

**Bull's Island Recreation Area:
Visual Tree Risk Inventory and Results
July 2011**

Inventoried & Prepared by:

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Introduction

Background

In June of 2011, a large sycamore failed below the soil surface and fell onto a campsite at Bull Island Recreational Area near Stockton, NJ. After this event, The F.A. Bartlett Tree Expert Company was hired to conduct a tree risk inventory for all trees' 12 inches or larger at DBH that could impact buildings, campsites, or roads in the northern section of Bull's Island.

Assignment

Bartlett Tree Experts was requested to locate all the trees using GPS receivers, record tree attributes, and rank trees using the Bartlett Tree Research Laboratories *Visual Tree Risk Assessment system*.

Where needed, arborists examined the root flare. Bartlett uses an air compressor and AirSpade® to excavate the soil around the *root collar*, and a probe to locate large roots adjacent to the stem.

Upon completion of the field assessments Bartlett Tree Experts will provide a written report documenting results and observations.

Limits of Assignment

The focus of this report is the trees' potential for failure. All tree and site observations were made from the ground. Dead, diseased, and declining branches were noted when identified as having a risk of failure.

It must be emphasized however, that all large trees pose a certain degree of inherent risk and this evaluation does not preclude all possibility of failure especially during severe storms.

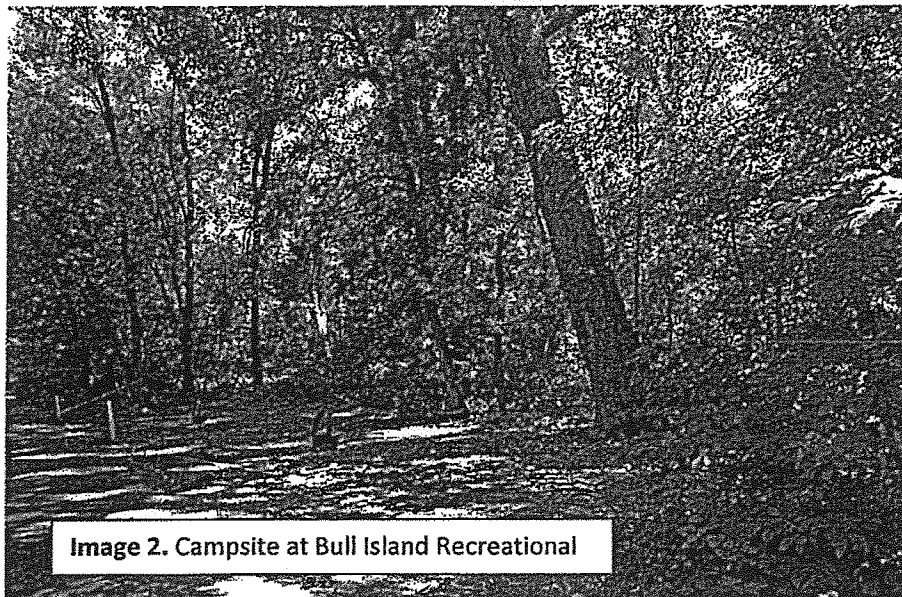
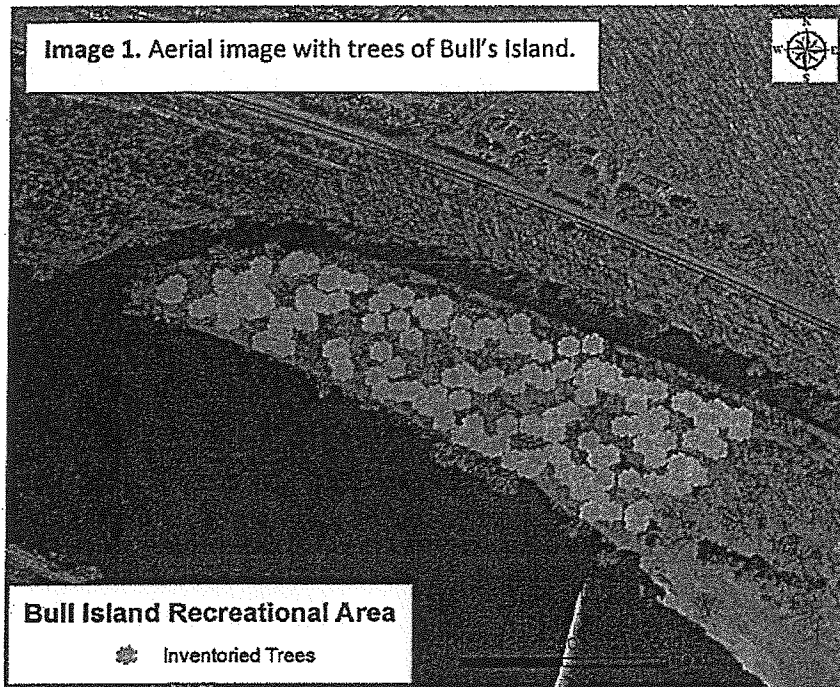
For those trees that the client considers hazardous and representing an immediate safety concern, we recommend placing a sign, tape, or other warning device near those trees until such time as the hazard can be remedied.

Observations

Bartlett Arborists visited Bull Run Recreational Area on two occasions July 14th-15th, 2011 and July 26th, 2011. Trees 1-101 were inventoried July 14th-15th and trees 102-180 were inventoried July 26th.

Site

The recreational area, with primitive campsites, is set in a forested area in the flood plain of the Delaware River and Delaware & Raritan canal.



Analysis

GPS Tree Risk Inventory

Using a Trimble Geo6000 XT GPS receiver, the Bartlett arborists captured the approximate position of the tree stem (within 1-3 meters). All trees were physically tagged with a blue anodized aluminum tag and aluminum nail. The following attributes were recorded:

- Tree Number
- Common Name
- *Diameter at Breast Height (DBH)*
- Estimated canopy radius (nearest five feet)
- Age Class
- Estimated Height Class (nearest 10 feet)
- Condition Class
 - Dead
 - Poor - Most of the canopy is affected with die-back, undesirable leaf color, undesirable leaf size and undesirable new growth. Tree or parts of the tree are in the process of failure.
 - Fair - Parts of the canopy affected by undesirable leaf color, undesirable leaf size and undesirable new growth. Parts of the tree are likely to fail.
 - Good - Tree health and condition are acceptable.
- Potential for Failure (*see paragraph below*)
- Consequence of Failure (*see paragraph below*)
- Visual Tree Risk Rating Score (*see paragraph below*)
- Root Collar Excavation Performed (Yes/No)
- Root Zone Infringement (Based on dripline, estimate grayscale (man-made structures, such as roads, paths, and campsites) impact on root zone)
- Pruning recommendations
 - Clean - Selective pruning to remove one or more of the following parts: dead, diseased, and/or broken branches
 - Raise - Selective pruning to provide vertical clearance
 - Thin - Selective pruning to reduce density of live branches
 - Reduce - Selective pruning to reduce height or spread
- Need for more quantitative tree hazard evaluations or climbing inspection
- Tree removal (Yes/No)
- Defects
- Poisonous Plants Present (Yes/No)
- Other notes

The Bartlett Visual Tree Structure Analysis System ranks the relative degree of risk for prioritizing remedial treatments when managing large tree populations. Bartlett's system uses two criteria: Failure Potential and Consequence of Failure. Failure potential (FP) considers the severity of defect, architecture, site exposure and other biological and site factors that contribute to failure as observed from the ground. Consequence of Failure (CoF) factors in size of the defective plant part, target value and frequency of use and potential for injury/loss should a failure occur as observed from the ground.

Failure Potential (FP)	Points
Critical Risk - Failure imminent	10
High Risk - Failure likely especially in storms	7 - 9
Moderate Risk- Failure possible especially in severe storms	4 - 6
Low Risk - Failure unlikely	1 - 3

Consequence of Failure (CoF)

This criteria considers potential for injury/loss should a failure occur based on such factors as size of defective plant part, target value and frequency of use.

Severe Consequence - High potential for injury/property loss	5
Moderate Consequence - Moderate potential for injury/ property damage	3 - 4
Low Consequence - Low Potential for any loss	1 - 2

***Total Visual Tree Structure Analysis = Failure Potential
+Consequence of Failure***

<u>Total Visual Tree Structure Analysis(VTSA)</u>	<u>Comments</u>
13-15	Critical Risk- Failure imminent; Personal injury and/or property damage inevitable.
10-12	High Risk- Failure likely especially during storms; Personal injury and/or property damage likely.

7-9

Moderate Risk-Failure unlikely, and/or high risk of failure and low risk of property damage/personal injury

<7

Low Risk-Failure unlikely and low risk of property damage

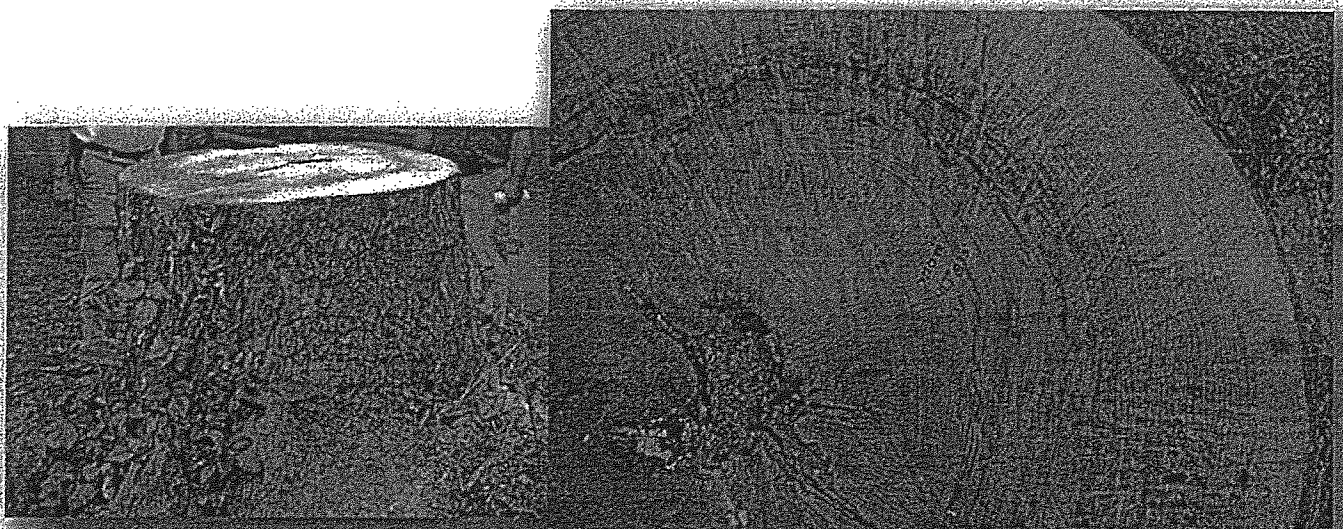
Root Collar Excavations

A Bartlett technician used a 185 CFM air compressor and an AirSpade® tool to remove soil near the root collar to expose the tree stem and *buttress roots* at or below the soil level. A root collar excavation will also expose the presence of *adventitious roots* and/or girdling roots.

Discussion and Findings

The species composition for this area is a mix of American sycamore, maple species (silver and red), black walnut, boxelder, and black locust. The largest of these trees are the American Sycamores with an average DBH of 46 in. and average canopy spread of 60 ft and an average height of 100 feet. Based on a count of visible annual growth rings of a recently removed 42 inch (at 3.5 ft) sycamore stump in another section of Bull Island recreational area, it is estimated that the age of all the sycamores on the section of the island is > 120 years.

Image 3 & 4. Recently removed sycamore tree showing ring count (each black mark representing approximately ten years of growth) near the inventory area Bull's Island Recreational Area



Although visible above-ground defects were documented, the main area of concern was the transition area from trunk to roots and in the root system of these trees, because the tree that failed in June did so in this general section of the recreational area. Based on the excavation of soil around the stems and the probing (using a metal irrigation probe) of the inventoried trees, the root collars the majority of the trees inventoried were buried from 6" to 18" or greater below their original soil level. For most of the walnut trees a root collar was not found despite probing up to approximately 2 feet below the current soils level.

Image 5. Tree # 12 Soil removed 24" from a tree stem and no buttress roots



Image 6. Tree # 1 Adventitious roots and potentially girdling roots growing just below the soil surface.



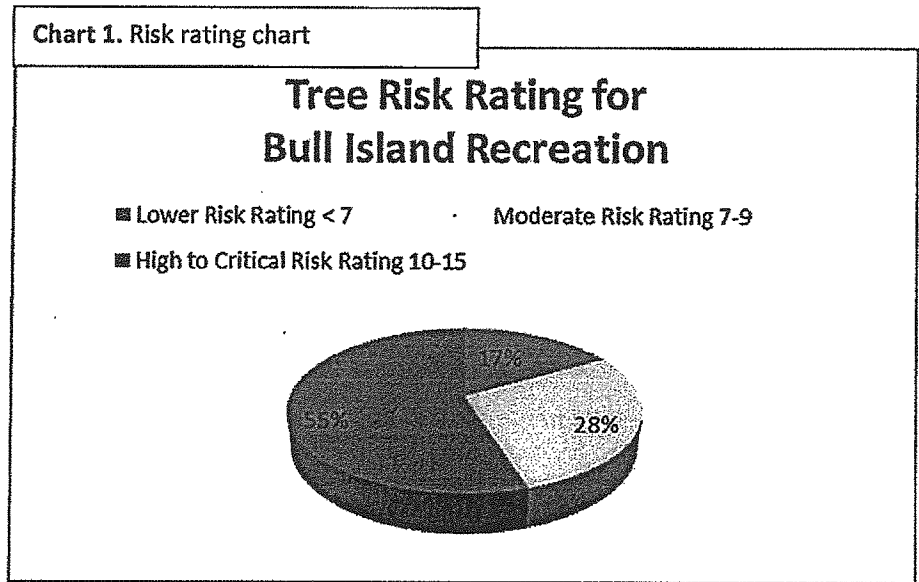
The excessive amount of soil burying the root collars of most trees can be attributed to the frequent flooding of the Delaware River (see table 1). Three of the top six highest flooding events have occurred in the last seven years. During each flooding event, soil is deposited on the island. Observations indicated that some soil might be washed away by subsequent floods, or more accumulated depending on the severity of a given event. More soil might accumulate around trees and on roots by the mechanical moving of soil to maintain roads and campsites. Over time this soil has accumulated to a depth from several inches to approximately three feet over the buttress roots and large lateral roots. The excess soil may be inducing stress to the root systems of these trees. Excess soil over root systems can reduce soil oxygen and other gas exchange, alter drainage, limit root growth, and even cause decline and death of major roots. In response to excess soil over their original root system, trees sometime produce adventitious roots – those which arise from stem tissue above the root flare.

(1) 38.85 ft on 08/20/1955	(13) 25.00 ft on 03/28/1913
(2) 35.90 ft on 10/10/1903	(14) 24.46 ft on 05/30/1984
(3) 34.07 ft on 04/03/2005	(15) 24.36 ft on 06/30/1973
(4) 33.62 ft on 06/29/2006	(16) 24.17 ft on 04/17/1983
(5) 32.45 ft on 03/19/1936	(17) 23.80 ft on 10/16/1955
(6) 30.95 ft on 09/19/2004	(18) 22.55 ft on 12/22/1973
(7) 28.72 ft on 01/20/1996	(19) 22.38 ft on 01/28/1996
(8) 27.50 ft on 05/24/1942	(20) 22.35 ft on 03/08/2011
(9) 26.47 ft on 04/01/1940	(21) 21.66 ft on 04/02/1993
(10) 25.40 ft on 12/12/1952	(22) 20.33 ft on 10/02/2010
(11) 25.20 ft on 03/12/2011	(23) 18.35 ft on 10/30/2003
(12) 25.16 ft on 03/16/1986	(24) 17.66 ft on 04/15/1994

The presence of adventitious roots may be an indication that the buttress and lateral roots are unable to function due to anaerobic conditions. This condition can predispose the roots to decay pathogens. The presence of decay can cause strength loss and reduce the vigor of the tree.

Conclusion

Based on the catastrophic failure of a large sycamore in June 2011, and the subsequent tree inventory, and examination of the root collars of the trees in this section, we conclude that a majority of trees do pose a *high to critical risk of failure*. Traffic in this section should be limited to reduced or excluded, or to eliminate risk of tree failure to people and property (the Consequence of Failure).



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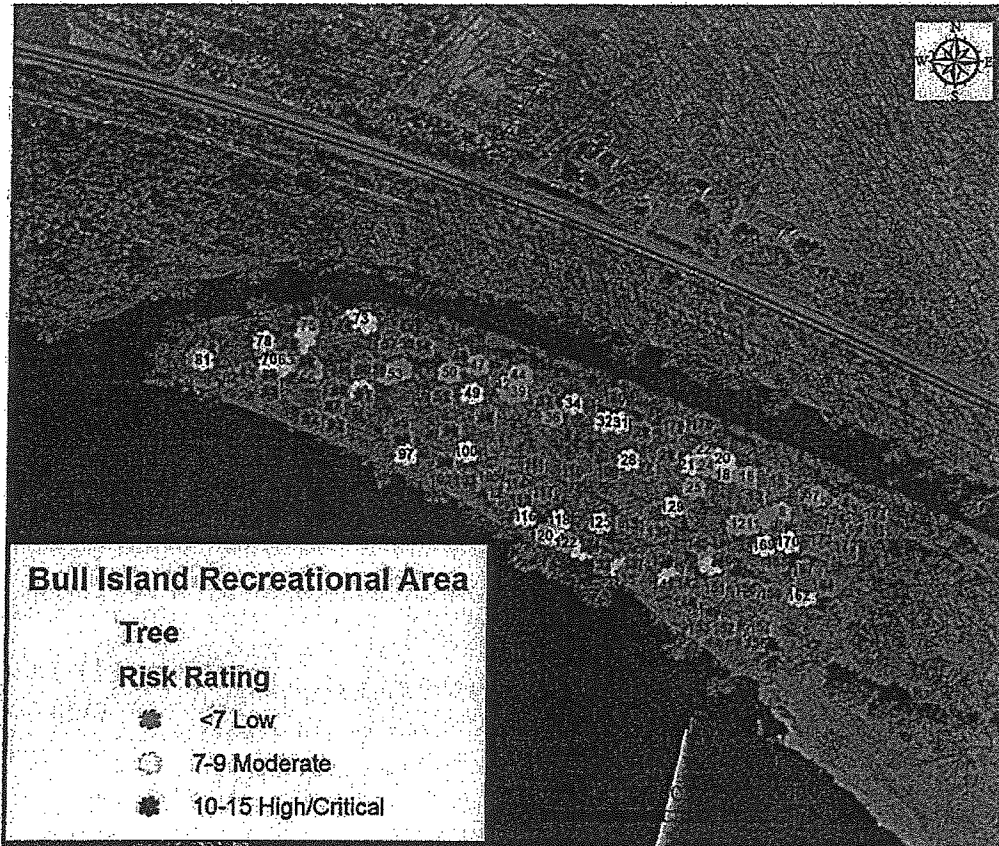


Image 7. Tree Risk Map for Bull's Island

Bibliography

Glossary

Adventitious roots - roots arising from stem tissue rather than root – a potential indicator of loss of structural roots

Buttress roots: Lateral surface roots that aid in stabilizing the tree.

Large, woody, lignified roots that arise at the base of the trunk and support the transition from trunk to roots. Structural roots that function to transfer compression and tension from the trunk to the roots and soil.

Critical Risk of Failure: Trees or tree parts are in the process of failing or prone to failure at any time.

Diameter at Breast Height (DBH): standard measure of trunk diameter at 4.5 feet above the ground

High Risk of Failure: Trees or tree parts are likely to fail during periods of stress such as wind and ice storms.

Root Collar: The transition zone between the trunk and the root system.

Root Flare or Trunk Flare: The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk. (ANSI Z60.1-2004 Nursery Stock) (ANSI A300 (Part 6)-2005 Transplanting).

Tree Risk Assessment: Closer inspection of visibly damaged, dead, defected, diseased, leaning or dying tree to determine management needs.

Trunk: That portion of a stem or stems of a tree before branching occurs

Bibliography

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Smiley, E.Thomas, Fraedrich, Bruce, Hendrickson, Neil. 2007. *Tree Risk Management Second Edition*. Bartlett Tree Research Laboratories, Charlotte, NC

Tree#	Species	DBH	Age Class	Condition	Root_Zone	Cdf	FP	Risk_Lasting	GTW_Priority	Clean	Remove	Noise	Drill_Stem	Drill_Boat	Climbing_Inspector	Defect_3	Defect_2	Defect_1
1	maple, red	20	Mature	Fair	Yes	5	6	11	2	Yes	No		No	No	No			
2	sycamore, American	38	Over-Mature	Good	Yes	5	7	12	3	Yes	No	remove vine	No	No	No			
3	oak, silver	34	Semi-Mature	Poor	Yes	3	7	9	1	No	Yes		No	No	No			
4	maple, silver	28	Mature	Poor	Yes	3	8	11	1	No	Yes		No	No	No			
5	maple, silver	28	Mature	Fair	Yes	2	7	9	1	No	Yes		No	No	No			
6	locust, black	23	Mature	Fair	Yes	4	4	12	1	Yes	No		No	No	No			
7	locust, silver	23	Semi-Mature	Good	No	2	3	5	2	Yes	No		No	No	No			
8	boxelder	13	Young	Fair	No	1	5	6	2	No	No	lean away from campsite	No	No	No			
9	boxelder	16	Over-Mature	Poor	No	1	9	10	1	No	Yes		No	No	No			
10	boxelder	17	Mature	Fair	No	1	5	6	N/A	No	Yes		No	No	No			
11	hickory speckles	29	Mature	Good	No	2	3	5	N/A	No	No	flare 12 below grade	No	No	No			
12	walnut, black	14	Mature	Fair	No	2	4	6	N/A	No	No		No	No	No			
13	walnut, black	26	Mature	Fair	No	4	7	11	1	Yes	No		No	No	No			
14	sycamore, American	42	Over-Mature	Fair	No	5	7	12	1	No	Yes		No	No	No			
15	maple, red	28	Semi-Mature	Poor	No	3	8	11	1	No	Yes		No	No	No			
16	maple, silver	38	Semi-Mature	Good	No	3	3	6	N/A	No	Yes		No	No	No			
17	maple, silver	18	Young	Good	No	2	3	5	N/A	No	Yes		No	No	No			
18	maple, silver	19	Mature	Good	No	2	3	5	N/A	No	Yes		No	No	No			
19	maple, silver	24	Mature	Fair	No	2	6	8	1	No	Yes		No	No	No			
20	maple, silver	26	Mature	Fair	No	2	6	8	1	Yes	No		No	No	No			
21	maple, silver	26	Mature	Fair	Yes	3	4	7	2	Yes	No		No	No	No			
22	locust, black	21	Mature	Good	Yes	3	4	7	2	Yes	No		No	No	No			
23	maple, silver	22	Mature	Fair	Yes	3	2	5	3	Yes	No		No	No	No			
24	poplar, yellow	26	Mature	Good	No	3	2	5	3	Yes	No		No	No	No			
25	poplar, yellow	31	Mature	Fair	No	3	6	11	N/A	Yes	No		No	No	No			
26	hickory speckles	33	Over-Mature	Fair	Yes	5	6	11	N/A	Yes	No		No	No	No			
27	sycamore, American	55	Over-Mature	Good	No	5	6	11	N/A	No	No		No	No	No			
28	walnut, black	26	Mature	Fair	No	1	6	7	N/A	No	No		No	No	No			
29	sycamore, American	57	Over-Mature	Fair	Yes	3	8	11	1	Yes	No	tree 20 ft growing top over road adding weight to tree 19	No	No	No			
30	locust, black	19	Mature	Poor	No	2	7	9	1	No	Yes		No	No	No			
31	maple, silver	21	Mature	Fair	Yes	5	3	8	N/A	Yes	No		No	No	No			
32	maple, silver	23	Mature	Good	Yes	5	3	8	N/A	No	No		No	No	No			
33	maple, silver	29	Mature	Fair	Yes	4	5	9	1	Yes	No		No	No	No			
34	maple, silver	18	Mature	Good	Yes	5	3	8	3	Yes	No		No	No	No			
35	maple, red	59	Over-Mature	Good	Yes	5	8	13	1	Yes	No		No	No	No			
36	maple, sugar	17	Mature	Good	Yes	3	2	5	N/A	No	No		No	No	No			
37	sycamore, American	51	Over-Mature	Good	Yes	3	6	9	2	Yes	No		No	No	No			
38	maple, silver	21	Mature	Good	No	1	3	4	N/A	Yes	No		No	No	No			
39	maple, silver	12	Semi-Mature	Good	No	1	2	3	N/A	No	No		No	No	No			
40	locust, black	24	Semi-Mature	Fair	No	2	6	8	2	Yes	No		No	No	No			
41	locust, black	26	Mature	Fair	No	2	8	10	1	Yes	No		No	No	No			
42	maple, silver	22	Semi-Mature	Fair	No	3	3	5	N/A	No	Yes		No	No	No			
43	maple, silver	13	Semi-Mature	Fair	Yes	3	3	6	N/A	No	No		No	No	No			
44	boxelder	32	Semi-Mature	Fair	Yes	1	4	9	1	No	Yes		No	No	No			
45	sycamore, American	49	Mature	Good	No	5	4	9	N/A	Yes	No		No	No	No			
46	sycamore, American	29	Mature	Fair	No	4	7	11	N/A	No	No		No	No	No			
47	poplar, yellow	24	Over-Mature	Fair	Yes	3	7	10	1	Yes	No		No	No	No			
48	boxelder	24	Over-Mature	Fair	Yes	3	7	10	1	No	Yes		No	No	No			
49	walnut, black	21	Mature	Good	No	2	6	8	N/A	No	No		No	No	No			
50	hackberry	20	Mature	Good	No	3	6	10	N/A	No	No		No	No	No			
51	sycamore, American	59	Over-Mature	Good	No	4	6	10	N/A	No	No		No	No	No			
52	ash, green	13	Mature	Fair	No	1	5	6	N/A	No	No		No	No	No			
53	ash, green	22	Mature	Fair	No	2	4	6	N/A	No	No		No	No	No			
54	poplar, yellow	28	Mature	Good	Yes	5	5	10	2	Yes	No		No	No	No			
55	locust, black	21	Mature	Good	Yes	4	6	10	2	Yes	No		No	No	No			
56	locust, black	17	Mature	Fair	Yes	3	7	10	1	Yes	No		No	No	No			
57	locust, black	31	Mature	Fair	Yes	2	7	9	1	No	Yes		No	No	No			
58	poplar, yellow	27	Mature	Good	Yes	5	6	11	1	No	Yes		No	No	No			
59	boxelder	31	Over-Mature	Poor	No	2	8	10	1	No	Yes		No	No	No			
60	boxelder	24	Over-Mature	Poor	No	3	7	10	1	No	Yes		No	No	No			

60	bitarwood, American	12	Semi-Mature	Fair	Yes	No	No	No	No	No	No	Poor Branch Structure	Wound	Cavity
61	bitarwood, American	23	Mature	Fair	Yes	No	No	No	No	No	No	Codepinitates Stems	Wound	
62	walnut, black	1	Mature	Good	Yes	No	No	No	No	No	No	Wounds	Deadwood >2	
63	hickory species	15	Semi-Mature	Good	Yes	No	No	No	No	No	No	Cavity	Lean	
64	chestnut, northern	32	Over-Mature	Fair	Yes	No	No	No	No	No	No	Wounds		
65	boxelder	13	Mature	Poor	Yes	No	No	No	No	No	No	Wounds		
66	maple, sugar	16	Semi-Mature	Good	Yes	No	No	No	No	No	No	Wounds		
67	maple, sugar	31	Semi-Mature	Good	Yes	No	No	No	No	No	No	Wounds		
68	walnut, black	31	Mature	Fair	Yes	No	No	No	No	No	No	Wounds		
69	hackberry	14	Semi-Mature	Good	Yes	No	No	No	No	No	No	Poor Branch Structure		
70	locust, black	15	Mature	Good	Yes	No	No	No	No	No	No	Wounds		
71	locust, black	18	Mature	Good	Yes	No	No	No	No	No	No	Wounds		
72	boxelder	19	Mature	Good	Yes	No	No	No	No	No	No	Wounds		
73	boxelder	19	Mature	Good	Yes	No	No	No	No	No	No	Poor Branch Structure		
74	maple, silver	74	Semi-Mature	Fair	No	No	No	No	No	No	No	Cavity		
75	locust, black	19	Mature	Good	Yes	No	No	No	No	No	No	Deadwood >2		
76	ash, green	26	Mature	Poor	Yes	No	No	No	No	No	No	Deadwood <2		
77	sycamore, American	47	Over-Mature	Good	Yes	No	No	No	No	No	No	Codepinitates Stems		
78	maple, sugar	22	Semi-Mature	Fair	Yes	No	No	No	No	No	No	Codepinitates Stems		
79	maple, silver	17	Mature	Fair	Yes	No	No	No	No	No	No	Poor Branch Structure		
80	sycamore, American	36	Mature	Good	Yes	No	No	No	No	No	No	Wounds		
81	maple, silver	17	Semi-Mature	Fair	Yes	No	No	No	No	No	No	Hanger		
82	sycamore, American	48	Over-Mature	Good	Yes	No	No	No	No	No	No	Wounds		
83	sycamore, American	47	Over-Mature	Fair	Yes	No	No	No	No	No	No	Wounds		
84	walnut, black	25	Mature	Good	Yes	No	No	No	No	No	No	Cavity		
85	boxelder	30	Over-Mature	Poor	Yes	No	No	No	No	No	No	Uneven Crown		
86	maple, silver	37	Mature	Fair	Yes	No	No	No	No	No	No	Codepinitates Stems		
87	hackberry	12	Semi-Mature	Good	Yes	No	No	No	No	No	No	Deadwood >2		
88	sycamore, American	44	Mature	Good	Yes	No	No	No	No	No	No	Cavity		
89	maple, silver	25	Mature	Good	Yes	No	No	No	No	No	No	Poor Branch Structure		
90	maple, silver	25	Mature	Fair	Yes	No	No	No	No	No	No	Codepinitates Stems		
91	poplar, yellow	19	Semi-Mature	Good	No	No	No	No	No	No	No	Codepinitates Stems		
92	boxelder	28	Over-Mature	Poor	Yes	No	No	No	No	No	No	Codepinitates Stems		
93	maple, silver	42	Over-Mature	Fair	Yes	No	No	No	No	No	No	Cavity		
94	maple, silver	42	Over-Mature	Fair	Yes	No	No	No	No	No	No	Lean		
95	ash, green	16	Semi-Mature	Poor	Yes	No	No	No	No	No	No	Deadwood >2		
96	sycamore, American	25	Over-Mature	Fair	Yes	No	No	No	No	No	No	Cavity		
97	sycamore, American	48	Mature	Good	Yes	No	No	No	No	No	No	Codepinitates Stems		
98	sycamore, American	41	Mature	Good	Yes	No	No	No	No	No	No	Codepinitates Stems		
99	sycamore, American	19	Semi-Mature	Good	Yes	No	No	No	No	No	No	Codepinitates Stems		
100	locust, black	23	Mature	Good	Yes	No	No	No	No	No	No	Cavity		
101	maple, silver	28	Mature	Fair	Yes	No	No	No	No	No	No	Lean		
102	boxelder	12	Semi-Mature	Poor	Yes	No	No	No	No	No	No	Codepinitates Stems		
103	maple, silver	38	Semi-Mature	Fair	Yes	No	No	No	No	No	No	Cavity		
104	maple, silver	38	Semi-Mature	Fair	Yes	No	No	No	No	No	No	Cavity		
105	maple, silver	16	Semi-Mature	Good	No	No	No	No	No	No	No	Codepinitates Stems		
106	poplar, yellow	24	Semi-Mature	Good	No	No	No	No	No	No	No	Wounds		
107	boxelder	17	Mature	Poor	No	No	No	No	No	No	No	Wounds		
108	sycamore, American	40	Mature	Good	No	No	No	No	No	No	No	Wounds		
109	sycamore, American	24	Mature	Good	No	No	No	No	No	No	No	Lean		
110	boxelder	20	Mature	Fair	No	No	No	No	No	No	No	Lean		
111	boxelder	37	Over-Mature	Fair	No	No	No	No	No	No	No	Lean		
112	maple, silver	37	Over-Mature	Fair	Yes	No	No	No	No	No	No	Poor Branch Structure		
113	maple, silver	29	Over-Mature	Fair	Yes	No	No	No	No	No	No	Poor Branch Structure		
114	mullberry species	18	Over-Mature	Fair	Yes	No	No	No	No	No	No	Storm Damage		
115	pine, white	12	Semi-Mature	Fair	Yes	No	No	No	No	No	No	Storm Damage		
116	pine, white	34	Over-Mature	Fair	Yes	No	No	No	No	No	No	Storm Damage		
117	boxelder	24	Over-Mature	Poor	Yes	No	No	No	No	No	No	Storm Damage		
118	pine, white	14	Semi-Mature	Good	Yes	No	No	No	No	No	No	Cavity		
119	maple, silver	28	Mature	Fair	No	No	No	No	No	No	No	Codepinitates Stems		
120	sycamore, American	26	Mature	Good	No	No	No	No	No	No	No	Lean		
121	sycamore, American	31	Mature	Good	Yes	No	No	No	No	No	No	Lean		

122	spycamore, American	29	Mature	Good	No	No	No	No	No	2 trees	No	No	No	No	No	Lean	Poor Branch Structure	Poor Branch Structure
123	spycamore, American	47	Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Deadwood <2	Deadwood <2
124	mulberry species	20	Mature	Good	No	No	No	No	No		No	No	No	No	No	Sweep	Deadwood <2	Lean
125	hackberry	18	Mature	Good	No	No	No	No	No		No	No	No	No	No	Storm Damage	Lean	Lean
126	boxelder	23	Over-Mature	Poor	No	Yes	No	No	Yes	no roots top 18"	No	No	No	No	No	Cavity	Deadwood <2	Poor Branch Structure
127	spycamore, American	35	Over-Mature	Poor	No	Yes	No	No	Yes	no roots top 18"	No	No	No	No	No	Lean	Deadwood <2	Poor Branch Structure
128	walnut, black	22	Mature	Fair	No	No	No	No	No		No	No	No	No	No	Sweep	Poor Branch Structure	Poor Branch Structure
129	boxelder	24	Mature	Fair	No	No	No	No	No		No	No	No	No	No	Cavity	Poor Branch Structure	Poor Branch Structure
130	boxelder	20	Over-Mature	Poor	No	Yes	No	No	Yes	no roots 18"	No	No	No	No	No	Lean	Deadwood <2	Lean
131	boxelder	17	Over-Mature	Poor	No	Yes	No	No	Yes		No	No	No	No	No	Cavity	Poor Branch Structure	Poor Branch Structure
132	maple, silver	38	Over-Mature	Poor	No	Yes	No	No	Yes		No	No	No	No	No	Lean	Deadwood <2	Lean
133	maple, silver	37	Over-Mature	Poor	No	Yes	No	No	Yes		No	No	No	No	No	Sweep	Poor Branch Structure	Poor Branch Structure
134	spycamore, American	34	Mature	Good	Yes	No	No	No	No		No	No	No	No	No	Lean	Deadwood <2	Lean
135	maple, silver	32	Over-Mature	Fair	Yes	No	No	No	Yes		No	No	No	No	No	Sweep	Poor Branch Structure	Poor Branch Structure
136	spycamore, American	21	Mature	Fair	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
137	spycamore, American	20	Semi-Mature	Fair	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
138	spycamore, American	32	Mature	Fair	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
139	maple, silver	21	Over-Mature	Fair	No	No	No	No	No	lean away from target	No	No	No	No	No	Lean	Lean	Lean
140	maple, silver	20	Mature	Good	No	No	No	No	No	lean away from target	No	No	No	No	No	Lean	Lean	Lean
141	spycamore, American	40	Over-Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
142	spycamore, American	24	Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
143	spycamore, American	24	Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
144	maple, silver	24	Semi-Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
145	hackberry	22	Semi-Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
146	walnut, black	20	Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
147	spycamore, American	42	Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
148	spycamore, American	28	Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
149	spycamore, American	40	Mature	Good	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
150	spycamore, American	23	Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
151	maple, silver	20	Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
152	maple, silver	40	Over-Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
153	spycamore, American	52	Mature	Good	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
154	spycamore, American	33	Mature	Good	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
155	pine, white	14	Semi-Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
156	pine, white	41	Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
157	spycamore, American	43	Mature	Good	Yes	No	No	No	Yes	roots about 6"	No	No	No	No	No	Lean	Lean	Lean
158	spycamore, American	41	Mature	Good	Yes	No	No	No	Yes	roots about 12"	No	No	No	No	No	Lean	Lean	Lean
159	boxelder	17	Over-Mature	Poor	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
160	basewood, Antiofan	28	Mature	Fair	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
161	hackberry	17	Semi-Mature	Good	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
162	Hedera species	13	Semi-Mature	Good	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
163	spycamore, American	60	Over-Mature	Good	Yes	No	No	No	Yes	amazing tree 145'	No	No	No	No	No	Lean	Lean	Lean
164	pine, white	22	Mature	Fair	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
165	pine, white	13	Mature	Fair	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
166	pine, white	15	Mature	Fair	Yes	No	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
167	pine, white	15	Semi-Mature	Poor	Yes	No	No	No	Yes	18" off roots	No	No	No	No	No	Lean	Lean	Lean
168	pine, white	15	Semi-Mature	Poor	No	Yes	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
169	hackberry	28	Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
170	hackberry	18	Semi-Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
171	hackberry	29	Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
172	hackberry	27	Mature	Good	No	Yes	No	No	Yes		No	No	No	No	No	Lean	Lean	Lean
173	hackberry	15	Semi-Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
174	hackberry	27	Semi-Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
175	maple, silver	33	Over-Mature	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
176	maple, silver	23	Young	Good	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
177	loquat, black	19	Mature	Poor	No	No	No	No	No		No	No	No	No	No	Lean	Lean	Lean
178	poplar, yellow	33	Mature	Fair	No	Yes	No	No	Yes	backfilled root collar built 12"	No	No	No	No	No	Lean	Lean	Lean
179	maple, silver	24	Mature	Fair	No	Yes	No	No	Yes	backfilled root collar	No	No	No	No	No	Lean	Lean	Lean
180	boxelder	20	Mature	Fair	No	Yes	No	No	Yes	backfilled root collar 24"	No	No	No	No	No	Lean	Lean	Lean