AQUATIC VEGETATION SURVEY

JOE'S POND
WEST DANVILLE, VT

Prepared For: Joe's Pond Association
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Pondweed Pursuits

Pre-Management Aquatic Vegetation Survey

August 2026

Joe's Pond Association hired Pondweed Pursuits to perform a pre-management aquatic vegetation survey in First and Second Pond to identify ProcellaCOR-sensitive species and Eurasian Watermilfoil presence. The survey was conducted on August 18, 2026. The weather was partly cloudy and 75°F with a light breeze. A 15-foot aluminum boat was used to tour the littoral zone. A throw-rake was utilized as a way to collect bottom vegetation to confirm species identification and relative abundance. A hand-held Garmin GPS collected points at each location where aquatic vegetation were observed. An on-board Lowrance unit was utilized to assist in identifying beds of submersed vegetation and the depth of water.

The objective of this littoral survey was to perform a qualitative native aquatic species survey that are known to have sensitivity to the US/EPA registered herbicide, ProcellaCOR EC (EPA Registration Number: 67690-80). Non-target, native species include watershield (*B. schreberi*), white waterlily (*N. odorata*), yellow waterlily (*N. variegata*), and alternate-flowered watermilfoil (*M. alterniflorum*).

During the survey, a single macro-alga, sixteen (16) native species, and one (1) non-native, invasive aquatic species were identified (see table 1).

COMMON NAME	SCIENTIFIC NAME
Bidens Water-marigold	*Bidens beckii*
Muskgrass	*Chara spp.*
Waterweed	*Elodea canadensis*
Bayonet Rush	*Juncus militaris*
Alternate-flowered Watermilfoil	*Myriophyllum alterniflorum*
***Eurasian Watermilfoil**	*Myriophyllum spicatum*
Yellow Waterlily	*Nuphar variegata*
White Waterlily	*Nymphaea odorata*
Large-leaf Pondweed	*Potamogeton amplifolius*
Ribbon-leaf Pondweed	*Potamogeton epihydrus*
Variable-leaf Pondweed	*Potamogeton gramineus*
Floating-leaf pondweed	*Potamogeton natans*
Thin-leaf pondweed	*Potamogeton pusillus*
Richardson's Pondweed	*Potamogeton richardsonii*
Robbin's Pondweed	*Potamogeton robbinsii*
Arrowhead	*Sagittaria spp.*
Burreed	*Sparganium spp.*
Tapegrass	*Vallisneria americana*

***Red** indicates non-native, invasive species

Images 1 & 2
Eurasian Watermilfoil patch

Eurasian Watermilfoil was identified as present in First and Second pond (**Figure 1**). It was present in depths between three (3) and nine (9) feet. There were zones within both First and Second Pond, identified by buoys, to demonstrate where watermilfoil beds were present, warning boaters to keep out of the area. Eurasian Watermilfoil was confirmed as present within these zones (Images 1 & 2).

Native aquatic species that were identified throughout First and Second pond were white and yellow waterlily (**Figures 2 & 3**). They were often identified in small, trace patches along residential shorelines in depths between one (1) and four (4) feet. Several coves had areas of large waterlily growth as seen in the images below (Images 3 & 4).

Images 3 &4
White and Yellow waterlily

Several submersed aquatic species were identified throughout First and Second Pond, including multiple pondweed species. Richardson's, Ribbon-leaf, Robbin's, and Large-leaf Pondweed were the most commonly collected. Robbin's Pondweed grows close to the substrate and was found in shallower water than the other common pondweed species. Variable-leaf, Thin-leaf, and Floating-leaf Pondweed occurred in trace to sparse abundances along shallow residential shorelines and within several coves.

Waterweed, Tapegrass, Slender Naiad, and Muskgrass were commonly observed trailing along the substrate in water depths of one (1) to six (6) feet. Within these same depth zones, occasional patches of Water-marigold and Alternate-flowered Watermilfoil were also documented. Nearshore emergent species, including Bayonet Rush, Arrowhead, and Burreed, were observed along the immediate shoreline, with submersed vegetation growing below them.

In summary, First and Second Ponds support a diverse and healthy population of native aquatic vegetation. Although Eurasian watermilfoil remains present, its abundance is low relative to the available littoral zone. Given that this is a relatively new infestation, prompt action by the Joe's Pond Association could make eradication achievable.

Chemical management using ProcellaCOR EC is highly recommended for the identified treatment zones in Joe's Pond. Although the Eurasian Watermilfoil is currently at low density, immediate intervention offers a rare, high-probability window for local eradication before a critical ecological tipping point is reached. This targeted application of a highly selective systemic herbicide aligns with the statutory goals by proactively mitigating a known ecological threat while protecting the long-term integrity of the non-target environment.

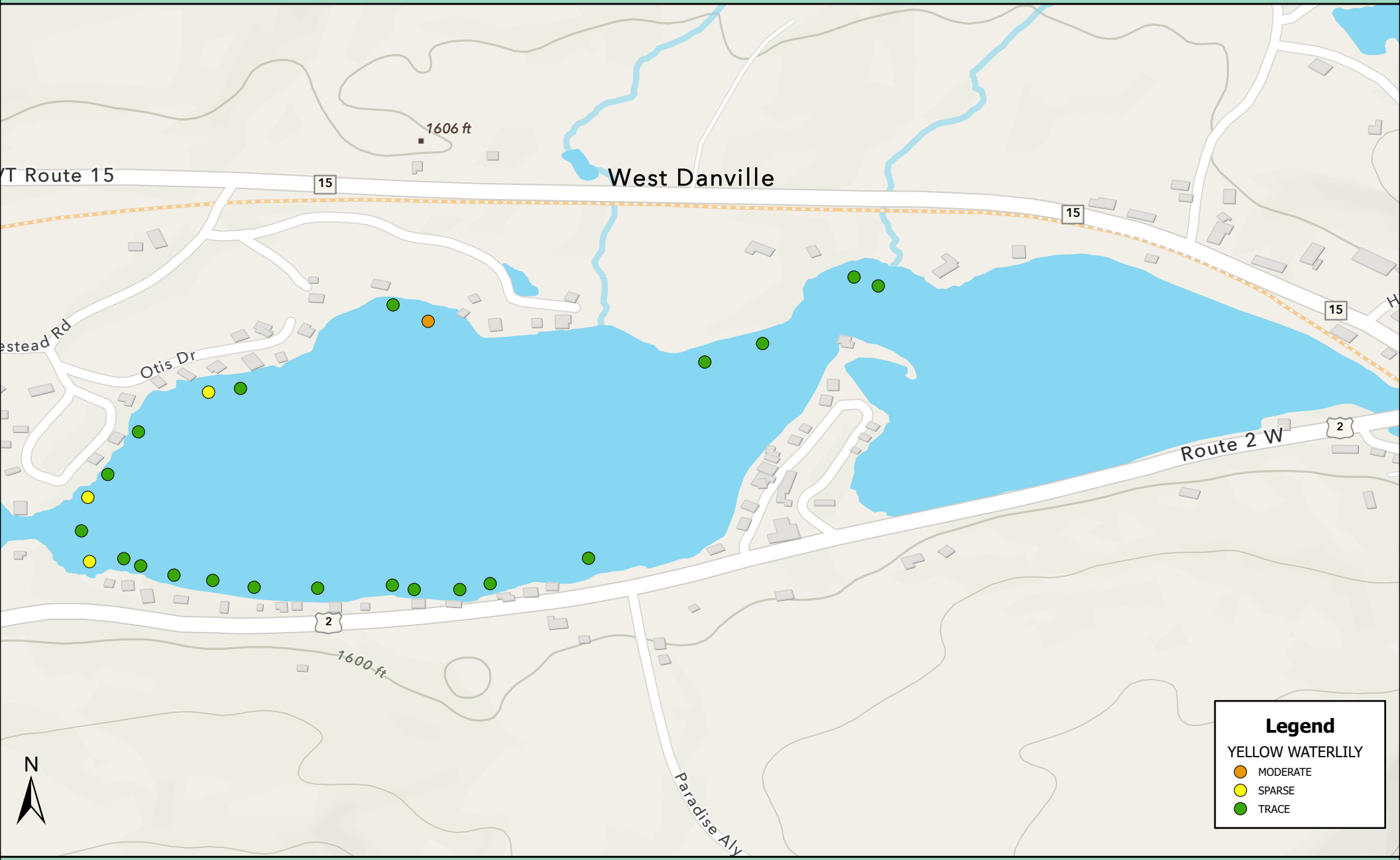
The Vermont DEC's concerns regarding sensitive non-target taxa are valid but must be contextualized within the rapid dissipation dynamics of the compound and the seasonal growth patterns of these native plants. An evaluation of the eighteen species identified in the this aquatic plant survey reveals that the vast majority of the native plant community will experience zero to negligible impacts. The diverse native monocotyledon, including Tapegrass, Waterweed, Bayonet Rush, Arrowhead, Burreed, and seven native pondweeds (Large-Leaf, Ribbon-Leaf, Variable-Leaf, Floating-Leaf, Thin-Leaf, Richardson's, and Robbin's), are biologically immune to this specific mode of action, ensuring they maintain their ecological functions immediately following treatment. Alternate-Flowered Watermilfoil shares some physiological vulnerability as a native congener, but ProcellaCOR EC exhibits a significantly higher binding affinity for invasive Eurasian Watermilfoil at low concentration rates. While temporary biomass reduction or localized bending may occur, native milfoils routinely demonstrate rapid vegetative recovery from intact root crowns within the same or subsequent growing season as chemical concentrations drop to non-detectable levels within 48-hours.

Dicotyledonous floating-leaf plants like Yellow and White Waterlilies can exhibit transient, localized sensitivity, such as minor petiole curling or foliar yellowing, when exposed to surface drift. However, because the herbicide functions via short-exposure contact hours and breaks down quickly, it does not compromise the underlying perennial rhizome network of these lilies. Native dicots like Bidens Water-Marigold can also show early-season sensitivity, but treating a low-density target infestation allows for precise, low-dose spot applications rather than broad-scale volumetric loading, which spatially isolates and protects the broader native population from lethal exposure.

Long-term post-treatment monitoring data from comparable Vermont waterbodies indicates that native sensitive species frequently show a net increase in frequency of occurrence and relative abundance one to two years post-treatment. By removing the invasive canopy, sensitive native plants are granted competitive release from light-blocking, nutrient-depleting invasive competition, allowing them to ultimately thrive and achieve higher biodiversity metrics over time.

Choosing the no-action alternative carries a near-certain ecological penalty that has plagued many Vermont waterbodies. Eurasian Watermilfoil initiates growth significantly earlier in the spring than native species. And if left unchecked, these low-density colonies will rapidly establish an aggressive surface canopy that will out-compete and eventually shade out the highly diverse pondweed and lily assemblages documented in this survey. This displacement would accelerate eutrophication and cause localized dissolved oxygen crashes from mass autumn biomass decay, eventually forcing a reliance on much larger, higher-dose chemical applications or disruptive mechanical harvesting in the future. Proactive, low-density eradication remains the most scientifically objective mechanism available to minimize the long-term chemical footprint on Joe's Pond.

FIGURE 2: DISTRIBUTION & ABUNDANCE OF YELLOW WATERLILY (N. VARIEGATA)



JOE'S POND
WEST DANVILLE, VT
44°24'30.3"N, 72°12'15.4"W

PRE-TREATMENT AQUATIC VEGETATION SURVEY

0 110 220 330
Meters

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FIGURE 3: DISTRIBUTION & ABUNDANCE OF WHITE WATERLILY (N. ODORATA)

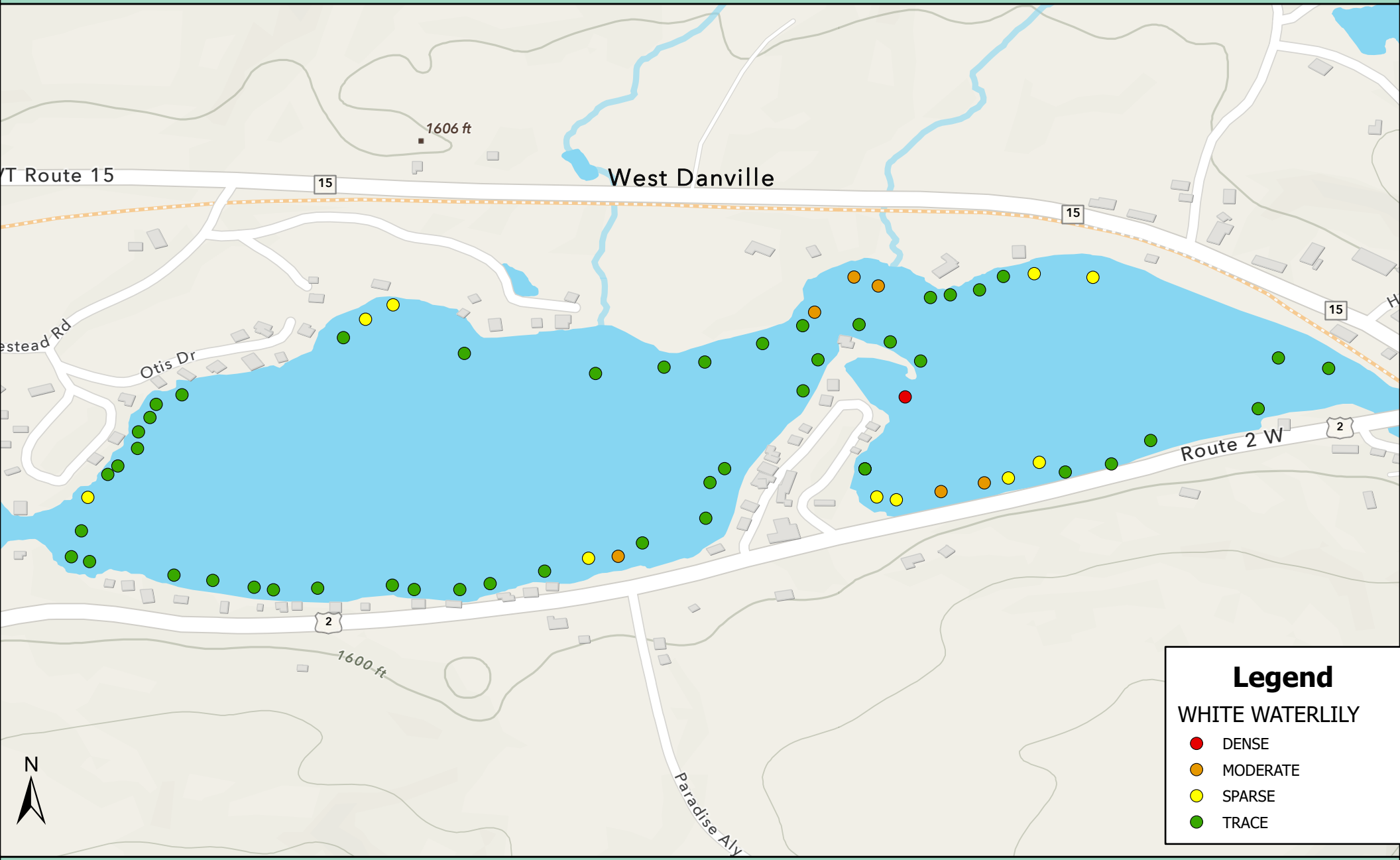

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FIGURE 4: DISTRIBUTION & ABUNDANCE OF BECK'S WATER-MARIGOLD (B. BIDENS)

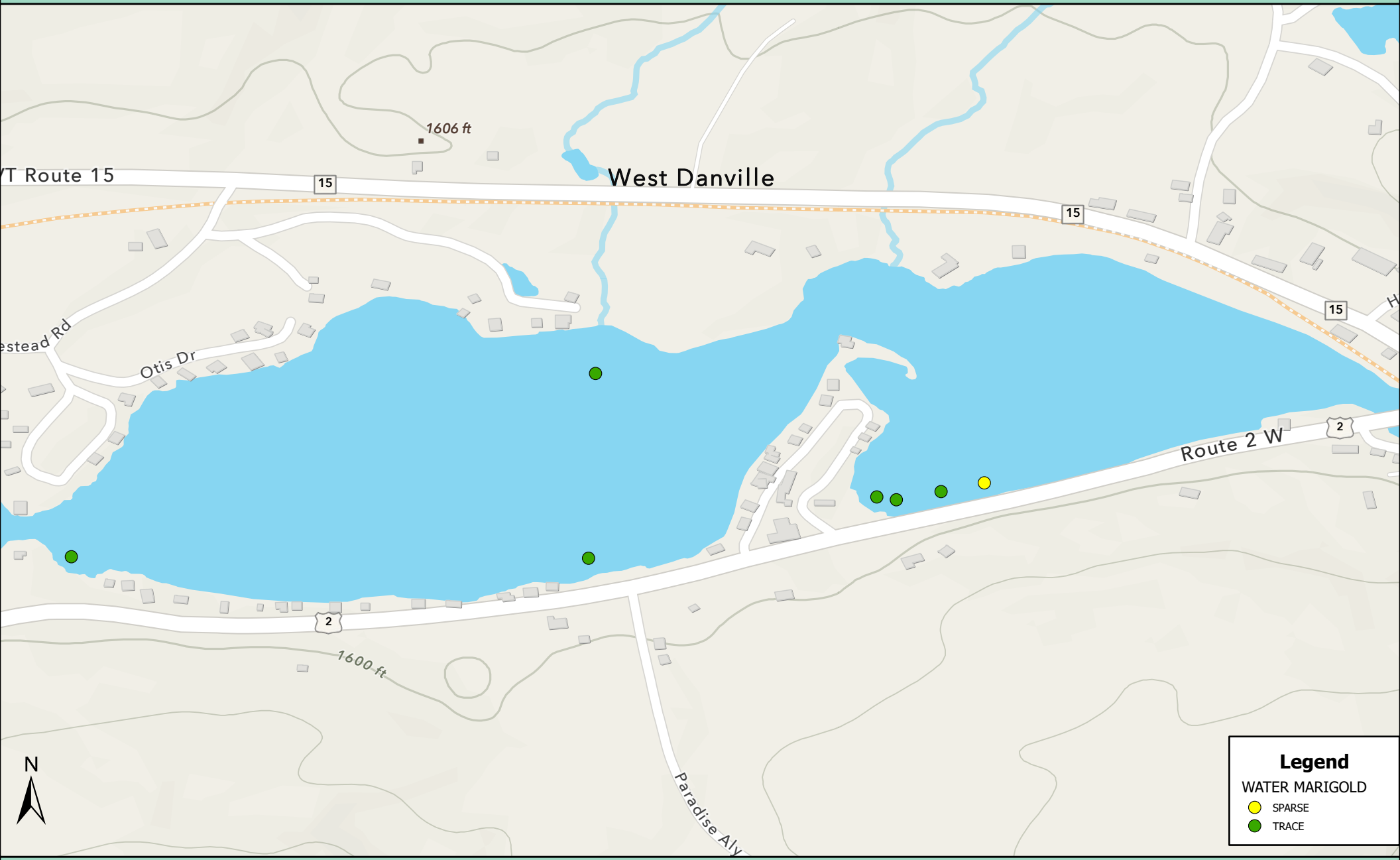

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FIGURE 5: DISTRIBUTION & ABUNDANCE OF ALTERNATE-FLOWERED WATERMILFOIL (M. ALTERNIFLORUM)

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FIGURE 6: DISTRIBUTION OF RICHARDSON'S PONDWEED (P. RICHARDSONII)

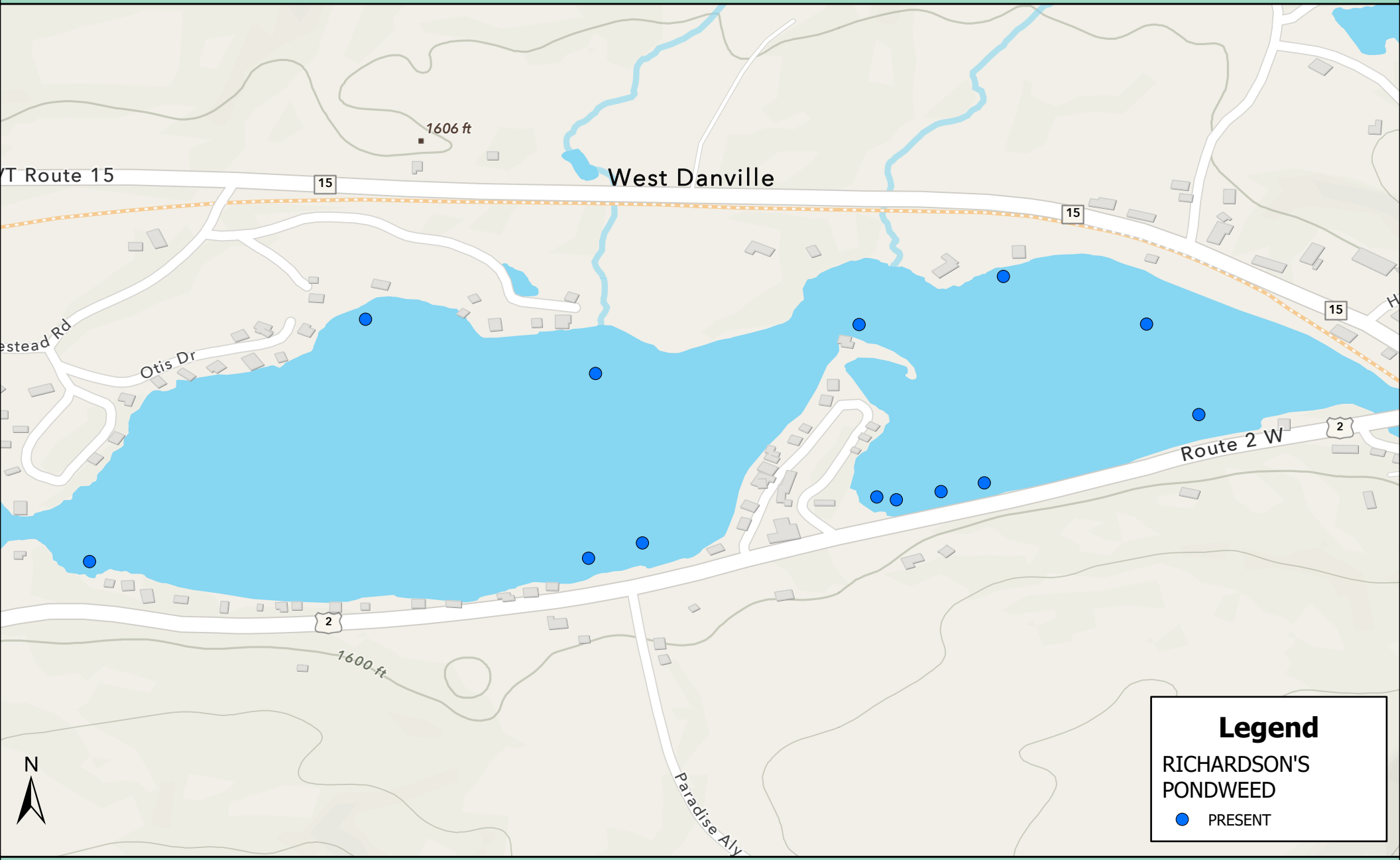

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FIGURE 7: DISTRIBUTION OF LARGE-LEAF PONDWEED (P. AMPLIFOLIUS)

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FIGURE 8: DISTRIBUTION OF COMMON WATERWEED (E. CANADENSIS)

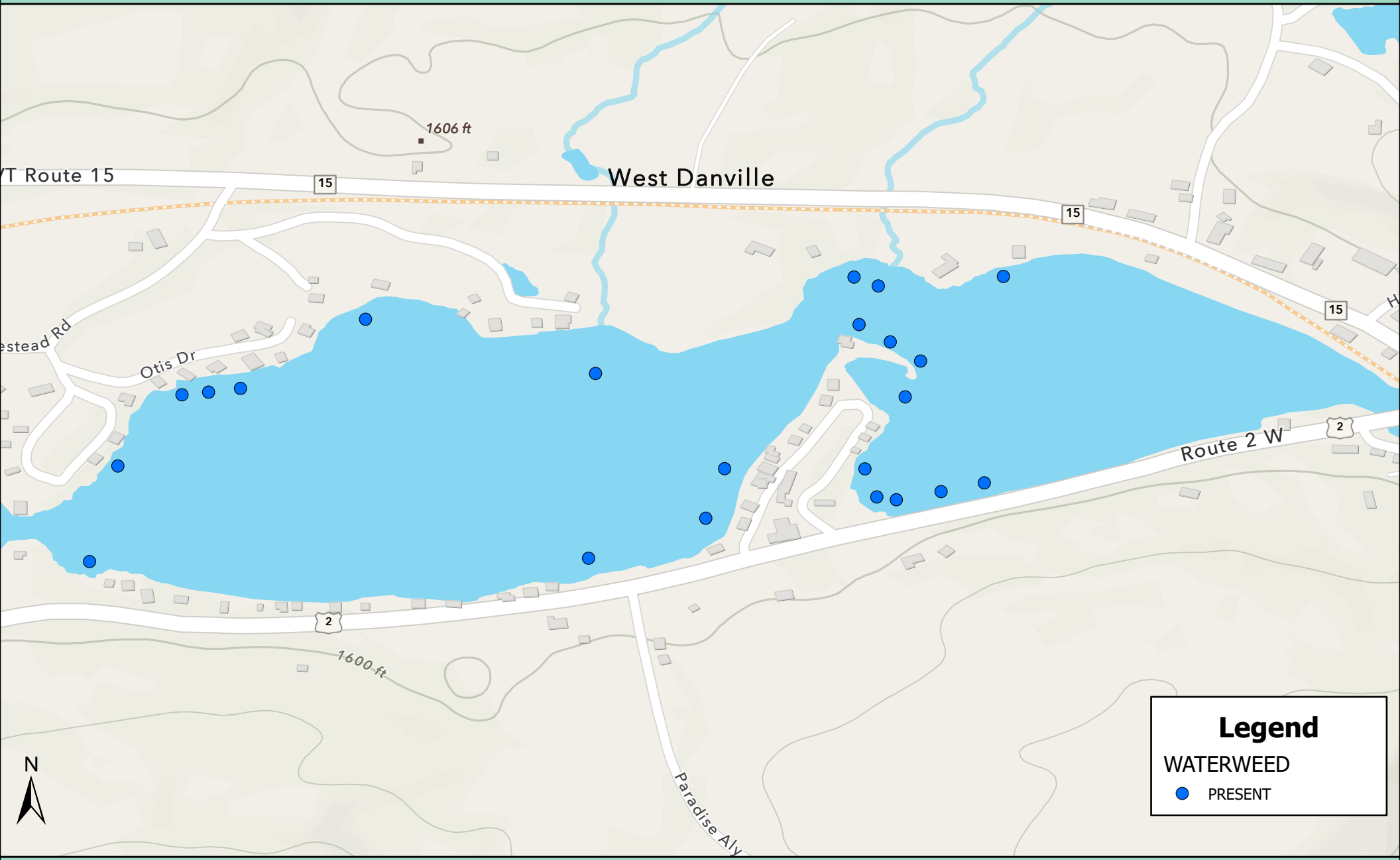

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FIGURE 9: DISTRIBUTION OF VARIABLE-LEAF PONDWEED (P. GRAMINEUS)

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FIGURE 10: DISTRIBUTION OF SLENDER NAIAD (N. FLEXILIS)

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FIGURE 11: DISTRIBUTION OF BURREED (SPARGANIUM SPP.)

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FIGURE 12: DISTRIBUTION OF ARROWHEAD(SAGITTARIA SPP.)

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FIGURE 13: DISTRIBUTION OF MUSKGRASS (CHARA SPP.)

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FIGURE 14: DISTRIBUTION OF TAPEGRASS (VALLISNERIA AMERICANA)

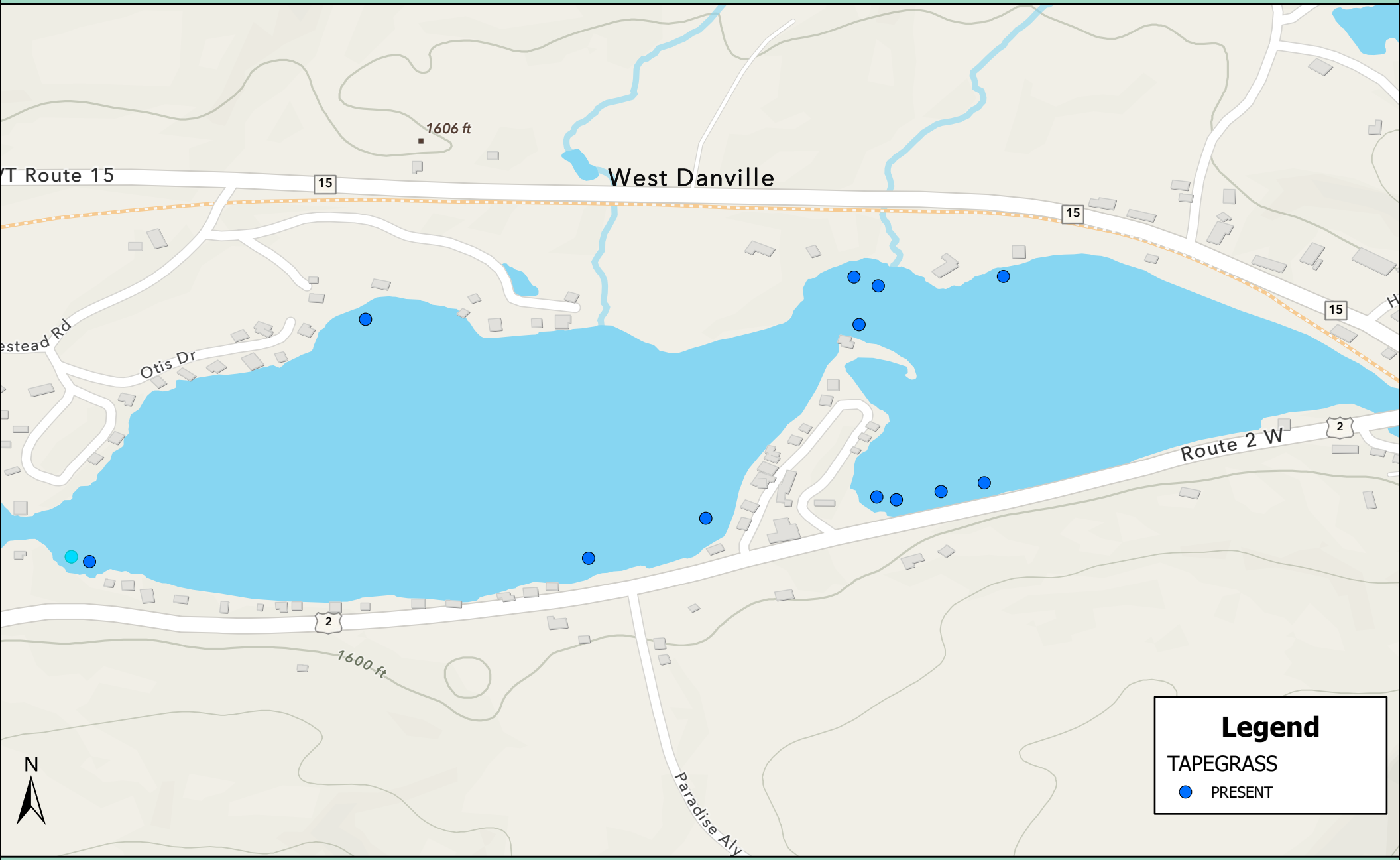

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FIGURE 15: DISTRIBUTION OF ROBBIN'S PONDWEED (P. ROBBINSII)

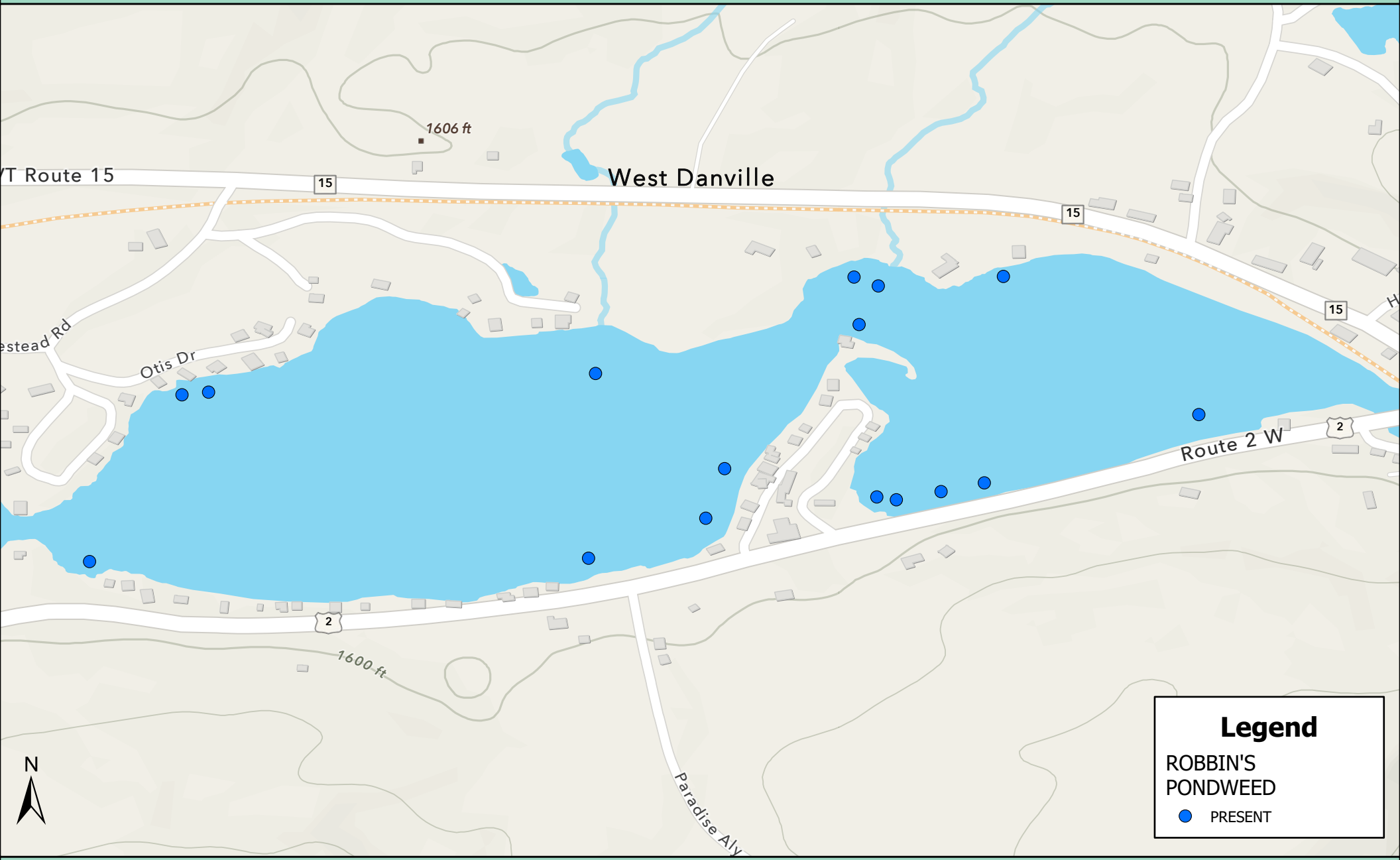

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FIGURE 16: DISTRIBUTION OF THIN-LEAF PONDWEED (P. PUSILLUS)

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FIGURE 17: DISTRIBUTION OF RIBBON-LEAF PONDWEED (P. EPIHYDRUS)

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FIGURE 18: DISTRIBUTION OF FLOATING-LEAF PONDWEED (P. NATANS)

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