

VEGETATION MANAGEMENT PLAN

**60 Shaw Drive
Rochester, NH 03867
Map 240, Lot 49
&
Shaw Drive
Rochester, NH 03867
Map 240, ROW**

Prepared for:
GNM Solar 17, LLC
123 Washington Street
Rochester, NH 03867

Prepared by:
Damon E. Burt, CWS, CPESC
Fraggle Rock Environmental
38 Garland Road
Strafford, NH 03884



December 15, 2022

1.0 PROJECT INFORMATION

Project Name, Plans, and Maps:

Project Name: Shaw Drive Vegetation Monitoring Plan

Project Location: 60 Shaw Drive
Rochester, NH 03867
Tax Map 240, Lot 49

Shaw Drive
Rochester, NH 03867
Tax Map 240, ROW

Project Applicant: GNM Solar 17, LLC
Attn: Packy Campbell
123 Washington Street
Rochester, NH 03867

Property Owner: Map 240, Lot 49
GNM Solar 17, LLC
Attn: Packy Campbell
123 Washington Street
Rochester, NH 03867

Map 240, ROW
City of Rochester
31 Wakefield Street
Rochester, NH 03867

Site Plans/Maps: Wetland Vegetation Management Plan

2.0 PROJECT DESCRIPTION

The project is located off of Shaw Drive in the Town of Rochester, NH (Map 240, Lot 49). The project proposed to construction of an agrovoltaic field of solar trackers and blueberry patches. The project includes the installation of 60 solar trackers and the associated infrastructure. The project will involve Vegetation Management to allow for solar rays to reach tracker. The project also involves required upgrades of Shaw Drive for site access and utility access. Wetland impacts of 7,950 sq. ft. (temporary impact is 1,832 sq. ft.) for the installation of 3 culverts along Shaw Drive will be required and is part of NHDES Wetland Application.

The following is a vegetation management plan to monitor tree and vegetation types every 2 years and management/cutting of vegetation on-site every 4 years to provide adequate sunlight for the proposed solar trackers within wetland and City of Rochester – 50 Foot Wetland Buffer and Wetland.

3.0 VEGETATION MANAGEMENT METHODS

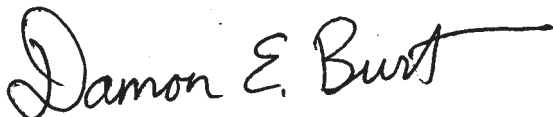
The following vegetation management plan has been prepared to allow tree clearing/cutting to occur during one event every 4 years to ensure adequate sunlight is available for the proposed solar trackers. Vegetation management form will be reported every 2 years. Only trees shall be cut during the selective tree cutting event and all native shrubland shall remain undisturbed. The following vegetation management sequence shall be followed:

1. Only trees shall be cut using a selective tree cutting method during one event every 4 years.
2. No native shrubs shall be removed or cut on-site. Please review attached UNH Cooperative extension for a list of New Hampshire native shrub species.
3. Tree clearing shall occur using a flail cutter on an excavator arm or using hand tools as necessary to maintain herb and shrub species.
4. Care will be taken as not disturb or run soil.
5. A monitoring report shall be submitted to the City of Rochester every 2 years, including following a tree cutting event. The monitoring report shall detail the current conditions of the site and report the tree clearing event.

4.0 VEGETATION MANAGEMENT MONITORING

The site will be monitored every 2 years, including following a tree cutting event. A report documenting the current conditions of the site, including vegetation cover and site status, and results of the tree clearing event, shall be submitted to the City of Rochester. The monitoring report shall include the following:

- Tree clearing date and time
- Portion of site tree clearing took place
- The percent cover of tree, shrub, and herbaceous cover in each zone
- If any wetland impacts were observed
- If any trash or debris was observed
- If any wildlife was observed



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NH Certified Wetland Scientist #163
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VEGETATION MANAMGENTING REPORT

General Information			
Project Name	60 Shaw Drive Rochester NH		
Owner			
Inspector's Name(s)			
Inspector's Contact Information			
Date of Inspection:	/ /	Start Time:	End Time:
Type of Inspection: <input type="checkbox"/> Bi-annual Inspection <input type="checkbox"/> Other, explain: _____			
Notes:			

Site Vegetation Management Monitoring Information			
ZONE 1: NORTH PORTION OF THE SITE			
Tree cutting on site in Zone 1:			
Has a tree cutting event occurred this year?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, what portion of trees were cut in Zone 1?	
Percent vegetation cover on-site in Zone 1 (Following tree cutting event, if applicable):			
In Wetlands in Zone 1:	Native tree cover:		
	Native shrubland cover:		
	Native Herbaceous cover:		
In 50 ft Wetland Buffers in Zone 1:	Native tree cover:		
	Native shrubland cover:		
	Native Herbaceous cover:		
In Uplands in Zone 1:	Native tree cover:		
	Native shrubland cover:		
	Native Herbaceous cover:		
Zone 1 Observations:			
1	Were any areas of native shrubland removed during the tree cutting event (if applicable)	<input type="checkbox"/> Yes <input type="checkbox"/> No	

VEGETATION MANAMGENTING REPORT

2	Excluding the selective tree cutting, have wetlands been impacted in any way, including filling, rutting, storage of materials within wetlands and/or removal of shrub/herbaceous cover?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain.
3	Excluding the selective tree cutting, have 50 ft wetland buffers been impacted in any way?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain.
4	Was any trash or debris observed on-site?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain.
5	Was any wildlife observed on site during the monitoring visit?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain.
6	Are there any additional concerns within Zone 1?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain.

ZONE 2: SOUTH PORTION OF THE SITE

Tree cutting on site in Zone 2:

Has a tree cutting event occurred this year?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, what portion of trees were cut in Zone 1?
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Percent vegetation cover on-site in Zone 1 (Following tree cutting event, if applicable):

In Wetlands in Zone 2:	Native tree cover:	
	Native shrubland cover:	
	Native Herbaceous cover:	
In 50 ft Wetland Buffers in Zone 2:	Native tree cover:	
	Native shrubland cover:	
	Native Herbaceous cover:	
In Uplands in Zone 2:	Native tree cover:	
	Native shrubland cover:	
	Native Herbaceous cover:	

Zone 2 Observations:

VEGETATION MANAMGENTING REPORT

1	Were any areas of native shrubland removed during the tree cutting event (if appliable)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	Excluding the selective tree cutting, have wetlands been impacted in any way, including filling, rutting, storage of materials within wetlands and/or removal of shrub/herbaceous cover?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain.
3	Excluding the selective tree cutting, have 50 ft wetland buffers been impacted in any way?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain.
4	Was any trash or debris observed on-site?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain.
5	Was any wildlife observed on site during the monitoring visit?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain.
6	Are there any additional concerns within Zone 2?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain.



University of New Hampshire

Cooperative Extension

NEW HAMPSHIRE'S NATIVE TREES, SHRUBS, AND VINES WITH WILDLIFE VALUE

SPECIES	FRUITING PERIOD	WILDLIFE USE	WILDLIFE USING PLANT FOR FOOD
TREES			
Common Apple* <i>Malus pumila</i> *non-native	September - March	Fruit, twigs, buds, and bark. Excellent winter food.	Preferred by ruffed grouse, pine grosbeak, and cedar waxwing. Also consumed by wild turkey, ring-necked pheasant, various songbirds (purple finch eat spring buds), deer, rabbits, and red and gray fox.
Mountain Ash <i>Sorbus americana</i>	August - March	Fruit and twigs. Fast growing tree. Excellent winter food.	Wild turkey, catbird, cedar waxwing, bluebird, robin, thrushes, mockingbird, brown thrasher, and bear.
Big-toothed Aspen <i>Populus grandidentata</i>	May - June	Buds, catkins, twigs and foliage. Fair winter food.	Catkins preferred by ruffed grouse. Yellow-bellied sapsucker, black-capped chickadee, evening grosbeak, purple finch, squirrel, and browsed by deer.
Quaking Aspen <i>Populus tremuloides</i>	May - June	Buds, catkins, bark, twigs, and foliage. Excellent winter food.	Preferred by ruffed grouse and browsed on by deer, snowshoe hare, beaver and porcupine.
American Beech <i>Fagus grandifolia</i>	September - November	Nuts. Good winter food.	Deer, bear, tufted titmouse, preferred by ruffed grouse, wild turkey, fox, porcupine, squirrel, chipmunk, and snowshoe hare.
Yellow Birch <i>Betula allegheniensis</i>	September - February	Catkins, bud, bark, twigs, and foliage. Good winter food.	Ruffed grouse, common redpoll, pine siskins, black-capped chickadee, deer, snowshoe hare, beaver, porcupine and other various songbirds.
Butternut <i>Juglans cinerea</i>	September - November	Nuts. Good winter food.	Preferred by black-capped chickadee, tufted titmouse, nuthatches, yellow-rumped warbler, pine warbler, purple finch, and field sparrow. Nuts also eaten by squirrels.
Eastern Red Cedar <i>Juniperus virginiana</i>	September - March	Seeds and foliage. Fair winter food and excellent winter cover.	Wild turkey, ruffed grouse, ring-necked pheasant, northern flicker, phoebe, tree swallow, mockingbird, catbird, brown thrasher, robin, bluebird, cedar waxwing, yellow-rumped warbler, grosbeaks, purple finch, deer, squirrels. Used for nesting and cover by many species.
Atlantic White Cedar <i>Thuja occidentalis</i>	September - March	Seeds and foliage. Fair winter food and excellent winter cover.	Pine siskin, deer, and snowshoe hare.
Black Cherry <i>Prunus serotina</i>	June - October	Fruits and buds. Excellent summer wildlife food.	Preferred by ruffed grouse, northern flicker, yellow-bellied sapsucker, eastern kingbird, blue jay, common crow, mockingbird, catbird, brown thrasher, robin, thrushes, veery, bluebird, cedar waxwing, vireo, orchard and northern oriole, tanager, cardinal, rose-breasted and evening grosbeaks, and white-throated sparrow.

SPECIES	FRUITING PERIOD	WILDLIFE USE	WILDLIFE USING PLANT FOR FOOD
Choke Cherry <i>Prunus virginiana</i>	July - October	Fruits and buds. Excellent summer food.	Preferred by ruffed grouse, ring-necked pheasant, pileated woodpecker, yellow-bellied sapsucker, eastern kingbird, common crow, thrushes, robin, catbird, brown thrasher, bluebird, and evening and rose-breasted grosbeaks.
Pin Cherry <i>Prunus pensylvanica</i>	July - December	Fruits and buds. Excellent summer food.	Preferred by ruffed grouse, ring-necked pheasant, northern flicker, eastern kingbird, common crow, catbird, cedar waxwing, bluebird, robin, rose-breasted grosbeak, thrushes, purple finch, brown thrasher, vireo, veery, red squirrel, white-footed mouse, raccoon, fox, and black bear.
Hazelnut <i>Corylus americana</i>	July - October	Nuts, catkins, and buds. Fair winter food.	Squirrels and chipmunks eat nuts. Preferred by ruffed grouse, ring-necked pheasant, hairy woodpecker, and blue jay. Browsed by deer and rabbits.
Eastern Hemlock <i>Tsuga canadensis</i>	September - March	Twigs, foliage, and seeds. Excellent winter cover and nesting.	Seeds eaten by pine siskin, crossbill, black-capped chickadee, and red squirrel, white-footed mouse. Cover for deer wild turkey, and ruffed grouse. Nesting sites for veery, black-throated blue warbler, black-throated green warbler, black burnian warbler, and juncos. Porcupines eat bark of young hemlocks.
Shagbark Hickory <i>Carya ovata</i>	September - October	Nuts. Good winter food.	Red squirrels, wild turkey, field sparrows, white-breasted nuthatch, yellow-rumped warbler, pine warbler, cardinal, rose-breasted grosbeaks, rufous-sided towhee, wood ducks and chipmunks.
Hop-hornbeam <i>Ostrya virginiana</i>	August - October	Seeds, catkins, and buds. Seeds persist into winter. Fair summer food.	Common merganser, wild turkey, ruffed grouse, ring-necked pheasant, downy woodpecker, mockingbird, rose-breasted grosbeak, and purple finch.
Red Maple <i>Acer rubrum</i>	March - July	Seeds, buds, and sap. Good summer food and nest sites.	Yellow-bellied sapsucker, cardinal, evening and pine grosbeaks, and goldfinch. Nesting site for robin and prairie warbler. Browse for deer and rabbits.
Silver Maple <i>Acer saccharinum</i>	April - June	Seeds and buds. Fair summer food. Good nest sites.	Cardinal and evening and pine grosbeaks. Nesting sites for northern oriole and goldfinch.
Sugar Maple <i>Acer saccharum</i>	June - December	Seeds, twigs, and bark. Fair summer food. Good nest sites.	Ruffed grouse, ring-necked pheasant, snowshoe hare, squirrel, evening and rose-breasted grosbeak, cardinal, chipmunk, beaver, and porcupine; nest site for robin, vireo, grosbeak, and goldfinch; browse for deer and rabbit.
Red Oak <i>Quercus rubra</i>	September - December	Acorns. Excellent winter food.	Wild turkey, ruffed grouse, blue jay, squirrel, wood duck, deer, bear, cottontail, flying squirrel, and various songbirds.
White Oak <i>Quercus alba</i>	September - November	Acorns. Excellent winter food.	Wild turkey, ruffed grouse, blue jay, squirrel, wood duck, deer, bear, cottontail, flying squirrel, and various songbirds.
White Pine <i>Pinus strobus</i>	August - September	Seeds, foliage, and twigs. Good for winter cover and songbird nesting. Excellent winter food.	Spruce grouse, wild turkey, chickadee, nuthatch, grosbeak, crossbill, junco, chipping & white-throated sparrow, pine warbler, brown creeper, snowshoe hare, rabbit, gray and red squirrel, chipmunk, porcupine, beaver, and deer.
Serviceberry <i>Amelanchier spp.</i>	July - August	Fruit. Excellent summer food and cover.	Bluebird, cardinal, cedar waxwing, gray catbird, red squirrel, scarlet tanager, veery, beaver, and deer.

SPECIES	FRUITING PERIOD	WILDLIFE USE	WILDLIFE USING PLANT FOR FOOD
Spruce <i>Picea spp.</i>	August - November	Bark, needles, and seeds. Important northern wildlife food.	Spruce grouse, crossbills, snowshoe hare, and deer.
Pussy Willow <i>Salix discolor</i>	April - May	Buds, catkins, twigs, and bark. Moderately important to wildlife.	Ruffed grouse, various songbirds, rabbits, beaver, hare, squirrel, and other browsing and bud-eating wildlife.
Witchhazel <i>Hamamelis virginiana</i>	Spring - fall of second year	Woody seeds, buds, twigs, and bark. Fair wildlife use, produces winter flowers.	Catkins preferred by ruffed grouse. Wild turkey, ring-necked pheasant, cardinal, squirrels and browsed by deer.
SHRUBS			
Blackberry <i>Rubus spp.</i>	July - September	Fruits and canes. Includes raspberries. Excellent wildlife cover and nesting.	Wild turkey, ruffed grouse, ring-necked pheasant, blue jay, various woodpeckers, tufted titmouse, mockingbird, gray catbird, brown thrasher, robin, wood thrush, veery, cedar waxwing, grackle, oriole, tanager, cardinal, grosbeak, rufous-sided towhee, raccoon, chipmunk, squirrel, deer, and rabbit.
Highbush Blueberry <i>Vaccinium corymbosum</i>	June - September	Fruit, twigs, and buds. Excellent summer food.	Ruffed grouse, scarlet tanager, bluebird, gray catbird, rufous sided towhee, thrushes, black bear, chipmunk, white-footed mouse, deer, and rabbit.
Flowering Dogwood <i>Cornus florida</i>	August - November	Fruit. Excellent fall food. Good cover and nesting sites.	Preferred by wild turkey, northern flicker, pileated woodpecker, yellow-bellied sapsucker, hairy woodpecker, mockingbird, brown thrasher, robin, thrushes, bluebird, cedar waxwing, yellow-rumped warbler, cardinal, and evening and pine grosbeak. Also used by deer, rabbits, and squirrels.
Gray Dogwood <i>Cornus racemosa</i>	July - October	Fruits persistent to early winter. Excellent fall food. Good cover and nesting sites.	Preferred by wild turkey, ruffed grouse, northern flicker, downy woodpecker, eastern kingbird, catbird, robin, thrush, cedar waxwing, cardinal, and pine grosbeak. Also used by wood duck, squirrel, rabbit and deer.
Red-osier Dogwood <i>Cornus sericea</i>	July - October	Fruit. Excellent fall food. Good cover and nesting sites.	Preferred by wild turkey, ruffed grouse, northern flicker, downy woodpecker, eastern kingbird, common crow, catbird, brown thrasher, robin, bluebird, cedar waxwing, and purple finch. Also used by rabbits, deer, and squirrels.
Silky Dogwood <i>Cornus amomum</i>	August - October	Fruit. Excellent fall food. Good cover and nesting sites.	Preferred by wild turkey, ruffed grouse, northern flicker, downy woodpecker, eastern kingbird, catbird, brown thrasher, robin, wood thrush, bluebird, cedar waxwing, and purple finch. Also used by wood duck, rabbits, deer, and squirrel.
Elderberry <i>Sambucus canadensis</i>	July - September	Fruit, twigs, and buds. Grows in moist soil. Good summer food.	Ruffed grouse, wild turkey, ring-necked pheasant, robin, catbird, bluebird, cardinal, indigo bunting, brown thrasher, squirrel, and rabbit.
Hawthorn <i>Crataegus spp.</i>	September - March	Fruit. Good cover and nesting site. Excellent winter food.	Favored by ruffed grouse and cedar waxwing.
Common Juniper <i>Juniperus communis</i>	September - March	Twigs, foliage, and bluish-black fruit. Good wildlife food.	Foliage browsed by deer, rabbits, and other songbirds. Fruit eaten by robin, bluebird, finches, grosbeaks, and cedar waxwing.
Pasture Rose <i>Rosa carolina</i>	July - March	Hips. Important winter food and summer cover.	Used by wildlife in winter when other food sources are scarce. Browsed on by deer and rabbits.
Virginia Rose <i>Rosa virginiana</i>	July- August	Hips. Good summer and winter food. Good cover.	Wildlife use hips as alternative food source while frequently used for nesting and cover.

SPECIES	FRUITING PERIOD	WILDLIFE USE	WILDLIFE USING PLANT FOR FOOD
Smooth Sumac <i>Rhus glabra</i>	August - October	Fruit persistent through winter. Used as an emergency winter and early spring food source.	Wild turkey, bluebird, robin, gray catbird, cardinal, black-capped chickadee, hermit and wood thrush, mockingbird, rabbit, deer and various overwintering birds.
Staghorn Sumac <i>Rhus glabra</i>	August - March	Fruit persistent. Good for cover and nesting in spring. Important winter and early spring food source.	Wild turkey, bluebird, robin, gray catbird, cardinal, black-capped chickadee, hermit and wood thrush, mockingbird, rabbit, deer and various overwintering birds.
<i>Viburnums</i>	August - October	Bark, twigs, and buds. Good cover. Late summer or fall ripened fruit.	Ruffed grouse, brown thrasher, cedar waxwing, red squirrel, and deer.
Winterberry <i>Ilex verticillata</i>	August - March	Berries. Persist through winter. Excellent fall food.	Consumed by many fruit eating songbirds.
Canada Yew <i>Taxus canadensis</i>	July - September	Fruit and foliage. Good browse.	Ruffed Grouse, mockingbird, robin, wood thrush, and white-throated, song, and chipping sparrow. Browsed by deer.
VINES			
Bittersweet <i>Celastrus scandens</i>	August - February	Fruits, buds, and leaves. One native species, can be very invasive. Excellent winter food.	Wild turkey, ruffed grouse, bluebirds, and other various songbirds.
Wild Grape <i>Vitis spp.</i>	August - October	Fruit. Excellent summer food. Good cover. Bark used for nest building. Favored by a large number of songbirds.	Ruffed grouse, ring-necked pheasant, wild turkey, bluebird, cardinal, mockingbird, robin, thrushes, brown thrasher, vireos, various warblers, tanagers, fox sparrow, cedar waxwing, woodpeckers, black bear, gray fox, raccoon, and skunk.
Poison Ivy <i>Toxicodendron radicans</i>	August - November	Fruit. Persists through the winter. Excellent fall and winter food.	Wild turkey, downy and hairy woodpecker, northern flicker, yellow-bellied sapsucker, black-capped chickadee, mockingbird, catbird, hermit thrush, bluebird, ruby-crowned kinglet, yellow-rumped warbler, and white-crowned sparrow.
Virginia creeper <i>Parthenocissus quiquefolia</i>	August - February	Fruit. Excellent fall food.	Bluebird, great-crested flycatcher, pileated woodpecker, red-eyed vireo.

Compiled by Wendy Patmos

REFERENCES

1. Degraff, R. M. and Witman, G. M. 1979. Trees, Shrubs, and Vines for Attracting Birds. The University of Massachusetts Press. 194 pp.
2. Harris Center for Conservation Education. Hancock, NH.
3. Martin, A. M., Zim, H. S., and Nelson, A. L. 1951. American Wildlife & Plants A Guide to Wildlife Food Habits. General Publishing Company, Ltd, Canada. 500 pp.

