

INTERNAL REPORT

Removal and Utilization of High Risk Sudden Oak Death Host Material

Progress Report 5

February 1, 2005

(Revised March 17, 2005)

Period covered: July 1 to December 31, 2004

John R. Shelly, CE Advisor
Ramnik Singh, Post Graduate Researcher
Christine Langford, Staff Research Associate
University of California
Division of Agriculture and Natural Resources
Richmond Field Station, Building 478
Richmond, California 94720

and

Tad Mason
TSS Consultants
Rancho Cordova, California

Project Funded by California Department of Forestry and Fire Protection
Agreement No. 8CA01257

UNIVERSITY OF CALIFORNIA
WOOD RESOURCES GROUP

Table of Contents

Introduction.....	3
Tasks Worked on During This Report Period	3
Report of Activities.....	5
Management of Collection Yards and Processing Sites	5
Marin County Site - North Bay	5
Santa Cruz County Site - South Bay.....	5
Outreach.....	6
SODBusters Web Site and Telephone Information Line	6
Results.....	7
Marin County Collection Yard	7
Santa Cruz County Collection Yard	9
Santa Cruz County Sawmill Activity	11
Activity at the Soledad Power Plant	13
Discussion of Results.....	13
Collection Activity.....	13
<i>P. ramorum</i> Monitoring.....	14
Bark Beetle Activity	14
Wood Property Research Activities.....	15
Summary.....	15
Future Activities	15
Appendix I – Progress Updates	16
<i>SODBusters Project Update # 19</i>	17
<i>SODBusters Project Update # 20</i>	18
<i>SODBusters Project Update # 21</i>	19
Documents:	19
<i>SODBusters Project Update # 22</i>	20
<i>SODBusters Project Update # 23</i>	21
<i>SODBusters Project Update # 24</i>	22
Appendix 2 – Toll Free Telephone Information.....	23
Appendix 3 – Firewood Notice.....	26

Introduction

This progress report covers the period from July 1, 2004 to December 31, 2004. Work performed on this project from its inception to June 30, 2004 was reported in Progress Report 2¹, 3², and 4³. The project is designed to help facilitate the disposal and utilization of woody materials with Sudden Oak Death disease and active infections of *Phytophthora ramorum*, the primary pathogen of the disease. Two collection yards for SOD-diseased wood are actively managed under this project. The Marin County collection yard, located at Marin Resource and Recovery in San Rafael, has operated for 20 months. The Santa Cruz County yard, located at the Santa Cruz County transfer station in Ben Lomond, has operated for 13 months. In addition, SOD-diseased material is monitored at a sawmill in Davenport and a biomass power plant in Soledad, both of which are participating in this project. The specific project objectives and a description of the project phases were reported in detail in Progress Report 1⁴. In general, the project goals included: 1/ development of protocols for transporting, storing and processing SOD-diseased wood, 2/ evaluating the risk of spreading SOD through utilization activities, and 3/ finding the best use(s) for SOD-diseased wood.

Project updates for each month during this reporting period were prepared and distributed by the Operations Coordinator, Tad Mason, and are presented in **Appendix 1** of this document. A Coordinating Committee meets as needed and provides general oversight to the project, comments on testing and monitoring protocols, and participates in reviewing documents.

Tasks Worked on During This Report Period

A summary of the activities and tasks worked on during this period is presented in **Table 1**. This work effort was devoted to the continued operation of the two collection yards, the monitoring of *P. ramorum* levels in and around the yards, and the exploration of effective utilization alternatives for the diseased material. A detailed discussion of these tasks follows in the next section.

¹ Shelly, John, R., R. Singh, C. Langford, T. Mason. 2003. Removal and utilization of high risk Sudden Oak Death host material, Progress Report 2. University of California Cooperative Extension, UC Richmond Field Station, Berkeley, Calif.

² Shelly, John, R., R. Singh, C. Langford, T. Mason. 2003. Removal and utilization of high risk Sudden Oak Death host material, Progress Report 3. University of California Cooperative Extension, UC Richmond Field Station, Berkeley, Calif.

³ Shelly, John, R., R. Singh, C. Langford, T. Mason. 2004. Removal and utilization of high risk Sudden Oak Death host material, Progress Report 4. University of California Cooperative Extension, UC Richmond Field Station, Berkeley, Calif.

⁴ Shelly, John, R., R. Singh, C. Langford, T. Mason. 2003. Removal and utilization of high risk Sudden Oak Death host material, Progress Report 1. University of California Cooperative Extension, UC Richmond Field Station, Berkeley, Calif.

Table 1. Update of Activities and Tasks from June 2004 to December 2004

Activities and Tasks	Date Initiated	Date Completed	Expected Completion
Project Meetings			
Coordinating Committee Implementation Team		Aug 13 Sept 20, Nov 3	
Presentations and Reports			
Progress Report 4		July 30	
Outreach [Santa Cruz County (SCC) and Marin County (MC)]			
Update at Marin SOD Training Workshop Provide information to tree service professionals Visit saw shops in Santa Cruz County	July 20	July 7 Aug 13	Ongoing
Operations			
Install monitoring plots at sawmill site	June 10	June 17	
Arrange for transport of SCC sawlogs to sawmill	June 17	August 25	
Process sawlogs into lumber at sawmill	July 20	Dec 15	Ongoing
Discuss possible use of diseased wood with a densified firelog manufacturer in SCC	July 19		Ongoing
Coordinate processing and utilization of SCC diseased material	No activity this period		Ongoing
Coordinate grinding and utilization of MC diseased material	Aug 5, Sept 9, Oct 15, Dec 2		Ongoing
Coordinate firewood processing of MC diseased material	Aug 5, Aug 25, Sept 23, Dec 24		Ongoing
Research and Monitoring			
Monitor deliveries of infected biomass fuel to biomass powerplant in Solodad, CA	No activity this period		
Collect wood samples at MC	July 15, Aug 17, Aug 30, Sep 7, Sep 14, Oct 5, Oct 15, Nov 18, Dec 6		
Collect wood samples at sawmill	Aug 25, Dec 16		
Collect wood samples at SCC	No activity this period		
Collect beetle samples at MC	July 28, Aug 26, Sept 25, Oct 31, Dec 8		
Collect beetle samples at SCC	Aug 3, Sept 13, Oct 21, Dec 3		
Sample host vegetation at MC site		Dec 20	
Sample host vegetation at SCC site		Oct 11	
Measure benchmark properties			Ongoing
Assess product potential			Ongoing
Laboratory analysis of samples			Ongoing
Survey End-Users			June 2005

Report of Activities

Management of Collection Yards and Processing Sites

Marin County Site - North Bay

The Marin County site is fully developed and the management activities for this site included the routine monitoring of the site operations and managing the administration of the contract with the Marin Resource Recovery Center to operate the SOD collection yard.

During this reporting period, the scheduled six-month survey of host vegetation for *P. ramorum* levels and SOD symptoms in the collection yard monitoring plots was conducted in December 2004. As of this report date the results are not tallied. The following information was collected.

- Leaves from host vegetation in the monitoring transects
- Leaves from the sentinel rhododendron plants
- Observations regarding symptoms on coast live oak trees

In addition to collecting monthly bark beetle activity in and around the collection yard, *P. ramorum* samples were also collected from the following:

- Delivered material before processing
- Fugitive dust emissions in the collection yard
- Dust emissions during grinding
- Firewood processed from the delivered material
- Partially air-dried firewood stored on site

Santa Cruz County Site - South Bay

The Santa Cruz County site is fully developed at the Ben Lomond Transfer Station. The management activities for this site included the routine monitoring of the site operations and managing the administration of the contract with the County of Santa Cruz Public Works Department to operate the yard and Vision Recycling Inc. to process the SOD-diseased material. All SOD-diseased material that is processed into biomass powerplant fuel is delivered to the Soledad Power Plant where *P. ramorum* monitoring stations are also maintained as described in Progress Report 4³.

A satellite processing facility was established at a small sawmill (Out-of-the-Woods) in Davenport, CA to process up to 5000 board feet of lumber from SOD-diseased logs. Sawlog quality, SOD-diseased logs removed by Santa Cruz County as hazard trees were identified and transported to the mill for processing. The milling of the logs into lumber began on July 20 and was completed on December 15. The lumber was then air-dried and prepared for kiln drying. Routine monitoring and sampling of sawmill residues for *P. ramorum* was conducted during this time.

Ben Lomond Transfer Station – During this reporting period, the scheduled six-month survey of host vegetation for *P. ramorum* levels and SOD symptoms in the collection yard

monitoring plots was conducted on October 11, 2004. The following information was collected.

- Leaves from host vegetation in the monitoring transects
- Leaves from the sentinel rhododendron plants
- Observations regarding symptoms on coast live oak trees
- The beetle traps were examined monthly to determine bark beetle activity in and around the collection yard. Since there were not any deliveries at the Santa Cruz County collection yard during this report period no new samples were collected. However, some of the material collected at this yard in the last reporting period was processed at a sawmill during this report period and samples were obtained from that material as described below.

Out-of-the-Woods Sawmill – During this reporting period, 18 sawlogs were processed at the “Out-of-the-Woods” sawmill site in Davenport, CA. The logs were processed into lumber 1-1/4 inch thick and widths of 3-inch, 4-inch and 6-1/4 inch wide. Residual wood from the milling operation was processed into firewood when possible. Samples were collected from the lumber, sawdust, and firewood to measure the wood quality and to monitor the *P. ramorum* activity. Host vegetation and beetles were sampled in the site plots as described in progress report 4.

Soledad Biomass Powerplant – No SOD-diseased material from the Santa Cruz collection yard was delivered to the Soledad biomass powerplant during this reporting period. The sentinel rhododendron plants at this site are being maintained.

Outreach

The outreach effort during this reporting period consisted of the following

- Continuing maintenance of the SODBusters web site <http://groups.ucanr.org/SODBusters> and the toll free telephone information line (866-SOD-7411).
- Update of the toll free telephone information text (see Appendix 2)
- Participation in a July 7, 2004 SOD training workshop sponsored by the Marin County Agriculture Commissioner’s office.
- Direct phone call contact with SOD-trained tree care professionals in Santa Cruz County and Marin County
- Direct visits to the chainsaw shops in Santa Cruz County to discuss the SODBusters collection yard program with the operators and to post fliers about the program in each saw shop.
- Distributed a revised flier for firewood customers that described the recommendations and regulations for handling firewood processed from host species in regulated counties (See Appendix 3).

SODBusters Web Site and Telephone Information Line

The web site for this project remains the main depository for the documents, technical information, and details of the project. The SODBusters project web site received about

8,400 hits between July 1 and December 31, 2004. Of these inquiries, 19% were directed to the “homeowner information and frequently asked questions” page, about 15% to the collection yard information page, 10% to the home page, and the remainder were evenly spaced among the other pages.

The toll free phone information service continues to be an important tool for delivering information, averaging about 10 to 12 phone calls per month. Most of the inquiries are for general information but about 1/3 of the callers are interested in specific information on the SODBusters collection yards.

Results

Marin County Collection Yard

The Marin County collection yard for sudden oak death diseased wood has been operating for more than 1 year (opened on May 7, 2003). Data is routinely collected according to the protocols outlined in Progress reports 2¹ and 3² to monitor the level of disease associated with the movement and processing of SOD-diseased wood, sampled as follows.

- Quantity of material delivered
- Presence of *P. ramorum* in the host vegetation in and around the collection yard
- Bark beetle activity in and around the collection yard
- Presence of *P. ramorum* in the delivered material
- Presence of *P. ramorum* in fugitive particles collected during processing and on processed materials

Collection Activity – During this reporting period (July 1 to December 31, 2004), 315.28 tons of SOD-diseased material from 399 tree removals was delivered to the Marin County collection yard. This brings the total since the opening of the collection yard to 856.48 tons. Seven companies and agencies were responsible for these deliveries. They include: Artistry in Trees, Beaver Tree Service, Marin County Department of Public Works, Marin County Arborists, Marin County Parks, Nu-Way Landscaping, and the Urban Forestry Associates.

Of the material delivered, approximately 13% was diverted to firewood and the remainder was processed and sent to biomass power plants in Rocklin and Woodland, CA.

The SOD-diseased material delivered to the collection yard was from three SOD host tree species: tanoak, coast live oak and California black oak (Table 3). Tanoak remains the most common species delivered, 93% of the trees delivered were tanoak and 6.5% were coast live oak. Only one California black oak tree was delivered during this reporting period.

Table 3. Number of SOD infected trees delivered to the SOD Collection Yard in Marin County

Tree Species	July 1, 2004 to December 31, 2004	Total from startup to December 31, 2004
<i>Lithocarpus densiflorus</i> (tanoak)	372 (93%)*	761 (82%)*
<i>Quercus agrifolia</i> (coast live oak)	26 (6%)	160 (17%)
<i>Quercus kelloggi</i> (California black oak)	1 (< 1%)	5 (< 1%)
<i>Umbellularia californica</i> (California bay laurel)	0	3 (< 1%)
Total Number of Trees	399	929

* Percent of Total in parenthesis

Host Vegetation – During this reporting period the Winter 2004 sampling of the host vegetation in and around the collection yard was conducted in December but the analysis of the samples was delayed. Winter 2004 results will be reported in the next progress report.

Beetle Activity – Beetle (scolytids) activity in the four measuring transects/sites D, E, F, and G at the Marin collection yard continues to be monitored monthly and the results are summarized in **Figure 3**. The activity in the collection yard dropped off dramatically after the early summer 2004 peak. Beetle activity during the late fall and winter months remains very low as expected. There was a dramatic increase in bark beetle activity during late spring in the traps located in the collection yard (site F) as compared to the other transects. The traps in transect E (farthest from the collection yard) consistently shows higher beetle counts than those in transects D and G but it is still an order of magnitude less than the beetle count in the collection yard (site F).

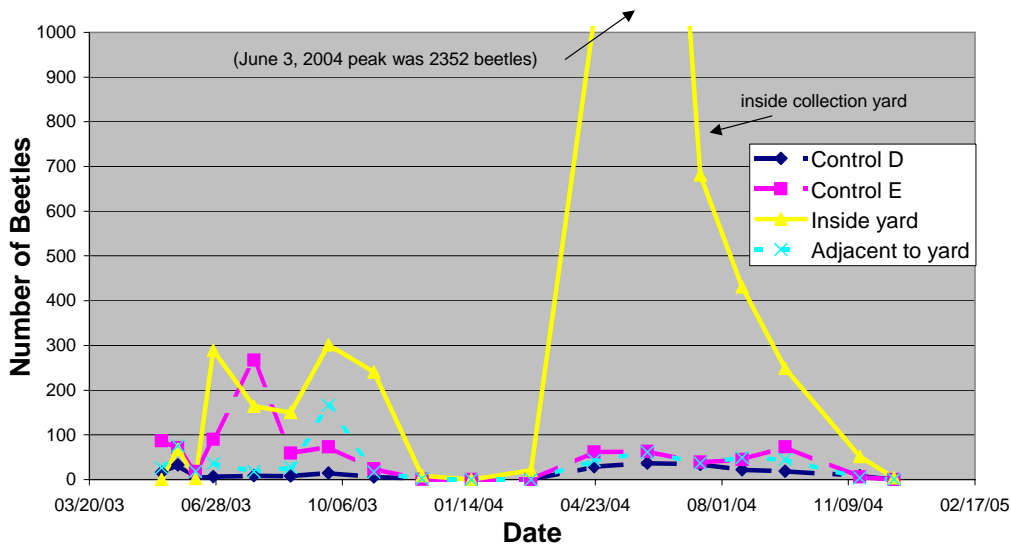


Figure 3. Plot of Scolytidea activity at the Marin Collection Yard

Monitoring of delivered materials – Monitoring activities at the Marin County collection yard included sampling the materials delivered, collecting dust in the collection yard and processing areas, testing firewood samples, and sampling the leaves of the sentinel Rhododendron plants. During this reporting period an additional 20 samples of chips, 2 samples of grinder fines (from the grinder during processing of the SOD material), 24 pieces of freshly split firewood, 55 pieces of thoroughly dried (seasoned) firewood, 29 samples of collection yard dust (air borne), 15 samples of grinder dust (air borne), and 1 sentinel rhododendron sample were collected. The specific monitoring techniques were discussed in Progress Report 2¹.

The results of the monitoring activities for *P. ramorum* in the host material delivered to and processed at the MRR collection yard are presented in **Table 4**. To date, *P. ramorum* has been cultured from the following specimens:

- Two bay leaf samples recovered from the chips-bin in the collection yard
- One 4-liter bag of chips from the collection bins
- Eight pieces of freshly split firewood
- One piece of seasoned firewood (6 months of air drying)
- 8 specimens of grinder dust collected adjacent to the hammer mill

None of the samples from collection yard dust or the sentinel rhododendron plants have tested positive for *P. ramorum* during this reporting period.

Table 4. Summary of monitoring activities at the Marin County Collection Yard

Sample	Average % Moisture Content (standard deviation)	Number of Samples tested (7/1 to 12/31, 2004)	Number of <i>P. ramorum</i> positives from 7/1 to 12/31, 2004	Total number of samples since yard opened	Number of <i>P. ramorum</i> positive since opening
Chips	64 (28)	20	0	63	1 (< 1%)
Grinder Fines	51 (22)	2	0	12	0
Fresh Split Firewood	64 (20)*	24	0	100	8 (8%)
Seasoned Firewood (26 week)	76 (14)*	55	0	85	1 (<1%)
Collection Yard Dust	n/a	29	0	122	0
Grinder Monitoring Dust	n/a	15	4	41	8 (20%)
Sentinel Rhododendrons	n/a	1	0	14	0
Bay leaves (from collection bins)	n/a	0	n/a	8	2 (25%)
Rainwater	n/a	0	n/a	3	1 (33%)

* Moisture content of the seasoned firewood is heavily influenced by rain during winter months

Santa Cruz County Collection Yard

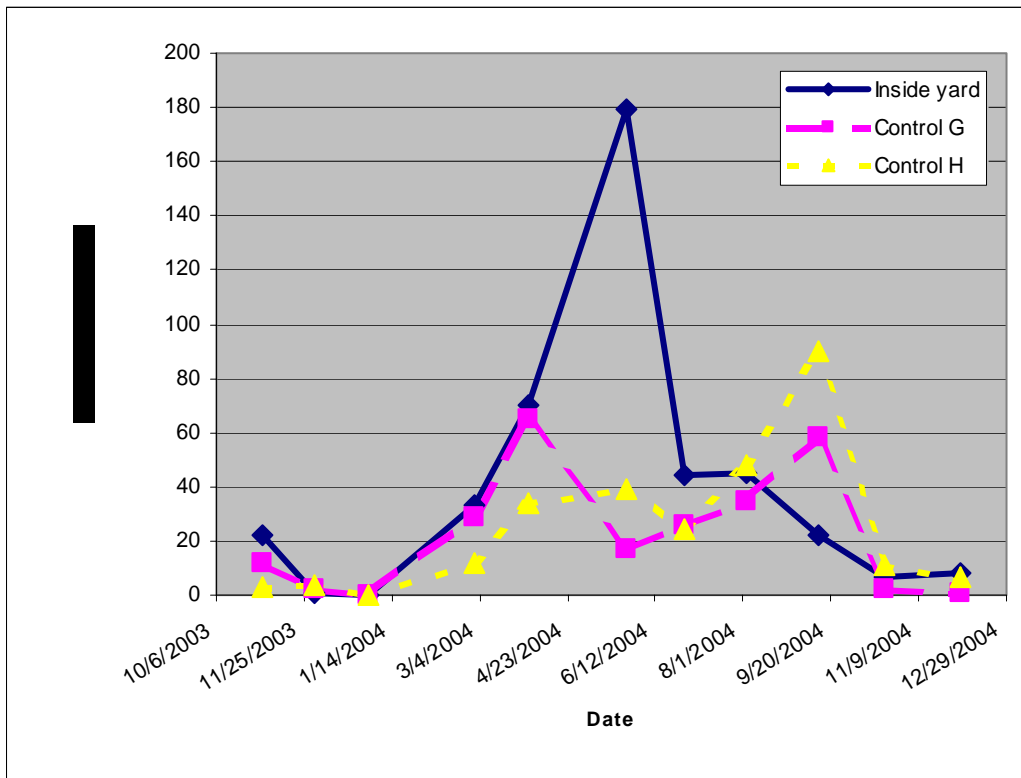
Collection Activity at Ben Lomond Transfer Station – No deliveries were made to the collection yard at Ben Lomond during this reporting period (July 1 – December 31, 2004).

Host Vegetation – During this reporting period the Winter 2004 sampling of the host vegetation in and around the collection yard was conducted in October but the analysis of

the samples was delayed. The results of the Winter 2004 sampling will be reported in the next progress report.

Beetle Activity – Beetle (scolytids) activity in the three measuring sites F, G, and H at the Ben Lomond collection yard continues to be monitored monthly and is summarized in **Figure 4**. The activity in the collection yard dropped off dramatically after the last of the deliveries of this period were delivered in late spring 2004. Beetle activity in the two measuring sites away from the collection yard (G and H) surprisingly showed an increase in the fall collection but than dropped to the expected late fall and winter month low levels of activity. This appears to be part of the expected life cycle of scolytids in this area and is likely not related to collection yard activity. As more data is collected this relationship will become clearer.

Figure 4. Plot of Scolytid activity at the Santa Cruz, SOD Collection Yard



Monitoring of delivered materials – No deliveries were made to the collection yard at Ben Lomond during this reporting period (July 1 – December 31, 2004). Consequently, no SOD-diseased material was sampled. The results of *P. ramorum* monitoring remain the same as reported in Progress Report 4 and they are repeated below in **Table 5** for convenience.

Table 5. Summary of monitoring activities on SOD infected material delivered and processed at the SOD Collection Yard in Santa Cruz County from December 1, 2003 to December 31, 2004.

Sample	Average % Moisture Content (standard deviation)	Number of Samples Tested	Number of samples positive for <i>P.</i> <i>ramorum</i>	Percent <i>P.</i> <i>ramorum</i> positive
Chips	52 (10)	22	1	5
Grinder Monitoring Dust	n/a	11	1	9
Sentinel Rhododendrons	n/a	1	0	0

Santa Cruz County Sawmill Activity

Twenty-four logs (15.5 tons total weight) of SOD-diseased logs were selected for sawlog potential at the collection yard and delivered to the sawmill in Davenport, CA. The species mix of the sawlog test was 21 tanoak, 2 coast live oak, and 1 California black oak. The logs were processed into 8-foot long lumber measuring 1-1/4-inch thick (aka 5/4) and various widths of 3-inch, 4-inch, and 6-1/4-inch. All of the solid wood residue from the sawmilling operation was processed into firewood and the sawdust was collected and stored on site for future analysis and potential utilization. The total log volume of 412.84 cubic feet (4954 bf or board foot equivalent) produced 188.89 cubic feet (2393 bf) of green, 5/4 inch thick lumber with about 52 percent of the log volume ending up as residue (unusable wood converted to firewood and sawdust).

The yield and physical properties of the logs and lumber produced is summarized below in **Table 6**. This table includes the coast live oak and the California black oak logs. Separating out the tanoak logs, the tanoak average moisture content of the heartwood and sapwood lumber was 84% and 74% respectively. Since the sapwood moisture content is typically higher than the heartwood moisture content in all wood species this result suggest something out of the norm for these tanoak logs. It was observed that many of the tanoak logs processed in this study had zones of mineral staining in the heartwood which is consistent with heartwood bacterial infections that result in higher than normal moisture contents. The specific gravity (calculated on an oven-dry mass/green volume basis) of the processed tanoak was 0.57, which is slightly lower than previously reported values.

Table 6. Summary of lumber milled from SOD-diseased logs.

Log ID	Average MC (%)	Average Specific Gravity (od,g)	Average Log Diameter (in)	log length (ft)	Bark Thickness (in)	Log Volume (ft ³)	Actual Green Lumber Volume (ft ³)	Lumber Volume (5/4 scale) (bd ft)	Percent Residue Volume
1	88.63	0.54	16.0	8.3	1.37	11.49	5.00	60.0	56.5%
2	85.61	0.58	16.2	8.2	0.75	11.70	5.83	69.9	50.2%
3	91.18	0.56	19.5	8.1	1.25	16.76	6.71	80.6	60.0%
4	83.58	0.54	17.9	8.4	1.25	14.66	6.86	82.3	53.2%
5	86.21	0.59	18.1	8.2	1	14.68	7.25	87.0	50.6%
6	83.52	0.60	15.2	8.3	1	10.44	5.39	64.7	48.4%
7	80.14	0.57	16.6	8.3	1.25	12.49	6.57	78.9	47.4%
8	89.61	0.53	21.3	8.1	1.25	20.01	9.73	129.1	51.4%
A1	61.81	0.55	22.0	8.3	0.5	21.78	13.14	157.7	39.7%
A2	71.23	0.56	17.8	8.2	1	14.03	7.18	86.1	48.9%
A3	82.03	0.59	15.1	8.3	1	10.40	4.92	59.1	52.6%
A4	82.55	0.59	15.8	8.2	1	11.05	5.63	67.6	49.0%
A5	86.62	0.65	18.9	8.3	1	16.19	5.92	71.0	63.5%
A6	69.31	0.61	23.3	8.2	1.25	24.08	10.37	124.5	56.9%
A7	79.38	0.62	27.8	8.3	1.25	35.00	8.59	217.0	75.5%
A8	70.15	0.69	20.1	8.3	1.5	18.22	9.40	112.8	48.4%
16A	93.11	0.51	18.3	8.2	1.25	14.94	4.23	50.8	71.6%
16B	77.76	0.60	15.2	8.1	1	5.11	4.19	50.3	17.9%
17	82.52	0.60	25.7	8.1	1.5	29.17	8.36	100.3	71.4%
18	90.65	0.56	17.9	8.3	0.75	14.45	8.17	98.0	43.5%
19	102.96	0.56	27.5	8.1	1.5	33.31	16.02	192.2	51.9%
20	91.80	0.55	18.1	8.1	0.75	14.46	6.49	77.8	55.1%
21	103.00	0.52	25.1	8.3	1	28.40	18.42	221.1	35.1%
22	100.61	0.54	14.9	8.3	1	10.01	4.52	54.2	54.8%
AVERAGE	84.75	0.57	19.33	8.22	1.10	17.20	7.87	99.7	52.2%
TOTAL						412.84	188.89	2393.0	

Host Vegetation – The host vegetation in and around the sawmill site was not surveyed during this reporting period. The final survey will be completed after all activity at the mill site has ceased and the results will be reported in the next progress report.

Beetle Activity at Sawmill Site – The beetle activity around the sawmill remains very low (**Table 7**). The highest numbers of beetles were measured in the traps located closest to the SOD-diseased log pile and the sawmill (trap #1 and #4). The beetle count in the other traps was less but all the numbers are low enough to infer that the SOD-diseased wood had no impact on the background levels of beetle activity in the sawmill yard and surrounding area.

Table 7. Summary of beetle activity at the sawmill site.

Trap	Location	Date Collected	# Beetles
1	East of the sawmill @ plot C1	12/2/2004	4
2	Northeast of sawmill @ plot A1	12/2/2004	2
3	Northeast of sawmill @ plot A3	12/2/2004	2
4	Near sawmill, behind SOD log storage	12/2/2004	3
5	North of sawmill, Transect B	12/2/2004	2

Monitoring of Delivered and Processed Materials at the Sawmill Site – All of the sawmill residues (sawdust and slabs), dust emissions collected while milling and firewood generated at the mill have tested negative for *P. ramorum*. **Table 8** summarizes the results of the monitoring of SOD infected material. To date there have been no positive cultures of *P. ramorum* collected at the sawmill site.

Table 8. Summary of *P. ramorum* activity at the sawmill.

Sample	Average Moisture Content (standard deviation)	Number of Samples Tested	Number of samples positive for <i>P. ramorum</i>
Airborne Dust	-	6	0
Fresh Split Firewood *	74 % (24)	47	0
Seasoned Firewood (26 weeks)	37 % (23)	16	0
Sawdust	69 % (18)	24	0
Slabs from sawlogs	-	17	0
Sentinel Rhododendrons	-	1	0

* The moisture content of seasoned firewood is heavily influenced by rain during the winter months

Activity at the Soledad Power Plant

No deliveries were made of SOD-diseased material from the Santa Cruz collection yard. The sentinel rhododendron plants continued to be maintained at the power plant site.

Discussion of Results

Collection Activity

The Marin County collection yard in San Rafael, data has been in operation for about 20 months. The Santa Cruz County collection yard in Ben Lomond has been in operation for about 13 months. During this time the Marin County yard has received about 856 tons of potentially diseased SOD woody material for an average of about 45 tons per month. The Santa Cruz County yard collected 299 tons, all from the county hazard tree removal project,

and it was all during the first 7 months of operation for an average of about 46 tons during those 7 months. The counties actively support both yards but only the Marin County yard is used regularly by private tree removal companies.

Of the total 1155 tons of material collected at both yards, about 933 tons (79%) was processed into biomass powerplant fuel, 235 tons (20%) was processed into firewood and 15 tons (1%) was processed into lumber. The biomass powerplant fuel was delivered to the powerplants in Woodland, Rocklin, and Soledad. The firewood is released for use within the regulated counties after at least 9 months of air-drying. All firewood customers are provided with an informational flier that explains the concerns for using firewood from SOD regulated counties (Appendix 3). The green lumber is undergoing kiln drying and quality evaluations.

***P. ramorum* Monitoring**

The past 6-month sample data of the *P. ramorum* infestation levels in the host vegetation in and around the collection yards was not ready for analysis in this report due to scheduling difficulties. It will be reported on in the next progress report.

Positive cultures of *P. ramorum* were collected from a variety of unprocessed and processed material at the Marin County collection yard (delivered chips, firewood, and dust from the processing equipment). This brings the total positive samples since the collection yards opened to: 2 of 83 chip samples (2%), 2 of 8 bay laurel leaf specimens (25%), 8 of 145 firewood specimens (6%), 1 of 85 air-dried firewood specimens (< 1%), 9 of 58 airborne grinder/saw dust (16%). In addition, one of 3 rainwater runoff samples from the Marin yard tested positive.

Of the 23 positive *P. ramorum* cultures obtained to date in the collection yards and processing facilities, all but 7 were collected during the winter and early spring months. This data supports the observation of others that *P. ramorum* sporulation is most active during the wet weather season of the year but more data is needed to confirm this observation.

Bark Beetle Activity

The Bark Beetle activity during this reporting period is consistent with the results from the opening of the collection yards reported in previous progress reports. In both yards the beetles are most active in the spring and summer months. In both yards, the beetle activity within the yards peaked in conjunction with the delivery of large quantities of dead wood in the summer of 2004 but these peaks were not duplicated in the beetle traps away from the collection site. Because most of the material delivered during this time was from hazard trees that were dead for more than 4 months it is suggested that the beetles were not attracted to the wood once in was in the yard but rather they came into the yard with the delivered material. Also, since the beetle counts in the traps away from the yard did not show a corresponding rise, the beetles did not spread far from the collection yard.

Wood Property Research Activities

During this reporting period the sawlogs selected for the study of the lumber potential from SOD-diseased wood were milled into lumber. The final evaluation of the lumber quality will be reported in the next progress report after the lumber has been kiln dried. The preliminary results of average specific gravity of 0.57 and the average green moisture content (MC) of 85% are slightly lower than previously reported values of 0.60 specific gravity and 90% MC⁵. The 48% yield of green lumber is also slightly lower than the 60% green lumber conversion previously reported. The yield is expected to decrease another 5 to 10 percent as a result of drying defects created during kiln drying. The results of drying the lumber will be reported in the next progress report. These preliminary results suggest that lumber can be produced from SOD-diseased trees but the expected low yield of high quality lumber may limit the economic potential.

Summary

The Marin County collection yard remains very active, with the support of at least a dozen tree service companies and the county of Marin. The Santa Cruz collection yard was very active during the Santa Cruz County hazard tree removal project but it remains a challenge to encourage the local tree service companies to participate in the collection program.

The data reported on in this progress report continues to support the observation that viable *P. ramorum* spores can be collected at the collection yards but no evidence has been gathered to support the hypothesis that the collection, sorting, and processing activities in the collection yards influences SOD disease infestation levels at the site.

Firewood, biomass fuel, and lumber are all recognized as appropriate uses for SOD-diseased wood. The relative ranking of these options as a best use is dependent on the expected value of the product and any extra costs associated with handling the material to limit the risk of spreading SOD. This economic potential will be evaluated in the final report.

Future Activities

- Continue operation and monitoring of the two collection yards,
- Conclude wood property and lumber quality tests,
- Evaluate *P. ramorum* viability in firewood,
- Summarize the utilization options for the SOD-diseased wood of the greater San Francisco Bay area.
- Explore opportunities to continue the operation of the collection yards.
- Prepare the final report

⁵ Shelly, John R. and K. Jackovics. 2001. Tanoak Utilization: Coordination of Tanoak Recovery and Yield Studies and Knowledge Transfer. University of California Forest Products Laboratory. Berkeley, CA. Technical Report Number 35.01.4xx. September 2001. 29 p.

Appendix I – Progress Updates

During this reporting period, the following 6 monthly “Progress Updates” describing the activities at each collection yard were prepared and distributed by the project partner TSS Consultants.

- Progress Update 19 – July 5, 2004
- Progress Update 20 – August 18, 2004
- Progress Update 21 – September 7, 2004
- Progress Update 22 – October 4, 2004
- Progress Update 23 – November 22, 2004
- Progress Update 24 – December 20, 2004

Each progress update is copied on the following pages.

SODBusters Project <http://groups.ucanr.org/SODBusters>

University of California Cooperative Extension



SODBusters Project Hotline: 1-866-SOD-7411 (1-866-763-7411)

John Shelly Principal Investigator
UC Richmond Field Station, Bldg 478
1301 South 46th Street
Richmond, CA 94804-4698
Telephone: 510.231-9414
Fax: 510.231-9427
john.shelly@nature.berkeley.edu

Tad Mason, Project Coordinator
TSS Consultants
1560 Robinson Drive
Red Bluff, CA 96080
Telephone: 530.528.2900
Fax: 530.529.2767
tmason@tssconsultants.com

SODBusters Project Update # 19

Date: July 5, 2004

Report Period: June 1, 2004 through June 30, 2004

Prepared By: Tad Mason, SODBusters Project Coordinator

Project Activities:

- June 10 – Made arrangements with Dave Merchant - owner of “Out of the Woods” to facilitate the installation of monitoring plots, insect traps and sentry plants (rhododendrons) on site near his sawmill located at Davenport. Dave is currently under contract with UC to process tan oak logs that are suspected of infection with *Phytophthora ramorum* into lumber and firewood. Monitoring protocols have been implemented at his sawmill site to better understand the potential mechanisms that might facilitate the spread of *Pr* when handling and processing material that is suspected of being infected.
- June 17 – Arranged for sorting of logs delivered to the Santa Cruz collection yard. Dave Merchant was available to cut logs meeting sawlog specifications. He will transport these logs to his sawmill operation at a later date.
- June 23 – Scheduled the processing of chip material, logs and rounds received at the Marin collection yard. Logs and rounds were processed into firewood for long-term storage and monitoring on site – on the hill above Marin Resource Recovery. Chip material was processed and transported to the Rio Bravo – Rocklin, biomass power plant. Dust was sampled during processing.
- June 24 – Reviewed in detail, invoicing procedures that contractors – Marin Resource Recovery (Marin collection yard) and Vision Recycling (Santa Cruz collection yard) need to consider when providing invoices to UC for services rendered in support of the SODBusters project.
- June 29 – Arranged for processing of logs and chip material at the Santa Cruz collection yard. Long logs that did not meet sawlog specifications were bucked to more manageable lengths prior to grinding. All material processed was transported to the Soledad Energy facility (biomass power plant). Dust was sampled during processing and during the truck unloading process at Soledad Energy.

Challenges: Need improved communication regarding the generation of invoices for services with contractors now processing material at both collection yards. Participation of tree service providers in Santa Cruz County needs more encouragement.

Opportunities: Processing of material at both collection yards is proceeding smoothly. Contractors are providing quality service.

Highlights of Projected Activities in the next thirty days:

- Continue to monitor incoming deliveries to both collection yards.
- Assist with arborist training session at Marin County.



SODBusters Project <http://groups.ucanr.org/SODBusters>

University of California Cooperative Extension

SODBusters Project Hotline: 1-866-SOD-7411 (1-866-763-7411)

John Shelly Principal Investigator
UC Richmond Field Station, Bldg 478
1301 South 46th Street
Richmond, CA 94804-4698
Telephone: 510.231-9419
Fax: 510.231-9427
john.shelly@nature.berkeley.edu

Tad Mason, Project Coordinator
TSS Consultants
2724 Kilgore Road
Rancho Cordova, CA 95670
Telephone: 916.638.8811 Ext. 112
Fax: 916.638.9326
tmason@tssconsultants.com

SODBusters Project Update # 20

Date: August 18, 2004

Report Period: July 1, 2004 through July 31, 2004

Prepared By: Tad Mason, SODBusters Project Coordinator

Project Activities:

- July 7 – Presented an update on the SODBusters project during a SOD training workshop held at the Marin Civic Center. Sponsored by the Marin County Agriculture Commissioner this training attracted the participation of 30 tree care professionals – primarily from Marin County. A number of large tree service companies were in attendance including many that have delivered SOD material to the Marin collection yard.
- July 7 – Met with staff at Marin Resource Recovery (MRR) to review operations including firewood storage, and invoicing procedures. MRR is planning to expand their hazardous materials processing facility. Due to this expansion, the SODBusters collection yard will be moved approximately 50 yards south from its current location. Discussed at length the configuration of the collection yard once it is moved. Plans are to complete this move around August 20.
- July 19 – Met with a fire log enterprise known as Summit Views (SV). The SODBusters implementation team has been in discussions with SV for about 18 months now, to consider the possibility of SV utilizing woody biomass from the Ben Lomond collection yard as feedstock for their fire log manufacturing operation located at Watsonville. The densification process used to produce fire logs requires high heat and pressure that may effectively kill *Pr*. SV is still in the start up phase at Watsonville, and should be in full production by late September. The implementation team is currently drafting a Scope of Work for SV to consider as the basis for a research effort to understand the efficacy of utilizing SOD material in the manufacturing of fire logs.
- July 20 - 30 – Worked with UC Extension and SOD Coordinator Karl Buermeyer to contact tree service companies operating in Monterey and Santa Cruz counties. Over two dozen tree companies were contacted by phone to provide them with information regarding the Ben Lomond collection yard. Collection yard fliers were also distributed at saw shops that are frequently used by tree service companies.

Challenges: Coordination regarding the placement and storage of firewood at the Marin collection yard. Participation of tree service providers in Santa Cruz area.

Opportunities: Possibility of working with Summit Views to test the efficacy of utilizing SOD material as feedstock for a fire log manufacturing facility.

Highlights of Projected Activities in the next thirty days:

- Conduct Coordinating Committee meeting on 8/13 at Felton.
- Assist with the drafting of SODBusters project progress report # 4.



SODBusters Project <http://groups.ucanr.org/SODBusters>

University of California Cooperative Extension

SODBusters Project Hotline: 1-866-SOD-7411 (1-866-763-7411)

John Shelly Principal Investigator

UC Richmond Field Station, Bldg 478

1301 South 46th Street

Richmond, CA 94804-4698

Telephone: 510.231-9419

Fax: 510.231-9427

john.shelly@nature.berkeley.edu

Tad Mason, Project Coordinator

TSS Consultants

2724 Kilgore Road

Rancho Cordova, CA 95670

Telephone: 916.638.8811 Ext. 112

Fax: 916.638.9326

tmason@tssconsultants.com

SODBusters Project Update # 21

Date: Sept 7, 2004

Report Period: August 1, 2004 through August 31, 2004

Prepared By: Tad Mason, SODBusters Project Coordinator

Project Activities:

- August 13 – Distributed SODBusters project information and announcements to major saw shops in Santa Cruz County. All shop owners expressed an interest in distributing the information to professional tree care businesses that conduct business with the shops.
- August 13 – Coordinating Committee meeting held in Felton. SODBusters Implementation Team presented Progress Report # 4, which provided an overview of activities and research conducted from January 1 through June 30, 2004. Ten participants attended with the meeting. Included in the meeting was a tour of the Ben Lomond collection yard. Meeting notes will soon be posted on the SODBusters web site.
- August 20 – Met with Marin Resource Recovery (MRR) staff to review modifications to the collection yard. MRR is planning to expand their hazardous materials processing facility. Due to this expansion, the SODBusters collection yard will be moved approximately 50 yards south from its current location. Discussed at length the configuration of the collection yard once it is moved. The collection yard move was completed on August 20. Also reviewed SOD firewood storage on the hill above the collection yard.

Challenges: Participation of tree service providers in Santa Cruz area.

Opportunities: New collection yard location at MRR will provide better access for trucks delivering SOD material.

Highlights of Projected Activities in the next thirty days:

- Continue to recruit Santa Cruz area tree service companies to participate in the SODBusters project, by delivering SOD material to the Ben Lomond yard.
- Monitor deliveries and activities at both collection yards.
- Update the SOD info line to reflect the addition of Lake and San Francisco counties to the list of SOD regulated counties and additions to the host plants list.
- Generate a Scope of Work for Summit Views (fire log processor) for utilization research using SOD material as feedstock for the SV densified fire log process.

Documents:

- The August 13, 2004 Coordinating Committee meeting notes can be accessed using the following URL: http://ucce.ucdavis.edu/freeform/SODBusters/documents/Coordinating_Committee5572.pdf
- Progress Report # 4 can be accessed using the following URL: http://ucce.ucdavis.edu/freeform/SODBusters/documents/Progress_Reports5409.pdf



SODBusters Project <http://groups.ucanr.org/SODBusters>

University of California Cooperative Extension

SODBusters Project Hotline: 1-866-SOD-7411 (1-866-763-7411)

John Shelly Principal Investigator

UC Richmond Field Station, Bldg 478

1301 South 46th Street

Richmond, CA 94804-4698

Telephone: 510.231-9419

Fax: 510.231-9427

john.shelly@nature.berkeley.edu

Tad Mason, Project Coordinator

TSS Consultants

2724 Kilgore Road

Rancho Cordova, CA 95670

Telephone: 916.638.8811 Ext. 112

Fax: 916.638.9326

tmason@tssconsultants.com

SODBusters Project Update # 22

Date: Oct. 4, 2004

Report Period: September 1, 2004 through September 30, 2004

Prepared By: Tad Mason, SODBusters Project Coordinator

Project Activities:

- September 2 – Visited the Marin collection yard. Inspected new location and configuration of the collection yard. Yard continues to receive consistent deliveries of SOD material. Many of the deliveries are sourced from Marin County Road Department – SOD hazard tree removal program. Yard is beginning to receive material that was identified and marked in the field by the SODBusters research team as having multiple SOD symptoms
- September 17 – Distributed SODBusters project information and announcements to major saw shops in Santa Cruz County. All shop owners expressed an interest in continuing to distribute the information to professional tree care businesses that conduct business with the shops. Visited with local arborists, tree service companies and foresters to encourage their participation in the SODBusters project – by delivering SOD material to the Ben Lomond collection yard.
- September 17 – Visited the Ben Lomond collection yard – reviewed operations, and inspected stockpiled material. No recent deliveries of SOD material.
- September 20 – Conducted Implementation Team meeting (via conference call) to review research and project logistics. Power plant fuel, firewood, and lumber projects are ongoing and proceeding on schedule. Two new projects looking at densified fuel products and edible mushrooms grown on host plant substrates are in the startup stage.
- September 29 – Met with Marin Resource Recovery (MRR) staff to review latest modifications to the collection yard. Discussed plans to implement new firewood research project and the processing of SOD logs/rounds selected in the field by the SODBusters research team. Designated a new storage site on the hill above the collection yard to store the next batch of firewood, and to set up weather monitoring equipment.

Challenges: Encourage participation of tree service companies/tree care professionals in Santa Cruz and Monterey Counties. Construction activities at the Marin County site hinder access and data collection in the yard.

Opportunities: Marin Resource Recovery is interested in assisting us with a newly funded, detailed SOD firewood research project. All parties are interested in extending existing service agreements to June 2005, the revised end date of the project.

Highlights of Projected Activities in the next thirty days:

- Continue to recruit Santa Cruz area tree service companies/tree care professionals to participate in the SODBusters project.
- Monitor deliveries and activities at both collection yards.
- Assist with the development of protocols for new firewood research project.
- Generate a Scope of Work for utilization research with a densified fire log processing SOD-diseased material as feedstock for the extruded fire log process.



SODBusters Project <http://groups.ucanr.org/SODBusters>

University of California Cooperative Extension

SODBusters Project Hotline: 1-866-SOD-7411 (1-866-763-7411)

John Shelly Principal Investigator
UC Richmond Field Station, Bldg 478
1301 South 46th Street
Richmond, CA 94804-4698
Telephone: 510.231-9419
Fax: 510.231-9427
john.shelly@nature.berkeley.edu

Tad Mason, Project Coordinator
TSS Consultants
2724 Kilgore Road
Rancho Cordova, CA 95670
Telephone: 916.638.8811 Ext. 112
Fax: 916.638.9326
tmason@tssconsultants.com

SODBusters Project Update # 23

Date: Nov.22, 2004

Report Period: October 1, 2004 through October 31, 2004

Prepared By: Tad Mason, SODBusters Project Coordinator

Project Activities:

- October 11 – Collected vegetation samples at the Santa Cruz collection yard at Ben Lomond. This is the sampling that is scheduled for every 6 months. Evidence of vandalism of insect traps or sample sites noted in past visits was not found during this visit
- October 11 – Prepared and installed new firewood signs for posting at the Marin collection yard. Signs have both English and Spanish instructions requesting that the firewood not be disturbed.
- October 11 – Met with Pfeiffer/Big Sur State Park staff to view SOD material that has been stored on site at the park for the last 8 – 10 years. This material was generated from SOD hazard tree removal activities. The SODBusters research team was asked to inspect this material and advise the park staff on best methods for disposal or utilization. Upon review, it was clear that this material is not suitable for grinding but could be processed into firewood. We suggested to the staff that they consider working with a local firewood contractor to arrange for processing and utilize the firewood on site for the exclusive use of park guests. Provided park staff with an example of a firewood notice that they could consider for distribution to guests utilizing firewood sourced from SOD material.
- October 15 – Met with Marin Resource Recovery (MRR) representatives to set aside a separate storage area on MRR property for the storage of freshly processed firewood – as part of recently funded, new SOD firewood research project. Working with the SODBusters research team, installed weather monitoring equipment, fenced in the storage area and set up signs designating the area as a SODBusters research site.
- October 15 – Collected seasoned firewood from the Marin collection yard for testing (presence of *Phytophthora ramorum*). As MRR prepares the seasoned SOD material for sale, we are actively sampling from material that was processed over 12 months ago. A flier was developed for MRR staff to provide firewood customers that describes the state regulations pertinent to the use of *P. ramorum* host plants as firewood (see attached document)
- October 28 – Modified the text for the toll free SOD information phone line to update the lists of host plants and the counties included in the regulated area.

Challenges: Firewood research, processing and sample collection at the Marin collection yard is challenging. Firewood sales are peaking for Marin Resource Recovery and the staff is hard pressed to incorporate our project into their time schedule. Use of the collection yard in Santa Cruz county remains very low.

Opportunities: Marin County Public Works Dept continues to deliver SOD infected material – and is funded to continue SOD hazard tree removals through spring 2005.

Highlights of Projected Activities in the next thirty days:

- Continue to encourage Santa Cruz area tree service companies/tree care professionals to participate in the SODBusters project.
- Monitor deliveries and activities at both collection yards.
- Generate a Scope of Work for utilization research with a densified fire log processing SOD-diseased material as feedstock for the extruded fire log process.

Documents:

- SOD firewood notice for oak firewood customers of Marin Resource Recovery. Note that with slight modification, this firewood notice could be utilized in any of the regulated counties. Contact us if you need a word version of this firewood notice. This document is now available on the SODBusters website:

http://ucce.ucdavis.edu/freeform/SODBusters/documents/SOD_Mitigation5911.pdf



SODBusters Project <http://groups.ucanr.org/SODBusters>

University of California Cooperative Extension

SODBusters Project Hotline: 1-866-SOD-7411 (1-866-763-7411)

John Shelly Principal Investigator
UC Richmond Field Station, Bldg 478
1301 South 46th Street
Richmond, CA 94804-4698
Telephone: 510.231-9419
Fax: 510.231-9427
john.shelly@nature.berkeley.edu

Tad Mason, Project Coordinator
TSS Consultants
2724 Kilgore Road
Rancho Cordova, CA 95670
Telephone: 916.638.8811 Ext. 112
Fax: 916.638.9326
tmason@tssconsultants.com

SODBusters Project Update # 24

Date: Dec.20, 2004

Report Period: November 1, 2004 through November 30, 2004

Prepared By: Tad Mason, SODBusters Project Coordinator

Project Activities:

- November 2 – Coordinated processing of selected firewood log samples delivered to the Marin collection yard for a newly funded project encompassing a detailed evaluation of the viability of *Phytophthora ramorum* in firewood. These samples were processed on site at the Marin yard with one half of the firewood production stored on site at Marin Resource Recovery (MRR) and one half delivered to the Richmond Field Station. Both sets of sample firewood will be monitored under varying conditions for the presence of *P. ramorum*.
- November 3 – Conducted conference call with the SODBuster Implementation Team. Primary discussion was focused on coordinating research efforts, sampling protocols, current contracts in place at the collection yards and challenges at the collection yards.
- November 12 – Met Joe Garbarino, owner and President of MRR. Reviewed recent personnel changes at MRR, procedures for receiving diseased wood, firewood research and contract extension.
- November 12 – Met with Marin County Agriculture Commissioner and Deputy Commissioner to discuss availability of SOD hazard tree removal funds. Both Santa Cruz County and Marin County have additional SOD hazard trees to remove – but unfortunately are not currently funded to facilitate removals. There may be some funding left over from counties that did not need to remove as many SOD hazard trees as originally thought.

Challenges: Change in personnel at the Marin collection yard presents some challenges in timely processing and storage of SOD firewood. No deliveries of SOD material were made to the Santa Cruz collection yard during the month of November.

Opportunities: Some additional funding (left over from counties that did not utilize funds set aside for tree removals) for SOD hazard tree removals may be available for Marin County and Santa Cruz County.

Highlights of Projected Activities in the next thirty days:

- Continue to encourage Santa Cruz area tree service companies/tree care professionals to participate in the SODBusters project.
- Monitor deliveries and activities at both collection yards.
- Generate a final Scope of Work for utilization research with a densified fire log processing SOD-diseased material as feedstock for the extruded fire log process.

Appendix 2 – Toll Free Telephone Information

SODBusters Information Phone Tree Text

1-866-SOD-7411 (1-866-763-7411)

10/18/04 Updated Version

Main Greeting: Thank you for calling the Sudden Oak Death information line. For general information on Sudden Oak Death, press 1. For information on the SODBusters project and disposing of infected material, press 2. If you need information on regulations and quarantines, press 3. If you'd like more information on the California Oak Mortality Task Force, press 4. If you are a member of the media, press 5. If you cannot find an answer to your question or would like to leave a message, please press 6.

Option 1 message: Sudden Oak Death is a plant disease caused by the pathogen *Phytophthora ramorum*. It can infect numerous tree and shrub species, and can be lethal to many California native hardwood tree species including, tanoak, coast live oak, California black oak, Shreve's oak, and canyon live oak. The pathogen is currently confirmed to exist in 14 California counties. For a complete list of Sudden Oak Death host plants, press 1. For the list of counties confirmed to have Sudden Oak Death, press 2. For a list of contacts for more information about Sudden Oak Death, press 3. To return to the main menu, press the star key.

Press 1: As of October 2004, plants known to be susceptible to *Phytophthora ramorum* infection and included in the regulation are: tanoak, coast live oak, California black oak, canyon live oak, Shreve oak, horse-chestnut, northern red oak, southern red oak, sweet chestnut, European beech, Holm oak, drooping leucothoe, wood rose, European turkey oak, *Viburnum* varieties, bigleaf maple, toyon, madrone, coffeeberry, cascara, formosa firethorn, California buckeye, coast redwood, huckleberry, salmonberry, manzanita, honeysuckle, Western starflower, grand fir, poison oak, California hazelnut, Douglas-fir, Scotch heather, mountain laurel, European yew, witch-hazel, *Pieris* varieties, strawberry tree, Victorian box, *Camellia* species, California wood fern, lilac, European yew, Pacific yew, rhododendrons/azaleas, false Solomon's seal, winter's bark, sweet bay laurel, goat willow, Andrew's clintonia bead lily, and California bay laurel/pepperwood. For more information, please go to www.suddenoakdeath.org. To return to the previous menu, press the star key.

Press 2: The following counties in California are confirmed to be infested as of December 2003: Alameda, Contra Costa, Humboldt, Lake, Marin, Mendocino, Monterey, Napa, San Francisco, Santa Clara, Santa Cruz, San Mateo, Solano, and Sonoma. Please go to www.suddenoakdeath.org to find out more about where Sudden Oak Death is found in California. To return to the previous menu, press the star key.

Press 3: If you live in one of the regulated counties and would like to speak with someone about Sudden Oak Death, please contact Janice Alexander in Marin County at 415-499-4204. If you are with the media, please contact Katie Palmieri at 510-847-5482. More detailed information on Sudden Oak Death is available at www.suddenoakdeath.org; to return to the previous menu, press the star key.

Option 2 message: The SODBusters project is managed by the University of California Cooperative Extension, and funded by the USDA Forest Service and California Department of Forestry and Fire Protection. This project is focused on the proper disposal of SOD-diseased material, finding acceptable ways to use infected wood, and understanding the risks associated with the movement of infected wood. Collection yards for infected material are open in Marin county and Santa Cruz county. Currently, only Sudden Oak Death-trained and certified tree care professionals are able to arrange for delivery of diseased host material at the collection yards. For more information on the collection yards, including hours of operation, press 1. If you are a tree care professional and need certificates of transport for delivery of material to the collection yards, press 2. If you are not a tree care professional and want to know how to deliver your infected material to the collection yards, press 3. To return to the main menu, press the star key.

Press 1: The Marin county SODBusters collection yard is located at Marin Resource Recovery in San Rafael. The address is 565 Jacoby Street, near the junction of highways 580 and 101. The yard is open for deliveries Monday through Saturday, from 8 a.m. to 4 p.m., and Sunday 9a.m. to 4 p.m. The Santa Cruz county collection yard is located at the Ben Lomond transfer station in Ben Lomond. The address is 9835 Newell Creek Road. The yard is open from 7:30 a.m. to 3:30 p.m., seven days per week, except holidays. Directions to both collection yards are available on the SODBusters web site. Go to www.suddenoakdeath.org and click on the SODBusters link. The collection yards only accept SOD diseased material accompanied by a SODBusters transport certificate completed and verified by a tree care professional trained to recognize sudden oak death symptoms. To return to the previous menu, press the star key.

Press 2: All deliveries of SOD-diseased material must be accompanied by a transport certificate that has been completed and verified by a Sudden Oak Death-trained tree care professional. Transport certificate forms may be downloaded from the web through the SODBusters website. Go to www.suddenoakdeath.org and click on the SODBusters link. To return to the previous menu, press the star key.

Press 3: All deliveries of SOD-infected material must be accompanied by a transport certificate completed and verified by a Sudden Oak Death-trained and certified tree care professional. Homeowners can find a list of SOD trained tree care professionals operating in their area on the SODBusters website. Go to www.suddenoakdeath.org and click on the SODBusters link. To return to the previous menu, press the star key.

Option 3: A quarantine is in place for the 14 California counties that have confirmed cases of Sudden Oak Death. Individuals and businesses in these counties are subject to federal and State regulations that limit movement of Sudden Oak Death host plant material. For the most up-to-date information on regulations and your responsibilities, please contact your county Agricultural Commissioner's office. A list of county contacts can be found at www.suddenoakdeath.org. To return to the previous menu, press the star key.

Option 4: The California Oak Mortality Task Force is a non-profit organization that brings together public, private, and non-profit groups and agencies to address Sudden Oak Death issues in the state. The Task Force facilitates a comprehensive and unified approach for research, management, education, and public policy issues surrounding California's Sudden Oak Death issues. For more information on the Task Force, please go to www.suddenoakdeath.org or call the Task Force Public Information Officer, Katie Palmieri, at 510-847.5482. To return to the previous menu, press the star key.

Option 5: All media inquiries should be directed to the California Oak Mortality Task Force's Public Information Officer, Katie Palmieri, at 510-847.5482. To return to the previous menu, press the star key.

Option 6: If you have not found the information you need through this message system nor the website www.suddenoakdeath.org, please press 1 and leave a message with your name, date, phone number and the best time of day to return your call. A SODBusters representative will return your call as soon as possible. To return to the previous menu, press the star key.

Appendix 3 – Firewood Notice

NOTICE: FIREWOOD AND SUDDEN OAK DEATH

DO NOT MOVE THIS FIREWOOD OUTSIDE OF THE COUNTY IN WHICH IT WAS PURCHASED WITHOUT READING THE FOLLOWING.

To limit the movement of a potentially lethal tree disease the state of California requires that firewood of certain host species obtained in a county within the regulated area NOT be transported outside of the regulated area.

The firewood you purchased was produced in a county that is within the state regulated area for Sudden Oak Death (SOD). The regulated area includes 14 coastal counties in California - from Monterey to Humboldt. This regulated area was established to restrict the potential spread of a plant pathogen known as *phytophthora ramorum*. This pathogen is thought to cause the SOD disease that is responsible for killing large numbers of coast live oak and tanoak trees in the coastal zone of California. The majority of firewood produced in the counties within this regulated area comes from host trees that may carry this pathogen (see reverse side for information on the host tree list). Although the risk of the pathogen surviving in thoroughly dried firewood is low, recent evidence suggests it is possible.

Details of the state regulation can be obtained from your County Agricultural Commissioner or from the California Food and Agriculture Code (section 3700) and can be accessed by searching for “Oak Mortality Disease Control” through the California Department of Food and Agriculture home page:

<http://www.cdfa.ca.gov>

If you have any questions or concerns regarding SOD, please contact: University of California Cooperative Extension - Novato - (415) 499-3041, or go to the web site for the California Oak Mortality Task Force:

<http://www.suddenoakdeath.org>

Your help in complying with these rules and regulations is appreciated.

Information produced by the University of California SODBusters project.

List of Host Plants Associated with *Phytophthora ramorum*
Which are Likely to be Used as Firewood*

Scientific Name	Common Name
<i>Acer Macrophyllum</i>	Bigleaf Maple
<i>Aesculus californica</i>	California buckeye
<i>Arbutus menziesii</i>	Madrone
<i>Lithocarpus densiflorus</i>	Tanoak
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas-fir
<i>Quercus agrifolia</i>	Coast live oak
<i>Quercus chrysolepsis</i>	Canyon Live Oak
<i>Quercus kelloggii</i>	California black oak
<i>Quercus parvula</i> var. <i>shrevei</i>	Shreve's oak
<i>Sequoia sempervirens</i>	Coast redwood

*The complete and most current version can be found on the following web page maintained by the US Department of Agriculture:

<http://www.aphis.usda.gov/ppq/ism/sod>