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FOREST AND WILDLIFE RESEARCH CENTER

DEPARTMENT OF SUSTAINABLE BIOPRODUCTS

Fifth Annual Evaluation of Phase II MSU/RTA Alternative Preservative Study

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This report covers the 5th annual evaluation of the full length crossties exposed as part of the MSU/RTA Phase II alternative preservative study. A visual evaluation of the exposed top surface was conducted for all ties at both exposure sites. Random ties from various treatment groups, at both sites, were selected to be examined on all four surfaces.

General Observations:

No unexpected results were found. As noted in previous reports Site 2 ties appeared to be a drier probably due to more direct sunlight exposure allowing for more checking. Ties at Site 1 appeared to be more moist/wet due to the increased shade and leaf litter at this site and thus more signs of decay were noted at this site.

General photographs documenting the condition of the sites and some of the noted deterioration can be seen below (Figures 1 - 8). The tie number denotes the position of exposure as recorded on the plot-maps and inspection forms.

Copies of the inspection forms can be found in the appendix.

Site 1 – Dorman Lake Research Site



Figure 1 - Site 1 (MSU Dorman Lake Test Site) at the time of inspection.



Figure 2 - Tie #173 with light decay.



Figure 3 - Tie #104 with decay and trace termite damage.

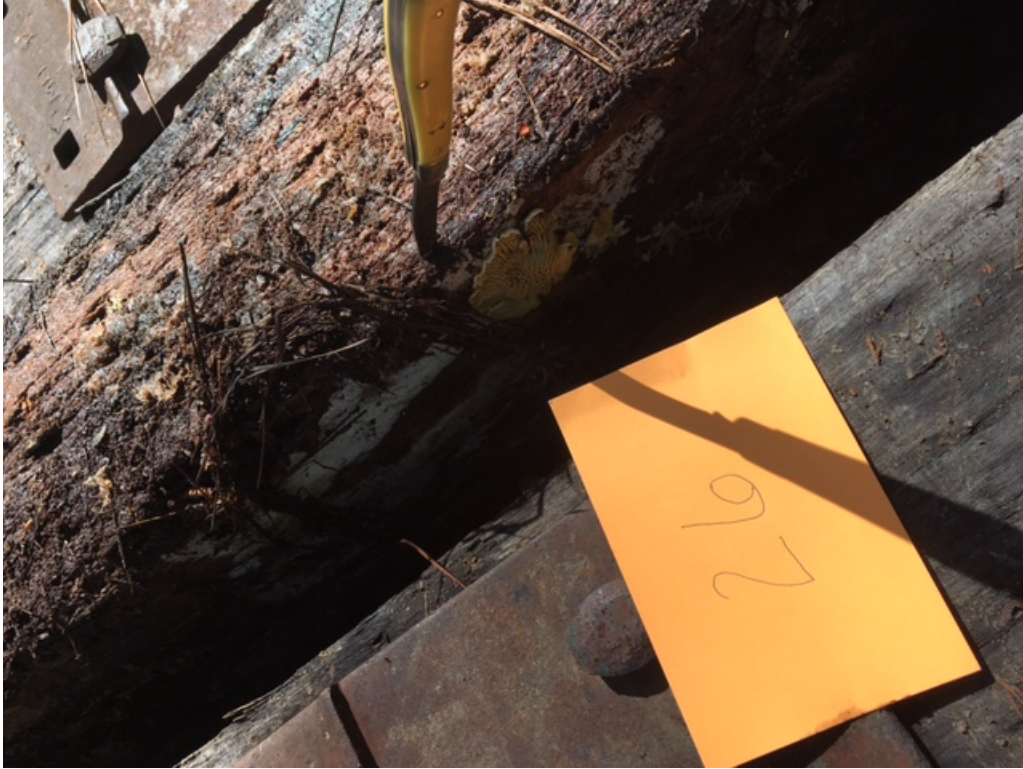


Figure 4 - Tie #26 with decay and slight termite damage.

Site 2 - MSU Formosan Termite Facility



Figure 5 - Site 2 at the time of inspection.



Figure 6 - Tie #34 with decay and slight termite damage.



Figure 7 - Tie #104 with "iron stain".



Figure 8 - Tie #247 with severe decay and trace termite damage.

APPENDIX:

Plot Map RTA Phase II Ties (Dorman Lake Site 1)
 Position Row 1 runs West -East (Northern most row)

			April-17					
			Decay	Termite	Decay	Termite	Comments	
Koppers	1	T6	WO-Bor-6#	x	x	x	x	cut 2016
	2	T6		10	10			
	3	T6		10	10			
	4	T6		10	10			
	5	T6		10	10			
	6	T6		10	10			
	7	T6		10	10			
	8	T6		10	10			
	9	T6		10	10			
	10	T6		10	10			CK
	11	T70	RO-Bor-7#	x	x	x	x	cut 2016
	12	T70		10	10			
	13	T70		10	10			
	14	T70		10	10			
	15	T70		10	10			loose plate/ck
	16	T70		10	10			
	17	T70		10	10			
	18	T70		10	10			
	19	T70		10	10			CK
	20	T70		10	10			CK
	21	blank tag	Unt. RO	x	x	x	x	cut 2016
	22	blank tag		9	10			
	23	blank tag		9	10			CK
	24	blank tag		9	10			
	25	blank tag		9	10			
	26	blank tag		8	9.5			
	27	blank tag		9	10			
	28	blank tag		9	10			
	29	blank tag		9	10			
	30	blank tag		9	10			CK
	31	T10	RO-Creo-7#	x	x	x	x	cut 2016
	32	T10		10	10			
	33	T10		10	10			
	34	T10		10	10			
	35	T10		10	10			CK
	36	T10		10	10			CK
	37	T10		10	10			
	38	T10		10	10			
	39	T10		10	10			CK
	40	T10		10	10			CK
	41	T7	WO-Bor-7#	x	x	x	x	cut 2016
	42	T7		10	10			
	43	T7		10	10			
	44	T7		10	10			CK
	45	T7		10	10			CK
	46	T7		10	10			
	47	T7		10	10			CK
	48	T7		10	10			
	49	T7		10	10			
	50	T7		10	10			CK
	51	T60	RO-Bor-6#	x	x	x	x	cut 2016
	52	T60		10	10			
	53	T60		10	10			

	54	T60		10	10				
	55	T60		10	10				
	56	T60		10	10				
	57	T60		10	10				
	58	T60		10	10				
	59	T60		10	10				
	60	T60		10	10				
Stella-Jones	61	RO-1 step	x		x	x	x	cut 2016	
	62	RO-1 step		10	10			CK	
	63	RO-1 step		10	10			CK	
	64	RO-1 step		10	10				
	65	RO-1 step		10	10				
	66	RO-1 step		10	10				
	67	RO-1 step		10	10				
	68	RO-1 step		10	10				
	69	RO-1 step		10	10				
	70	RO-1 step		10	10				
	71	WO-Creo	x		x	x	x	cut 2016	
	72	WO-Creo		10	10			CK	
	73	WO-Creo		10	10				
	74	WO-Creo		10	10				
	75	WO-Creo		10	10				
	76	WO-Creo		10	10				
	77	WO-Creo		10	10				
	78	WO-Creo		10	10			CK	
	79	WO-Creo		10	10				
	80	WO-Creo		10	10				
	81	WO-1 step	x		x	x	x	cut 2016	
	82	WO-1 step		10	10				
	83	WO-1 step		10	10			CK	
	84	WO-1 step		10	10				
	85	WO-1 step		10	10				
	86	WO-1 step		10	10				
	87	WO-1 step		10	10				
	88	WO-1 step		10	10				
	89	WO-1 step		10	10				
	90	WO-1 step		10	10				
	91	WO-Unt	x		x	x	x	cut 2016	
	92	WO-Unt		9	10				
	93	WO-Unt		9	10				
	94	WO-Unt		9	10			CK	
	95	WO-Unt		8	10				
	96	WO-Unt		9	10				
	97	WO-Unt		9	10				
	98	WO-Unt		9	10				
	99	WO-Unt		8	10			FB	
	100	WO-Unt		8	10				
Lonza	101	784	DF-Unt.	x		x	x	cut 2016	
	102	783		9	10				
	103	782		8	9				
	104	781		8	9.5			FB/CK	
	105	789		9	9				
	106	788		9	9				
	107	787		9	9				
	108	786		9	9			FB	
	109	785		9	9				
	110	790		9	9				

111	684	DF-DOT-ACZA	x		x		x	x	cut 2016
112	683			10	10				
113	682			10	10				
114	681			10	10				
115	689			10	10				CK
116	688			10	10				
117	687			10	10				
118	686			10	10				
119	685			10	10				CK
120	690			10	10				
121	581	RO-DOT-ACZA-Oil	x		x		x	x	cut 2016
122	586			10	10				CK
123	587			10	10				CK
124	584			10	10				
125	583			10	10				CK
126	582			10	10				CK
127	585			10	10				CK
128	590			10	10				CK
129	589			10	10				CK
130	588			10	10				CK
131	735	RO-ACZA-Oil	x		x		x	x	cut 2016
132	734			10	10				CK
133	732			10	10				CK
134	733			10	10				CK
135	731			10	10				CK
136	775	WO-ACZA-Oil	x		x		x	x	cut 2016
137	774			10	10				CK
138	773			10	10				
139	772			10	10				
140	771			10	10				
141	524	WO-DOT-ACZA-Oil	x		x		x	x	cut 2016
142	523			10	10				
143	522			10	10				loose plate/CK
144	521			10	10				loose plate/CK
145	529			10	10				
146	528			10	10				
147	527			10	10				CK
148	526			10	10				
149	530			10	10				
150	525			10	10				CK
151	641	RO-DOT-ACZA-Oil	x		x		x	x	cut 2016
152	646			10	10				
153	642			10	10				
154	643			10	10				CK
155	644			10	10				CK
156	645			10	10				CK
157	647			10	10				CK
158	648			10	10				CK
159	649			10	10				CK
160	650			10	10				CK
161	702	RO-ACZA	x		x		x	x	cut 2016
162	703			10	10				
163	704			10	10				
164	705			10	10				
165	709			10	10				CK
166	708			10	10				
167	707			10	10				

168	706			10	10				
169	710			10	10			CK	
170	701			10	10				
171	747	WO-ACZA	x		x	x	x	cut 2016	
172	746			10	10			CK	
173	742			9.5	10				
174	741			10	10			CK	
175	744			10	10				
176	749			10	10				
177	748			10	10			CK	
178	743			10	10				
179	745			10	10				
180	750			10	10				
181	803	DF-P2	x		x	x	x	cut 2016	
182	802			10	10			CK	
183	806			10	10			CK	
184	808			10	10				
185	807			10	10			CK	
186	805			10	10			CK	
187	804			10	10				
188	810			10	10				
189	809			10	10				
190	801			10	10			CK	
191	544	WO-ACZA-ET	x		x	x	x	cut 2016	
192	543			10	10				
193	542			10	10			CK	
194	541			10	10				
195	549			10	10				
196	548			10	10			CK	
197	547			10	10			CK	
198	546			10	10				
199	545			10	10			CK	
200	550			10	10			CK	
201	664	DF-ACZA-DOT-ET	x		x	x	x	cut 2016	
202	663			10	10				
203	662			10	10			CK	
204	661			10	10				
205	669			10	10			CK	
206	668			10	10				
207	667			10	10				
208	666			10	10				
209	665			10	10			CK	
210	670			10	10				
211	627	RO-ACZA-ET	x		x	x	x	cut 2016	
212	628			10	10				
213	629			10	10				
214	630			10	10				
215	622			10	10			CK	
216	623			10	10				
217	624			10	10			CK	
218	625			10	10			CK	
219	626			10	10				
220	621			10	10			CK	
221	502	WO-ACZA-DOT	x		x	x	x	cut 2016	
222	503			10	10			CK	
223	504			10	10			CK	
224	505			10	10				

225	507			10	10				
226	508			10	10				
227	509			10	10			CK	
228	510			10	10			CK	
229	501			10	10			CK	
230	506			10	10			CK	
231	564	WO-DOT-ACZA-ET	x		x	x	x	cut 2016	
232	563			10	10				
233	562			9.5	10				
234	561			10	10			CK	

Position Row 2 runs West -East (Southern most row)

April-17

				Decay	Termite	Decay	Termite	Comments
235	569			10	10			
236	568			10	10			
237	567			10	10			
238	566			10	10			
239	565			10	10			
240	570			10	10			CK
241	604	RO-DOT-ACZA-ET	x		x	x	x	cut 2016
242	603			10	10			
243	602			10	10			
244	601			10	10			CK
245	609			10	10			
246	608			10	10			CK
247	607			10	10			
248	606			10	10			
249	605			10	10			
250	610			10	10			CK

CK=check

FB=fruiting body

Plot Map RTA Phase II Ties (McNeill Site 2)
 Position Row 1 runs East - West (Southern most row)

Mar-17

			Decay	Termite	Decay	Termite	Comments	
Stella Jones	1	WO-Creo	10	10			check/bowed	
	2	WO-Creo	x	x	x	x	cut 2016	
	3	WO-Creo	10	10			check	
	4	WO-Creo	10	10			check	
	5	WO-Creo	10	10			check	
	6	WO-Creo	10	10			check	
	7	WO-Creo	10	10			check	
	8	WO-Creo	10	10			check	
	9	WO-Creo	10	10			split	
	10	WO-Creo	10	10			split	
	11	1-Step-RO	x	x	x	x	cut 2016	
	12	1-Step-RO	10	10			check	
	13	1-Step-RO	10	10			check	
	14	1-Step-RO	10	10			check	
	15	1-Step-RO	10	10			check	
	16	1-Step-RO	10	10			check	
	17	1-Step-RO	9.5	10			defect top South end/DK top	
	18	1-Step-RO	10	10			check	
	19	1-Step-RO	10	10			check	
	20	1-Step-RO	10	10			check	
	21	1-Step-WO	x	x	x	x	cut 2016	
	22	1-Step-WO	10	10			check	
	23	1-Step-WO	10	10			check	
	24	1-Step-WO	10	10			check	
	25	1-Step-WO	10	10			check	
	26	1-Step-WO	10	10			check	
	27	1-Step-WO	10	10				
	28	1-Step-WO	10	10			check	
	29	1-Step-WO	10	10			check	
	30	1-Step-WO	10	10				
	31	Unt. - WO	x	x	x	x	cut 2016	
32	Unt. - WO	9	10			FB		
33	Unt. - WO	9.5	10			FB		
34	Unt. - WO	9	9.5			DK top S end/retics		
35	Unt. - WO	10	10			check		
36	Unt. - WO	10	10			check		
37	Unt. - WO	9	10					
38	Unt. - WO	9.5	10					
39	Unt. - WO	9.5	9.5			DK top S end		
40	Unt. - WO	8	10			FB/beetle dmg		
Lonza	41	572	WO-DOT-ACZA-ET	x	x	x	x	cut 2016
	42	573		10	10			
	43	574		10	10			
	44	575		10	10			check
	45	576		10	10			
	46	577		10	10			
	47	578		10	10			
	48	579		10	10			check
	49	580		10	10			

50	571			10	10				
51	611	RO-DOT-ACZA-ET	x		x	x	x	cut 2016	
52	612			10	10			check/LP	
53	613			10	10			check/LP	
54	614			10	10			check/LP	
55	615			10	10			check/LP	
56	617			10	10			check/LP	
57	618			10	10			check/LP	
58	619			10	10			LP	
59	620			10	10			check/LP	
60	616			10	10			LP	
61	675	DF-DOT-ACZA-ET	x		x	x	x	cut 2016	
62	674			10	10			check/LP	
63	673			10	10			check/LP	
64	672			10	10			check	
65	671			10	10			check/LP	
66	679			10	10			check	
67	678			10	10				
68	677			10	10				
69	676			10	10			check/LP	
70	680			10	10				
71	555	WO-ACZA-ET	x		x	x	x	cut 2016	
72	554			10	10			check	
73	553			10	10				
74	552			10	10			check	
75	551			10	10			LP	
76	560			10	10			LP	
77	559			10	10			check/LP	
78	558			9.5	10				
79	557			10	10			LP	
80	556			10	10				
81	640	RO-ACZA-ET	x		x	x	x	cut 2016	
82	639			10	10			check/LP	
83	638			10	10				
84	637			10	10			LP	
85	636			10	10			LP	
86	635			10	10			check/LP	
87	634			10	10			check/LP	
88	633			10	10			check	
89	632			10	10			check/LP	
90	631			10	10				
91	695	DF-DOT-ACZA	x		x	x	x	cut 2016	
92	694			10	10			end plate corroded/LP	
93	693			10	10			check/end plat corroded/LP	
94	692			10	10			end plate corroded/check	
95	691			10	10			end plate corroded	
96	699			10	10			end plate corroded/check	
97	698			10	10			end plate corroded/check	
98	697			10	10			end plate corroded/check/LP	

99	696			10	10			end plate corroded
100	700			10	10			end plate corroded
101	795	DF-Unt.	x		x	x	x	cut 2016
102	794			10	10			check/IS
103	793			10	10			check/IS
104	792			10	10			check/IS
105	791			10	10			check/IS
106	800			9.5	10			FB/IS
107	799			10	10			check/IS
108	798			10	10			FB/check/IS
109	797			10	10			check/IS
110	796			10	10			check/LP
111	755	WO-ACZA	x		x	x	x	cut 2016
112	754			10	10			end plate corroded
113	753			10	10			end plate corroded
114	752			10	10			end plate corroded/check/LP
115	751			10	10			end plate corroded
116	760			10	10			Knot/burl under plate area N end
117	759			10	10			end plate corroded
118	758			10	10			check/end plat corroded
119	757			10	10			check/end plat corroded
120	756			10	10			end plate corroded
121	712	RO-ACZA	x		x	x	x	cut 2016
122	713			10	10			end plate corroded
123	714			10	10			end plate corroded
124	715			10	10			end plate corroded
125	717			10	10			end plate corroded
126	718			10	10			end plate corroded
127	719			10	10			end plate corroded
128	720			10	10			end plate corroded/check
129	716			10	10			end plate corroded/LP
130	711			10	10			end plate corroded
131	511	WO-ACZA-DOT	x		x	x	x	cut 2016
132	512			10	10			end plate corroded
133	513			10	10			end plate corroded
134	514			10	10			end plate corroded/check/LP
135	515			10	10			end plate corroded
136	516			10	10			end plate corroded
137	517			10	10			end plate corroded
138	518			10	10			end plate corroded
139	519			10	10			end plate corroded
140	520			10	10			end plate corroded
Row 2 runs East - West (middle row)								
Lonza	141	595	RO-DOT-ACZA-Oil	x		x	x	cut 2016
	142	594			10	10		check
	143	593			10	10		check/LP
	144	592			10	10		check/LP
	145	600			10	10		check
	146	599			10	10		LP
	147	598			10	10		check
	148	597			10	10		check/LP

149	596			10	10			check/LP
150	591			10	10			check
151	740	RO-ACZA-Oil	x		x	x	x	cut 2016
152	739			10	10			check
153	738			10	10			severe check/LP
154	737			10	10			severe check
155	736			10	10			check/LP
156	779	WO-ACZA-Oil	x		x	x	x	cut 2016
157	780			10	10			check/LP
158	777			10	10			LP
159	778			10	10			LP
160	776			10	10			
161	655	RO-DOT-ACZA-Oil	x		x	x	x	cut 2016
162	654			10	10			split
163	653			10	10			check
164	652			10	10			split
165	660			10	10			check
166	659			10	10			check
167	658			10	10			check
168	657			10	10			check
169	651			10	10			check
170	656			10	10			check
171	531	WO-DOT-ACZA-Oil	x		x	x	x	cut 2016
172	532			10	10			check
173	533			10	10			check
174	534			10	10			check/LP
175	536			10	10			
176	537			10	10			
177	538			10	10			check
178	539			10	10			sever check - holding water
179	540			10	10			
180	535			10	10			sever check - holding water/LP
181	820	DF-P2	x		x	x	x	cut 2016
182	817			10	10			check
183	819			10	10			check
184	811			10	10			
185	815			10	10			
186	816			10	10			
187	814			10	10			
188	813			10	10			
189	818			10	10			check
190	812			10	10			
Koppers	191	WO-Bor-6#	x		x	x	x	cut 2016
	192	T6		10	10			check & split S end
	193	T6		10	10			check/LP
	194	T6		10	10			
	195	T6		10	10			LP
	196	T6		10	10			
	197	T6		10	10			check
	198	T6		10	10			
	199	T6		10	10			check

200	T6			10	10			LP
201	T7	WO-Bor-7#	x		x	x	x	cut 2016
202	T7			10	10			
203	T7			10	10			
204	T7			10	10			check
205	T7			10	10			check
206	T7			10	10			
207	T7			10	10			check
208	T7			10	10			check
209	T7			10	10			
210	T7			10	10			severe check/bad tie
211	T70	RO-Bor-7#	x		x	x	x	cut 2016
212	T70			10	10			check/LP
213	T70			10	10			
214	T70			10	10			check
215	T70			10	10			check
216	T70			10	10			
217	T70			10	10			
218	T70			10	10			
219	T70			10	10			
220	T70			10	10			check
221	T60	RO-Bor-6#	x		x	x	x	cut 2016
222	T60			10	10			check
223	T60			10	10			
224	T60			10	10			
225	T60			10	10			check
226	T60			10	10			
227	T60			10	10			LP
228	T60			10	10			check
229	T60			10	10			
230	T60			10	10			
231	T10	RO-Creo-7#	x		x	x	x	cut 2016
232	T10			10	10			
233	T10			10	10			check
234	T10			10	10			check
235	T10			10	10			
236	T10			10	10			
237	T10			10	10			check/LP
238	T10			10	10			
239	T10			10	10			check
240	T10			10	10			check
241	blank tag	Unt. RO	x		x	x	x	cut 2016
242	blank tag			9	10			FB
243	blank tag			9	10			
244	blank tag			9	10			FB
245	blank tag			9	10			
246	blank tag			9	10			
247	blank tag			6	9.5			FB/split/gator
248	blank tag			9	10			FB
249	blank tag			8	10			split/gator
250	blank tag			9	10			

Report Authorized By:



Date: 6/01/17

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Applicable Standards:
None: