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FOREST AND WILDLIFE RESEARCH CENTER

DEPARTMENT OF SUSTAINABLE BIOPRODUCTS

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

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This report covers the 6th annual evaluation of the full length cross-ties 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 - 9). 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 #25 with decay and beetle damage.



Figure 3 - Tie #30 with decay damage.



Figure 4 - Tie #99 with decay on upper surface.



Figure 5 - Tie #103 with moderate decay.

Site 2 - MSU Formosan Termite Facility



Figure 6 - Site 2 at the time of inspection.



Figure 7 - Tie #40 with decay.



Figure 8 - Tie #110 with decay and trace termite attack.



Figure 9 - Tie #250 with heavy 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)

				May-18					
				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			CK	
	4	T6		10	10				
	5	T6		10	10				
	6	T6		10	10			CK	
	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/LP	
	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		8	10				
	26	blank tag		8	9.5				
	27	blank tag		9	10				
	28	blank tag		8	10				
	29	blank tag		8	10				
	30	blank tag		8	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			CK	
	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			CK	
	43	T7		10	10			CK	
	44	T7		10	10			CK	
	45	T7		10	10			CK	
	46	T7		10	10			CK	
	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				LP
	55	T60		10	10				
	56	T60		10	10				
	57	T60		10	10				LP
	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				CK
	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	x		cut 2016
	102	783		9	10				
	103	782		7	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				LP

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/LP
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				CK	
205	669			10	10				CK	
206	668			10	10				CK	
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/LP	
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)

May-18

			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/LP
241	604	RO-DOT-ACZA-ET	x	x	x	x	cut 2016
242	603		10	10			
243	602		10	10			LP
244	601		10	10			CK
245	609		10	10			LP
246	608		10	10			CK/LP
247	607		10	10			
248	606		10	10			
249	605		10	10			
250	610		10	10			CK/LP

CK=check
 FB=fruiting body
 LP=loose plate

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

Apr-18

			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	10			FB	
34	Unt. - WO	8	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	10				
39	Unt. - WO	9	9.5			DK top S end/FB	
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		check
	44	575		10	10		check
	45	576		10	10		check
	46	577		10	10		
	47	578		10	10		
	48	579		10	10		check
	49	580		10	10		check

50	571			10	10					
51	611	RO-DOT-ACZA-ET	x		x	x	x		cut 2016	
52	612			10	10				check/LP	
53	613			9.5	10				check/LP/Edge DK	
54	614			9.5	10				check/LP/Edge DK	
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				check/LP	
84	637			10	10				LP	
85	636			10	10				LP	
86	635			10	10				check/LP/S-end plate	
87	634			10	10				check/LP	
88	633			10	10				check	
89	632			10	10				check/LP/S-end plate	
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/LP
103	793			9.5	10					check/IS
104	792			9.5	10					check/IS
105	791			10	10					check/IS
106	800			9	10					FB/IS
107	799			10	10					check/IS
108	798			10	10					FB/check/IS
109	797			9	10					check/IS
110	796			8	9.5					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/check
124	715			10	10					end plate corroded
125	717			10	10					end plate corroded/check
126	718			10	10					end plate corroded/check
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/check
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/check
134	514			10	10					end plate corroded/check/LP
135	515			10	10					end plate corroded/check
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/check
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				check/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				split
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				check
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				bleeding/check
185	815			10	10				check
186	816			10	10				
187	814			10	10				bleeding
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			check/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			bleeding
217	T70		10	10			check
218	T70		10	10			check
219	T70		10	10			
220	T70		10	10			check
221	T60	RO-Bor-6#	x	x	x	x	cut 2016
222	T60		10	10			split
223	T60		10	10			check
224	T60		10	10			bleeding
225	T60		10	10			check
226	T60		10	10			check
227	T60		10	10			LP
228	T60		10	10			check
229	T60		10	10			bleeding
230	T60		10	10			bleeding
231	T10	RO-Creo-7#	x	x	x	x	cut 2016
232	T10		10	10			check
233	T10		10	10			check
234	T10		10	10			check
235	T10		10	10			
236	T10		10	10			check
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		8	10			FB
243	blank tag		8	10			
244	blank tag		8	10			FB
245	blank tag		9	10			
246	blank tag		7	10			
247	blank tag		4	9.5			FB/split/gator
248	blank tag		9	10			FB
249	blank tag		7	10			split/gator
250	blank tag		7	9			

Report Authorized By:



Date: 5/16/18

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Applicable Standards:

None: