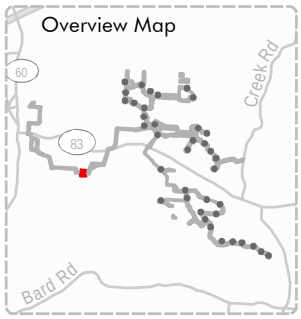


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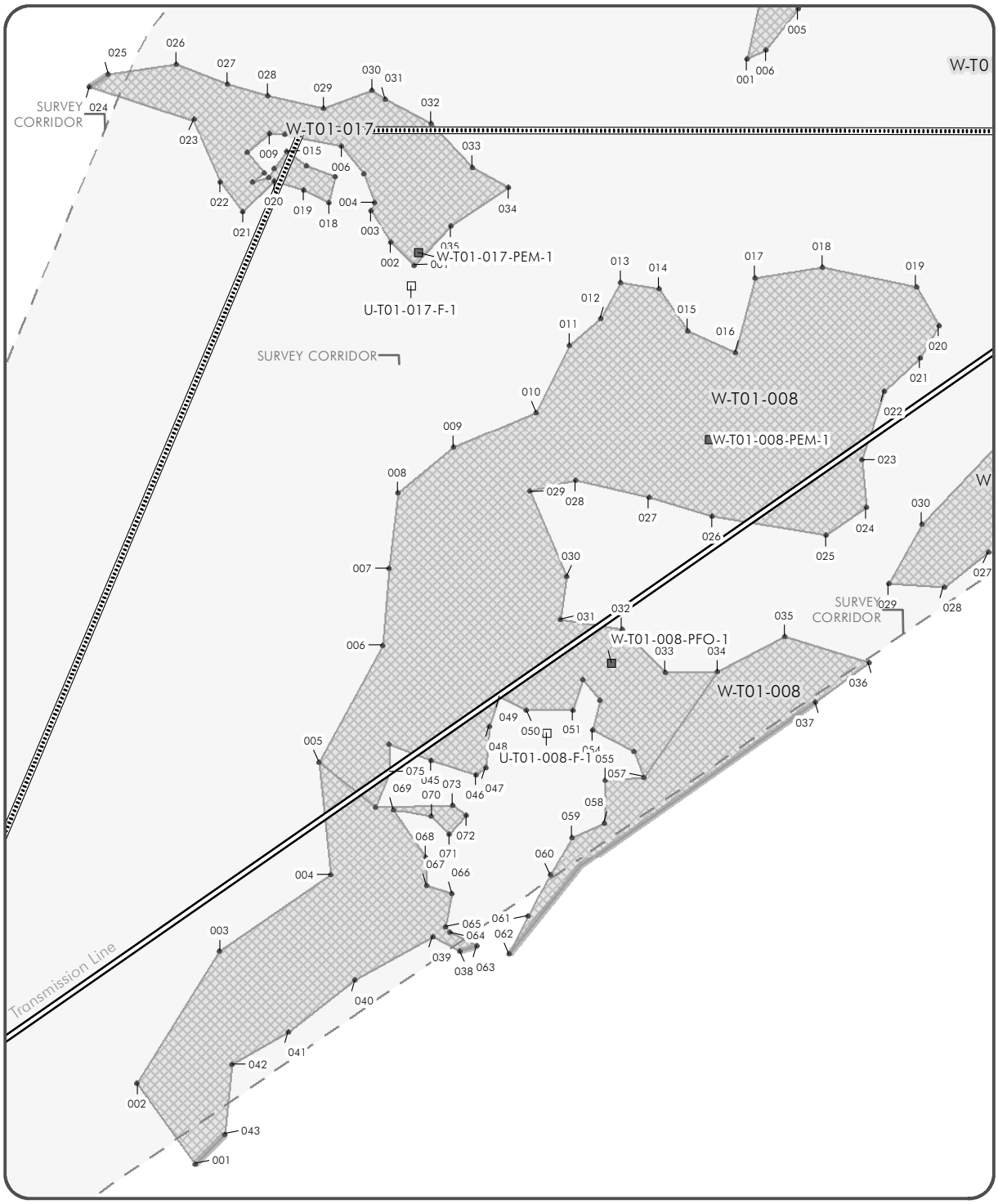


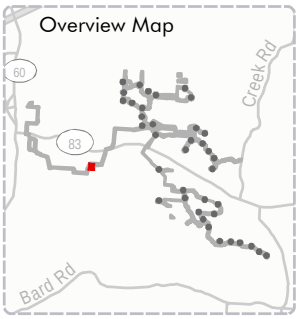


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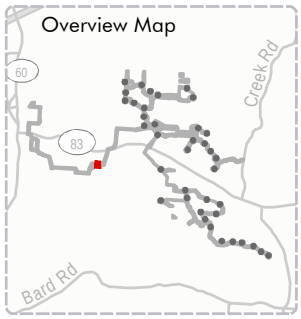


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Town of Arkwright
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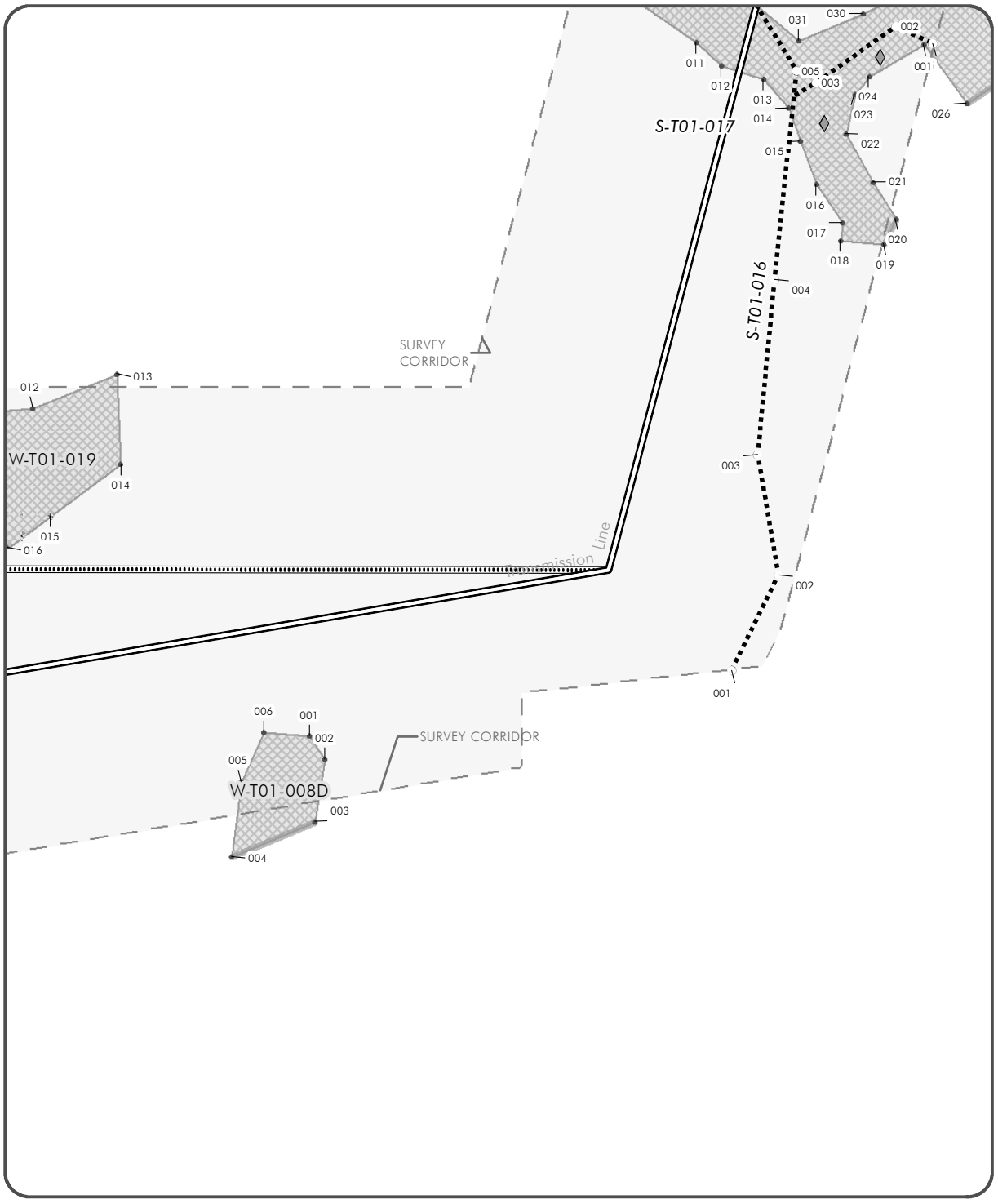


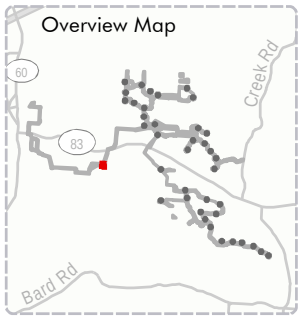


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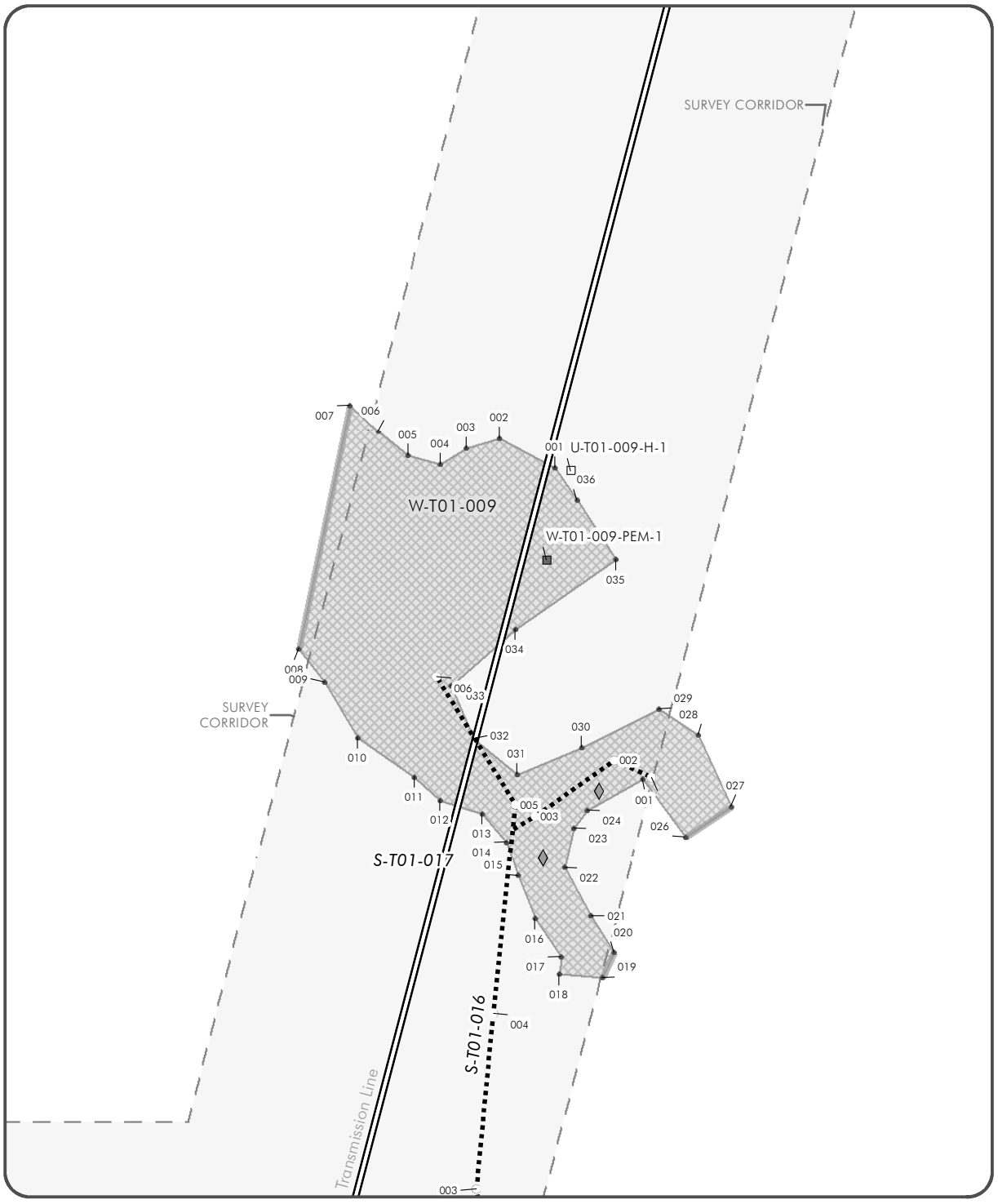


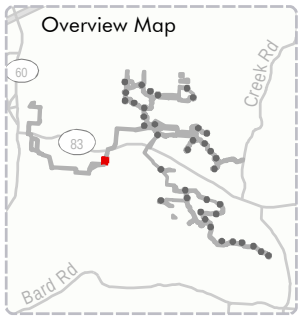


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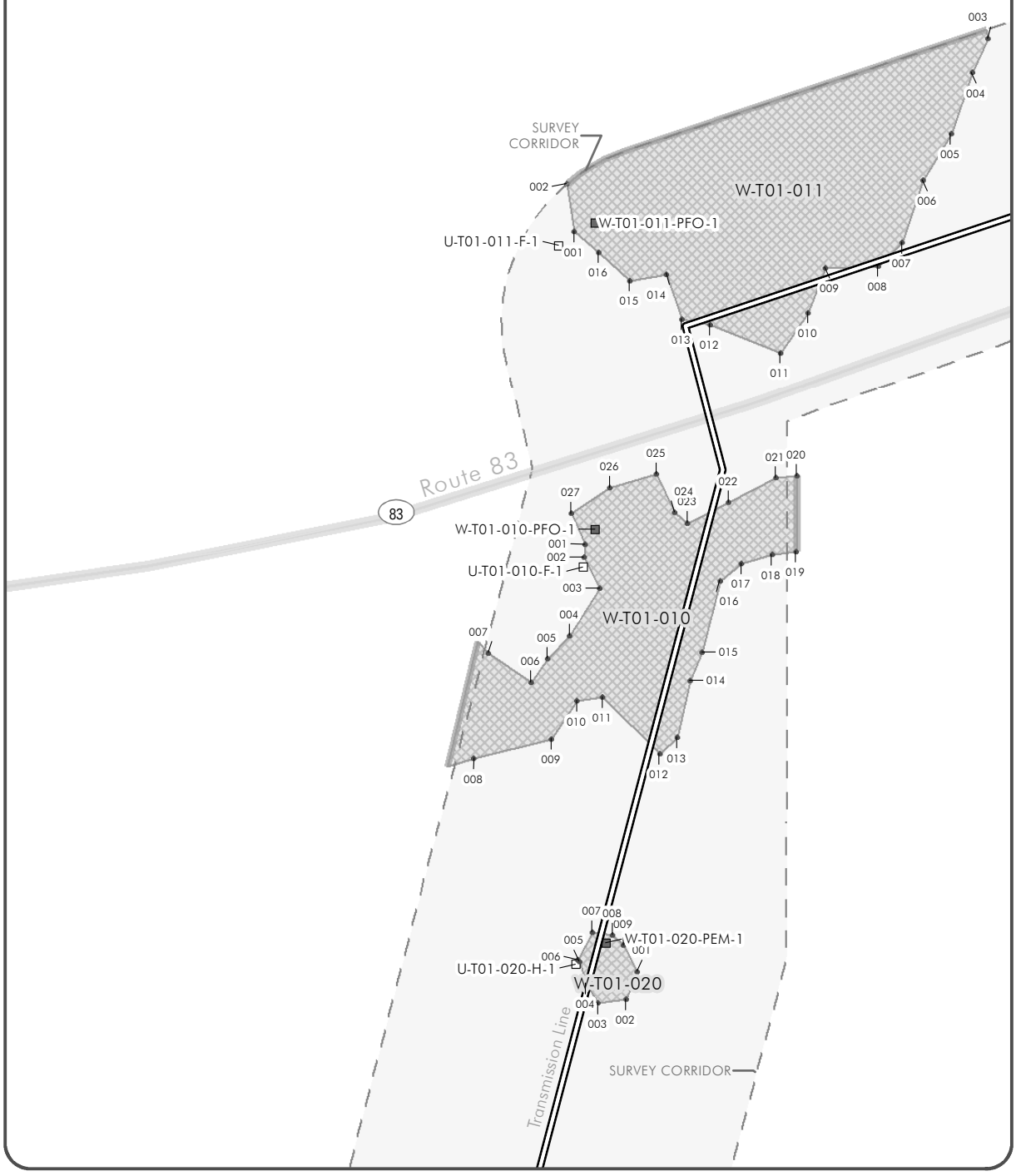


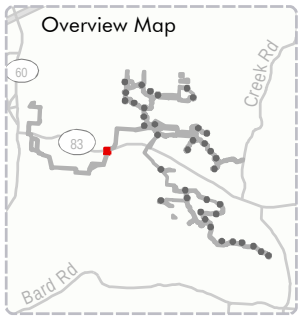


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# Wetlands and Streams

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Arkwright Wind Farm

Town of Arkwright

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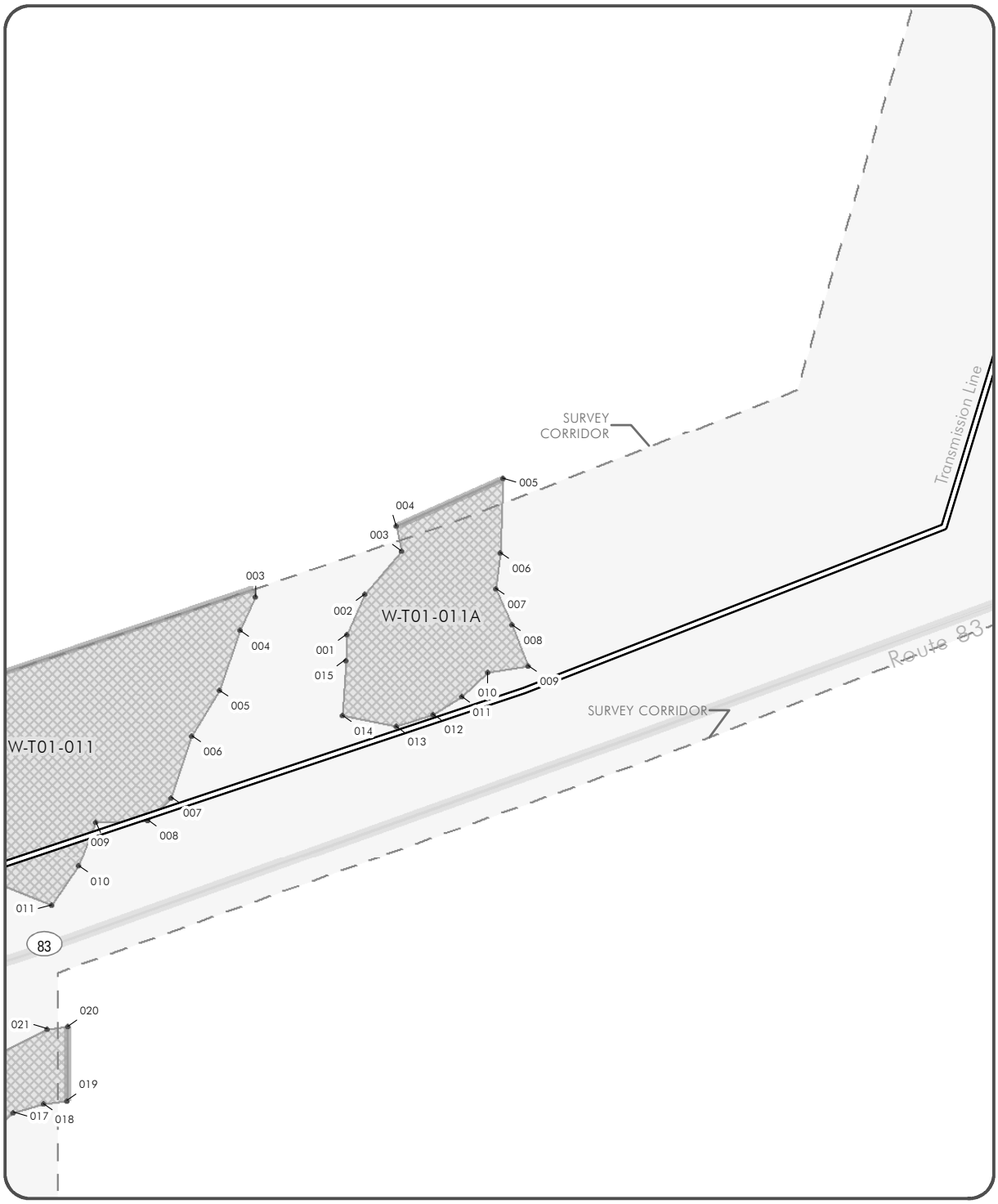


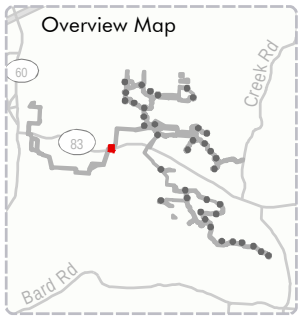


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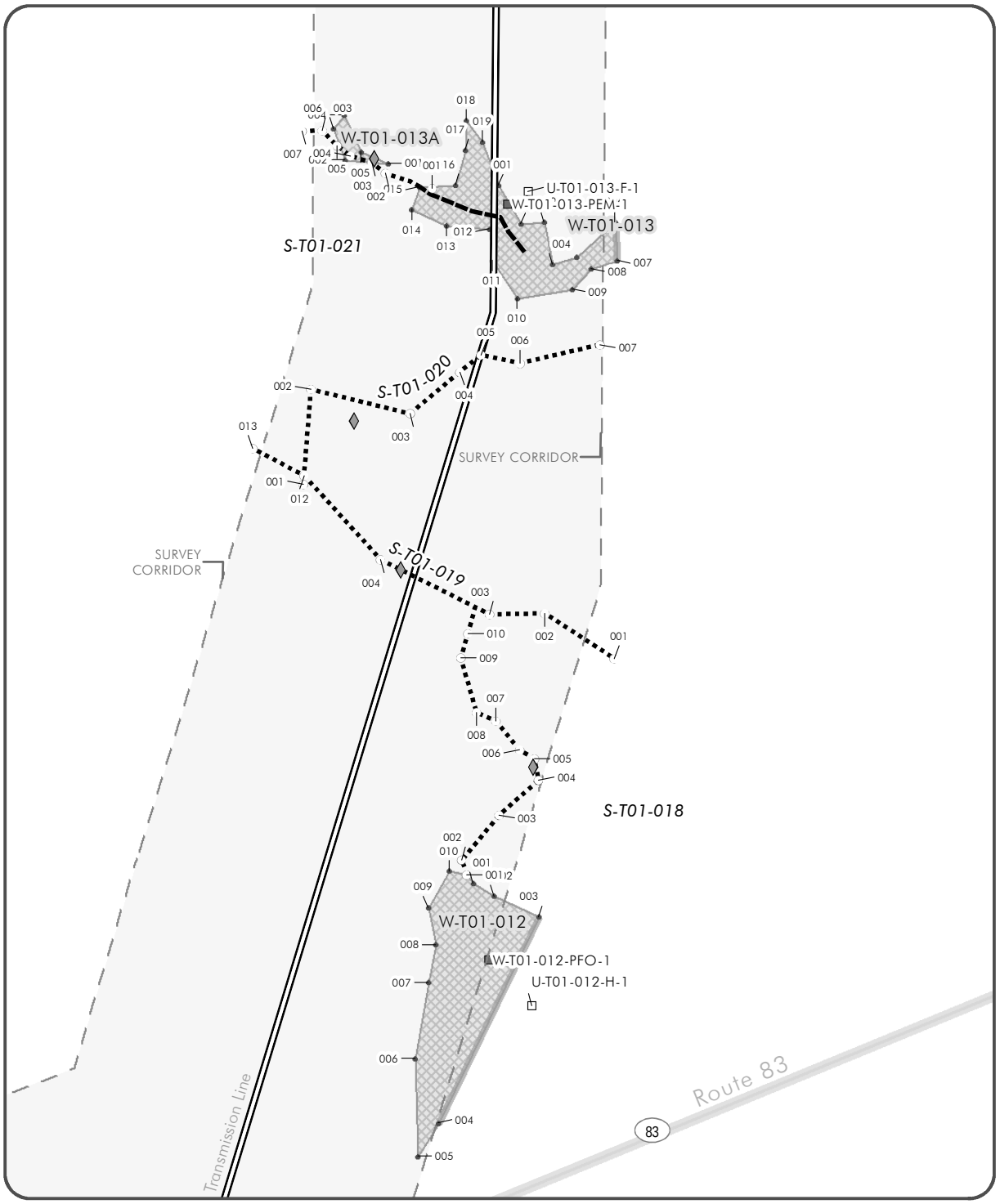


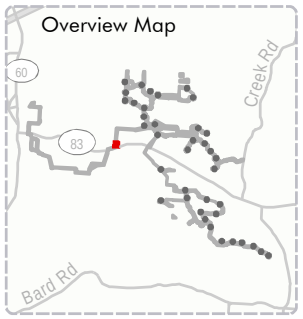


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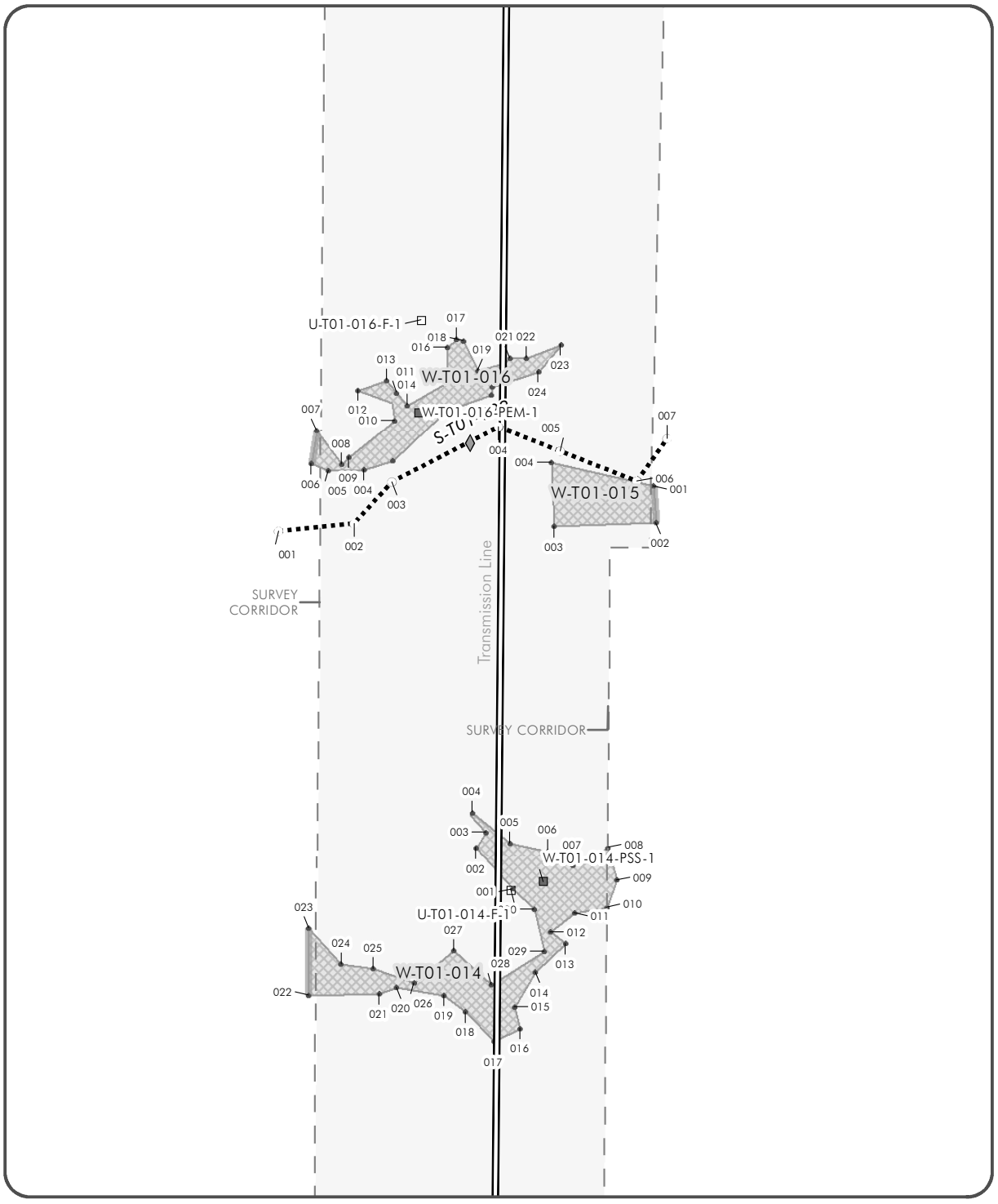


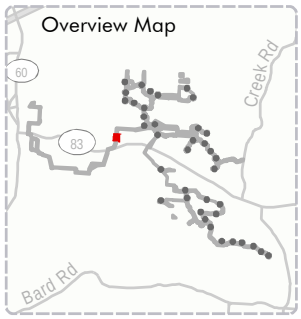


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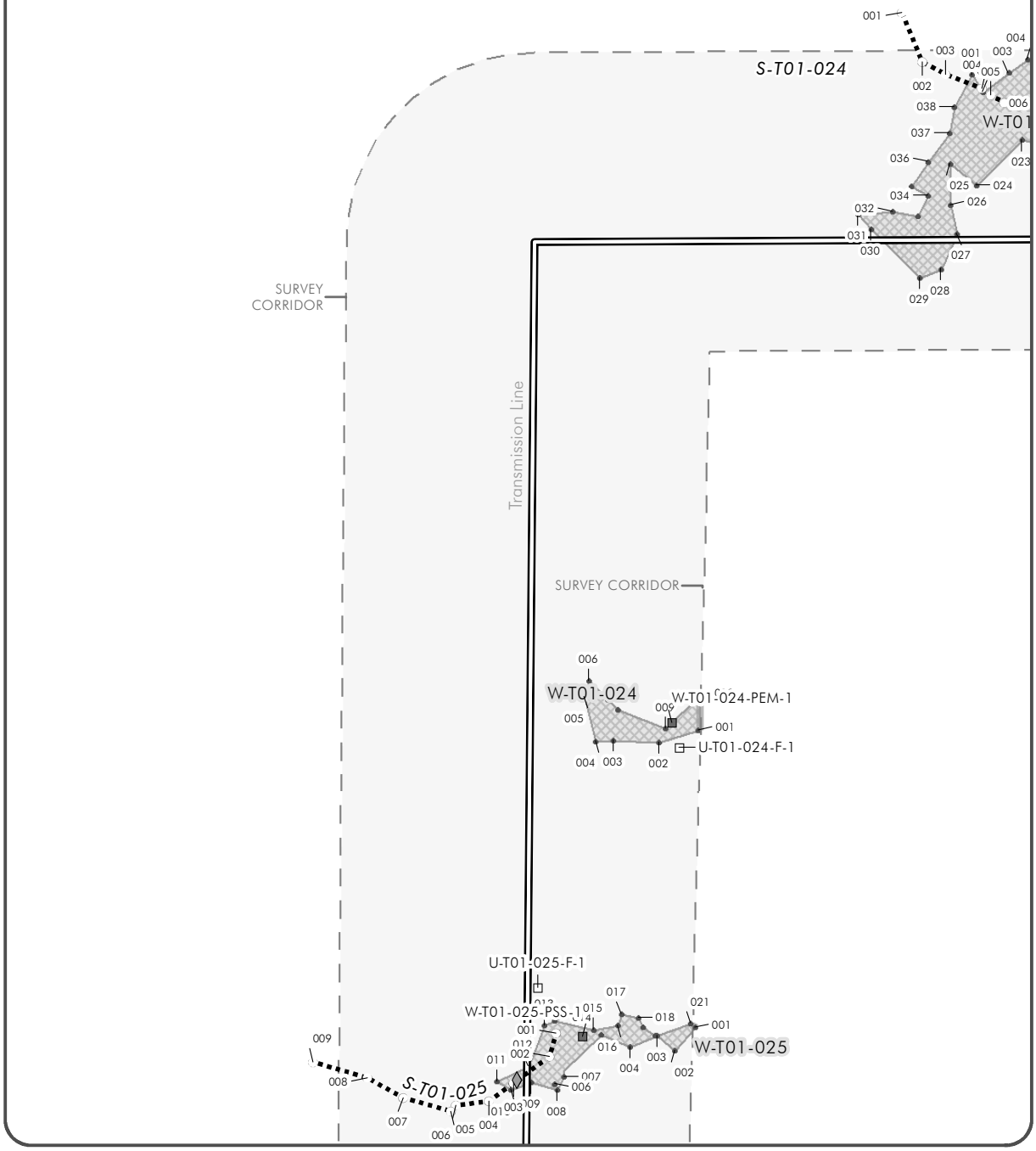


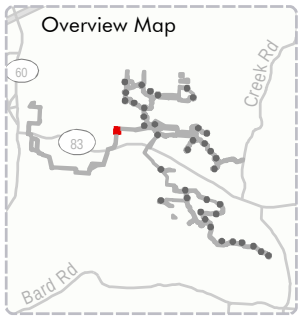


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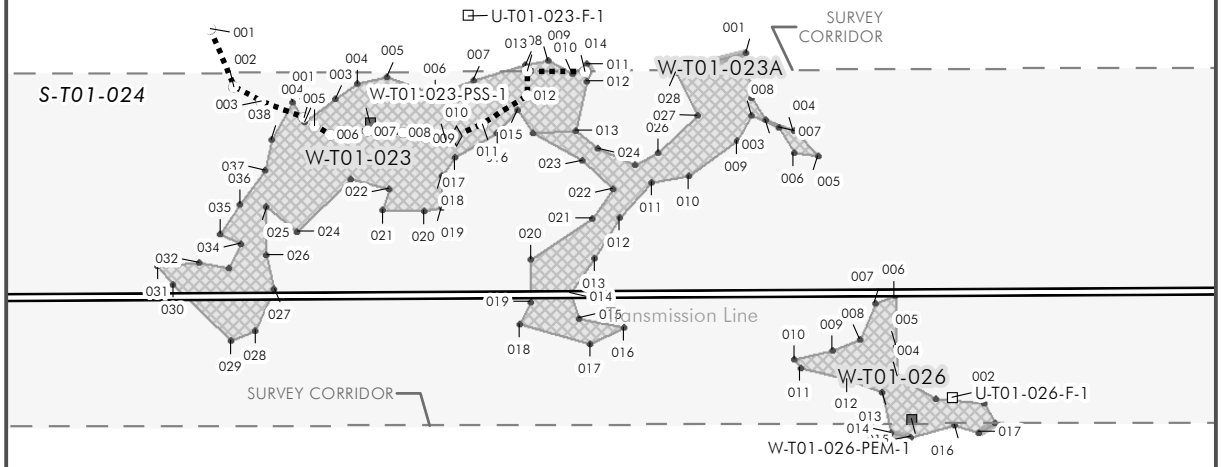


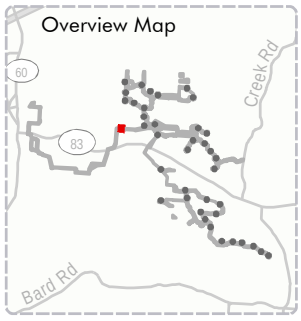


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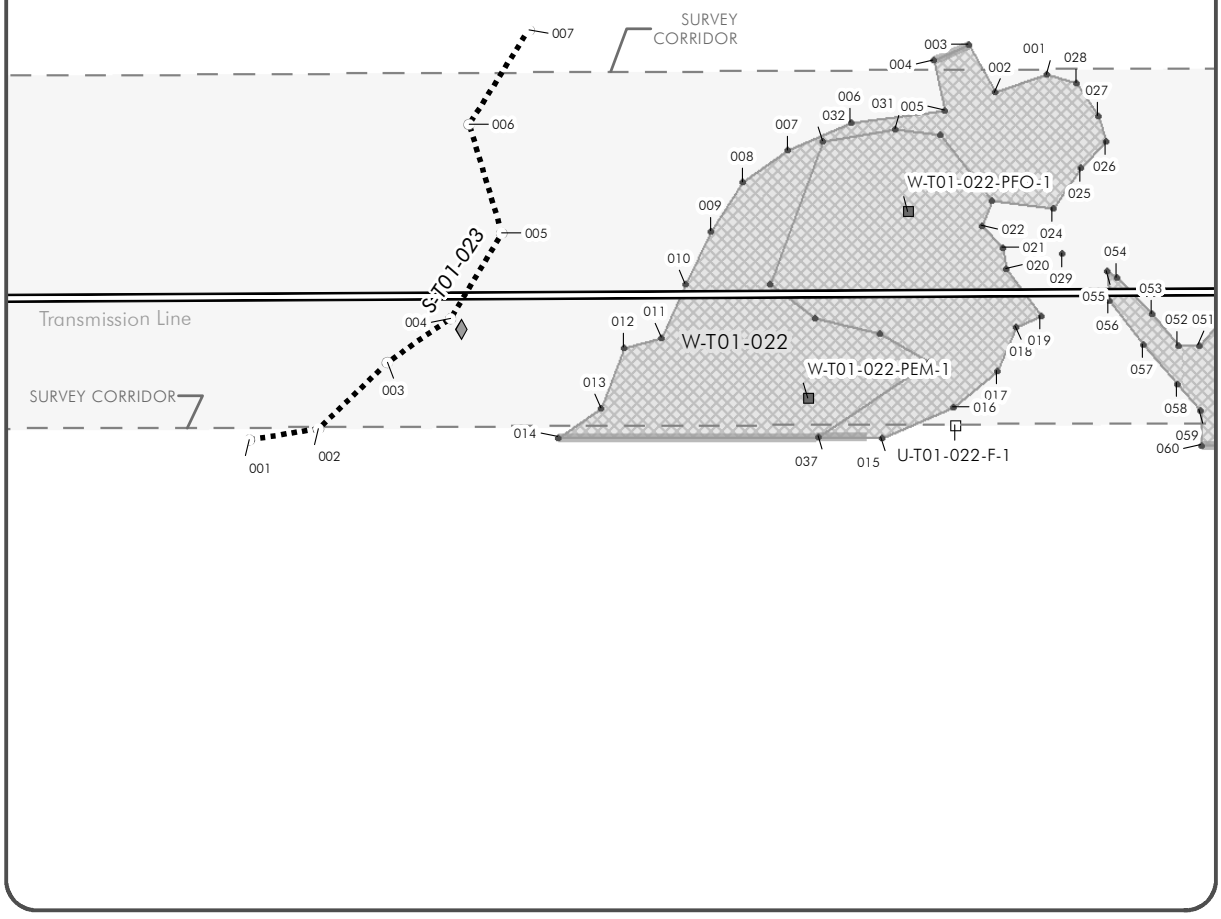


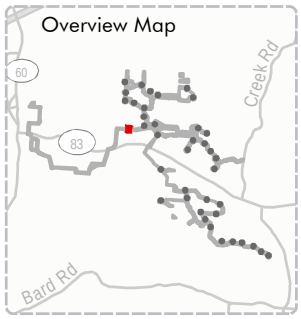


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# Wetlands and Streams



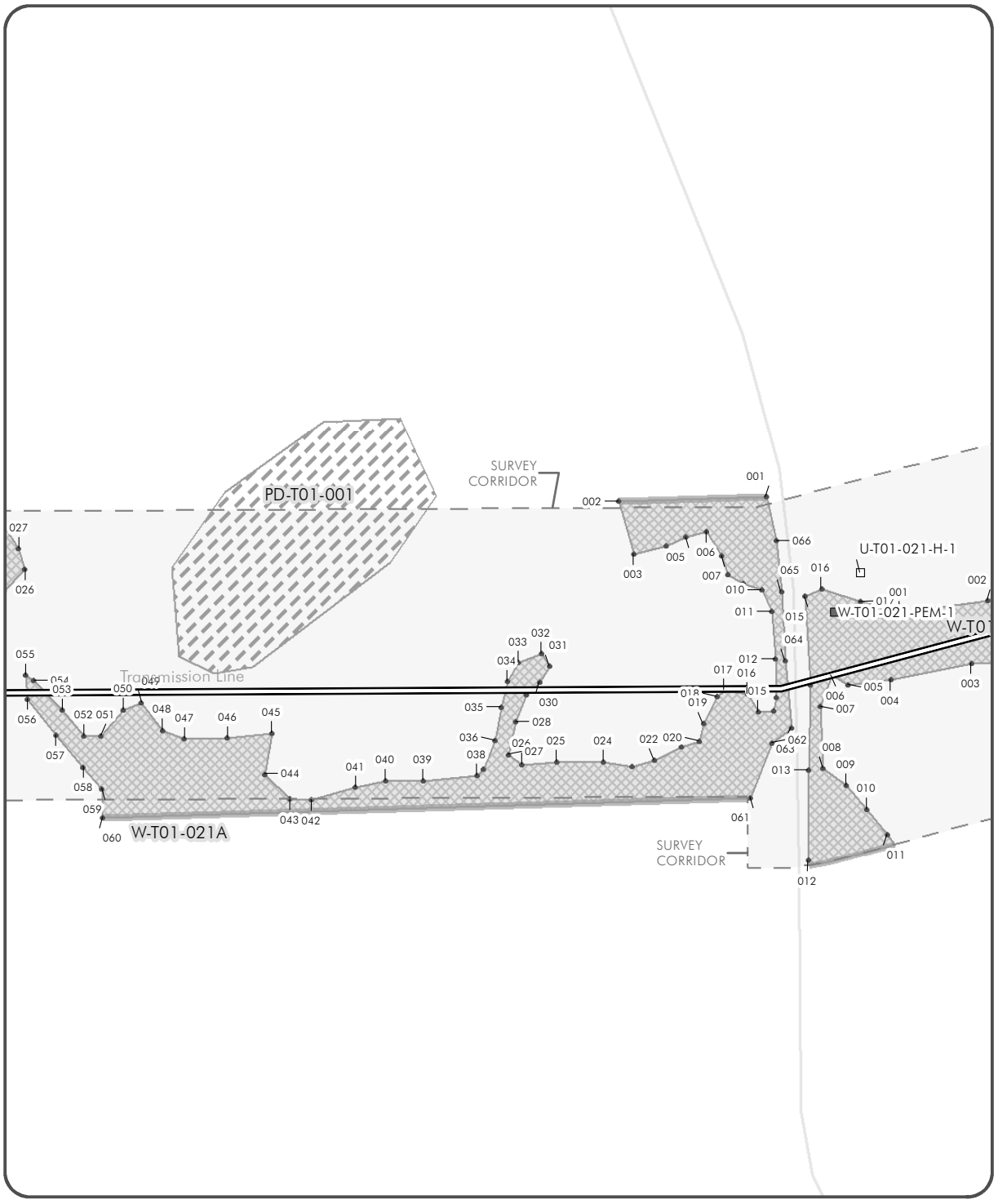
Arkwright Wind Farm

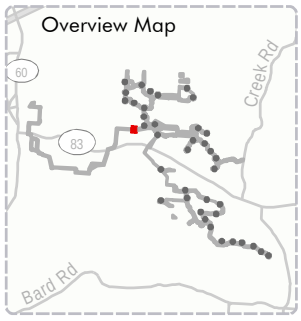
Town of Arkwright

Chautauqua County, New York

Scale:

0 25 50 100 Feet

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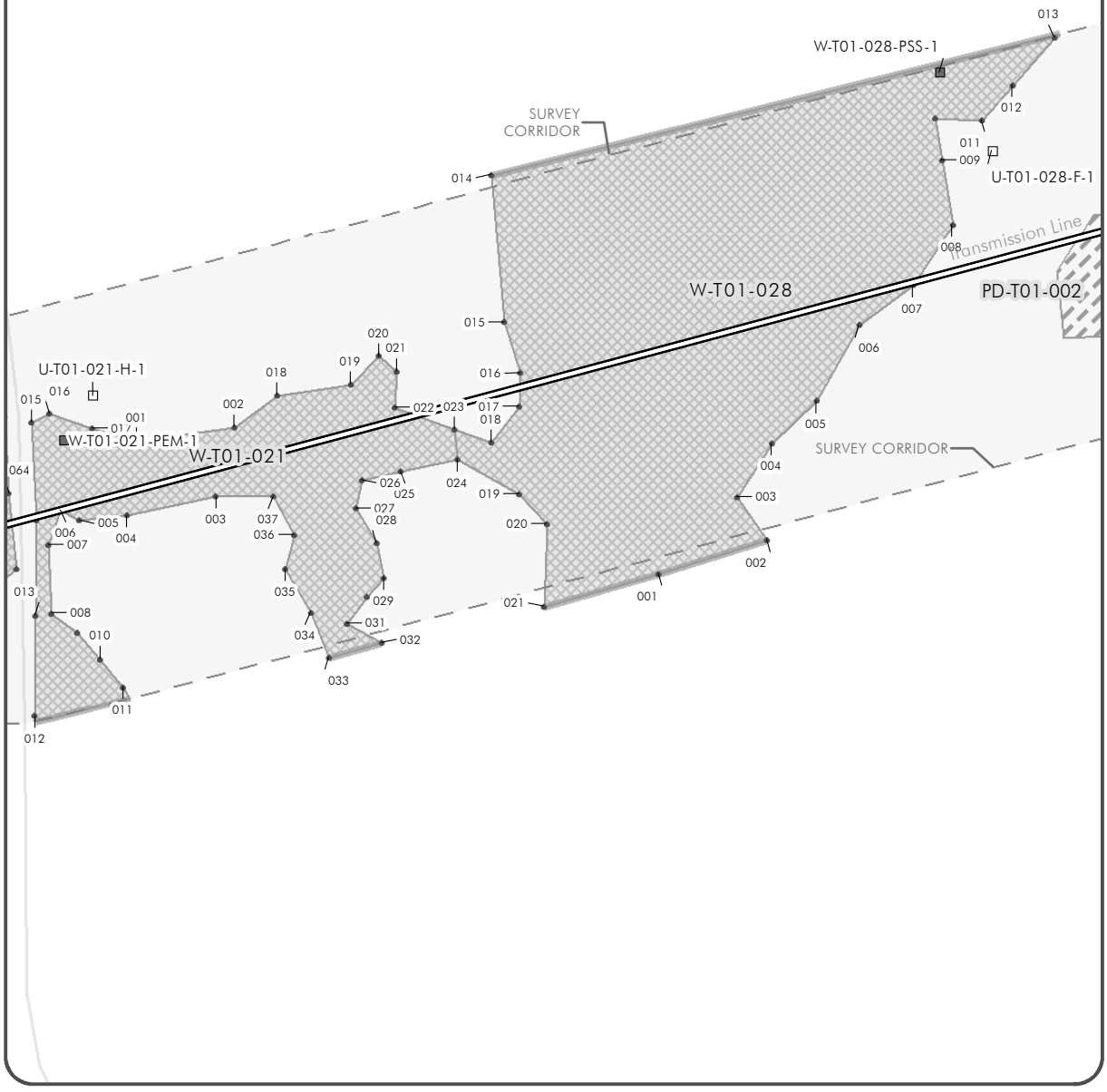


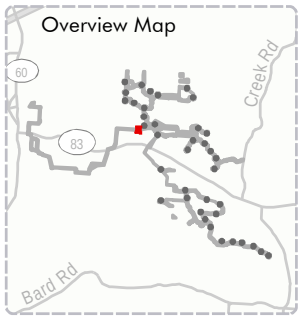


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Town of Arkwright
Chautauqua County, New York

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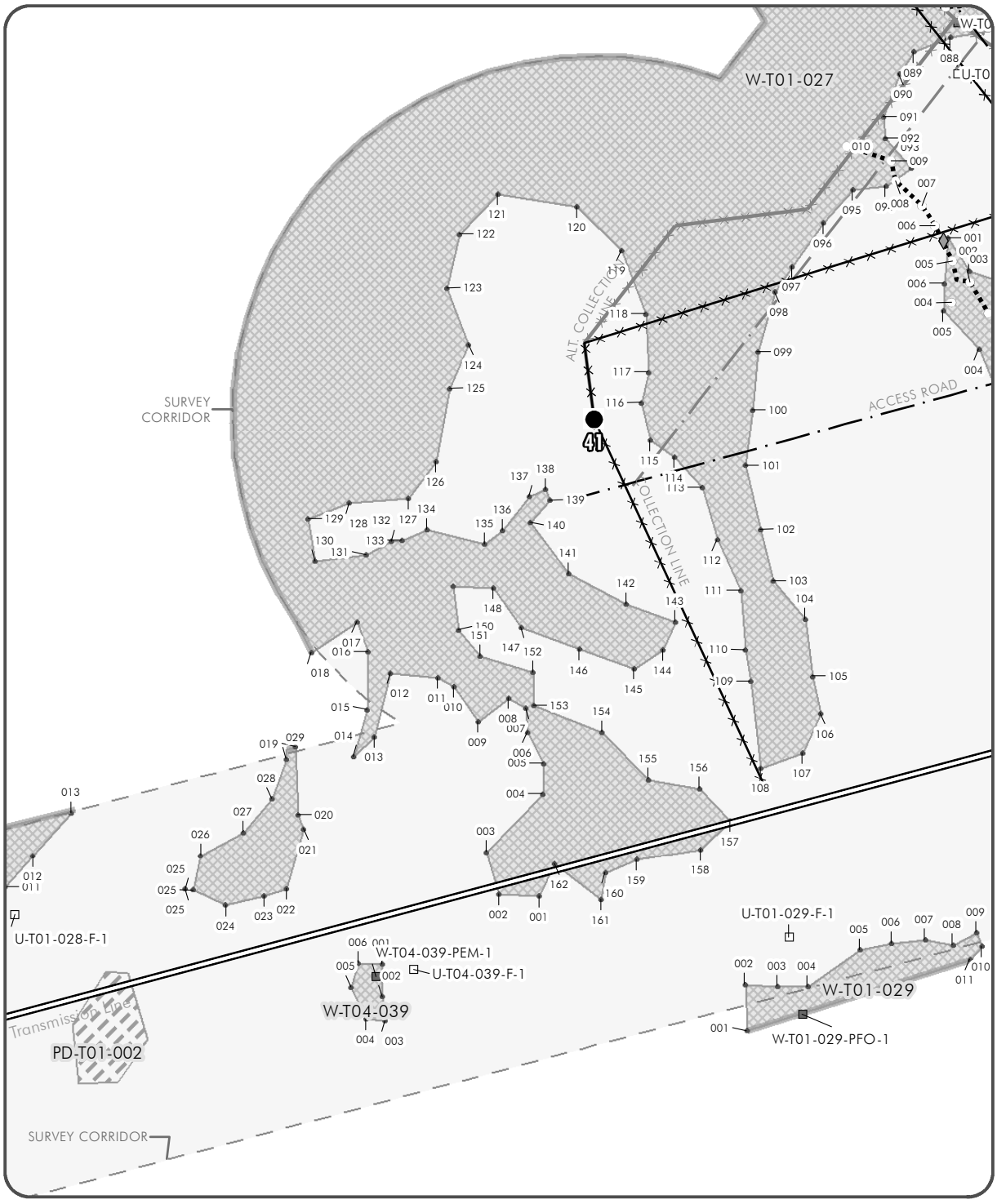


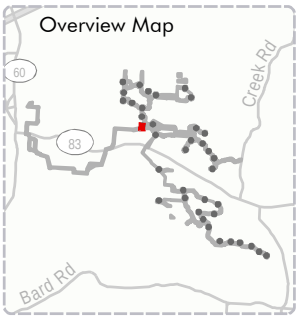


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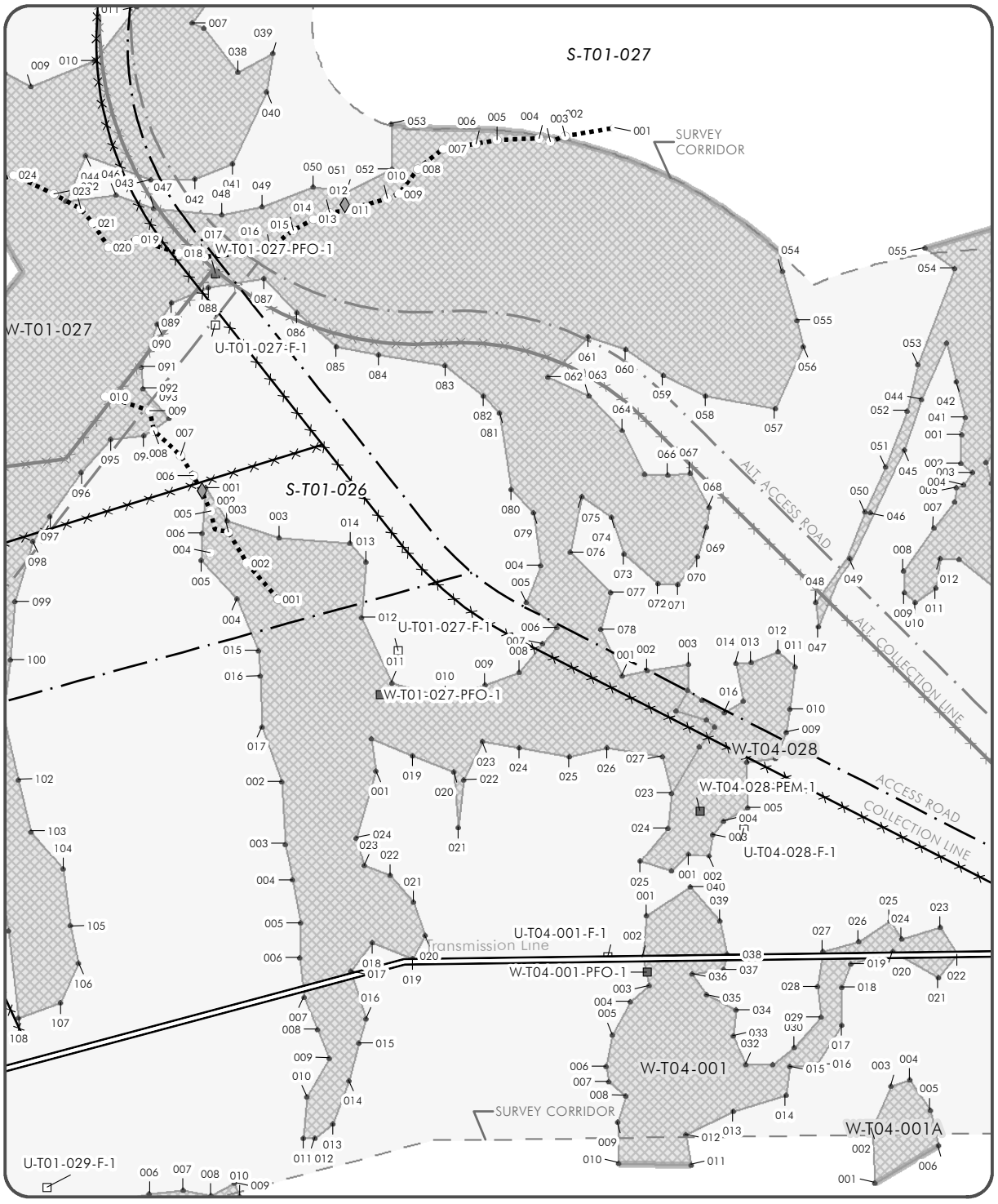


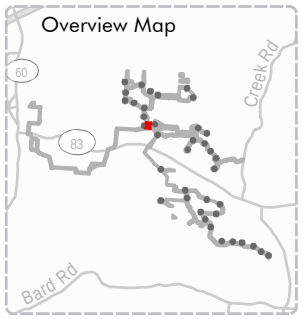


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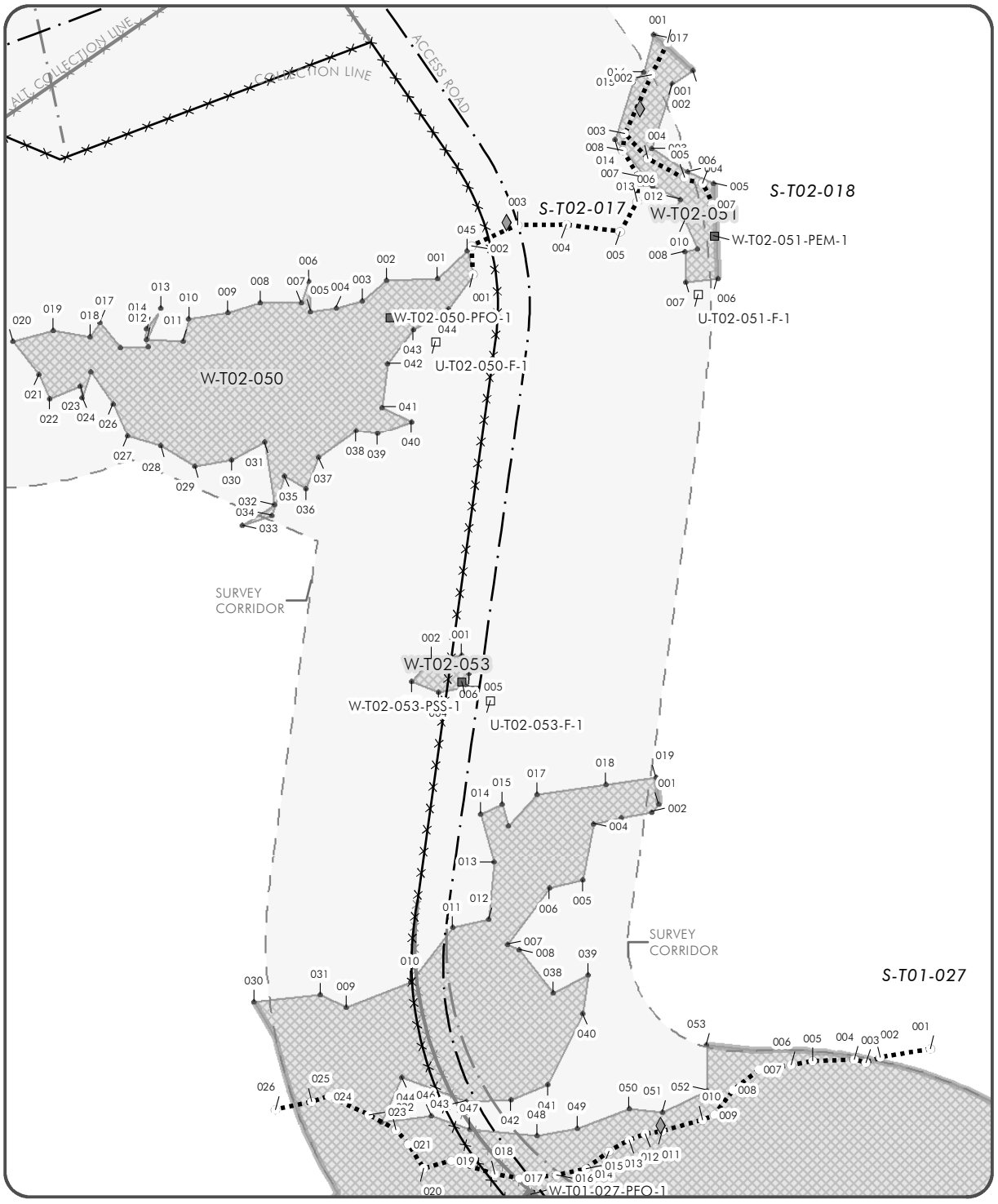


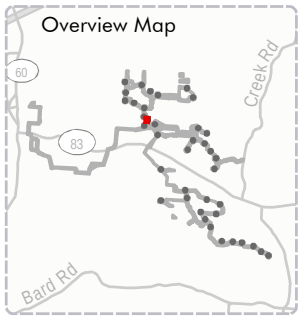


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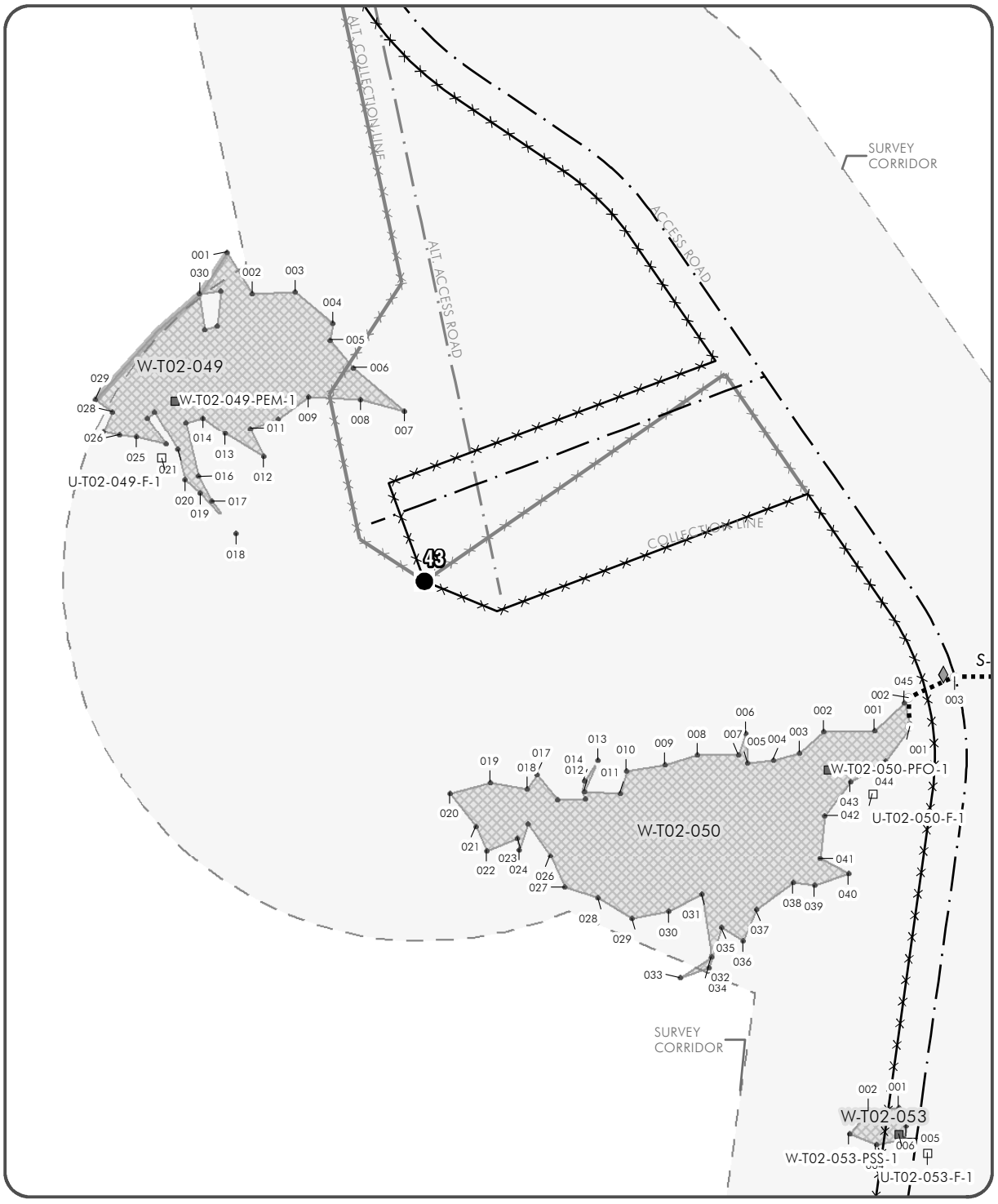


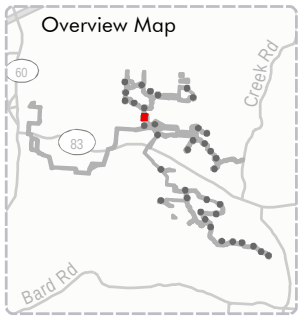


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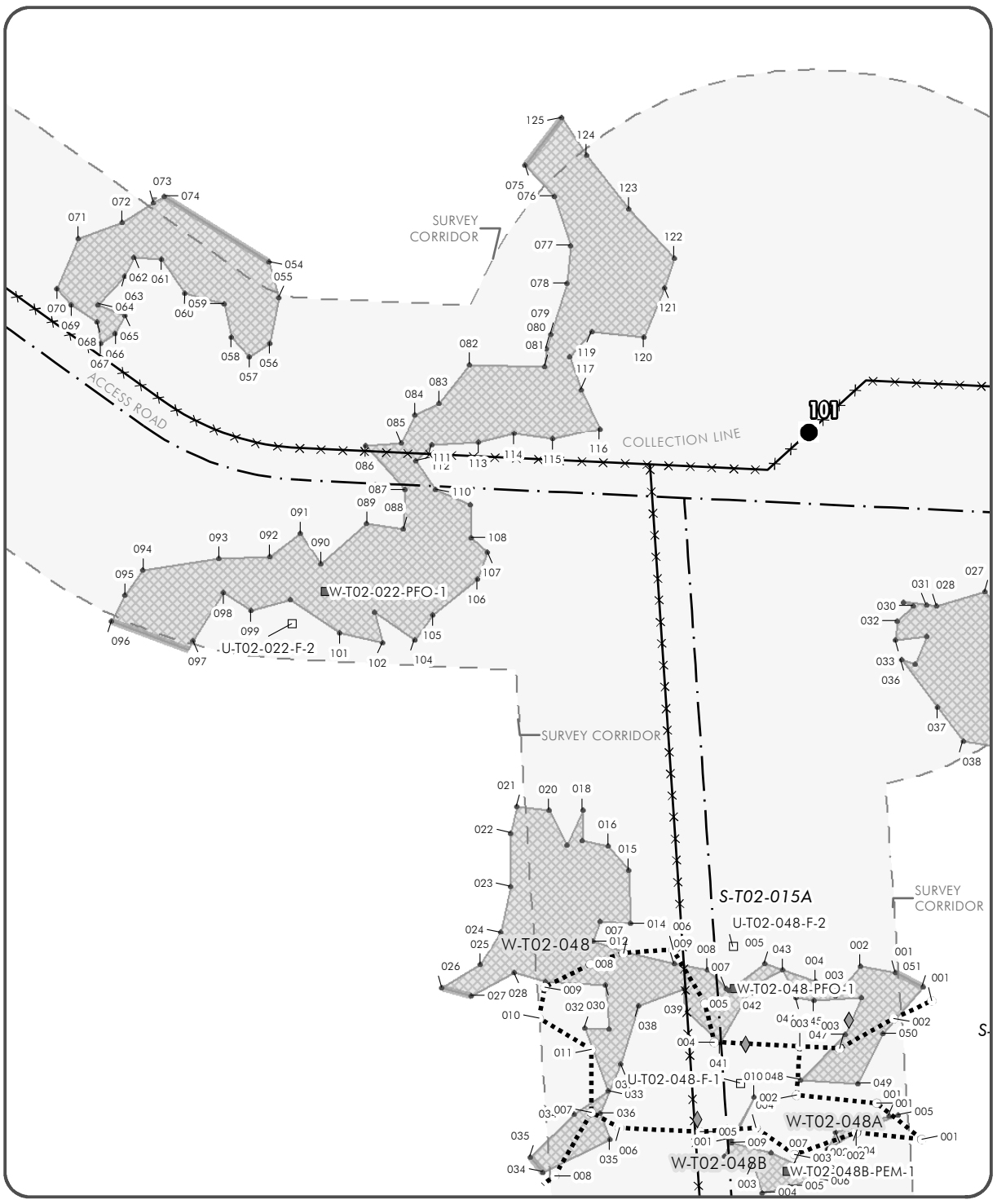


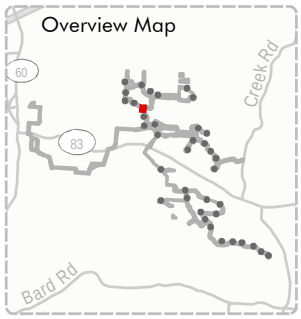


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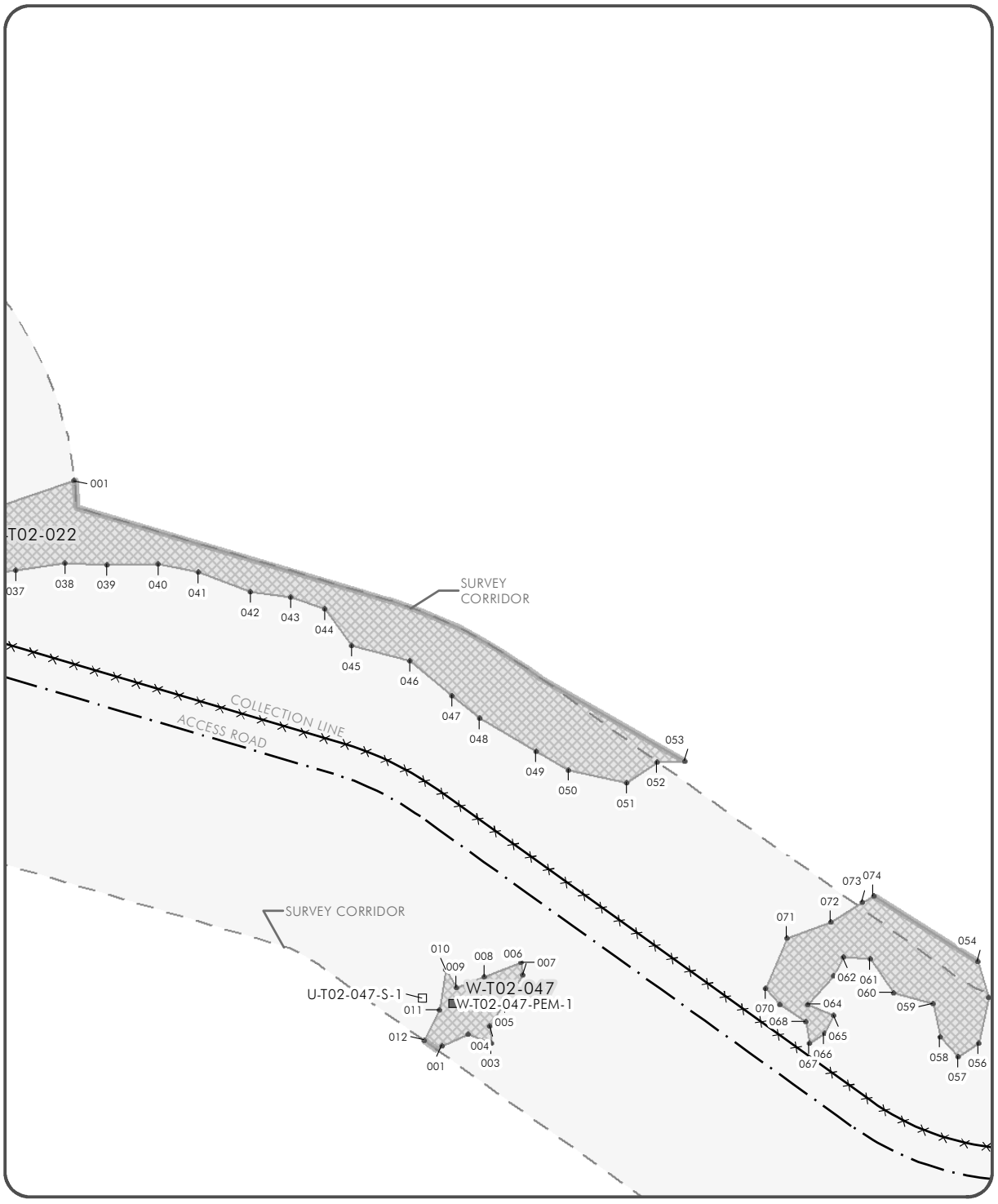


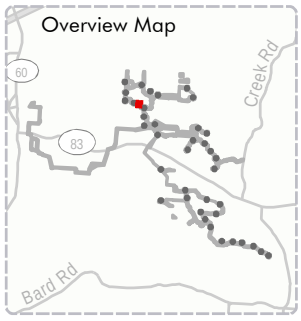


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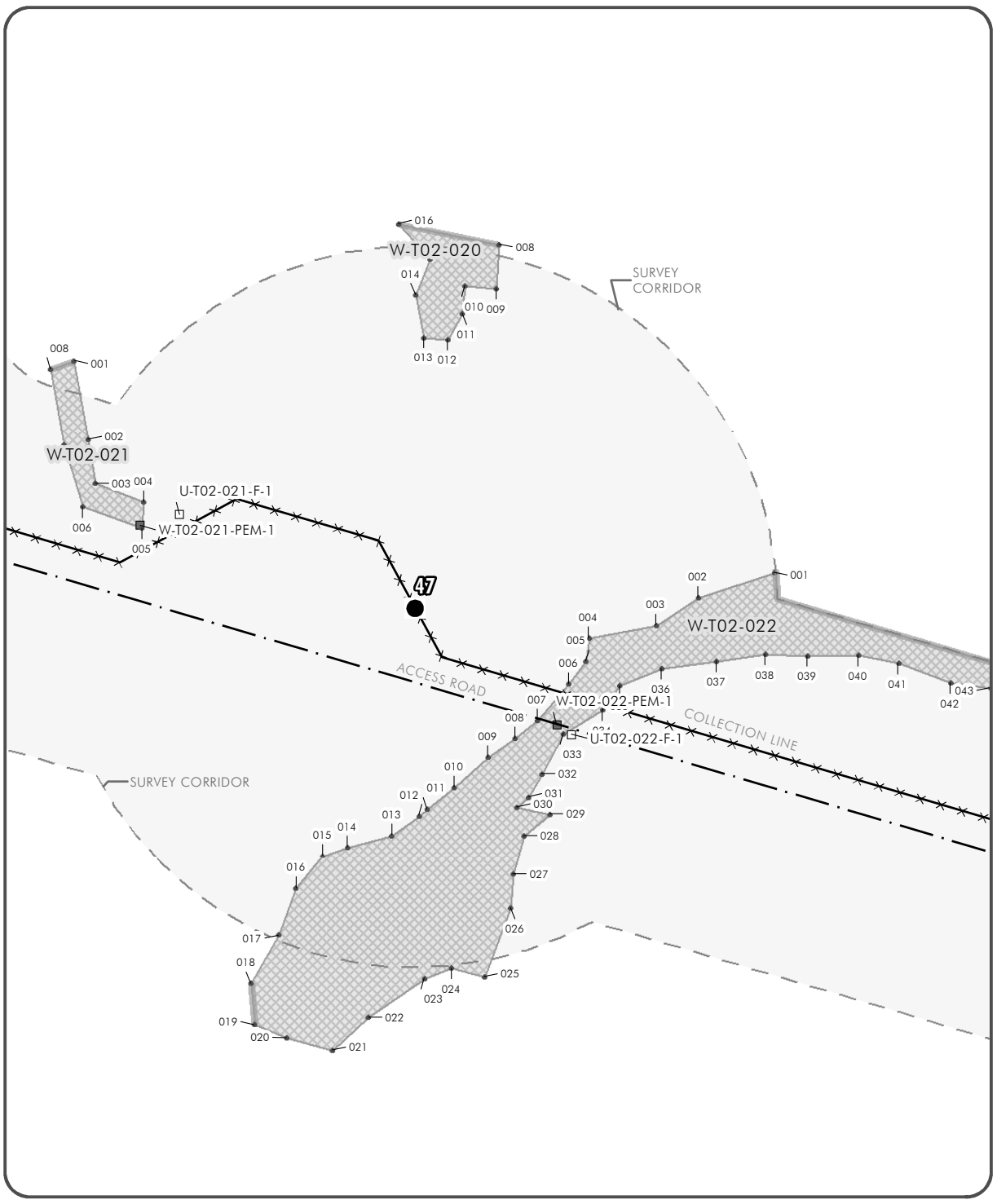


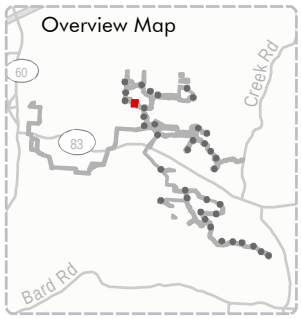


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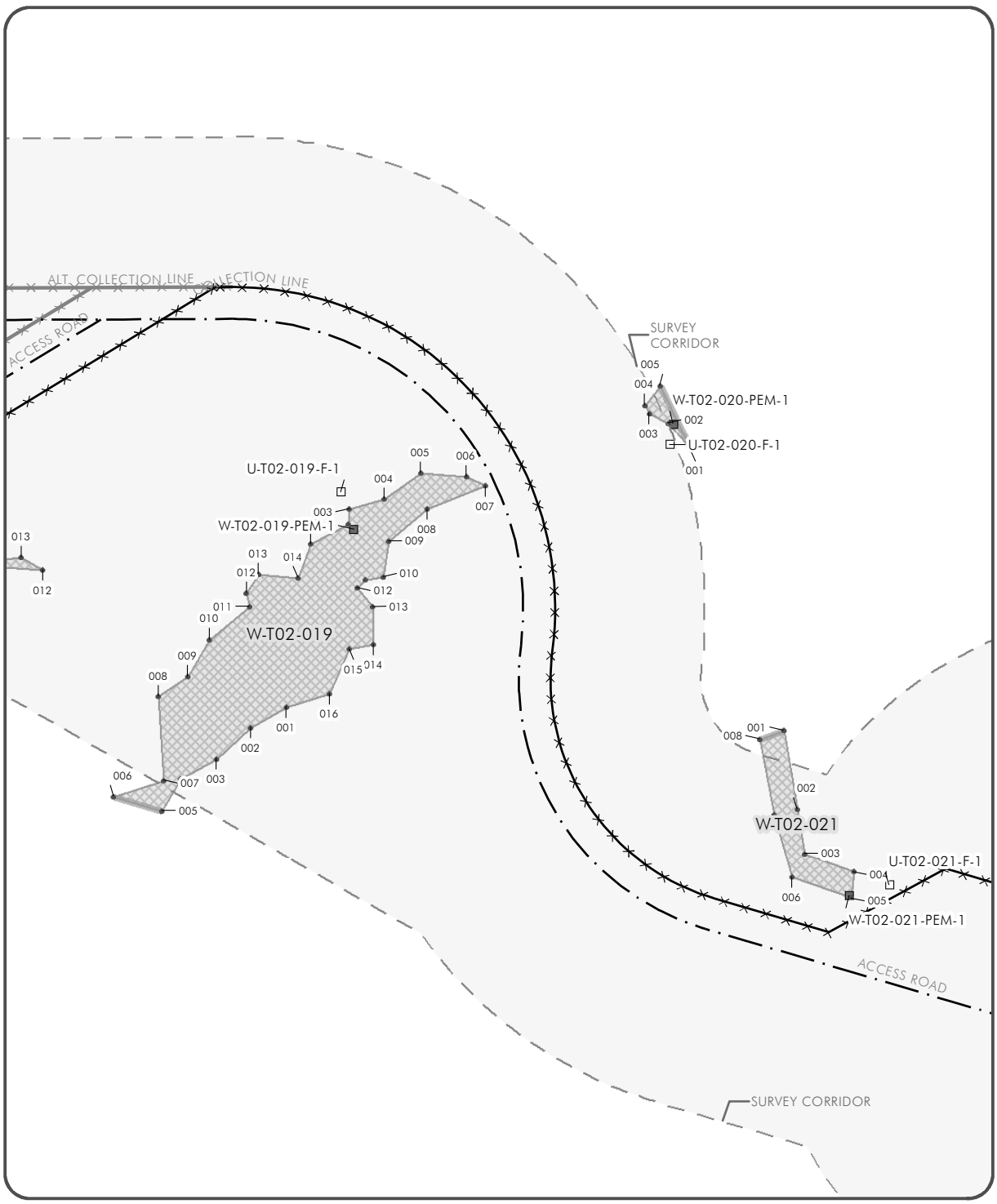


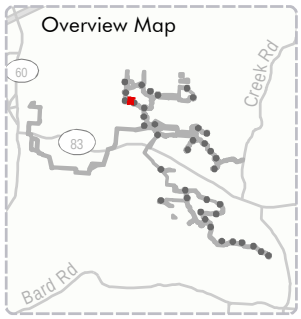


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# Wetlands and Streams

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Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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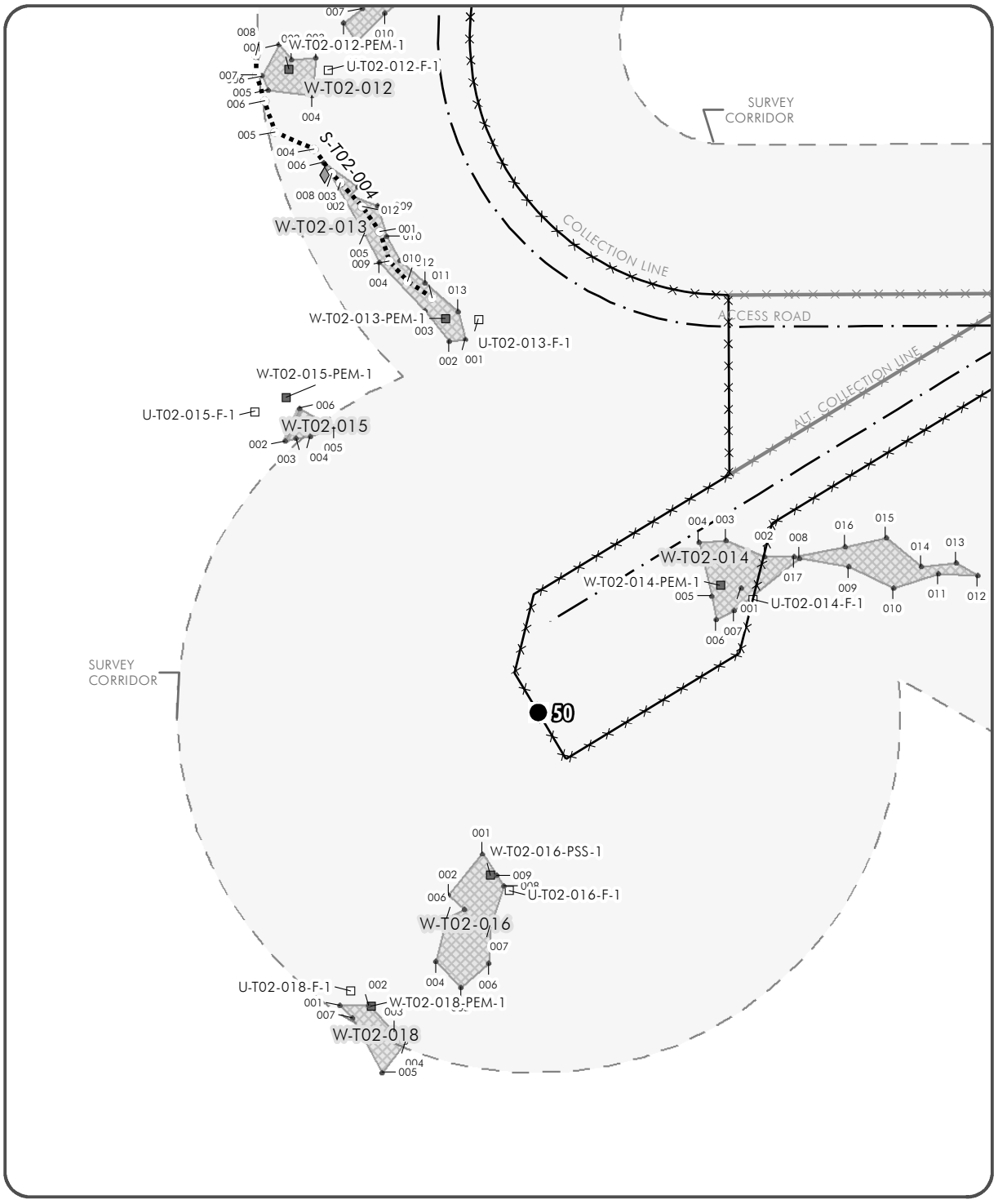


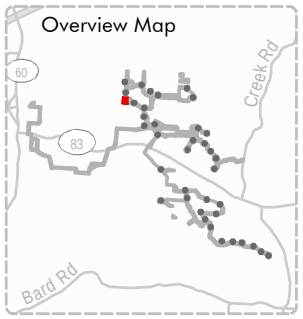


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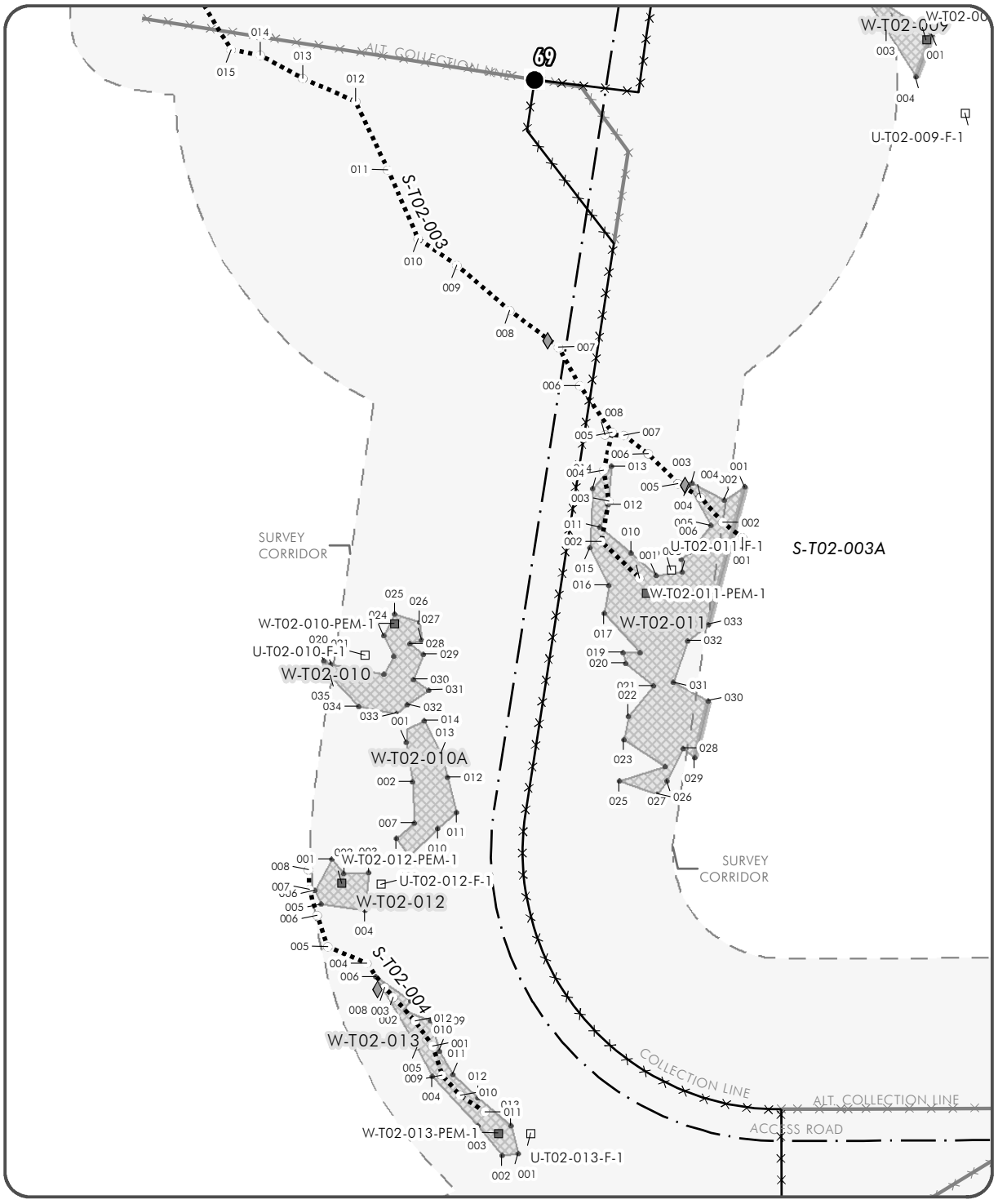


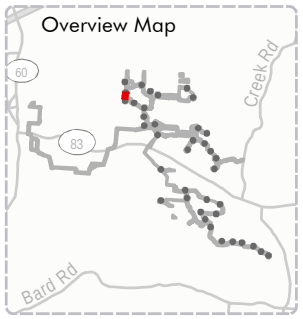


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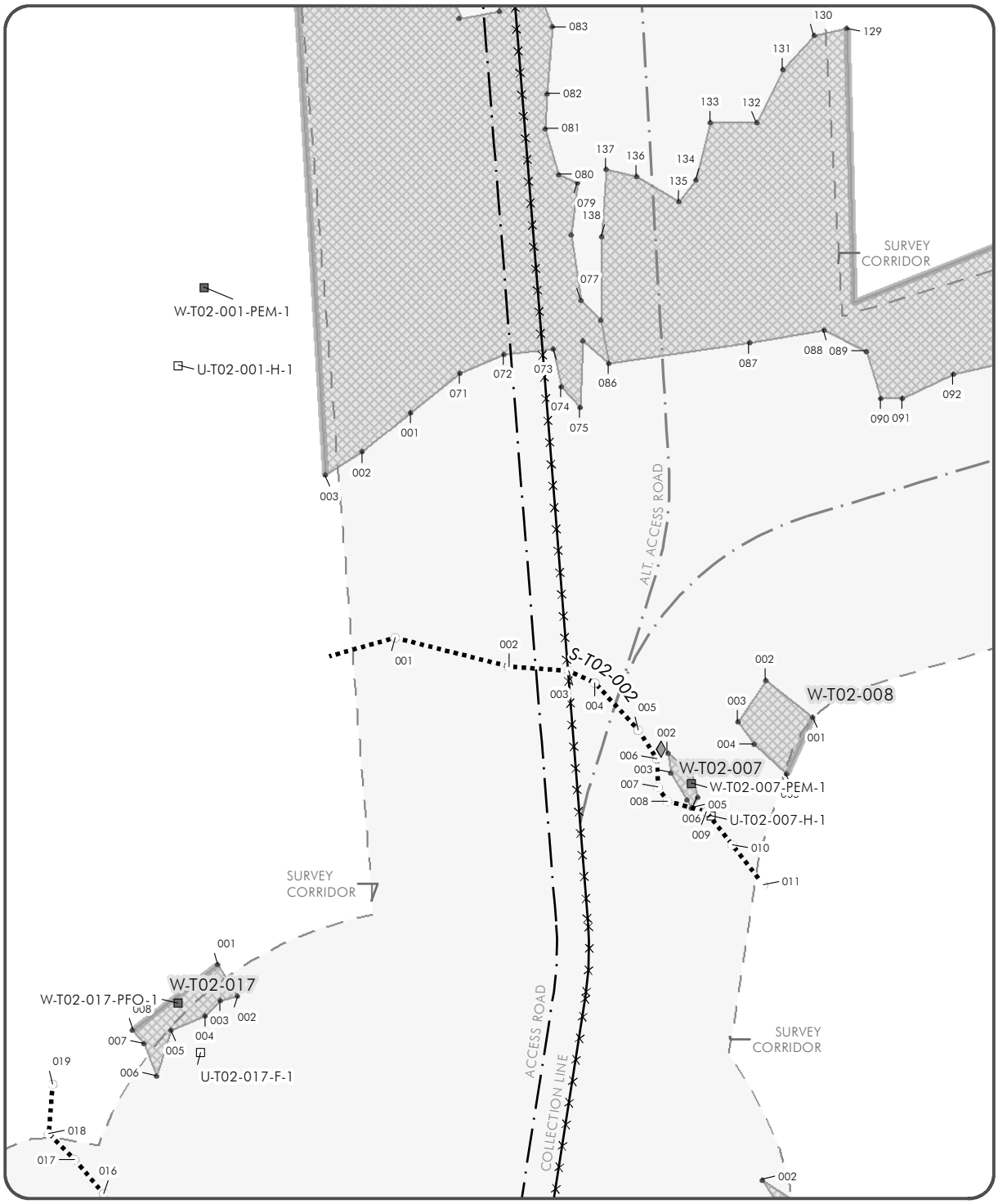


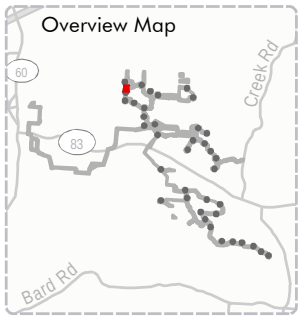


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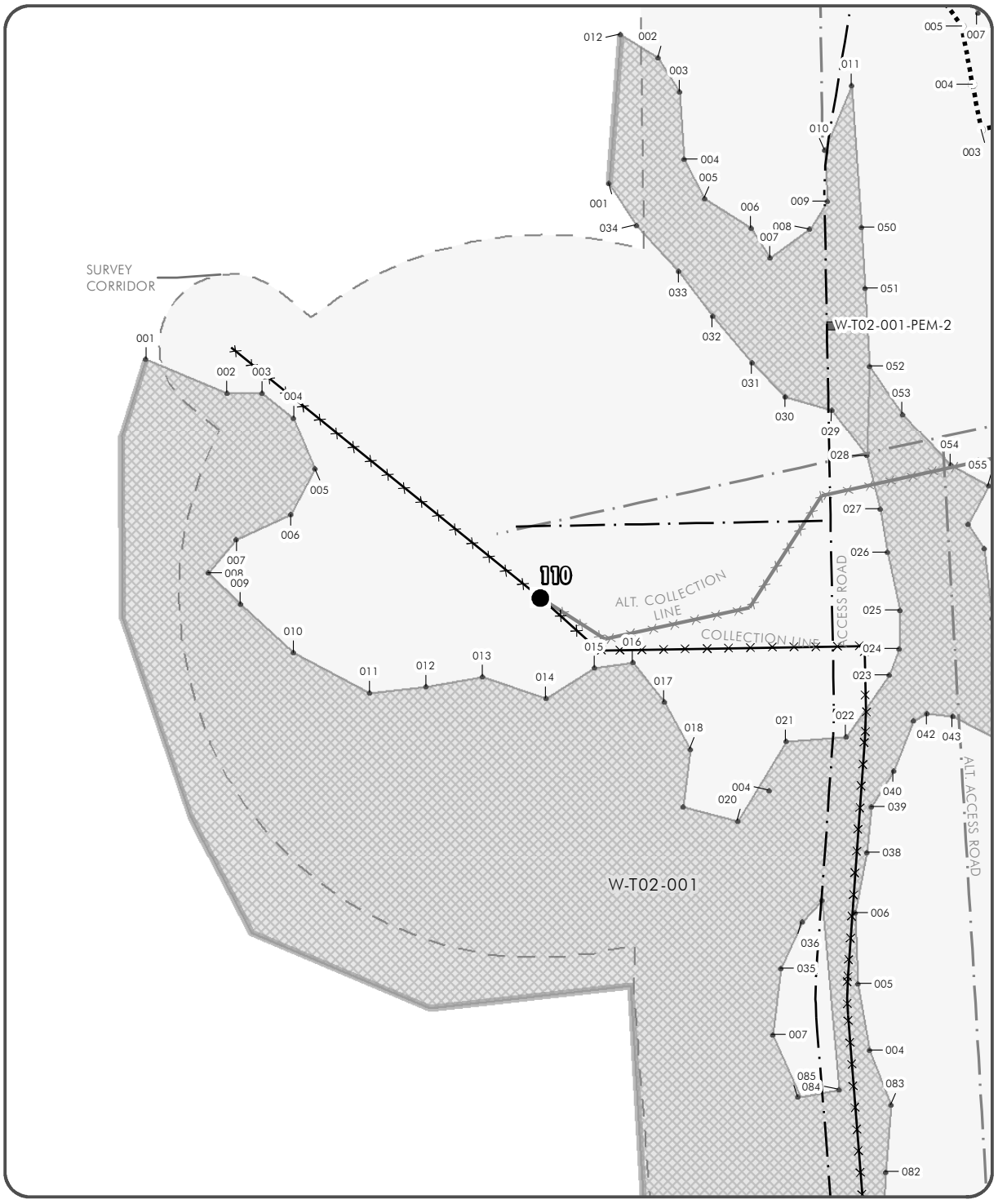


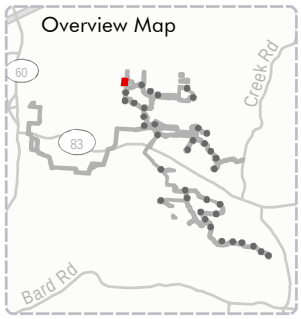


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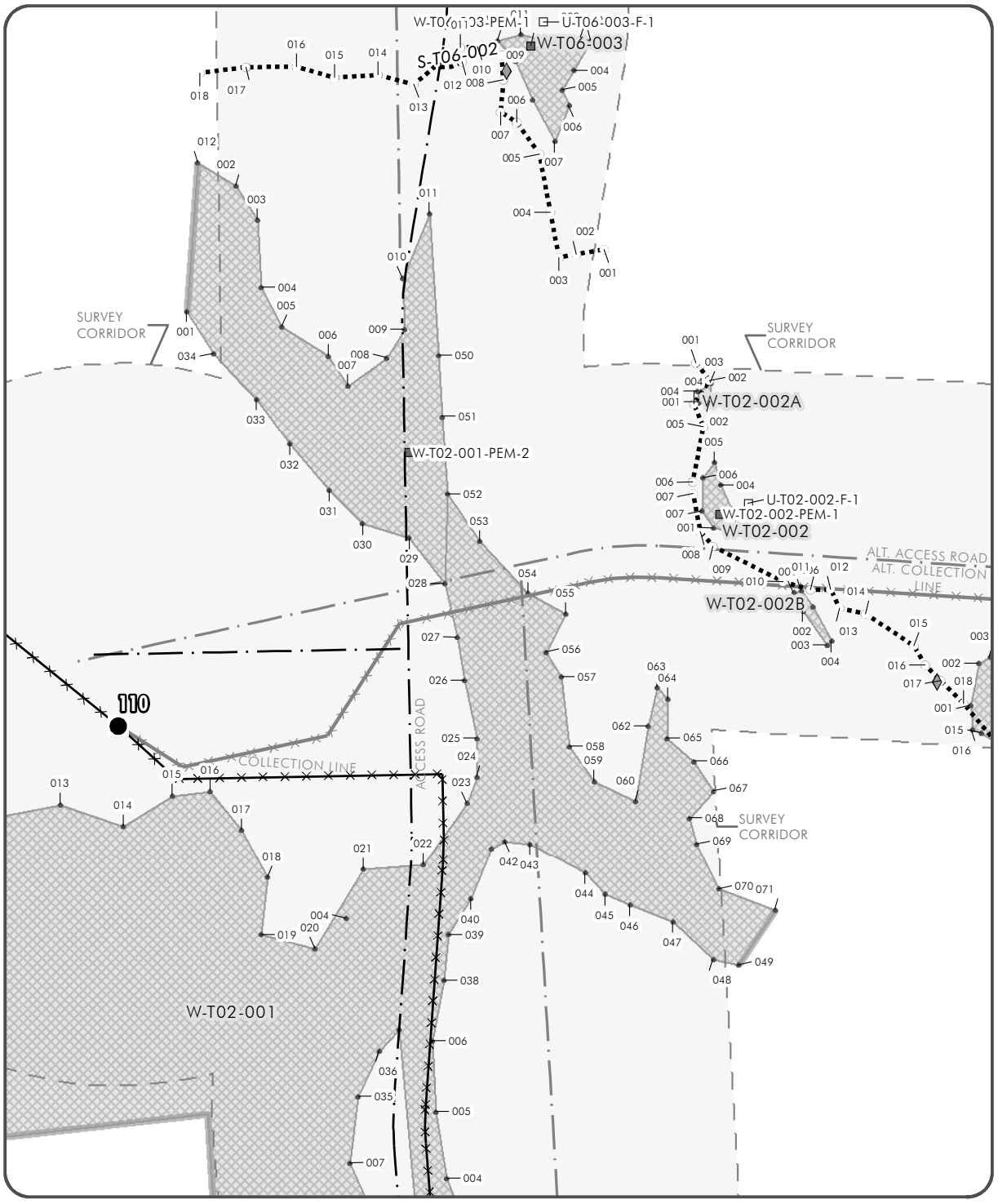


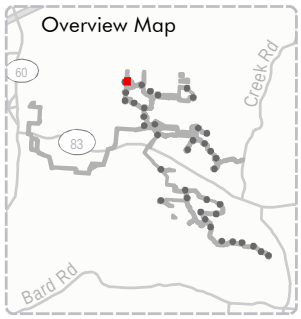


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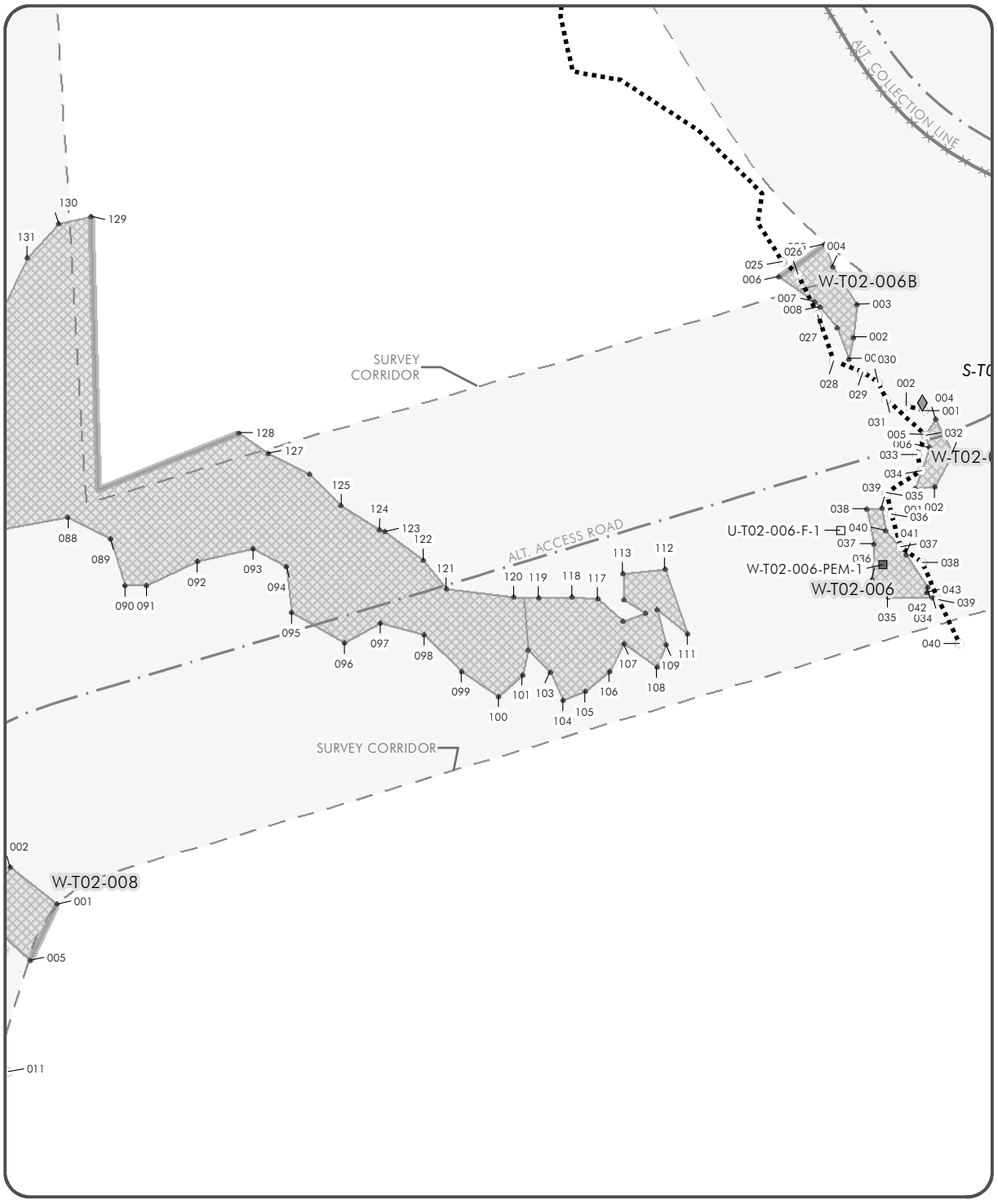


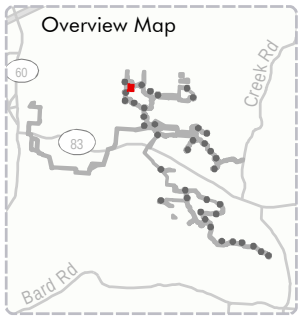


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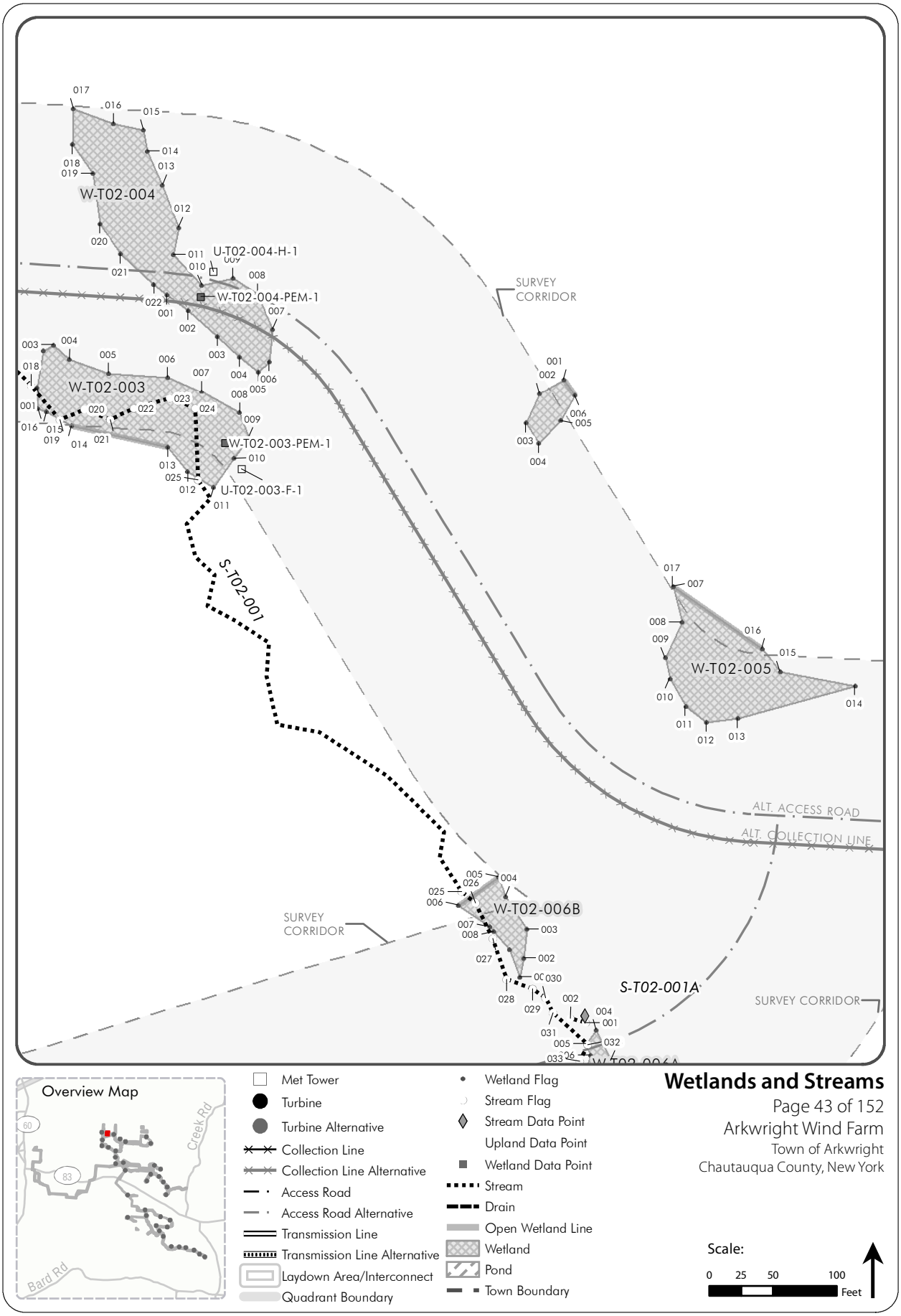


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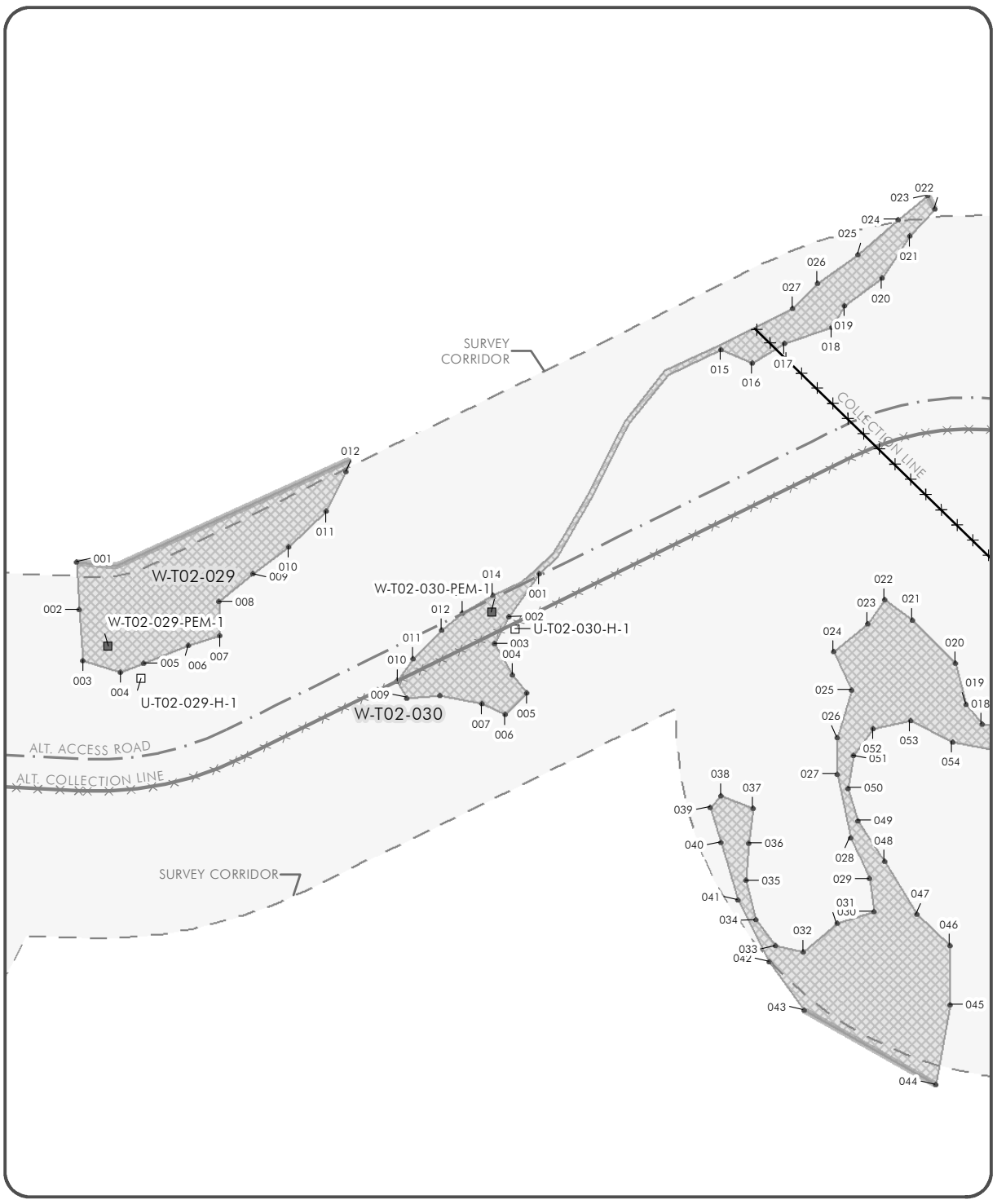


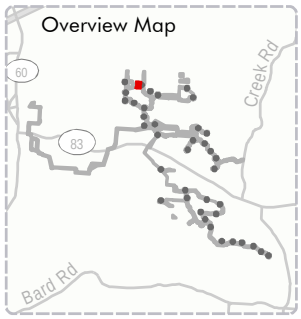


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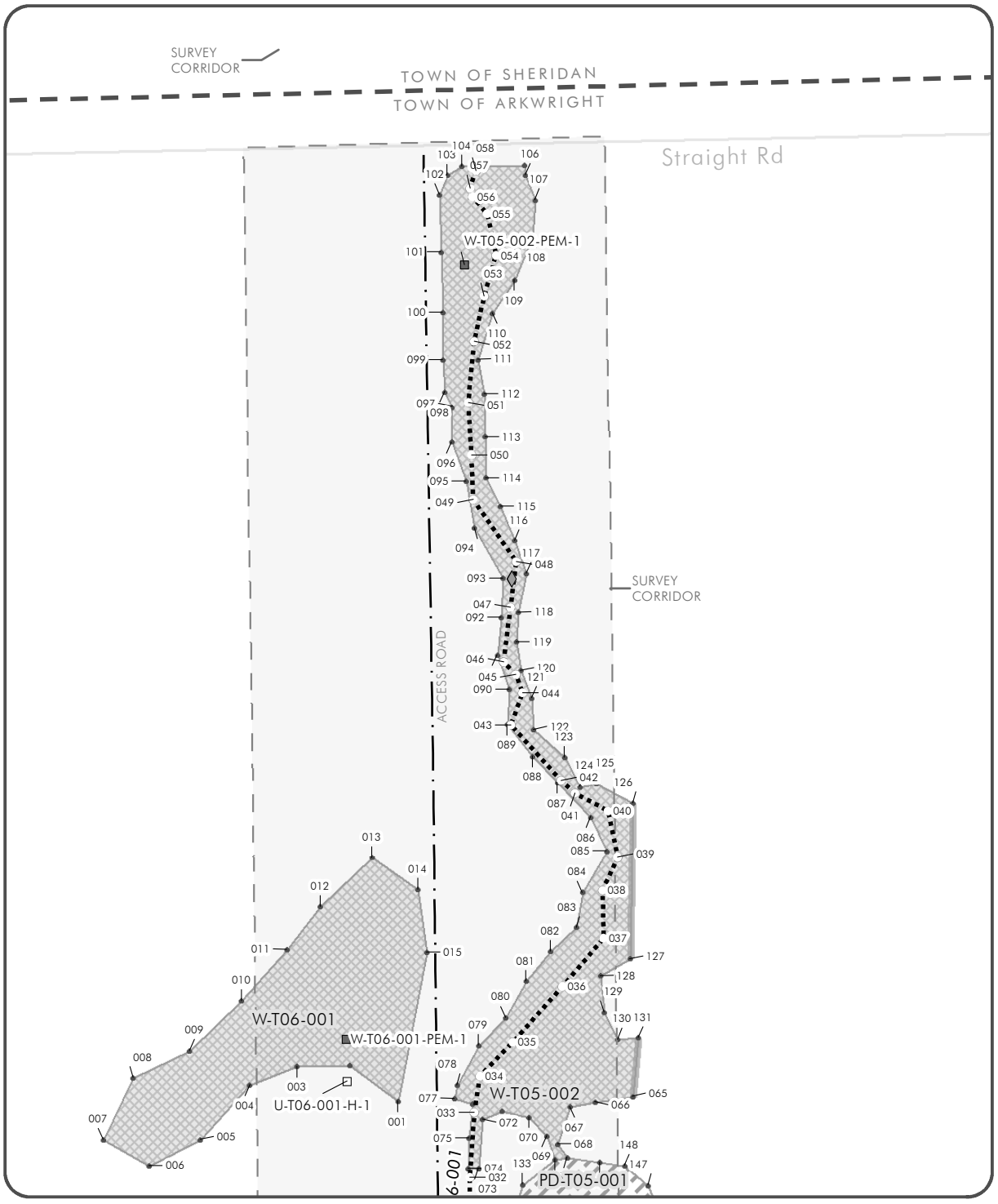


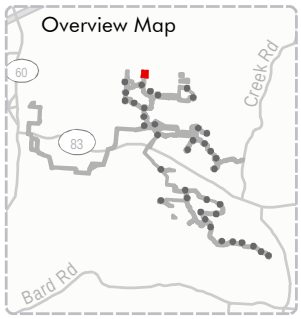


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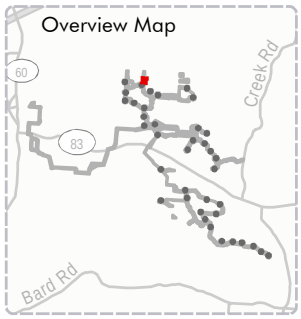


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- Town Boundary

# Wetlands and Streams



Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

Scale:

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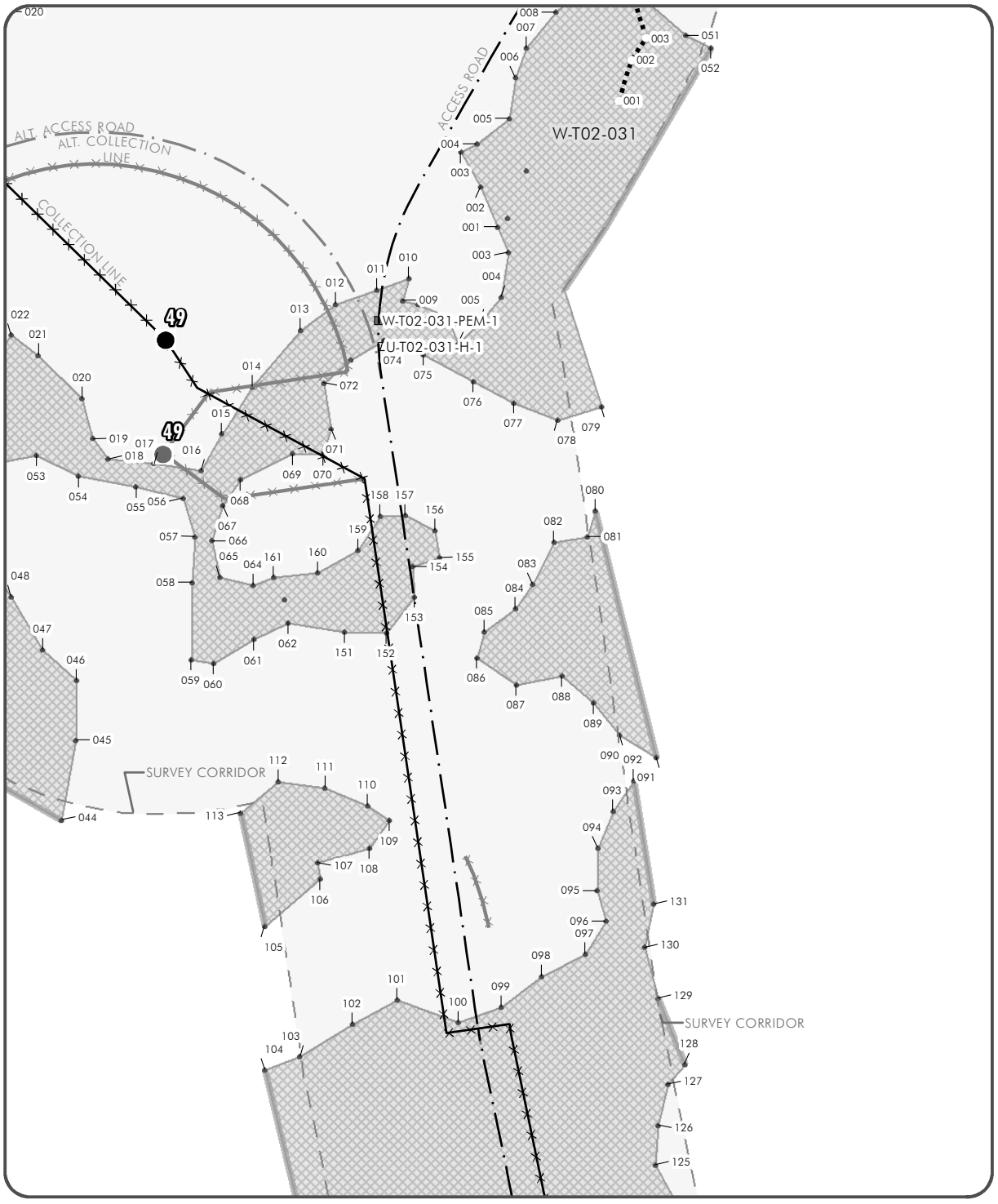


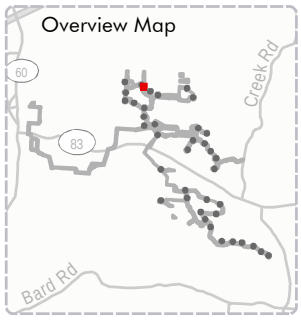


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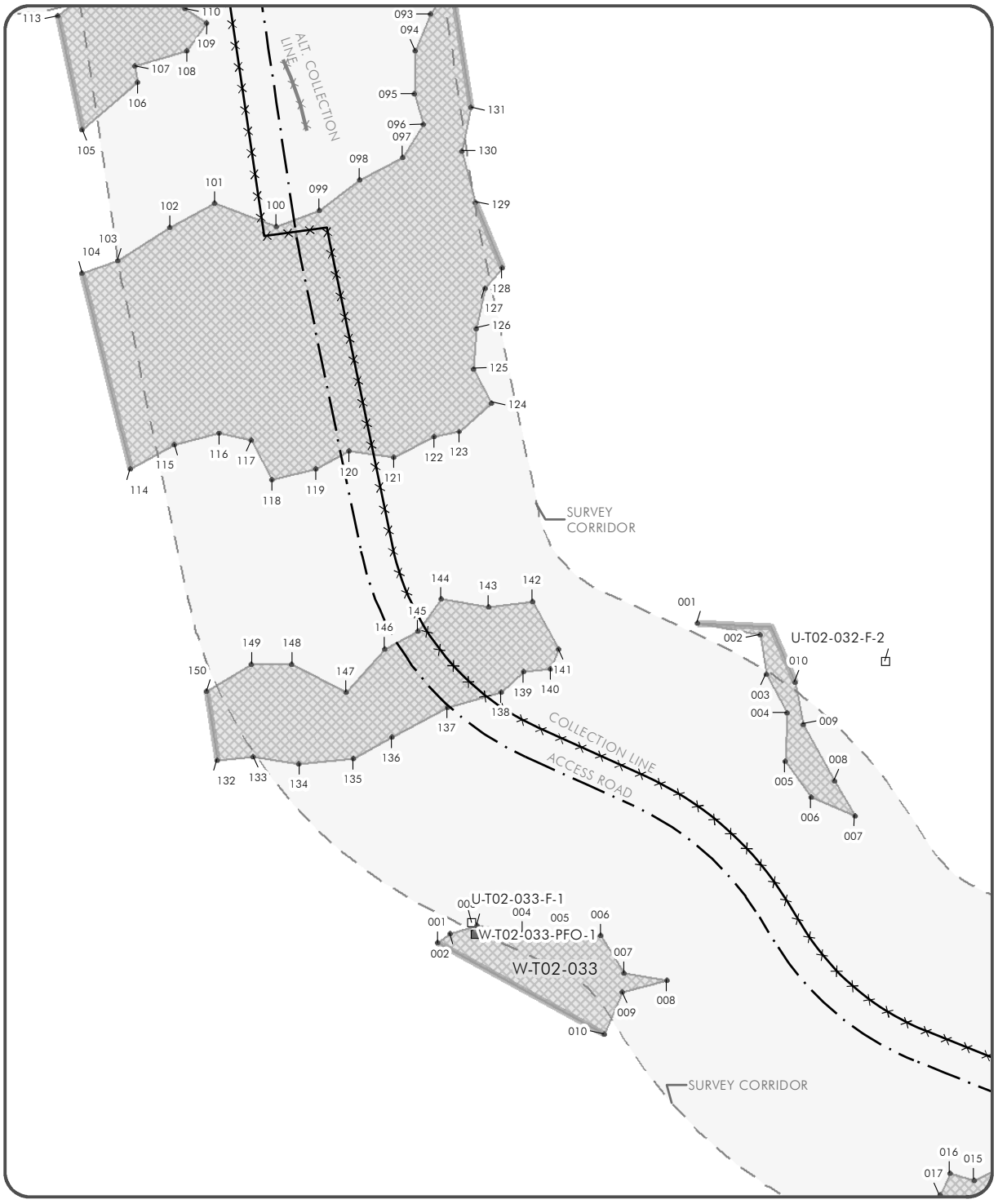


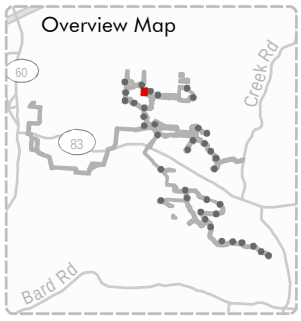


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# Wetlands and Streams

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Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

Scale:

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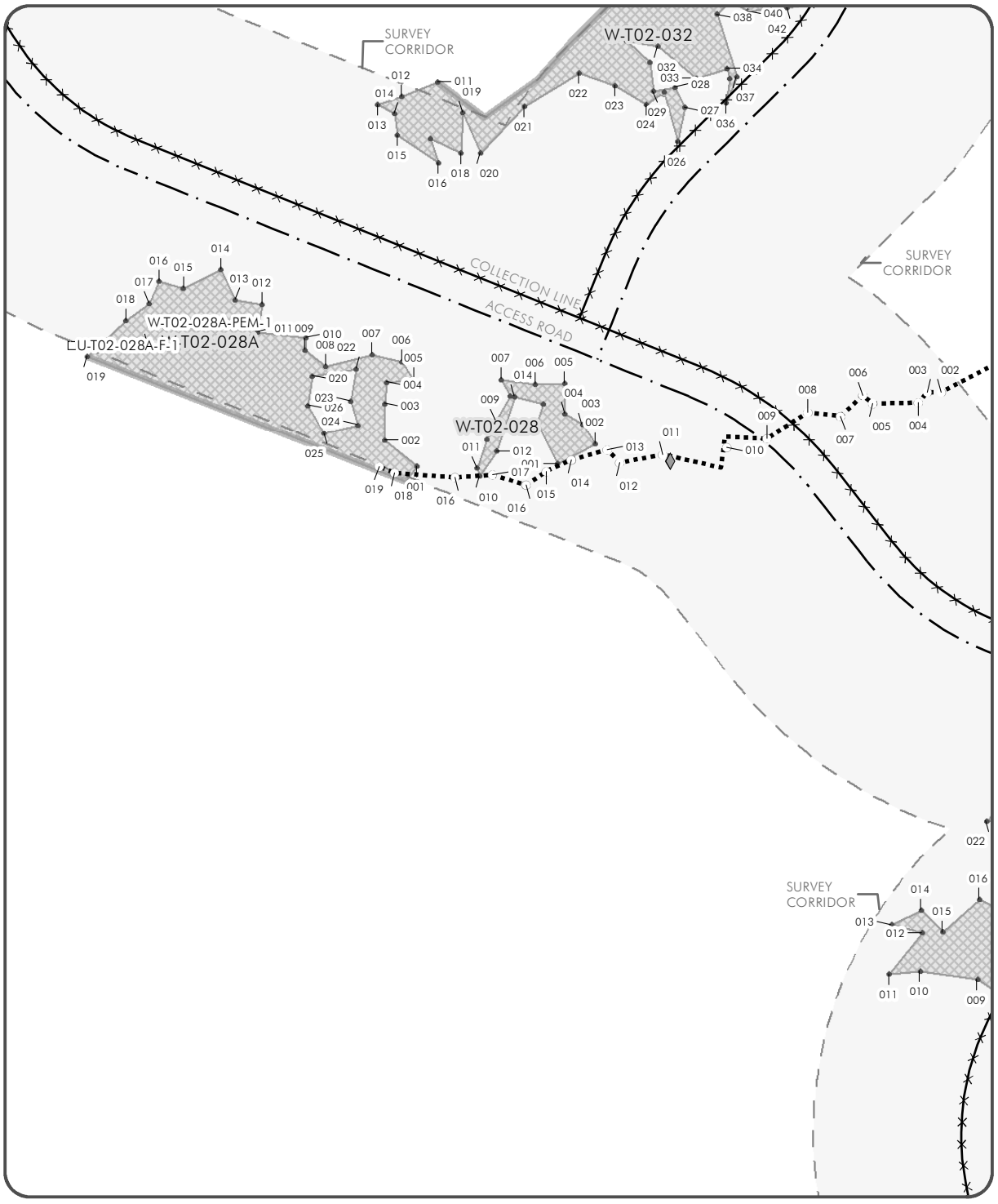


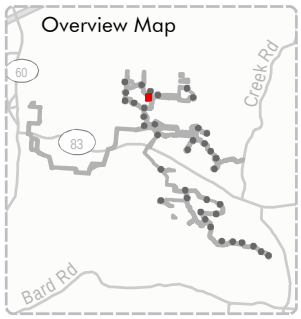


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Town of Arkwright

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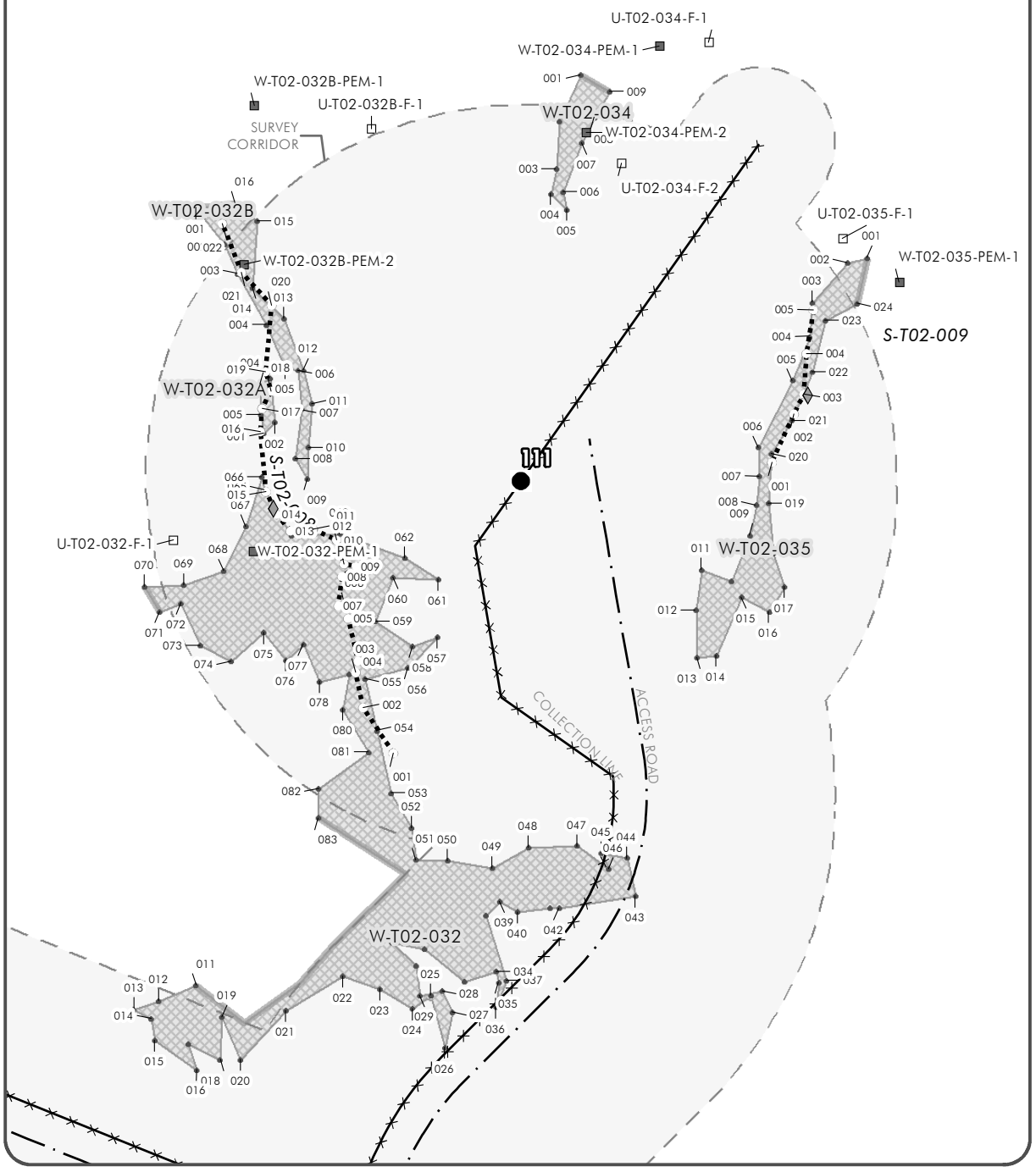


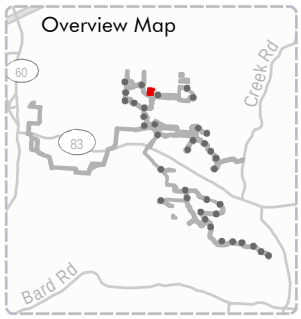


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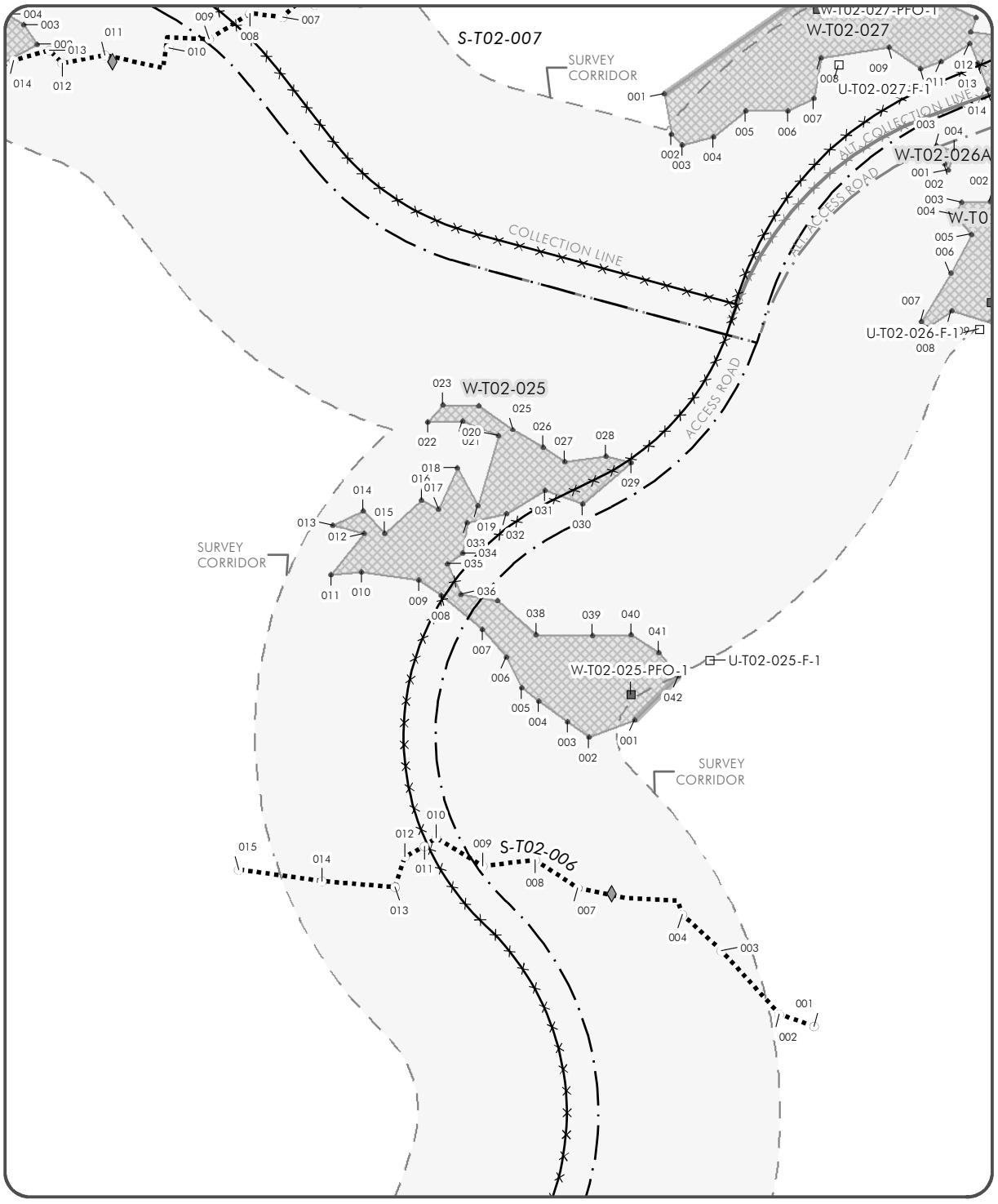


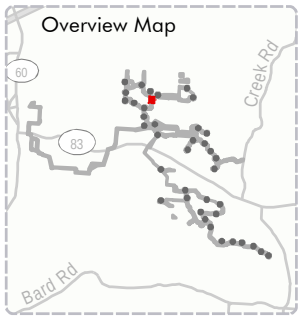


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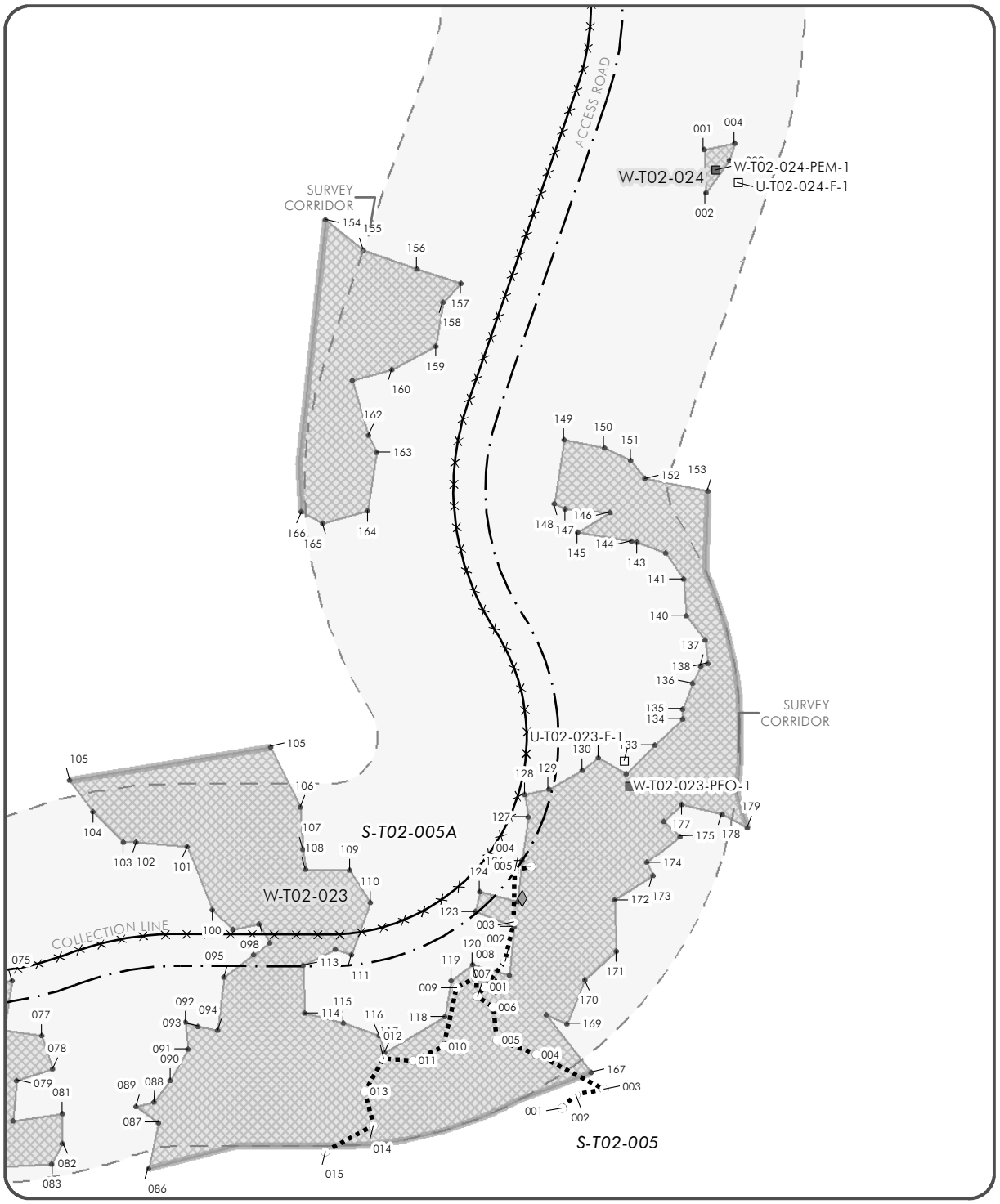


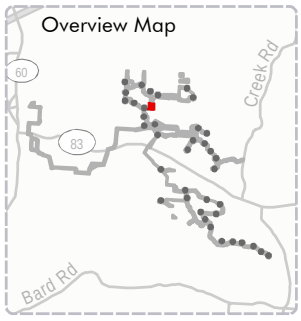


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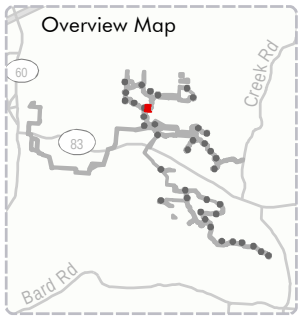


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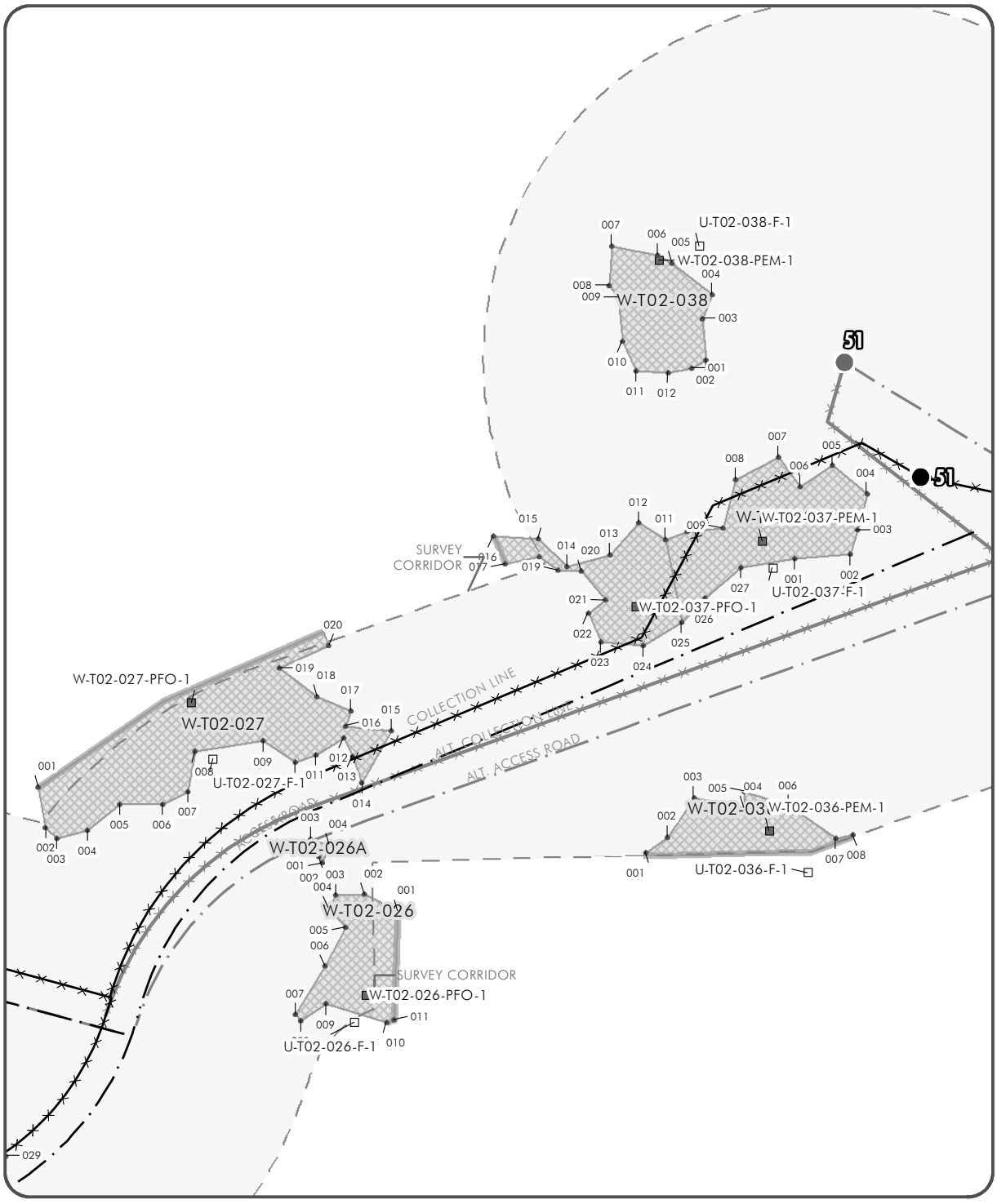


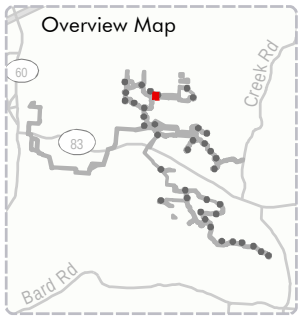


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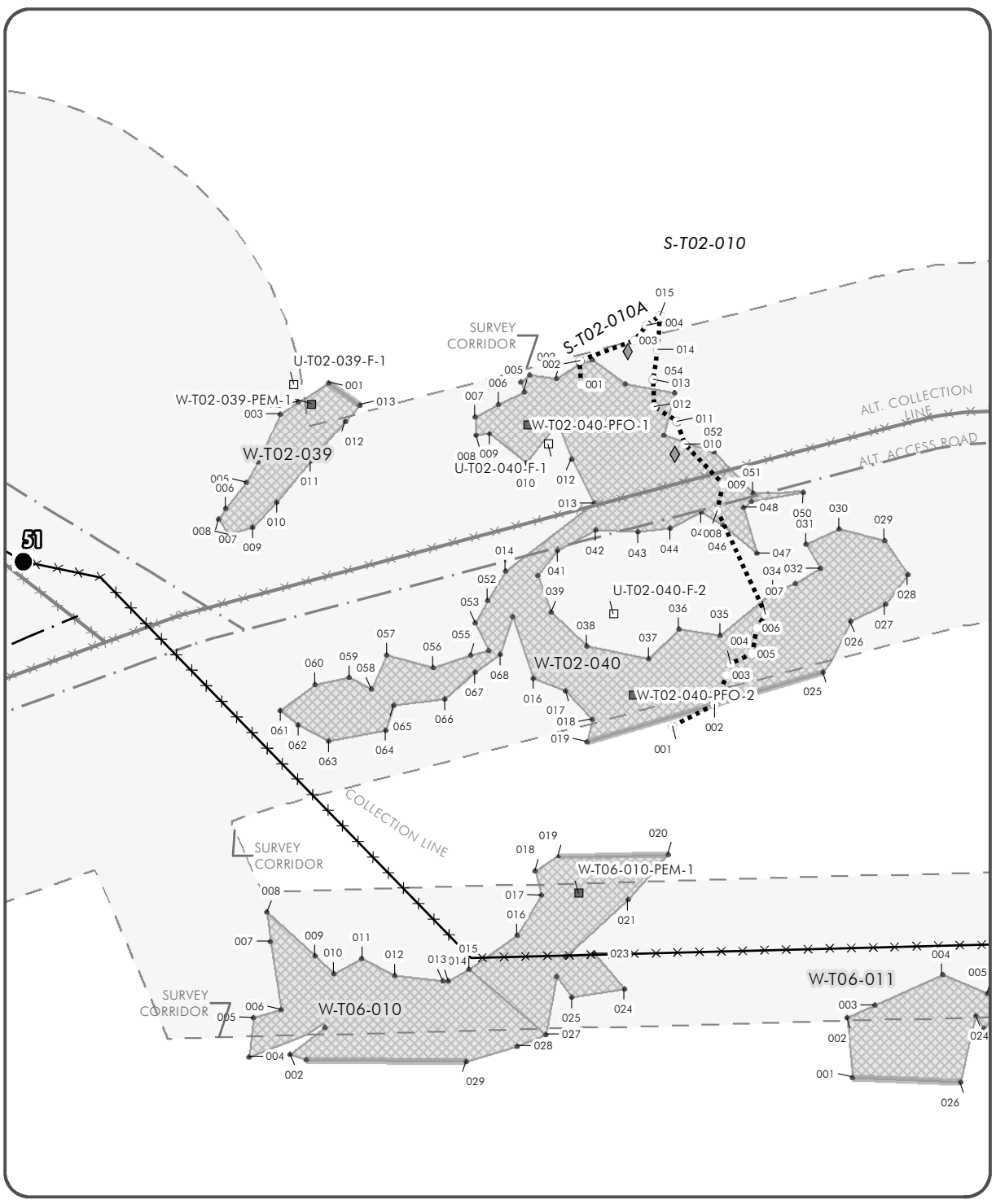


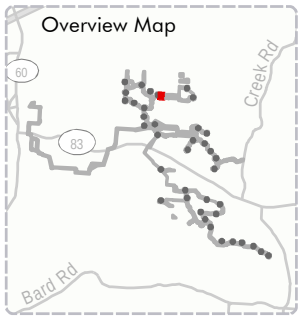


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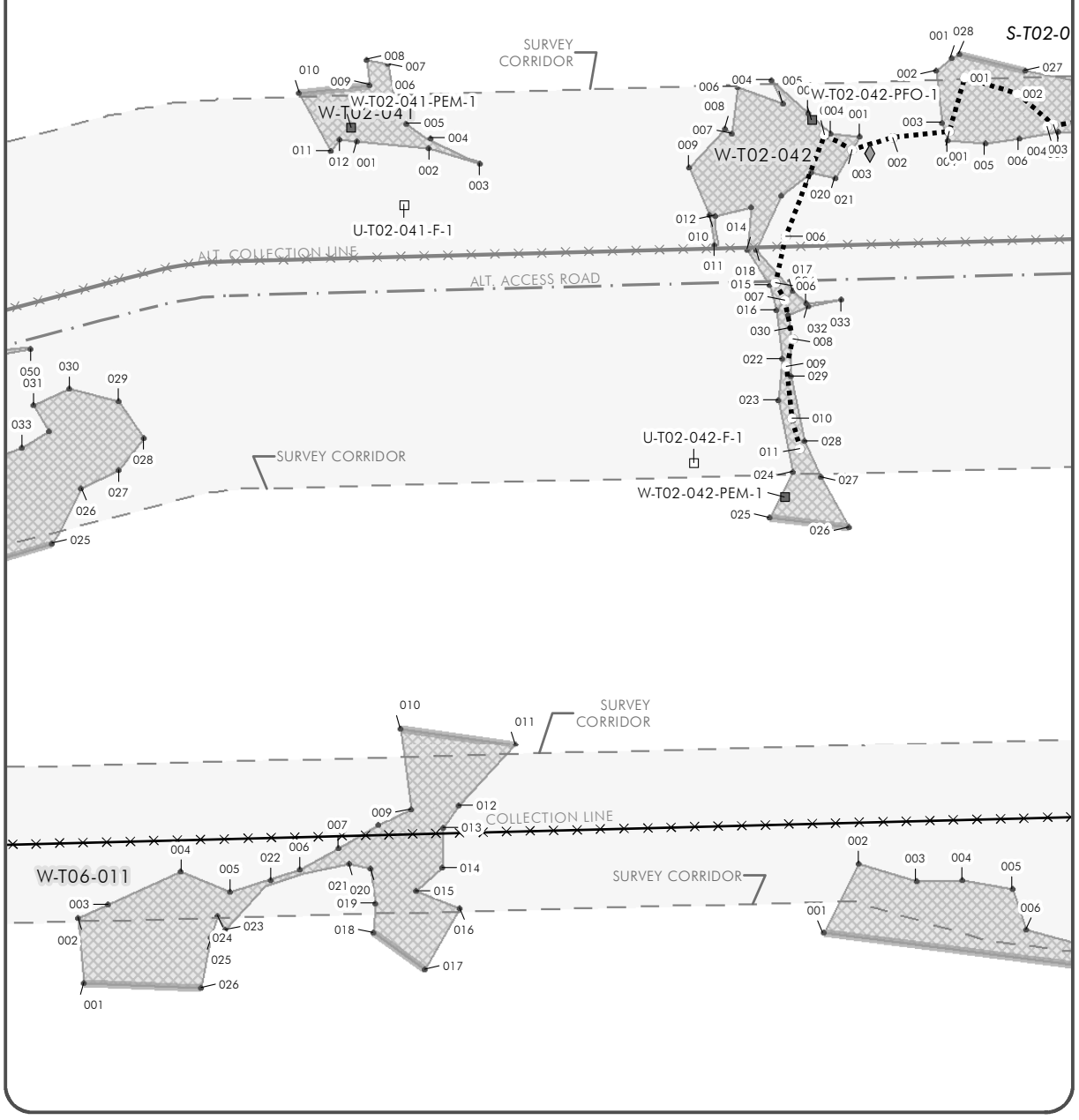


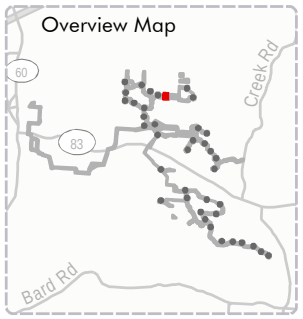


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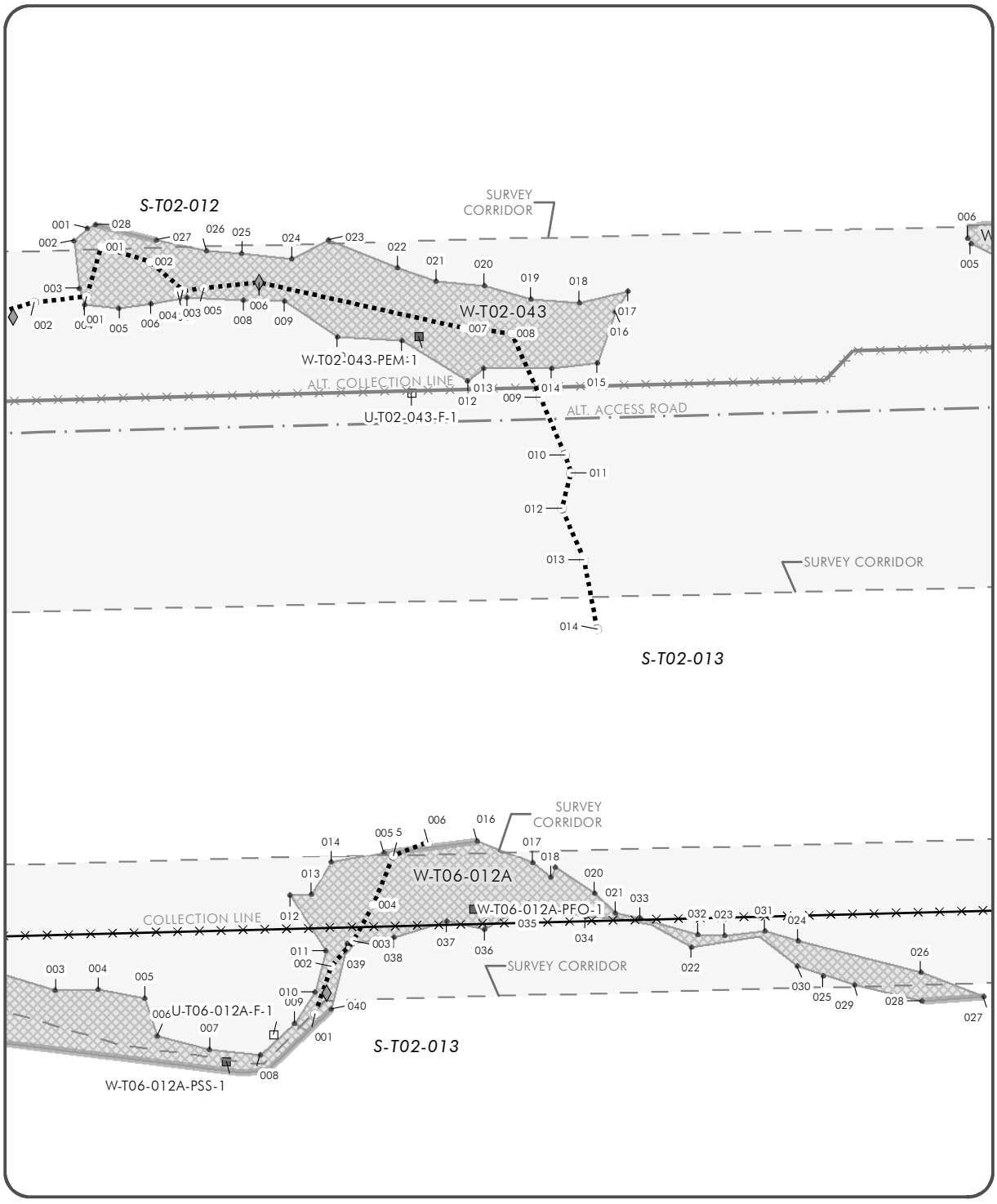


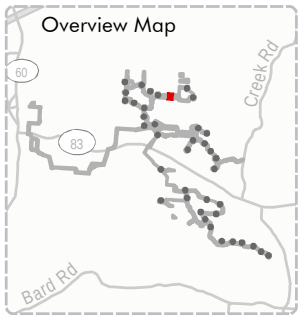


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Chautauqua County, New York

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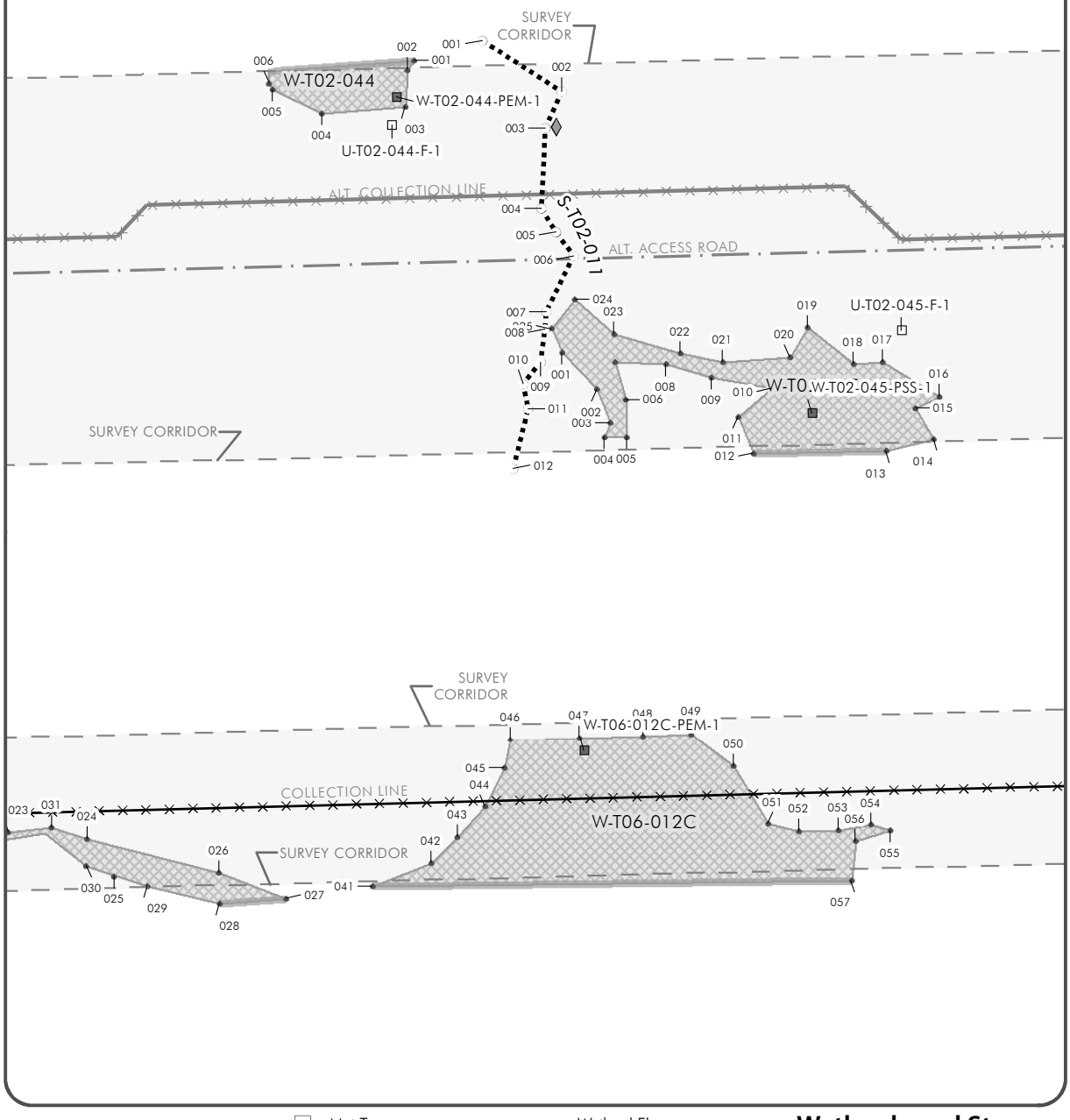


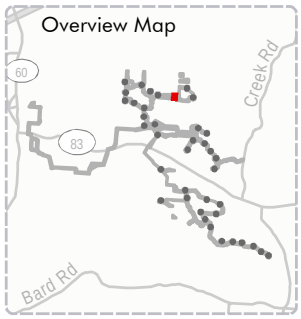


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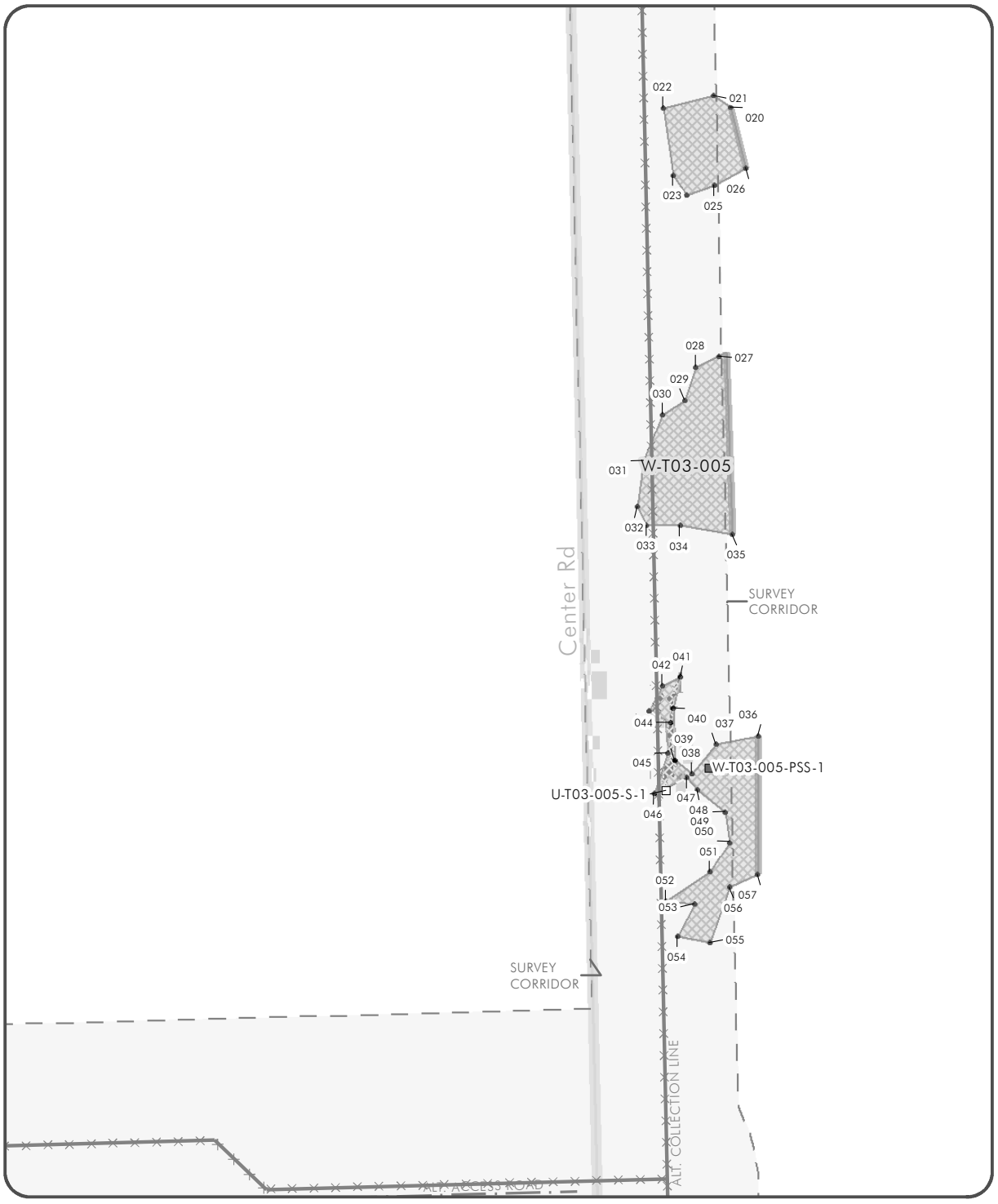


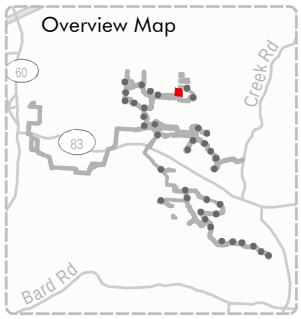


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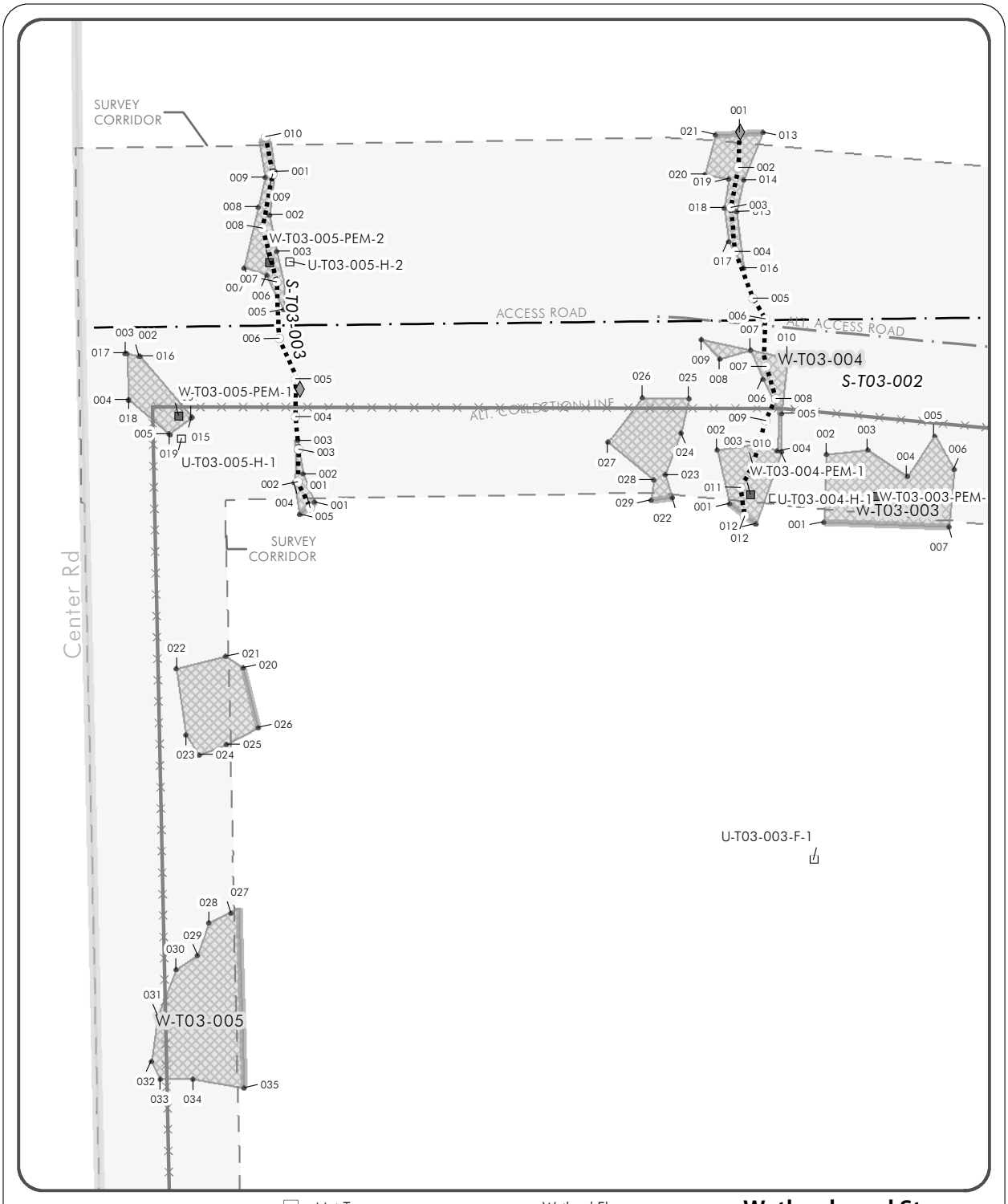


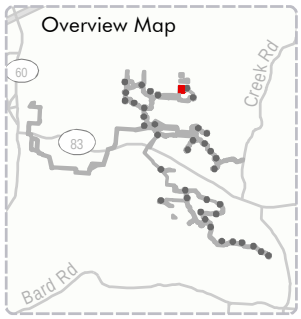


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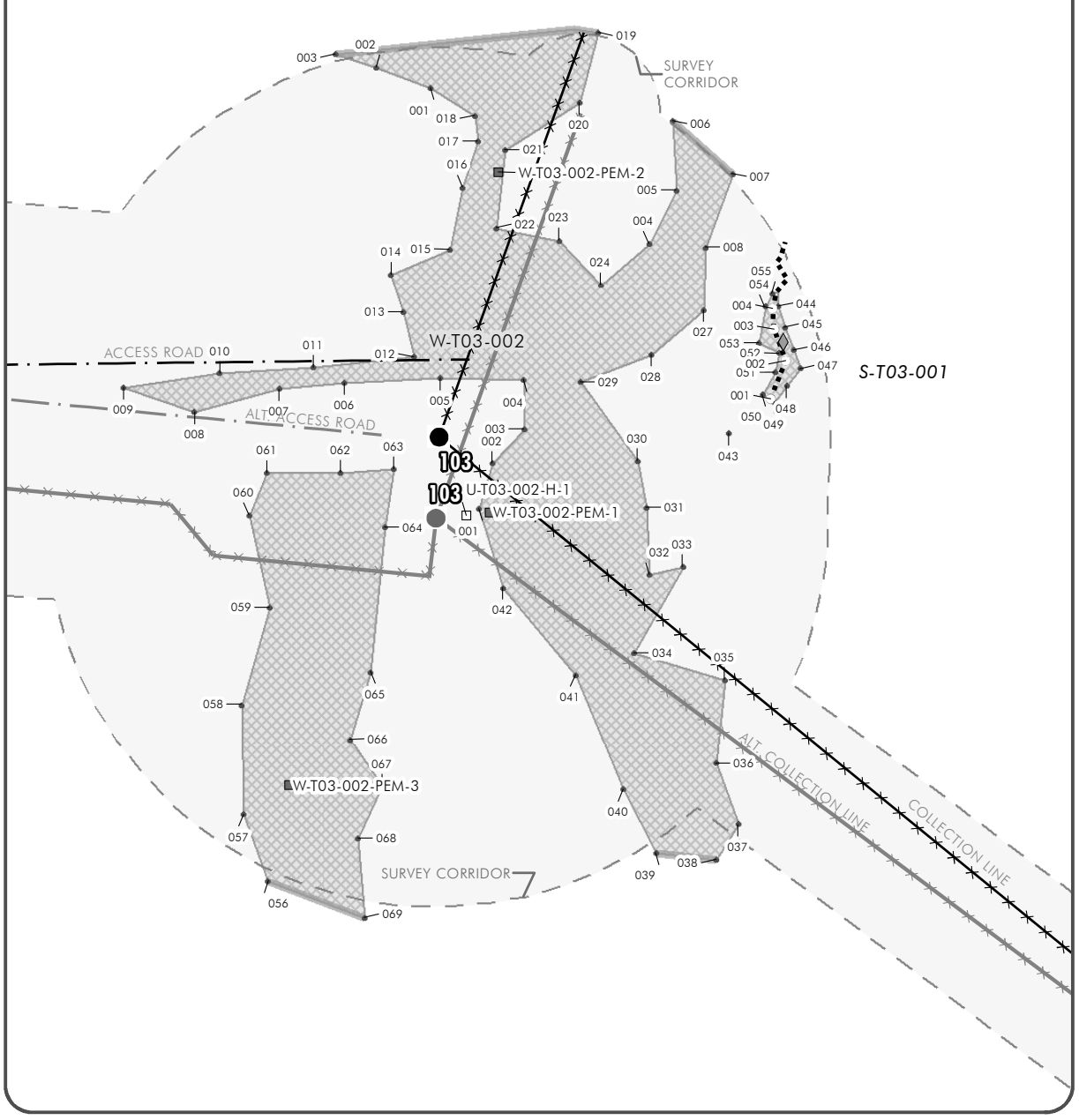


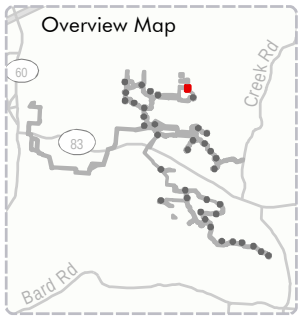


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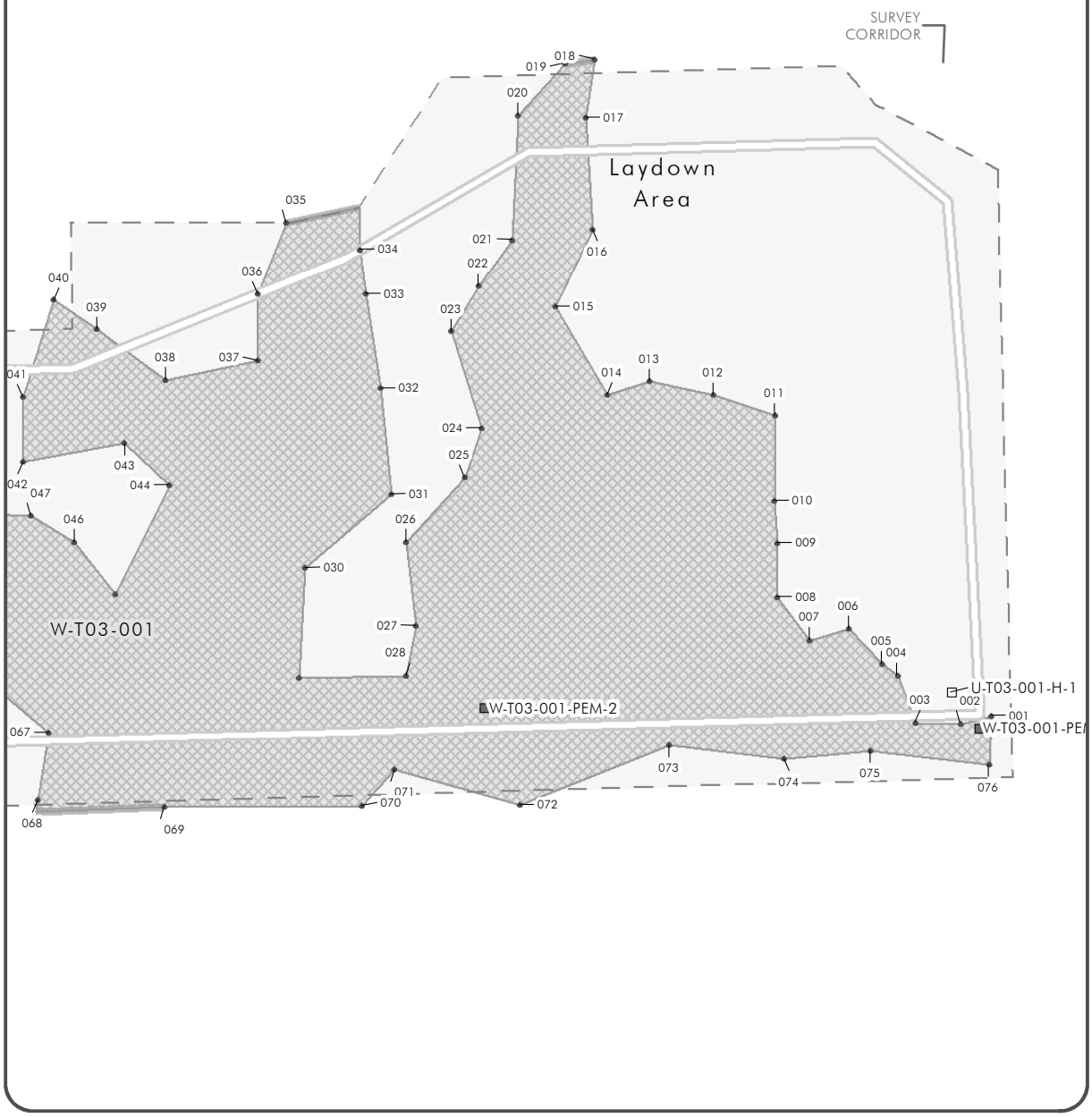


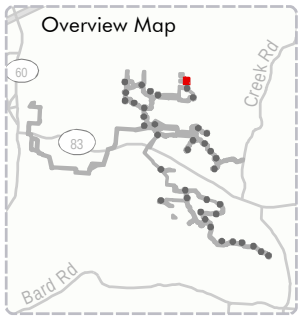


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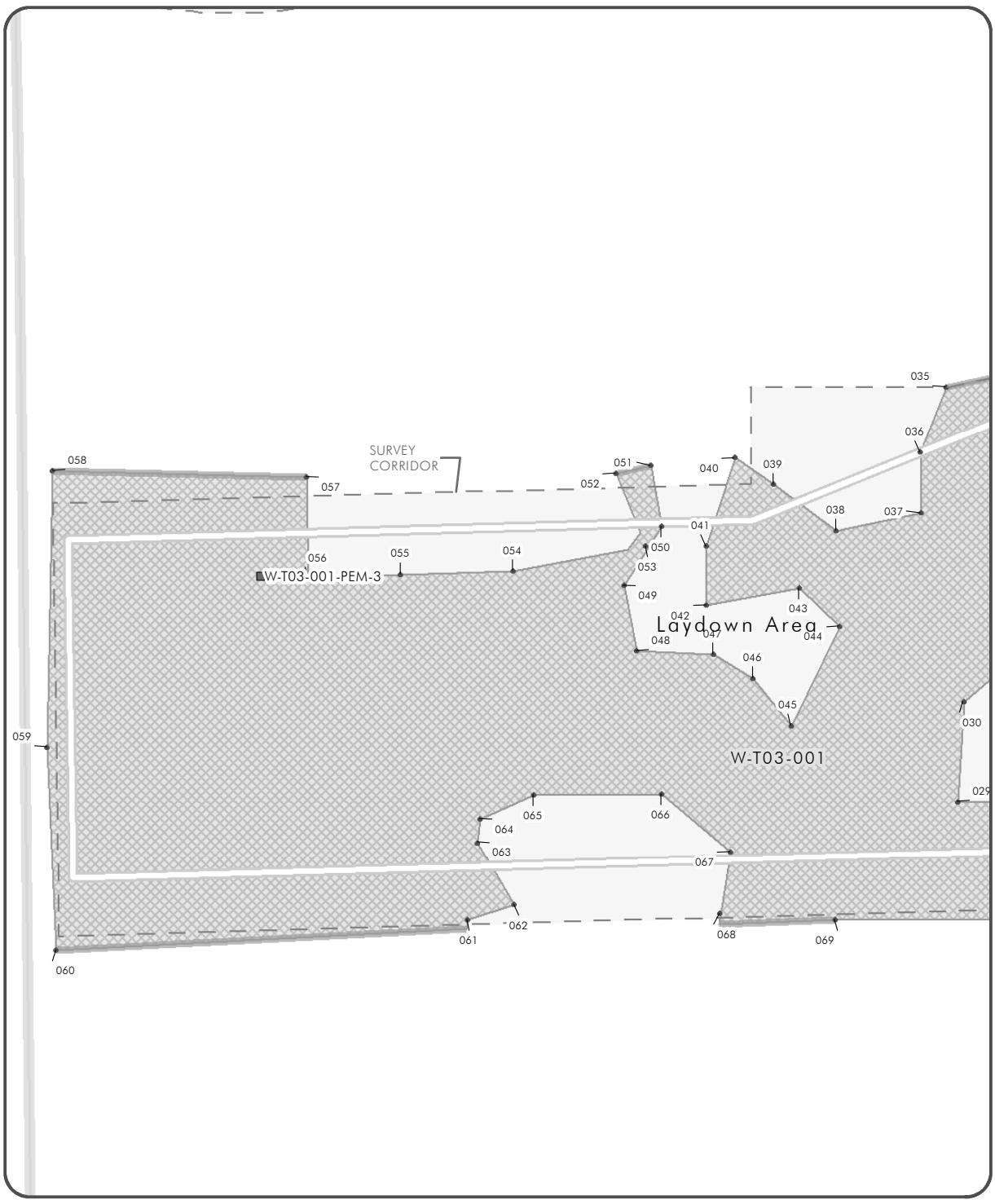


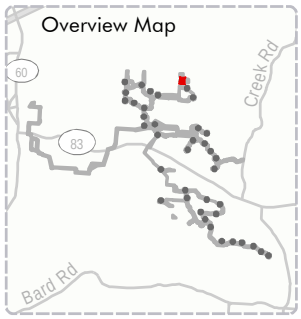


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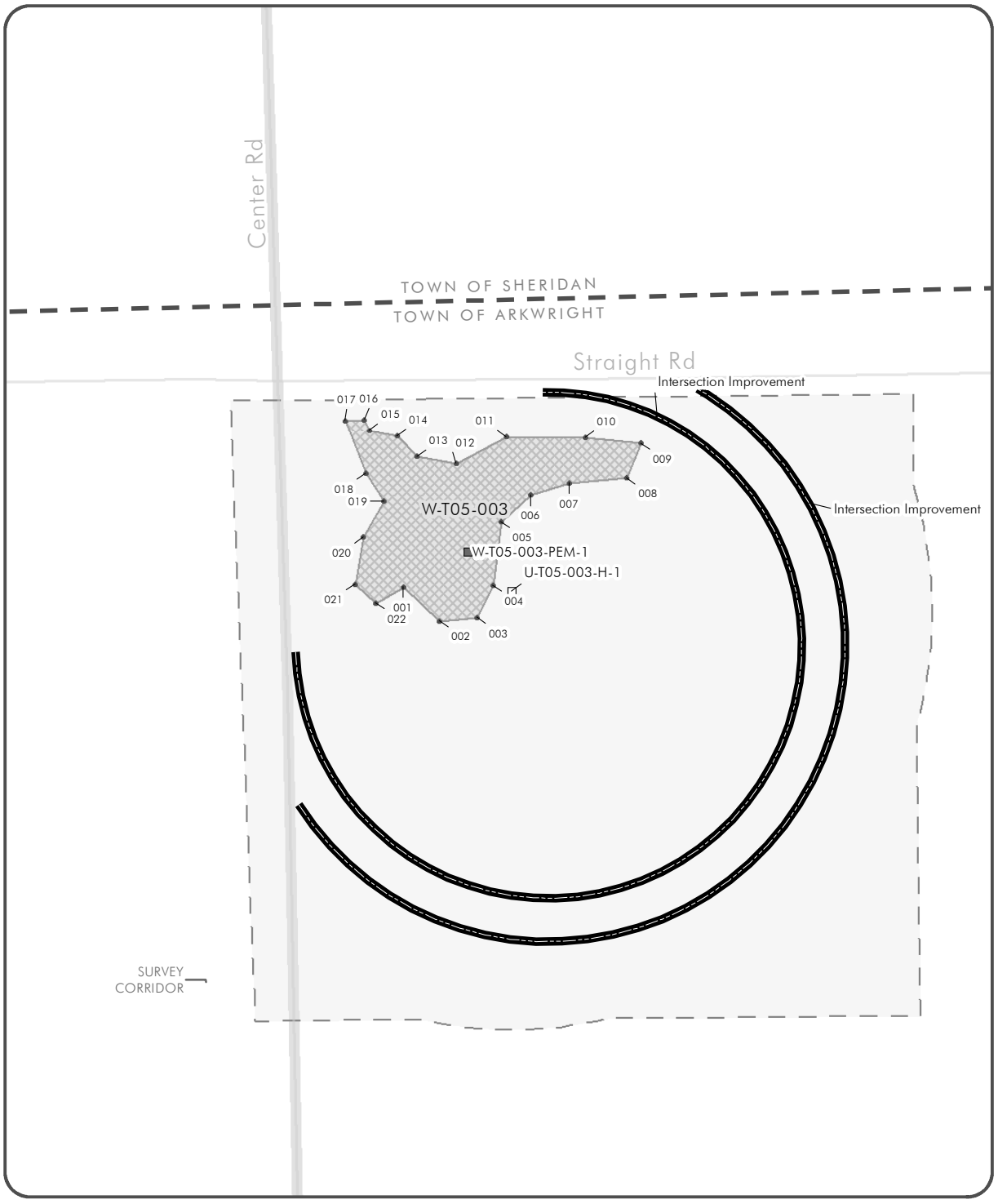


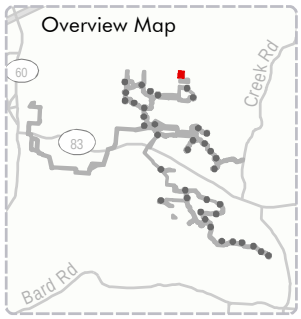


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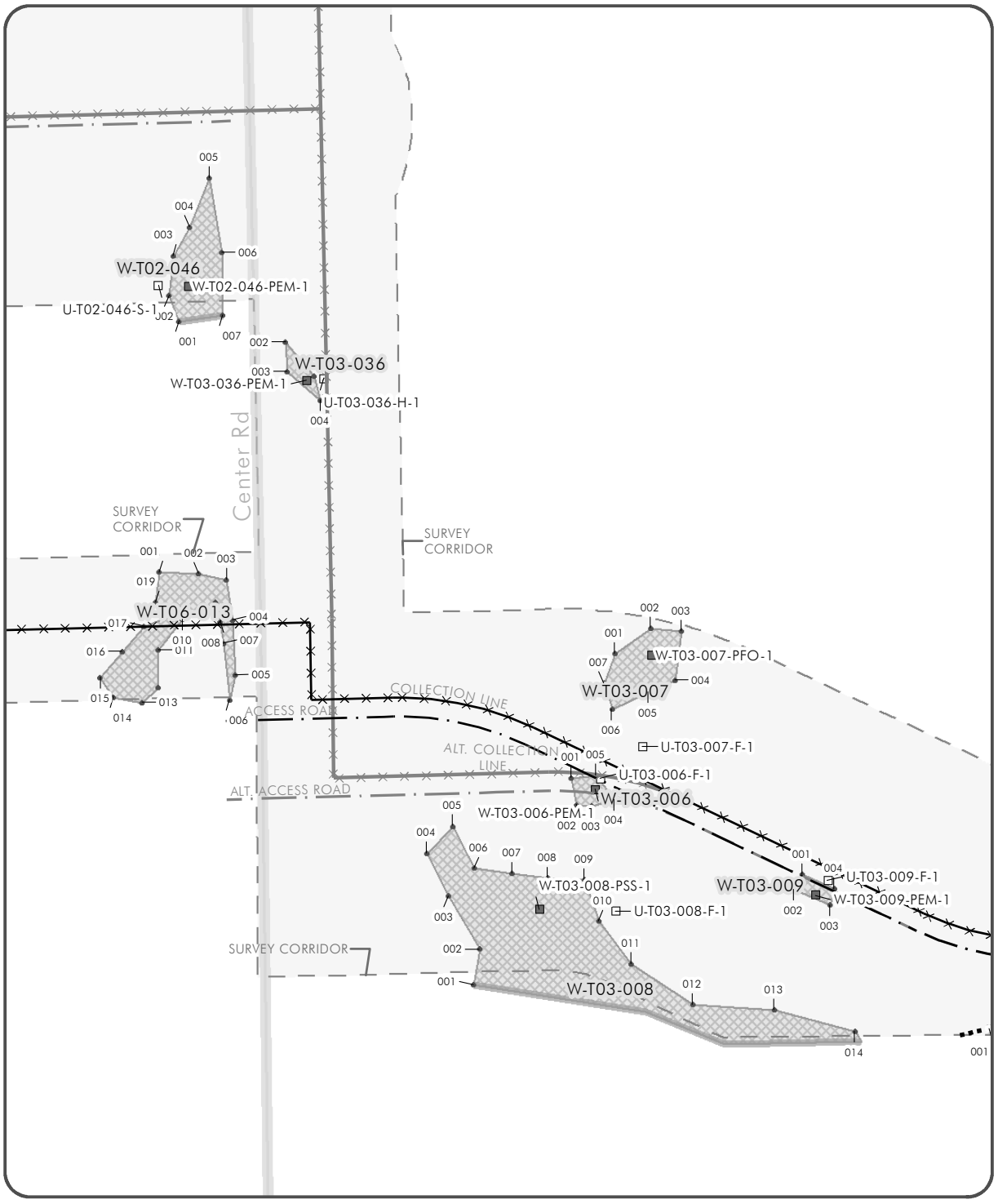


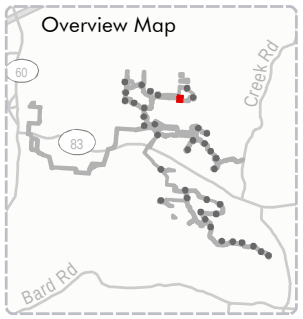


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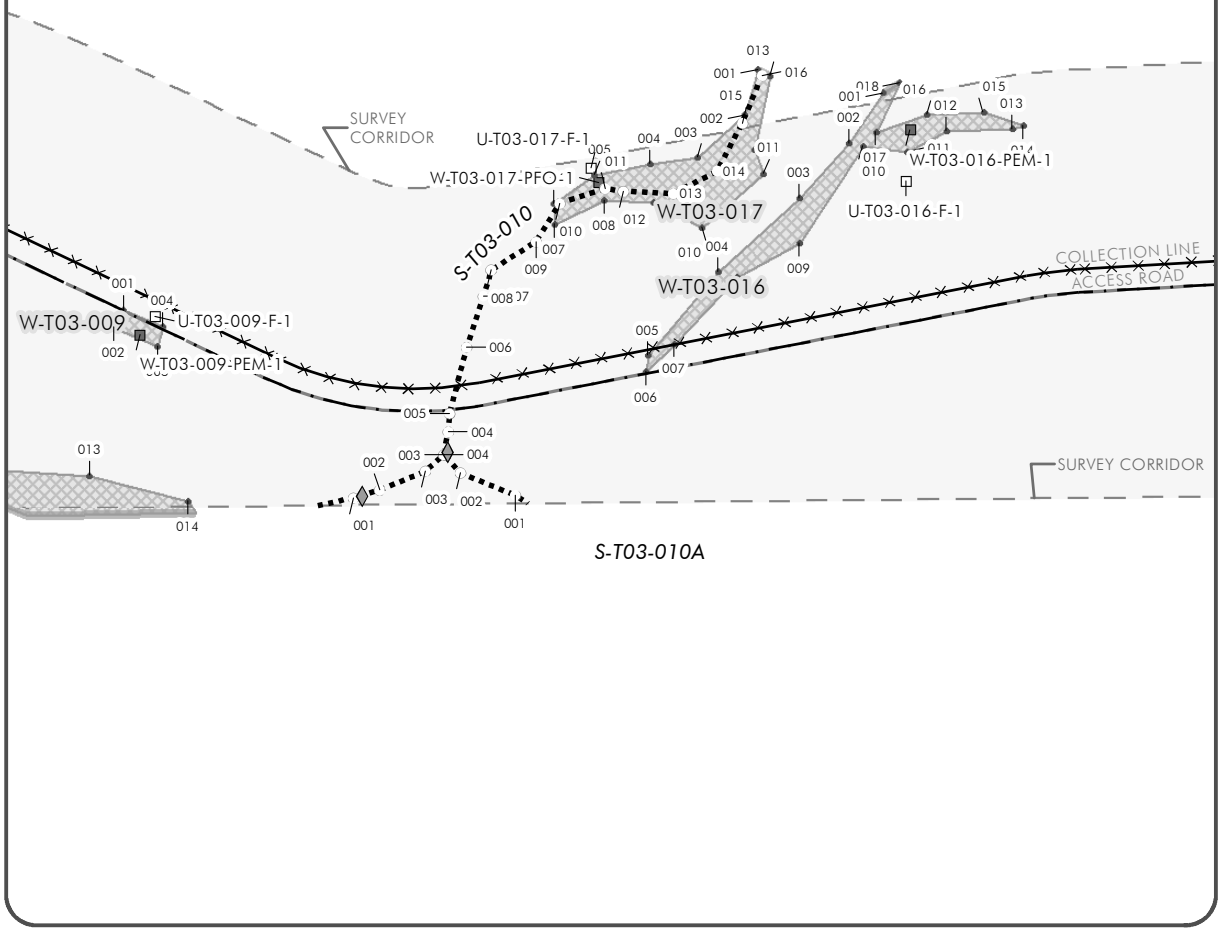
# Wetlands and Streams



Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

Scale:
0 25 50 100 Feet

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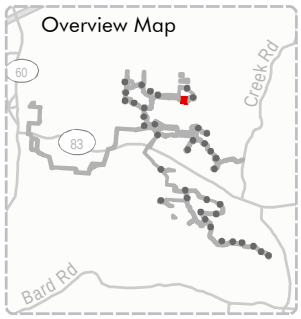


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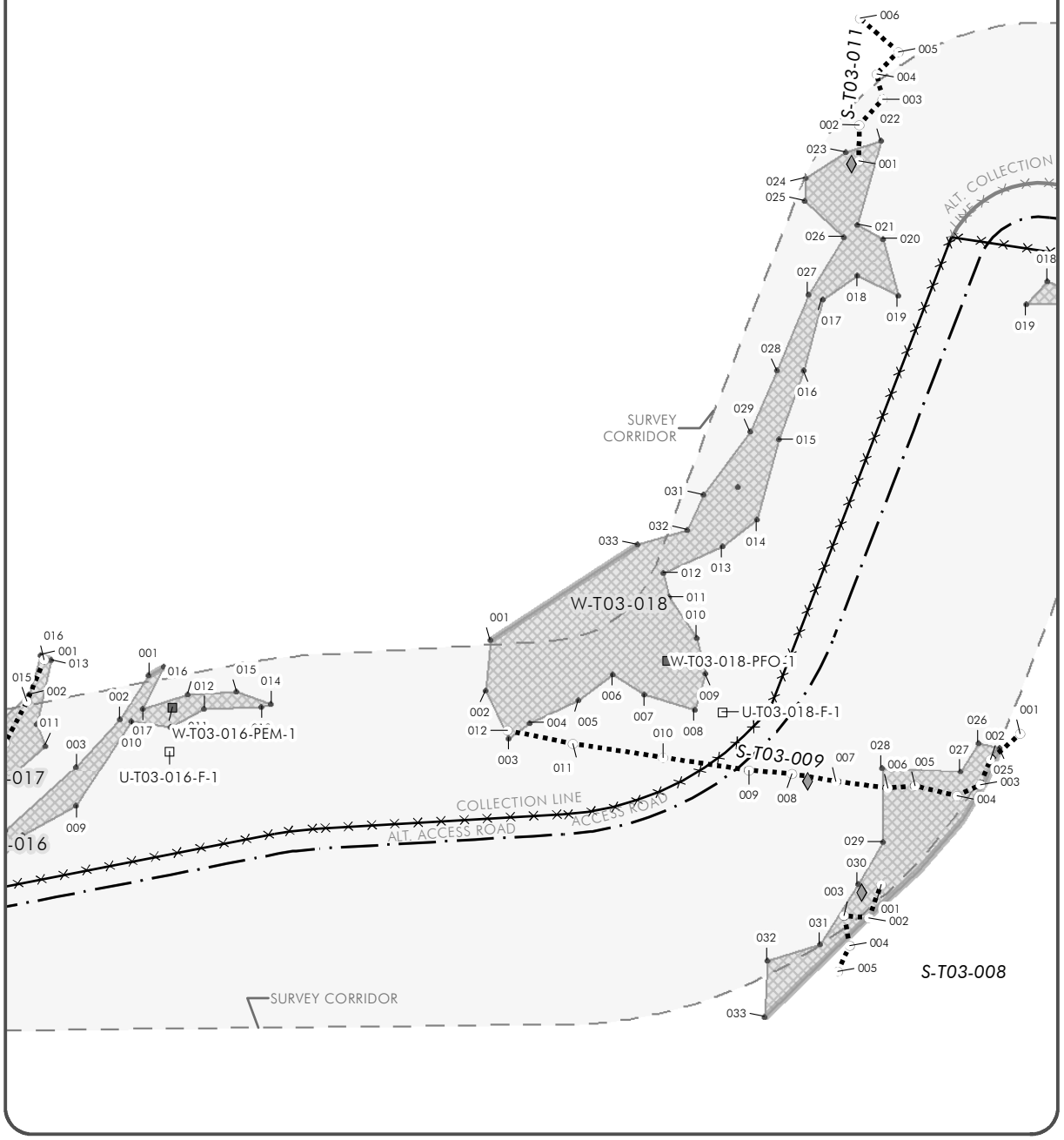


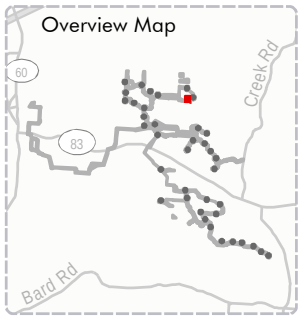


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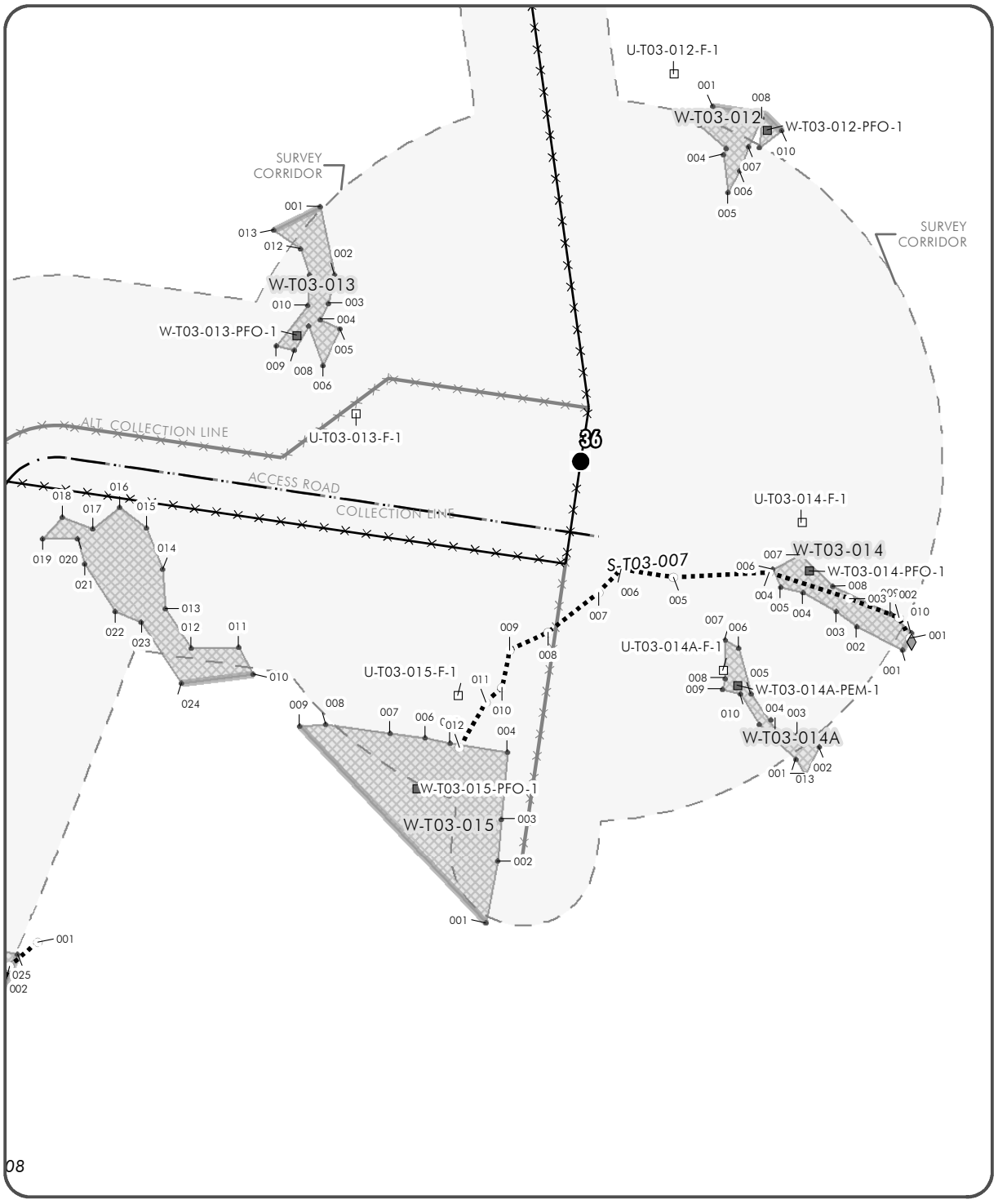


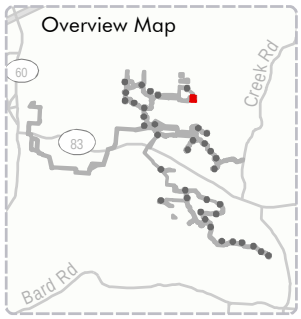


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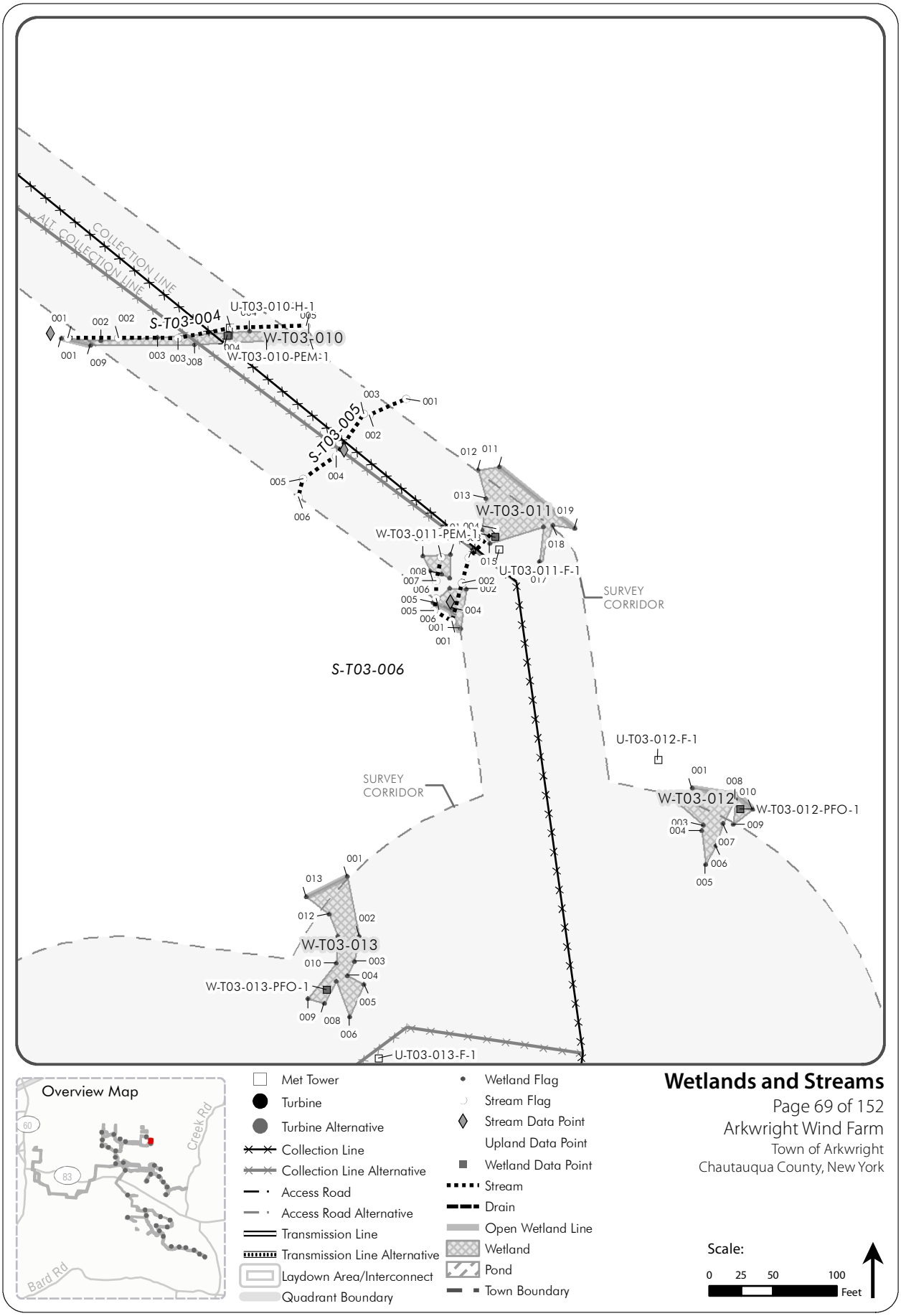


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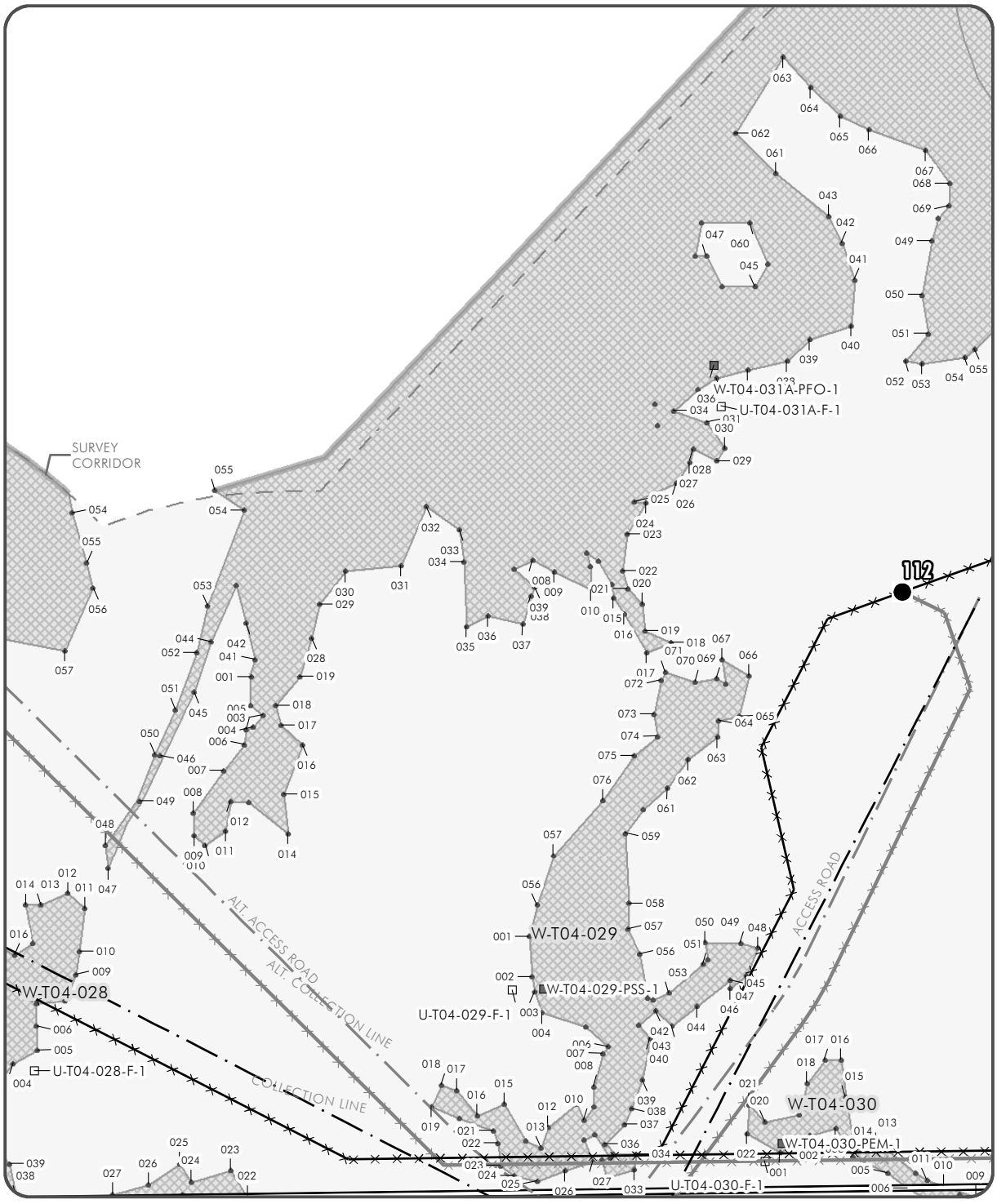
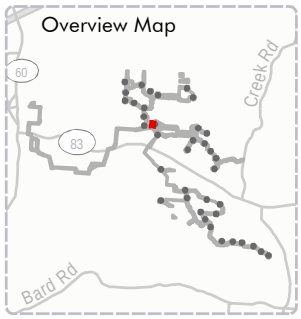
Town of Arkwright

Chautauqua County, New York

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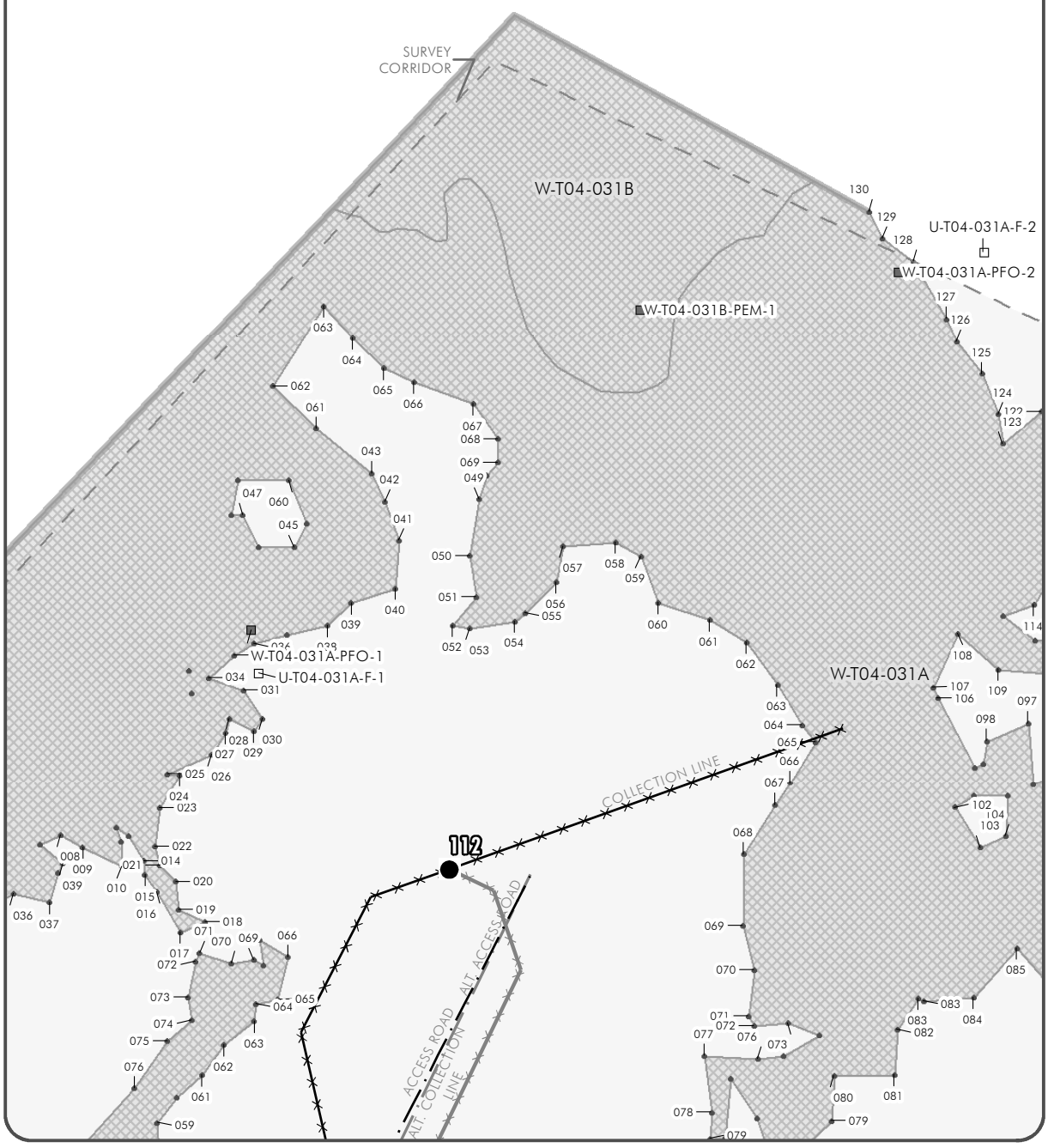


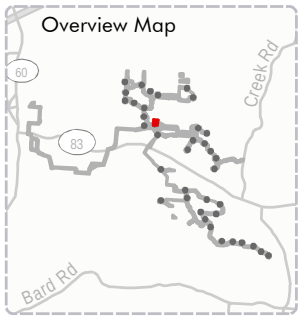


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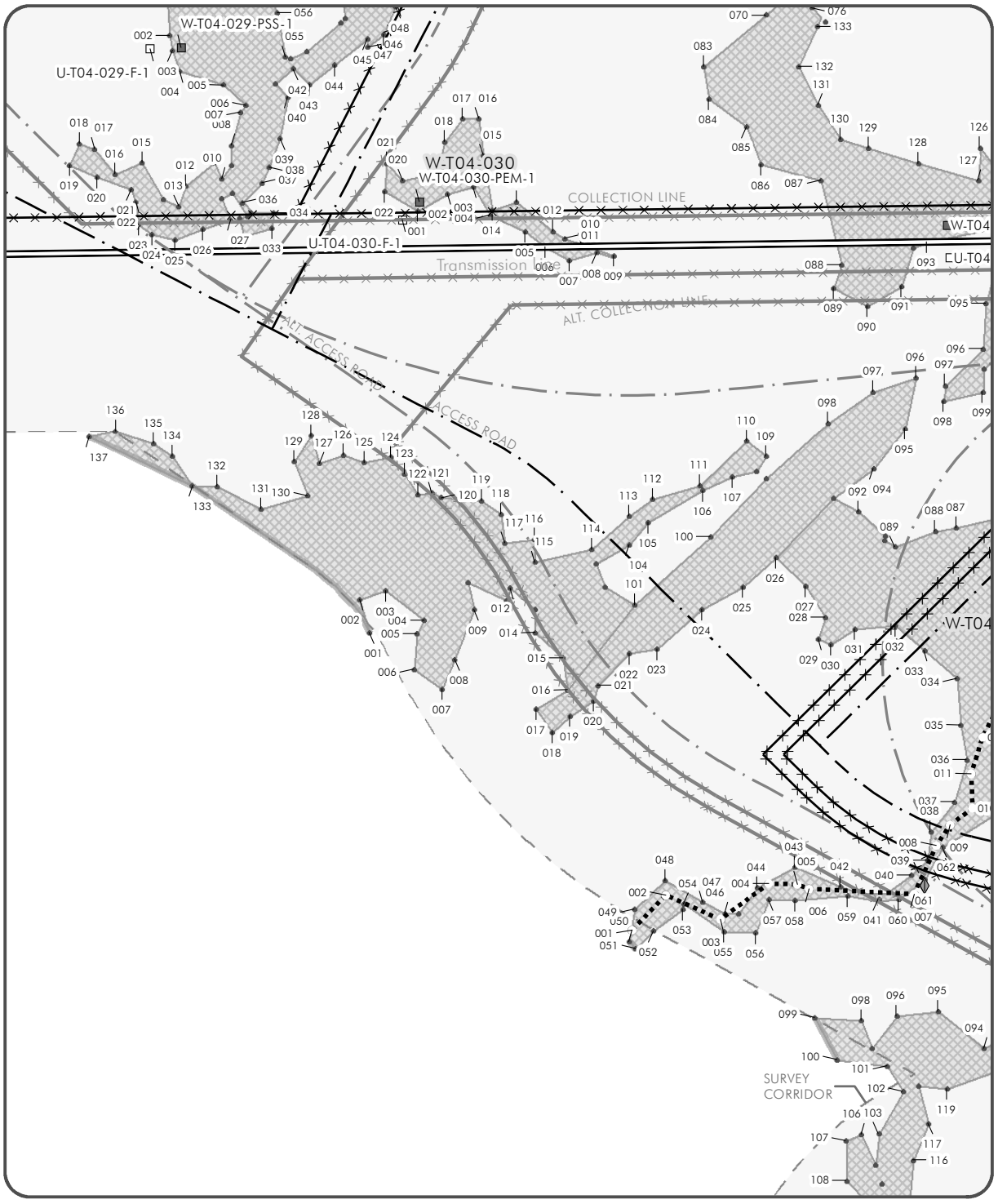


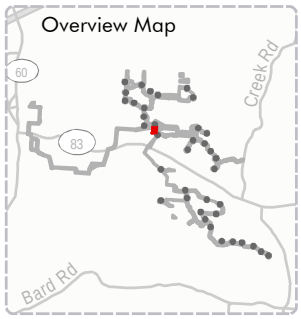


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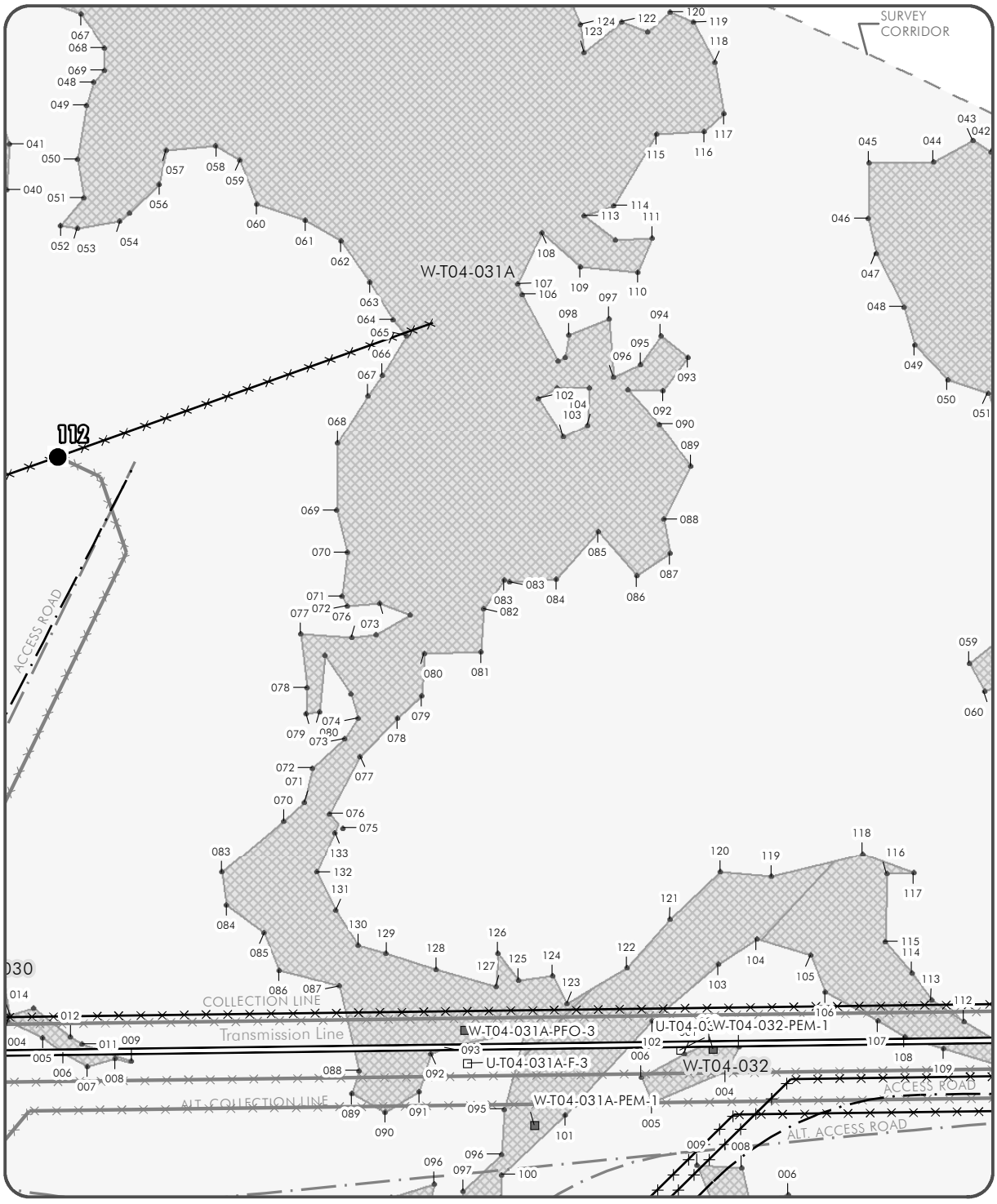


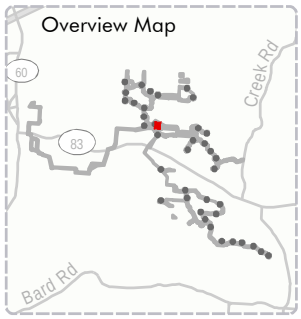


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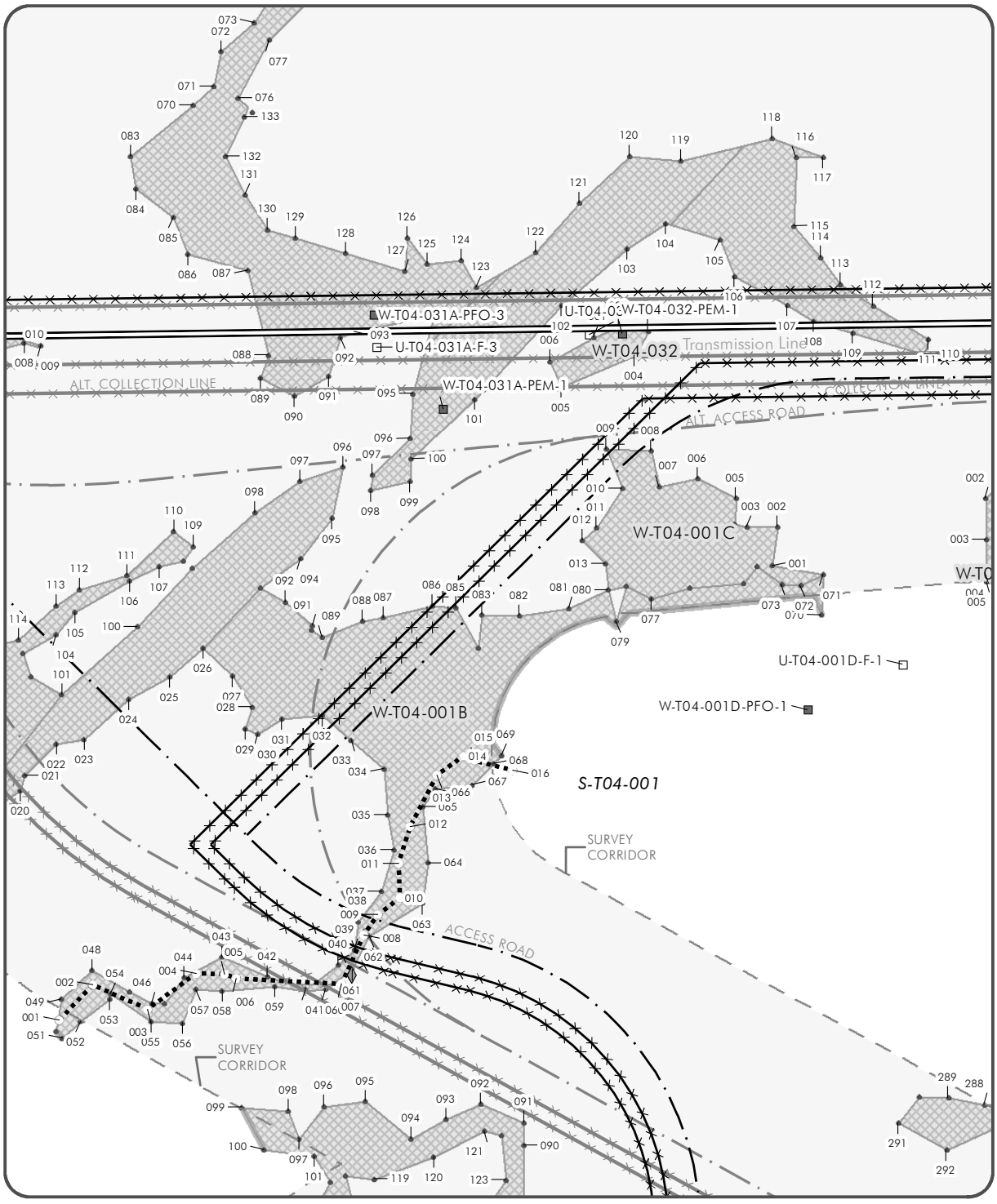


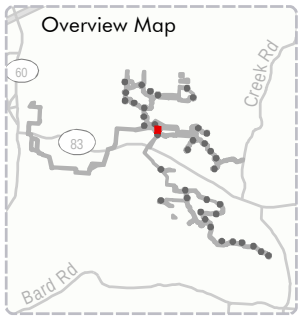


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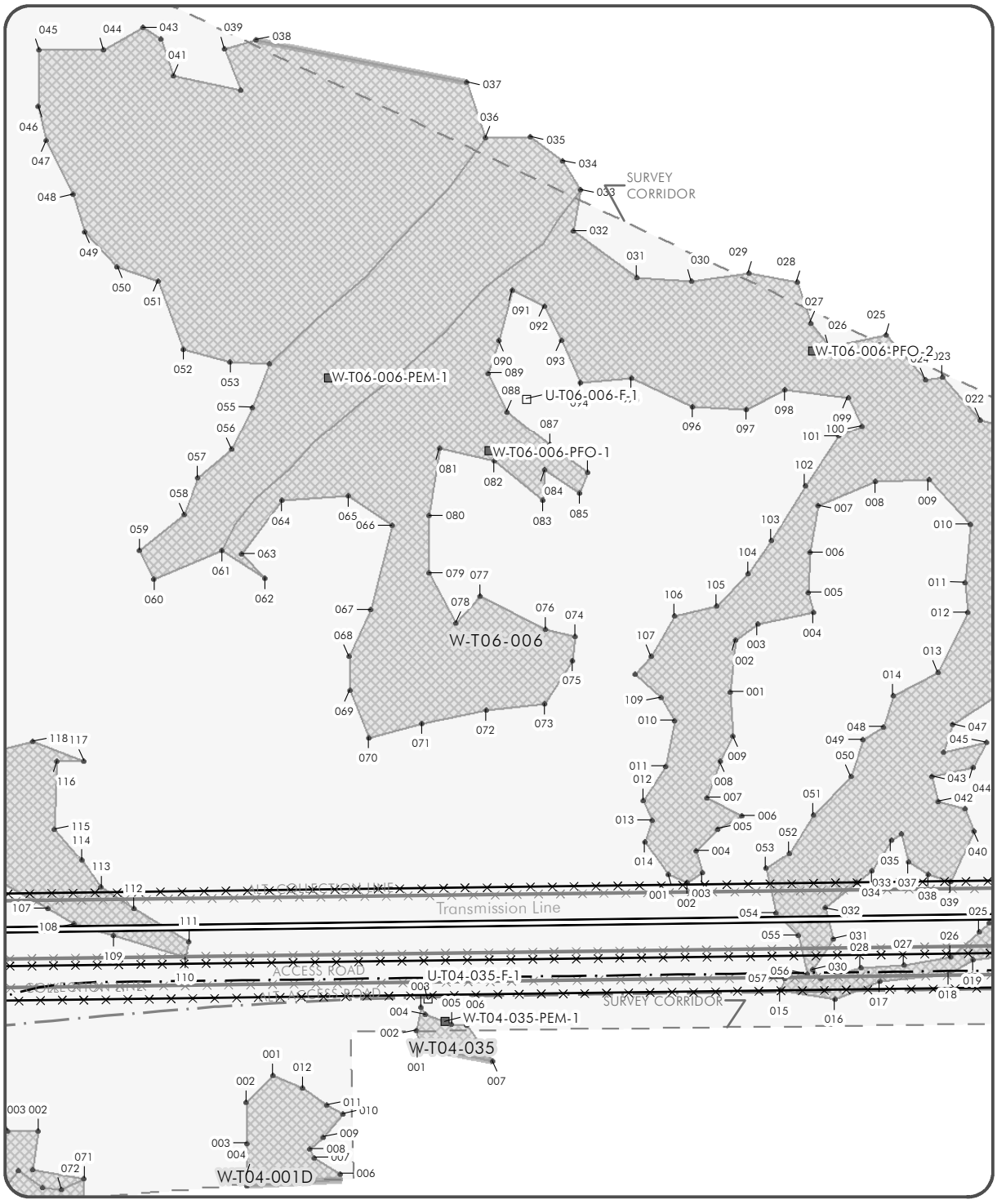


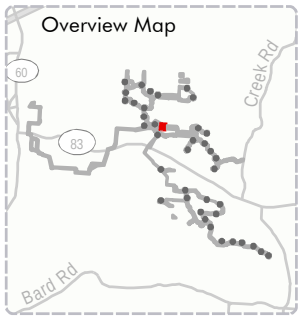


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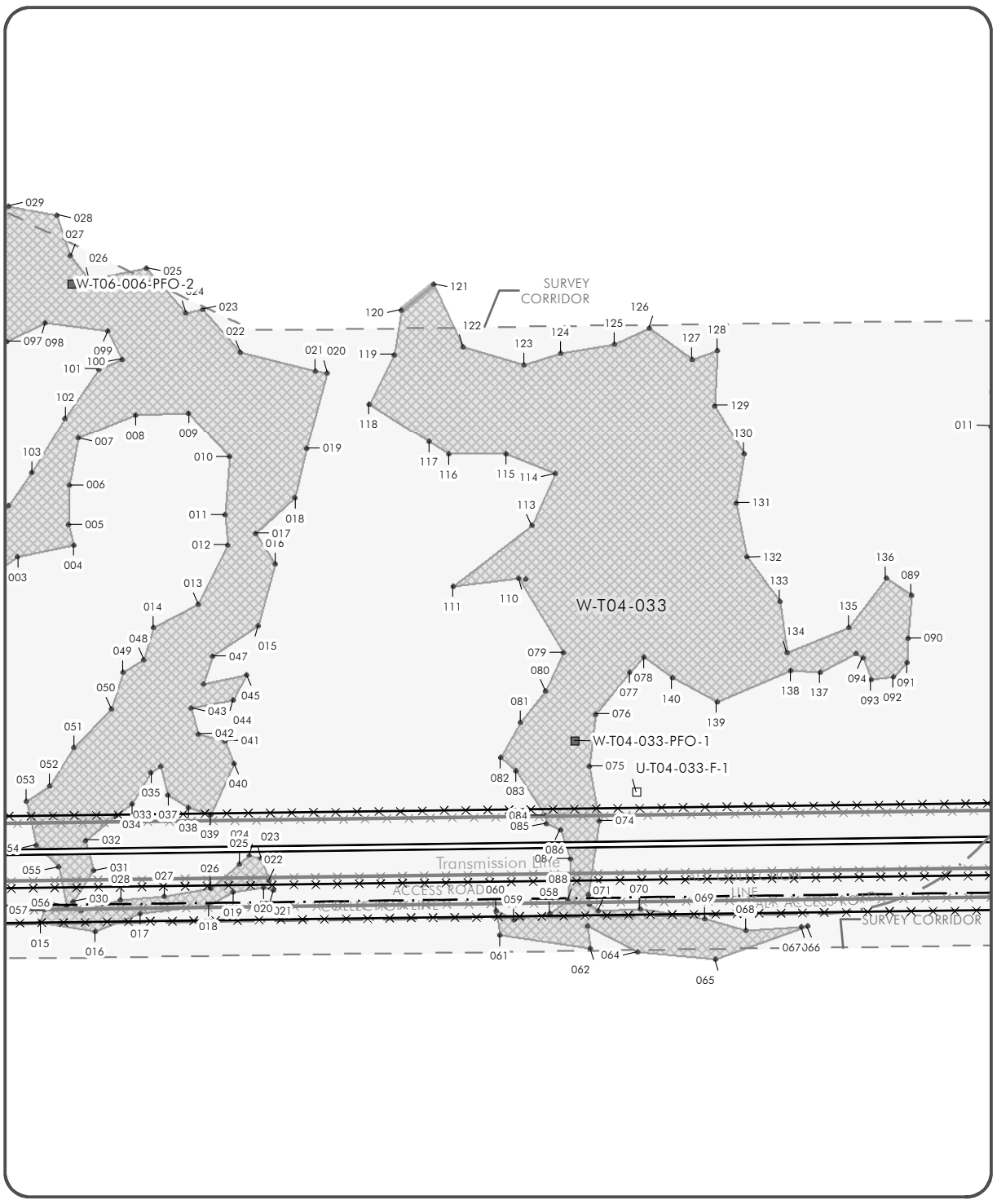


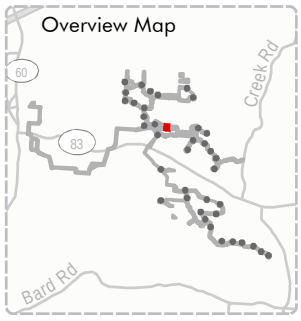


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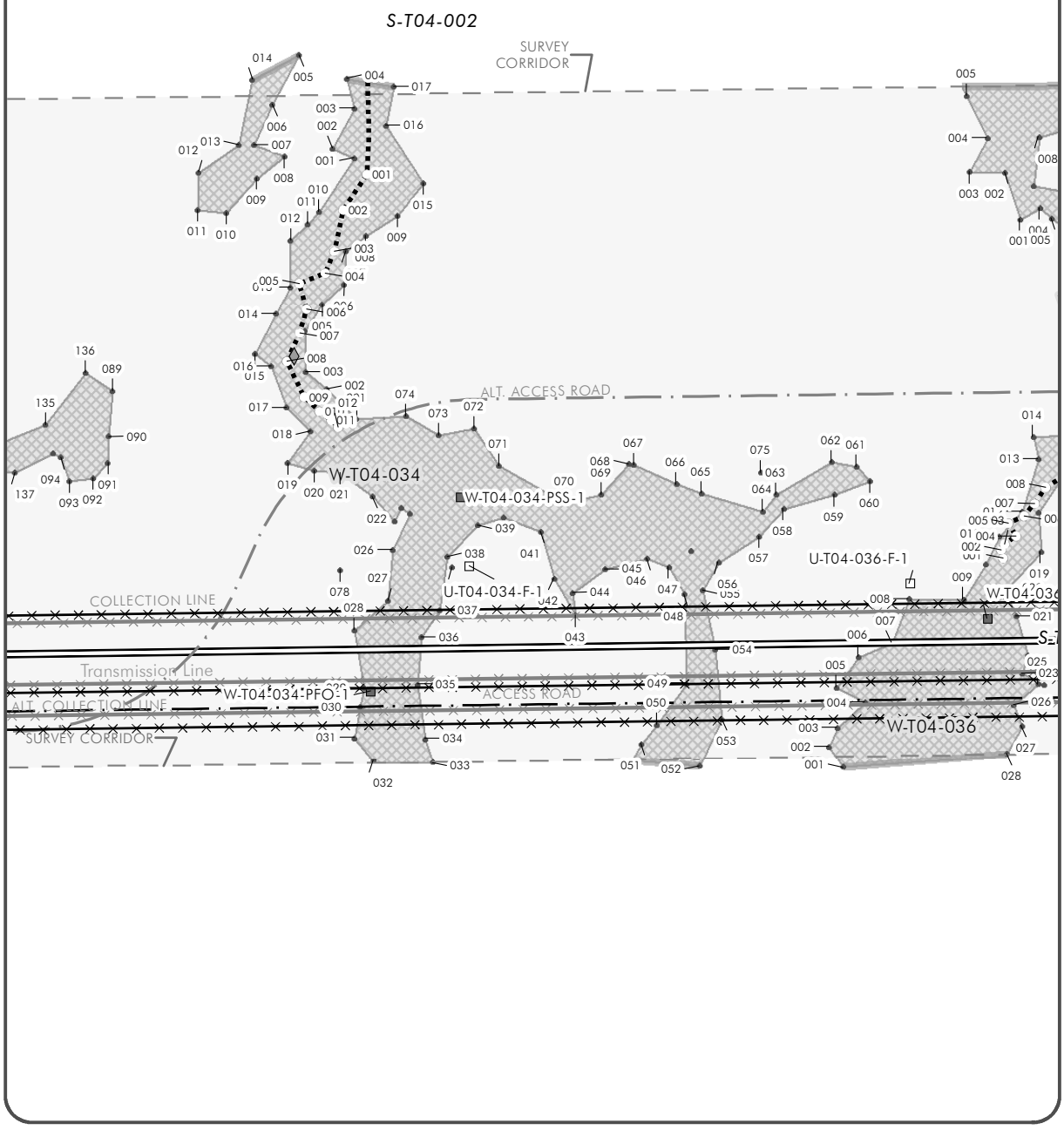


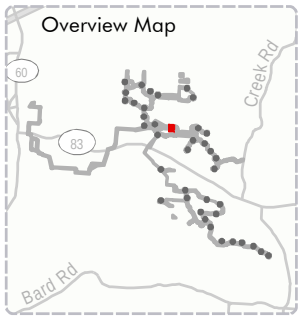


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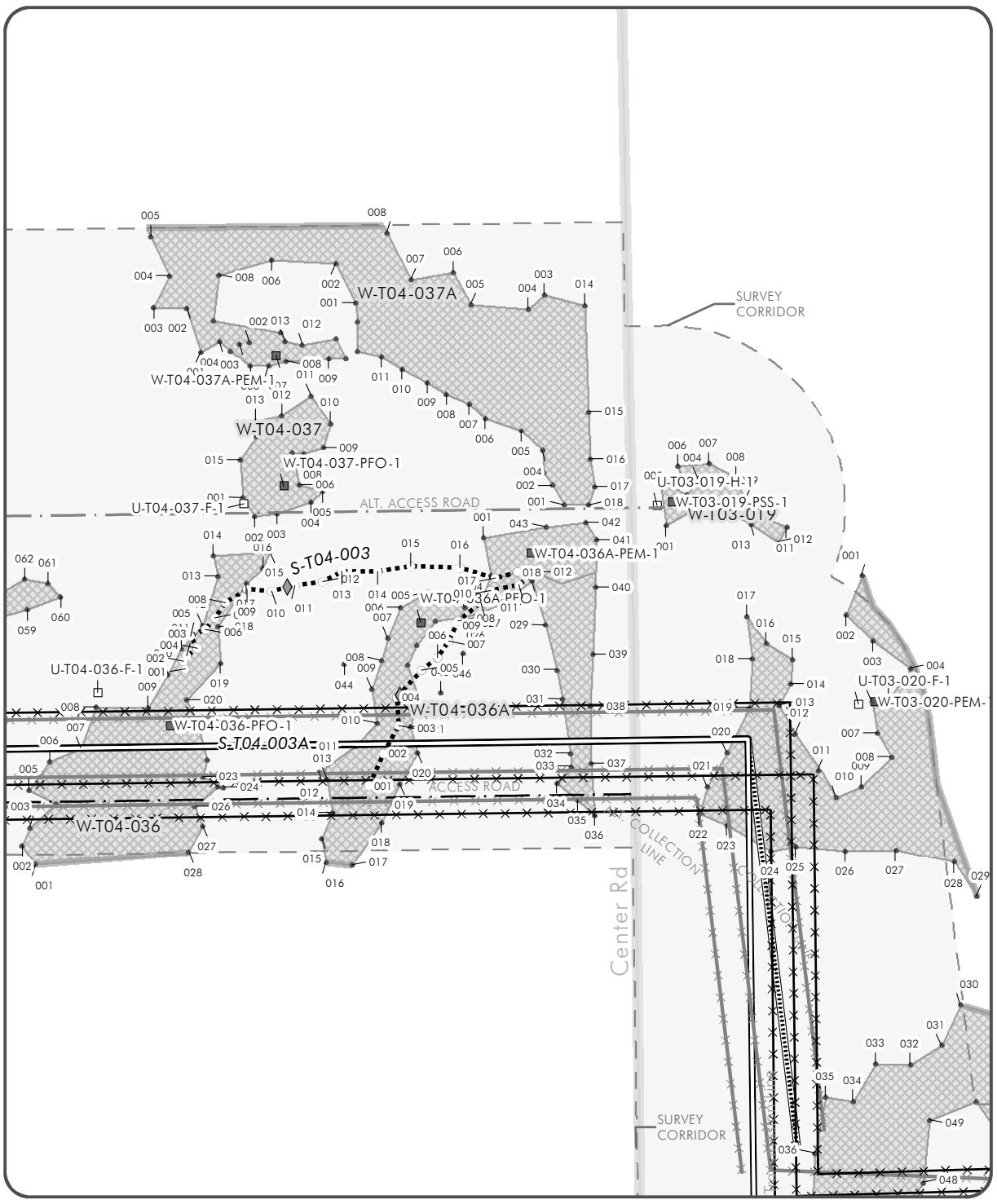


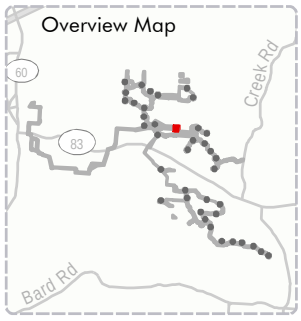


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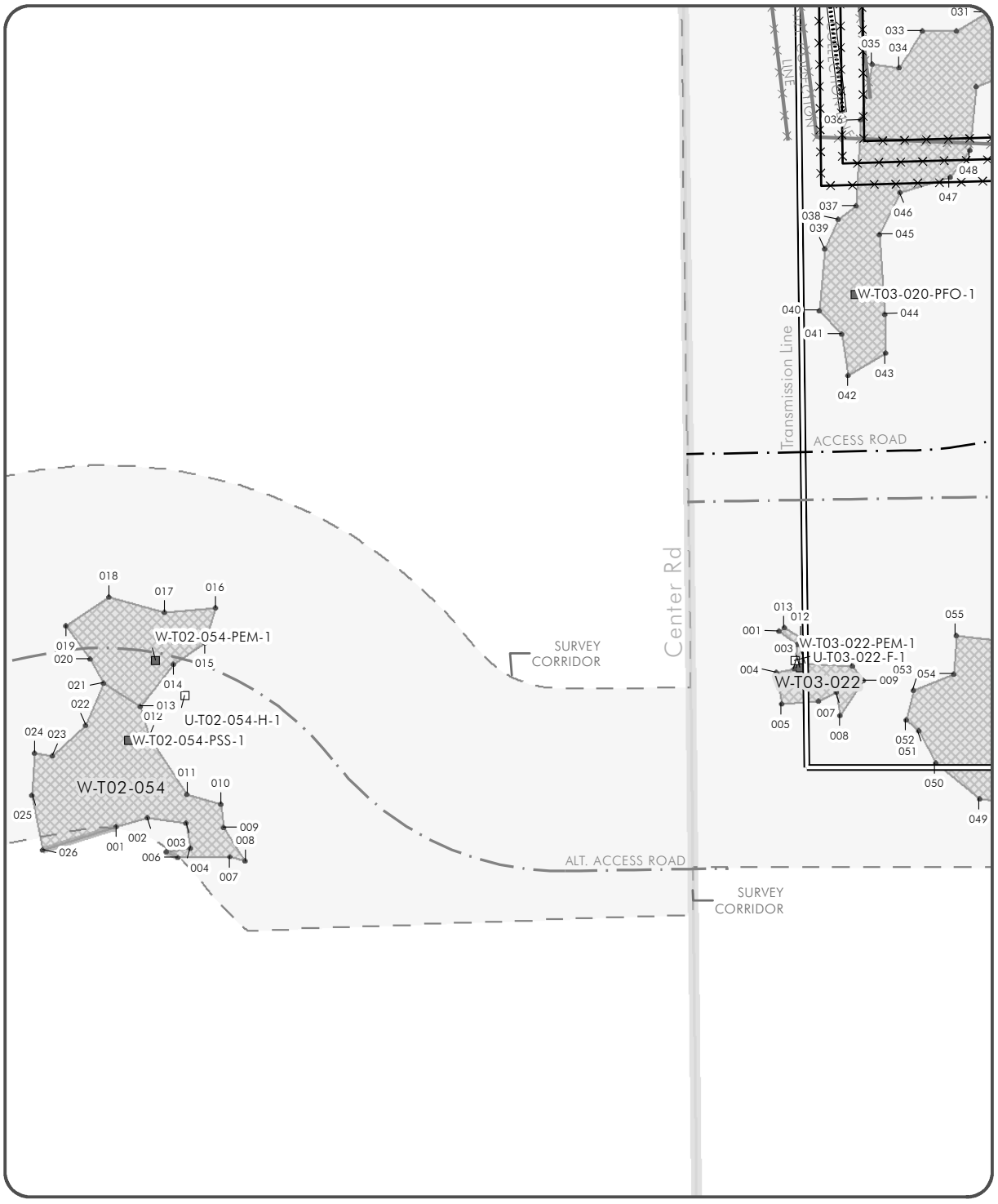


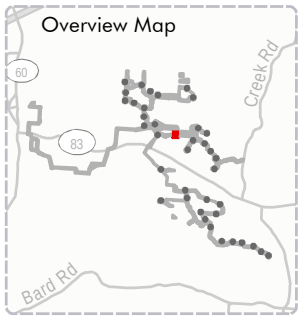


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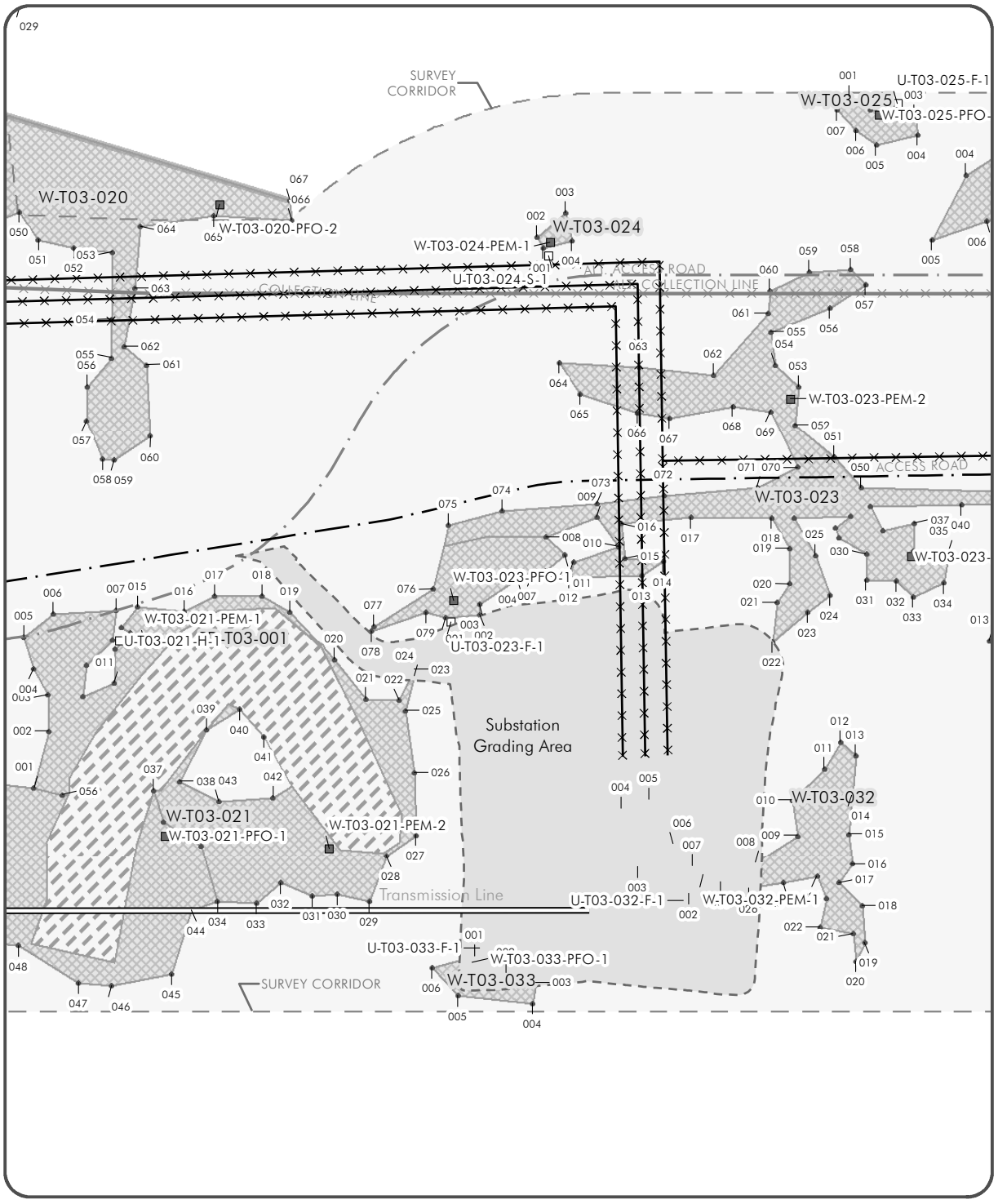


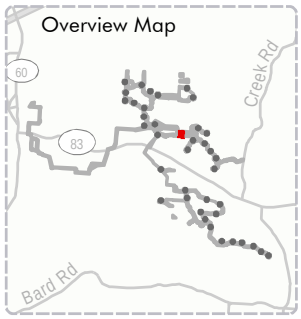


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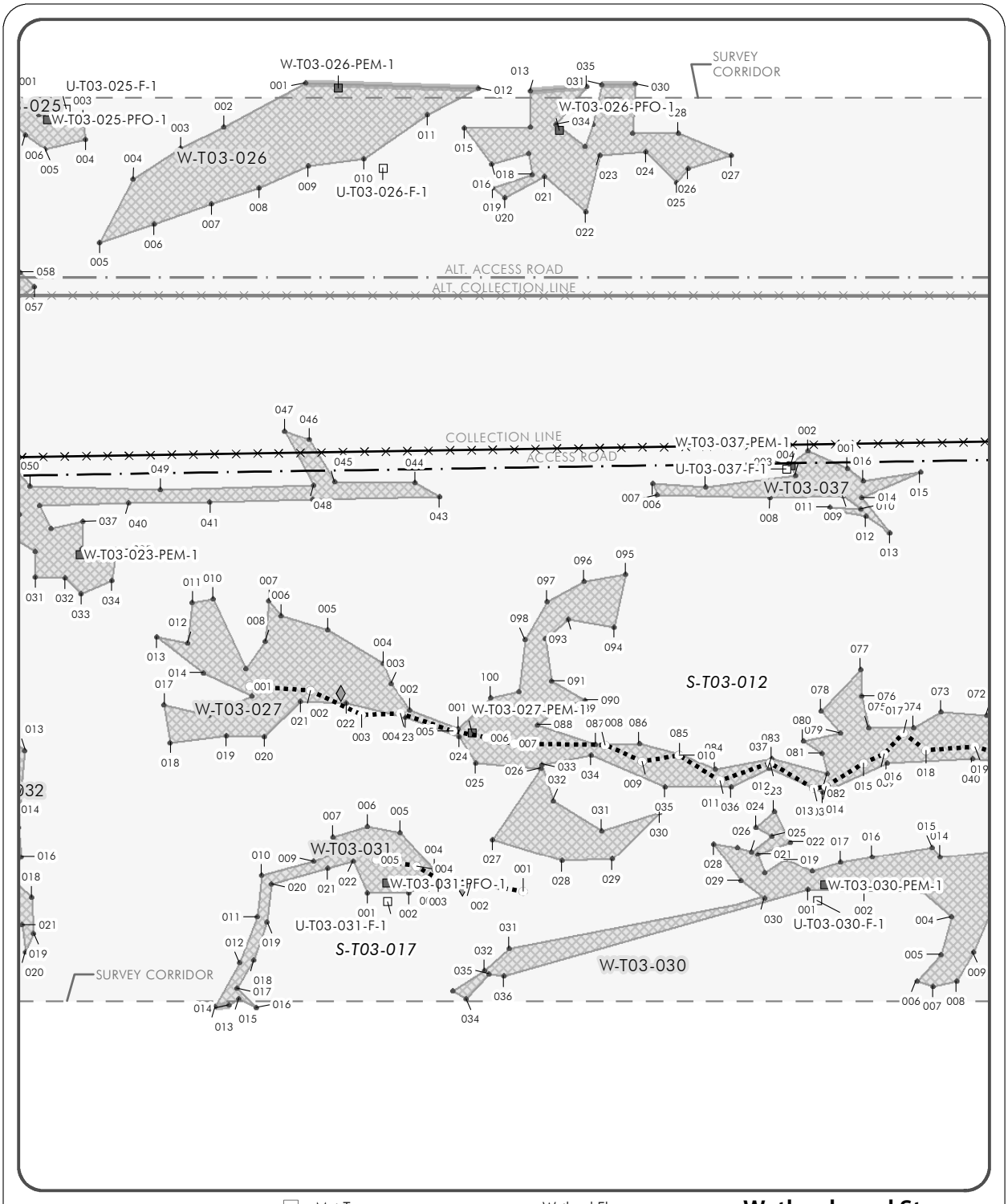


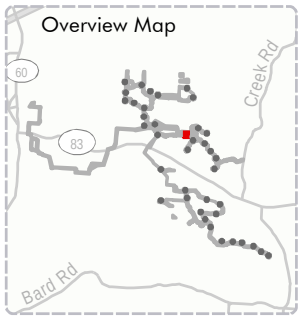


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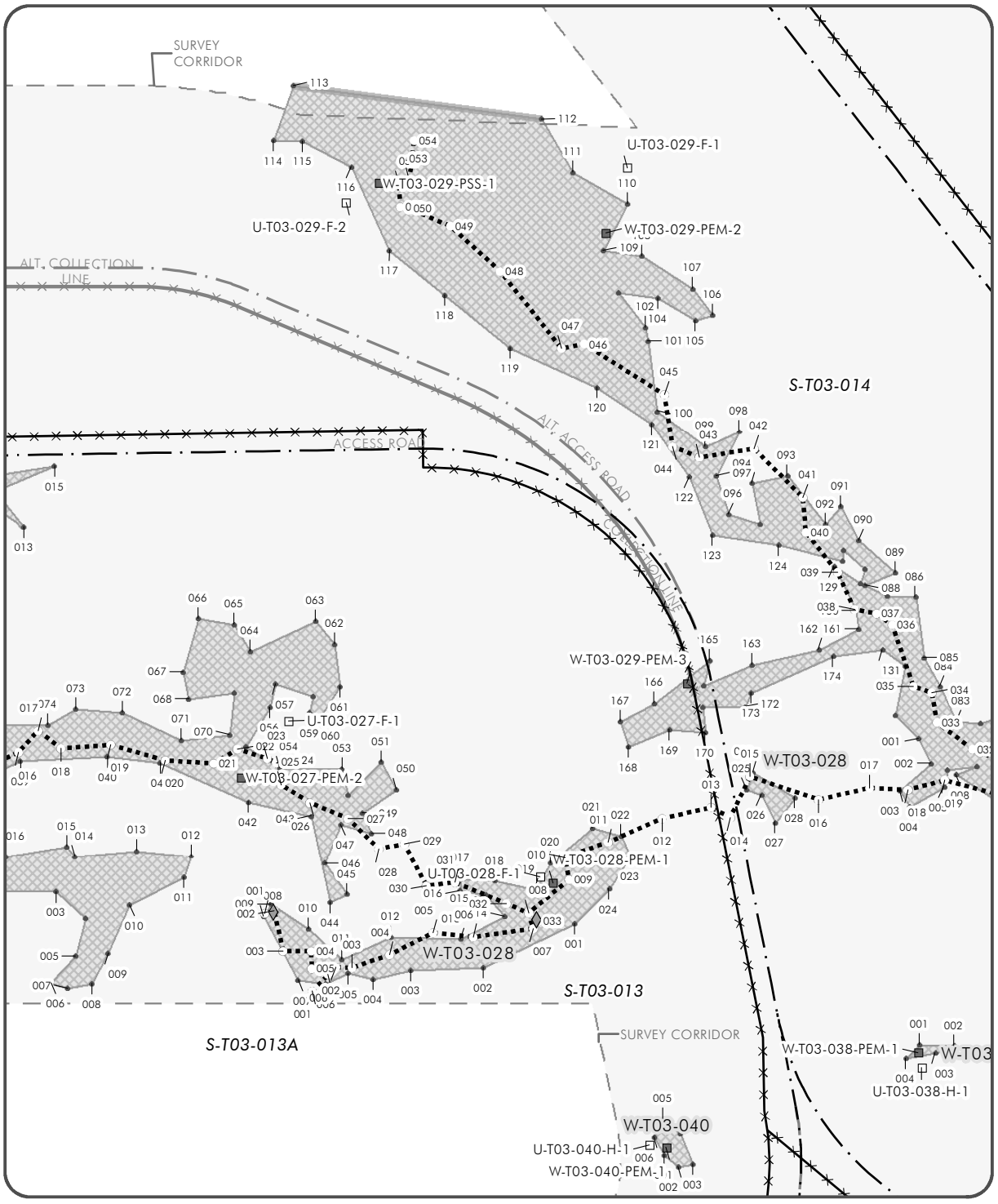


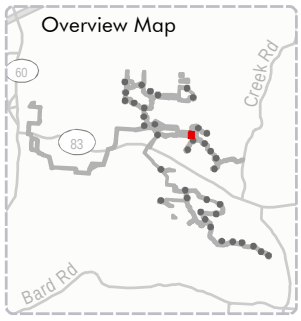


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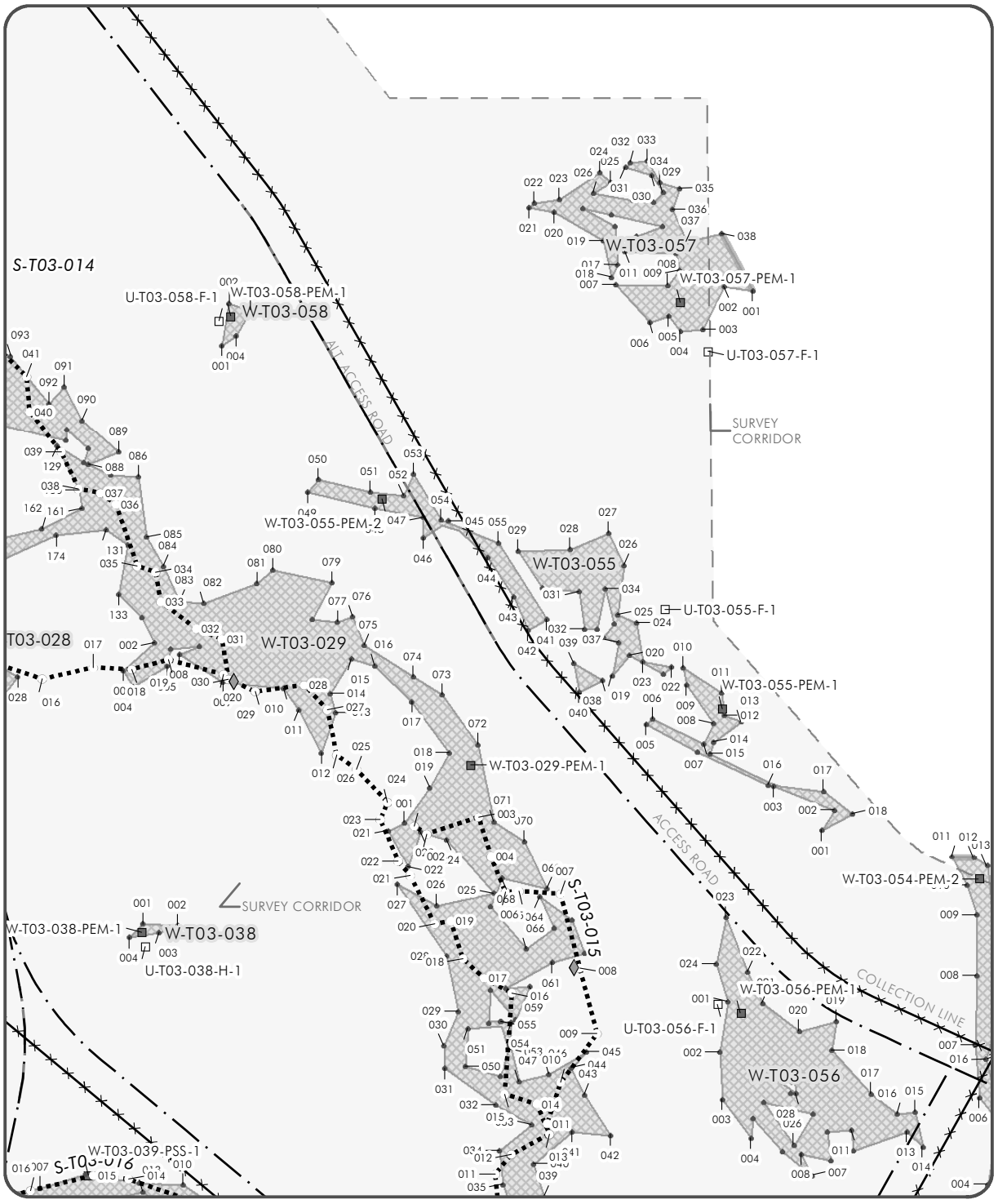


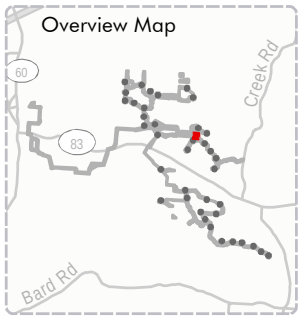


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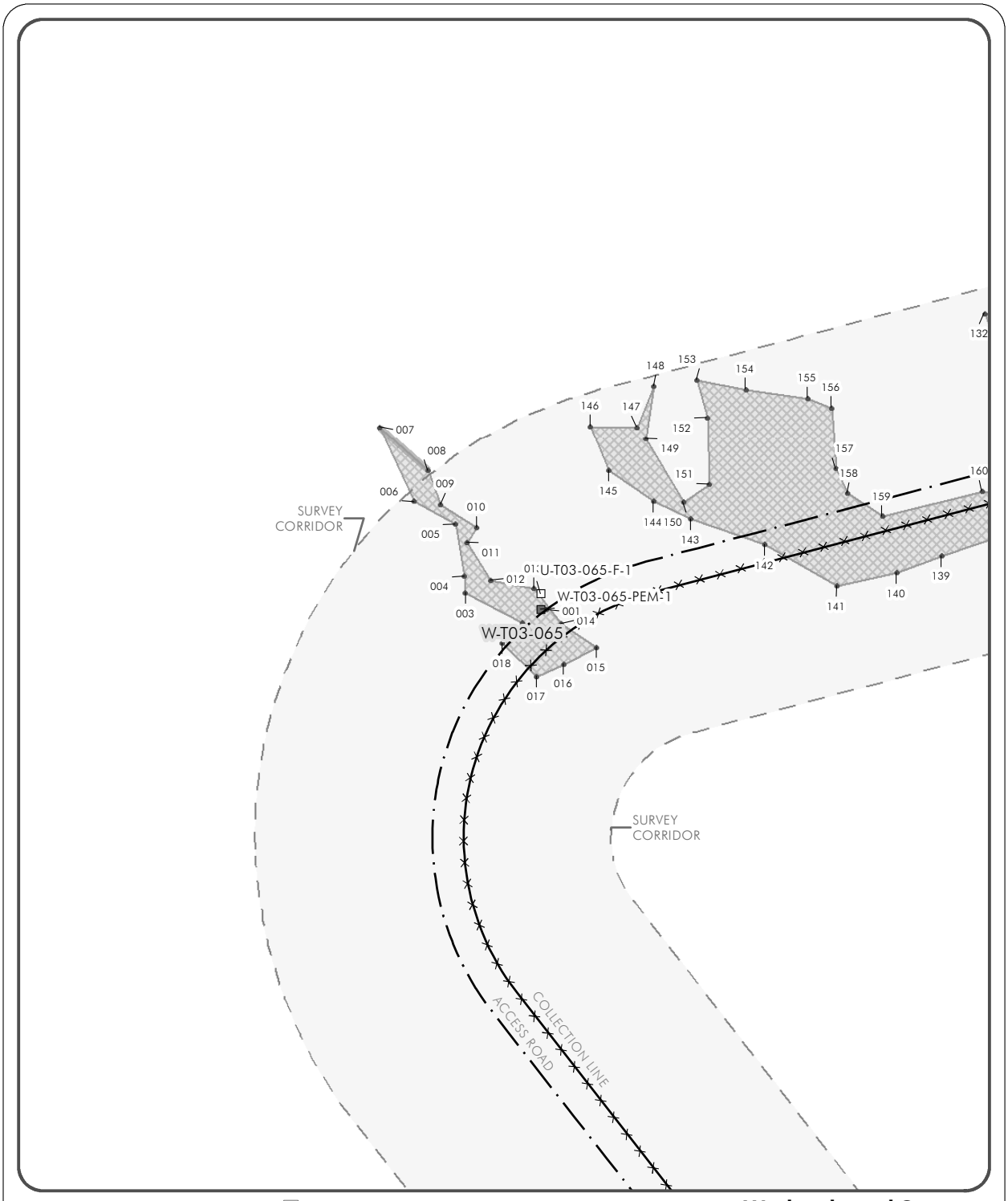


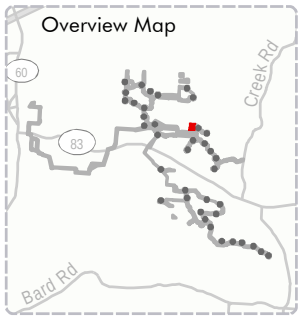


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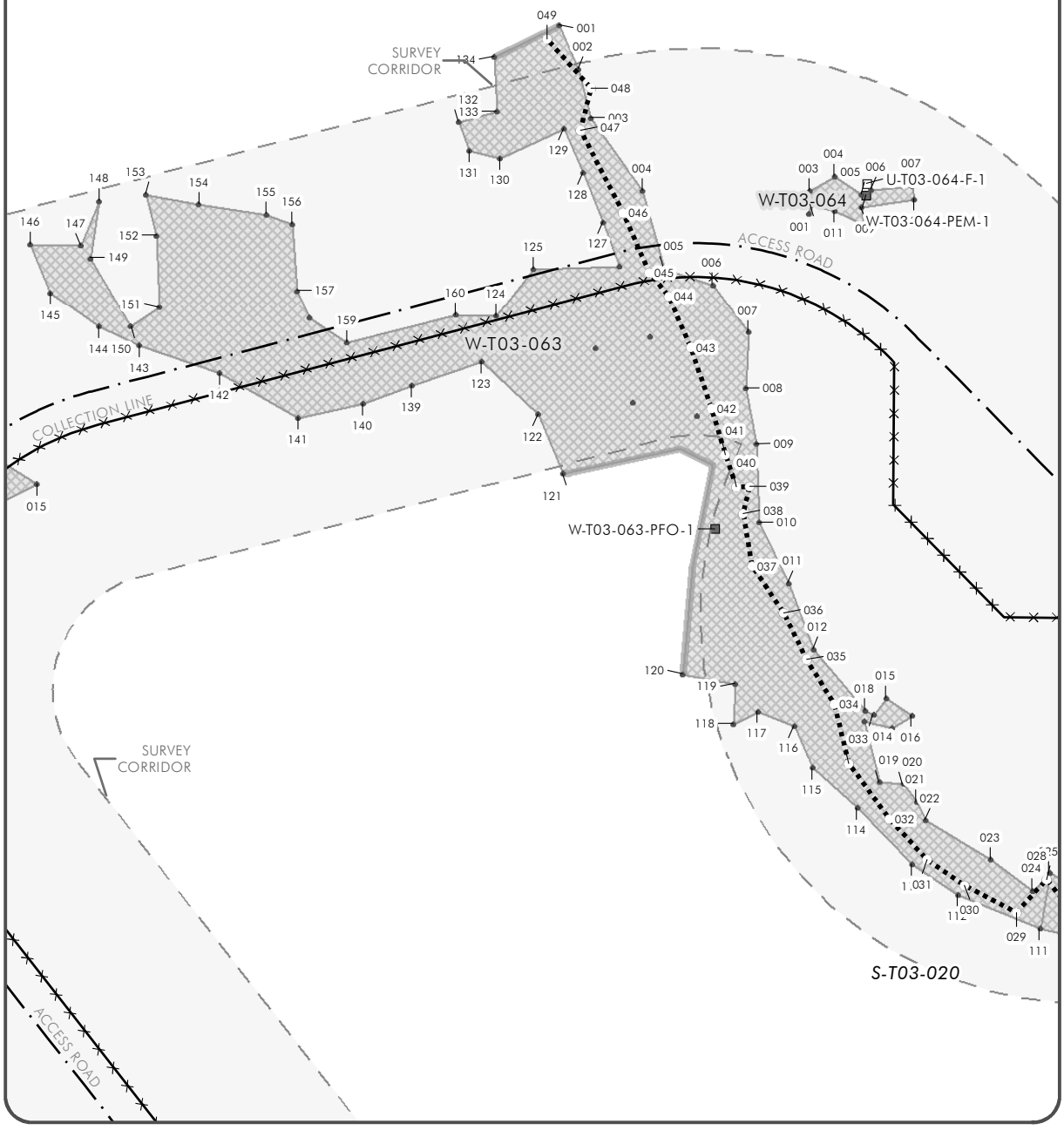


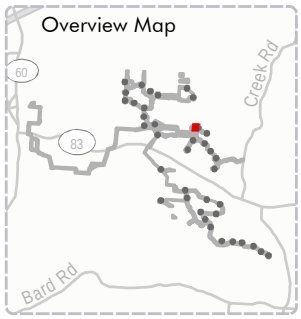


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# Wetlands and Streams



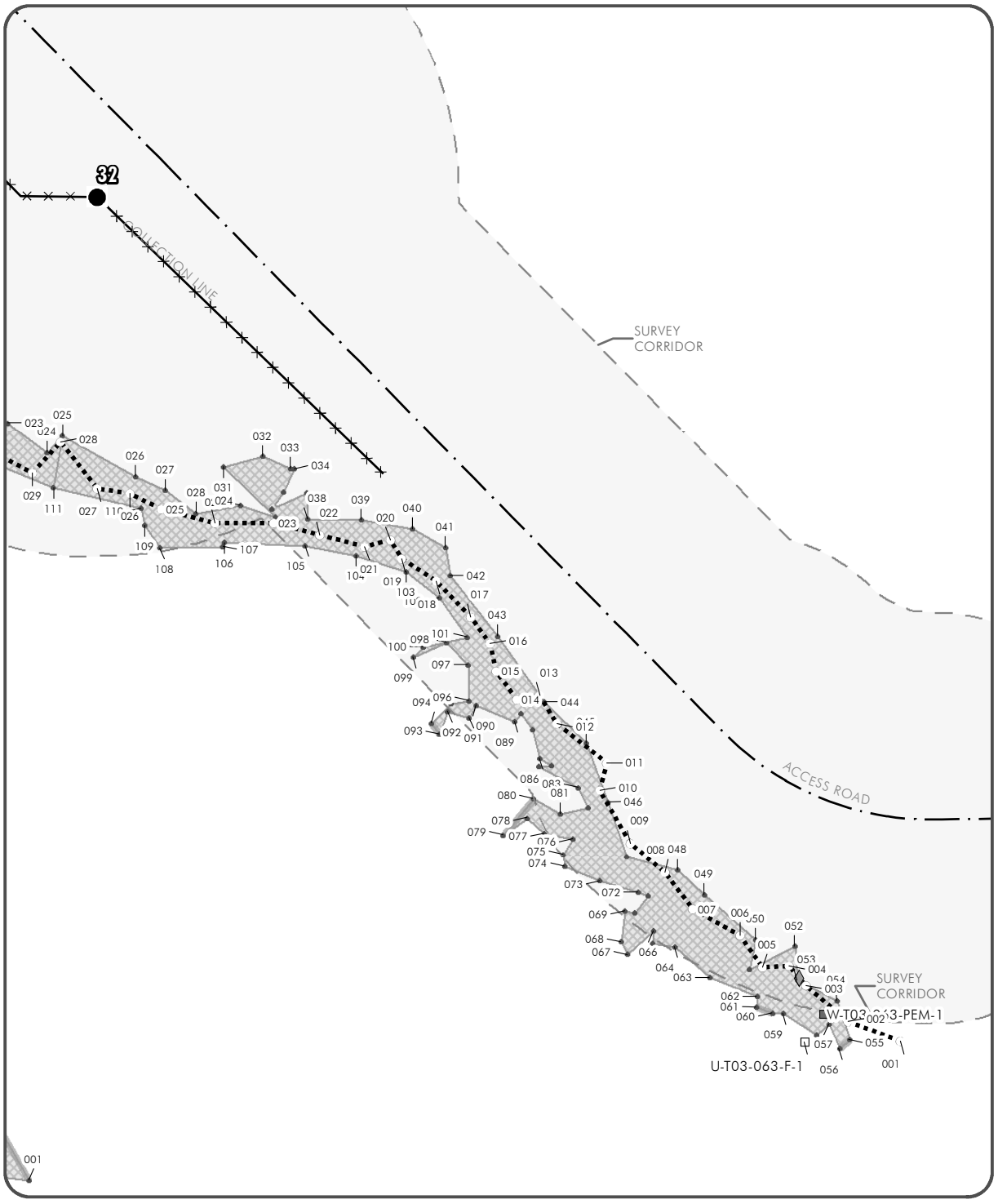
Arkwright Wind Farm

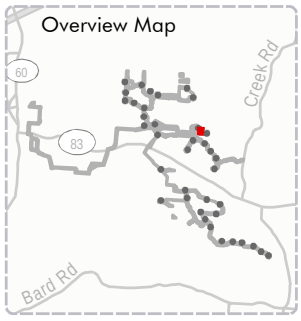
Town of Arkwright

Chautauqua County, New York

Scale:

0 25 50 100 Feet

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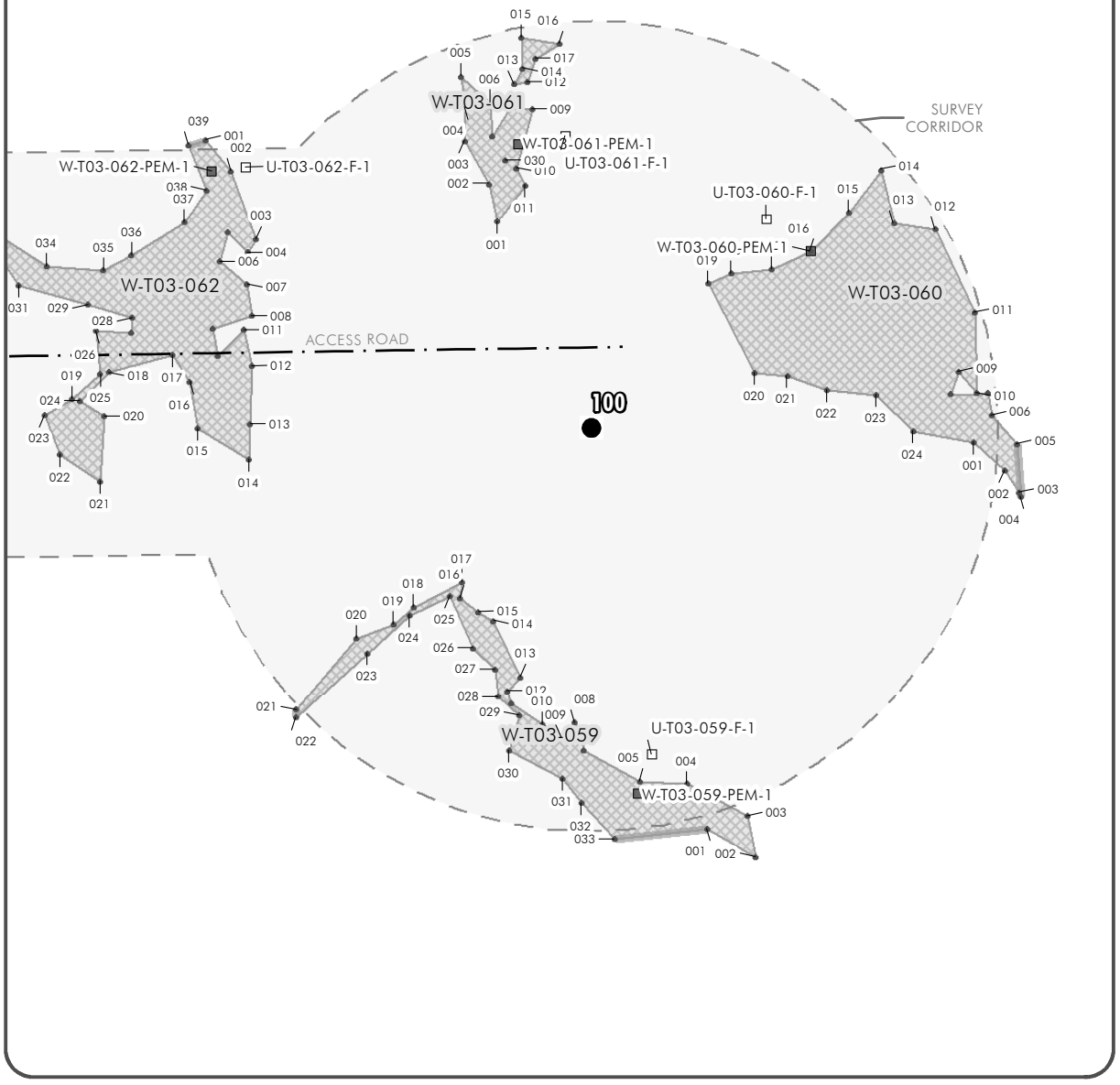


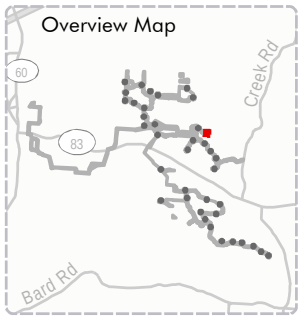


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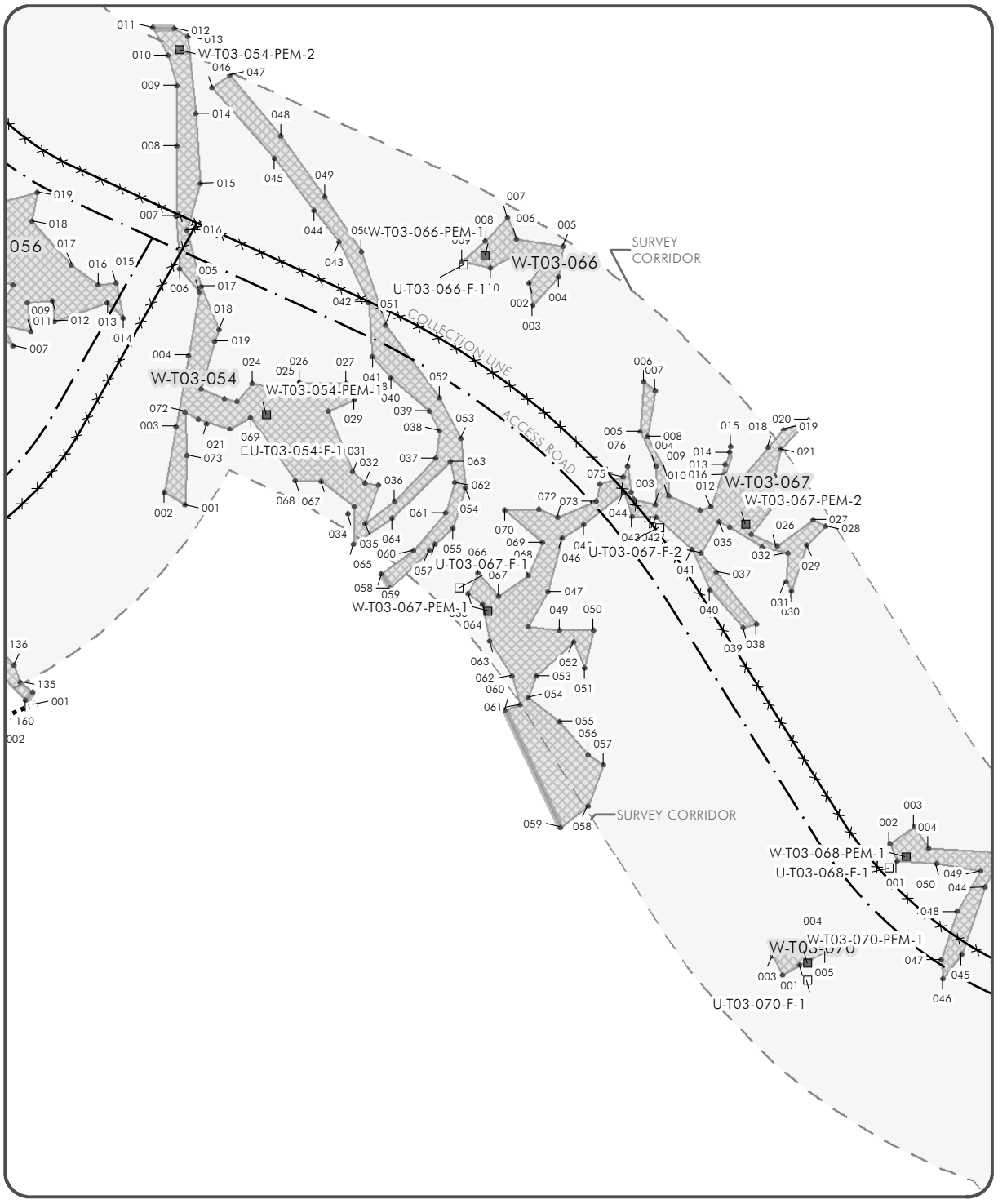


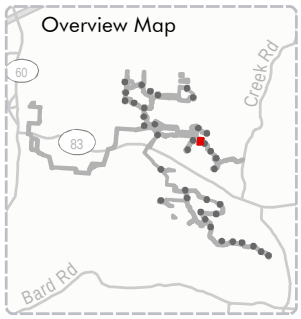


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# Wetlands and Streams

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Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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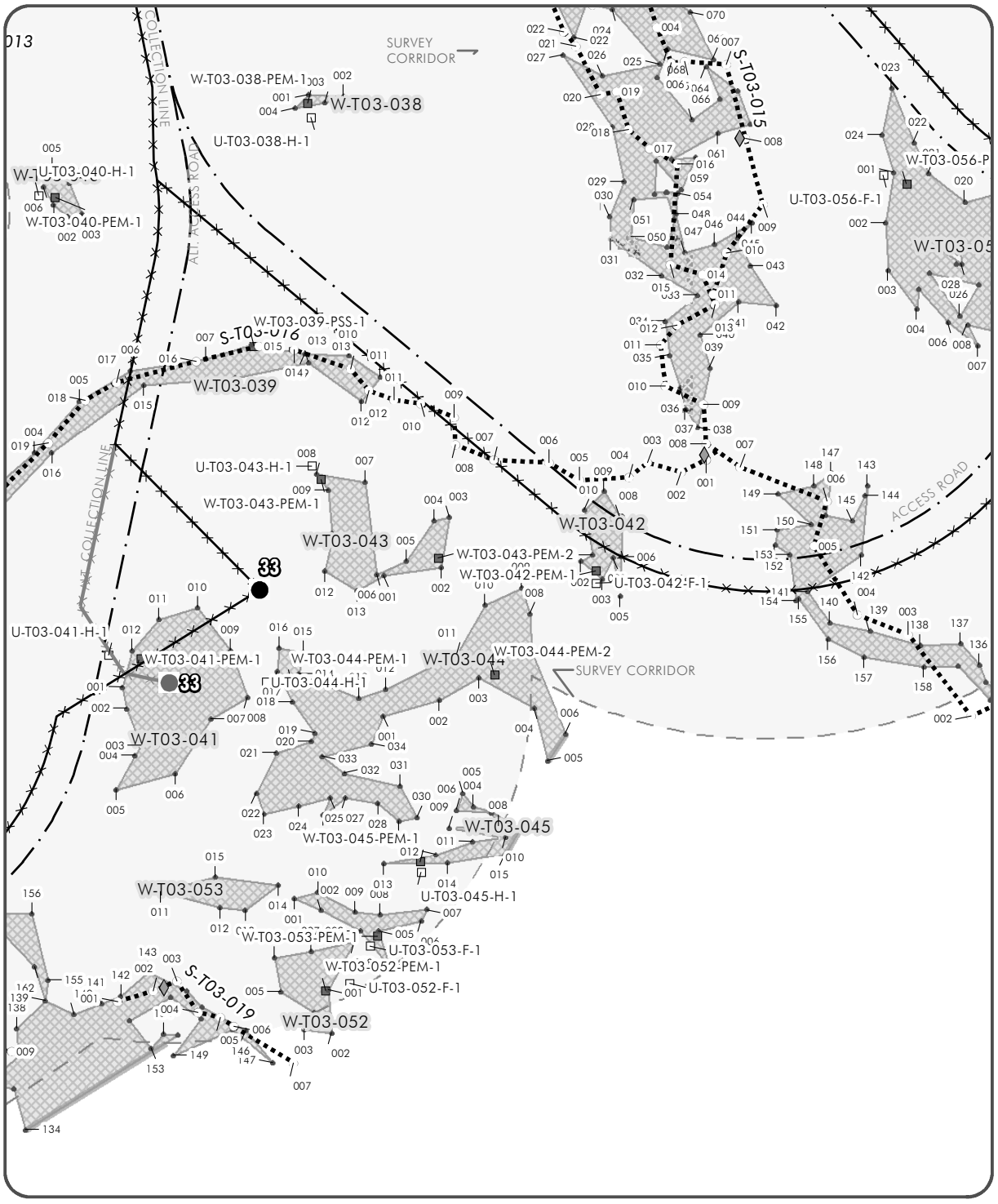


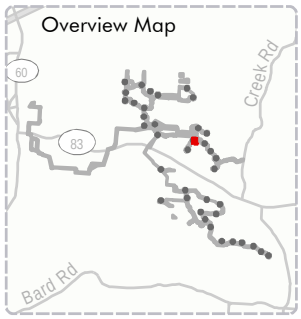


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Town of Arkwright
Chautauqua County, New York

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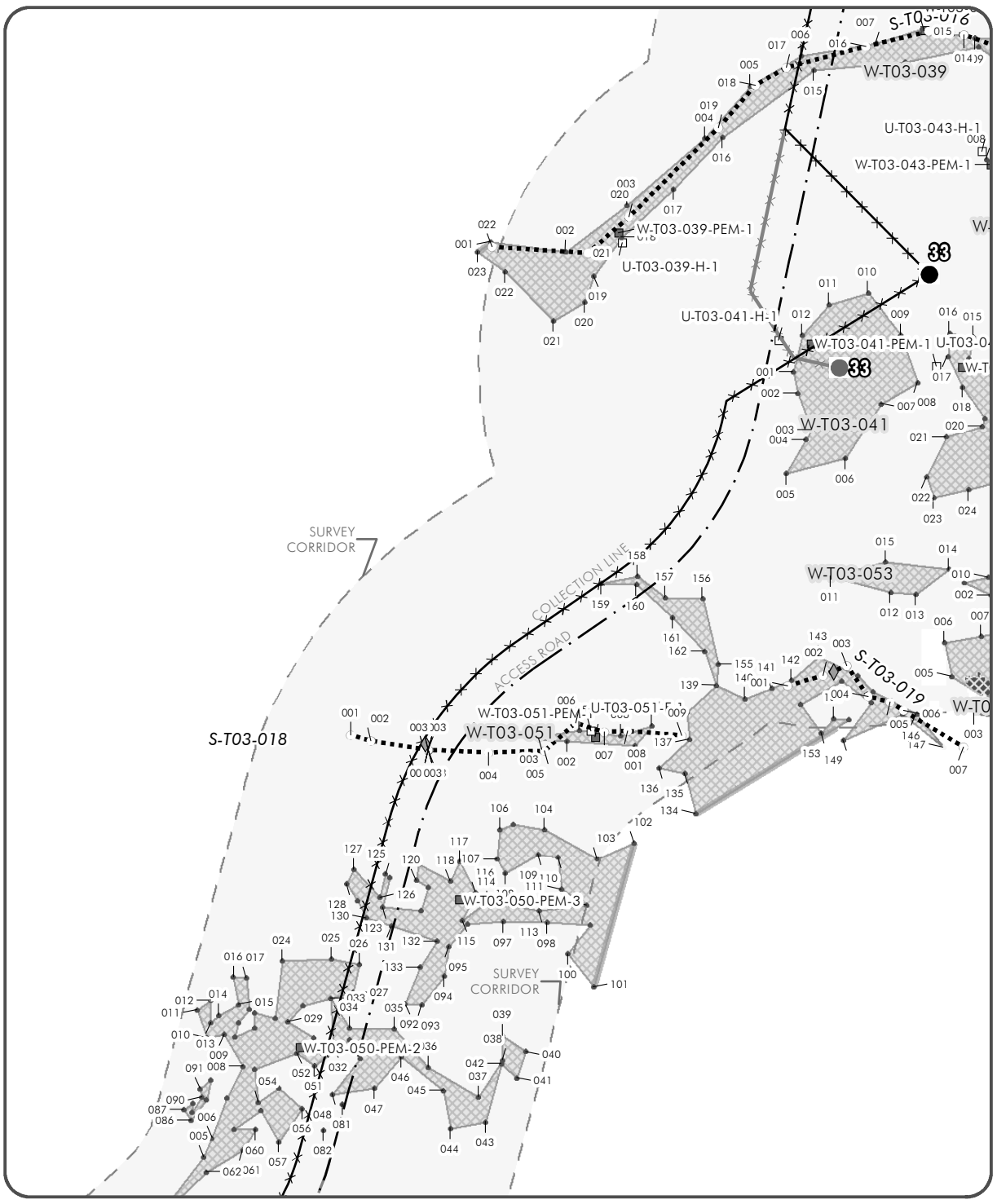


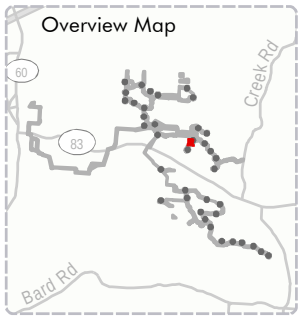


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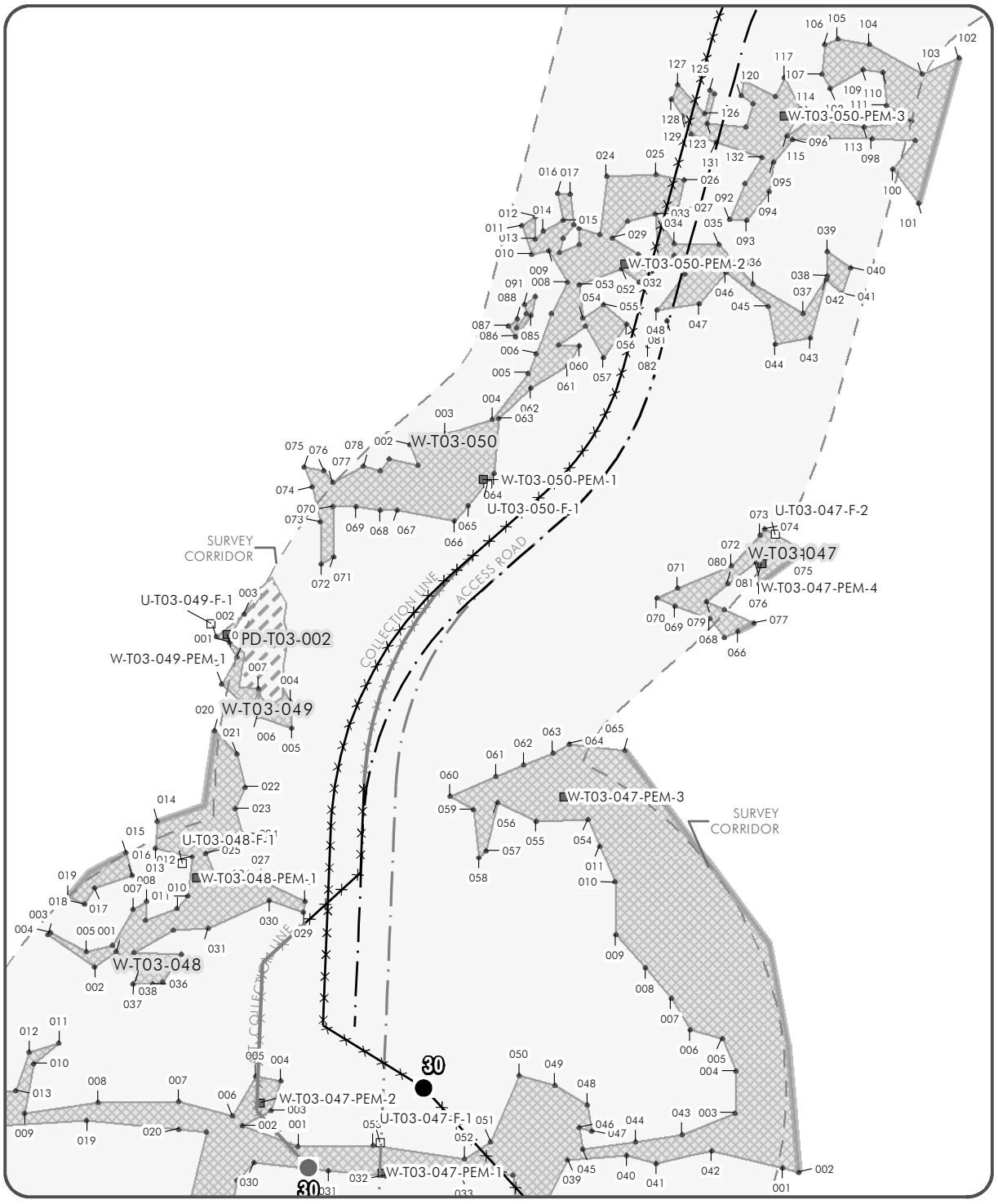


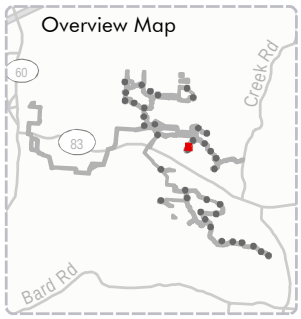


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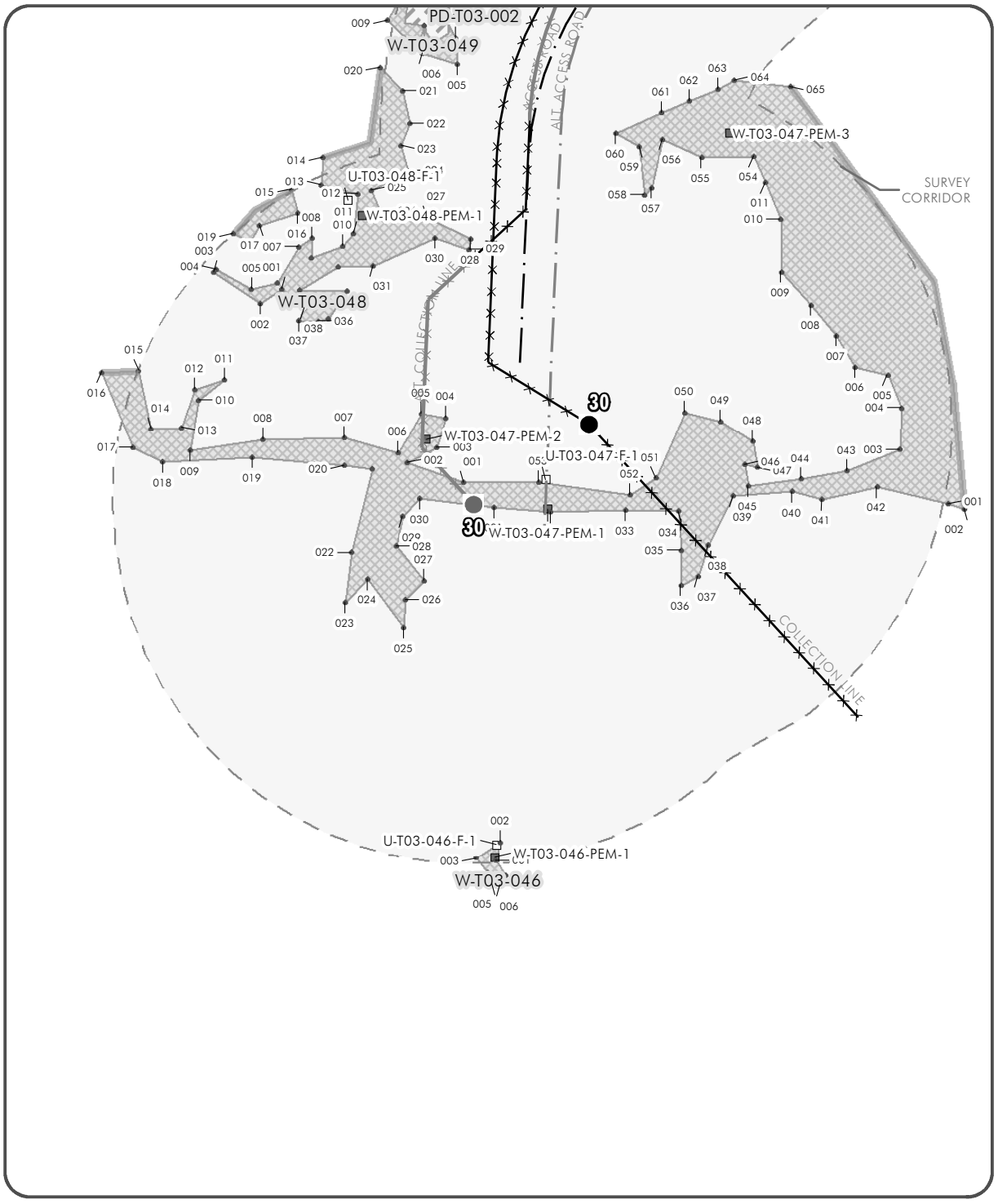


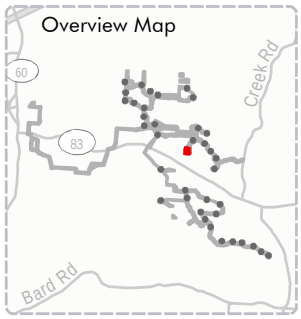


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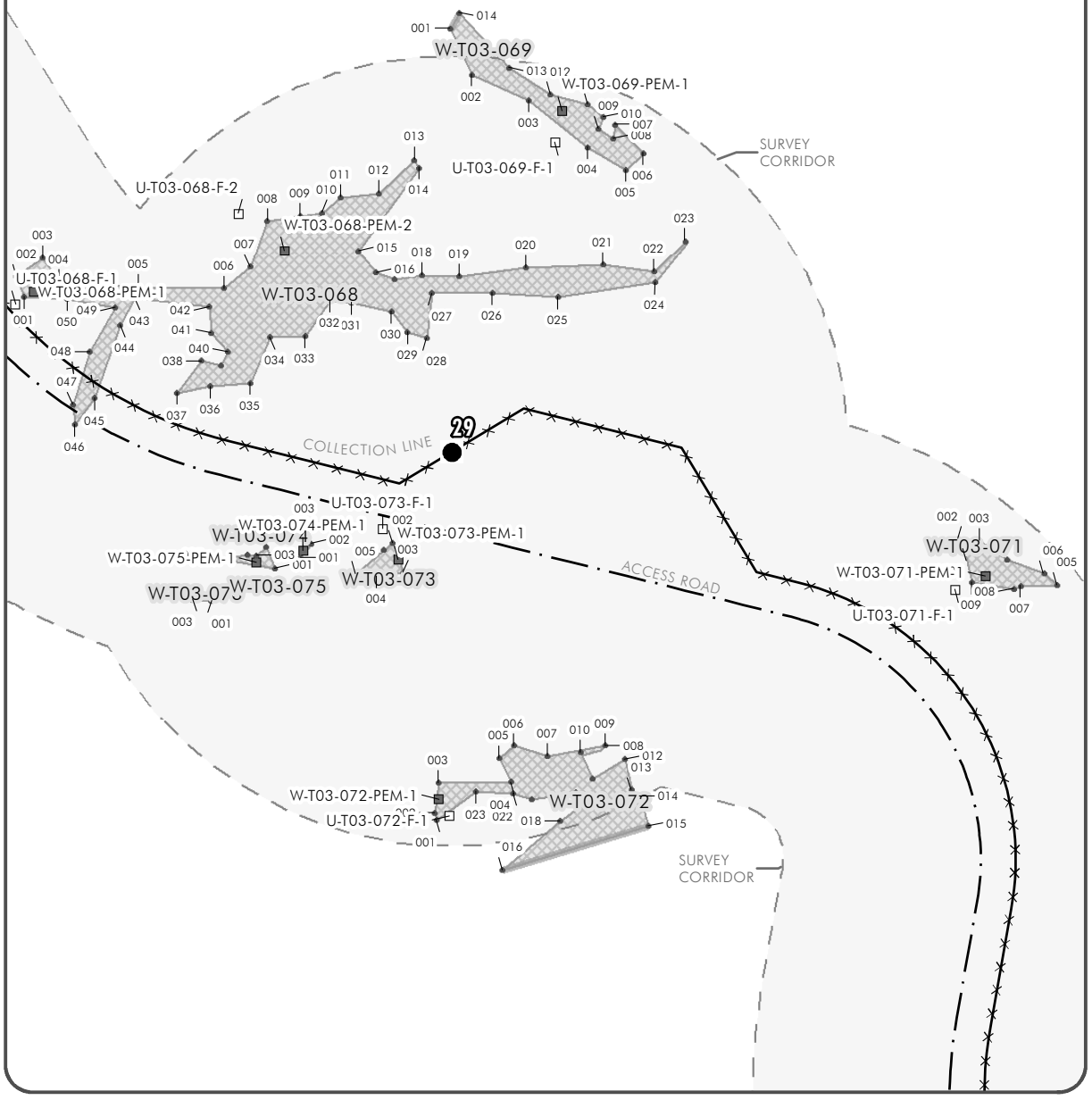


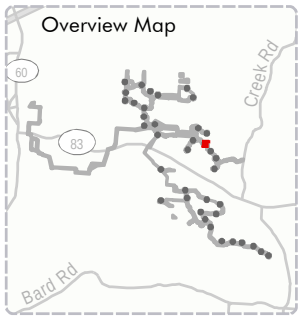


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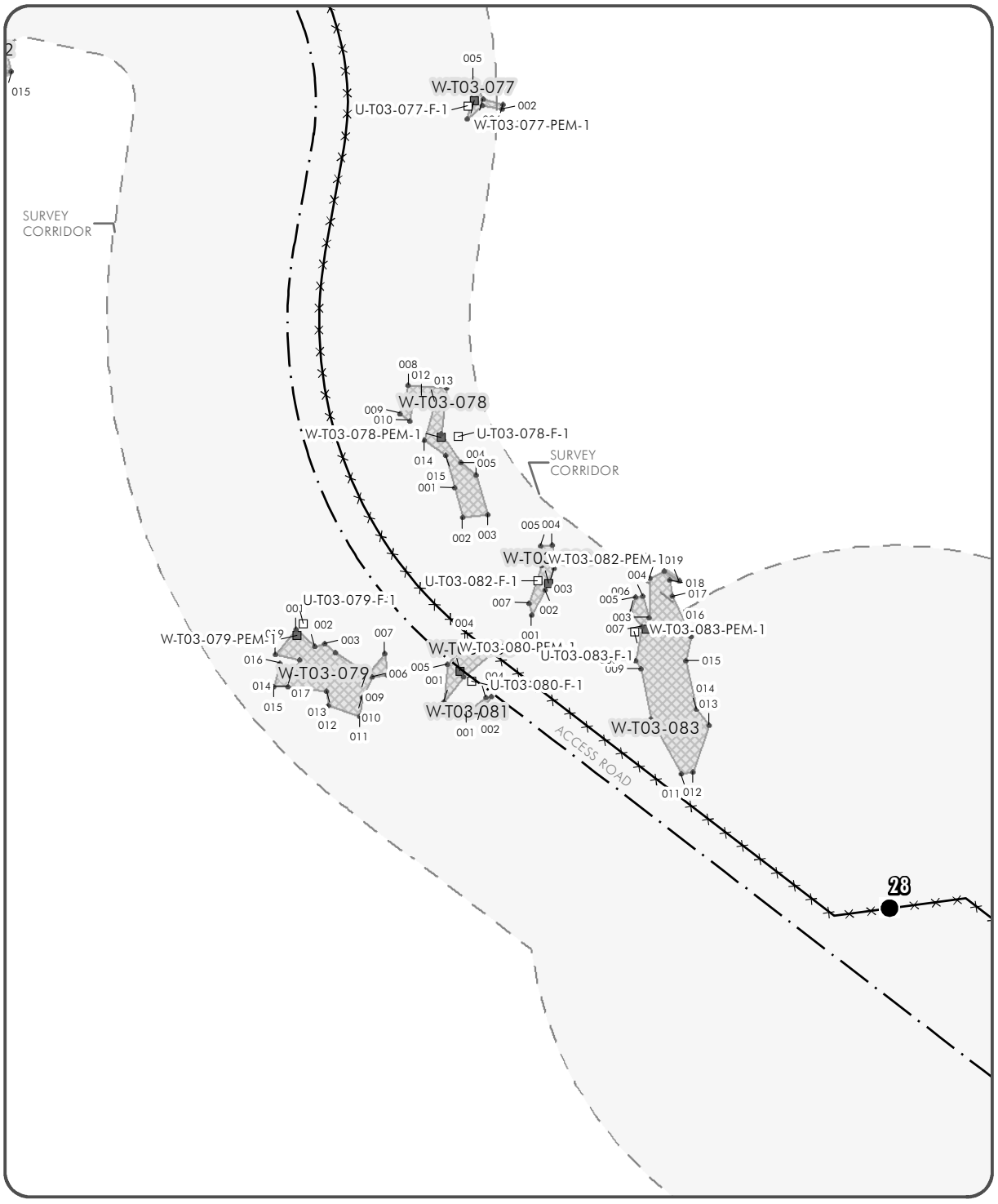


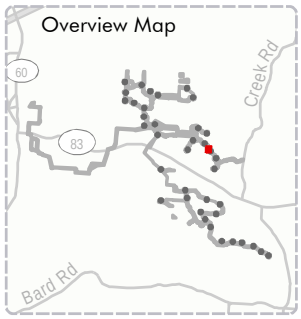


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Town of Arkwright
Chautauqua County, New York

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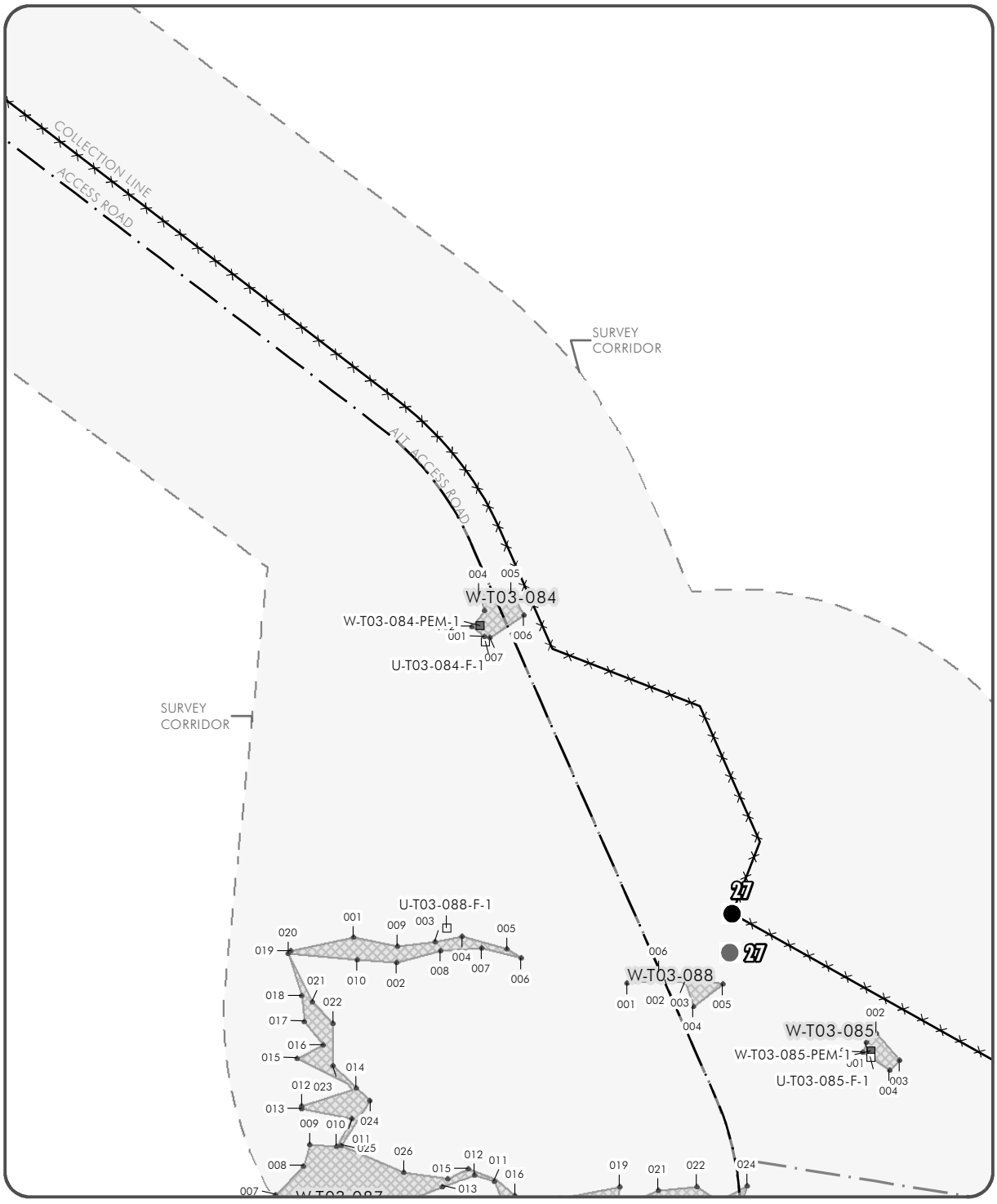


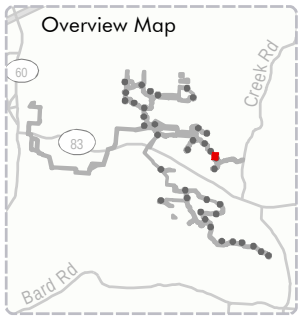


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Town of Arkwright

Chautauqua County, New York

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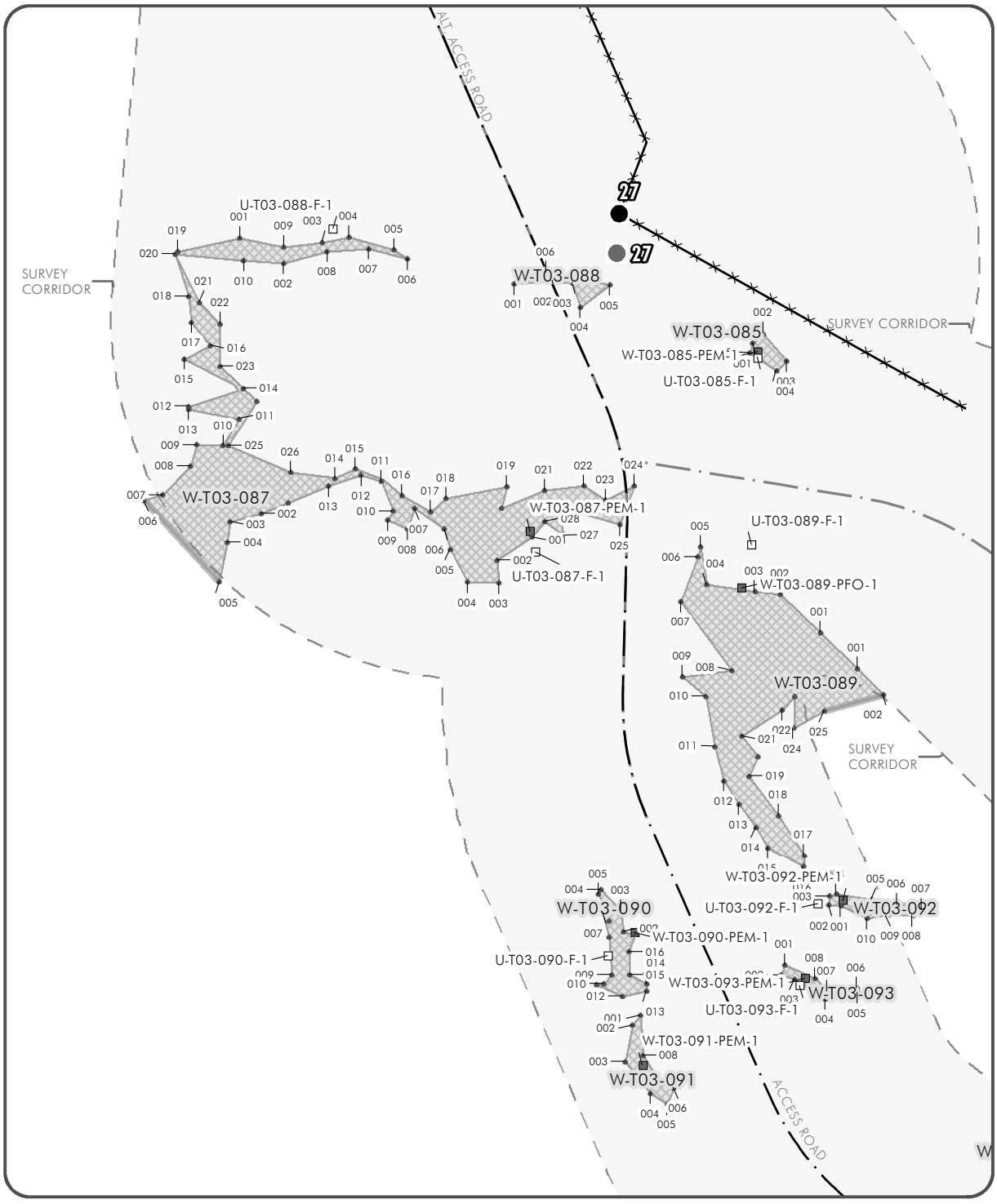


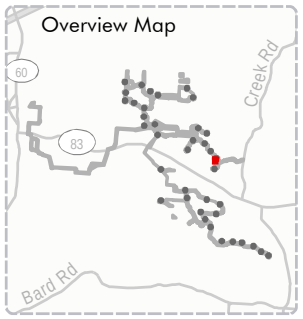


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Town of Arkwright

Chautauqua County, New York

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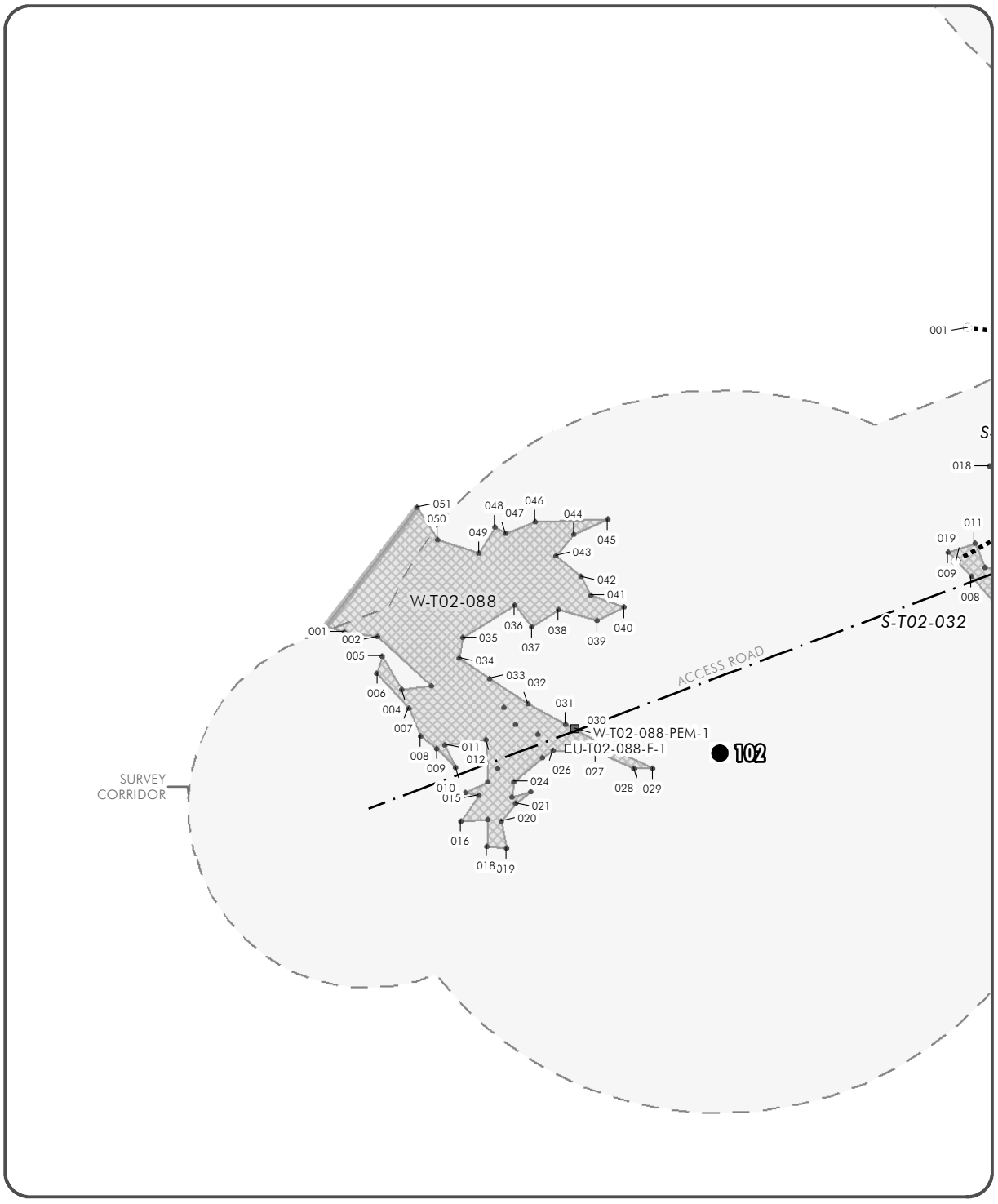


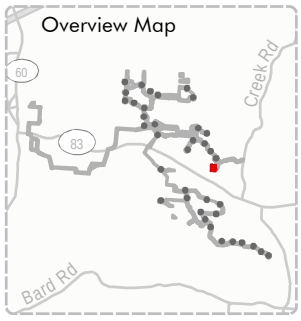


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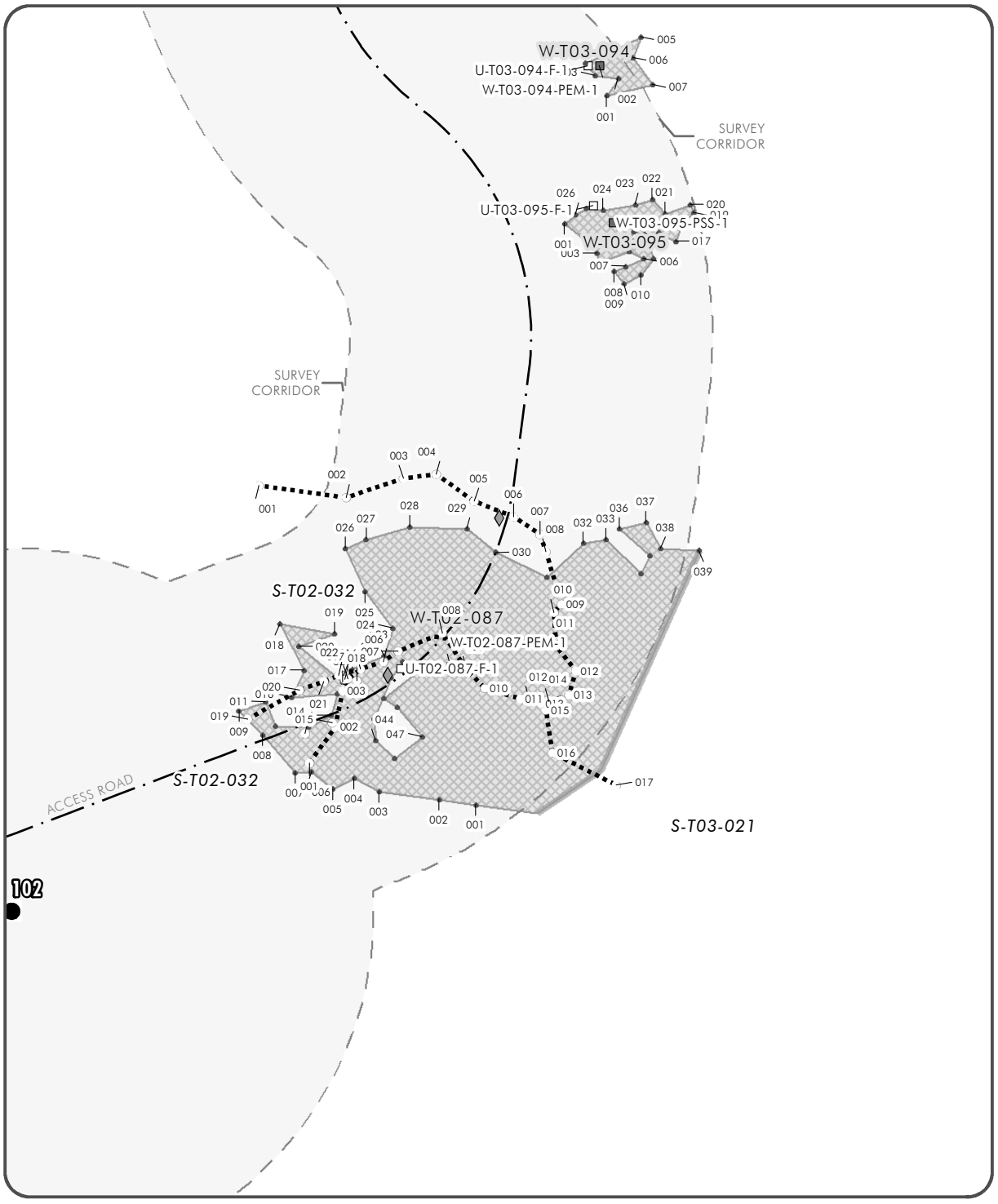


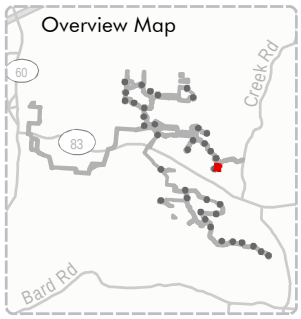


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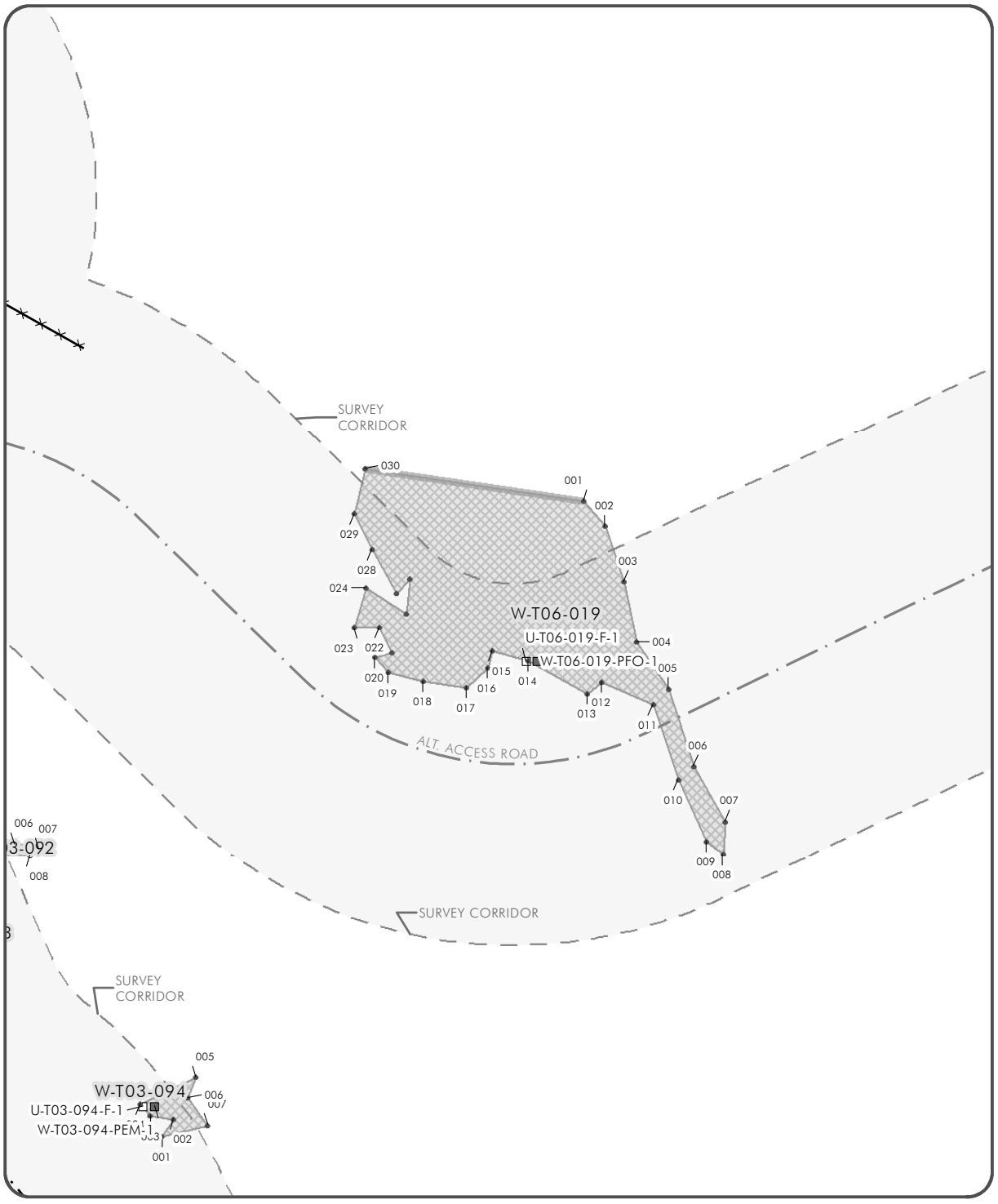


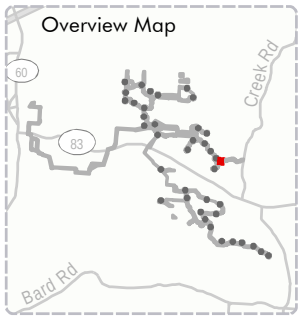


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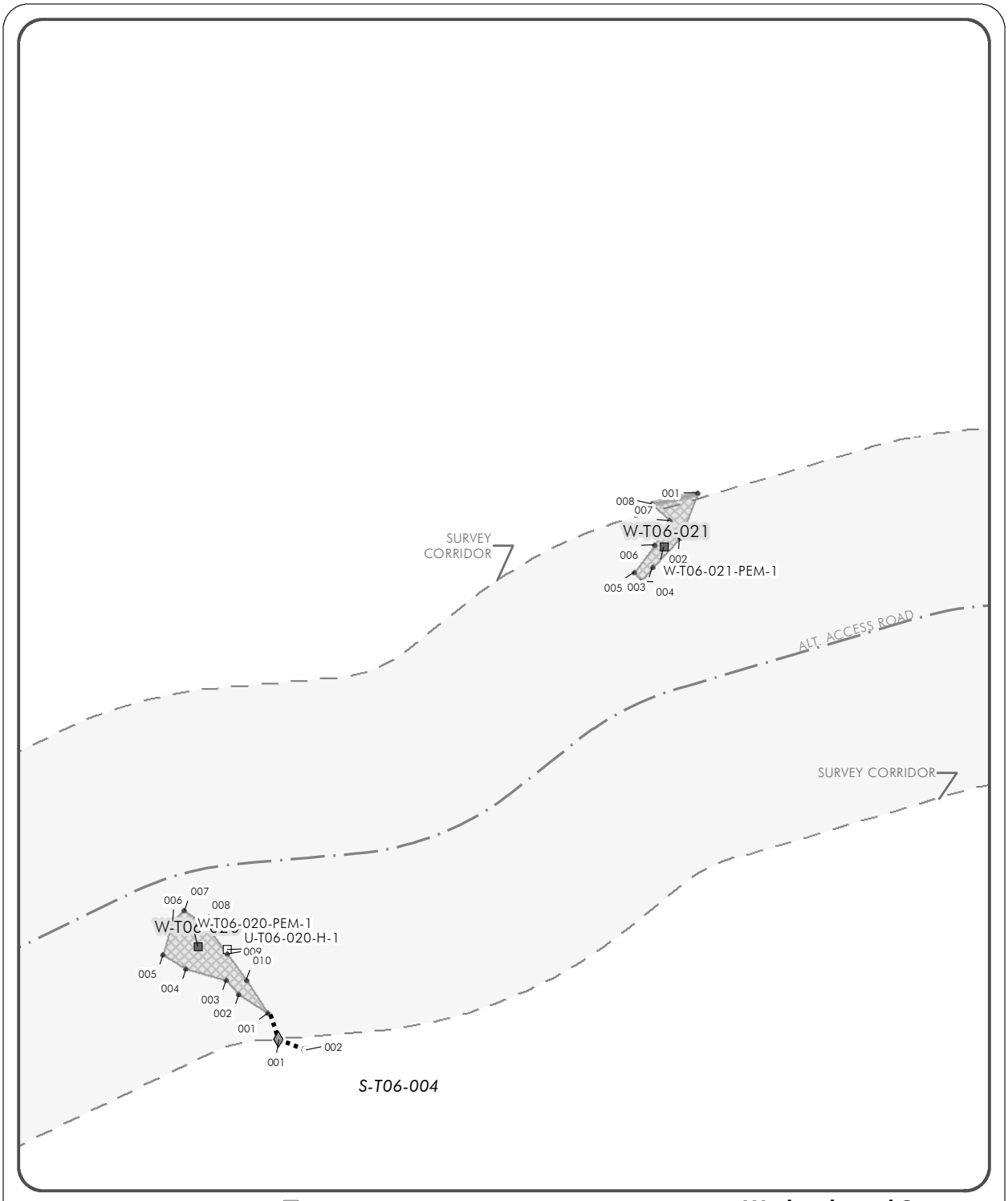


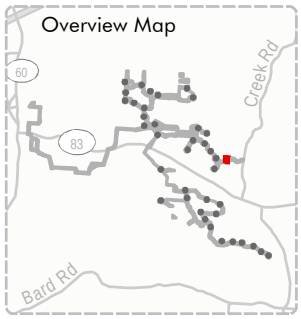


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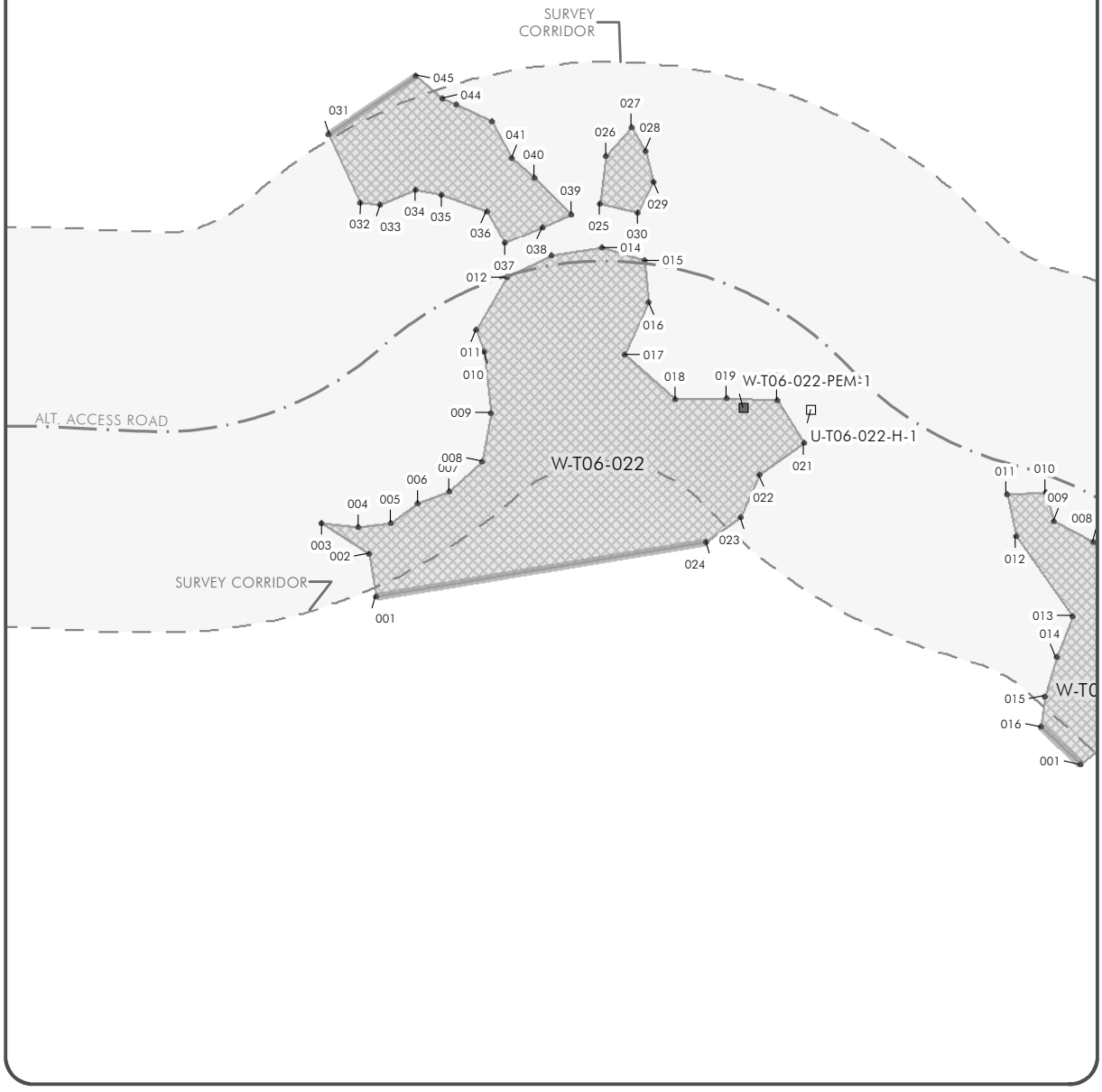


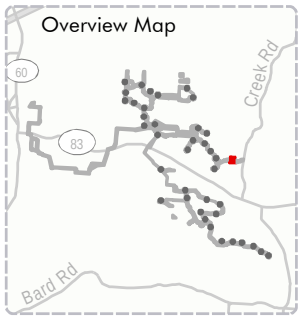


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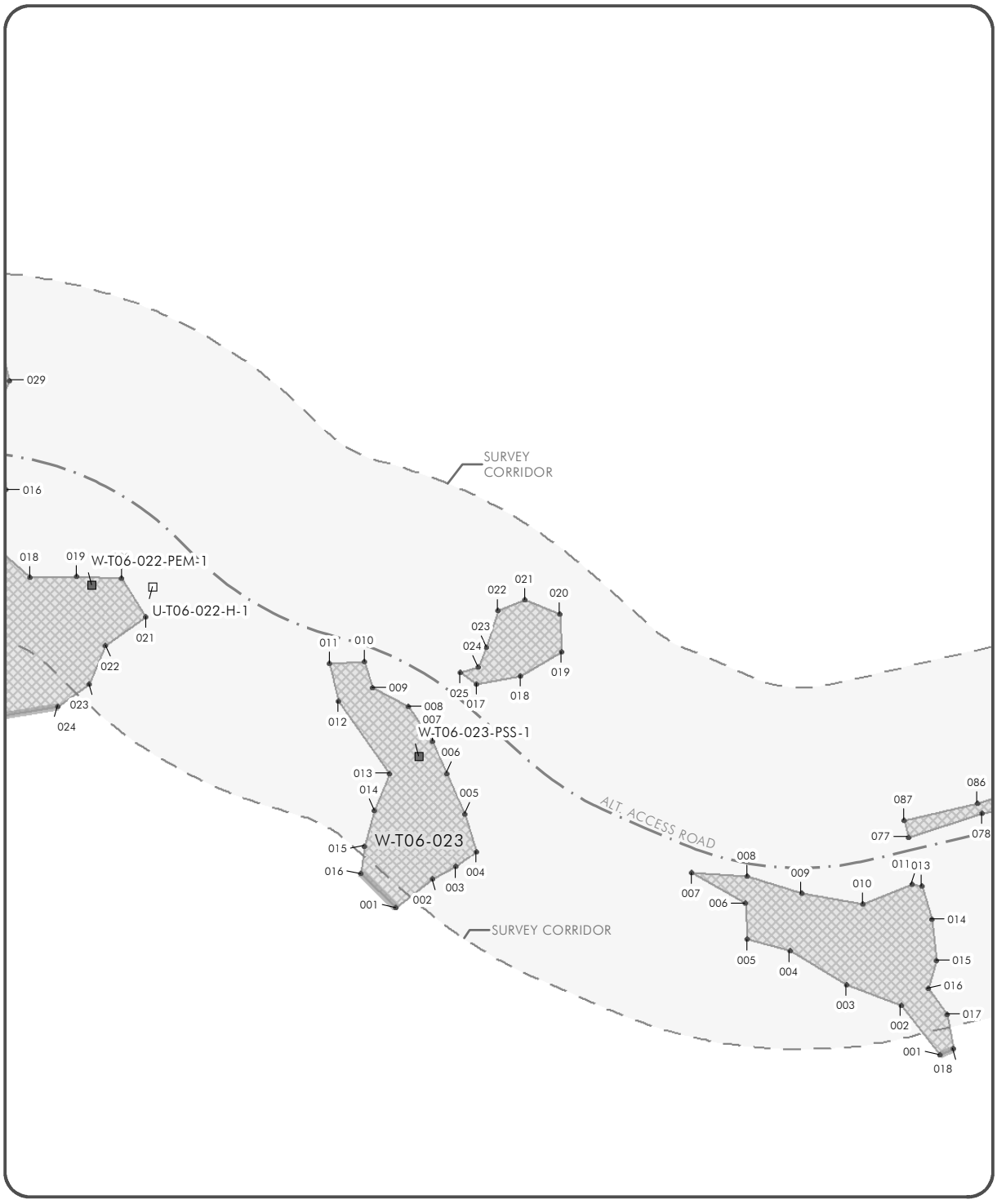


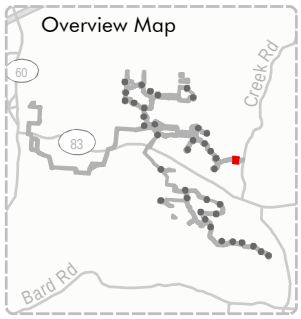


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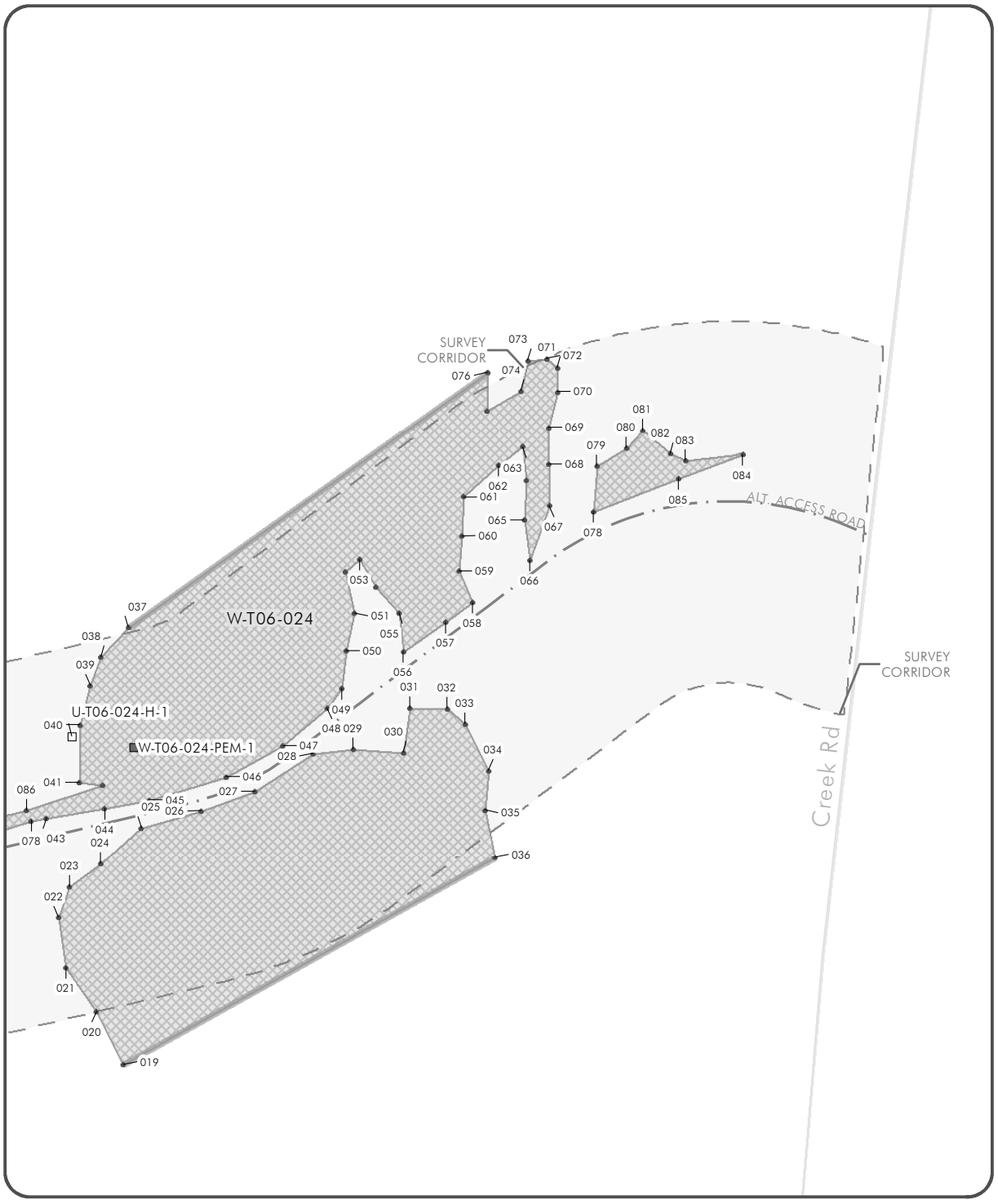


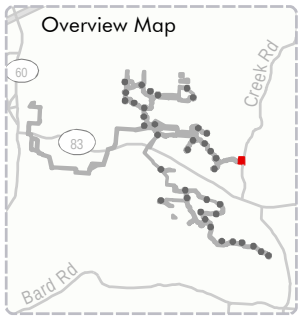


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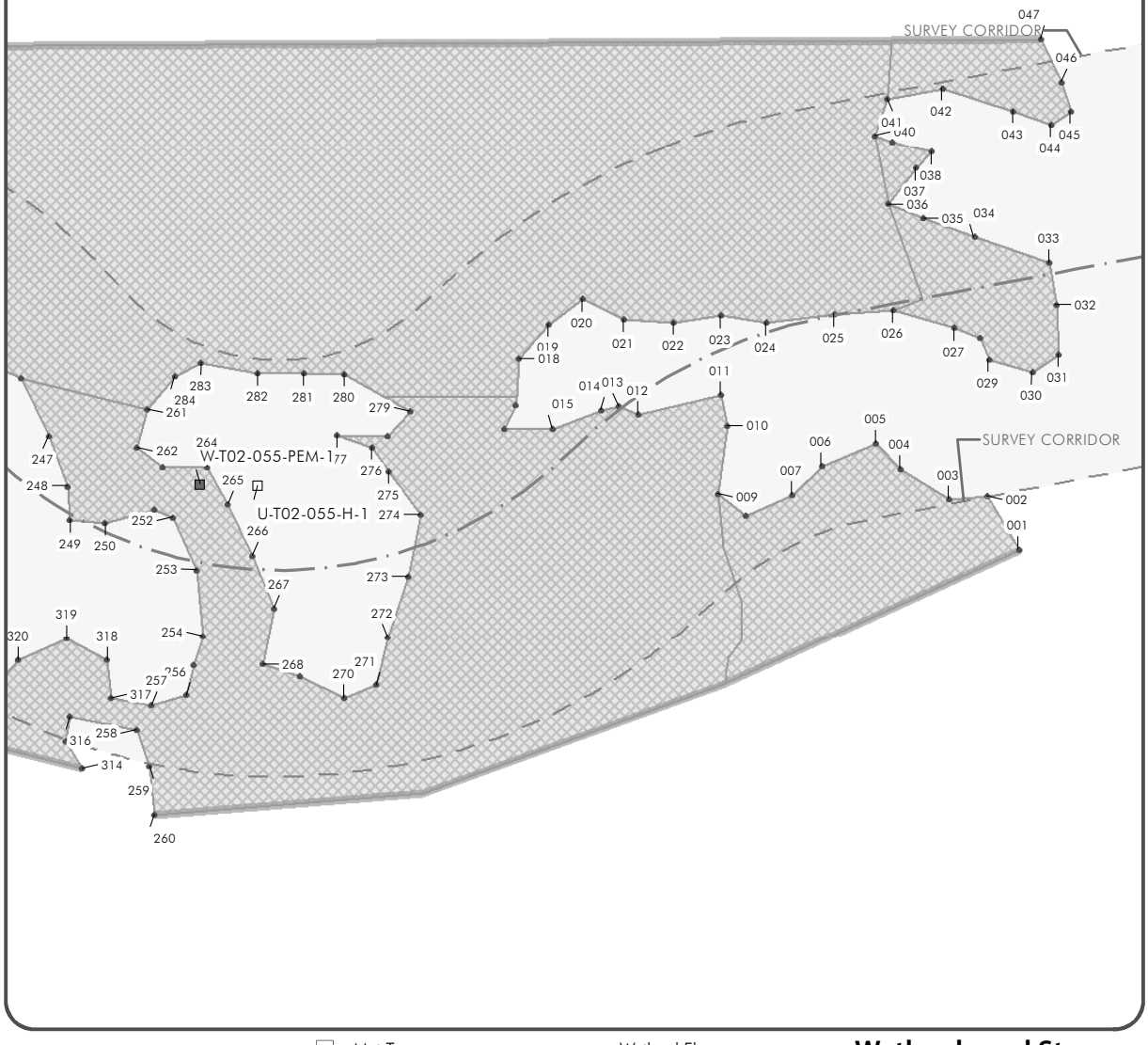
Arkwright Wind Farm

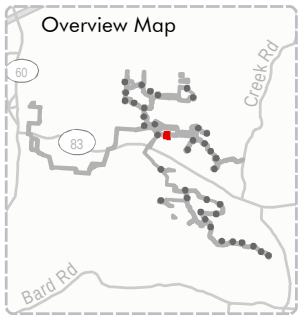
Town of Arkwright

Chautauqua County, New York

Scale:

0 25 50 100 Feet

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- Town Boundary

# Wetlands and Streams



Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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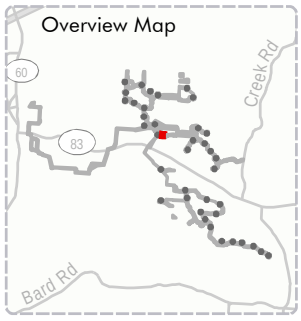


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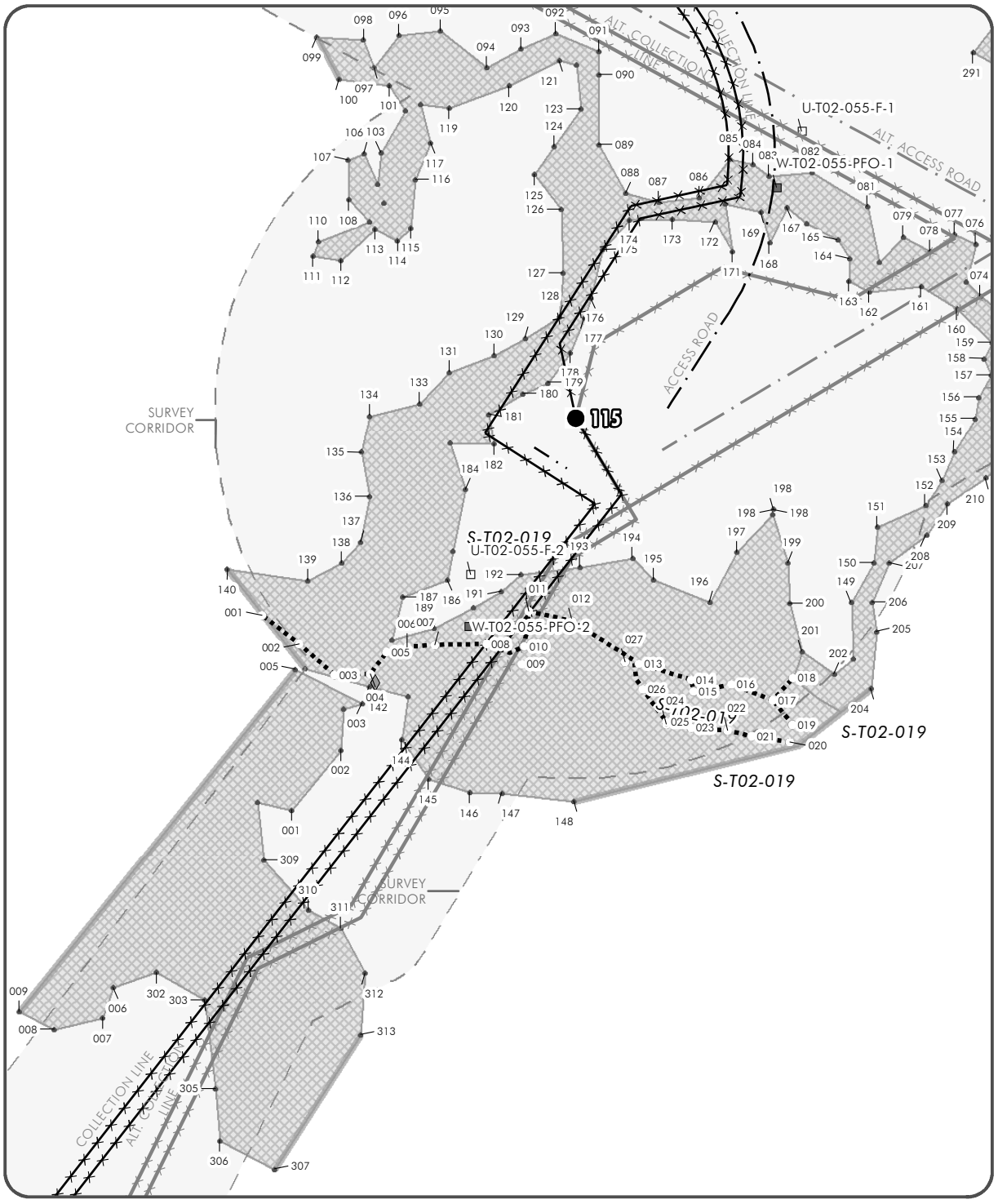


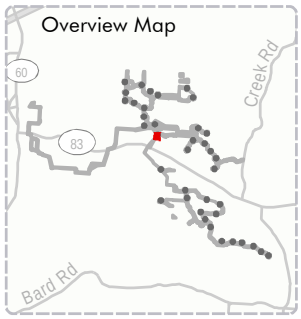


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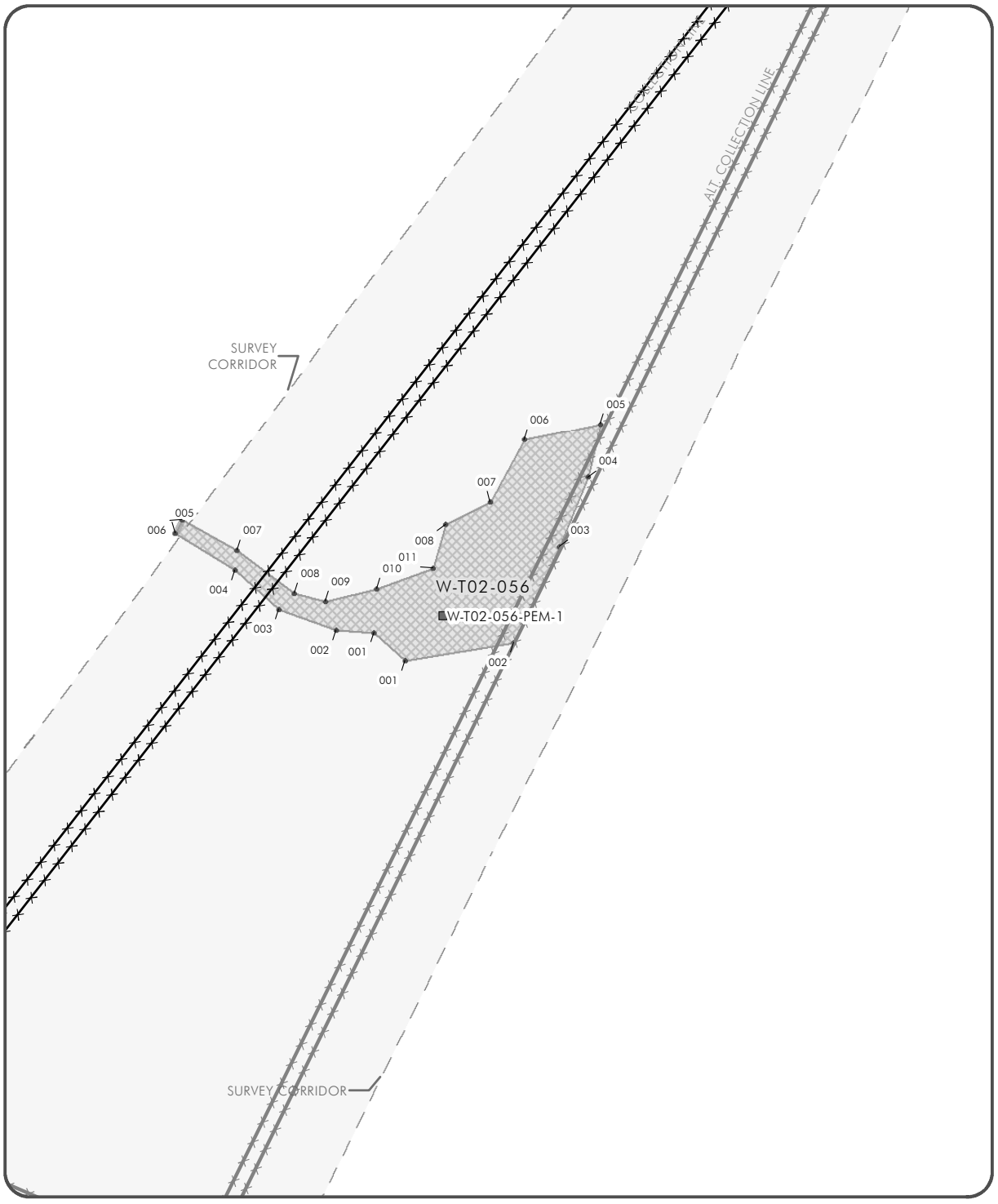


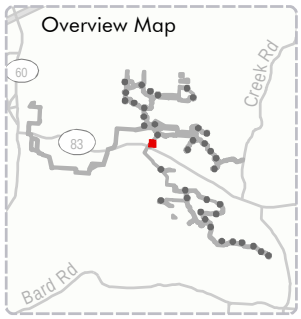


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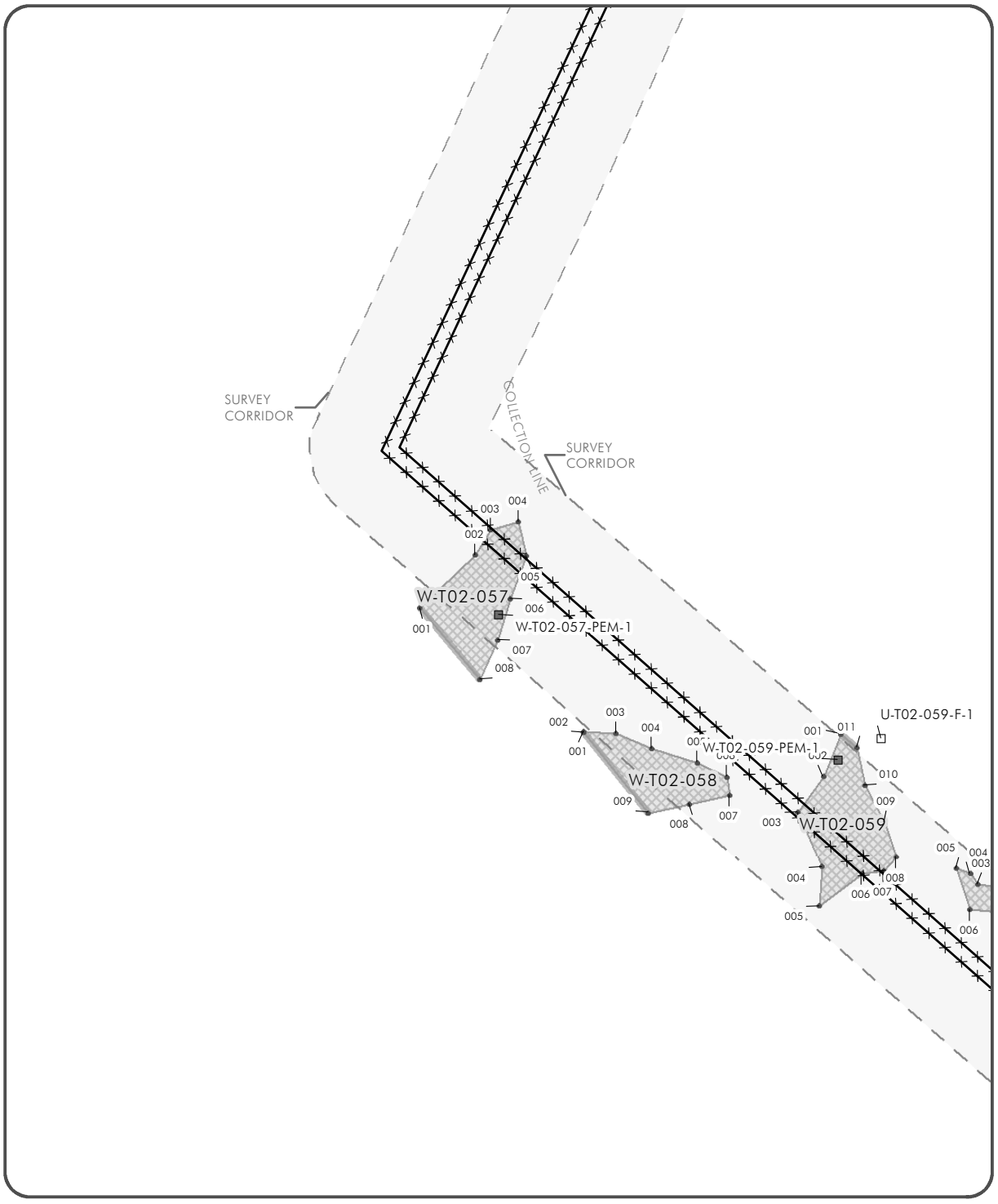


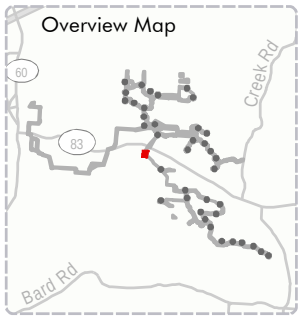


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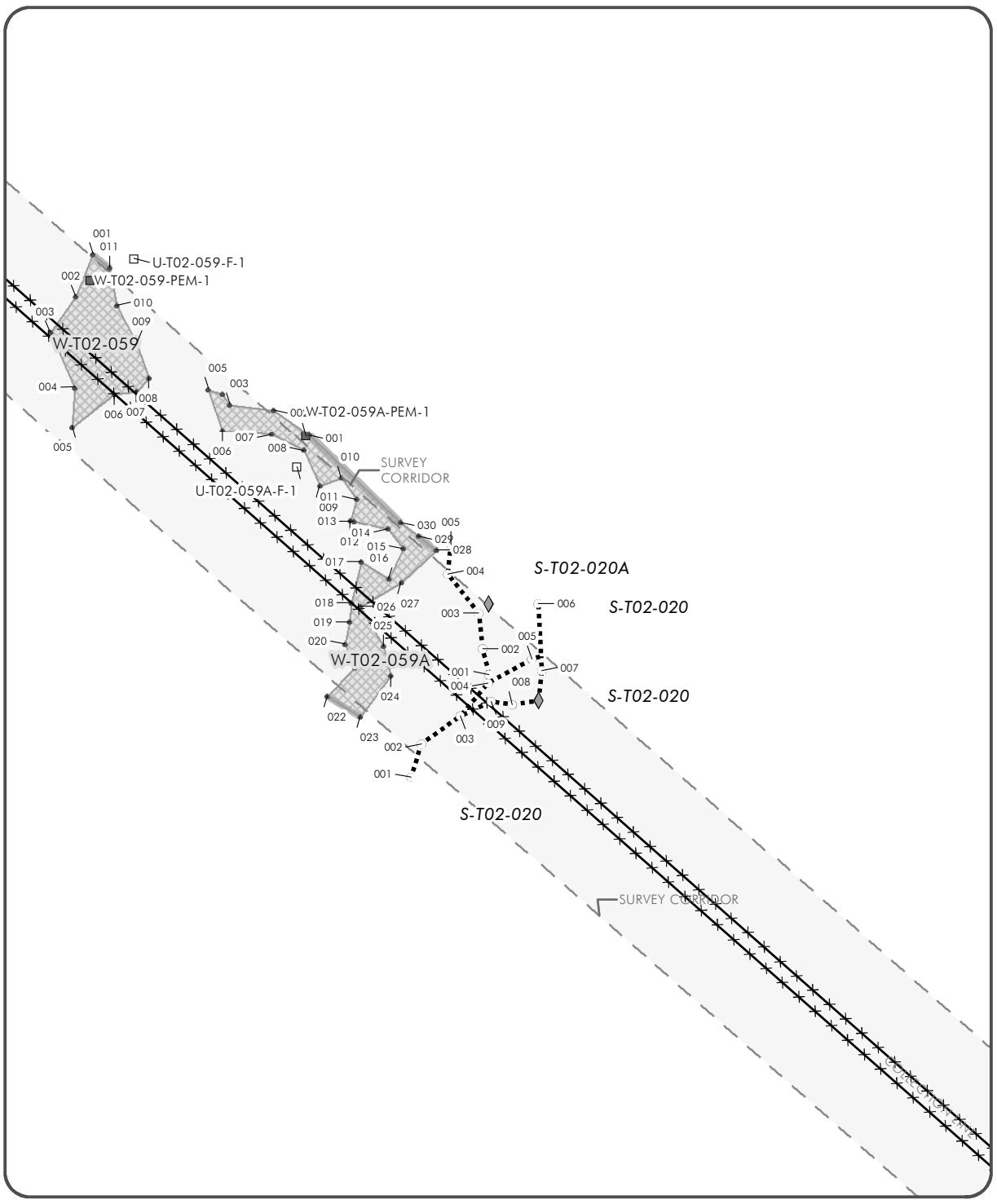


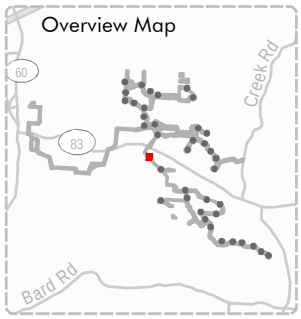


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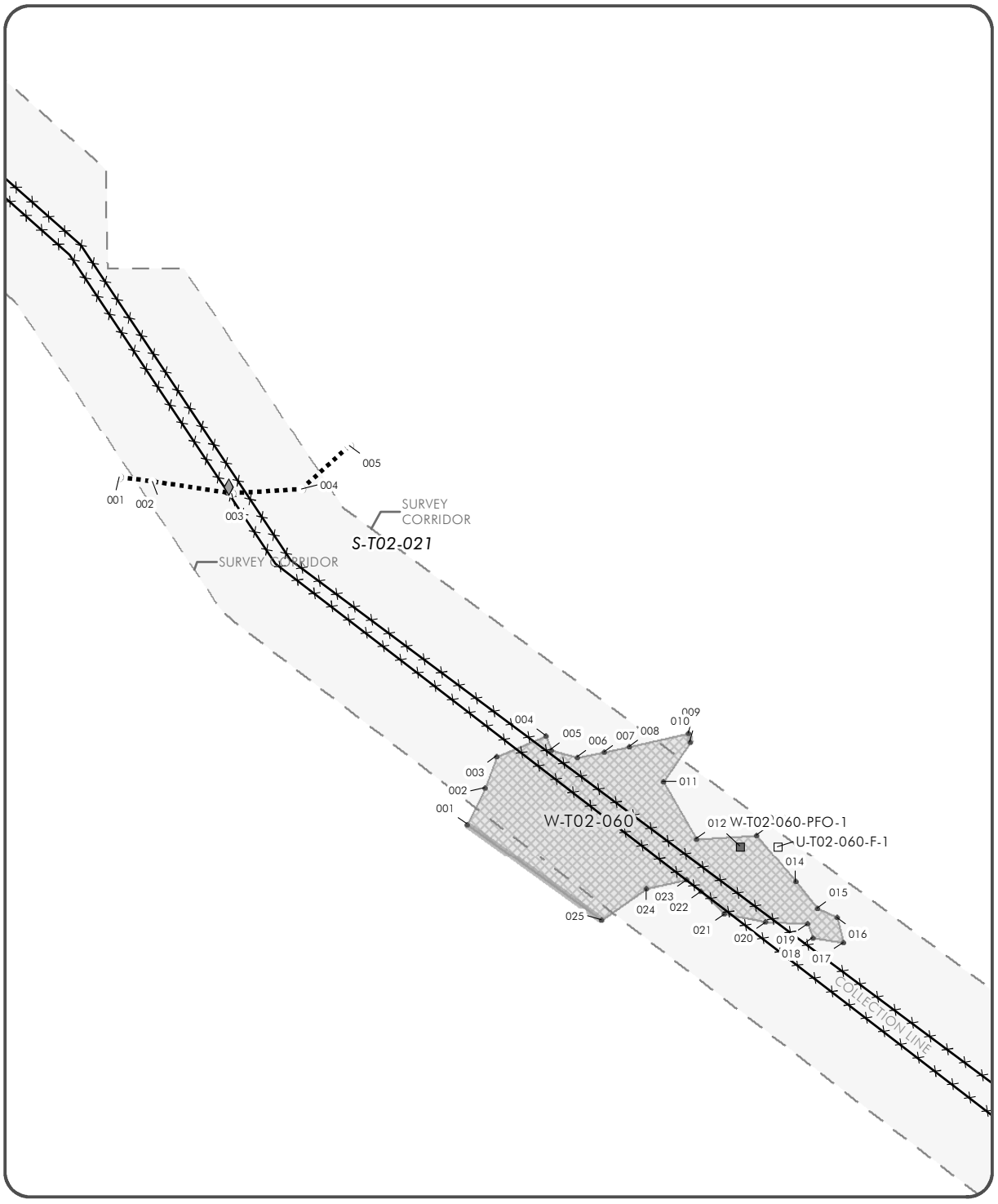


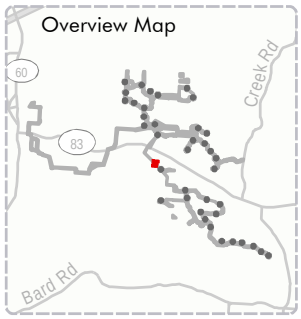


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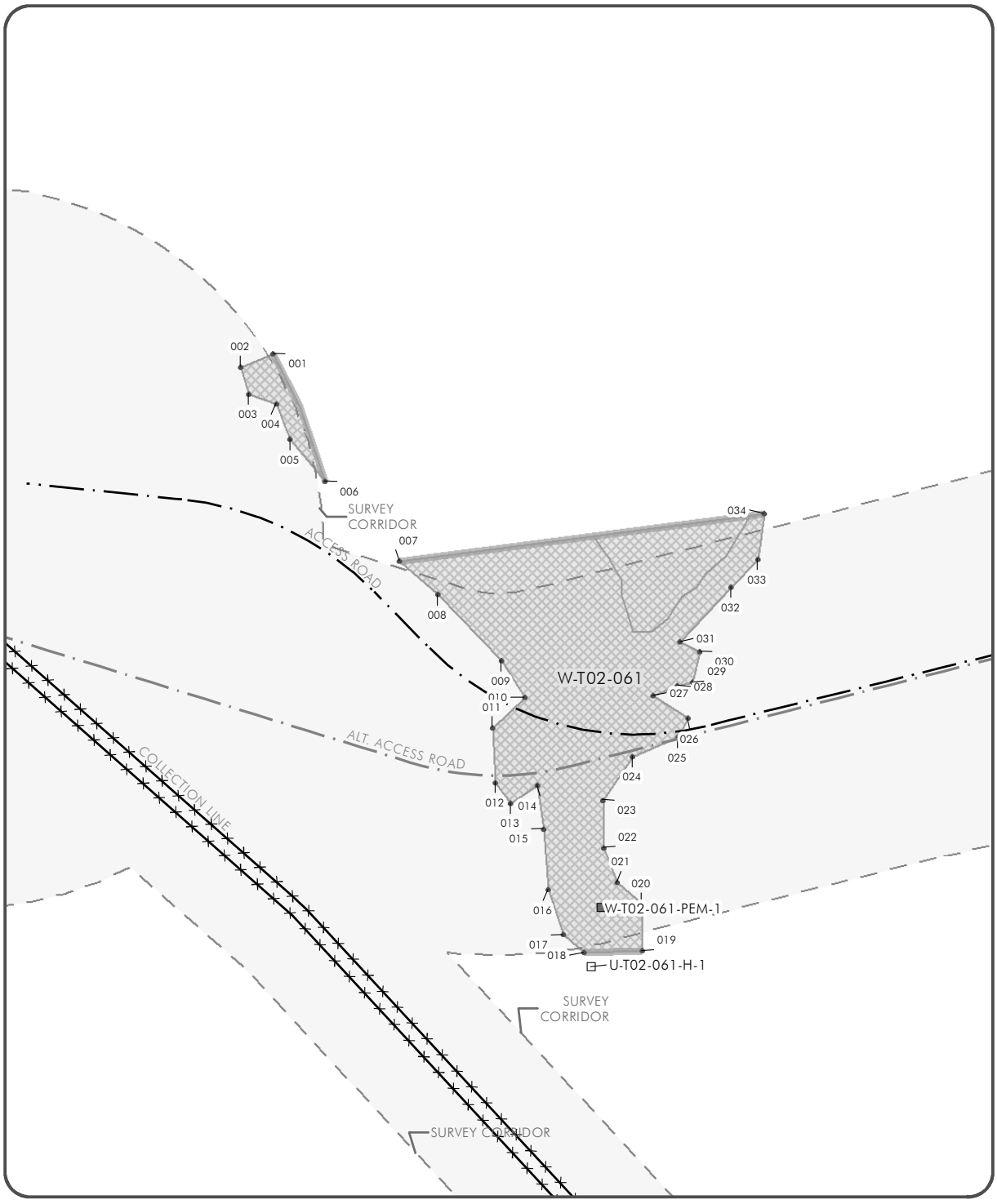


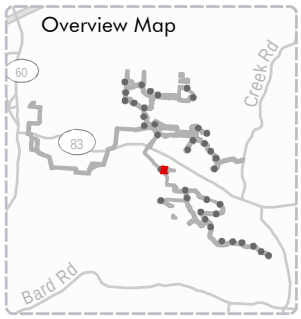


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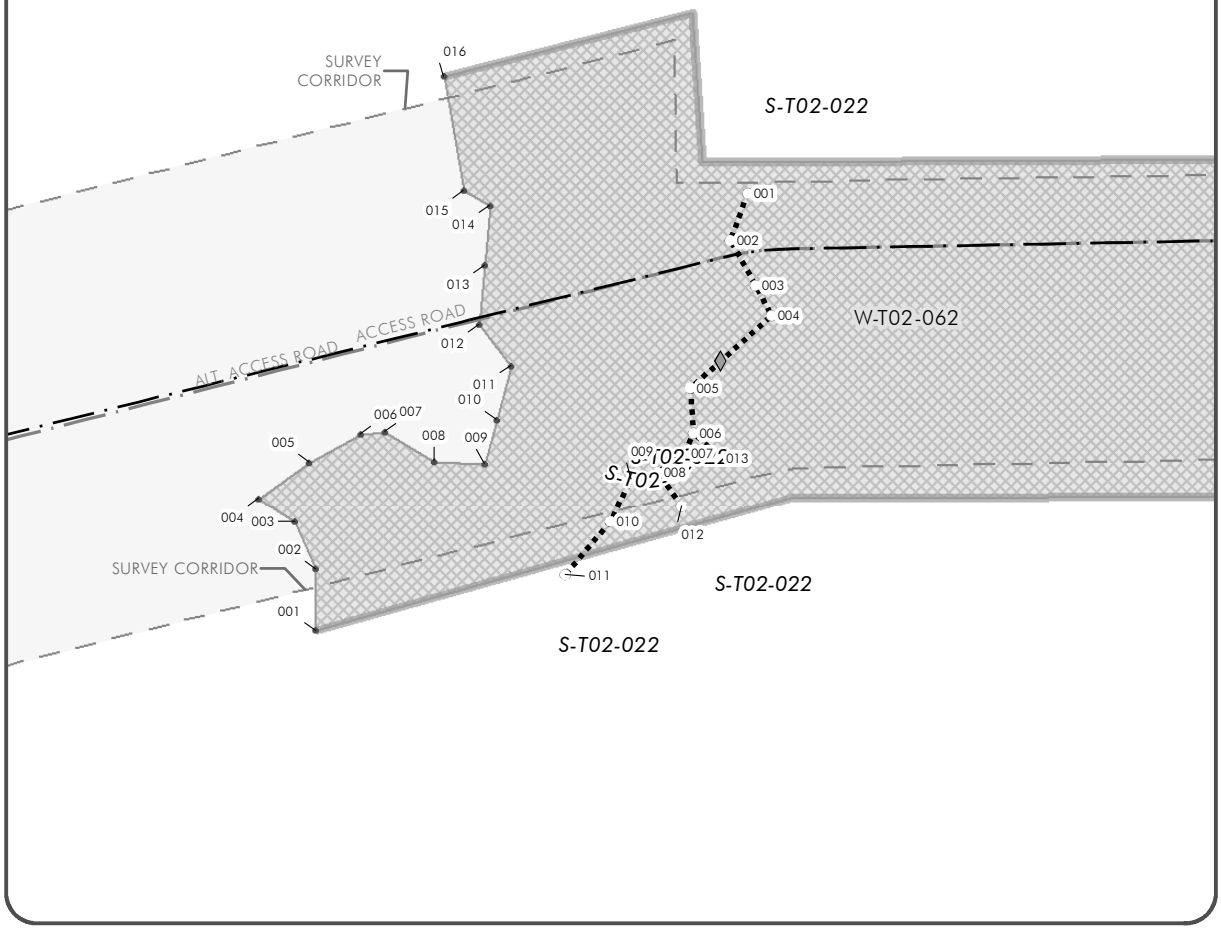


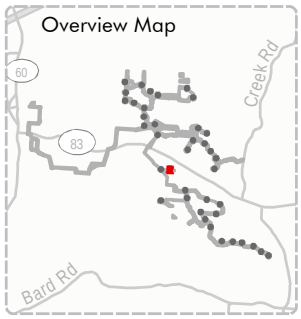


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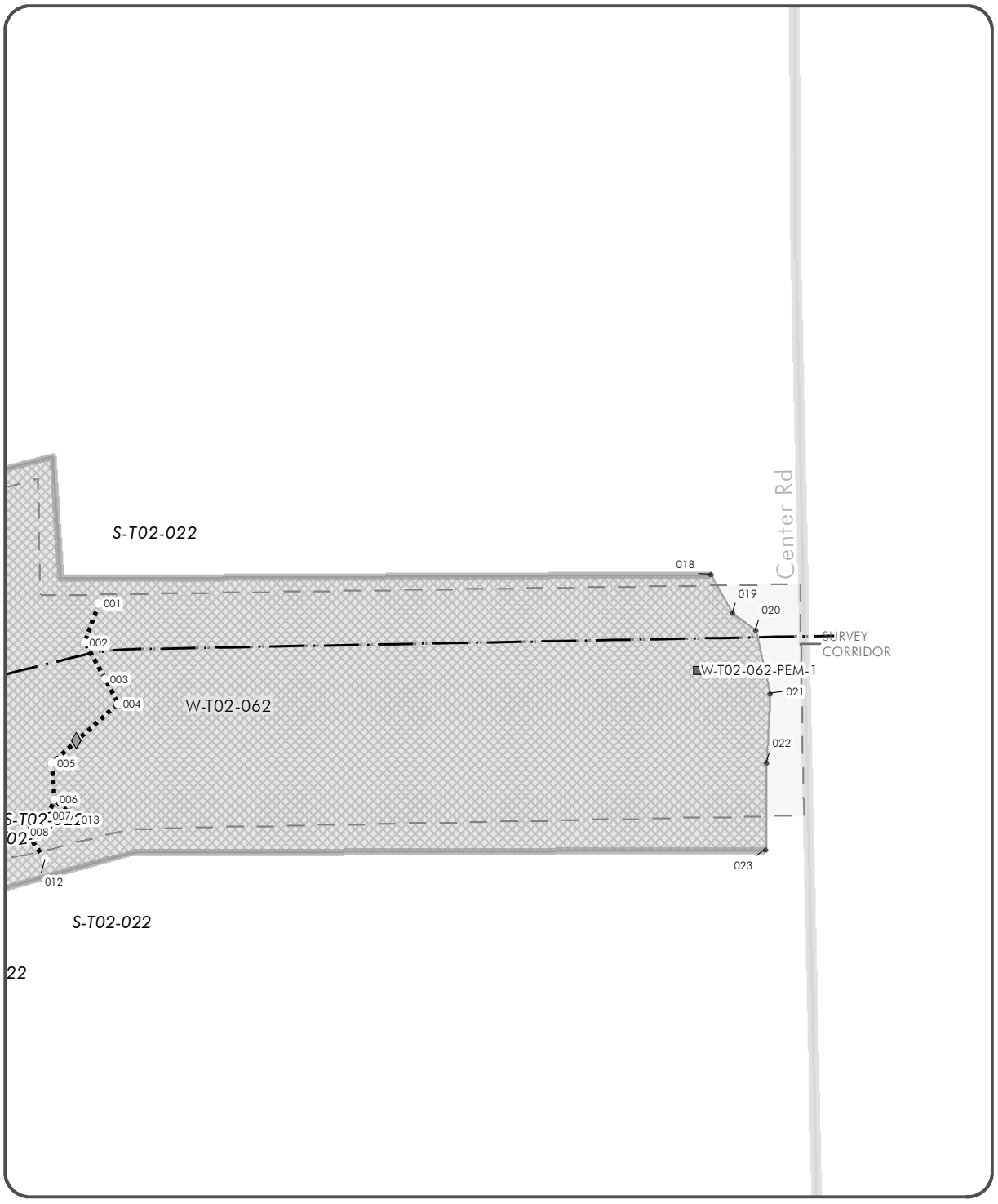


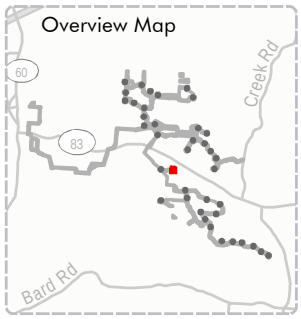


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Town of Arkwright
Chautauqua County, New York

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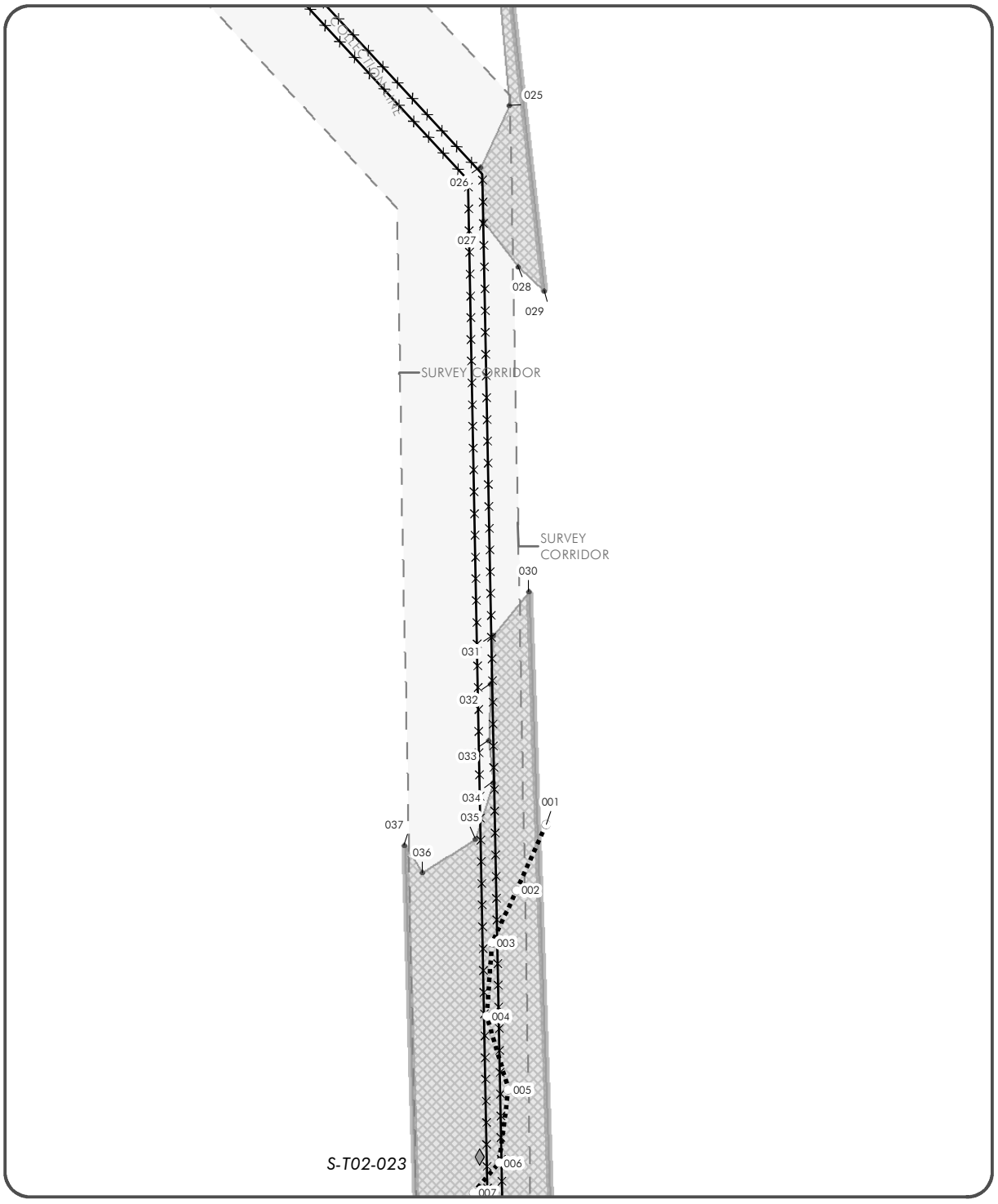


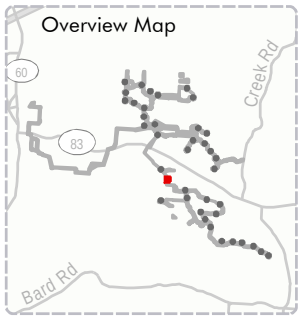


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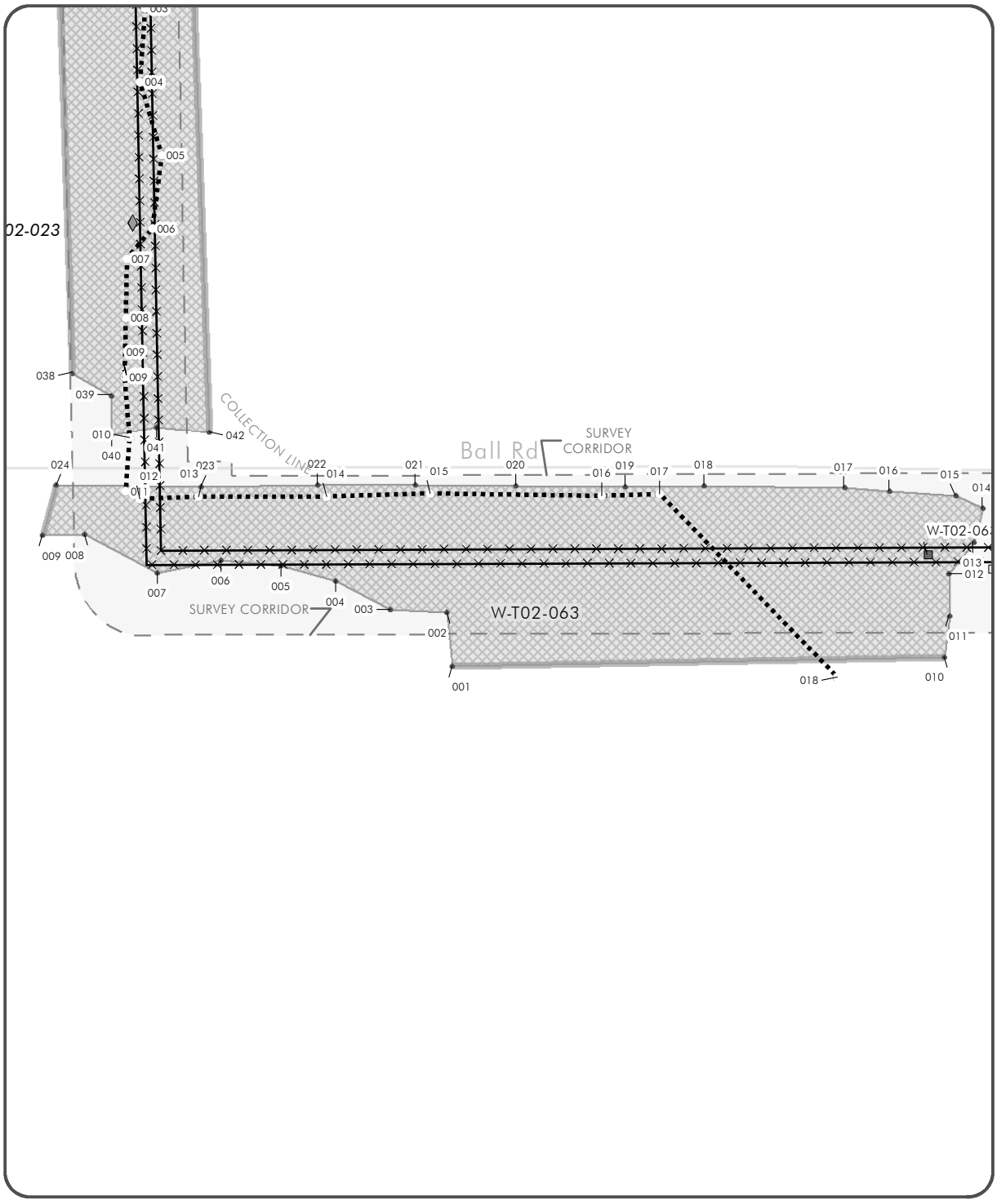


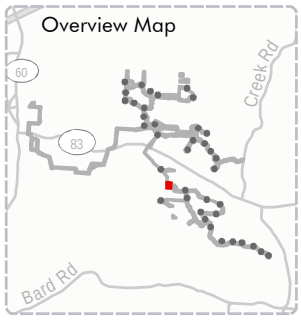


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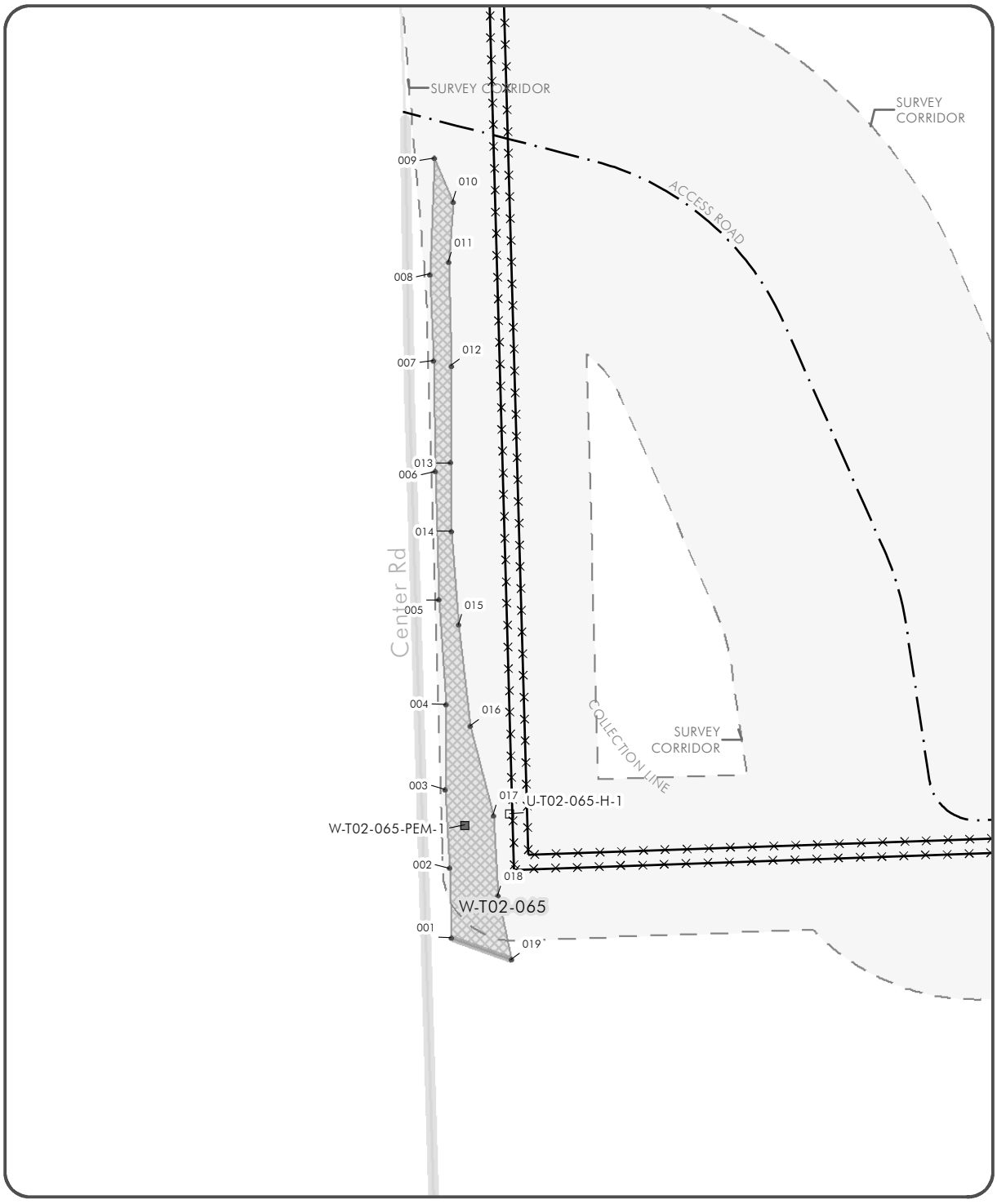


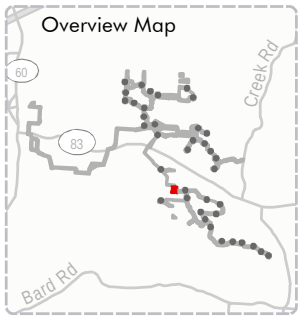


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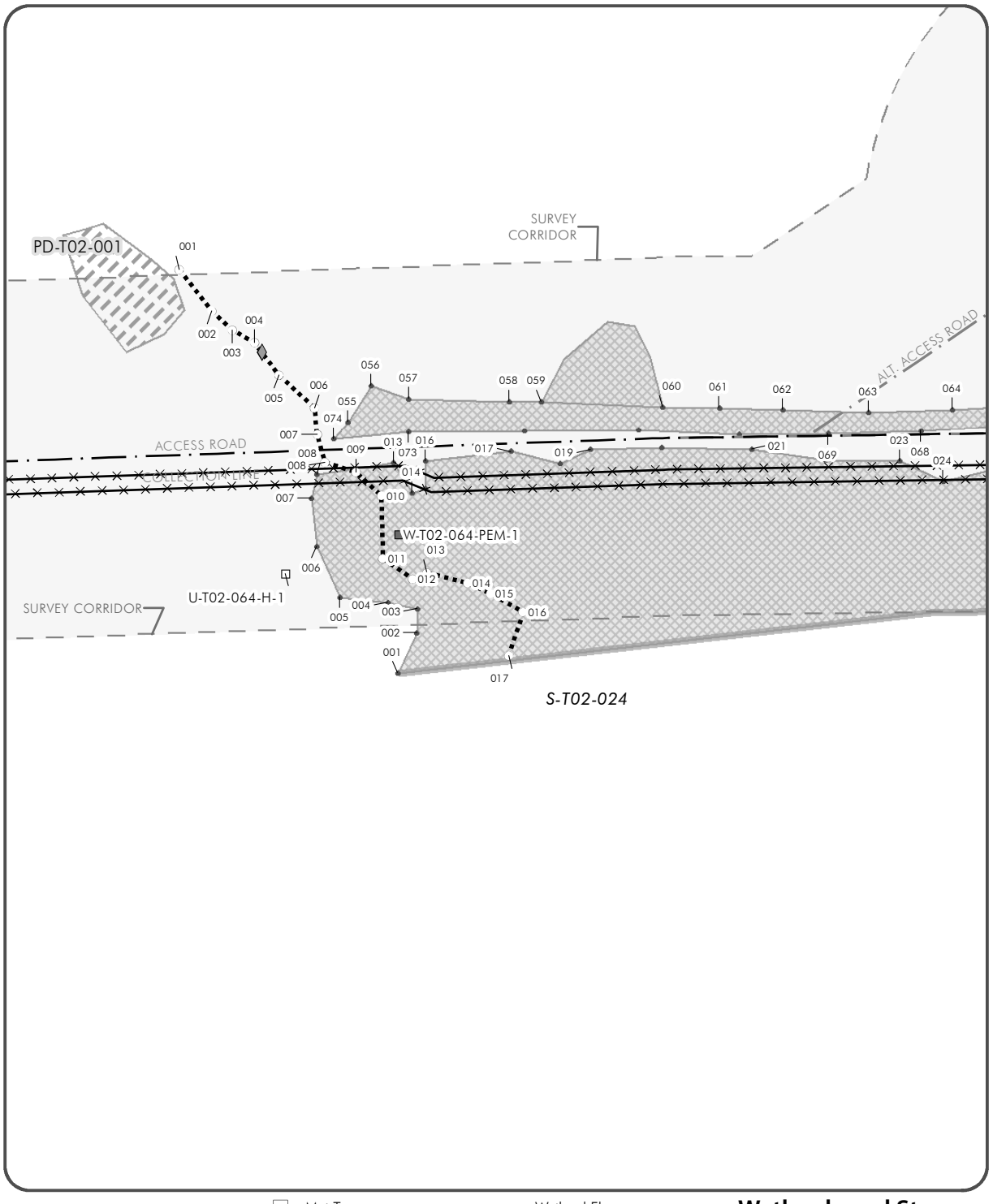


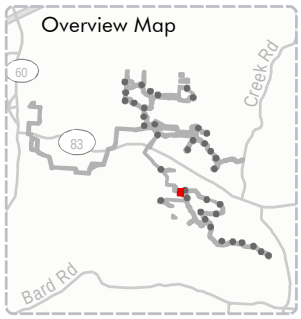


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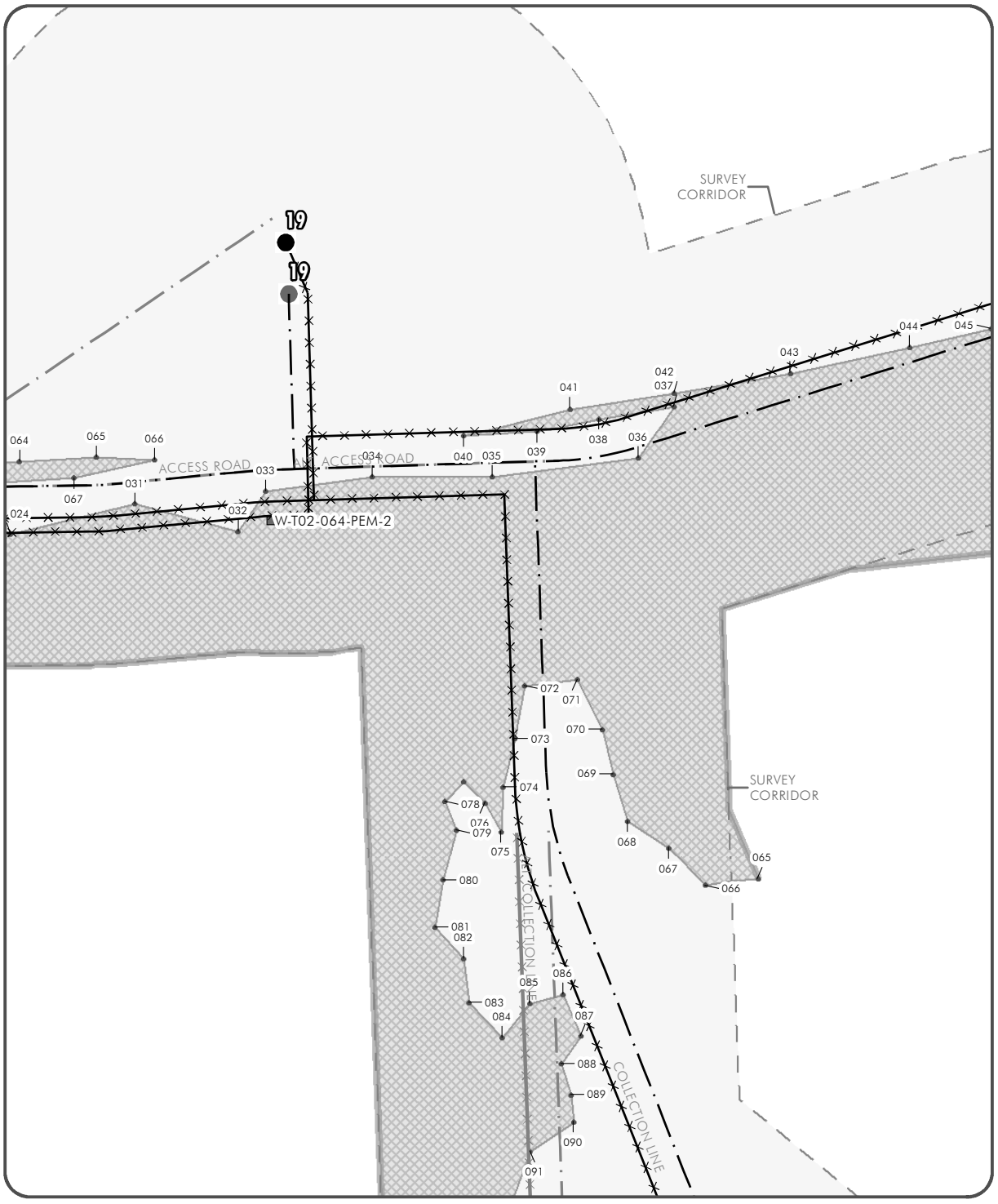


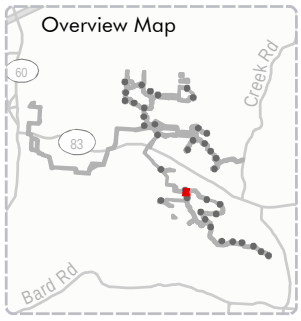


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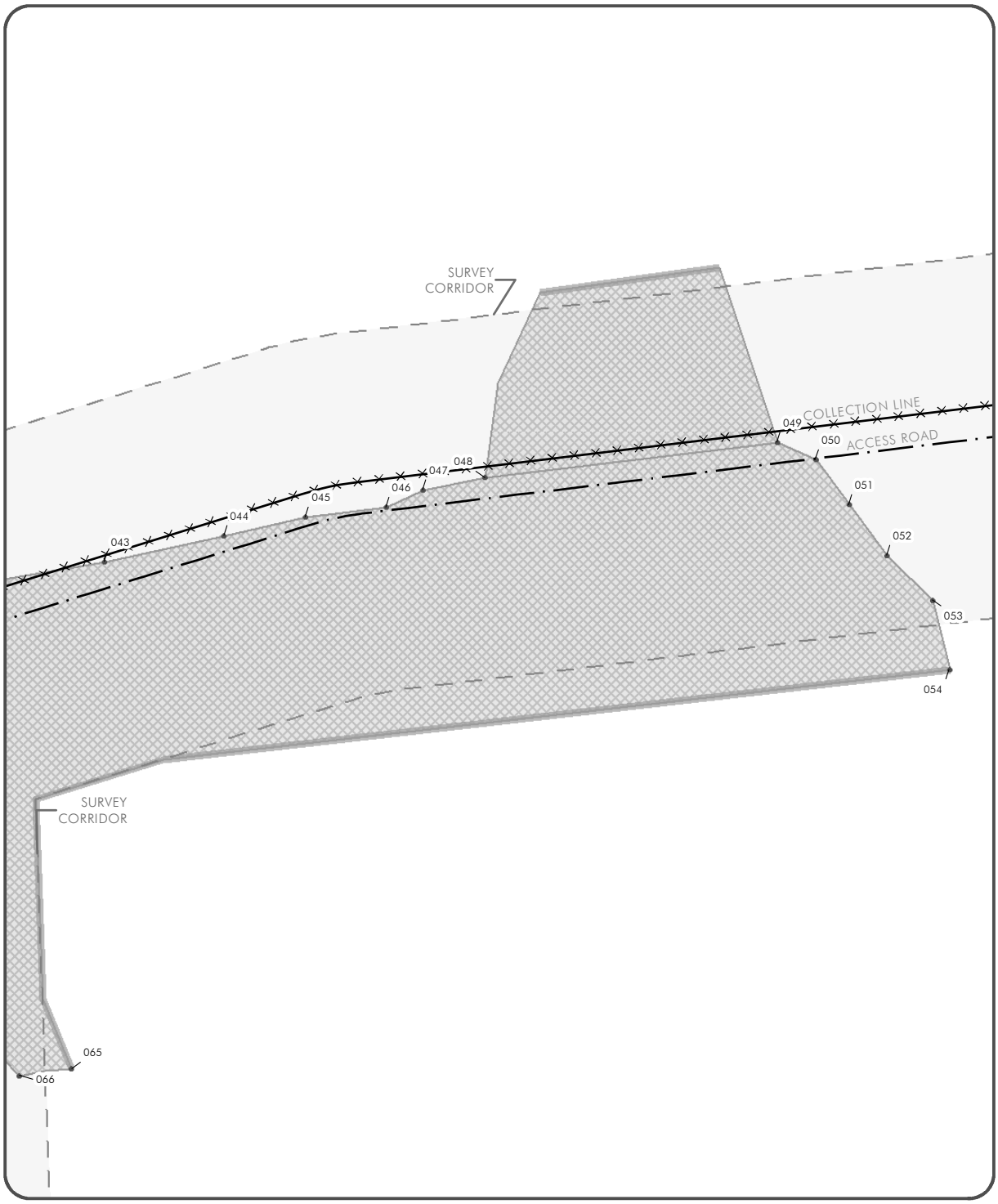


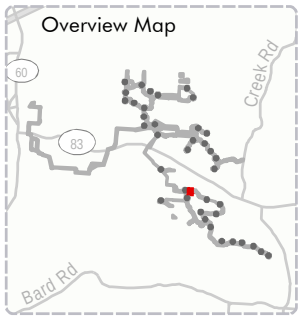


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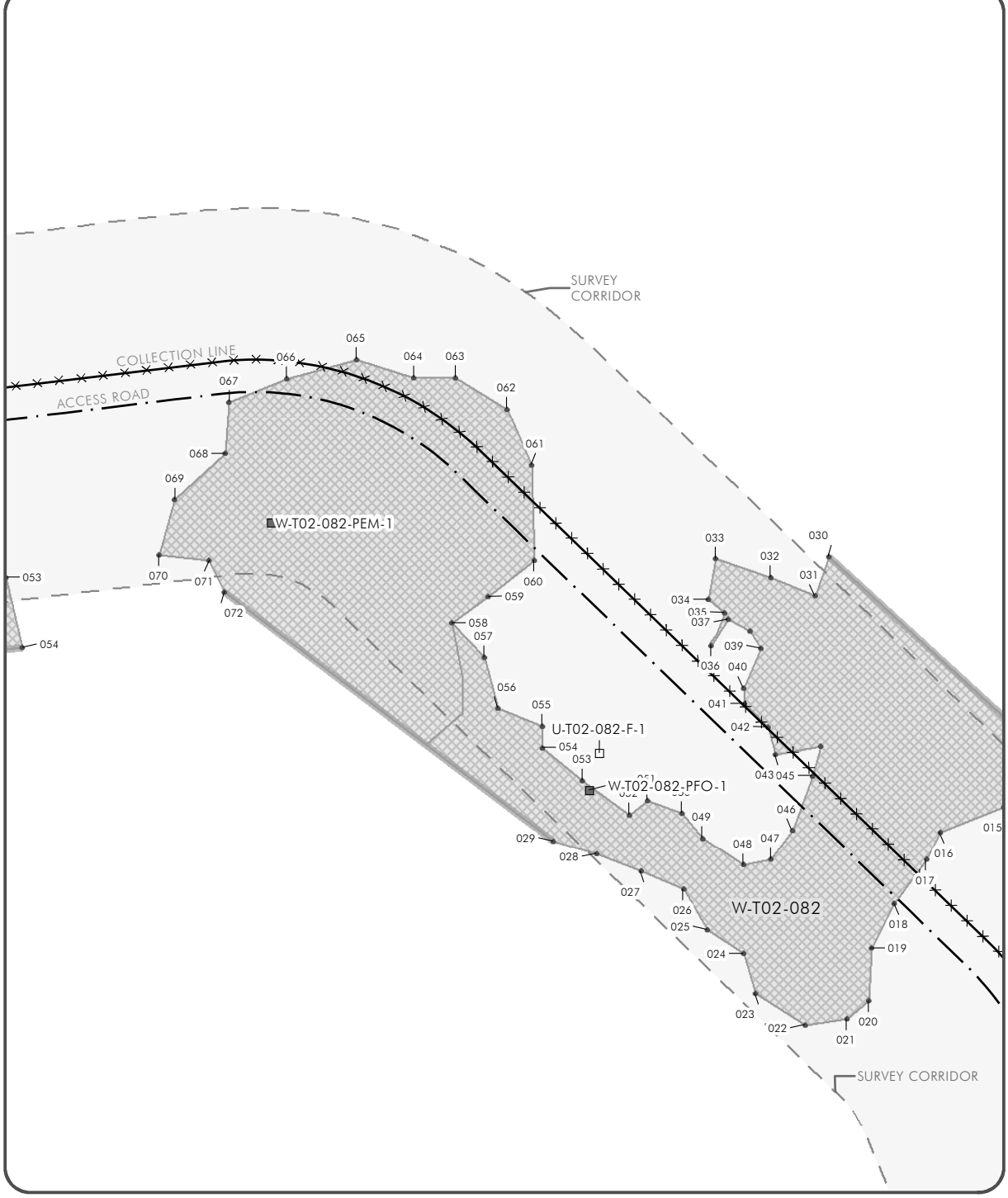


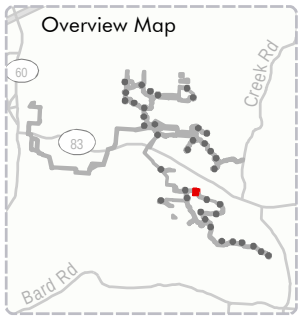


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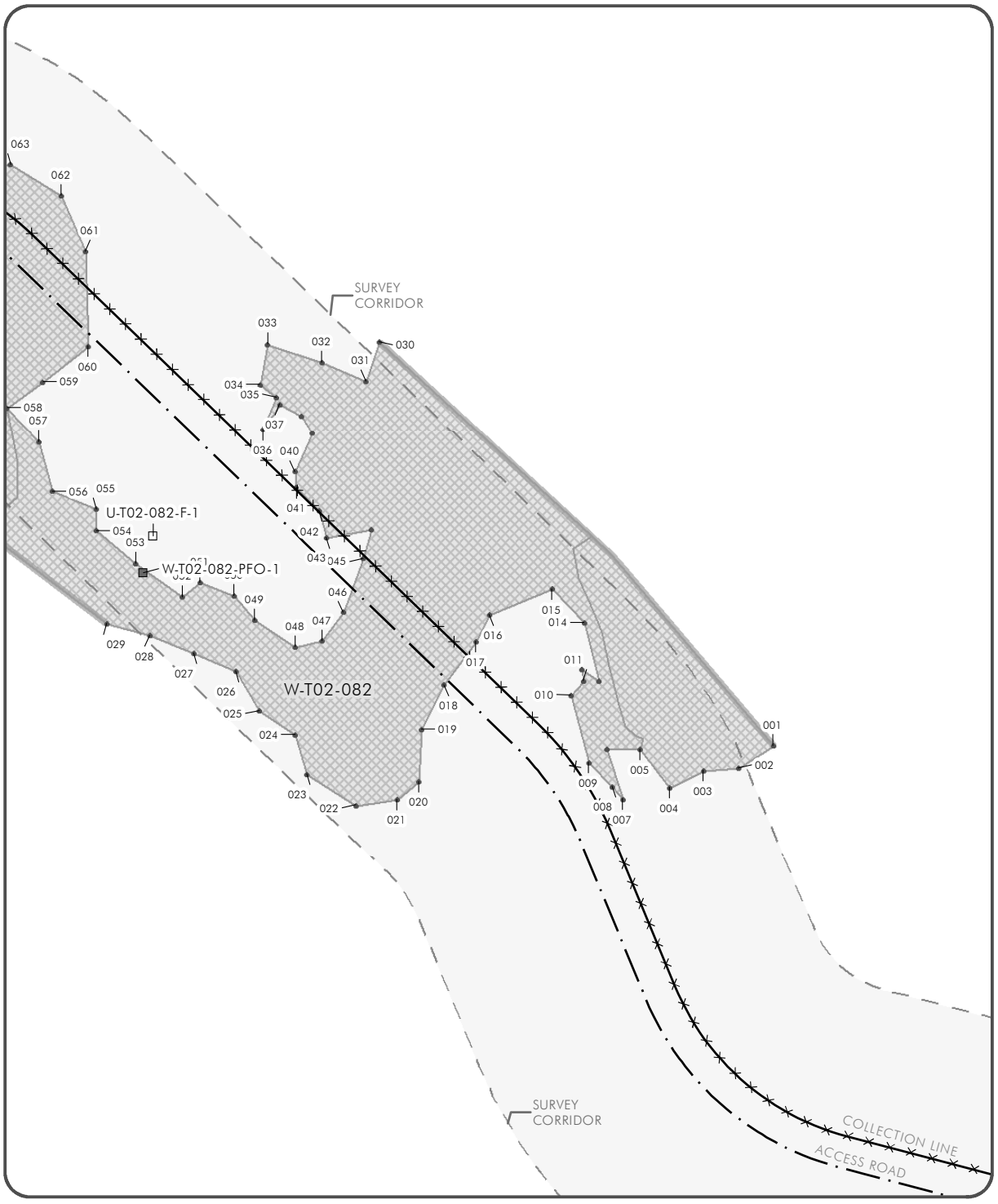


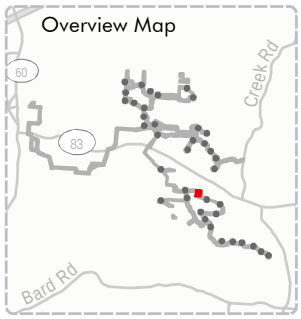


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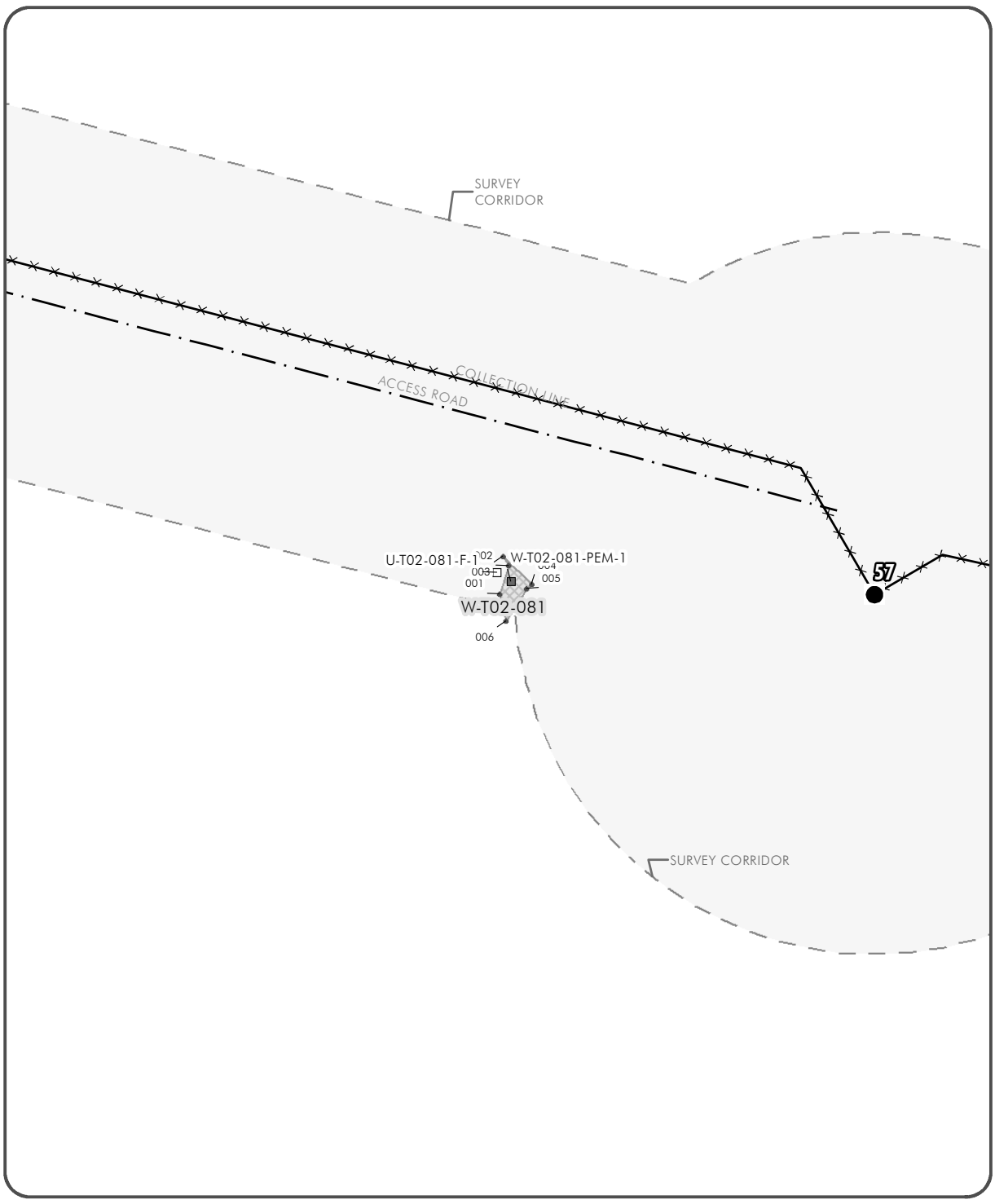


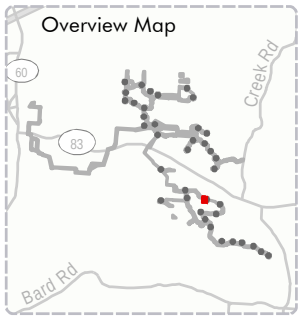


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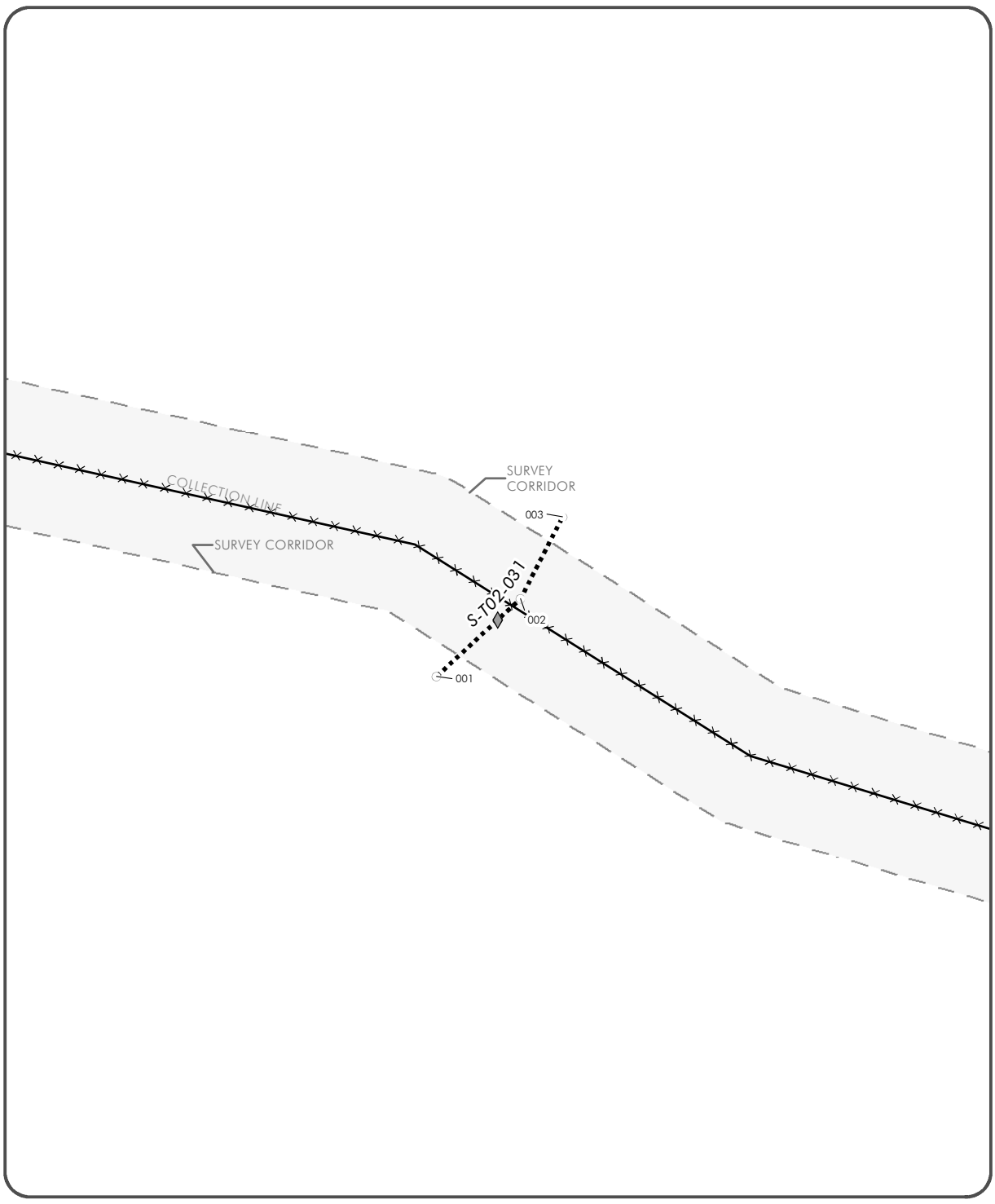


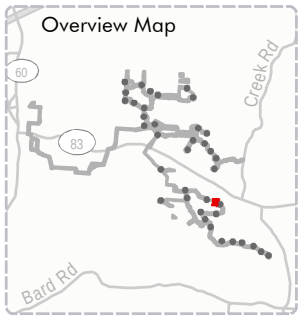


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- Pond
- Town Boundary

# Wetlands and Streams



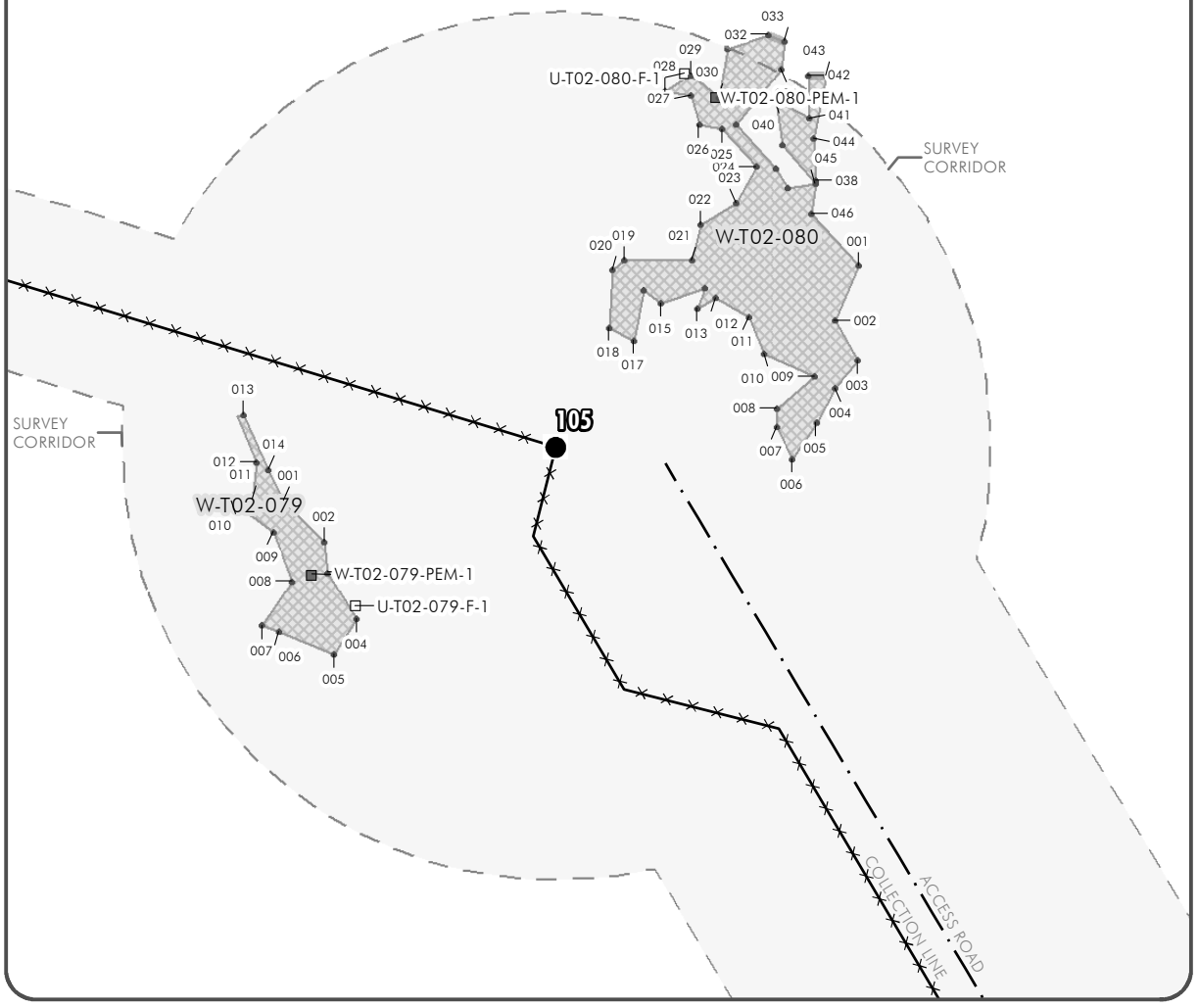
Arkwright Wind Farm

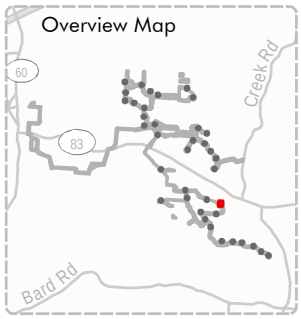
Town of Arkwright

Chautauqua County, New York

Scale:

0 25 50 100 Feet

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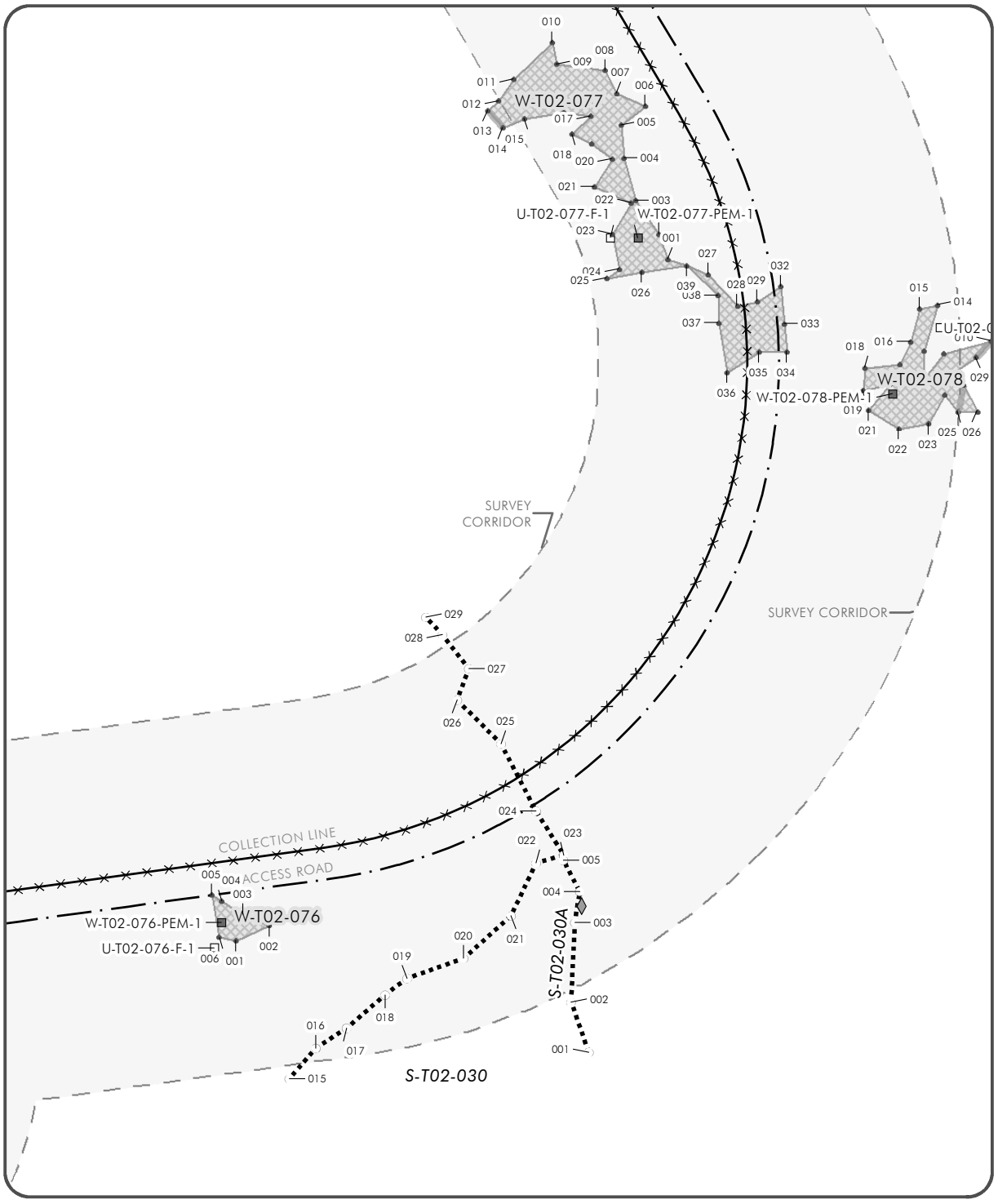


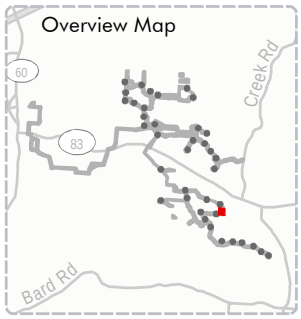


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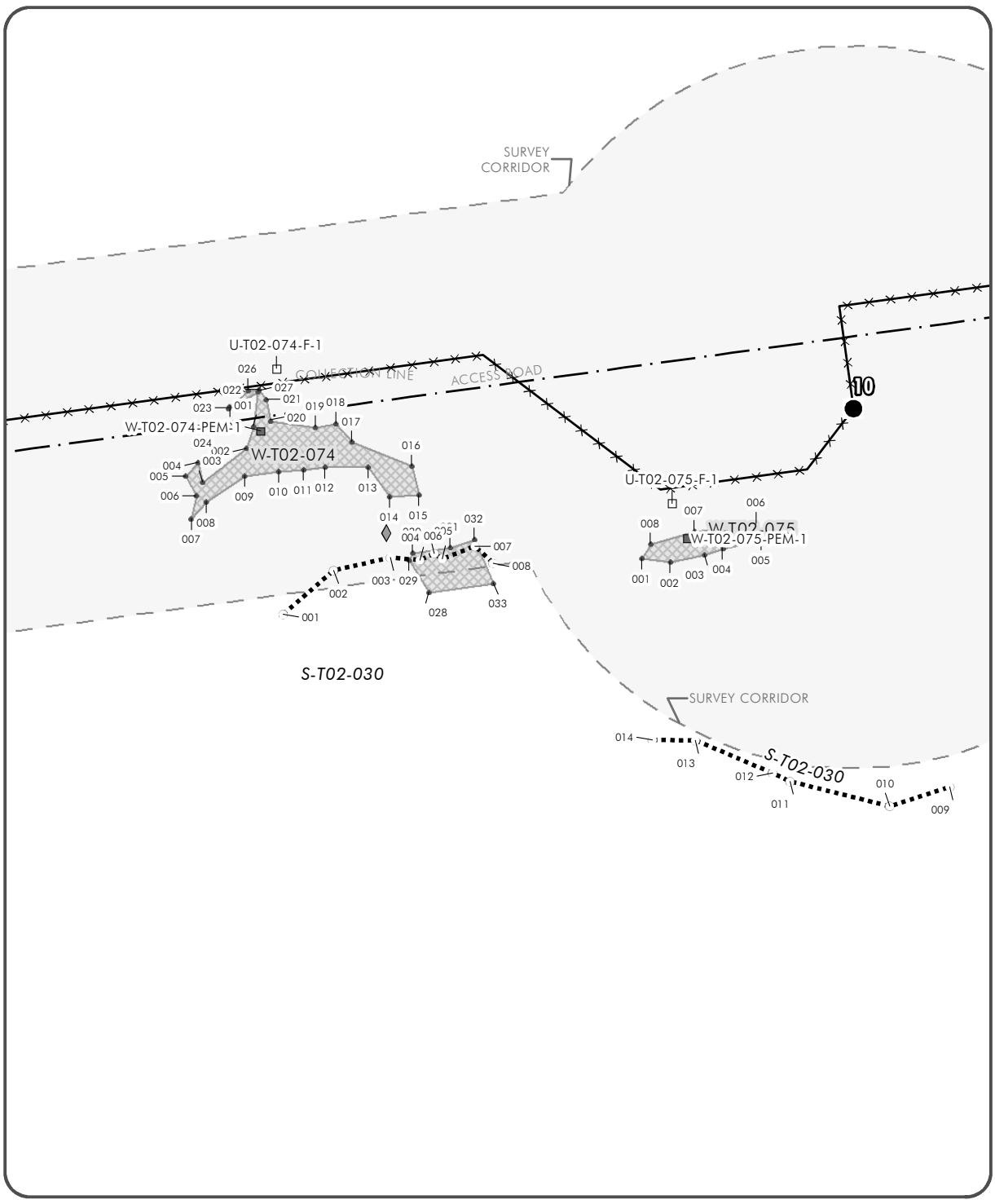


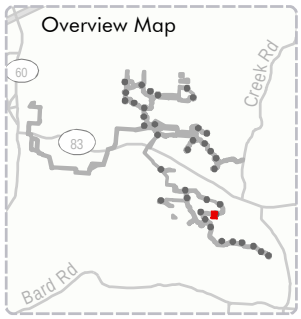


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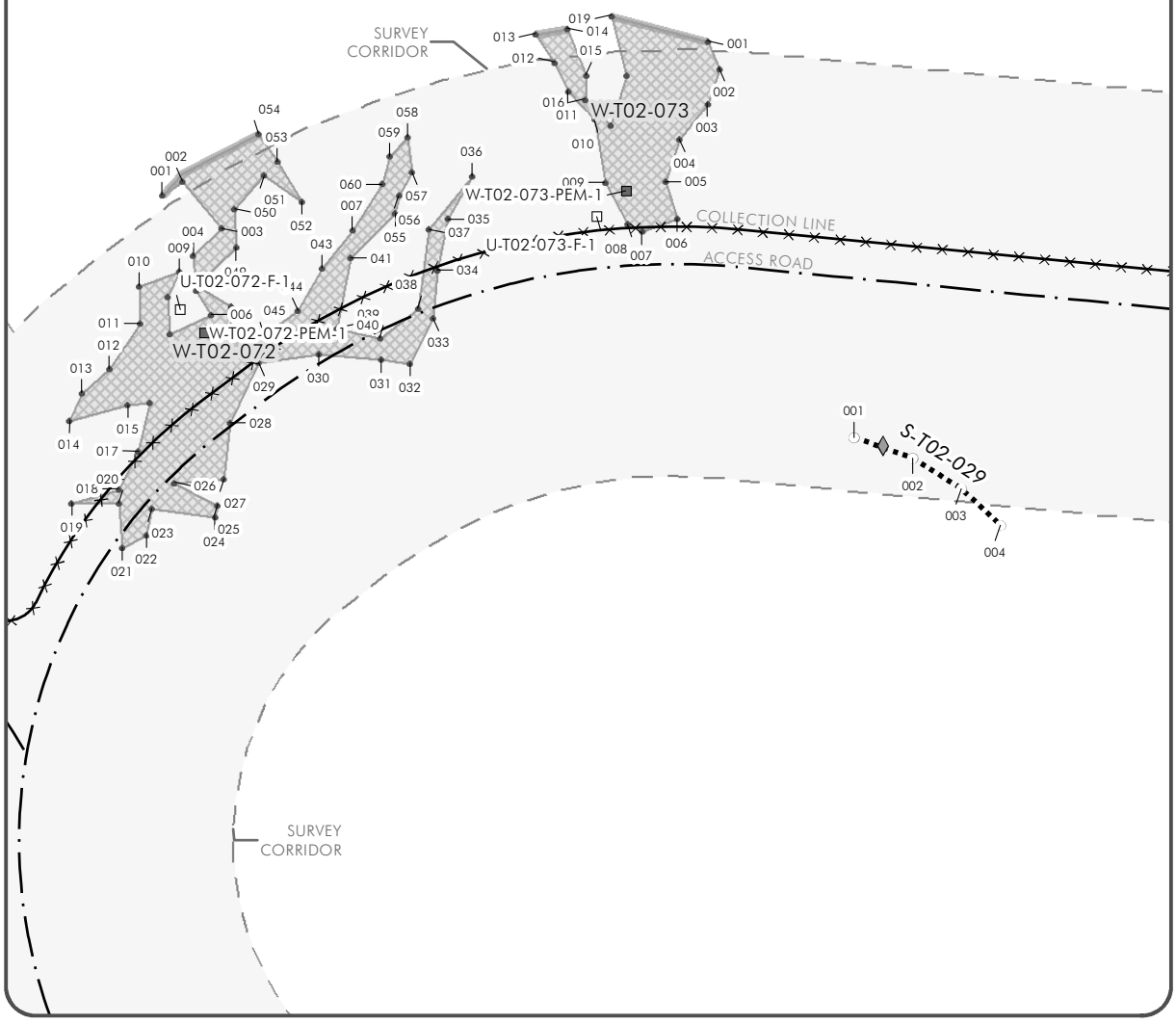


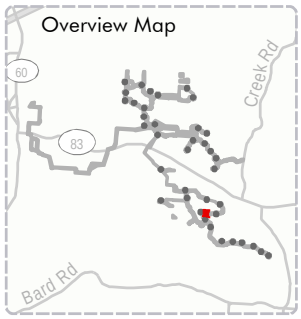


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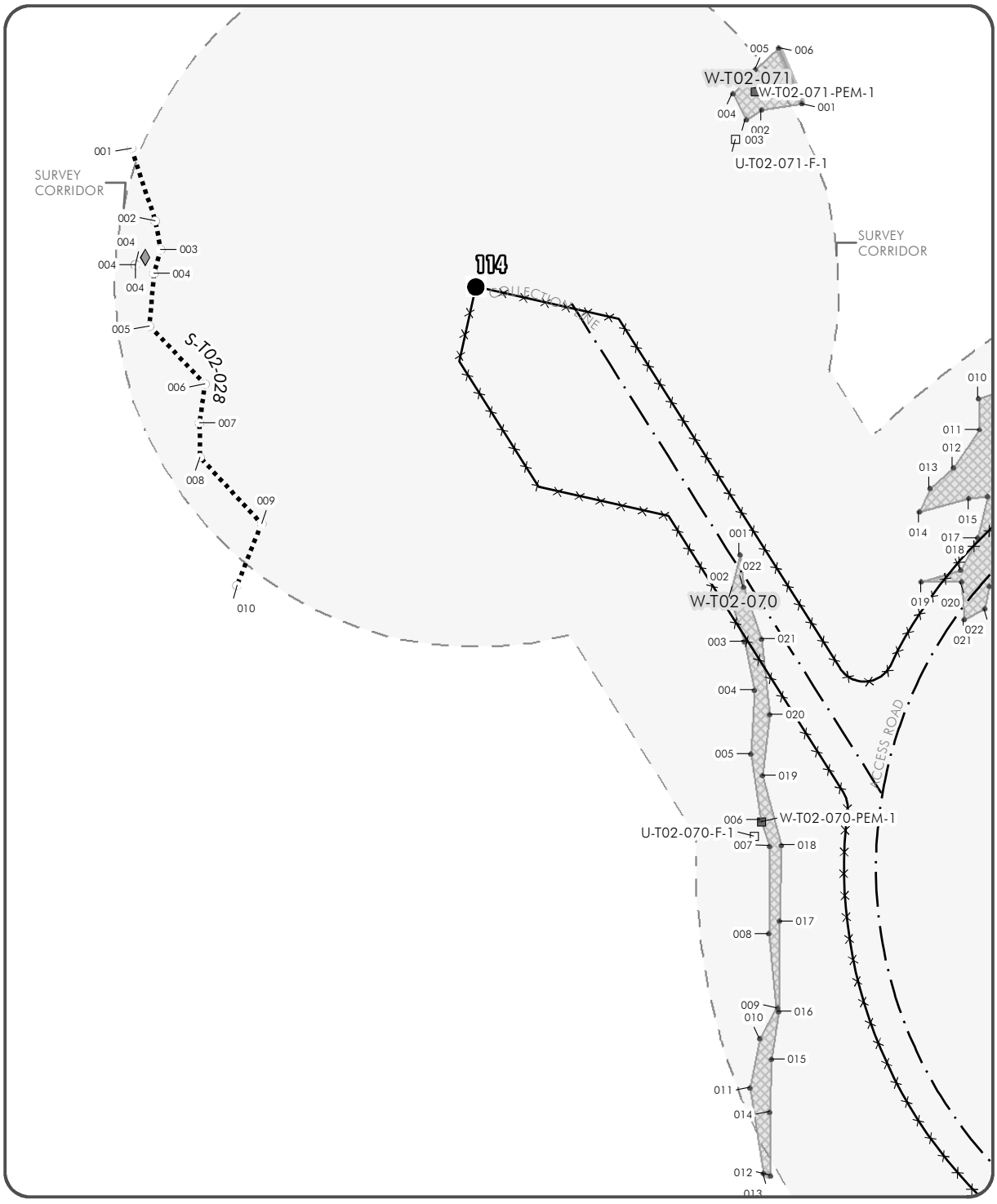


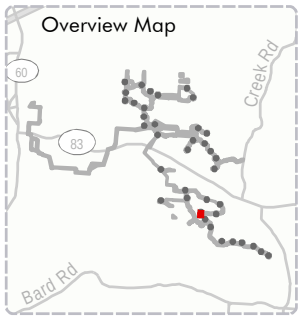


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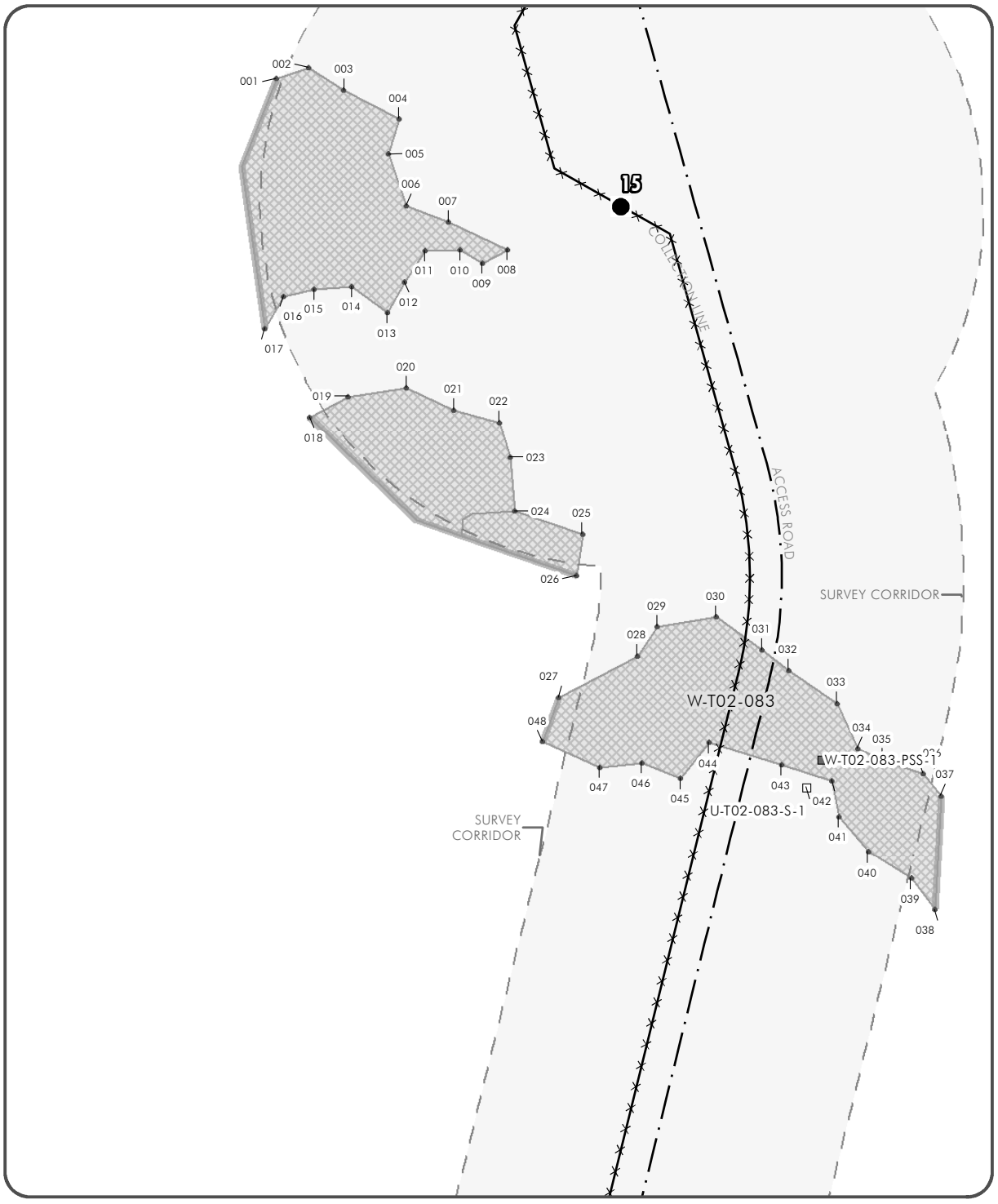


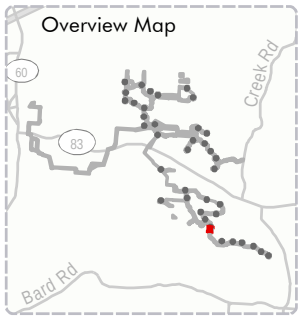


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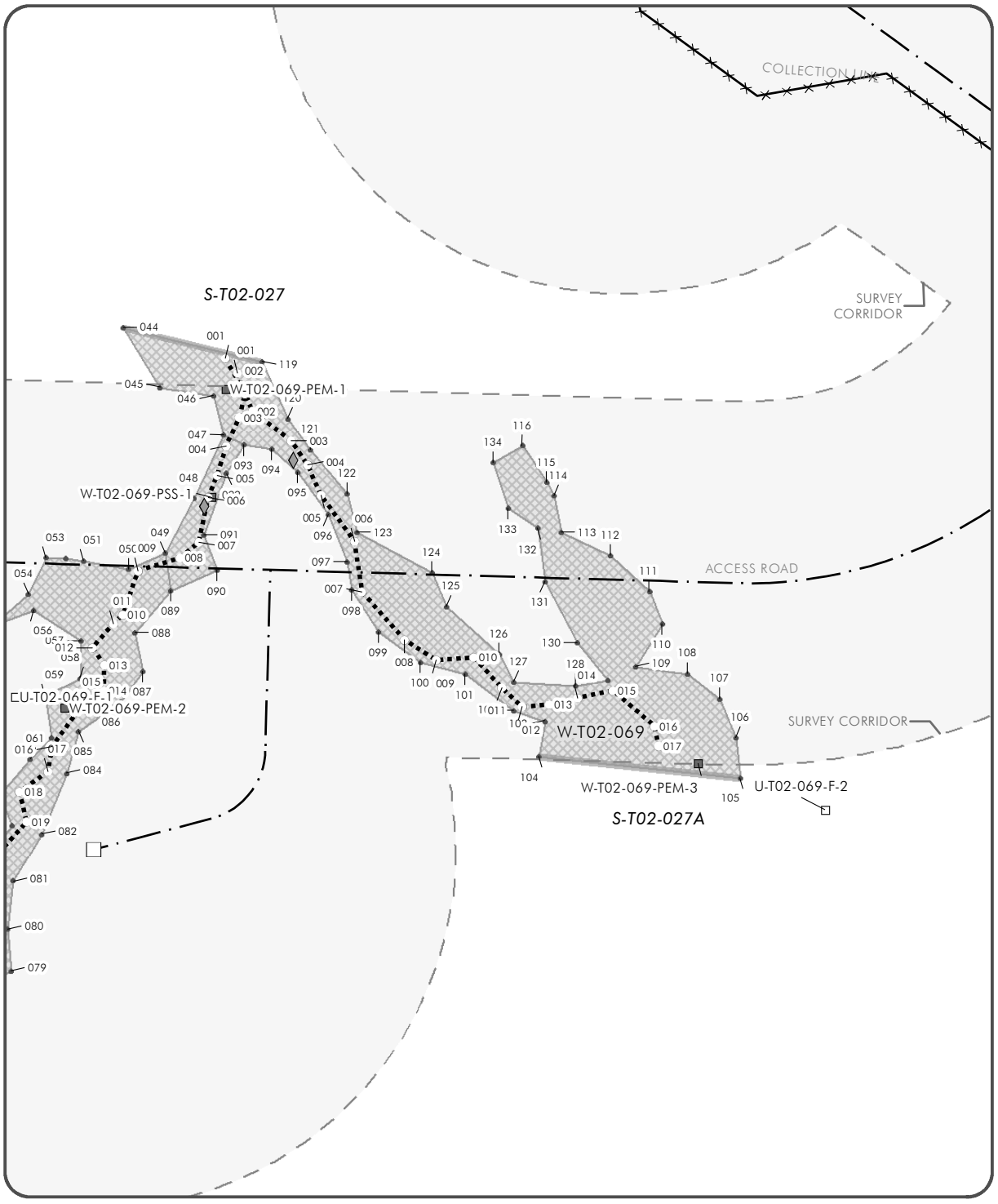


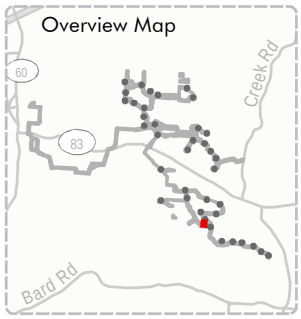


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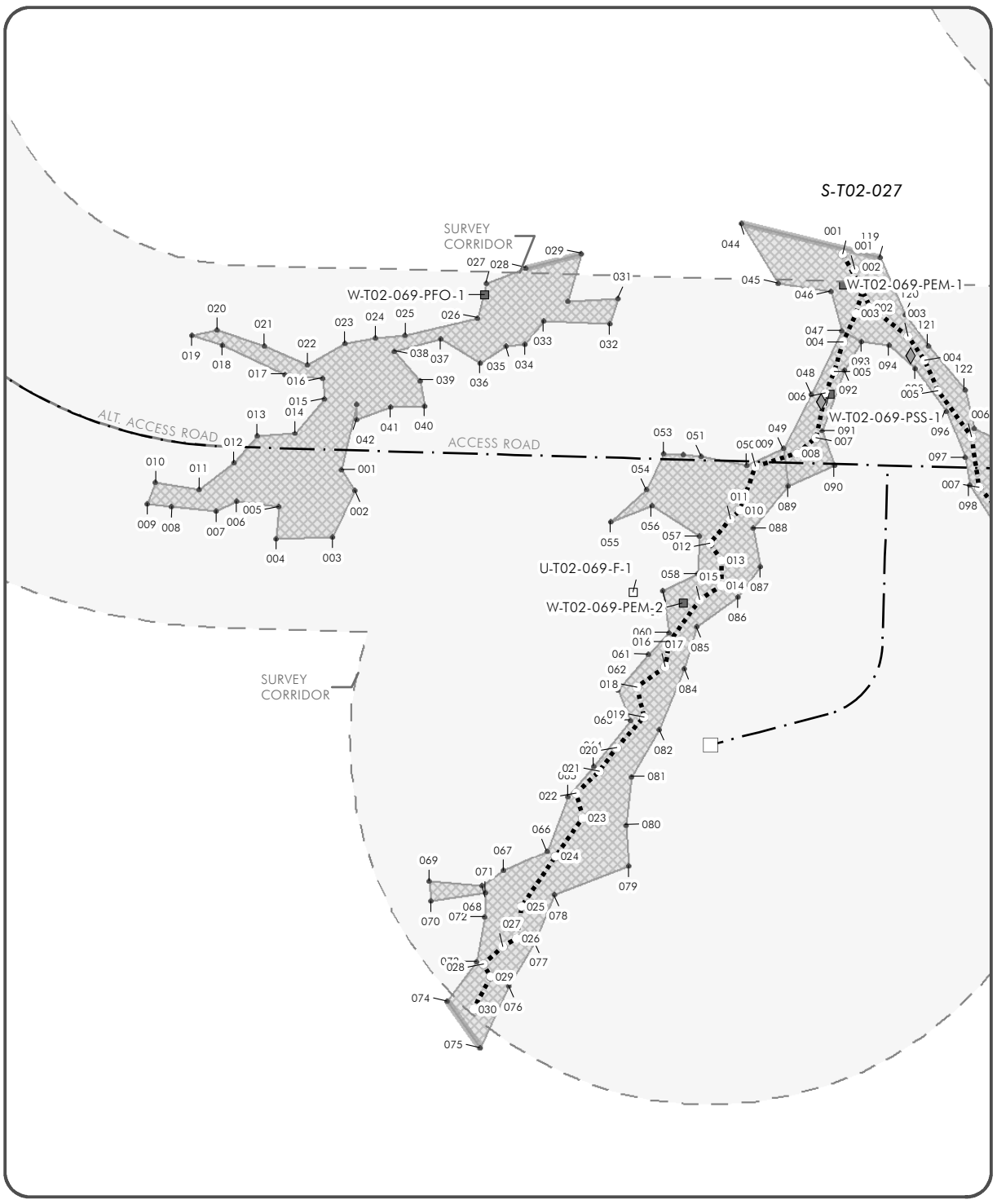


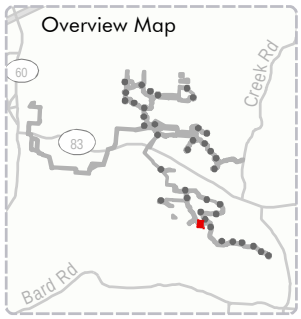


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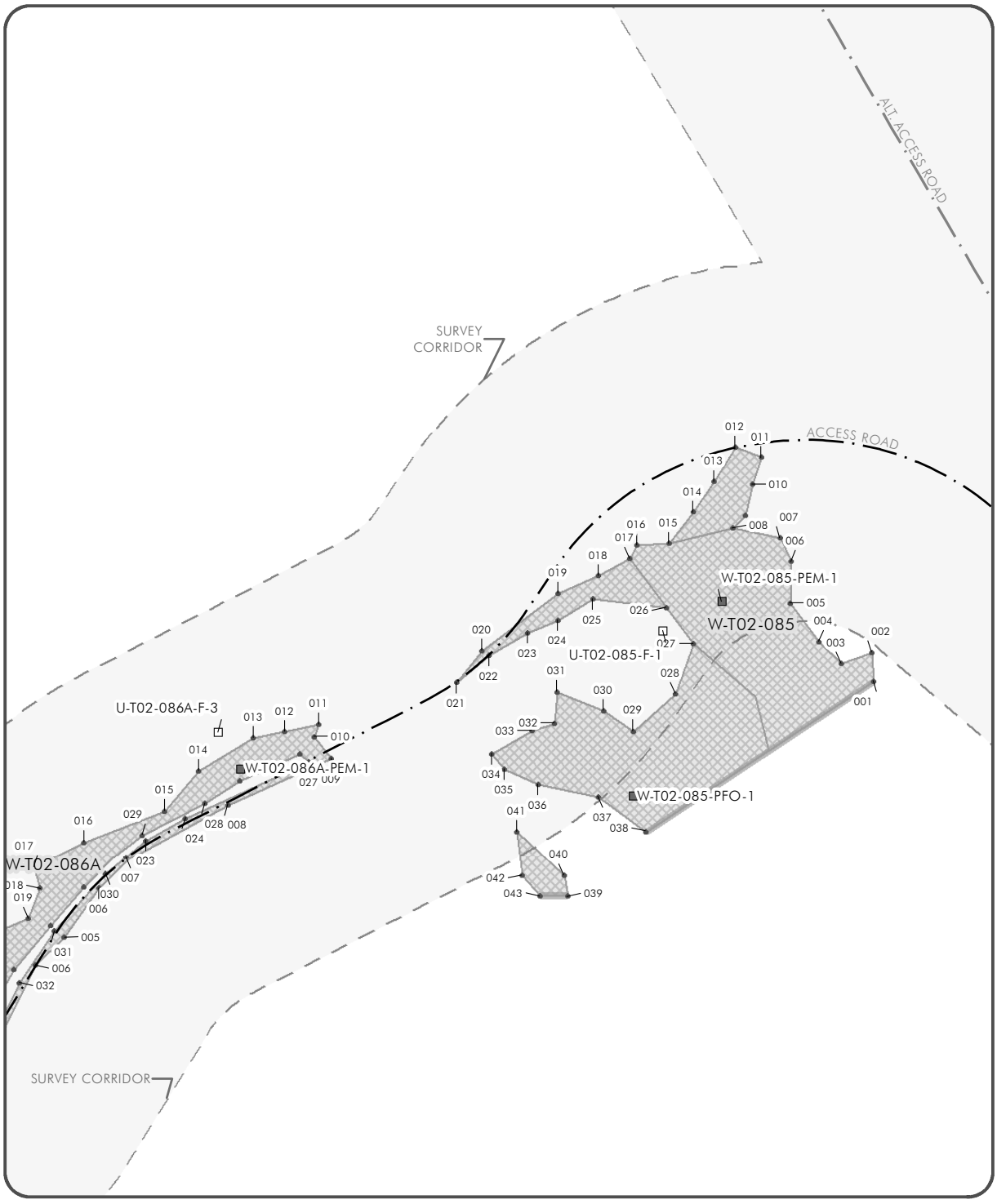


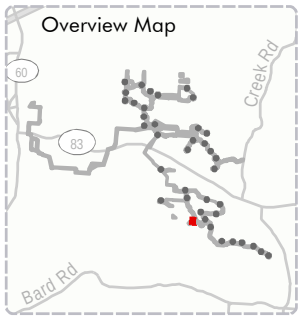


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Chautauqua County, New York

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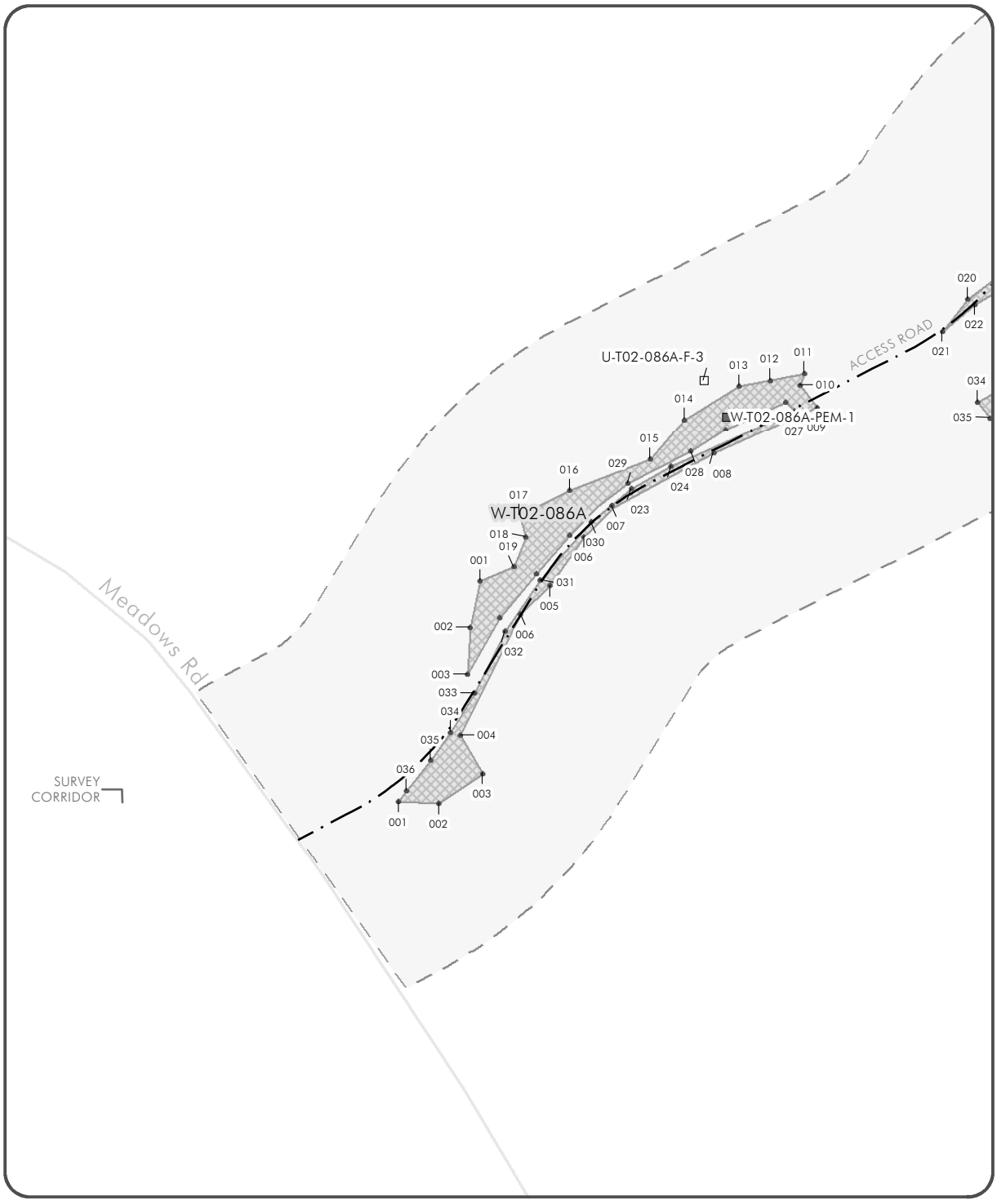


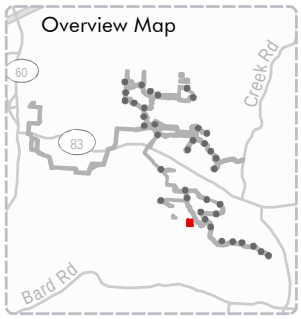


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Town of Arkwright

Chautauqua County, New York

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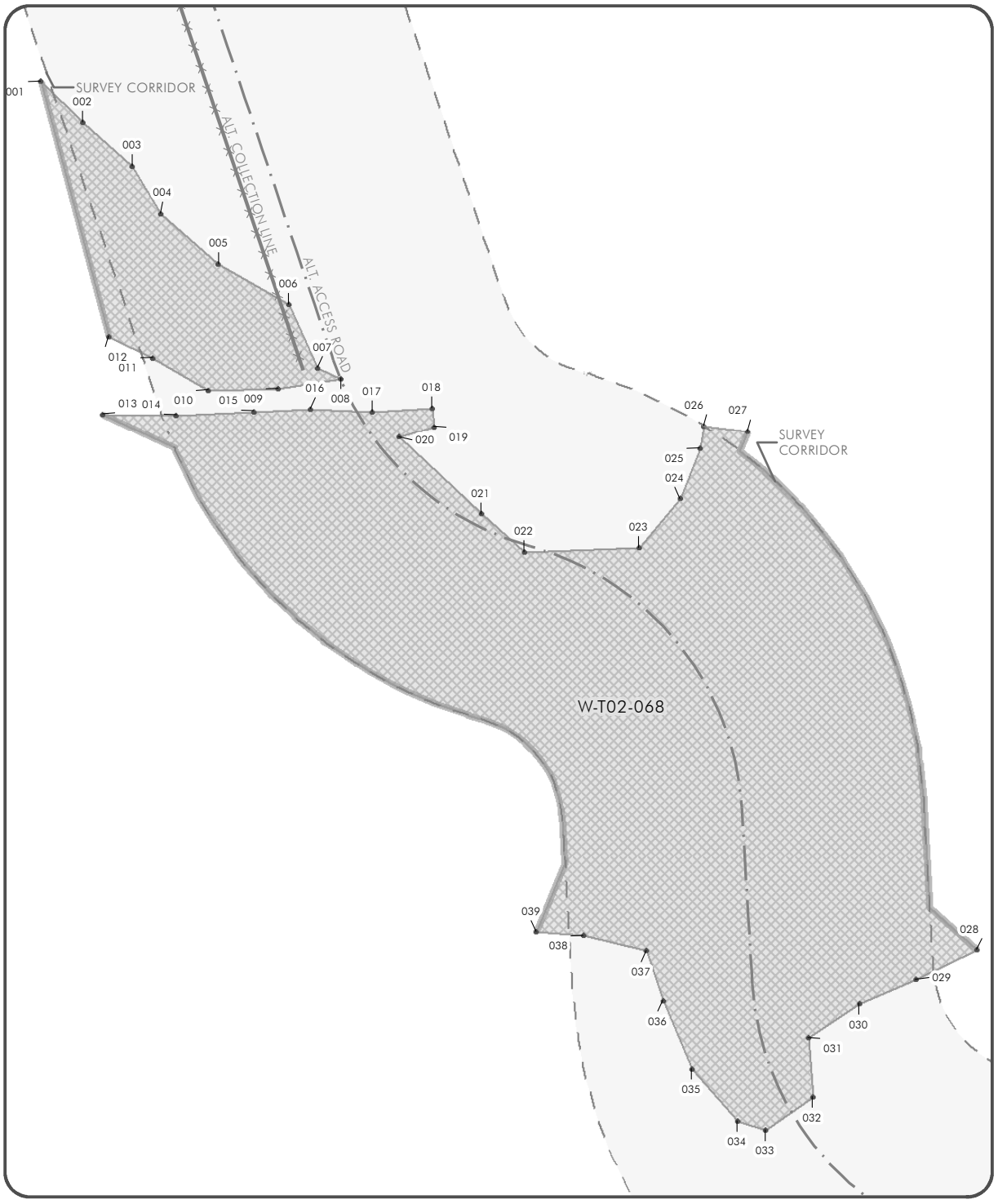


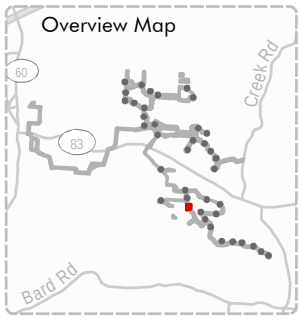


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# Wetlands and Streams



Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

Scale:
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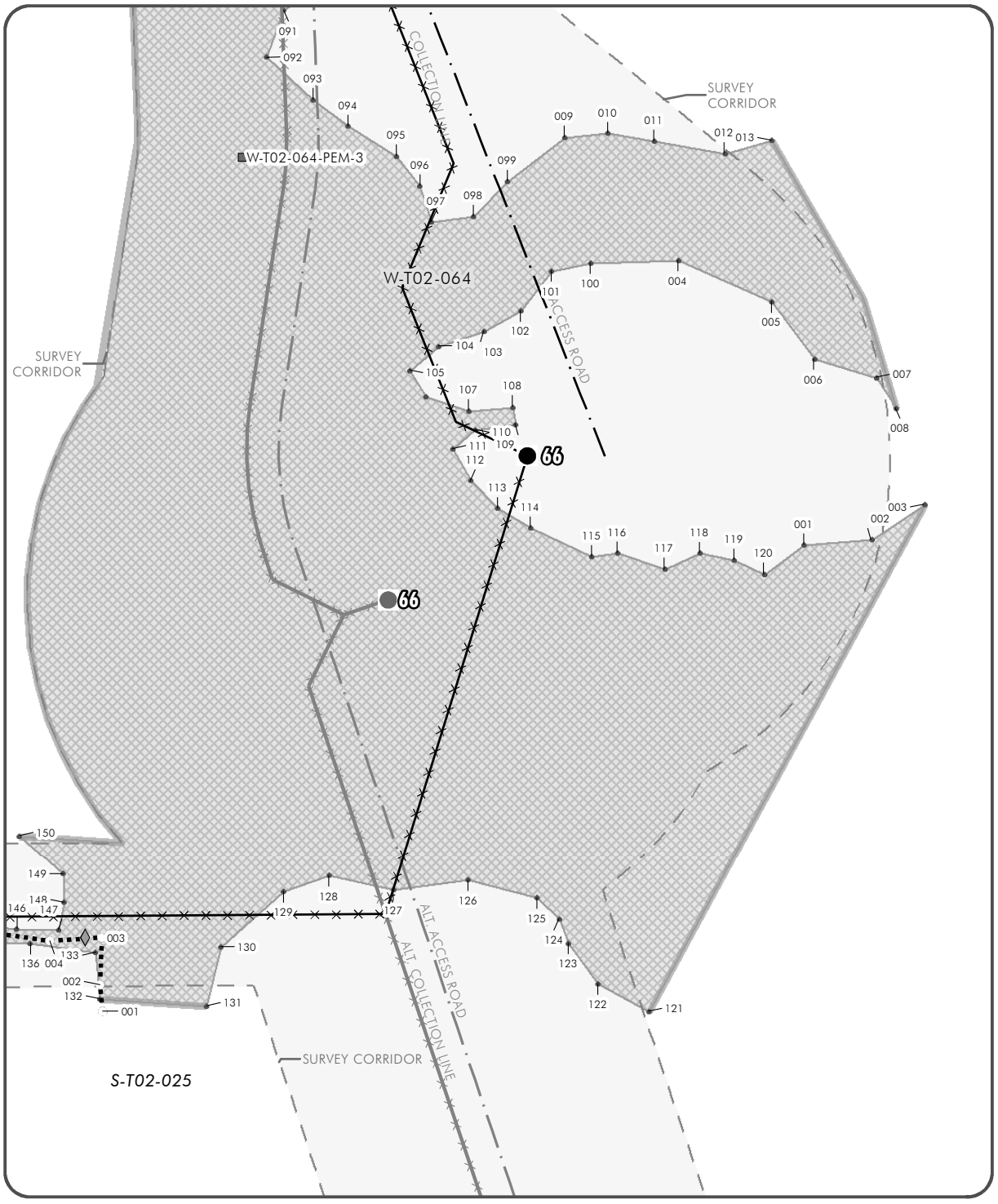


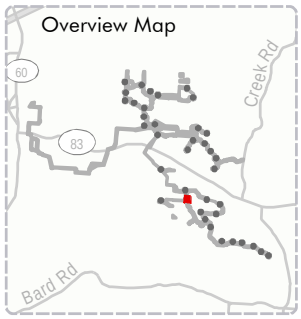


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# Wetlands and Streams



Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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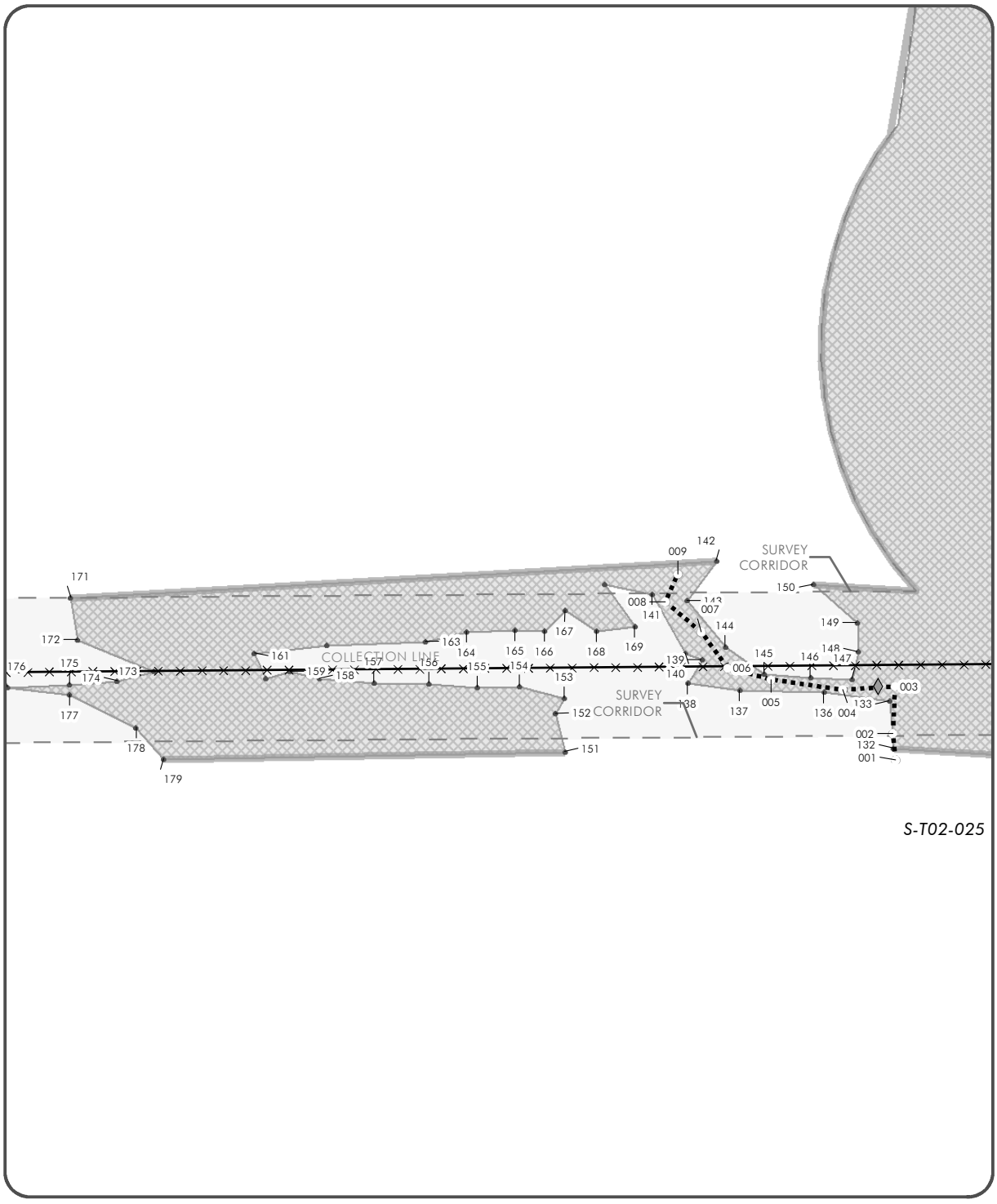


Overview Map

Met Tower
Turbine
Turbine Alternative
Collection Line
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Access Road
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# Wetlands and Streams



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Town of Arkwright
Chautauqua County, New York

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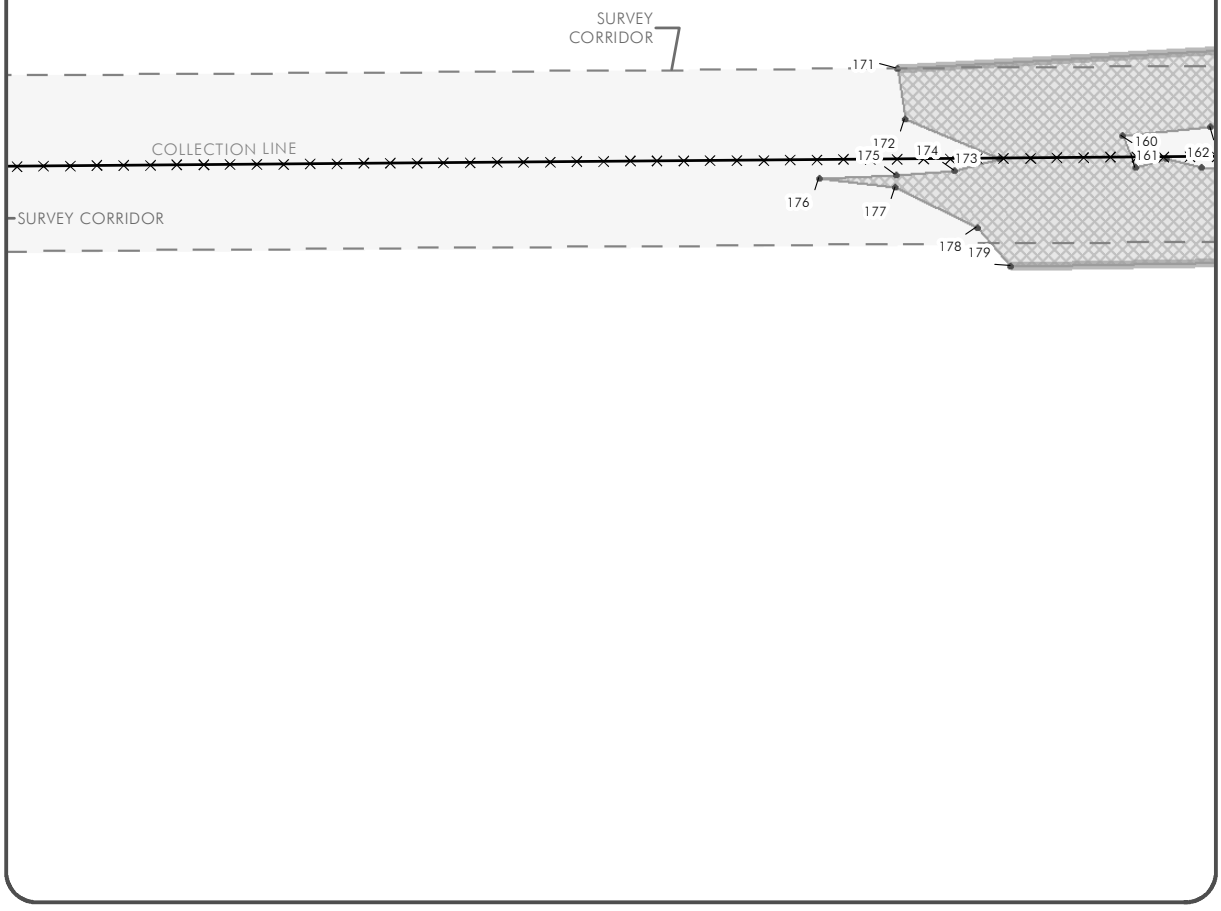


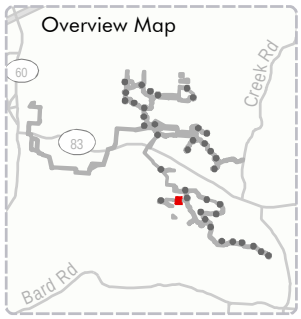


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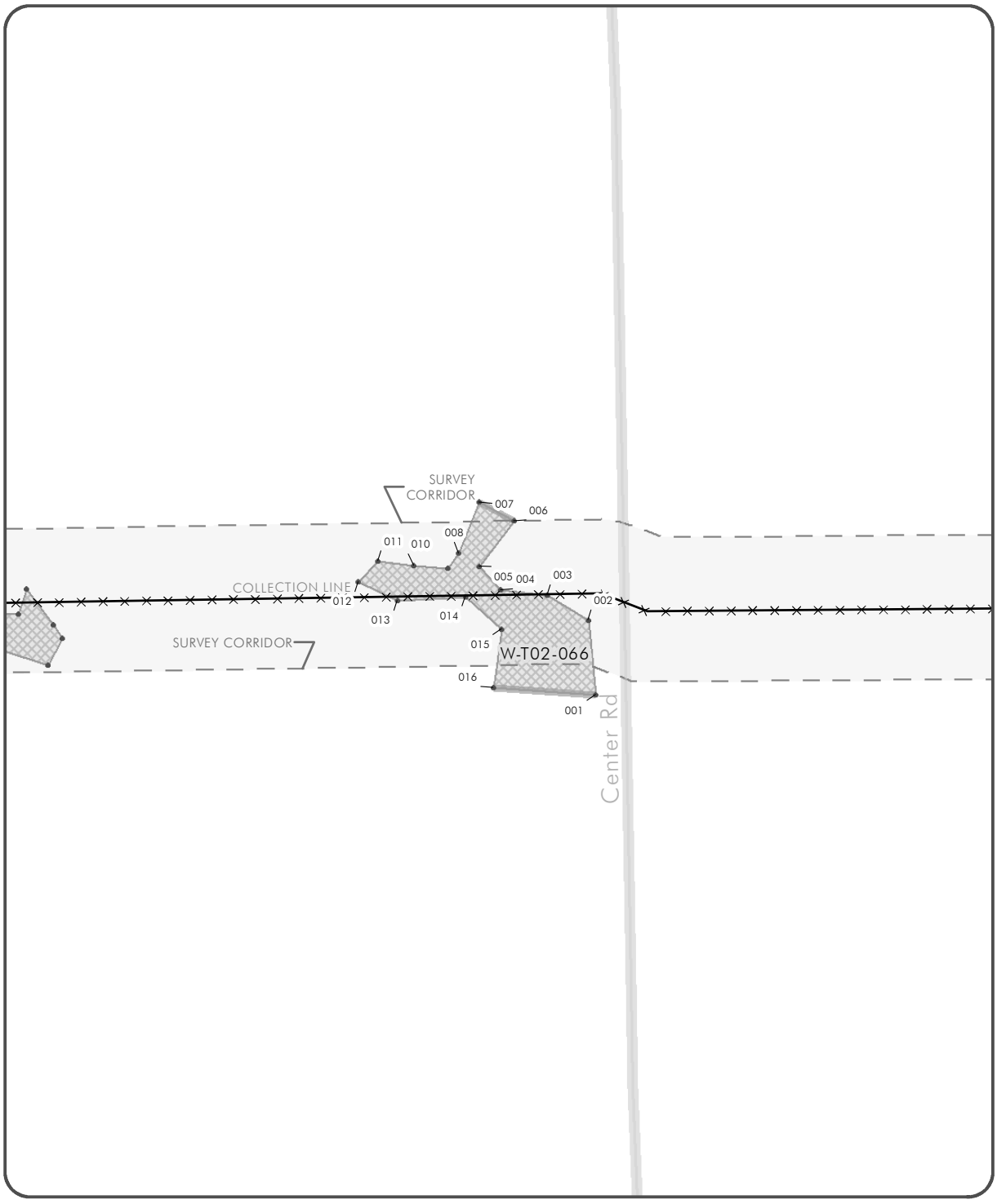


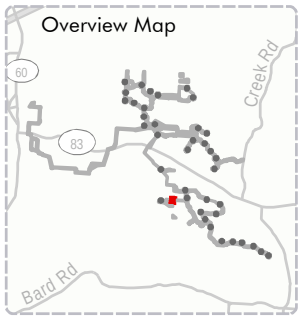


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Town of Arkwright

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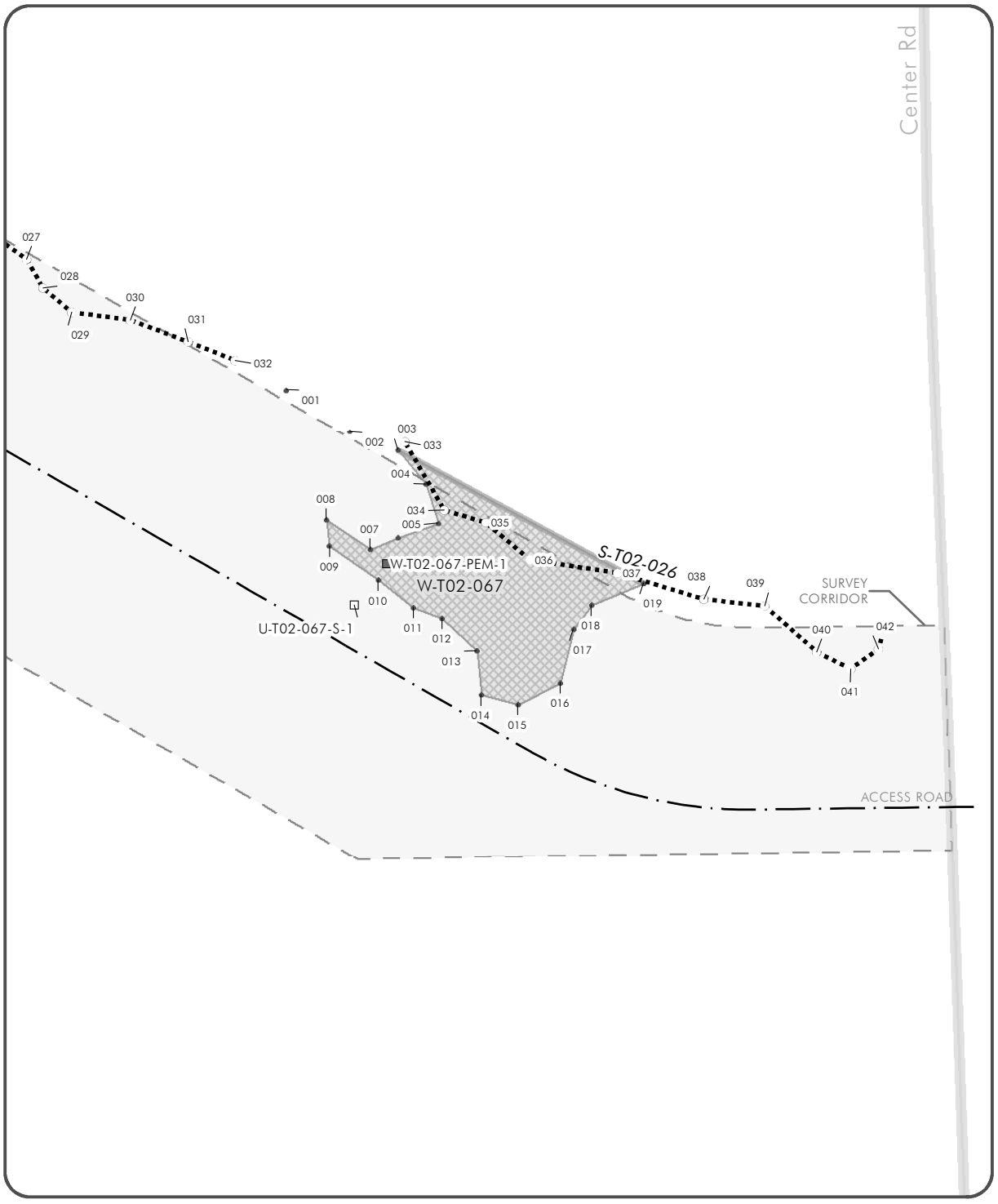


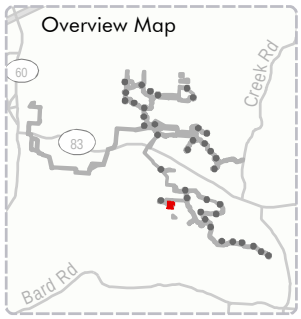


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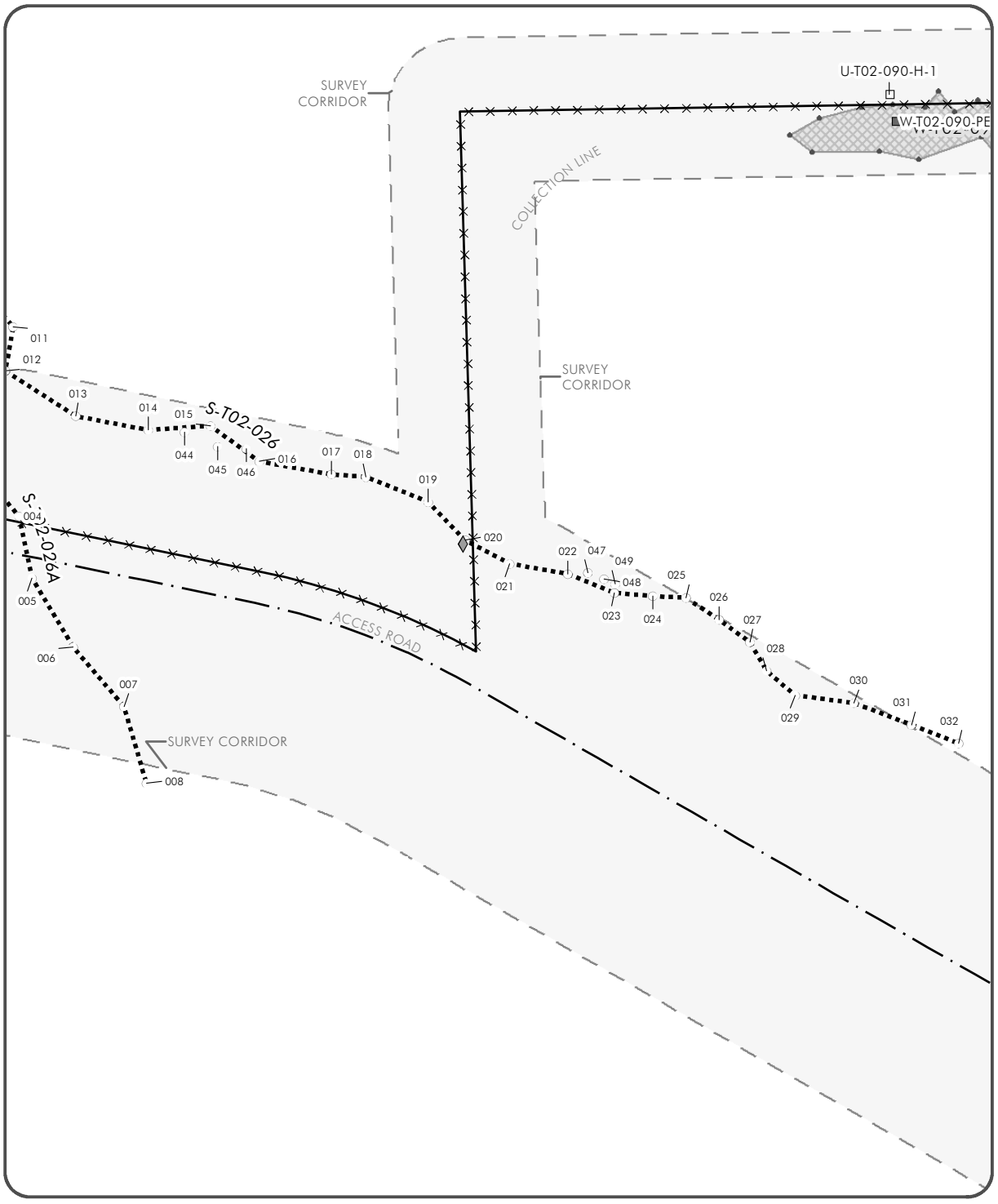


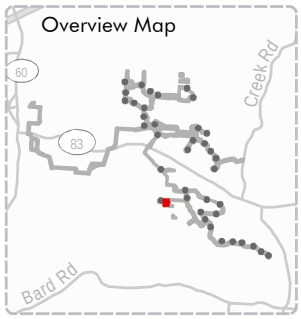


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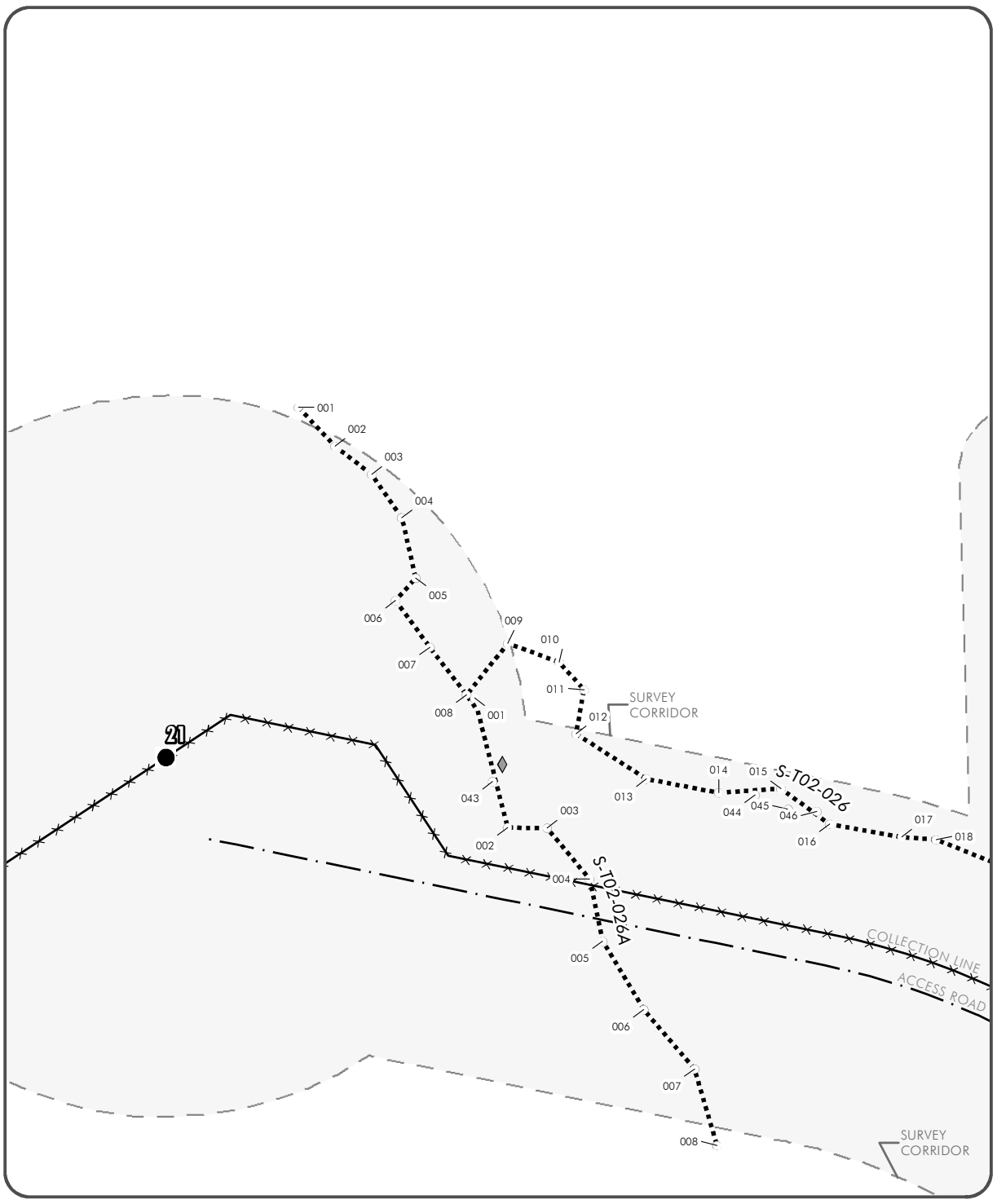


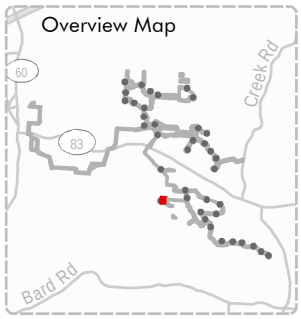


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Town of Arkwright
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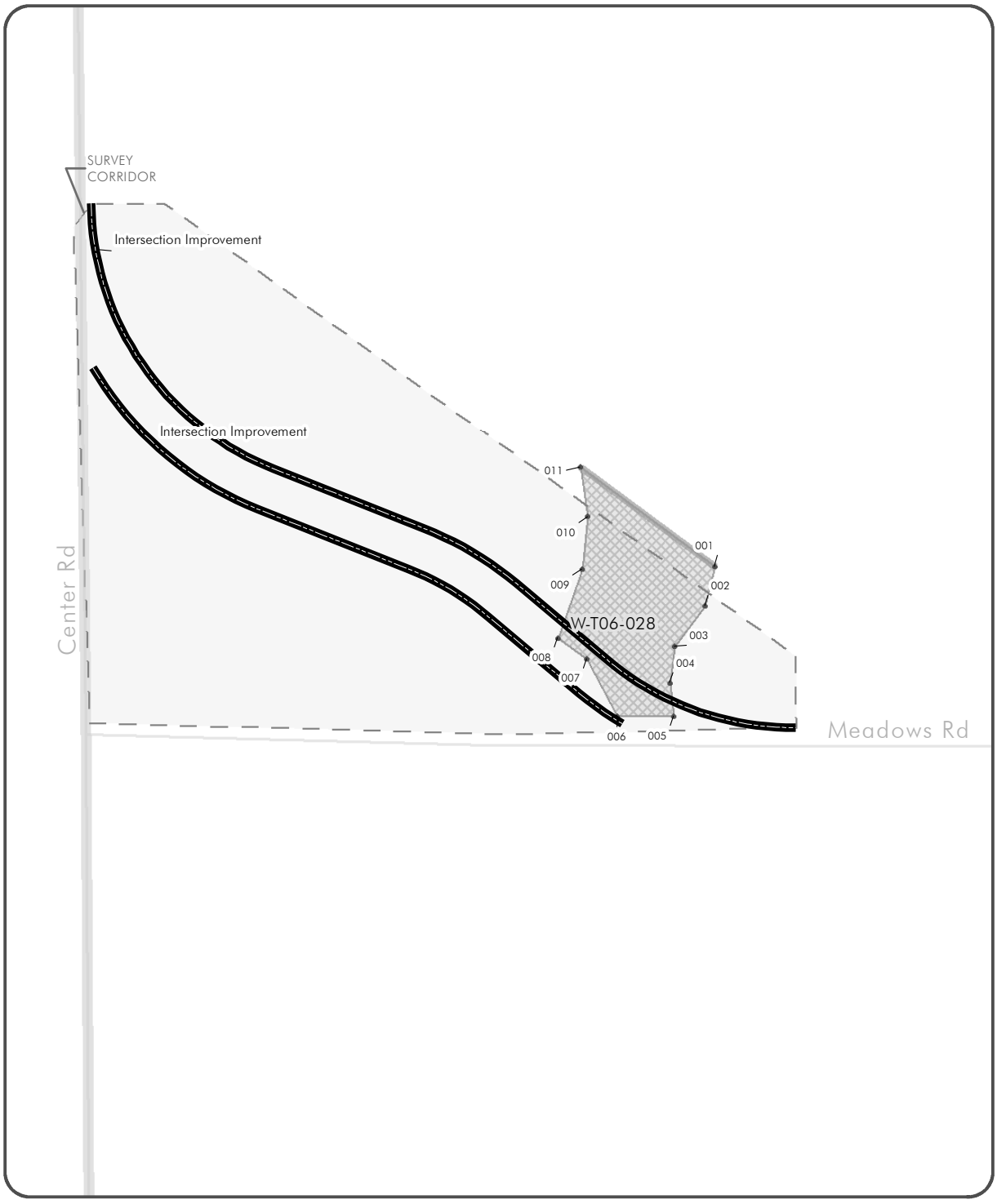
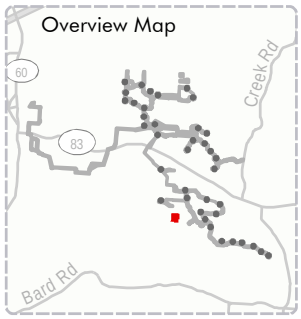
0 25 50 100
Feet




- Met Tower
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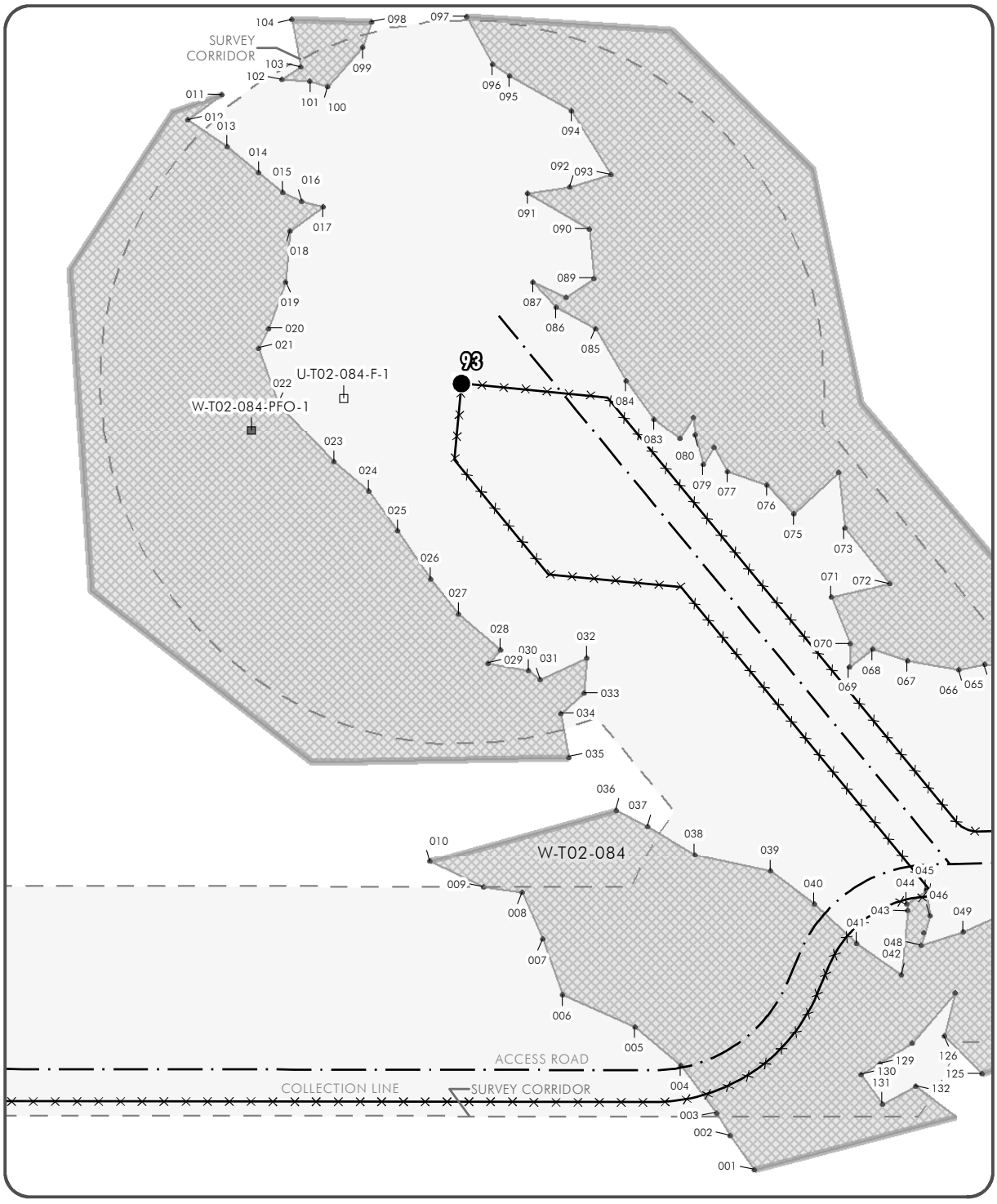
- Pond
- Town Boundary

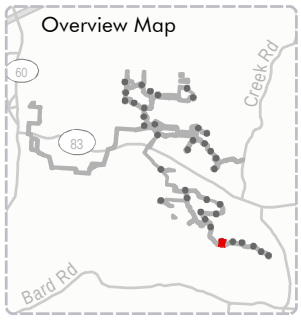
# Wetlands and Streams



Arkwright Wind Farm
Town of Arkwright
Chautauqua County, New York

Scale:
0 25 50 100
Feet

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# Wetlands and Streams



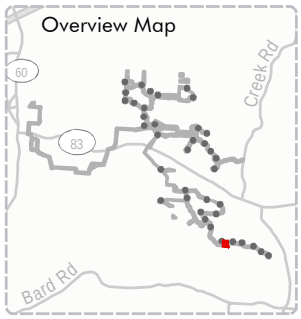
Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

Scale:

0 25 50 100 Feet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# Wetlands and Streams



Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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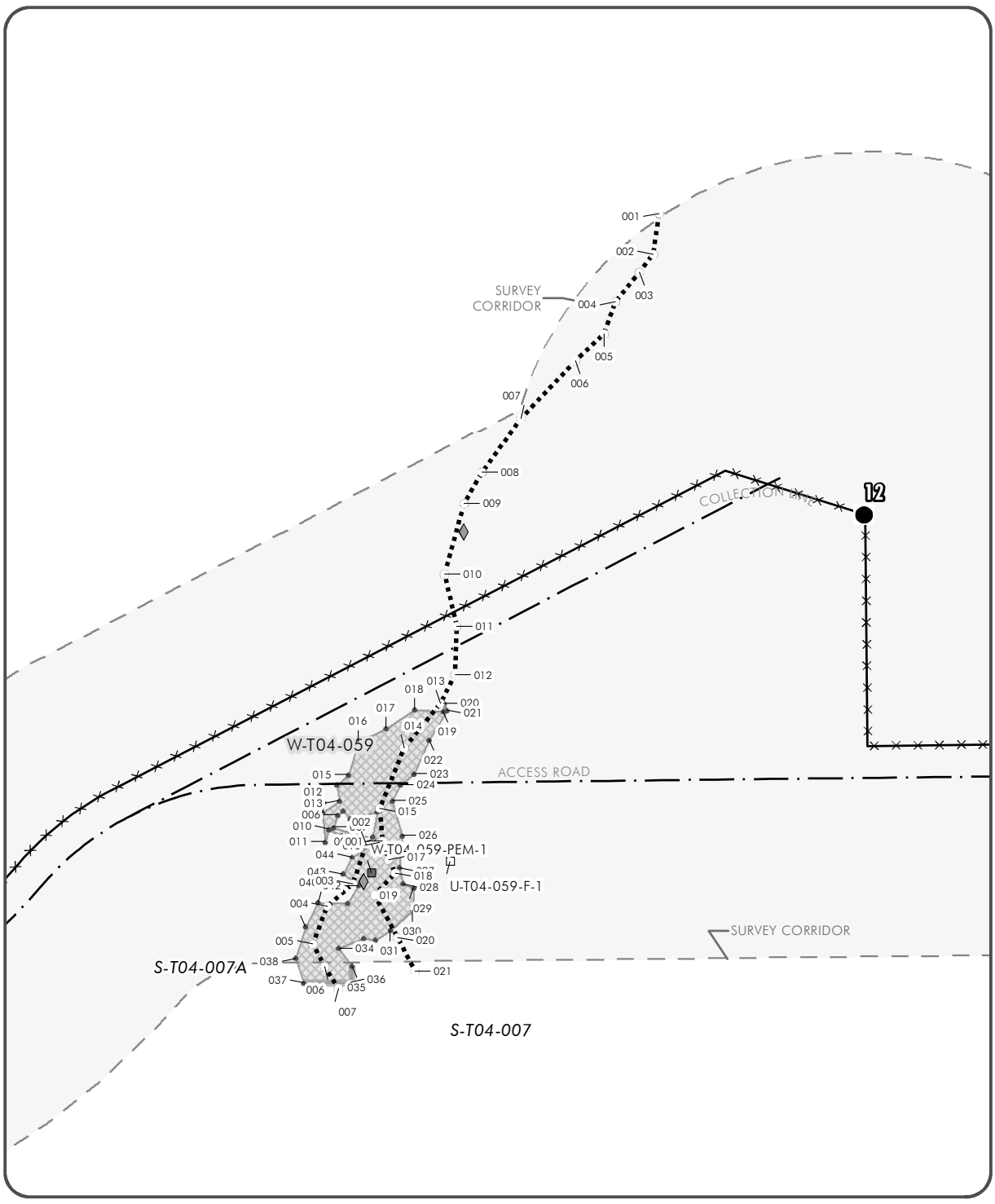


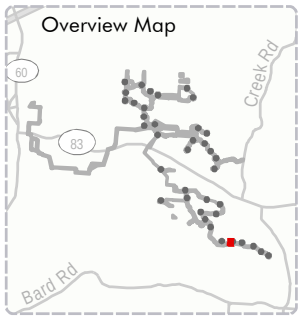


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# Wetlands and Streams



Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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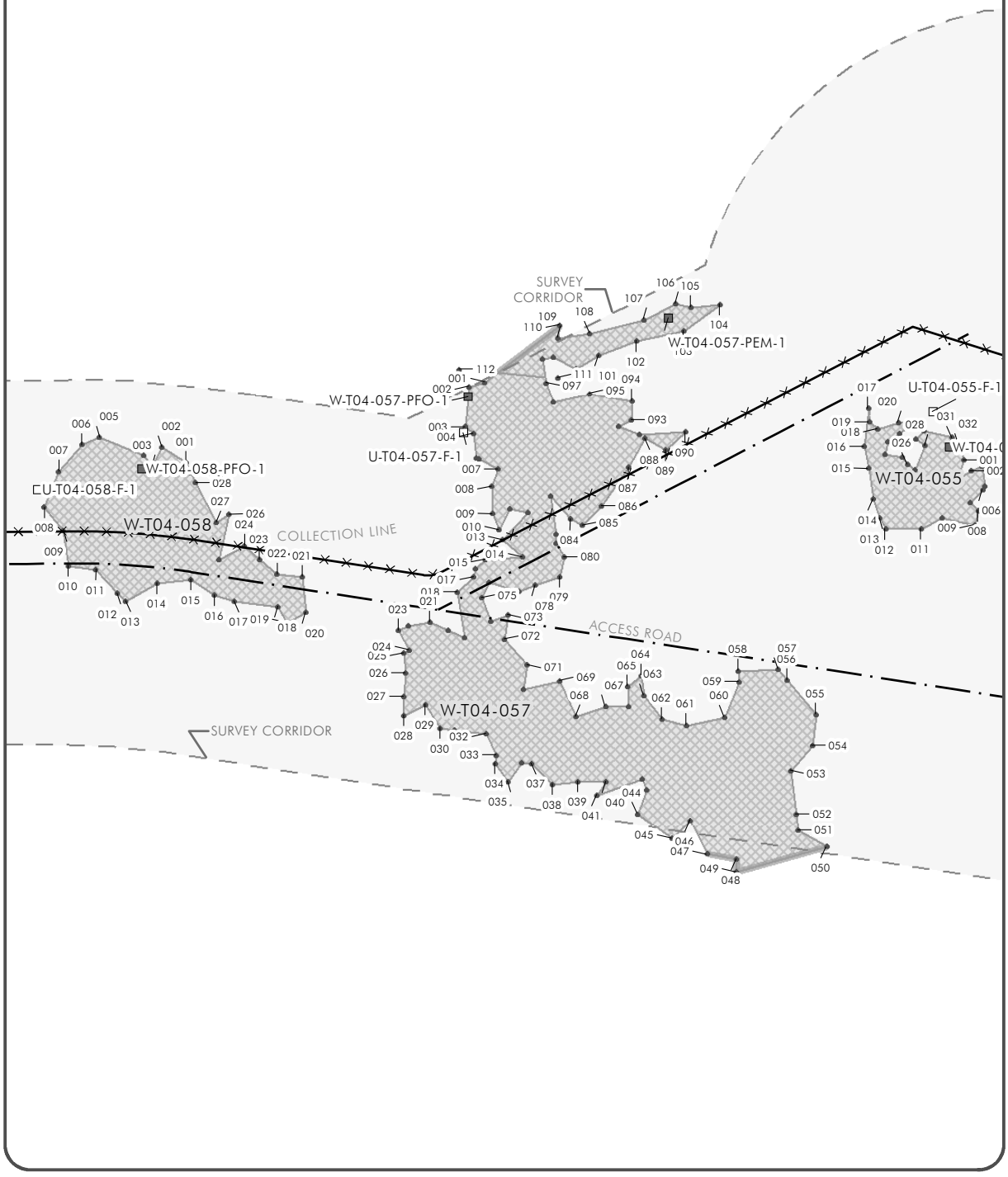


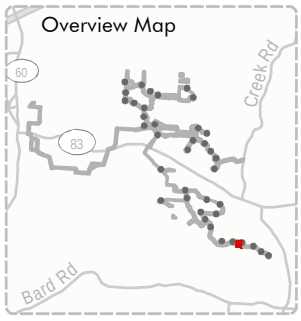


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Town of Arkwright

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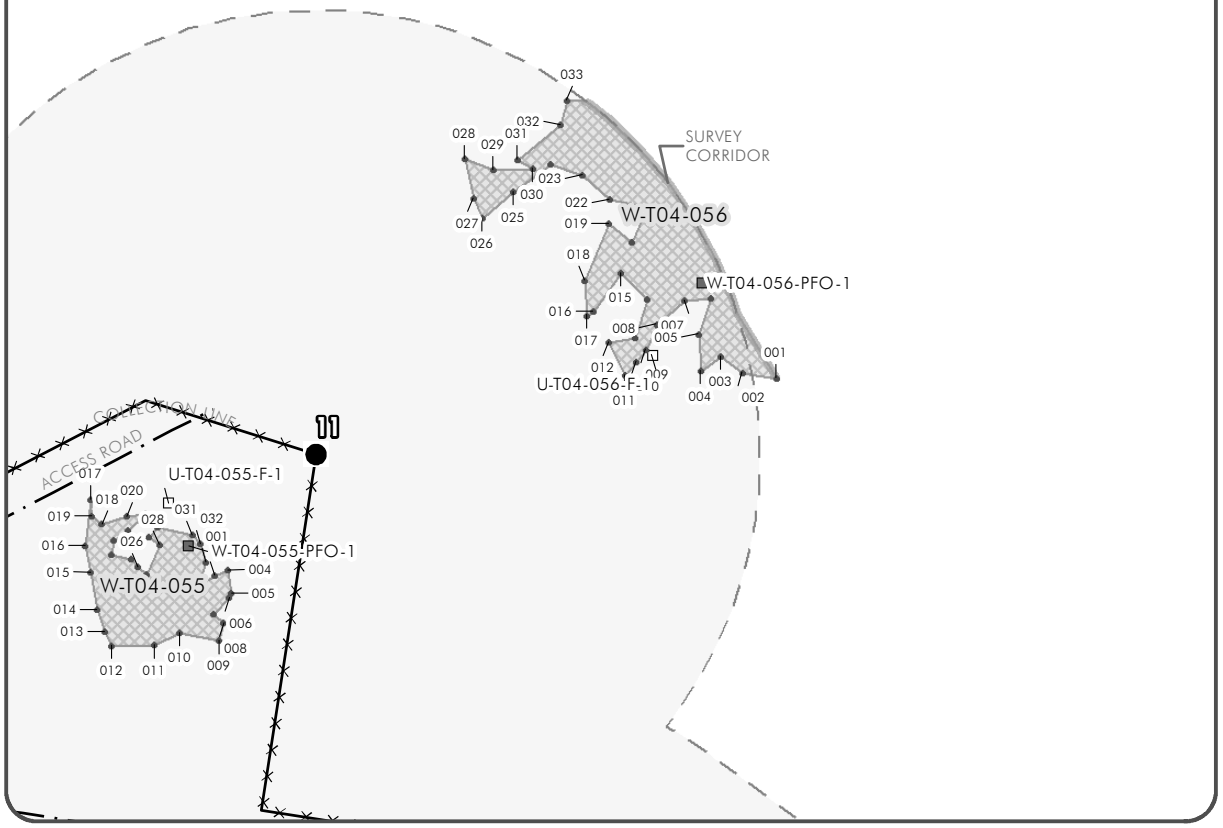


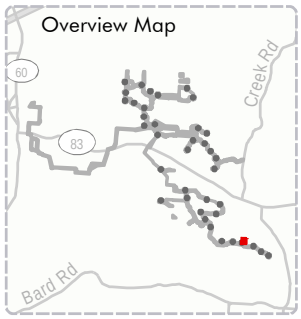


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Town of Arkwright

Chautauqua County, New York

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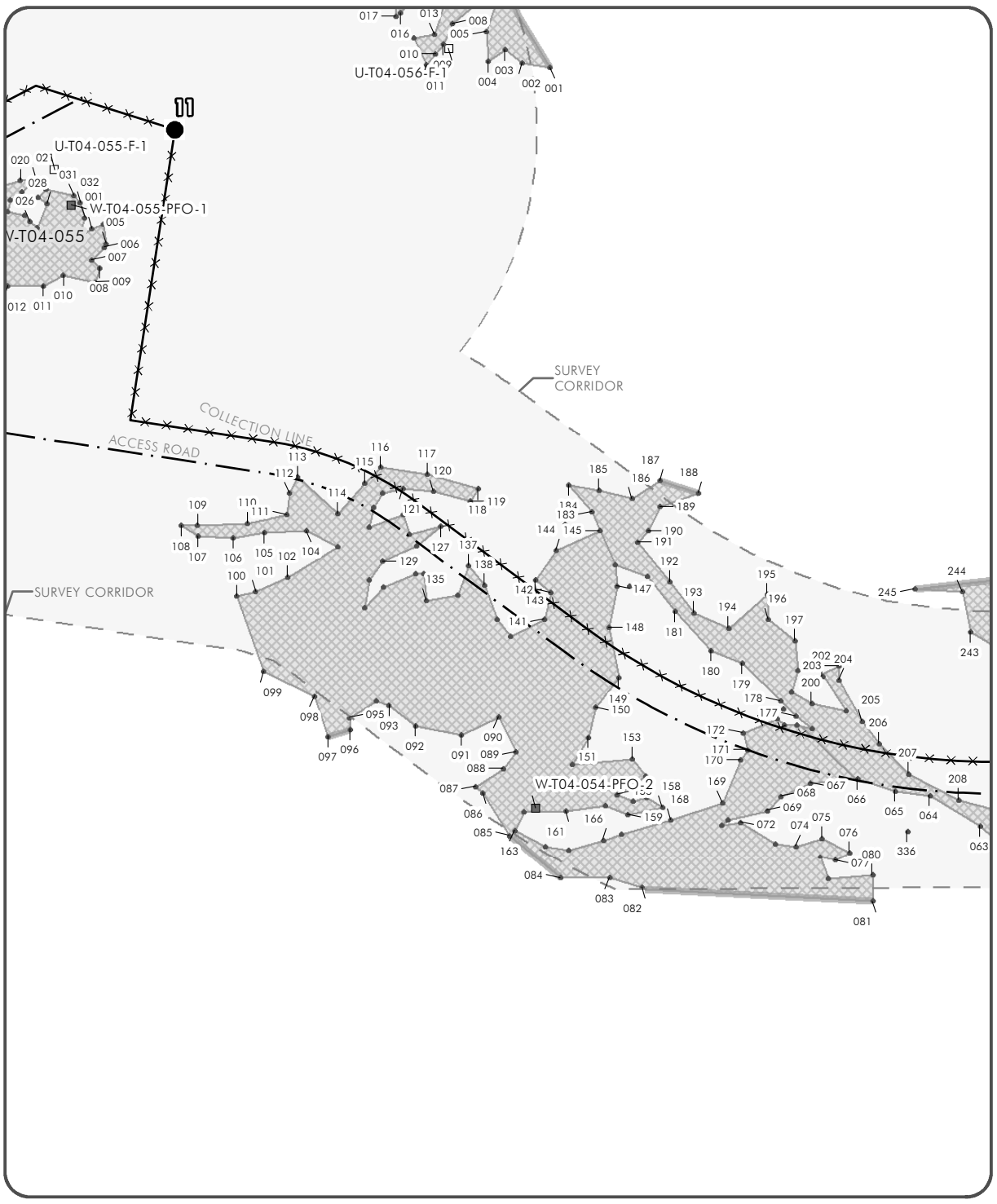


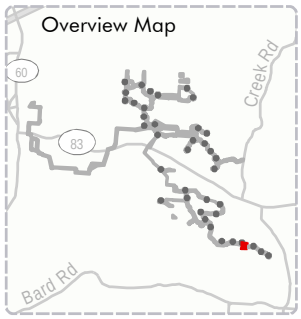


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Town of Arkwright

Chautauqua County, New York

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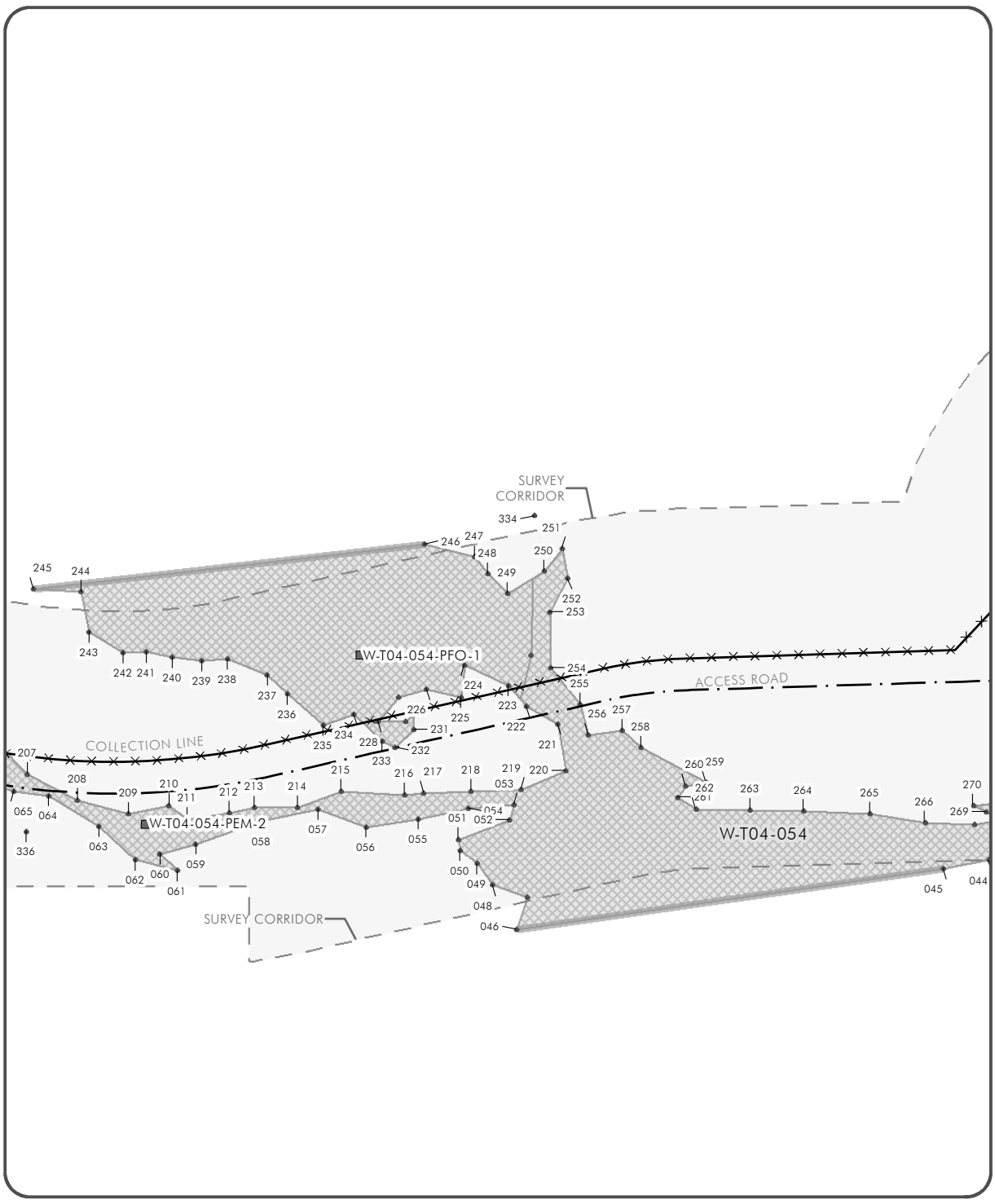


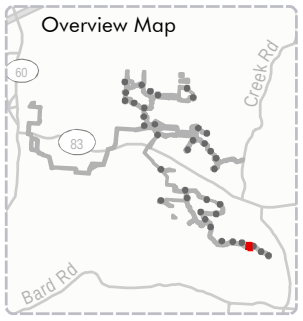


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# Wetlands and Streams



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Town of Arkwright

Chautauqua County, New York

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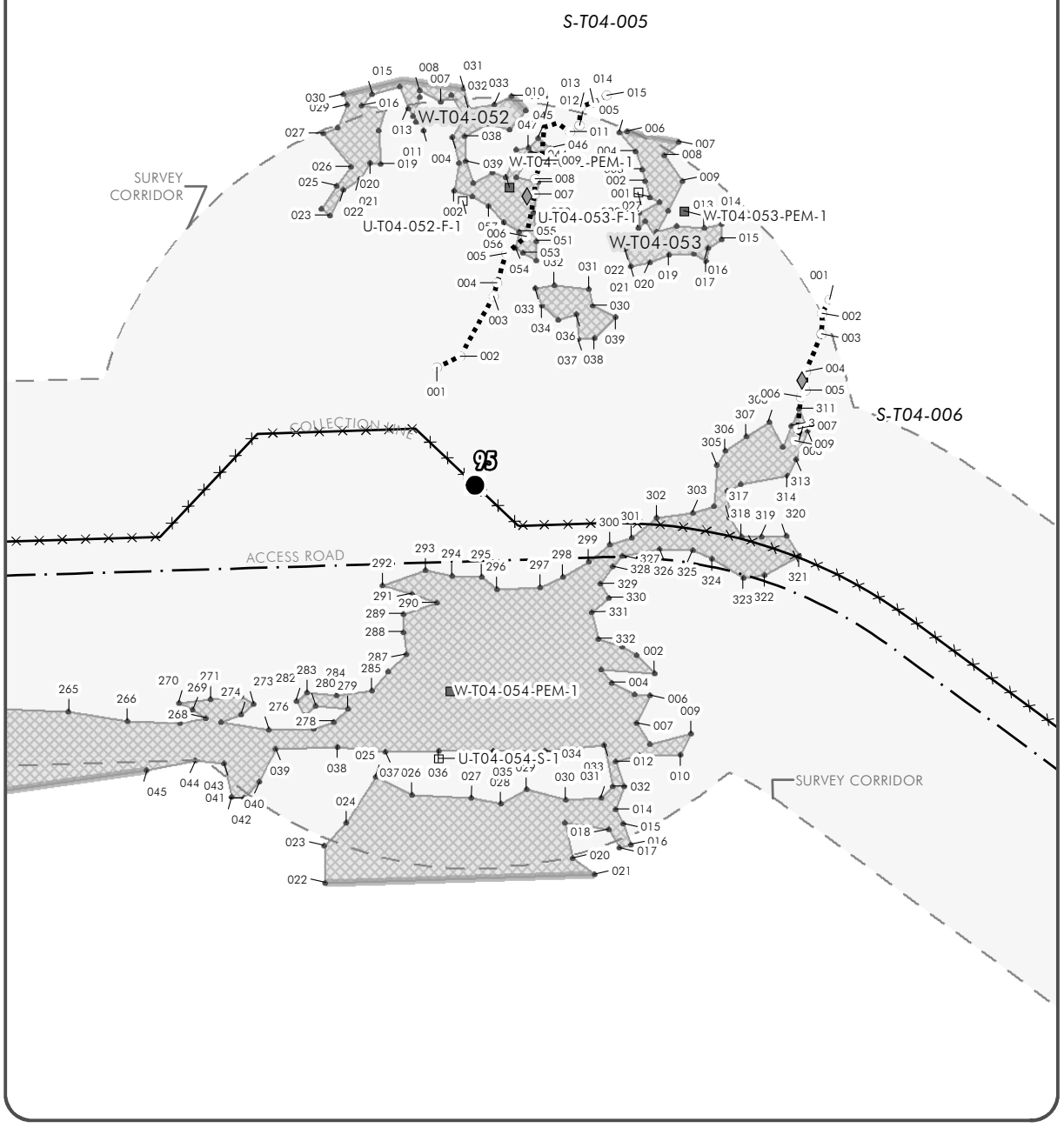


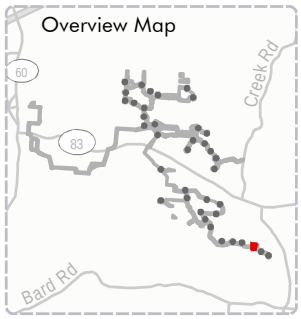


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Town of Arkwright

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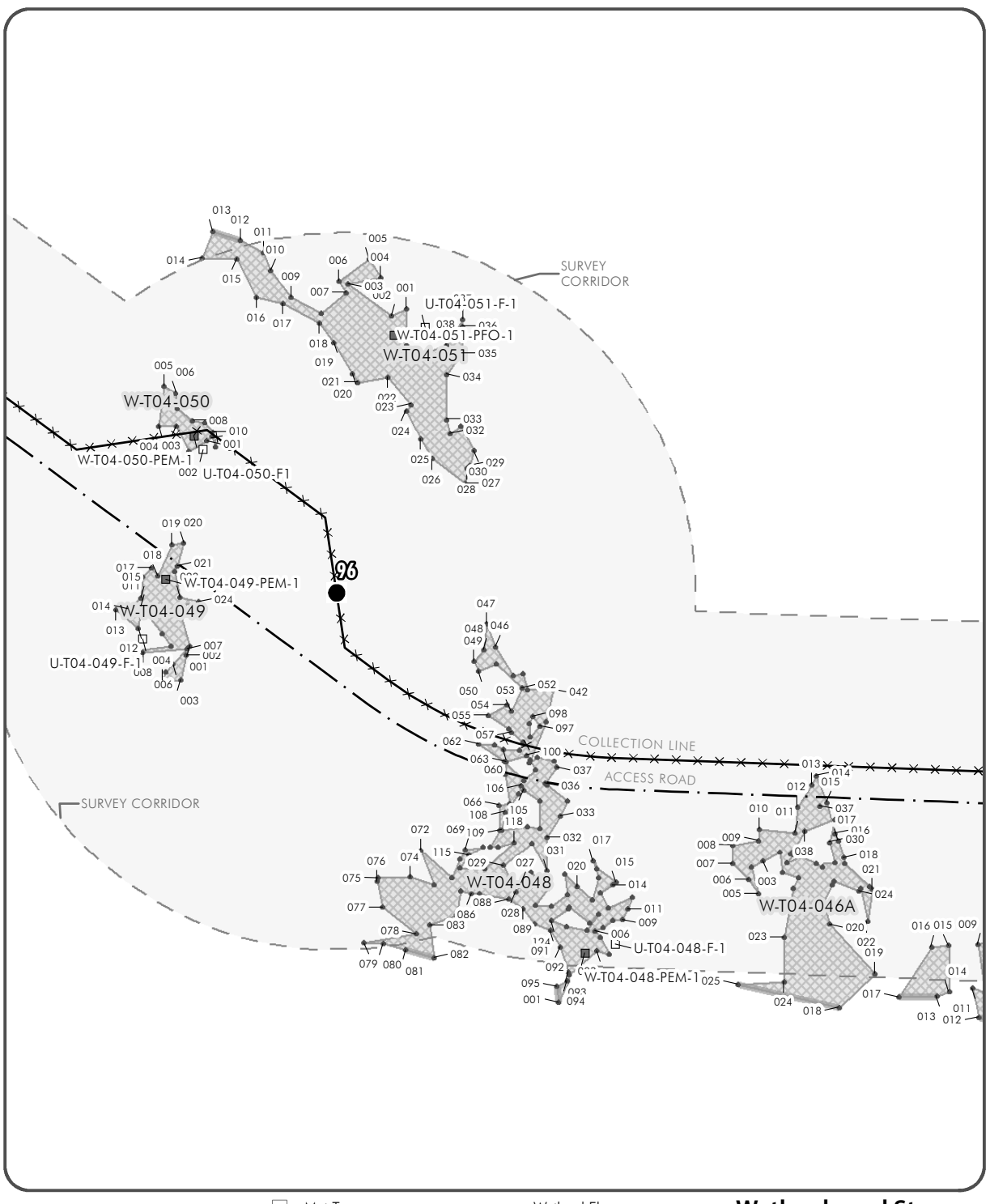


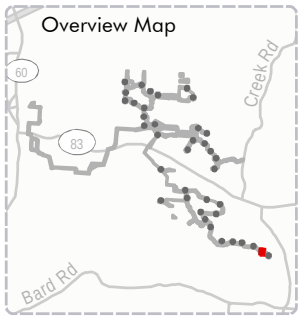


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# Wetlands and Streams



Arkwright Wind Farm

Town of Arkwright

Chautauqua County, New York

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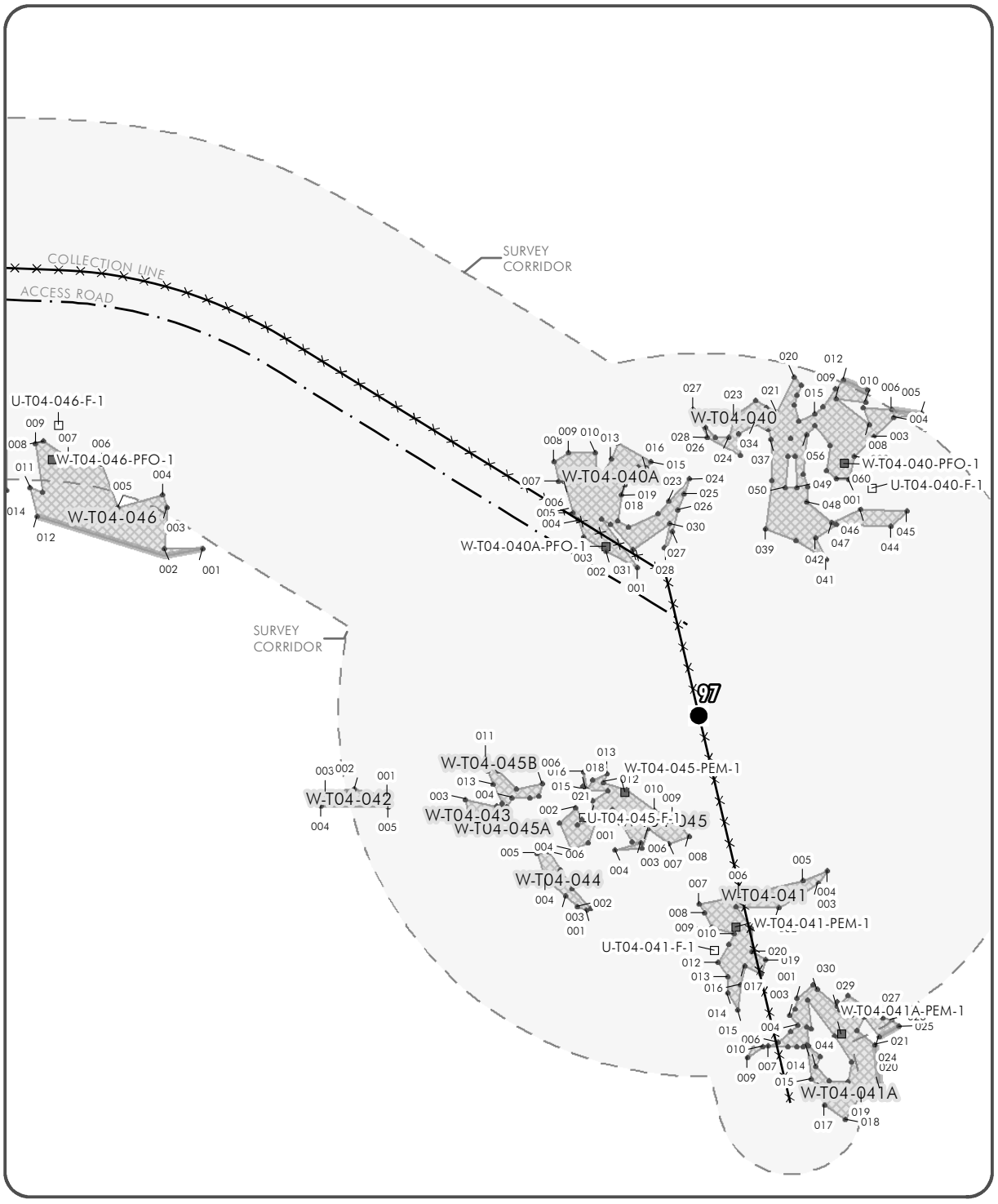


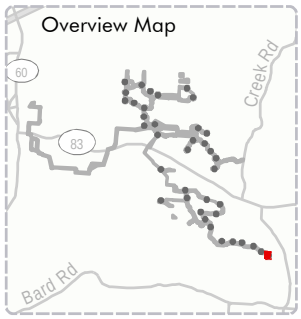


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# Wetlands and Streams



Arkwright Wind Farm

Town of Arkwright

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Scale:

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# B Wetland Data Package

This appendix is provided separately.

# C Stream Data Package

This appendix is provided separately.