SONOMA COUNTY

HOUSEHOLD HAZARDOUS WASTE

PROGRAM BENCHMARKING

AND

PROGRAM EVALUATION

Sonoma County Waste Management Agency

Prepared for
Sonoma County Waste Management Agency

Prepared by
Sweetser & Associates and Special Waste Associates

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This Household Hazardous Waste Program Benchmarking and Program Evaluation was prepared by Sweetser & Associates and Special Waste Associates under Agreement with the Sonoma County Waste Management Agency.

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Sonoma County Waste Management Agency
Household Hazardous Waste Program Benchmarking and Program Evaluation

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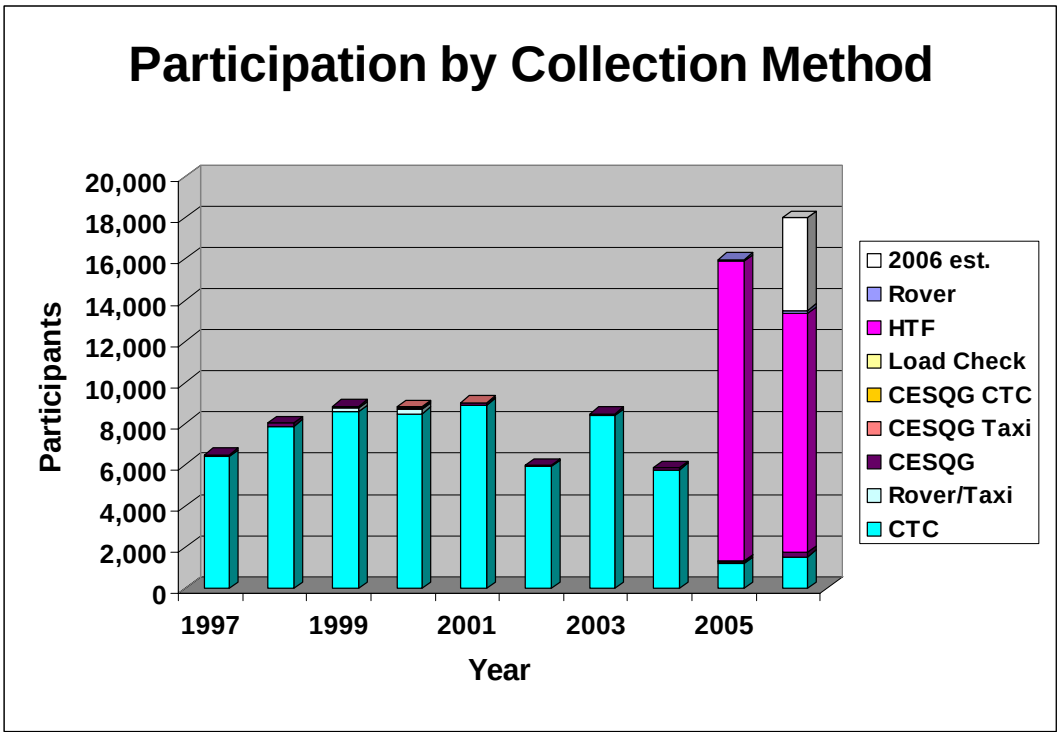
I. Executive Summary

Background

The Sonoma County Waste Management Agency (SCWMA) household hazardous waste (HHW) program has been providing increasing opportunities for residents and small businesses to dispose of their wastes since 1993. The current program consists of a permanent HHW facility located at the Sonoma County Central Disposal Site, Community Toxics Collections (CTC) held weekly throughout the County, an appointment based mobile collection program called the Toxic Rover, and locations for drop-off of select prohibited wastes

SCWMA contracted with Sweetser & Associates in partnership with Special Waste Associates to conduct this independent program benchmarking and system evaluation study regarding HHW and CESQG collection. The SCWMA HHW collection began in 1993 and has evolved into a multi-element system consisting of the Toxic Rover, Community Toxic Collection (events), and one permanent HHW facility, the Household Toxics Facility, HTF. Participation in these programs is indicated in the figure below.

Figure 1 –Participation by Collection Method



General Report Topics

Sonoma County Waste Management Agency's (SCWMA) HHW and CESQG program has expanded and is continuing to experience increasing demand. This report provides two analytical pieces:

- A comparison (benchmarking) to similar collection programs elsewhere in California and
- A focused examination of historic performance and future projections of the HHW and CESQG collection system.

Benchmarking to Similar Programs

Programs compared to SCWMA (population 480,000) were:

1. Central Contra Costa Sanitary District/Mt. View Sanitary District (440,000)
2. Kern County (757,900)
3. City of Sacramento (457,500)
4. Monterey Regional Waste Management District (175,000)
5. San Joaquin County (664,116)

All of these programs have permanent HHW collection facilities, accept CESQG wastes, and have a product reuse program.

Differences between programs were examined between those operated by private versus public staff and the relative performance measures and ratios between jurisdictions. Sonoma and two other jurisdictions are run by private vendors and the other three were run by public employees. There were no overwhelming advantages or disadvantages identified in operations run by private versus public employees.

The comparisons were based on a survey sent out to the chosen jurisdictions with a cover letter from Ken Wells, on behalf of SCWMA, and returned to the consultants for analysis. In most cases the SCWMA program performance was in the mid-range of results or toward the top of the range. A few of the findings that illustrate this are as follows.

Table 1 – - Comparative Benchmark Performance Measures

Performance Measure	**Low**	**Sonoma**	**High**
Percent of Households Served per Year by HHW collection	2.1%	8.3%	13.1%
Pounds HHW collected divided by all households in service area	2.09 pounds/HH	5.76pounds /HH	8.26 pounds/HH
Cost per pound of HHW collected	$0.61/lb.	$0.76 /lb.	$1.10/lb.

Program Evaluation

Multiple site visits and interviews with SCWMA and contractor staff were conducted to collect detailed operational data and gain an understanding of the operations and infrastructure. Site visits included ones to the permanent facility while processing wastes and serving customers, a CTC collection event, and visits to some selected collection and potential additional facility sites around the county.

HTF Improvements

The Household Toxics Facility (HTF) was examined for general compliance with common practices and regulatory concepts. It was clear from the first visit that the current size and configuration of the HTF is undersized for the volume of waste it manages and number of processes included in that building.

To relieve the operating pressure on the HTF various recommendations are proposed to reduce ergonomic impact on staff and increase the efficiency of the operation. These include more efficient latex paint recycling equipment and processes, expanding the building canopy and walls to the west for management of high-volume/less dangerous wastes, moving bulk tanks to the canopy area, and encouraging more reuse with increased accounting of those materials.

In addition, the HTF did not include a chemically-resistant concrete coating on its floor and sumps. This coating can be retrofit and it would eliminate the perpetual use of sheet plastic and tarps now covering the facility floor and sump areas. Vertical storage of latex paint awaiting processing is also recommended. Other physical and efficiency improvements are suggested to improve materials handling and to free up additional building space.

Participation Analysis

Detailed spreadsheets and a GIS analyses were prepared to compile the customer survey data. This determined the proportion of use for the Household Toxics Facility (HTF) versus the CTC and the Toxic Rover. This analysis also separated out the customers using each of the collection methods by city or the community name in the unincorporated areas.

Not surprisingly the residents closer to the HTF used it almost exclusively, in many cases well over 90% with only a few percent of customers taking advantage of the CTC or Toxic Rover. Communities further from the HTF used it less frequently and rely more on the CTC. In outlying areas the use of the HTF for collection of HHW often fell below 70%. This analysis combined with the increasing demand for HHW collection led to the conclusion that additional infrastructure was needed to provide adequate capacity now and for the future. In 2005, the County participation is mapped in the following figure and the participation by jurisdiction is indicated in the following table.

Figure 2- Participant Distribution Map 2005

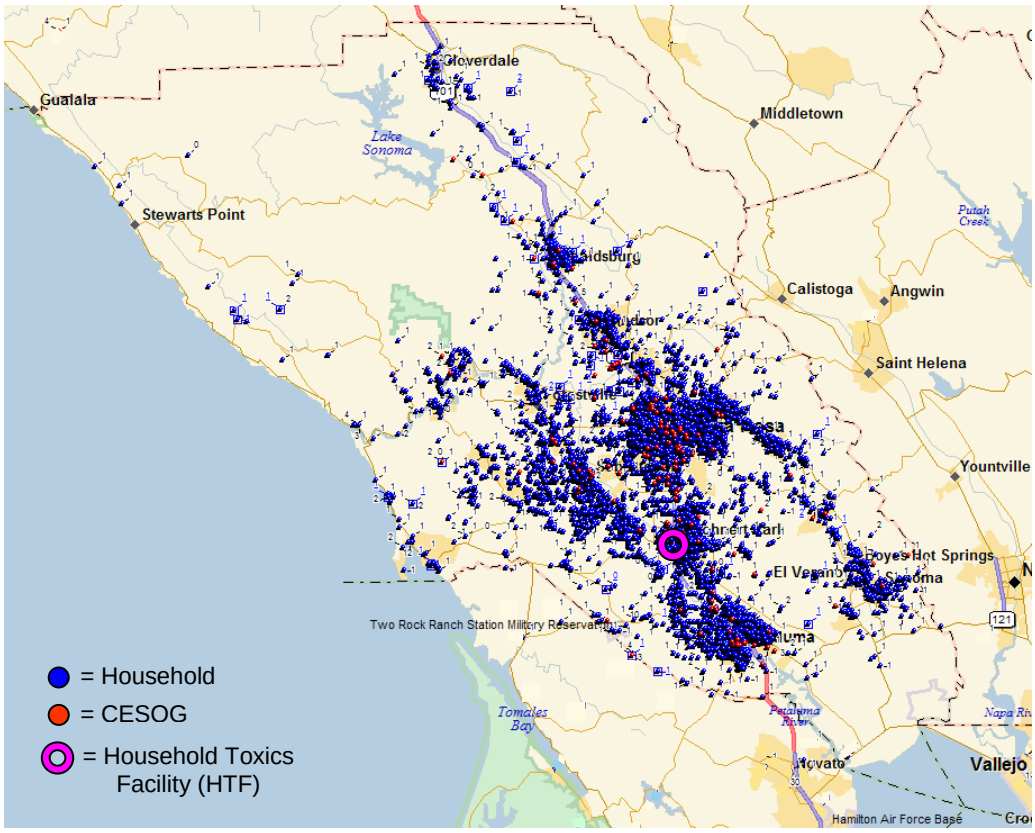


Table 2 – Participation Distribution by Jurisdiction (Jan.-Dec. 2005)

Jurisdiction	Community Total Households Served	Total Housing Units in Community	Percent of Households Served by Collection Method in each Community			Percent Served in each Com-munity
			HTF	CTC	Rover	
Cloverdale	62	3,297	1.2%	0.7%	0.1%	1.9%
Cotati	268	2,994	8.8%	0.1%	0.0%	8.9%
Healdsburg	150	4,565	2.0%	1.2%	0.0%	3.3%
Petaluma	1,881	21,443	8.5%	0.2%	0.1%	8.8%
Rohnert Park	1,118	16,353	6.5%	0.3%	0.1%	6.8%
Santa Rosa	4,483	62,398	6.4%	0.6%	0.2%	7.2%
Sebastopol	417	3,362	11.4%	0.9%	0.1%	12.4%
Sonoma	103	5,135	1.7%	0.2%	0.1%	2.0%
Windsor	383	8,975	3.0%	1.2%	0.0%	4.3%
Subtotal	**8,864**	**128,522**	**6.2%**	**0.5%**	**0.1%**	**6.9%**
Uninc. County	7,166	65,338	10.0%	0.8%	0.2%	11.0%
Total	**16,030**	**193,860**	**7.5%**	**0.6%**	**0.1%**	**8.3%**

The CTC and Toxic Rover were found to be more expensive than the HTF on a per participant basis. Therefore expansion of the system to accommodate future growth focused on permanent collection facilities to provide higher levels of service in the most cost-effective way. This distribution is indicated in the table below:

Table 3 – Collection Method Effectiveness

	HTF - HHW	TOXIC ROVER HHW	CTC- HHW	TOTAL HHW	CTC- CESQG*	HTF – CESQG*
Number of Participating Vehicles	12,911	220	1,051	**14,182**	8	204
Number of Households	14,578	243	1,209	**16,030**		
Total Recycled/ Disposed (pounds)	936,937	83,765	96,379	**1,117,081**	625	50,912
Total Recycled/ Disposed Costs	$426,712	$45,021	$50,261	**$521,994**	$543	$34,566
Mobilization Costs	$260,571	$8,838	$57,941	**$327,350**	$200	$5,100
Total Costs	$687,283	$53,860	$108,202	**$849,344**	$743	$39,666
Revenue		$4,545				**$38,623**
Pounds per Household	**64**	**345**	**79.72**	**69.69**	**78.06**	**249.57**
Cost per pound	**$0.73**	**$0.64**	**$1.12**	**$0.76**	**$1.19**	**$0.78**
Cost per Household	**$47.15**	**$221.65**	**$89.50**	**$52.98**	**$92.81**	**$194.44**
Mobilization Cost per Participant	**$17.87**	**$36.37**	**$47.92**	**$20.42**	**$25.00**	**$25.00**

*Costs borne by CESQG customers

To determine where it may be best to add infrastructure capacity the distribution of service demand, anticipated population growth, and anticipated HHW demand growth was projected. Two additional considerations for modeling additional infrastructure were to:

- Reduce pressure on the existing HTF which has very limited expansion potential due to site constraints,
- Increase operating efficiencies by use of specialization within an integrated collection system, and
- More evenly provide increased availability of service to areas away from the current HTF

Currently all waste from the CTCs and Toxic Rover is brought back to the HTF as well as some of the transfer station load check waste. With additional infrastructure capacity wastes could be taken to a number of facilities depending on where the space and logistics of waste handling would be most efficient.

Infrastructure Development to Meet Current and Future Needs

The SCWMA service area was divided for infrastructure planning purposes into three parts.

- Area 1 – North Santa Rosa and northern county including Healdsburg, Windsor, Cloverdale, the lower Russian River, and the coast from Jenner northward.

- Area 2 – South Santa Rosa, Sebastopol, Rohnert Park, Cotati, Petaluma and the rest of the county except the Sonoma Valley, and
- Area 3 – Sonoma Valley including Kenwood to the north through Sears Point in the south.

Based on the citizen demands from 2005 a scenario for a fully-developed collection system was created for these three service areas. In more populated areas a facility similar to the current HTF will be needed. These higher volume facilities are called a Type A or Type B facility. Type A facilities provide similar services as the current HTF where all wastes accepted by the system can be sorted, processed, and packaged for final shipping. Type B facilities also accept all kinds of HHW on a regular frequent basis but are limited in their processing of wastes and may be smaller or specialized to manage certain wastes such as paint recycling or special operating features such as storage of supplies purchased in bulk. In less populated areas a facility with very limited or no capacity for processing waste are needed to act as satellite collection points and possibly act as staging areas for a more limited CTC effort. These smaller facilities are called Type C and would be designed to serve a smaller population base but with higher service levels and more frequency than practical with the CTC method. The suggested collection system distribution by facility type is shown in the table below.

Table 4 – Distribution of Additional Facilities

Service Area	Facility Location, approximate	Facility Type
1	Windsor, Fulton, N. Santa Rosa	A
1	Cloverdale, Geyserville	C
1	Guerneville	C
2	Existing HTF (decrease from current level to 46% of total)	A
2	Petaluma, Penngrove	B (or A)
3	Sonoma Valley	C

If fully developed this collection infrastructure system would provide three large facilities, one of which is the existing HTF, and three smaller facilities. This would likely provide adequate levels of service for the foreseeable future.

It is impossible to predict future changes in DTSC exemptions for wastes, product stewardship initiatives that may allow some high volume waste to be handled by the private sector, and other developments which may impact the use and demand on this new infrastructure. So it is very difficult to predict how long it may be adequate.

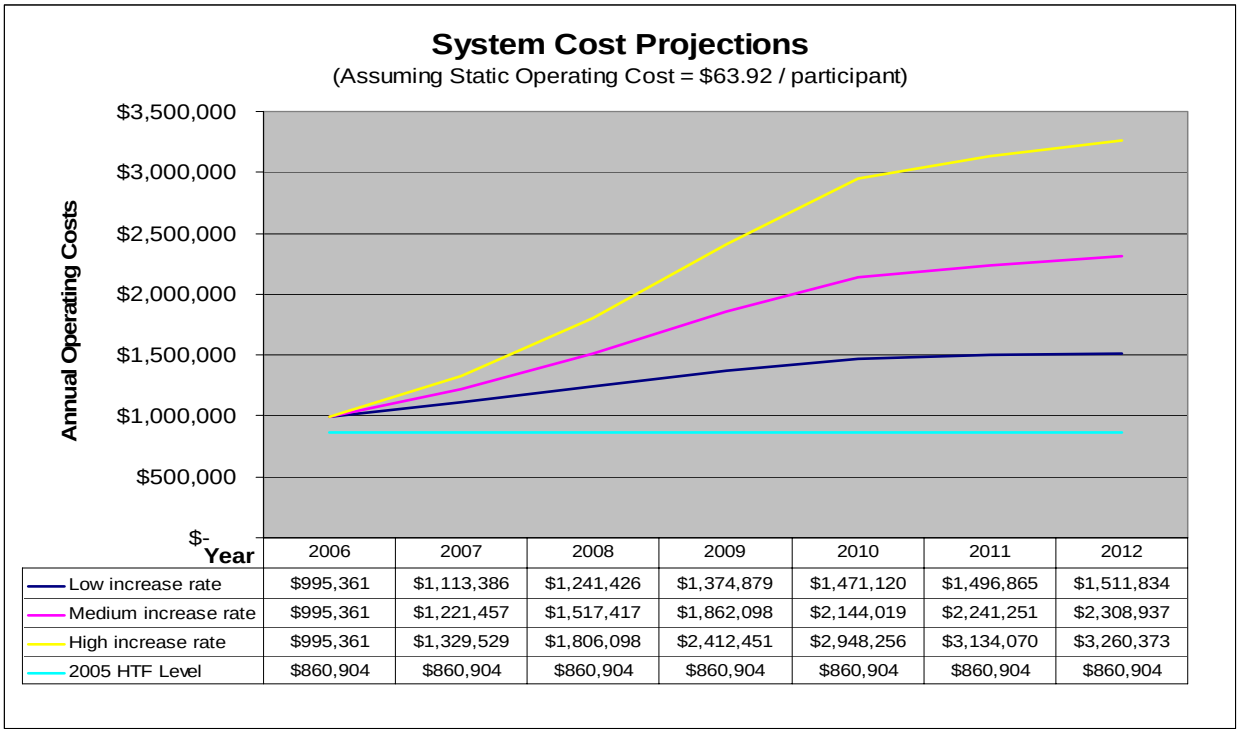
An effective method to expand the capacity of the system is for the SCWMA to encourage product stewardship programs which reduce the burden of HHW and CESQG management on local governments. Removing expensive and high volume problem wastes from local government responsibility through product stewardship programs will allow the current and expanded infrastructure to provide higher levels of service with a lower level of capital and operating expenditures. There are a number of

organizations who are working in CA and nationally to bring this change in product management for paints, mercury, and other products which become HHW or CESQG wastes when discarded. These organizations include the Product Stewardship Institute, the North American Hazardous Materials Management Association, and the CA Product Stewardship Council. SCWMA staff should participate as time and resources allow to stem the tide of increasing HHW waste management by encouraging product stewardship solutions for these wastes.

The development of the suggested expanded infrastructure will take a few years and a significant investment in facilities and operations. Ranges of operating costs have been estimated using a low, medium and high range of estimates. This is shown in the following graph. These operating cost increases may be delayed by restricting available services and not expanding from the current system.

However, historically many programs have been able to expand services while simultaneously becoming more efficient and cost effective. This has meant providing higher levels of service without an equivalent increase in cost, resulting in decreasing per customer costs. The Central Contra Costa Sanitary District/Mt. View Sanitary District is an example of this constant improvement and unit cost reduction over time. Their unit cost is now only $0.61 per pound of HHW collected. The operating costs chart below does not account for increased efficiencies and cost-effectiveness of an expanded collection system, so in that way it is a worst-case scenario. One objective for the SCWMA would be to find ways to reduce the current cost of approximately $63.92 per participant. Various additional recommendations in the body of this report suggest ways for the operation to become more efficient and cost effective.

Figure 3 - System Cost Projections with Static Operating Costs



Year	2006	2007	2008	2009	2010	2011	2012
Low increase rate	$995,361	$1,113,386	$1,241,426	$1,374,879	$1,471,120	$1,496,865	$1,511,834
Medium increase rate	$995,361	$1,221,457	$1,517,417	$1,862,098	$2,144,019	$2,241,251	$2,308,937
High increase rate	$995,361	$1,329,529	$1,806,098	$2,412,451	$2,948,256	$3,134,070	$3,260,373
2005 HTF Level	$860,904	$860,904	$860,904	$860,904	$860,904	$860,904	$860,904

Budget level costs of infrastructure development and improvements to the existing HTF are beyond the scope of this project. However some broad cost ranges or rough estimates are provided for the three types of permanent facilities and a few other improvements to the existing HTF. More details about the exact implementation of each facility, the site constraints, and other facility planning details would be needed to develop more precise estimates.

Summary

SCWMA has implemented a comprehensive Household Hazardous Waste Program that offers a variety of services to Sonoma County residents and businesses. Even with the variety of services offered, Sonoma program costs are within the midrange of other comparable jurisdictions.

In order to meet the increasing demand for this public service in a cost effective manner, SCWMA needs to consider expanding the services offered.

A number of recommendations are offered to enhance the HHW program:

- The popularity of the Community Toxics Collections indicates a need for service closer to the communities. The CTC does not have the ability to easily add capacity and is not as cost effective as permanent collection sites. Transitioning from these collection events to a system of permanent facilities would likely reduce the per customer operational costs while providing a higher level of service to underserved areas and reduce the operating pressure on the HTF,
- Expanding the HTF at the Central Disposal Site will provide more flexibility for management of wastes but will in itself not provide sufficient capacity for the foreseeable future,
- Increase disposal fees for small businesses and large volume mobile customers to reduce current subsidized rates, and
- Ensure accurate accounting of savings from the reuse program by better measurement, tracking, and recordkeeping

Sonoma County
Household Hazardous Waste Program
Benchmarking and Program Evaluation

II. Background

In 1992, the County of Sonoma and the Sonoma County cities joined to create the Sonoma County Waste Management Agency (SCWMA). One of the Agency responsibilities is to implement the County Household Hazardous Waste Management programs. As stated in the approved Integrated Waste Management Plan, the goal of the Household Hazardous Waste Element is that:

> The County and the Cities and/or the SCWMA will provide cost-effective and environmentally sound waste management services, including special waste and household hazardous waste handling and disposal, over the long term to all community residents and promote access to the services.

As Sonoma County has experienced population growth, and a growing awareness of proper HHW disposal, the household hazardous waste (HHW) program has expanded significantly since the SCWMA's first collection events in 1993. Sonoma County has implemented an extensive variety of HHW collection options to meet the needs of their residents scattered throughout the urbanized and remote rural areas of the county's 1500 square miles.

In 2006, Sonoma County Waste Management Agency retained Sweetser & Associates in partnership with Special Waste Associates to conduct this Benchmarking and Program Evaluation of Sonoma County's expanding Household Hazardous Waste (HHW) Program.

Household hazardous waste program infrastructures throughout California and the nation have continued to grow each year. Challenges faced by the jurisdictions sponsoring these programs include:

- Consistent increases in HHW program participation
- Increased costs of trained personnel required to operate the facility
- Increased regulatory scrutiny of these programs
- Reclassification of historical solid wastes as hazardous or prohibited wastes
- Increased demand by the public for convenient and free disposal options
- Concerns of the public on siting "hazardous" waste facilities
- Escalating construction costs for new facilities

Sonoma County's HHW program consists of:

- A permanent HHW facility located at the Sonoma County Central Disposal Site
- Community Toxics Collections (CTC) held weekly throughout the county
- An appointment-based mobile collection program called the Toxic Rover, and
- Locations for drop-off of select prohibited wastes

Historic System Performance

Sonoma County has demonstrated substantial citizen participation in the HHW program as indicated in Figure 4 below. As Figure 4 indicates, the opening of the permanent HHW facility in 2005 has become the overwhelmingly favored disposal option. Before 2005 most customers relied on the CTC system (formerly called Toxics Round-ups and conducted during 1997-2004). Included in the participation graph is an extrapolated value for the participation for the remainder of 2006 that projects an increasing rate of participation rate from 2005.

Figure 4 – Participation by Collection Method (1997 to 2006)

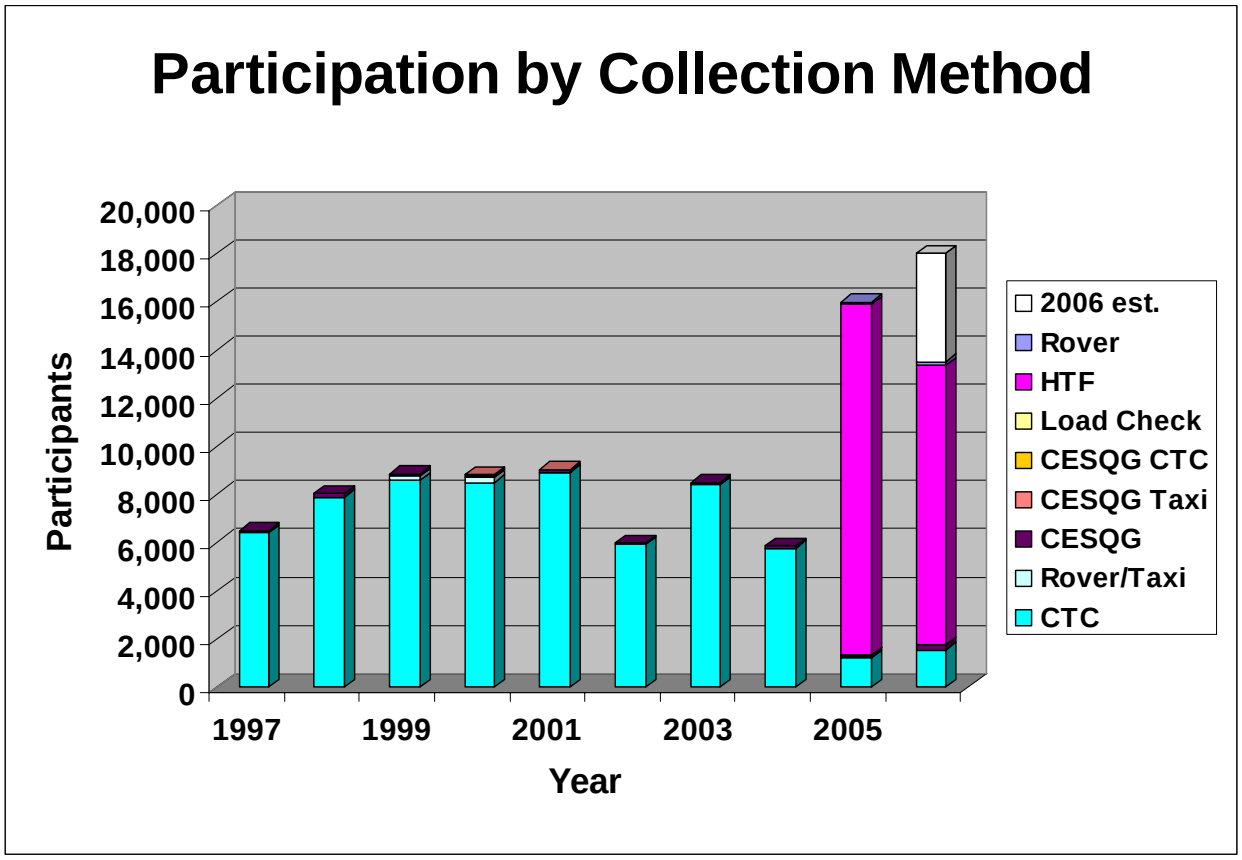


Table 5 shows the participation by community since 1997. The dip in participation in 2002 and 2004 were due to less collection events held in anticipation of opening the permanent HHW facility. Since 1997, nearly 100,000 residents have used the Household Hazardous Waste Program and have delivered nearly eight million pounds of wastes. The north coast communities are served under a contract with Mendocino County.

Table 5 – Household Participation (1997 - 2006)

Date	Toxics Round-ups/CTC	Toxic Rover / Toxic Taxi	HTF	HTF end of year est.	Total
1997	6,387	186			**6,501**
1998	7,890	183			**8,048**
1999	8,562				**8,856**
2000	8,497				**8,814**
2001	8,910				**9,039**
2002	5,905				**5,967**
2003	8,387	104			**8,490**
2004	5,776	130			**5,848**
2005	1,209	243	14,578		**16,030**
2006	1,531		11,616	4,502	**17,649**
Total	63,054	1,206	**26,194**	**4,502**	**94,596**

The pounds of HHW collected by the various programs are indicated in Figure 5 and Table 6 below.

Figure 5 – Pounds Collected (1997 to September 2006)

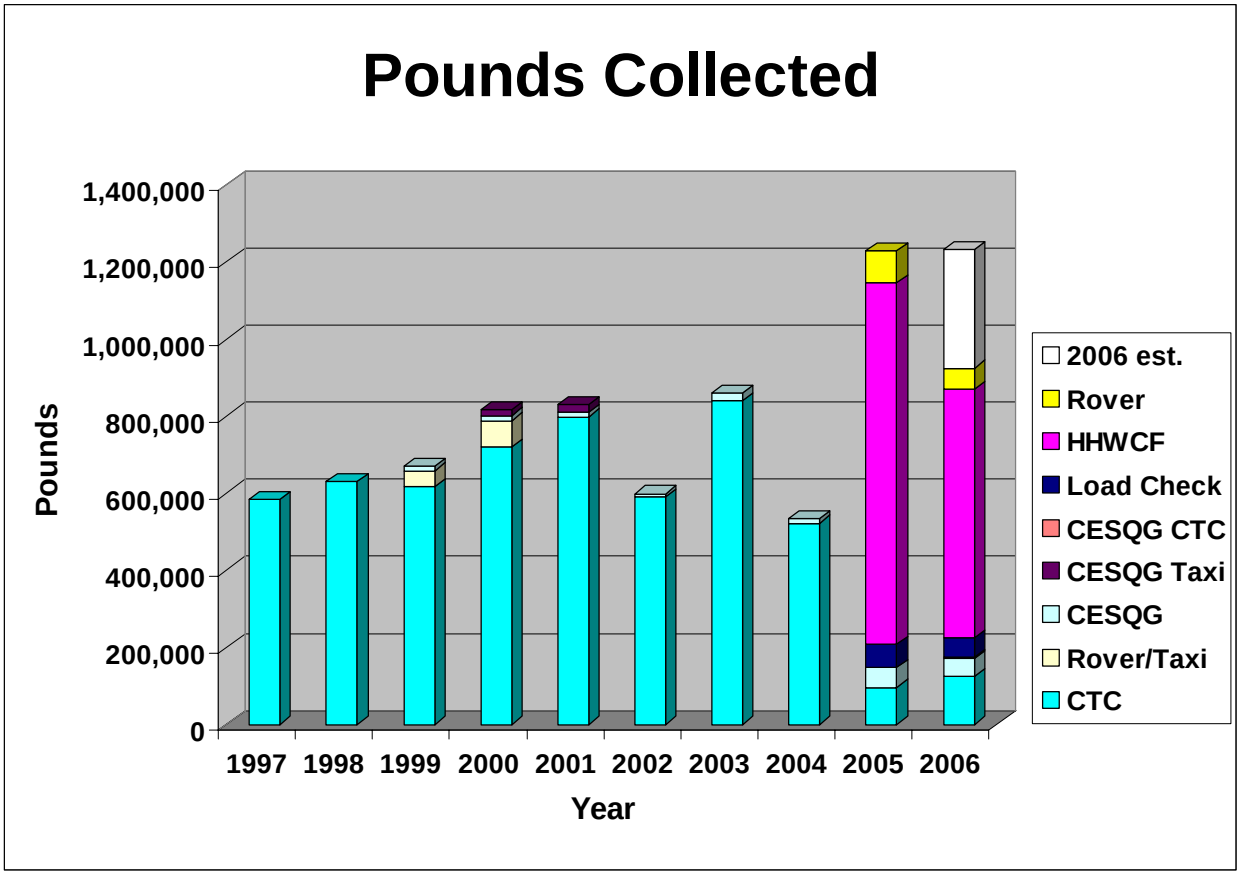
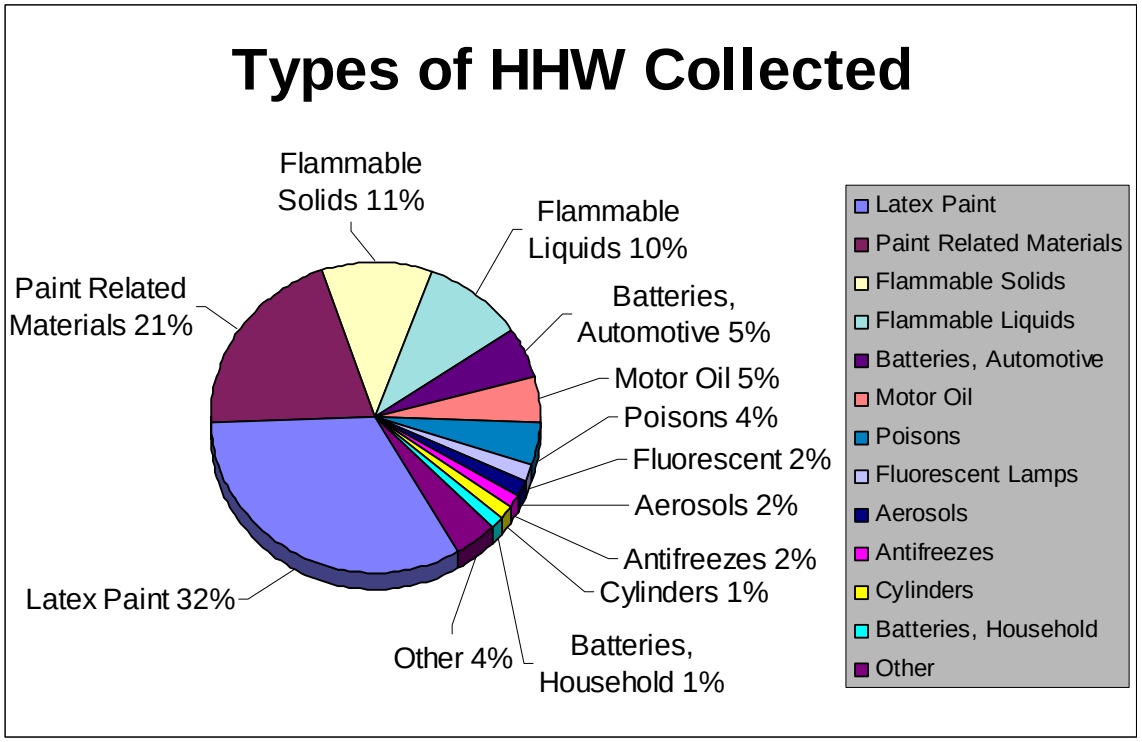


Table 6 – HHW Pounds Collected (1997 to 2006)

Date	CTC	ToxicsRover/ Toxic Taxi	HTF	HTF end of year est.	Total
1997	583,950				583,950
1998	630,039				630,039
1999	616,303	42,091			658,394
2000	718,919	69,194			788,113
2001	798,151				798,151
2002	589,832				589,832
2003	840,798				840,798
2004	522,082				522,082
2005	96,379	83,765	936,937		1,117,081
2006	123,784	53,880	645,310	308,064	1,131,038
Total	5,520,236	248,930	1,582,247	308,064	7,659,477

Based upon 2005 data, the types of HHW collected are included in Figure 6 and indicates that over half of the collected HHW is latex or oil based paint and other paint related materials.

Figure 6 – Distribution of Types of HHW Collected (2005)



Program Benchmark and Evaluation Methodology

A thorough evaluation of Sonoma County's current household hazardous waste program and its organization is an essential tool to allow the SCWMA to meet the current and future challenges. Evaluating the program can provide the information necessary for the Agency to develop increased cost-effectiveness and level of service while providing a valuable and much demanded public service. Given the established infrastructure for collection of used oil around the county, the used oil program will not be evaluated as part of this scope of work. This evaluation will include the following components:

- Benchmark Household Hazardous Waste Program
- Comparison of Contractor vs. Public Agency Operated Programs
- Evaluate Existing Household Hazardous Waste Programs Infrastructure Capacity
- Program Modifications Evaluation
- Analysis of Participant Service Charges for Residents
- Diversifying Funding Sources
- Recommendations

Benchmark Methodology

The Sonoma County Waste Management Agency wanted to establish a comparison of its program to a minimum of five other similar programs in California. Comparable jurisdictions were to be "similar in population, operate a permanent facility(s), be a California jurisdiction, and be similar in program design and waste handling methods". This was accomplished through a detailed survey of Sonoma and five comparable jurisdictions. A copy of the survey form is included in Appendix 1 and a full compilation of the surveys is included in Appendix 2. The comparison included:

- A brief program description
- Facility operator; contractor, jurisdiction or combination
- Staffing levels (FTE equivalents by job type, e.g. administrative, technician, chemist, management)
- Participation levels
- Percent of households served annually
- Geographic distribution of services (maximum drive to services)
- Pounds of waste collected
- Pounds of waste collected per participant
- Types of waste collected
- Hours of service
- Service for Conditionally Exempt Small Quantity Generators (CESQG's)
- E-waste management methods
- Universal waste management
- Latex paint management methods
- Labor, waste disposal, and supply costs related to waste handling
- Utilities
- Any other factors that significantly influence the cost of the program.

- Detail on any approaches employed by comparison jurisdictions that significantly reduce costs or increase effectiveness of the program.

Factors not included in this comparison included:

- Off-site management and administrative labor
- Lease payments
- Capitol bond payments
- Administrative overhead
- Permit costs
- Off-site overhead

Jurisdictions selected for comparison included those listed in Table 7 below and included the populations of each target County and the program's features. The survey of other HHW programs in CA focused on ones that were similar in a number of ways. A primary factor to find comparable programs was the size of population served. Table 7 shows that the compared programs' populations fall between 175,000 and 757,900 and Sonoma has approximately 480,000 people. The program features column in Table 3 shows similar programs between the chosen surveyed programs. A summary of the survey questionnaire results is included in Appendix 2

Table 7 – Targeted Survey Jurisdictions

Jurisdiction	Population (a)	Program Features (d)
Central Contra Costa Sanitation District /Mt. View Sanitary District	440,000 (b)	HHWCF, CESQG, Reuse Center, Used oil centers
Kern County	757,900	HHWCF (2), CESQG, HHWCE (22), Reuse Center
City of Sacramento	457,500	HHWCF, CESQG, Reuse Center
Monterey Regional Waste Management District	175,000(c)	HHWCF, CESQG, Reuse Center, Used oil centers
San Joaquin County	664,116	HHWCF, CESQG, Reuse Center
Sonoma	**480,000**	HHWCF, CESQG, mobile, HHWCE (37), Reuse Center

(a) Source: California Department of Finance, City / County Population Estimates, 2006
(b) Source: Special Waste Associates review of Central Contra Costa Sanitary District's annual HHW report FY04/05
(c) Service area population from the Waste Management District survey, not the entire County.
(d) HHWCF = Household Hazardous Waste Collection Facility, CESQG = Conditionally Exempt Small Quantity Generator Program, HHWCE = HHW Collection Event

Benchmark Household Hazardous Waste Program

Comparing different HHW programs has always been a difficult task. There is no consistent methodology on how to account or report costs of programs. An overview of the surveyed programs statistics is included in Table 8 below. A summary of the completed surveys are included in Appendix 2.

Table 8 – Overview of Surveyed Program (05/06 DTSC reporting year)

Service Area Statistics	**San Joaquin County**	**City of Sacramento**	**Sonoma County**	**Central Contra Costa San. District**	**Kern County**	**Monterey Regional Waste Management District**
Operations Directed by	Private	Private	**Private**	Public	Public	Public
Service Area, sq.mi.	1,463	99	**1,500**	145	8,161	853
Population	664,116	457,514	**479,929**	445,000	757,882	175,000
Pop. Density persons/sq.mi	454	4,612	**315**	3,069	93	205
Unincorporated Population	173,467	-	**152,467**	45,327	288,937	76,158
Percent Unincorporated.	26.1%	0.0%	**32.3%**	10.2%	38.1%	43.5%
Households	181,629	119,812	**193,860**	193,657	224,000	65,140
Pounds HHW, excluding e-waste, U-waste, medical and CESQG	732,025	583,451	**1,117,081**	1,600,000	468,447	529,113
Performance Ratios						
HHW lbs collected/pop.	1.10	1.28	**2.23**	3.60	0.62	3.02
HHW lbs collected/ all households in service area	4.03	4.87	**5.76**	8.26	2.09	8.12
Households served in 2005	3,792	7,077	**16,030**	23,992	7,521	8,504
Percent of HH served 2005	2.1%	5.9%	**8.3%**	12.4%	3.4%	13.1%
Cost/lb of HHW collected	$0.75	$0.64	**$0.76**	$0.61	$1.10	$0.76
Program Description						
Perm HHWCFs	1	1	**1**	1	2	1
Opening, Yr(s).	2003	1999	**2005**	1997	1995, 2005	1986
05 Collection Events	0	0	**37**	1	22	0
Reuse Program	Y	Y	**Y**	Y	Y	Y
CESQG Collection	Y	Y	**Y**	Y	Y	Y
Yr. CESQG began	1994	1999	**1993**	1998	2000	1995
Accept E-waste?	Y	Y	**Not in HHW program**	N	Y	Y
Accept U-Wastes?	Y	Y	**Y**	Y	Y	Y

Table 4 provides some performance ratios that help compare Sonoma to the other surveyed programs. The pounds collected per person and per household in the service area indicate that Sonoma, Central Contra Costa Sanitary District and Monterey are collecting relatively high levels of HHW from the waste streams. Each of these programs collects 3.0 to 3.6 pounds of HHW per person and between 8 and 8.3 pounds of HHW for every household in their service area.

This is despite the fact that Monterey and Central San. have significantly higher proportions of households served per year. Sonoma serves approximately 8.3% of households each year whereas Central San. serves about 12.4% and Monterey serves just over 13% of their households annually. This may be explained by the fact that Central San. and Monterey have had permanent facilities in operation much longer than SCWMA and that SCWMA customers are delivering more pounds per customer than the other two programs. Monterey customers deliver approximately 62 pounds per visit and Central San. customers deliver about 67 pounds per visit. Sonoma residents deliver about 77 pounds of HHW per visit.

Another key performance ratio is cost per pound. Again Sonoma is in the middle range of the programs surveyed at approximately $0.76 per pound of HHW collected.

A summary of each surveyed program's cost information is included in Table 9 below.

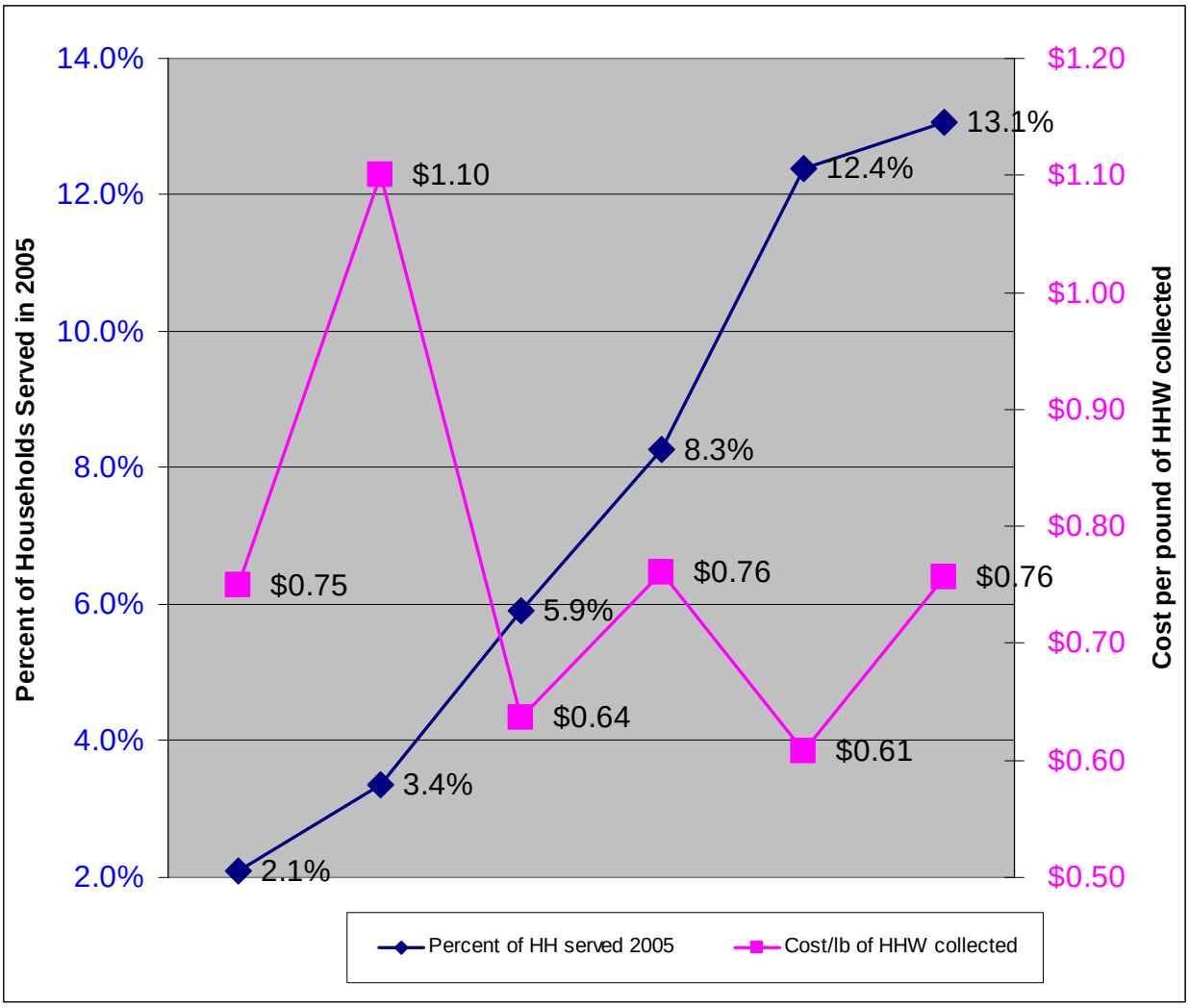
Table 9 – Surveyed Program Cost Summary (05/06 DTSC reporting year)

	San Joaquin County	City of Sacramento	Sonoma County	Central Contra Costa San. District	Kern County	Monterey Regional Waste Management District
Summary Cost Category	**Private**	**Private**	**Private**	**Public**	**Public**	**Public**
Labor	$186,000	$169,823	**$288,080**	$470,000	$364,000	$255,000
Percent of total	34%	46%	**32%**	48%	71%	64%
Supplies	contractor provides	$57,070	**$17,760**	$64,500	$58,000	$15,000
Percent of total	0.0%	15%	**2%**	7%	11%	4%
Disposal	$355,000	$124,384	**$584,244**	$361,000	$93,470	$100,000
Percent of total	65%	34%	**64%**	37%	18%	25%
Subtotal Labor, Supplies, Disposal	**$541,000**	**$351,277**	**$890,084**	**$895,500**	**$515,470**	**$370,000**
Percent of total	99%	95%	**97%**	92%	100%	93%
Utilities	$7,885	$3,118	**Not metered separately**	$11,000	$0	Provided by LFG, $0
Percent of total	1%	1%	**0%**	1%	0%	0%
Other	$0	$17,200	**$21,510**	$65,000	$0	$30,000
Percent of total	0%	5%	**2%**	7%	0%	8%
Total	**$548,885**	**$371,595**	**$911,594**	**$971,500**	**$515,470**	**$400,000**

As indicated in Table 5 and Figure 3, the percent of households served versus the costs per pound of collected wastes varies dramatically between programs. As the percentage of participating households increase, there does not appear to be a corresponding change in the cost per pound of waste managed. This lack of direct relationship is shown in Figure7. Overall

Sonoma is doing well in controlling costs compared to other programs. Ways in which improvements to further reduce operating costs will be discussed later in this report.

Figure 7 – Comparison Households Served and Cost per Pound



III. Comparison of Contractor vs. Public Agency Operated Programs

The program efficiencies and cost effectiveness of each surveyed program were evaluated and compared to Sonoma County's program. The surveys were also analyzed to determine if there were any significant similarities and differences between programs operated by public agencies and those programs operated by contractors. Three programs of each type, public and private, were used for this comparison. Some programs take advantage of private staff to fill in at times of high demand such as on weekends or collection events. These were considered essentially "public" as there is agency staff is on site directing the actual on-site work on an hour-by-hour basis of both agency and contractor staff.

Based upon the surveyed programs, summarized in Tables 8 and 9, there are only a few differences between those programs operated by public agencies versus private contractors. These findings are shown in Table 10 below.

Table 10 – Comparison Public versus Private Operated HHW Program

Program Feature	Private Operated	Public Operated
Labor Cost		Tends higher
Disposal Cost	Tends higher	
Supplies	Inconclusive	
Pounds collected	Inconclusive	
Cost per pound	Inconclusive	
Percent Households Served		Tends higher

Although there was not conclusive quantifiable data regarding a clear advantage of using public versus private operated programs, there are a number of other factors that can influence the decision of who operates an HHW program including:

- Job classification and hiring requirements, it is often easier to hire or replace contractor staff
- Worker retention, it is often easier to retain agency staff for longer periods
- Cost containment incentives, for example implementing a reuse program may be easier to implement with agency staff
- Approval of packaged wastes by disposal facilities, may be facilitated by contractor relationships
- Liability associated with shipments rejection from disposal facilities, may be minimized with contractor staff although this is not usually a problem
- Decreased long-term environmental liability from disposal of wastes since contractor is responsible for packaging wastes

IV. Evaluation of Existing Household Hazardous Waste Programs Infrastructure Capacity

The Sonoma County Waste Management Agency is responsible for providing household hazardous waste management programs for the residents in the nine cities and the unincorporated areas of Sonoma County. This HHW program has evolved into a variety of services. This program currently includes the following services:

- A Permanent Collection Facility to serve customers dropping off wastes for both residents and CESQGs
- Community Toxic Collections (CTCs) that are a series of collection events throughout the County to allow more convenient access
- A mobile service called the Toxic Rover that provides on-call service for those willing to pay a nominal flat fee for the collection and free service for those unable to travel to the other events such as homebound seniors and the disabled
- Small business qualifying as Conditionally Exempt Small Quantity Generators can use any or all of the above services
- Transfer station drop-off for certain large items like appliances and electronic waste

These programs are increasingly popular. Sonoma County's projected population increases and the increased activity by the California regulatory agencies can be expected to continue to expand the universe of household hazardous wastes prohibited from disposal as solid waste with a corresponding increased in the service needs of the Agency's HHW program. In addition, without these factors based upon the experience of other programs, SCWMA's program could significantly increase over the next few years.

The evaluation of the existing HHW program infrastructure will include the following topics:

- Evaluation methodology
- Identification of service needs
- Existing infrastructure
- Program service level
- Analysis of current operations
- Managing anticipated service needs
- Projected program growth
- Potential infrastructure expansion
- Infrastructure expansion timeline

Evaluation methodology

In order to provide realistic recommendations on improving Sonoma County Waste Management Agency's HHW program, a thorough understanding of the current program infrastructure is necessary. Evaluation of the current infrastructure included the following activities:

- Interviews with Agency and contractor personnel
- Site visits to the Central Disposal Site's (CDS) permanent collection facility
- Observations of a Community Toxics Collection event
- Tours of various selected county locations used for collection events or which may have potential as additional collection facility sites.

The following text describes the evaluation research and methods. The results of the evaluation of these activities and recommendations are discussed later in this document.

Interviews with Agency and contractor personnel

Several interviews were conducted with the Sonoma County Waste Management Agency Director, Ken Wells, Janice Oldemeyer of On-Site Electronics (who is the contractor assisting the Agency with current HHW operations), and the Teris (now Clean Harbors) personnel contracted to operate the program. These interviews reviewed current operations, discussed physical and logistical constraints of the existing CDS permanent collection facility, analyzed the operations of the Community Toxic Collections (CTC) and the mobile collection program (Toxic Rover), and the interactions between all of these program elements.

Site visits to the Central Disposal Site permanent collection facility

Site visits to the CDS permanent collection facility were conducted by David Nightingale and Larry Sweetser. The first visit was on June 21, 2006 with Lesli Daniel, the Agency HHW Program Manager. The basic operations of the facility were discussed along with a tour of the facility operating areas. Facilities operating data was requested. On Saturday, June 24, 2006, observations of the facility during operating hours were conducted along with specific questions to facility staff regarding operations. Another site visit was conducted on August 1, 2006, to address additional operation questions, request additional data, and brainstorm ideas for program improvements with Janice Oldemeyer (On-Site Electronics), Tammie Wilbourn (Clean Harbors), and other facility staff. In addition, Larry Sweetser met with John Sorensen (Clean Harbors) on October 18th to verify information.

Observations of a community toxics collection event

On August 1, 2006, the operation of a community toxics collection (CTC) at Santa Rosa was observed. Brief interviews with residents using this program were conducted. Contracted operations staff were interviewed regarding this activity.

Tour of various county locations used for collection events

On August 2, 2006, tours were conducted of various county locations that have been utilized for past CTC's. In addition, several possible locations were visited for evaluation as possible future collection permanent facility locations, if that option were to become a reasonable alternative.

Identification of Service Needs

The California Integrated Waste Management Act of 1989 (AB 939) required local jurisdictions to develop plans for the management of household hazardous waste. As the designated regional agency for the cities and the unincorporated county, the Sonoma County Waste Management Agency (SCWMA) is responsible for implementing programs to meet the goals established under AB 939. The Sonoma County Household Hazardous Waste Element's (HHWE) goal of addressing household hazardous waste management states that:

> The County and the Cities and/or the SCWMA provide cost-effective and environmentally sound waste management services, including special waste and household hazardous waste handling and disposal, over the long term to all community residents and promote the access to services.

Two of the objectives stated in this HHW Element are to achieve:

- Participation of 3% annually
- A measurable reduction of landfill disposal of prohibited wastes.

This report documents that well over 3% of the households are being served annually by the HHW programs. As of the first year of operation of the permanent facility in 2005 approximately 8.3% of Sonoma County households were served by the HHW program. This was in the midrange of the five other CA programs that were surveyed. The other programs ranged between 2.1% and 13.1%. Sonoma County is certainly doing well although there is potential for increasing the level of service significantly above the current level of 8.3% of households per year.

Table 4 shows that the SCWMA HHW program has reduced landfill disposal by over 1.2 million pounds in the past year, assuming that HHW not collected would have otherwise been disposed of in the landfill although other improper disposal methods are possible. Consequently, both of the HHW AB 939 element objectives have been met. An additional benefit of the HHW program is to protect solid waste workers from exposure potential and hazardous materials by offering residents a safer alternative for disposal of HHW.

SCWMA is now examining through this report what the next steps should be to implement a more cost effective Household Hazardous Waste Program and to meet future growth demands of both residents and small quantity generators.

Existing Infrastructure

Sonoma County has a population of 471,000 in 1,598 square miles. Sonoma County has communities along the coast, inland rural areas, and a central urbanized area. Given the geographic diversity of Sonoma County a variety of programs are necessary in order to provide residents with convenient and safe disposal of their accumulated household hazardous waste.

The existing infrastructure includes a permanent facility for collection of hazardous waste from households and small businesses, a series of Community Toxics Collection events held on a rotating basis throughout the county, and an appointment-based mobile collection for homebound seniors and the disabled. All programs are based out of the HTF. In addition, the CDS provides the opportunity for residents to drop-off CRTs, electronic wastes, and appliances

before unloading their solid wastes. All of the county's solid waste facilities' load checking programs are actively involved in screening incoming loads for hazardous and other wastes.

Program Service Level

Since its inception, the SCWMA HHW program has provided increasing opportunities for residents to dispose of their hazardous wastes. The program has been so successful that it is rapidly approaching the maximum operational limits in terms of the existing staffing and collection infrastructure.

The availability of the various HHW programs is identified in the table below. With the exception of the CDS facility program for e-waste and appliances, the HHW program is conducted by seven fulltime equivalent staff provided by Clean Harbors, a private hazardous waste company. Table 11 contains the typical schedule and Table 12 is the program availability.

Table 11 - HHW Program Weekly Hours of Operation

HHW Program Weekly Hours of Operations							
Service	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**	**Sun**
Permanent Facility, HHW				**7:30 am to 3:30 pm**			
Small Business, at HTF		**7:30 am to 3:30 pm**					
Community Toxics Collection Events		**4-8 pm**					
Mobile Collection, Toxic Rover			**Appt**				
Central Disposal, e-waste and appliances	**Daily 7:00 am to 4:00 pm**						

Table 12 – Program Availability

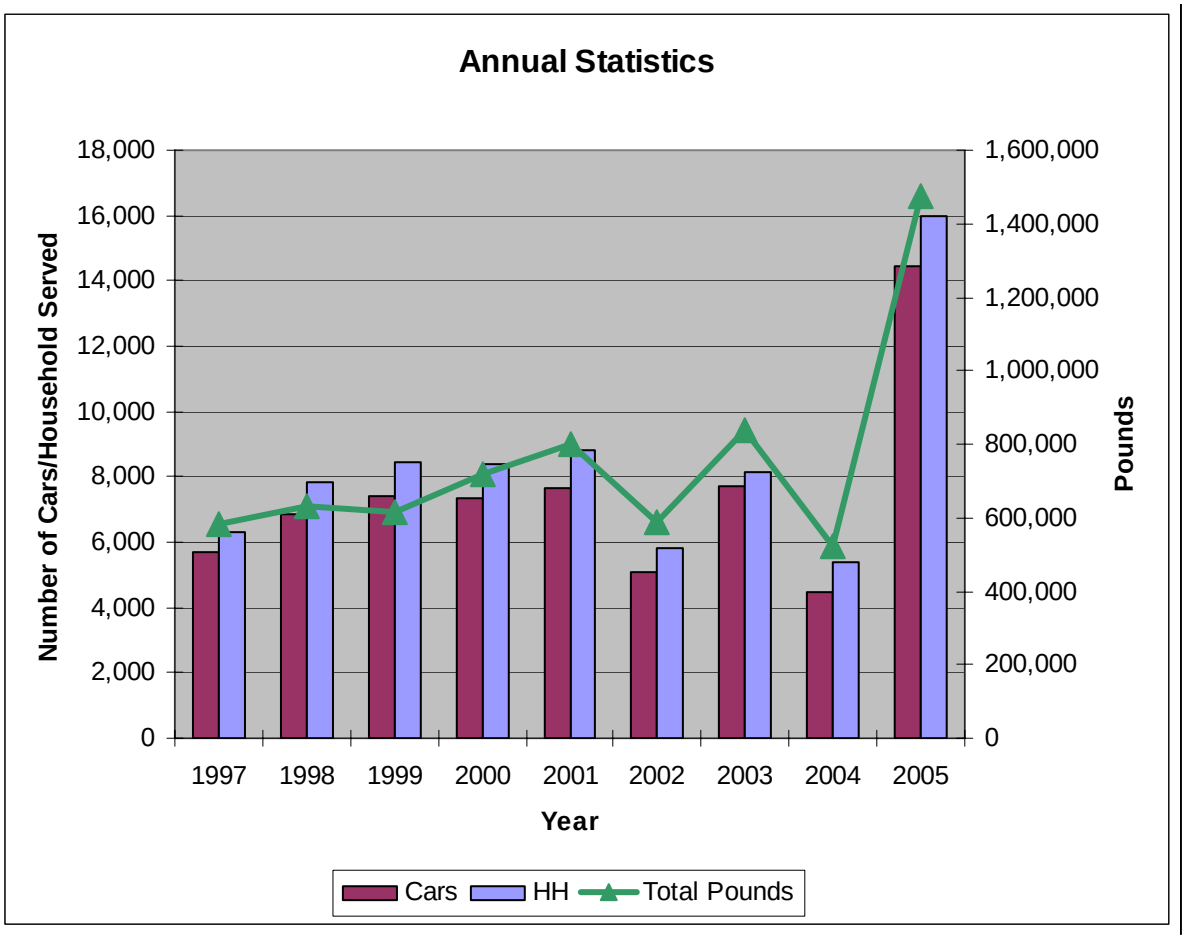
HHW Program Availability		
Service	**Hours per week**	**Hours per Year**
HTF, HHW	24	1,248
HTF, Small Generators	16	832
Community Toxics Collection	4	208
Mobile Collection/Rover	By appointment	By appointment
Central Disposal (for e-waste, appliances, etc.)	63	3,276

In addition to these HHW services, there are 75 used oil collection centers throughout the county. Some of these centers also collect antifreeze and used oil filters. Given the current

effectiveness of the used oil collection system, this evaluation will not review the used oil program.

As indicated in Figure 8, participation in the HHW program has tended to increase with the addition of new services since the first event in 1993 and increased awareness of the program by the public. The decreased number of pounds and customers in 2002 and 2004 was due to a decrease in the number of collection events in anticipation of opening the HTF.

Figure 8 – Annual Statistics



Currently, all of the collected wastes from the CTCs, the mobile program, and the remote disposal site load checking wastes are delivered to the permanent facility for additional processing and shipment. The storage capacity of the permanent facility is constantly near maximum. This overcrowding of the existing facility is a concern for both the overall efficiency of the operation as well as potential for less than optimal safety of materials handling and chemical safety. These concerns will be more fully discussed below in the analysis of the current operations.

The CTCs have limited participation to 80 pre-registered residents at each event. Appointments for many of these events in the denser populated areas are quickly booked at maximum participation well in advance of the event and residents are scheduled for the next local event or encouraged to bring their waste to the central facility during normal operating hours.

Analysis of current operations

As the HHW collection programs have grown to meet the increasing needs of Sonoma County, the existing programs are reaching maximum operating capacity. This evaluation will explore the design and operation of each of the HHW program elements:

- HTF
- CESQG Collection
- Community Toxics Collections (CTCs)
- Mobile collection program (Toxic Rover)
- Solid waste facility universal waste handling

The Program Modifications Evaluation Section will analyze the merits, costs and barriers of modifications presented in this section.

Permanent Facility Evaluation

The permanent facility provides the opportunity for households to drop off their hazardous wastes on three days a week every week and for CESQGs two days every week. In addition, this facility also receives and processes the wastes collected from the CTCs, the mobile (Toxic Rover) collection program, and load checking wastes from the county's solid waste facilities. The key facility features evaluated include:

- Design
- Waste Handling and Storage
- Paint Consolidation Processing
- Material Exchange

Design

The facility consists of a receiving area, the main storage and processing building (including office/break room), an outside storage area with a covered portion, the reuse locker, and the loading dock. Potential water quality impact concerns require that all waste handling and storage be covered. Unloading of customers vehicles occurs in the receiving area. The storage building is used for processing and storage of the collected wastes. The outside storage area provides an area for additional waste handling and the location of lockers for storage of supplies. Received items that qualify for reuse back to the public are placed within the reuse locker. The loading dock is utilized during removal of drums from the facility to an approved processing or disposal facility.

The interior of the facility consists of five storage bays to contain the various classifications of wastes, a mixing room for bulking paints and flammables, an office, a bathroom, a storage room, a fume hood, and the sorting area for processing the wastes including aboveground tanks for used oil and antifreeze. The floor plan of the facility is included in Appendix 3.

The storage area is classified as an H-2 occupancy due to the types and amounts of hazardous waste located in the storage area. Features required under this occupancy rating include automatic fire suppression system and explosion-proof wiring and fixtures. All of these features significantly increased the cost of facility construction. Thus, storage of materials within the

building should be principally limited for higher degree of hazardous wastes, such as flammable liquids being bulked into larger containers.

Each of the storage bays can contain the equivalent of 32, 55-gallon drums for a combined storage capacity of 160 drums. Underlying each of the storage bays is a 4,000 gallon sump to more than contain the required volume of 110 percent of the largest container and twenty minutes of sprinkler flow. The mixing room has a 1,984 gallon containment sump. These calculations are stated on the construction drawings of the facility and allow storage of 20 minutes of sprinkler flow. The walls separating the storage bays extend significantly beyond the portion of the storage bay located over the secondary containment sump.

Site visits and discussions with facility staff indicate that the waste storage area is continually limited by the large volume of wastes processed at the facility. Additional storage capacity is needed. After examining the facility and discussing options with staff, it is possible to reorganize the sorting area and utilize the outside storage area to extend the storage capacity of the facility.

The inside storage area is designed with extensive ventilation and fire suppression systems. This is due to the classification of wastes to be stored in the facility such as oil-based paint, solvents, and pesticides. Many of the other wastes stored do not require such extensive design features to be managed safely. Latex paint and universal wastes are not considered flammable or combustible and can be stored with minimum fire suppression equipment thus reducing the costs of the storage area.

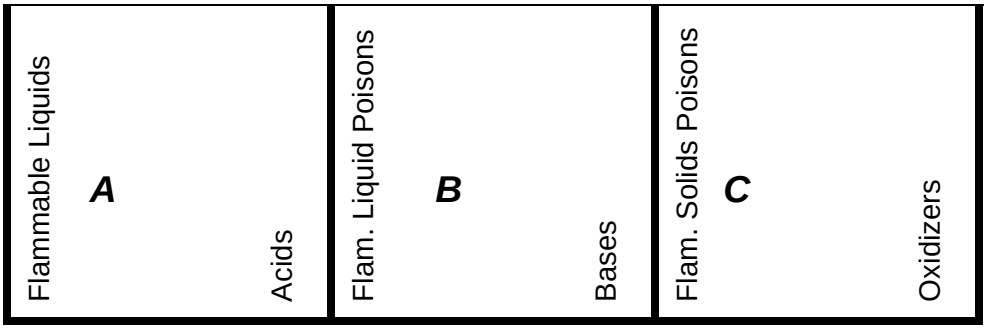
The existing facility has reached maximum storage capacity using the current processing and storage methods and locations. If additional storage area were provided at the HTF the operations could more easily accommodate the increasing customer demand. This would also provide additional time in which to build additional facilities or storage capacity elsewhere to reduce the operating pressure on the HTF. A new latex paint bulking area can be established in the outside area next to the HTF. This will allow more room for this activity as well as free up the area currently used for paint storage and management inside the HTF. Some possible redesign suggestions are listed in the following textbox.

Suggestions for HTF Design Modifications

1. Extend placement of the collected wastes into the area between the end of the containment sump and the end of the wall separating the bays. This will allow the equivalent of an additional eight drums to each of the storage areas. Bulk liquid drums of wastes can be placed on portable secondary containment pallets.
2. Interior waste storage space can be reconfigured to allow for increased waste storage. The used oil and antifreeze tanks can be relocated to the outside covered storage area and the fume hood is rarely used and could be relocated or removed.
3. There is a significant amount of space located outside the facility. This area can be utilized for additional storage of low hazard wastes, such as universal wastes. The existing canopy could be extended over the entire concrete slab area on the east side of the building to allow the storage in conformance with the requirement of covering waste storage areas. A more costly alternative would be to construct additional walled enclosures in this area. This would also provide additional flexibility in operating options. For instance this area could be used for latex paint sorting and recycling. To avoid blown dust and debris it would be best to have the area enclosed. Moving this operation out of the current area would allow the more chemically-dangerous materials to be managed in the current area without as much crowding.

Use of containment bays for incompatible waste separation

Below is a conceptual plan of the main internal storage areas shown as bays A, B and C.



Although most materials are stored in liquid tight drums and different waste types are stored against different walls, in the case of an earthquake or simultaneous spills some incompatible materials could combine in the common sump serving each bay. If each storage bay were used to store a different combination of wastes it would further minimize the potential for mixing of incompatibles. Strong Oxidizers and Flammables are chemically incompatible; similarly Acids and Flammable Liquids are generally incompatible. Most bases do not react with Flammables. An alternative arrangement could be as follows:

Flammable Liquids ***A*** Bases	Oxidizers (in safety cabinets) ***B*** Acids	Flam. Solids Poisons ***C*** Flam. Liquid Poisons

This arrangement would put all flammable poisons together and avoids acids and flammables in the same bay. Strong oxidizers, strong acids (concentrated nitric and concentrated hydrofluoric), and strong bases typically arrive infrequently and in small quantities. Because they are very chemically reactive it is prudent to manage these materials in safety cabinets or in hazardous materials storage lockers. There was at least one blue corrosive cabinet currently available inside the facility. The potential for some oxidizers and acids to react may call for moving one of these categories to another location from the B bay. There are many possible arrangements and options for use of spill pallets and other storage areas that are better than the current practice. The diagram above should be used as a starting point for consideration.

Suggestions for Use of containment bays

4. Reorganize the storage bays to provide better separation of potentially incompatible wastes

Chemically-resistant containment coating

The current operation relies heavily on the use of tarps and plastic sheeting taped to the floor or pavement for spill containment. Apparently this is because the original construction did not include a chemically-resistant coating over the concrete containment structure. The current method is cumbersome, creates tripping hazards and does not meet the intent of containment for chemical spills. The use of these covers should be limited to areas such as the paint bulking areas where small spills might be more difficult to clean up. Chemical resistant coating with non-slip abrasive additives can be applied to the floor.

Suggestions for Chemically-resistant containment coating

5. Apply a chemically-resistant containment coating to the facility floor and secondary containment sumps after proper surface preparation.

Flammable gas monitoring system in bulking room

There are large volumes of flammable liquids transferred to 55 gallon drums in the bulking room. If there were a spill it would be important to know if flammable vapors were present in concentrations approaching the lower flammability level, where a fire or explosion may occur. This early warning system could be accomplished by installing a flammable gas monitor system. Because flammable gases are typically heavier than air and spills would be near the floor, sensors would be best located near the floor, typically within 12 inches of the floor level, and where vapors are usually generated at the level of the bulking activity. The cost of a flammable gas monitor system is approximately $4,000.

Suggestion for bulking room

6. Purchase and install a flammable gas monitor system with sensors near to the floor and close to the point of vapor generation during bulking of flammables.

Waste Handling and Storage

The only facility for processing and storing HHW and CESQG wastes is located at the Central Disposal Site about 15 minutes from Santa Rosa. On average, every week there is enough waste to ship a full semi-truck. Because of the limited space in the facility some drums of waste are stored in the loading bay inside a trailer. The drums are sealed and ready to ship according to DOT hazardous materials regulations. However, this extraordinary measure has been taken because the facility is not currently able to effectively manage the very large volumes of waste with the current operations. Even after a shipment, the number of remaining drums fills a substantial portion of the facility. There are various issues of concern or efficiency that we will discuss below. Some of these will provide the ability to free up some space inside the existing facility while others are related to safety or efficiency of the operations. In general the operation at the HTF would benefit from additional storage space for waste prior to shipment. One possible solution is to enclose the slab to the east of the HTF with a building extension.

Suggestions for Waste Handling and Storage

7. Investigate additional drum storage options including converting the outside storage area to an enclosed building extension.

Waste Disposal Policy

It may be prudent to examine the chemical nature of certain leftover products brought into the facility. For example there was a 30-gallon drum in the oxidizer storage area that appeared to be filled with small consumer bottles of 2% hydrogen peroxide solution. While from a chemical perspective this is an oxidizer, from a hazards perspective it is not a strong formulation, it is used as a topical antiseptic on small cuts and skin abrasions and can even be used as a mouthwash. When exposed to the air, light, or in contact with the skin it releases small quantities of oxygen bubbles. Small quantities poured into the wastewater system would be very unlikely to cause problems. Disposing of this material as a hazardous waste is a very costly option compared to the fact that it will naturally react to release small amounts of oxygen and the remaining material is water. Alternate methods of treatment can be investigated for these very low hazard wastes. If this is a common waste but not very high volume it may be easy to simply set an open pail of this 2% solution outside overnight to allow the oxygen to slowly off-gas into the air.

Not all materials brought to HHW collection facilities merit packaging and shipping as hazardous wastes. Soaps, shampoos, silicone caulking compounds, and other products may often be disposed of by methods that are safer and less expensive than being sent to a hazardous waste disposal facility. Although these wastes are technically "liquids", many solid waste facilities allow them to be disposed in small consumer container quantities as nonhazardous, solid waste.

Most of these nonhazardous wastes are classified as solid poisons or as bases. If even five percent of the 2005 disposal costs for these wastes were avoided it could result in $2,000 to $3,000 disposal cost per year.

Suggestions for Waste Disposal Policy

8. Consider alternative disposal options for non-hazardous wastes.

Paint Consolidation Processing

The latex bulking program could be relocated to the redesigned outside storage area since this operation does not need to be conducted within the building's H-2 occupancy rating.

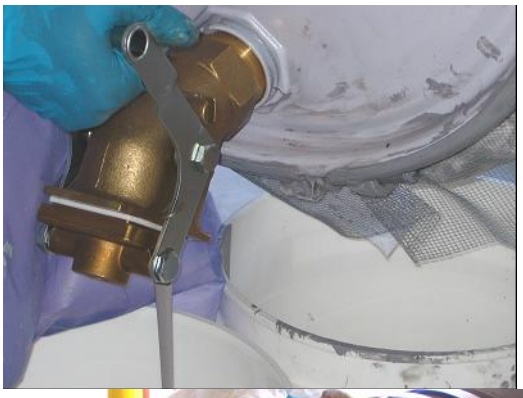
During the site visits the HTF was beginning to experiment with processing leftover latex paint into recycled paint to give away to local customers. As with any new process there is a learning curve. Now that the contractor has had time to experiment with this process, a more permanent processing system can be installed. Below is a brief description of the process observed on June 21st followed by an evaluation and recommendations.

Existing Paint Consolidation Procedure

1. Useable leftover paint is sorted by color in original cans and stored in drums or cubic yard cardboard boxes until there is enough to fill a 55-gallon drum.
2. Paint cans are emptied into an open-head 55- gallon drum. There are no standard colors at this early stage in the consolidation history at this facility.
3. When the drum is full an electric mixer is mounted on the drum with a propeller to mix the paint into a consistent color. The electric mixer motors are rated as explosion resistant (proof).

4. A fabric filter cloth and wire mesh screen (hardware cloth) is placed over the entire top of drum prior to the drum lid being placed and tightened. The 2-inch bung hole in the drum lid has a manually-operated bronze valve installed.
5. The sealed drum is secured to a drum tipper mounted on the front forks of a fork lift truck.
6. The fork lift truck lifts the sealed drum approximately 2 feet off the ground
7. The drum is tipped so that when the valve is opened the paint will flow by gravity into an empty 5-gallon paint bucket.
8. When each 5-gallon bucket is filled the valve is closed and a new empty bucket is placed below the valve.
9. The drum angle is adjusted as needed to empty the drum and the drum holder height is adjusted with the fork lift truck as needed until the drum is empty and approximately 10 buckets (50 gallons) have been filled
10. Each bucket receives a plastic lid with a daub of color from the bucket to indicate the color within. The lid is pounded tight by a worker with a non-metallic mallet.
11. The full, sealed, 5-gallon buckets are moved to the reuse buildings for free distribution and use by the community.

Latex Paint Consolidation Process



Evaluation of Leftover Paint Consolidation Process

The latex paint can storage, drums into which paint is consolidated, and the mixing process takes up most of one the hazardous materials containment bays in the facility. When the paint is being decanted into the 5-gallon buckets a large additional area adjacent to the paint storage and mixing bay is required to stage the fork lift truck, fill the buckets and mark and seal the buckets.

One of the most highly-engineered and expensive areas of the facility are the bays designed to contain the most dangerous hazardous materials. Although latex paint is still considered "hazardous" by the Department of Toxic Substances Control, it is not nearly as reactive or dangerous as many other high volume hazardous materials delivered by homes and businesses. And latex paint does not present the hazards of flammable vapors that can create an explosive atmosphere. If there were a spill of latex paint a simple asphalt or cement pad would provide adequate containment and epoxy coating would be unnecessary. So the relative threat to the workers, building, and environment is less than many other materials and easily contained in areas other than the hazardous materials bays.

Further, latex paint provides little if any health threats to workers through inhalation of vapors, however, it is prudent to provide eye and general skin protection for occasional splashes. Workers at the facility were wearing eye and general skin protection. Passive or non-mechanical ventilation can usually be adequate during latex paint bulking operations however it is prudent to provide mechanical ventilation for worker comfort and avoidance of any potential long-term health effects.

Therefore, latex paint can be managed effectively and in regulatory compliance without the more expensive epoxy-coated hazardous materials containment structures. If there were sufficient room in the facility for all other operations, this part of the operation could remain.

However, the facility is heavily used and space demands for more hazardous materials should be met by using the hazardous materials bays.

Given the space constraints, it is strongly recommended that the latex paint consolidation process be relocated possibly to an area outside the facility under the canopy. This relocation is discussed in more detail later in the facility modifications section. In addition to relocating the paint recycling area, there are certain improvements to the latex paint consolidation process that should be considered. The recommended process modifications largely revolve around providing storage and processing areas as well as workflow patterns for more efficient and ergonomic materials handling. These recommendations are provided below.

1. Standardize the color sorting protocol. This provides predictable working practices and a more consistent product for the citizens who use the paint.

2. Use durable stacking boxes for paint cans awaiting processing. Stacking these containers will allow more storage capacity for paint awaiting processing.

3. Drum mixers are limited. The electric drum mixers are of good design, however, because of the relatively high viscosity of leftover paint and high levels of use may not last more than a few years. In addition, they are heavy and awkward to move the drums in and out which needs to be done for each use. Air driven mixer motors are lighter and tend to last longer than electric mixer motors. Another step up in processing would be to use 300 gallon totes that are moved by forklift for bulking mixing and dispensing into buckets. In this case a larger mixer would be used and would be suspended above the tote. The suspended mixer configuration could also be employed with the current mixers to reduce the current ergonomic stress with manual moving the mixer and motors.

4. Paint filter system is inefficient. Sandwiching the filter fabric and wire mesh between the drum and drum head is a cumbersome and timely process to assure a good seal. In addition, the only area where the filter fabric is actually needed is at the outlet of the two-inch bung hole whereas the filter sandwich is placed over the whole two-foot diameter drum head. So only a fraction of the filter material is used. Also, impinging the fabric and wire mesh between

the drum head and drum together with the usual drum seal may provide undue stress on the drum ring seal design. If this led to a seal break or drum ring became dislodged during the pouring process there could be a significant spill or physical hazards to the workers in the area. To improve the filtering process a simple screen with filter fabric can be used above the bucket. There are also commercial paint filters which may be available. Another option would be to use an air driven liquid pump to force the paint through a cartridge filter between the drum and bucket. The pump-filter system could be adapted for use with the larger tote system if that were implemented later.

5. Use of a forklift for paint bucket dispensing provides less control. The person operating the two-inch drum valve for filling the 5 gallon recycled paint buckets is unable to control or see the controls over the drum tipping mechanism or operation of the forklift. The use of the forklift and attachment provide more potential for uncontrolled or unexpected movement of the heavy paint drum during the decanting process. Providing a dedicated drum handling machine such as the tilting drum dolly shown in the picture here for paint dispensing would remove some or most of these workplace hazards. The cost of this tilting drum dolly is about $3,000. The dispensing could also be done in conjunction with the 300-gallon totes placed on a tilted rack.

6. Improve working height for paint bucket filling and lid placement/sealing. Currently the paint buckets are filled with the bucket on the floor and the drum tipped to pour to the floor level. In addition, the buckets are sealed with lids at floor level after being moved manually to another nearby location. These practices can be ergonomically improved. A similar process but at an improved working height is shown in the image above. This also shows a tilting drum dolly that is controlled by the bucket filler. The buckets are pushed along the raised platform roller conveyor where the lids are placed and sealed in a linear and efficient process at a more normal working height.

Suggestions for Paint Consolidation Processing

9. Consider relocating latex paint operation to free up space for drum storage.
10. Standardize color sorting protocol.
11. Use 300 gallon tote for mixing rather than 55 gallon drums
12. Use durable stacking boxes for paint cans awaiting processing
13. Consider replacement of electric paint mixer with an air driven unit at future operations.
14. Redesign paint filtering apparatus.
15. Replace forklift with a stationary tilting drum dolly or use of 300 gallon totes for dispensing paint.
16. Improve working height for paint bucket filling and lid placement/sealing.

Material Exchange - Reuse

Products which are selected by staff for reuse are in essence no different functionally or chemically from products found in local hardware or home improvement stores. At the point where the products are put out for reuse they have been evaluated for banned products as well as for sound containers. Currently these products are being stored in the hazardous materials prefabricated steel building designed to contain spilled hazardous materials. At retail stores, the building and fire codes recognize an M occupancy for "merchandise" on display for customer purchase. There are limits for consumer quantity containers, for instance 5-gallon or less size for certain materials. For common products in sound containers it may be possible to store the items put out for reuse into a building rated as M instead of the more expensive H occupancy currently used. This would allow the hazardous materials prefabricated building to be used for more dangerous wastes prior to shipment (oxidizers, strong acids, and other more chemically reactive wastes). This would also relieve some of the space constraints at the current facility.

Tracking the amount of items reused is a valuable component of an HHW program since it can document significant savings on disposal costs and measure the Agency's efforts to control the cost of the program. In addition, this is a much appreciated service by the public. California statutes provide liability exemptions for these material exchange programs provided that the participants sign a liability waiver when removing the items. The current liability waiver serves that purpose but it is complicated for the average user. As a result, it does not appear that an accurate inventory is maintained on the amount of items actually reused. Observations during the site visit confirmed this concern. A simpler form would make this record keeping task easier, provide more complete accounting of items taken for reuse, and ensure that the Agency maintains its liability protection. An example of a simplified reuse form is included in Appendix 4.

In the benchmarking surveys, the Central Contra Costa Sanitary District indicated that they had historically estimated their reuse statistics using an average of 2 lbs per items. But data of actual reuse weights measured since July 2006 indicate actual weight is 5.6 lbs per item, an underestimate of about two and a half times. It would be prudent for Sonoma to periodically determine the actual weight of reuse items and types of materials reused to more accurately estimate the benefits and cost reductions of the reuse program. The Central Contra Costa Sanitary District has decided to use this more accurate weight information to allocate their facility costs to both waste disposed as well as reused. Because their customers reuse a lot of HHW, this accounting change resulted in a reduced cost per pound of HHW handled from $1.02 to $0.80.

During the sorting process, HTF personnel currently segregate out eligible items for the reuse program onto a cart. Once the cart is full or when time allows, the cart is moved to the reuse locker and the items off-loaded into the appropriate locker. Weighing the carts prior to delivery to the reuse area can provide a more accurate weight of the reuse items. It is expected that the reports issued would then reflect a substantial disposal cost savings.

Suggestions for Waste Exchange

17. Simplify tracking form used to more accurately obtain the types and number of containers amount of materials taken by the public from the reuse program.
18. Weigh carts with reuse items to more accurately obtain the amount of materials taken by the public from the reuse program on an ongoing basis. Periodically determine actual weights and types of materials passing through the reuse program. This will allow more accurate estimates of cost savings and benefits to the community from the reuse program. The detailed profile of waste and quantity can be used to create an average reuse profile that can be used in combination with the cart weights for more accurate program results.

CESQG Collection

The Conditionally Exempt Small Quantity Generator (CESQG) collection program provides the opportunity for some small businesses to use the central HTF or the Community Toxics Collection programs. Only those businesses that generate less than 100 kilograms (27 gallons liquid or 220lbs. of solid) of hazardous waste per month are eligible to use this program for a small fee. Currently, this cost includes a $25.00 registration fee plus disposal fees based on type and quantity of the waste. Prior to delivering the waste, the business must contact the facility operator to verify eligibility and determine type and quantity of wastes to be collected.

Suggestions for CESQG Collection

19. Evaluate current fee structure for the CESQG program to ascertain whether eligible businesses are being assessed the appropriate charges. Consider increasing the user costs for residents with large amounts and small businesses.

Community Toxics Collections (CTC) Evaluation

Community Toxics Collections (CTC) provide the opportunity for participating residents to drop off their accumulated hazardous wastes at a closer location for them than to deliver the waste to the HTF. These programs are conducted once a week at a different location throughout the county. The CTC program has gotten so popular that participation has been limited to the first 80 participants that call for a reservation. Subsequent participants are directed to the next event in their area. The collection is only scheduled for four hours and typically involves three to four program staff. Additional staff hours are needed to set up a collection location, packaging the drums for transport, cleaning up the site, and to finish processing the waste once it is returned to the HTF. Once the collected wastes are transported to the facility, the wastes typically remain on the vehicle parked at the facility since there is insufficient room to store the containers in the facility.

These events satisfy the need to provide convenient collection opportunities for residents but are extremely staff intensive. Since the events are conducted nearly every week it is not feasible to add additional weekly events with current staffing. In 2005, the CTC had 1051 participants and collected 96,379 pounds. The average statistics per participant is $102.95 and 91.70 pounds collected. Cost for personnel and equipment vary depending upon the number of

participants with confirmed reservations. The costs per event vary depending upon the number of participants as indicated in the table below:

Table 13 – CTC Costs per Event CTC

Category	Participant Range		
	0-40	40-60	60-80
Preparation	$152	$152	$152
Labor	$304	$360	$536
Vehicle Fee	$150	$250	$250
Total	$606	$762	$938

Because the space at the HTF is so limited it would be advantageous to establish satellite locations for storage or supplies and wastes at strategic locations in the service area. This may be feasible at existing transfer stations of other public service facilities.

Suggestions for Community Toxics Collections (CTC)

20. Evaluate locating storage for CTC supplies and waste at established satellite collection locations to reduce impact on HTF storage.

Mobile Collection Evaluation

The mobile program (Toxic Rover) provides pick-up for a fee and free of hazardous wastes from home bound seniors, disabled residents. Residents with large amounts of HHW, and some small businesses users of this program pay a $35 flat fee. CESQG who use the mobile program also pay the cost of waste disposal. Facility staff queries the callers on the amount and types of waste to be picked up. Business waste is required to have the inventory formally approved prior to pick-up.

Mobile collection directly from residents is the most expensive HHW program service. The Agency's current cost per participant is $245 compared to the to $53.00 cost per participant of delivering wastes to the facility. Mobile collection is also complicated by distance and environmental factors. Drive time to the site can vary significantly given location. Given the distances involved, participation in the mobile program is limited to about 8 stops per day with an average of 18 stops per month.

Once on-site, staff can encounter issues with access to the site, access to the wastes, inaccurate waste inventory, participant cooperation, and animal and pest issues. Travel time and time on-site can range from 4 to 8 hours.

Costs for this service include use of the box van at $150 and $76 per hour for two staff for a cost range of $454 to $758 not including waste disposal costs. In 2005, an average of 381 pounds was collected from each of the 220 mobile program users.

Suggestions for Mobile Collection Evaluation

21. In addition to the suggestion to increase disposal fees, evaluate the user fee charged to households using this program.

Solid Waste Universal Waste Handling

Although the collection of universal waste at the solid waste facilities is not considered a component of the HHW program, it provides an essential service for the collection of cathode ray tubes, electronics waste, and appliances containing materials that require special handling. Without this collection option, residents would attempt to deliver these wastes to the HTF.

Currently, California is seeking to expand the regulatory requirements for disposal of treated wood waste and lead painted wood. Collection of these large items by a solid waste facility is more appropriate and a more convenient option than using the HHW facility.

Suggestions for Solid Waste Universal Waste Handling

22. Continue utilizing solid waste facilities for universal and other large hazardous wastes from households.

Load Checking

Although prohibited wastes collected by the solid waste load checking programs are not considered a direct component of the Sonoma County HHW program because the cost of this service is covered by the County, the prohibited wastes are transferred to the HTF for processing. Sonoma County's hazardous waste contractor currently collects hazardous load checking wastes within the required 90 day storage limit. This collection occurs regardless of the amount of hazardous waste accumulated at remote solid waste facilities. The contractor dispatches personnel to each of the solid waste facilities to package the wastes to transport them back to the permanent HTF. This is a labor and equipment intensive operation.

Increasing storage retention time at the remote locations and packaging the waste for future transport could result in significant cost savings and reduce processing burden at the HTF. The contractor can dispatch personnel to periodically package the waste in each of the facilities and, when appropriate, send a driver and truck to pick up the waste. The storage time can be increased by submittal of a Permit-by-Rule as a household hazardous waste collection program with a request for a maximum one year storage time. This is a relatively simple process and is routinely granted by DTSC. Since this operation would not intentionally accept HHW from residents, there is no change to the operation or current training requirements of site personnel. The contracted hazardous waste hauler would continue to be responsible for utilizing fully trained personnel for the collection.

Another program cost savings would be to include the packaging and transport of the Annapolis transfer station load checking wastes with the Mendocino County mobile HHW program that is currently servicing the Sea Ranch community with periodic collection events several times per year.

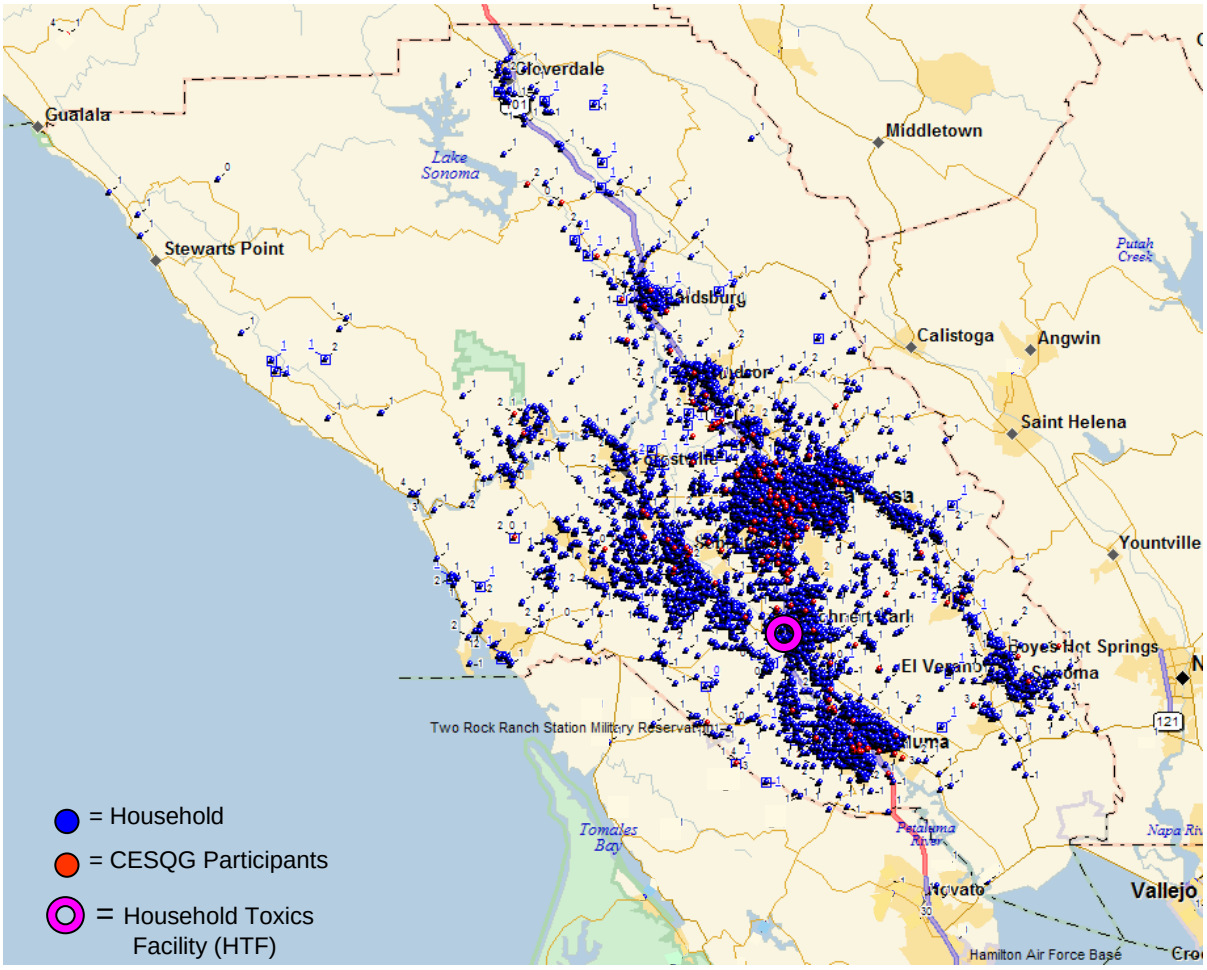
Suggestions for Load Checking

23. Submit completed Permit-by-Rule to allow storage of accumulated load checking HHW and CESQG wastes for up to one year
24. Investigate expanding the contract arrangement with Mendocino County for periodic HHW collection from Sea Ranch to include packaging and transport of load checking wastes from the Annapolis Transfer Station.

Participation Analysis

The variety of programs offered by Sonoma County has been well utilized as indicated in Figures 1 and 2. Figure 9 displays the household and CESQG participants for 2005 for the incorporated and unincorporated County residents.

Figure 9 - Participant Map 2005



A table analyzing customer participation level by community is indicated in the table below for the calendar year 2005 participation. Also included in this table is the percent participation in each program type based upon the number of participants that used the HHW program.

This data was accumulated by tabulating the 2005 Sonoma participants' surveys. The number of customers indicated includes the occasions when the customer is delivering waste for more than one household. The surveyed data was mapped by Sonoma County's Department of Transportation and Public Works who utilized the County's GIS to extract accurate participation for each incorporated city.

Table 14 – Participation Distribution by Jurisdiction (Jan.-Dec. 2005)

Jurisdiction	Customers Served 2005			Community	Percent of	Percent of Collection by Method for each Community		
	HTF	CTC	Rover	Totals	Countywide	by HTF	by CTC	by Rover
Cloverdale	38	22	2	62	0.4%	61.4%	35.1%	3.5%
Cotati	262	4	1	268	1.7%	98.0%	1.6%	0.4%
Healdsburg	93	56	1	150	0.9%	61.9%	37.4%	0.7%
Petaluma	1,826	43	13	1,881	11.7%	97.0%	2.3%	0.7%
Rohnert Park	1,062	45	12	1,118	7.0%	95.0%	4.0%	1.0%
Santa Rosa	4,003	383	97	4,483	28.0%	89.3%	8.5%	2.2%
Sebastopol	383	29	5	417	2.6%	91.8%	7.0%	1.2%
Sonoma	87	11	5	103	0.6%	84.4%	11.1%	4.4%
Windsor	272	108	3	383	2.4%	71.0%	28.1%	0.9%
Subtotal or Average	**8,025**	**701**	**139**	**8,864**	**55%**	**90.5%**	**7.9%**	**1.6%**
Uninc. County	6,553	508	104	7,166	45%	91.5%	7.1%	1.5%
Total or Average	**14,578**	**1,209**	**243**	**16,030**	**100%**	**90.9%**	**7.5%**	**1.5%**

Key:

HTF = Household Toxics Facility
CTC = Community Toxics Collections

This data clearly indicates the overwhelming participation in the permanent facility (HTF) located at the CDS. It also indicates that the number of participants from the more distant cities of Cloverdale, Healdsburg, and Windsor use the facility less and rely more on the CTCs. This begs the question "How important are the CTC events in the areas where the vast majority of customers choose to use the HTF instead?" Increased usage of the HTF is partially due to the increased operating hours. The data also indicates that a significant number of residents will travel to use the facility.

Based upon the California Department of Finance number of housing units estimated as of January 1, 2006 for each city and the unincorporated County, the following table indicates percent participation based upon the number of households in each jurisdiction. As Table 15 indicates, Sonoma County has a high overall participation of 8.3% of the population for the year 2005 with 7.5% of that total from use of the HTF. Table 15 shows that only slightly more households served were self-identified as being from incorporated communities, 8,864 versus 7,166 in the unincorporated areas.

Table 15 – Percent Participation Distribution by Jurisdiction (Jan.-Dec. 2005)

Jurisdiction	Community Total Households Served	Total Housing Units in Community	Percent of Households Served by Collection Method in each Community			Percent Served in each Com-munity
			HTF	CTC	Rover	
Cloverdale	62	3,297	1.2%	0.7%	0.1%	1.9%
Cotati	268	2,994	8.8%	0.1%	0.0%	8.9%
Healdsburg	150	4,565	2.0%	1.2%	0.0%	3.3%
Petaluma	1,881	21,443	8.5%	0.2%	0.1%	8.8%
Rohnert Park	1,118	16,353	6.5%	0.3%	0.1%	6.8%
Santa Rosa	4,483	62,398	6.4%	0.6%	0.2%	7.2%
Sebastopol	417	3,362	11.4%	0.9%	0.1%	12.4%
Sonoma	103	5,135	1.7%	0.2%	0.1%	2.0%
Windsor	383	8,975	3.0%	1.2%	0.0%	4.3%
Subtotal	**8,864**	**128,522**	**6.2%**	**0.5%**	**0.1%**	**6.9%**
Uninc. County	7,166	65,338	10.0%	0.8%	0.2%	11.0%
Total	**16,030**	**193,860**	**7.5%**	**0.6%**	**0.1%**	**8.3%**

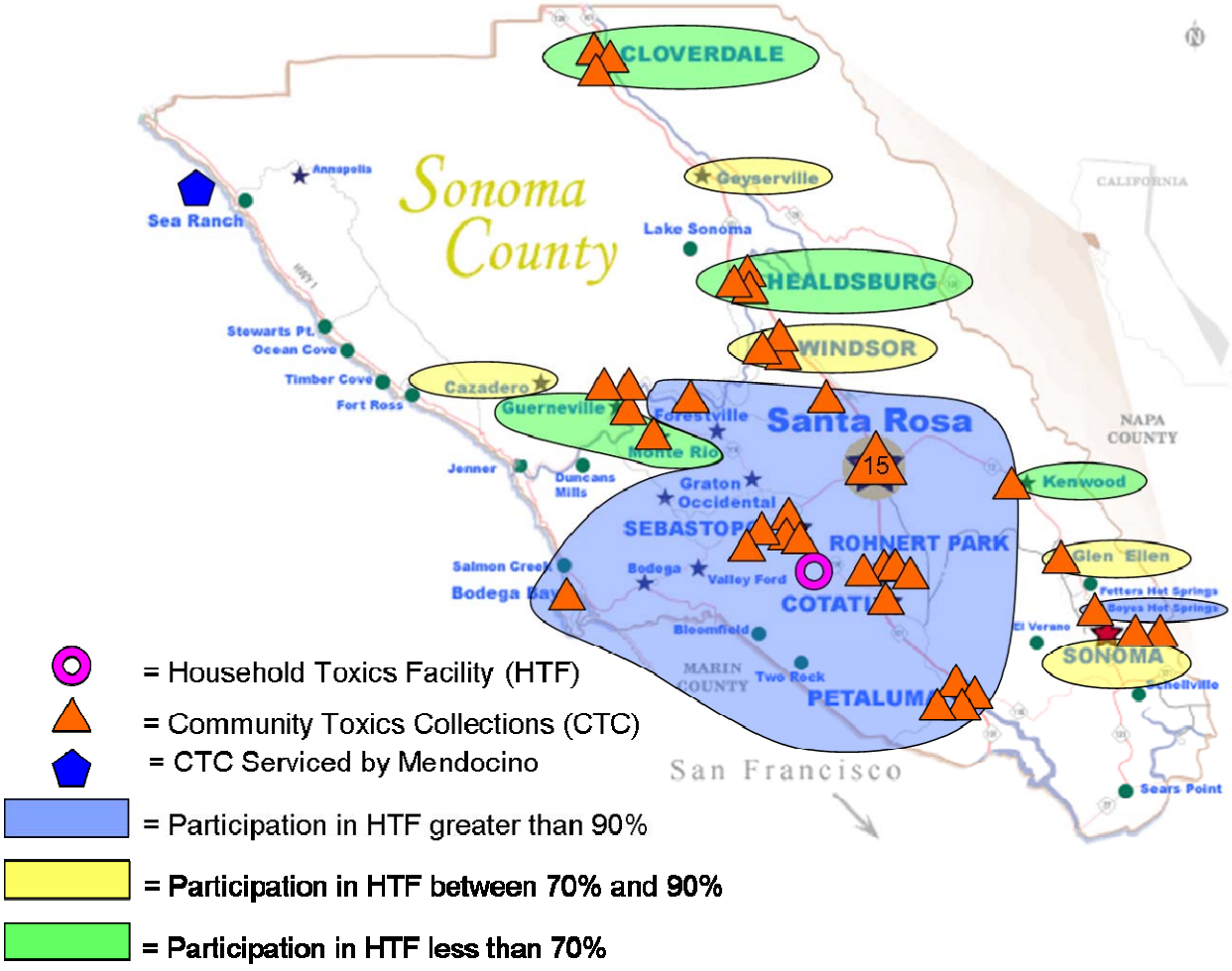
The last column shows the estimated percentage from each of the incorporated communities served in 2005 based on customer survey data. Every customer fills out a survey and indicates what community they are from. The "Total Housing Units in Community" column only includes the residences within city limits. The 2005 County total participation rate of 8.3% is based on all participating households divided by total households (incorporated and unincorporated areas) in the County and is a good overall program service level indicator, although exact counts for each city may not be precise due to reporting errors by participants.

In comparing relative service levels in incorporated versus unincorporated areas, the unincorporated areas appear to be getting a higher overall level of service, approximately 11.0% of households were served in 2005. The incorporated area households received a smaller overall level of service, approximately 6.9% of households in 2005. In addition, the unincorporated areas rely more heavily on the CTC service, 0.8% versus only 0.5% for households from incorporated areas. This might be attributable to the much lower level of subscription to garbage service (approximately 50%) compared to residents in the incorporated cities, reducing the opportunity to conveniently (and illegally) dispose of HHW in their household trash.

The table also indicates that the northern incorporated cities of Cloverdale, Healdsburg, and Windsor use the HTF less than other cities and were higher users of the CTC program. Since the CTCs are held less frequently in these areas, it is likely the residents would participate more if more opportunities were available.

Figure 10 indicates the locations of the existing HTF (the pink donut symbol) and the CTCs (orange triangles). It also indicates participation levels in the Household Toxics Facility for various areas of the County. The area that is shaded blue includes areas with more than 90% of the participating households using the HTF. Not surprisingly the areas closest to the HTF are served to a great extent (over 90% of participants) by that facility. In general, areas further out rely less on the HTF and more on CTCs.

Figure 10 – Participation Density and Program Location



The 2005 HHW program participation and cost data illustrated in Table 16 below indicates that even though the permanent HTF is the most heavily used program it has the least expensive operating costs per pound collected and per participant. The HTF costs represent only about 79 percent of the total, 75% for HHW plus 4% for CESQG wastes. This table clearly indicates that the HTF is the most effective and cost efficient collection method for the SCWMA. This is very typical of findings from other jurisdictions. Fixed facilities are usually considerably less expensive to operate on a per customer or per pound basis than collection events such as the CTCs or mobile collections such as the Toxic Rover.

Table 16 - Collection Method Effectiveness

	HTF - HHW	TOXIC ROVER HHW	CTC-HHW	TOTAL HHW	CTC-CESQG*	HTF – CESQG*
Number of Participants	12,911	220	1,051	**14,182**	8	204
Total Recycled/ Disposed (pounds)	936,937	83,765	96,379	**1,117,081**	625	50,912
Total Recycled/ Disposed Costs	$426,712	$45,021	$50,261	**$521,994**	$543	$34,566
Mobilization Costs	$260,571	$8,838	$57,941	**$327,350**	$200	$5,100
Total Costs	$687,283	$53,860	$108,202	**$849,344**	$743	$39,666
Revenue		$4,545				$38,623
Pounds per Participant	**72.57**	**380.75**	**91.70**	**78.77**	**78.06**	**3.94**
Cost per pound	**$0.73**	**$0.64**	**$1.12**	**$0.76**	**$1.19**	**$0.78**
Cost per Participant	**$53.23**	**$244.82**	**$102.95**	**$59.89**	**$92.81**	**$194.44**
Mobilization Cost per Participant	**$20.18**	**$40.17**	**$55.13**	**$23.08**	**$25.00**	**$25.00**

*Costs borne by CESQG customers

The mobilization cost is based upon the contractor's costs for personnel, equipment, materials, and insurance bonds. The annual mobilization cost is a negotiated flat rate. The contractor has estimated that the costs are distributed to the HTF by 79.6%, the CTCs are 17.7%, and the Rover is established at 2.7% of the base annual rate. The mobilization cost for CESQGs is an additional fee beyond the negotiated mobilization fee and is assessed as a flat rate per customer. The Load Checking mobilization cost is based upon a flat rate of $150 per site. Now that the permanent facility has been operating for nearly two years, the allocation of the mobilization costs should be reevaluated by the contractor to provide for more accurate program evaluation in the future.

Managing anticipated service needs

It is anticipated that the service level needs of Sonoma County will continue to increase in conjunction with increases in population and also as more wastes are banned from landfill. The ability of the existing HHW infrastructure to manage these needs will be difficult without changes to the infrastructure. Once the public is aware that certain wastes are not allowed to be disposed of as solid waste, they expect their local government to develop convenient and free options for disposal.

Personnel, equipment, and disposal costs continue to rise each year. It is important to ensure that the programs are operated at their maximum cost effectiveness.

Potential infrastructure expansion

The extent to which the infrastructure may need to be expanded depends on many factors such as expected population growth as well as typical use trends at SCWMA's current and potential expanded infrastructure. Ideally any expansion would be implemented so that additional capacity creates a more efficient operation, distributes programs and resources evenly throughout the service area and keeps up with the anticipated needs of the citizens.

Because the existing HTF is over used and it is physically constrained at its current site, it is likely that there will need to be additional permanent facility capacity in Sonoma County. There are various types, sizes and functional capacities that can be created to add more facility capacity. For planning purposes it is useful to use different general types of facilities. For this report we will discuss three types, called A, B, and C.

Although there are many variations, the three facility types are described as follows:

Type A facility – A collection facility similar in function to the existing HTF where wastes are accepted, processed, packaged and stored prior to being shipped offsite. This is also sometimes referred to as a "full-service" facility.

Type B facility – A collection facility that is less sophisticated in the range of services or operational complexity than a full service Type A facility. For instance a Type B facility may accept, package and store wastes for shipment but not open containers or perform processing of wastes.

Type C facility – A collection facility that is primarily designed to provide service to less urban areas and would be unlikely to process wastes except bulking of automotive fluids. A Type C facility may act as a staging area for collection events (CTCs), and provide a permanent satellite collection point for all wastes that are further managed at a larger Type A or B facility.

The actual cost, size, configuration and features of new facilities will depend on many factors. Some factors are determined by the site where the facility is located. For instance there may be a small lot or part of a parcel in an ideal location for public access but it may not be possible to provide as much storage or queuing space as desired for the operation. This tradeoff between desirable location and size of site might be accommodated by limiting the processing and storage, which could be performed at another facility.

If a chosen site is relatively large it may be good to consider locating addition processing or storage capacity at that site that will serve the whole system. For instance, it may be advantageous to have different facilities specialize in processing latex paint or bulking of flammable liquids or provide offloading and storage of truckload quantities of drums or other supplies to reduce operating costs through bulk purchase pricing.

Whether a particular facility is a Type A, full-service, or B, limited operations, has more to do with the site and facility functions anticipated and included in the design of the building than ability to manage more or less customers. Both Type A and B facilities should be sized to manage, store and ship truckload size wastes. Wastes might be sent to another facility in the system for wastes that are further processed before leaving the county or directly to a TSD or recycler for wastes that will not be further processing in the SCWMA system.

The design of the system should be performed in an integrated way so that materials and processes are combined to provide maximum efficiency. Because there is a need for additional facilities in the more populated areas of the county it should be possible to locate specialized functions at different locations to increase the materials handling efficiency and minimize overall operating costs.

If the SCWMA Board decides to pursue an expanded and integrated infrastructure system, a more detailed analysis of the expanded system would be the next step. This could include a process to further define parameters of an expanded system including detailing:

- Number and type of additional facilities and anticipated range of site sizes
- Optimal areas to locate new facilities
- Define characteristics of ideal sites (e.g. areas, zoning, type of facility, etc.)
- Availability of suitable parcels in optimal areas
- A system plan of operation regarding capacities and functions at each facility

Some of these details are suggested in this report in the scenario that follows. However there will need to be further refinement and additional tasks performed to fully complete the entire list above.

Timeframes and rough costs for the three types of facilities are described in the following text.

Type A or B Facility Development Timeline – 2 to 3 ½ years
The development process would include:

- Secure locations for new collection facilities and procure professional design services
- Create conceptual designs
- Permitting/CEQA
- Review and approve Preliminary Design
- Review and approve Final Design and construction specifications
- Bid for construction
- Construction
- Facility Acceptance and Commence Operations

Planning level cost: $1 – $2 million each

Type C Facilities would follow a similar but abbreviated process to develop which may take 1 ½ to 2 ½ years.

Planning level cost $100,000 - $250,000 each

HHW Collection Service Areas

The HTF is currently located relatively close to the most densely populated areas of the Sonoma County Waste Management Agency (SCWMA) service area. For those areas close to the HTF, over 90% of the HHW participants use the HTF as opposed to CTCs or the Toxic Rover. Areas further from the HTF use that service less, as it is less convenient for them. Because of their limited nature, the CTCs and Toxic Rover services are less convenient to communities than a permanent collection site. CTCs and the Toxic Rover services also have higher costs per participant due to mobilization, set up and take down costs when compared to a permanent collection site. In addition, the HTF is not large enough to efficiently handle additional quantities of waste and customers.

Key points regarding current collection system are summarized as follows:

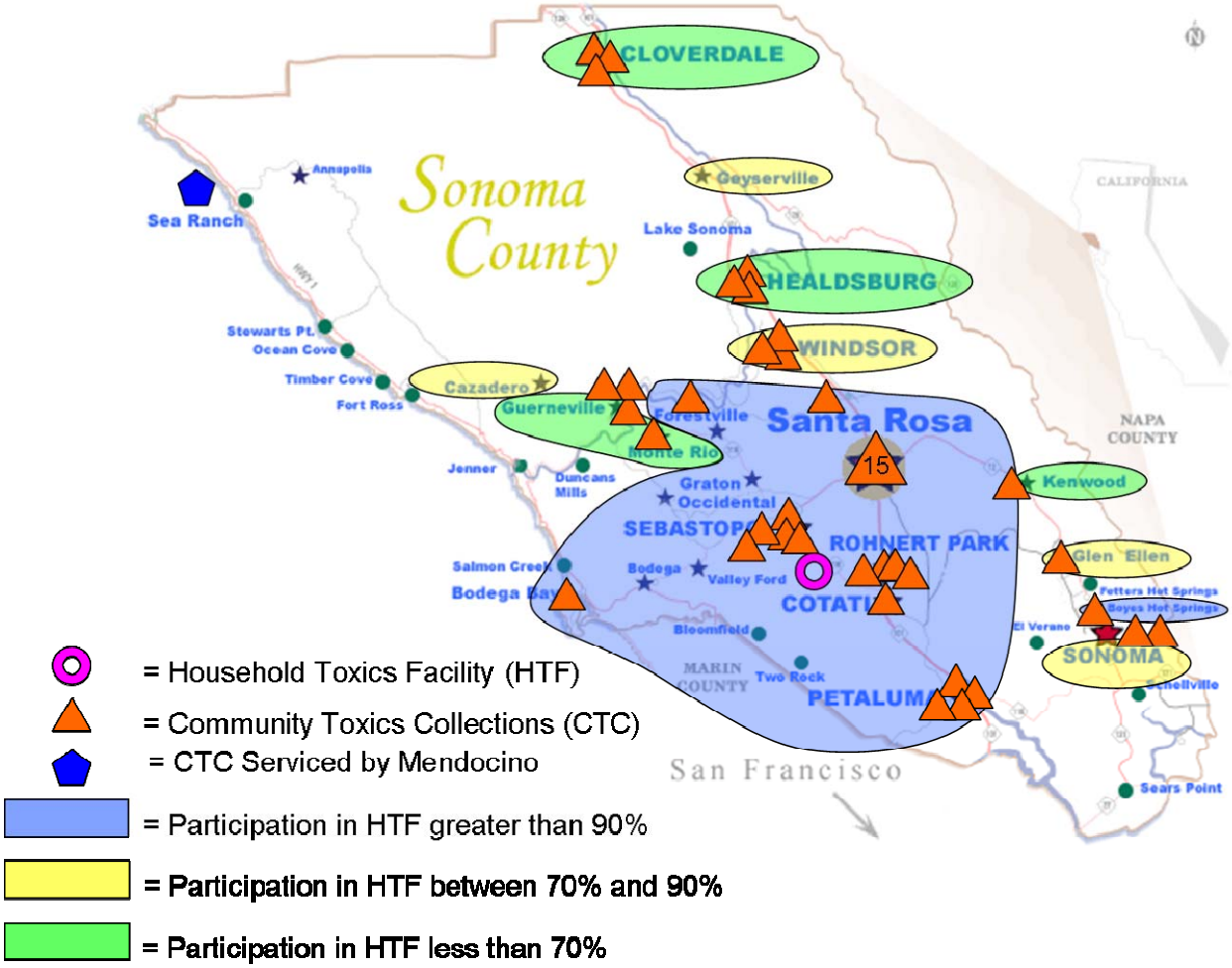
- The HTF is overused and cannot significantly expand its footprint to accommodate the increasing demands of the HHW program; this facility is not capable of effectively managing growth in the collection system.
- Communities far from the HTF receive less service from the occasional CTCs and to a lesser extent from the Toxic Rover
- The CTCs and Toxic Rover are more expensive to operate per participant than the customers served by the HTF
- The SCWMA needs to look at options to increase service levels to satisfy customer demands while finding ways to reduce operating costs.

An expanded collection system that relies more on permanent collection sites distributed in the Agency service area is likely to provide the following:

- Reduced operating pressure on the existing HTF by distributing customers and materials though a more comprehensive system of collection sites.
- Increased level of service to areas away from the existing HTF.
- Reduced per participant operating cost compared to CTCs or Toxic Rover services.
- Increased flexibility of permanent operations in a coordinated HHW and CESQG collection system.

To start assessing how to provide a coordinated system of permanent collection sites appropriate to each area, the Agency service area was divided into three geographic areas. The three areas were originally defined based on geography and existing reliance on the HTF. Communities that are already served 90% or more by the HTF is one area, while geographic differences defined the other two areas.

Figure 11 – HTF Participation and CTC Locations



Even in communities where over 90% of their participants take their waste to the HTF (shown in the blue shaded areas) the current system also provide the majority of the CTCs to those same areas. From observing a CTC at Santa Rosa, the consultants saw only able-bodied customers who could have very likely taken their HHW to the HTF if the CTC were no longer or less available.

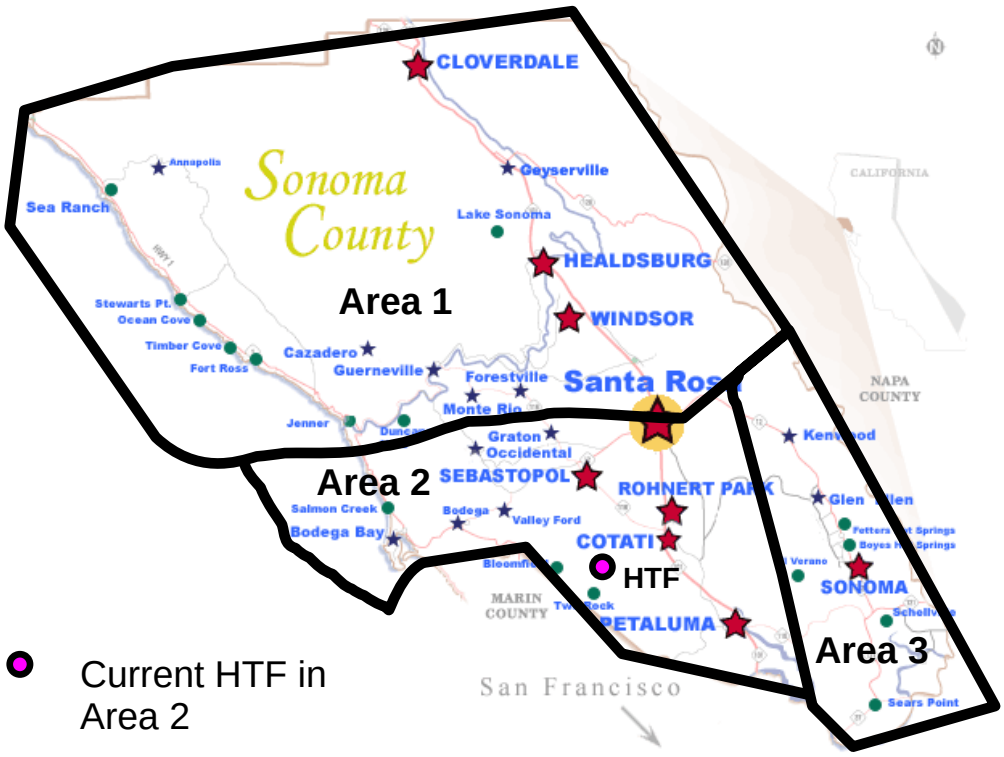
Santa Rosa is the largest City served by the Agency and also has the most participants using the collection system. In order to reduce the operating pressure on the HTF from Santa Rosa at least one facility would need to be located in close proximity to Santa Rosa. Based generally on Figure 11, the Agency service area was divided into three areas to separate well served and areas less well served by the HTF.

Area 1 includes the communities to the north of the Blue shaded areas on Figure 12 as well as the north half of Santa Rosa. Communities included in Area 1 are Guerneville, Cazadero, Windsor, Healdsburg, Geyserville, Jenner, Cloverdale, and Forestville, Fulton and the north half of Santa Rosa.

Area 2 includes most of the blue shaded communities from Figure 12. Included are: Sebastopol, Cotati, Petaluma, Penngrove, Bodega Bay, Rohnert Park, Occidental, Bloomfield, and the south half of Santa Rosa.

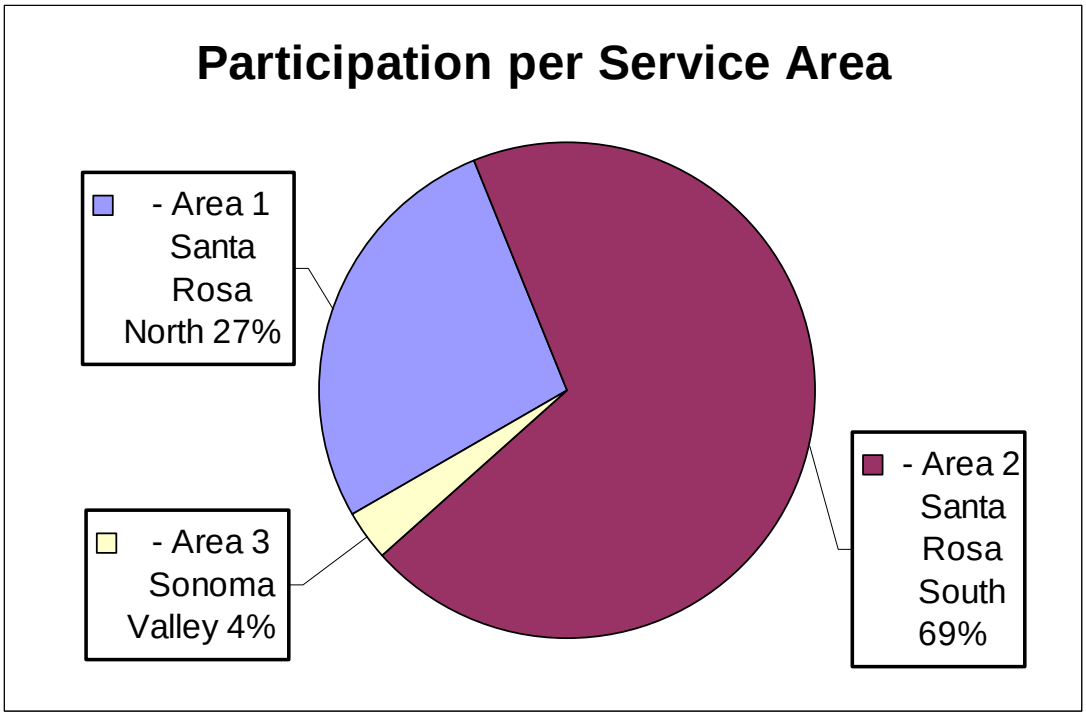
Area 3 consists of the communities east of the blue shaded area in Figure 8 and includes the Sonoma Valley communities of Sonoma, Glen Ellen, Sears Point, Kenwood, and Boyes Hot Springs.

These three areas (Areas 1, 2, and 3) are shown on the figure below



The data clearly show that the demand for HHW collection varies considerably between the three areas. Using the 2005 data as an example, there were approximately 14,000 customers that used the HTF, CTCs and Toxic Rover that year. The proportion of HHW customers per area are represented in the pie chart below.

Figure 13 – Participation per Service Area



Even by assigning only the Southern half of the population of Santa Rosa to Area 1, there is still 69%, over 2/3, of the total demand from SCWMA customers in Area 2. The next largest demand area is Area 1 that includes the Northern half of the Santa Rosa population and communities along the northern coast and North of Santa Rosa surrounding the 101 corridor. Sonoma Valley, Area 3, has comparatively smaller demand with approximately 4% of the HHW collection participants.

To examine relative service levels between these three areas it is useful to compare the system use to the proportion of population in each service area. SCWMA staff estimated the proportion of population for Areas 1, 2, and 3. These values are matched to the service levels for each area in Table 17.

Table 17 – Service Levels and Proportion of Population in Three Areas

Service Area	Percent of Households Served by the HHW System in 2005	Approximate Percent of Population in Sonoma County
1	27%	33%
2	69%	47%
3	4%	20%
Total	100%	100%

Table 17 shows that Areas 1 and 3 are underserved compared with Area 2.

The implication for expanded HHW and CESQG services are that additional capacity should be allocated in Area 2 to relieve pressure on the HTF and then to Area 1 to serve that next largest part of the system that is underserved. In addition, because of the geographic separation of the

Sonoma Valley residents, who are currently underserved, as well as other remote communities in Area 1 it may be prudent to consider local satellite drop off locations. Type C facilities, at strategic locations in Areas 1 and 3 should provide expanded services to these areas.

More specifically envisioning what a fully built out collection system may look like, including reduced load on the HTF and leveling out service levels in areas away from the HTF, the following scenario was developed.

Possible fully-developed collection system features.

1) To reduce increasing demand on the current HTF and serve the densely populated areas
   - Locate a collection facility in the Petaluma/Penngrove area (this may also serve some from the lower Sonoma Valley area)
   - Locate a collection facility in the north Santa Rosa/Windsor area, which is underserved
2) To provide more cost effective services to less densely populated areas, which are underserved
   - Locate a satellite collection facility to serve the lower Russian River and North Coast communities in the Guerneville area
   - Locate a satellite collection facility in the Sonoma Valley area
   - Locate a satellite collection facility in the Cloverdale/Geyserville area

This possible future collection system is shown on the table and figure below.

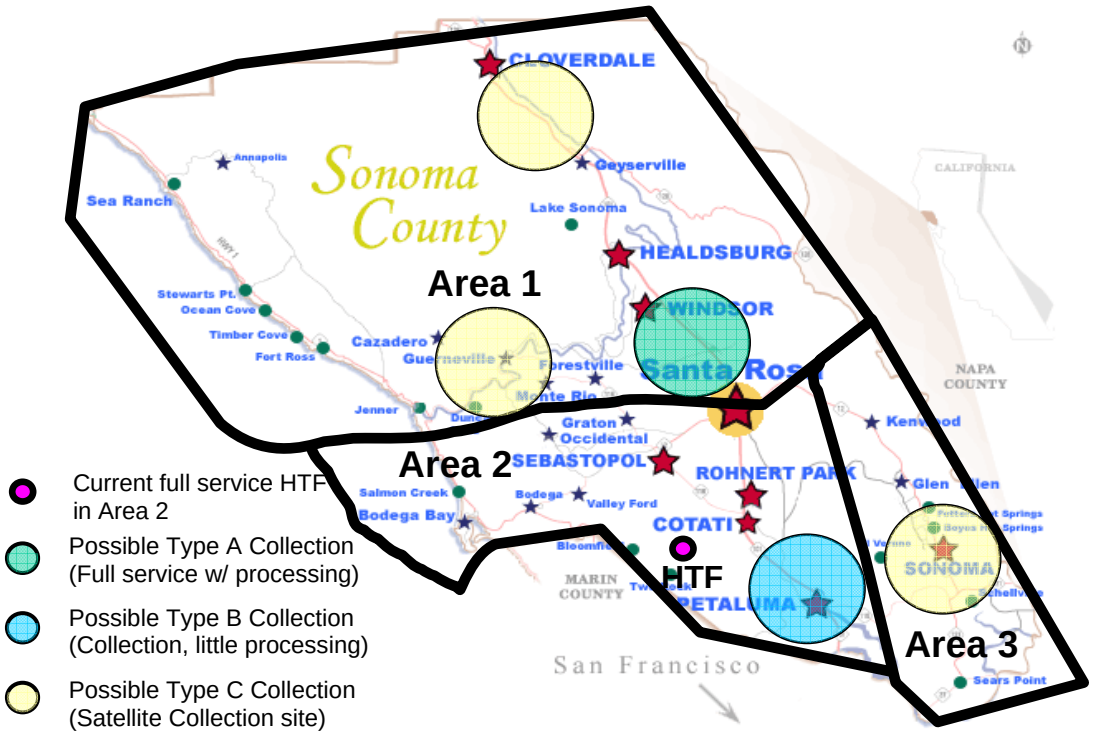
Currently all participants' wastes pass through the HTF. With a fully developed system the load would be redistributed. Using 2005 participation data the system load by facility would be as follows assuming a total participation of about 14,000:

Table 18 – Participation Distribution Impact of Additional Facilities

Service Area	Facility Location (approximate)	Facility Type	2005 Participants	Rationale
1	Windsor, Fulton, N. Santa Rosa	A	3,291	Underserved area and reduce demand on HTF
1	Cloverdale, Geyserville	C	105	Underserved area
1	Guerneville, Duncans Mill	C	415	Underserved area
2	Existing HTF (decrease from current level to 46% of total)	A	6,425	Reduced demand
2	Petaluma, Penngrove	B (or A)	3,287	Reduce demand on HTF, enough current demand for another facility & may serve some from Sonoma area
3	Sonoma Valley	C	481	Underserved area

The new Type A and B facilities would act as aggregation points for the nearest satellite locations. Figure 15 shows the approximate locations of this facility expansion scenario.

Figure 14 – Possible Future Collection System



Future Participation Projections

For planning purposes the level of service demand in the future needs to be estimated. Sonoma County estimates a 1% per year population growth. However, growth patterns for HHW collection facilities have been studied and do not follow population growth. In a national study average growth in HHW participants from the start of 19 permanent facilities found the following.

Table 19 - US Average Annual Participation Increase at HHW Collection Facilities[1]

Year of Operation	Percent Increase Compared to Previous Year
2	108%
3	43%
4	46%
5	43%
6	28%
7	7%
8	4%

[1] Nightingale and McLain, Proceedings of 1997 Conference on Household, Small Business, and Universal Wastes, San Diego, CA, SWANA/NAHMMA, November 16-21, 1997, pp 131-141.

This national study was from new facilities in jurisdictions that previously had only collection events. It was also typical that these facilities realized initial participation levels of a few percent per year and after 7 or 8 years were in the 6% to 10% participation range. SCWMA is already at this high level of participation, about 8.3% per year currently, so it is likely that the increase in the SCWMA area will not be as dramatic as shown in the national facility study.

Because much of the population of the SCWMA has had access to the HTF for nearly two years the national averages would apply to new SCWMA system facilities starting in year three. To account for the fact that the service level in SCWMA is already about 8.3 percent the national annual increase data will be reduced to 25%, 50% and 75% of the national averages to provide low, medium, and high projections. This approach will provide a range of estimates of future system demand.

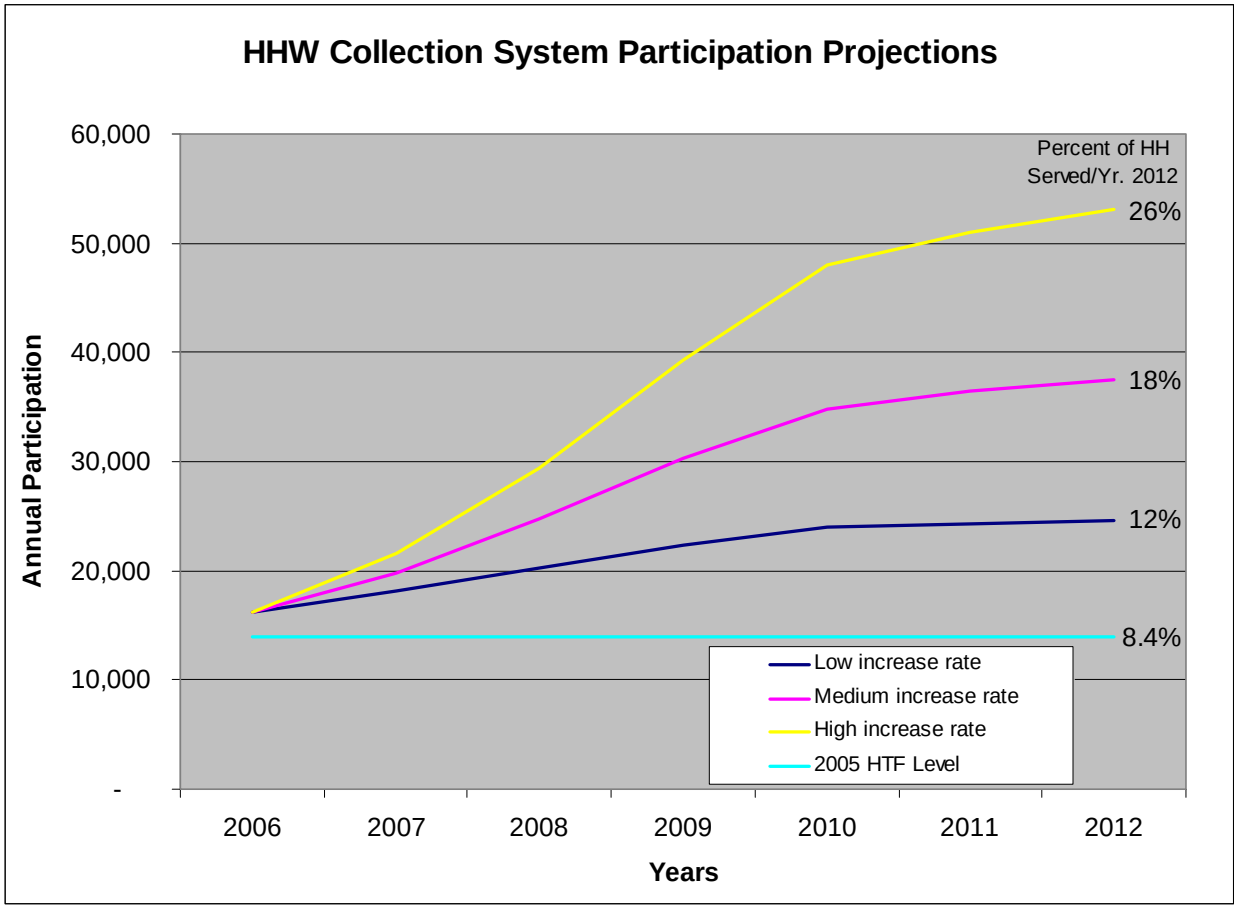
Because the satellite collection facilities will rely on the larger Type A and B facilities to aggregate more efficient truckload-sized shipments the projections will be made on the Type A and B facilities including the closest satellite facilities. These demand scenarios are shown in the tables below.

HHW system demand projections are based on the following assumptions discussed above:

1) 1% annual growth in participation due to anticipated population increases in Sonoma County.
2) Additional increase based on three variations on national statistics regarding HHW collection facility increased participation per year
    - Modify the statistics beginning in year three of operation to reflect the fact that the HTF has been operating for about two years
    - Because SCWMA is beginning at a higher initial level of annual participation as a more mature program, reduce the effect of the national statistics. Model three scenarios of 25, 50 and 75% of national statistical increase values for a low, medium, and high scenario of growth.
3) Show overall system demand projections as well as new system facility projections using the same scenario methodology.
4) CESQG collection will continue to be a minor part of the collection system

Figure15 shows the HHW collection system growth from 2006 through 2012 using the three scenarios. The Low Scenario uses the 25% of national statistic increase values; the Medium Scenario uses 50% of the national statistical increase, and the High Scenario uses 75% of the national average statistic for each year.

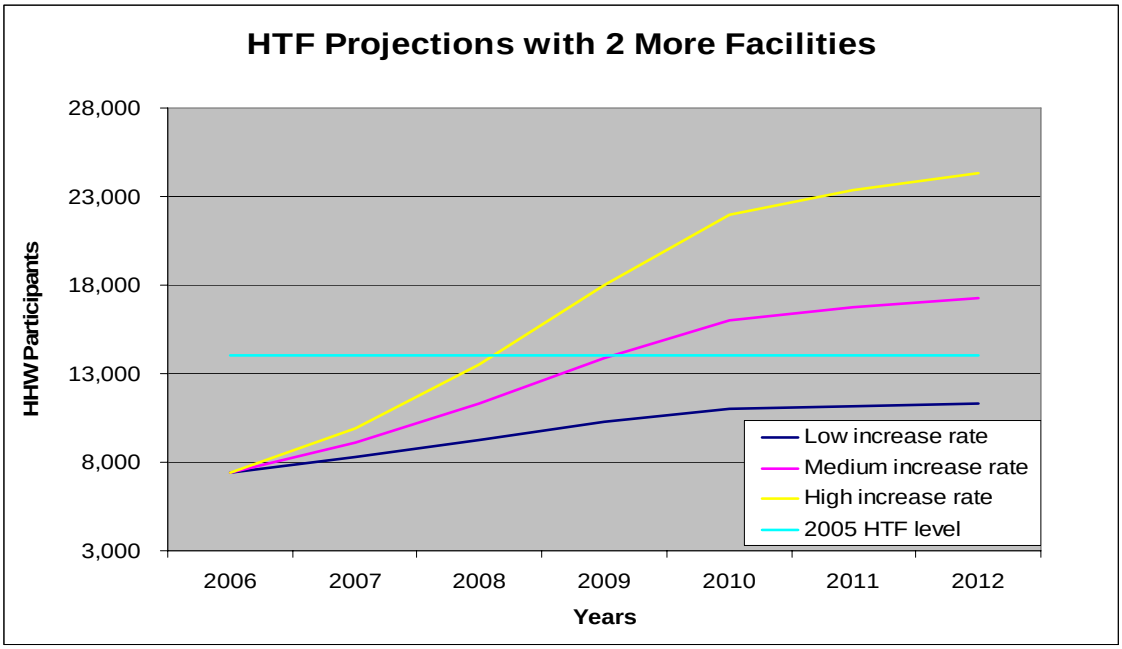
Figure 15 – HHW Collection System Participation Projections



If the SCWMA decided to create the distributed collection facility system mentioned previously with a system of 3 permanent and 3 satellite facilities the distribution of the HHW customers could be modeled. It is reasonable to expect that the satellite facilities would take their waste to the existing HTF or the closest new permanent facility. The following figures graph how the demand may be distributed between these three permanent facilities using the same method as the projections for the entire system.

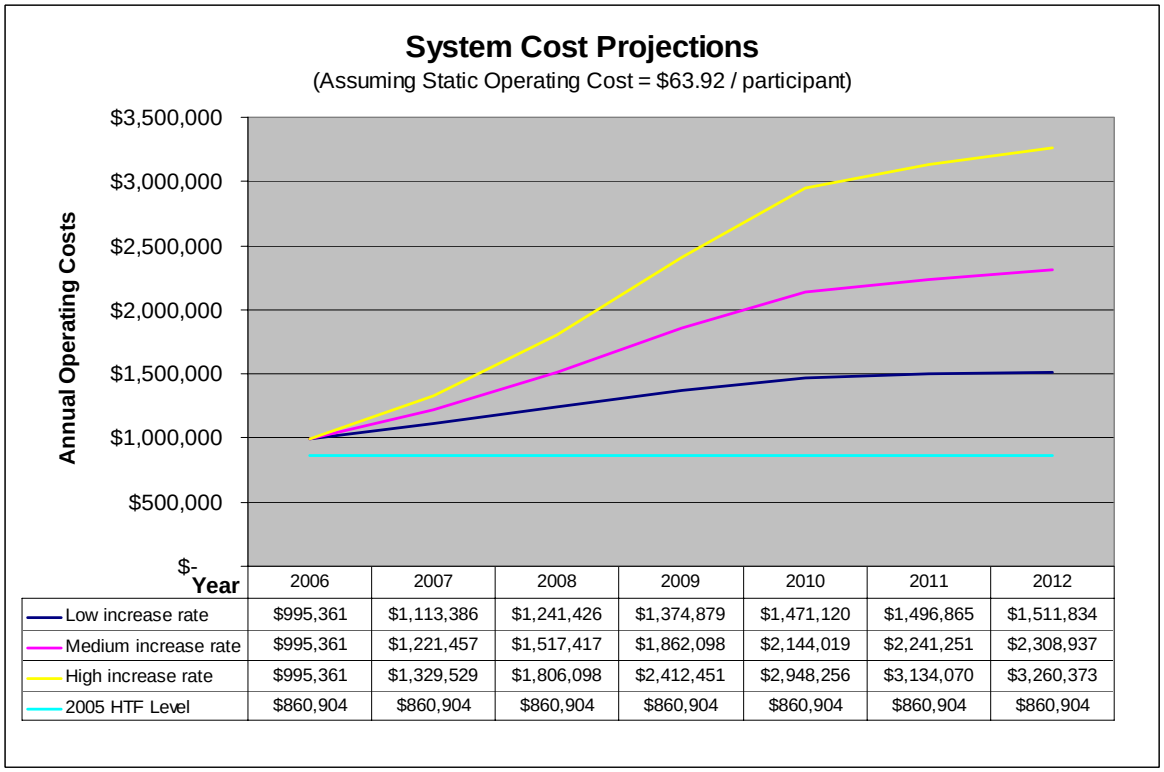
The HTF specific demand is shown in Figure 16. This shows that the two new facilities are likely to take a significant customer load from the existing HTF although it would still likely draw the most customers. However, this strategy would hopefully keep the level of service demanded at the HTF to levels at or below current levels for at least a few years. The two new facilities would be expected to support satellite collection locations and could also support an occasional focused CTC for remote areas such as the northern coast.

Figure 16 – HTF Projections with 2 More Facilities



Cost projections for the future system are presented in Figure 17. These projections are based upon the participation increases in Table 19 and assume that operating and disposal costs are constant. The capital costs of additional facilities are not included. Additional personnel will likely be needed to manage the increased participation.

Figure 17 - System Cost Projections



Year	2006	2007	2008	2009	2010	2011	2012
Low increase rate	$995,361	$1,113,386	$1,241,426	$1,374,879	$1,471,120	$1,496,865	$1,511,834
Medium increase rate	$995,361	$1,221,457	$1,517,417	$1,862,098	$2,144,019	$2,241,251	$2,308,937
High increase rate	$995,361	$1,329,529	$1,806,098	$2,412,451	$2,948,256	$3,134,070	$3,260,373
2005 HTF Level	$860,904	$860,904	$860,904	$860,904	$860,904	$860,904	$860,904

V. Program Modifications Evaluation

Program efficiency and cost effectiveness are essential to maintaining fiscal and operational control of Sonoma's HHW program as it seeks to provide optimal service. In addition, facility modifications can provide additional efficiencies. These modifications include the following items presented earlier including:

- Facility Design
- Use of containment bays
- Chemically-resistant containment coating
- Bulking room
- Waste Disposal Policy
- Paint Consolidation Processing
- Waste Exchange
- CESQG Collection
- Community Toxics Collections (CTC)
- Mobile Collection Evaluation
- Solid Waste Universal Waste Handling
- Load Checking

Each of these modifications is described with a list of pro and cons, potential program savings, costs of implementation, implementation barriers, impact on service to participants and increased availability, and impact on program growth.

Proposed Facility Modifications

Suggestions for Household Toxics Facility Design at the Central Disposal Site
A number of recommendations on facility design are proposed as indicated in this section and as presented in the floor plan below.

1. Extend placement of the collected wastes into the area between the end of the containment sump and the end of the wall separating the bays. This will allow the equivalent of an additional eight drums to each of the storage areas. The wastes can be placed on portable secondary containment pallets if the CUPA or other authorities require them.

Pro	Con
• Increases drum capacity by 36 drums	• Fire department may be concerned that secondary containment within pallet is not sufficient.

Savings	• Provides additional capacity without funding structural improvements • Possibly allows extended frequency of waste removal.
Costs	• $250 to $350 per pallet
Barrier	• Verify with fire department and permit requirements • Drums must remain 18 inches back from the end of the segregation wall
Service Impact	• Allows increased service to participants
Growth Impact	• Increases facility storage to allow additional time to develop long-term options

2. Interior waste storage space can be reconfigured to increase waste storage capacity. The used oil and antifreeze tanks can be relocated to the outside covered storage area and the fume hood is rarely used and could be removed.

Pro	Con
• Increases drum capacity by 20 drums • Provides direct access to oil and antifreeze area from outside the facility	• Requires removal or relocation of hood. • Water Board may have concerns regarding storage outside or require additional containment and structural cover

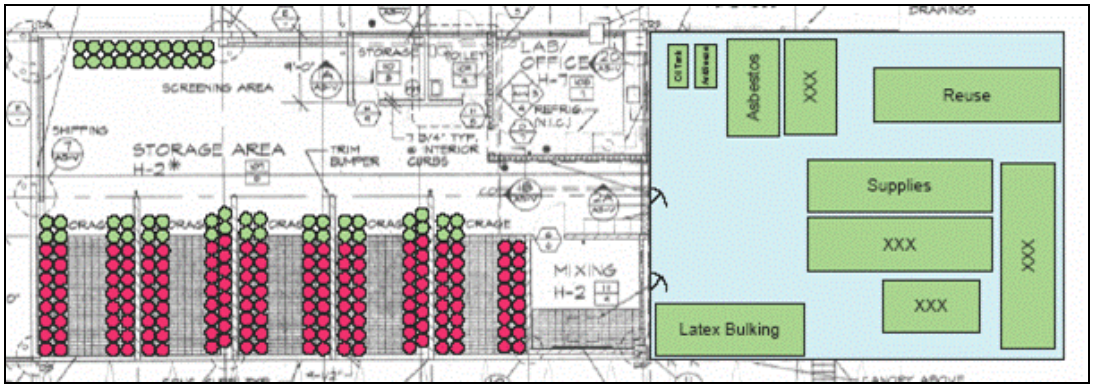
Savings	• Provides additional capacity without funding structural improvements • Possibly allows extended frequency of waste removal
Costs	• Minimal costs to remove hood • May require additional electrical and ventilation costs to relocate hood • Minimal costs to relocate oil and antifreeze tanks
Barrier	• May require regulatory approval by the fire and building departments for exterior storage and relocation of hood. In addition, the Permit-by-Rule notification will need to be revised for any facility modifications.
Service Impact	• Allows increased service to participants
Growth Impact	• Increases facility storage to allow additional time to develop long-term options

3. There is potentially useable space located outside the facility. This area can be utilized for additional storage of low hazard wastes, such as fluorescent lamps, universal wastes and latex paint. The existing canopy could be extended over the entire area to allow the storage in conformance with the requirement of covering waste storage areas. An alternative would be to construct additional walls to enclosure this area.

Pro	Con
• Significantly increases facility storage capacity • Use outside area for wastes with lesser hazards such as latex paint, used oil, and universal wastes • Saves inside storage area for higher-hazard wastes	• Cost to retrofit the outdoor area with a roof and utilities. • Permitting approval by fire, building, and CUPA will be required

Savings	• Saves the more expensive storage capacity inside the H-2 occupancy rating for the more potentially hazardous materials.
Costs	• $15,000 to $20,000 per new container, plus cost for canopy extension
Barrier	• Requires regulatory agency approval of exterior storage
Service Impact	• Allows increased service to participants
Growth Impact	• Increases facility storage to allow additional time to develop long-term options

Figure 18 - Facility Design Suggestions



Suggestions for Use of Containment Bays

4. Reorganize the storage bays to provide better separation of potentially incompatible wastes.

Pro	Con
• Provides safer storage for collected wastes	• NA

Savings	• $0
Costs	• Minimal staff time and equipment costs to relocate wastes
Barrier	• Maintaining segregation of incompatibles
Service Impact	• NA
Growth Impact	• NA

Suggestions for Chemically-Resistant Containment Coating

5. Apply a chemically-resistant containment coating to the facility floor and containment sumps.

Pro	Con
• Provides protection on floor from long-term spills • Meets standard practices of HW facilities • Avoids trip hazard by including a non-skid additive	• Requires regular maintenance and occasional reapplication • Need to clear areas of the facility for surface preparation and application of coating for a few days

Savings	• 0
Costs	• $20/sq. ft. but varies widely
Barrier	• Requires preparation of the floor and that area cannot be used until the coating is cured
Service Impact	• NA
Growth Impact	• NA

Suggestion for bulking room

6. Purchase and install two flammable gas monitors and alarm system

Pro	Con
• Provides safety warning if flammable vapors reach dangerous levels	• Most require periodic calibration

Savings	• NA
Costs	• $2,000 to $5,000
Barrier	• Cost
Service Impact	• Provides additional safety measure
Growth Impact	• NA

Suggestions for Waste Handling and Storage

7. Investigate additional drum storage options including converting the outside storage area to an enclosed building extension.

As indicated in suggestions 1 and 3, additional drum storage can be developed by constructing an enclosed area in the current open storage area.

Pro	Con
• Significantly increases facility storage capacity • Use outside area for wastes with lesser hazards such as latex paint, used oil, and universal wastes • Saves inside storage area for higher-hazard wastes	• Cost to retrofit the outdoor area with a roof and utilities. • Permitting approval by fire, building, and CUPA will be required

Savings	• Saves the more expensive storage capacity inside the H-2 occupancy rating for the more potentially hazardous materials.
Costs	• $15,000 to $20,000 per new container, plus cost for canopy extension
Barrier	• Requires regulatory agency approval of exterior storage
Service Impact	• Allows increased service to participants
Growth Impact	• Increases facility storage to allow additional time to develop long-term options

Suggestions for Waste Disposal Policy

8. Consider alternative disposal options for non-hazardous wastes.

Pro	Con
• Reduce costs by targeting nonhazardous wastes for disposal as solid wastes	• List of nonhazardous wastes will need to be developed in compliance with regulatory and disposal site criteria

Savings	• Reduced disposal cost of $2,000 to 3,000 per year
Costs	• NA
Barrier	• Ensuring that the wastes are nonhazardous and meet the criteria for solid waste disposal at the landfills utilized for SCWMA's wastes
Service Impact	• Saves packing, shipping, and disposal labor and materials costs
Growth Impact	• NA

Suggestions for Latex Paint Consolidation Processing

9. Consider relocating latex paint operation to free up space for drum storage.

Pro	Con
• Significantly increases valuable interior storage • Allows design of bulking area specific to latex paint	• Requires regulatory agency approval by the fire and building departments, CUPA and possibly the Regional Water Quality Control Board • Cost of construction

Savings	• Extend facility capacity
Costs	• Addition to the canopy expansion plus extension of electricity and possibly other utility runs
Barrier	• Regulatory agency approval
Service Impact	• Allows more efficient processing of latex paint
Growth Impact	• Allows interior storage to be better utilized

10. Standardize latex paint color sorting protocol.

Pro	Con
• Provides predictable working practices • Provides more consistent product quality for community users	• NA

Savings	• NA
Costs	• NA
Barrier	• NA
Service Impact	• Increases quality of paint provided for reuse, which may increase demand for this product
Growth Impact	• NA

11. Use 300 gallon tote for mixing rather than 55 gallon drums

Pro	Con
• Decrease staff time needed for assembly and disassembly of existing setup • Reduced ergonomics stress • Increased consistency of paint batch colors	• Need larger fixed area for permanent operation and purchase of additional equipment

Savings	• Significant staff time will be saved.
Costs	• Two totes can be purchased for under $1,500
Barrier	• Need sufficient area to install tanks
Service Impact	• NA
Growth Impact	• Allows faster processing of paint bulking operation

12. Use durable stacking boxes for paint cans awaiting processing.

Pro	Con
• More efficient vertical storage area	• NA

Savings	• Storage area holds more paint containers in same floor area
Costs	• Purchase of several storage boxes
Barrier	• Staff operations learning curve
Service Impact	• More efficient operations
Growth Impact	• NA

13. Consider using an air driven paint mixer rather than an electric unit for future operations. Electrical devices used in the building must be intrinsically safe resulting in significantly increased costs. If the latex paint is blended in the new outside area. The intrinsically safe electrical requirement would likely not be necessary.

Pro	Con
• Intrinsically safe motor and components if used in area where flammable vapors may be present • Lighter weight unit for less ergonomic stress potential • Longer service life expected	• Requires an air compressor with sufficient flow and pressure for operation

Savings	• NA
Costs	• Air mixer for tote is about $5,000
Barrier	• Requires air compressor
Service Impact	• Increases productivity
Growth Impact	• Provides for more expeditious processing of paint

14. Redesign paint filtering apparatus or use commercial grade filter system.

Pro	Con
• Increased productivity and safety • Minimize labor and materials associated with filtering paint prior to bulking	• Need to provide space for filtering apparatus

Savings	• Significant staff time is saved by reduced maintenance
Costs	• Minimal equipment required but commercial filter system would need to be specified and priced
Barrier	• Need space for equipment to operate
Service Impact	• Would provide paint for local use more efficiently
Growth Impact	• Higher throughput of paint recycling process

15. Replace forklift with a drum holder dispensing paint. (If the larger totes are installed, the forklift will be necessary to move the totes for bulking paint.)

Pro	Con
• Provides better drum movement and control by one operator • Frees up the forklift and driver for other duties • Increased control on dispensing paint	• Cost of device

Savings	• $2,000 - $6,500 per year • Staff time associated with using forklift
Costs	• $1,200 – $3,000
Barrier	• NA
Service Impact	• NA
Growth Impact	• NA

16. Improve working height for paint bucket filling and lid placement/sealing by use of raised roller conveyor.

Pro	Con
• Improves ergonomics related to paint bucket filling operation	• NA

Savings	• Reduced ergonomic stress on workers and more efficient operation may reduce processing unit costs
Costs	• Purchase of raised roller conveyor at working height <$1,000
Barrier	• Need a space for establishing processing area
Service Impact	• Increases paint bulking operation efficiency
Growth Impact	• Higher throughput of paint recycling

Suggestions for Waste Exchange

17. Simplify tracking form used to more accurately obtain the types and number of containers and amount of materials taken by the public from the reuse program.

Pro	Con
• Improves tracking of reuse materials • Simplified forms more likely to encourage proper usage by participants • Less frustration by users of reuse area	• NA

Savings	• Provide more accurate determination of waste diverted from disposal, cost savings, and reuse participation
Costs	• NA
Barrier	• Administrative time to develop form and encourage consistent use
Service Impact	• Improves program accountability
Growth Impact	• NA

18. Weigh carts with reuse items to more accurately obtain the amount of materials taken by the public from the reuse program. The scale currently utilized inside can be moved to the outside area for this purpose.

Pro	Con
• Improves accuracy of tracking reuse materials	• Minimal increase in staff time to track weights prior to delivery to reuse area

Savings	• Provide more accurate determination of cost savings
Costs	• Minimal staff time • A ramp will need to be installed to allow the cart to be rolled on the scale ($200)
Barrier	• Need to relocate scale to receiving area
Service Impact	• Increase program accountability
Growth Impact	• NA

Suggestions for CESQG Collection

19. Evaluate current fee structure for the CESQG program to ascertain whether eligible businesses are being assessed the appropriate charges that cover costs of service. Increasing the disposal cost charged to businesses to more fully pay for the actual costs is a valid option.

Pro	Con
• Provide more representative allocation of costs to small business users by reducing subsidy • Reduces subsidized costs to users for large amounts	• May discourage business users

Savings	• TBD, depends on final billing service changes
Costs	• TBD, it may provide additional cost recovery
Barrier	• Need to develop new fee structure
Service Impact	• Program is still a cost effective program for small business hazardous waste generators • May discourage users of the facility
Growth Impact	• As CUPAs increase their regulation of businesses producing hazardous wastes, small businesses will have an incentive to use the facility

Suggestions for Community Toxics Collections (CTC)

20. Reduce CTC service to only outlying rural areas and staging of materials and storage of CTC waste at the Type C, satellite collection locations.

Pro	Con
• Significantly reduce the costs of mobilization related to CTC • Reduce impact on HTF storage area by timing transportation from satellite facilities • Continues convenient access to HHW program for areas most reliant on CTCs	• Need to permit and install storage areas in other areas of the county

Savings	• TBD
Costs	• TBD, should reduce system operating cost per customer
Barrier	• Locating acceptable sites for satellite storage of collected wastes • Obtaining approval for additional sites
Service Impact	• Local CTCs would be replaced by more permanent locations with strategically located sites
Growth Impact	• Allows for future growth

Suggestions for Mobile Collection (Toxic Rover) Evaluation

21. Evaluate the costs charged to both household and businesses utilizing this program. Facility staff have reported that participants do not complain about the current user fee and might be amenable to an increase.

Pro	Con
• Reduces subsidy of program by charging more representative cost for wastes as well as cover mobilization costs	• May discourage some users from program

Savings	• Not significant because few businesses use this service
Costs	• None
Barrier	• Need to develop new fee schedule
Service Impact	• May discourage some users
Growth Impact	• Allows system to continue for businesses willing to pay the real cost of service and may encourage some to use less expensive methods

Suggestions for Solid Waste Universal Waste Handling

22. Continue utilizing solid waste facilities for universal and other large hazardous wastes from households. As more larger items, such as CRTs, have been added to the list of prohibited wastes, collection at the solid waste sites has proven to be effective.

Pro	Con
• Provides convenient option for disposal of these wastes • Reduces impact on permanent facility storage • Allows for user charge for wastes to offset disposal costs	• Requires additional training and recordkeeping of solid waste facility staff

Savings	• NA
Costs	• NA
Barrier	• NA
Service Impact	• Allows larger items to be disposed of at convenient locations
Growth Impact	• Allows significant program growth for new materials since use of the facility is not required

Suggestions for Load Checking

23. Submit completed Permit-by-Rule to allow storage of accumulated load checking wastes for up to one year.

Pro	Con
• Provides cost savings by reduced trips to remote solid waste facilities • Allows longer storage of wastes at remote sites	• NA

Savings	• Reduces trips to remote sites at least by half
Costs	• Reduced transportation cost
Barrier	• Submit revised PBR to CUPA
Service Impact	• Frees up facility staff time by reduced trips
Growth Impact	• Reduces impact on permanent facility by allowing for increased storage time at remote sites

24. Investigate expanding the contract arrangement with Mendocino County for periodic HHW collection from Sea Ranch to include packaging and transport of load checking wastes from the Annapolis transfer station.

Pro	Con
• Reduces costs since facility staff will not need to travel to the remotest County site	• Requires contractual arrangement and payment with Mendocino County

Savings	• Travel and mobilization costs for the twice a year service will be saved
Costs	• Contractual rates will need to be established
Barrier	• Legal agreements will need to be revised • PBR will need to be filed with the CUPA
Service Impact	• Allows contractor to devote additional time to other activities
Growth Impact	• Allows additional capacity at facility since the load checking wastes will not be delivered to the site

Infrastructure expansion timeline

Expansion of the HHW infrastructure will take some time to determine the funding source, complete permitting and CEQA review of the program features, and to design and construct. The table below provides an estimate of the timeline to complete the expansions presented in this report if the decision to proceed was made today.

Table 20 – Infrastructure Expansion Timeline

Program Feature	Estimated Time Schedule
Expand existing facility with canopy and walls	1 year
Develop three satellite facilities	1-½ - 2-½ years
Obtain extended storage time at remote load checking sites	1 month
Update material exchange data collection	1 month
Develop two additional permanent facilities	2—3-½ years
Revise CESQG Fee Structure	6 months

VI. Analysis of Participant Service Charges for Residents

SCWMA staff reports from March 29, 2006 and April 19, 2006 analyzed assessment of charging user fees for residents utilizing their HHW program of a participant service charge as a possible mechanism to offset the costs for the HHW program. Those reports accurately present the impacts and issues of assessing a fee.

Surveys from Sonoma and other areas indicate that participation will decrease due to this type of fee. As indicated in the staff memos, the actual impact has not been significantly quantified at the facilities assessing fees.

As indicated in Agency staff research, only a few jurisdictions throughout the Country charge participants a fee for using the HHW program. The table below lists those jurisdictions.

Table 21 - Summary of Case Studies, Jurisdictions that Charge HHW Fees

Jurisdiction	Type of Charge	Amount of Fee	Revenue Earned	Percent of Budget
Mendocino/Lake County, CA	Overload	Based on type and quantity	$8,250	3.8%
City of Redding, CA	Variable Fee	Based on type and quantity	$10,679	6.6%
City of Sacramento, CA	Overload	$25 for every 20 gallons over 15 gallons	$9,000	3.0%
Portland Metro, OR	Flat Fee	$5, increasing fees for overloads		Discontinued
Van Buren County, MI	Flat Fee	$4	$240	5.2%
Washtenaw County, MI	Donation	Determined by participant	$11,000	10.0%

The only update to that survey was the that the Redding program currently collects about $25,000 per year from fees charged to about 2,500 users. Universal wastes are not assessed a fee yet. Several jurisdictions have implemented a fee on users with greater than a certain volume. Mendocino imposes a variable fee for loads arriving with greater than 15-gallons. They have not quantified the amount of money collected for this fee. If the SCWMA considers this approach, then the hazardous waste contractor will need to track the number of loads by quantity ranges to determine potential revenue. Another option would be to seek donations from users.

An effect of the potential decrease in participation would be illegal dumping impacts from users unwilling or unable to pay the fee. The cost for illegal cleanup of HHW would likely far exceed the revenue collected.

Based upon 2005 data the average cost for handling the collected wastes is $0.75 per pound or about $6.22 per gallon. The average cost per user is $63.92.

VII. Diversifying Funding Sources

As the list of HHW increases due to regulatory changes, the impact on HHW programs continues to also increase, significantly impacting program expenses and services. Increasingly, other collection opportunities are being encouraged along with receiving HHW (e.g. cathode ray tubes, electronics waste, batteries, and fluorescent lamps). In addition, there are also increased regulatory pressures on other government services to decrease contamination especially for mercury releases from treatment plants to receiving waters.

Given that the impacts of HHW are beyond the solid waste system, other sources of funding can be reviewed for potential contributions to the funding of collection programs. Some of these additional funding sources include:

- Storm water,
- Wastewater,
- Franchise fees,
- Sales Tax,
- Property Tax,
- Advance Disposal Fees,
- Producer Responsibility Initiatives
- Excise Tax,
- Utility Fees,
- Health Department Assessments,
- Code Enforcement Fees, and
- Business Technical Assistance Fees.

These funding sources can be reviewed to assess the potential relationship to the HHW system. In addition to approval by elected officials, assessment of any fess may need to be submitted to voter approval under Proposition 218. Advance Disposal Fees and Producer Responsibility options are gathering momentum and Sonoma County may want to participate in these efforts at higher than current levels. The recently formed NAHMMA Chapter and the emergence of the California Product Stewardship Council may provide such opportunities.

Currently, most of the HHW program is funded by a fee on solid waste services. An example of a potential relationship between other funding programs is the increasing requirements for wastewater treatment plants to keep mercury and pesticides out of the system.

As indicated in the tables below, an analysis of the wastes collected in 2005 indicates that about 8.2% of the wastes collected in 2005 contained mercury or pesticides. However, waste streams account for 23.6% of the disposal costs. While not all of these waste categories are potentially released to the waste water treatment plants, the HHW program provides a significant service to water pollution prevention efforts. It might be possible to defray some operating costs in the future by partnering with the various wastewater treatment plants in the SCWMA service area to share funding on an average per million gallon daily throughput (MGD) basis.

Table 22 – Mercury and Pesticide Wastes Amounts

Program Amount (lbs)	FACILITY -HHW	FACILITY - CESQG	TOXIC ROVER	CTC-HHW	CTC-CESQG	LOAD CHECK	TOTAL
Household Batteries	8,409	630	225	3,001	383	700	13,348
Lamps	11,233	7,148	183	2,185	1,036	1,175	22,960
Mercury	35	10	1	110	12	147	315
Mercury Switches							
Subtotal	9,677	7,789	409	5,296	1,431	2,022	36,623
Pesticides	42,880	2,789	4,234	9,540	1,156	3,438	64,037
Total	**2,556**	**10,578**	**4,643**	**14,836**	**2,587**	**5,460**	**100,660**
Total Disposal	**36,937**	**50,912**	**83,765**	**96,379**	**14,456**	**60,634**	**1,229,251**
Percent	**6.7%**	**20.8%**	**5.5%**	**15.4%**	**17.9%**	**9.0%**	**8.2%**

Table 23 - Mercury and Pesticide Wastes Disposal Costs

Program Cost	FACILITY -HHW	FACILITY - CESQG	TOXIC ROVER	CTC-HHW	CTC-CESQG	LOAD CHECK	TOTAL
Household Batteries	4,336	398	173	1,784	123	938	7,753
Lamps	6,416	5,522	411	1,886	826	1,095	16,157
Mercury	167	92	10	819	101	250	1,437
Mercury Switches							
Subtotal	$10,919	$6,012	$593	$4,489	$1,050	$2,284	$25,347
Pesticides	84,700	3,176	5,925	12,871	1,672	4,241	112,585
Total	**$95,619**	**$9,188**	**$6,519**	**$17,360**	**$2,722**	**$6,525**	**$137,932**
Total Disposal	**$426,712**	**$34,566**	**$45,021**	**$50,261**	**$8,315**	**$27,141**	**$584,244**
Percent	**22.4%**	**26.6%**	**14.5%**	**34.5%**	**32.7%**	**24.0%**	**23.6%**

VIII. Minimizing Local Program Costs through Support of Product Stewardship and Chemicals Policy

For products that eventually become HHW or CESQG wastes policy and decision-makers are increasingly considering approaches that hold the makers of products responsible for end-of-life management. This is often referred to as product stewardship or producer responsibility. In addition, there is increasing interest in discouraging creation of new or continuation of existing products that become toxic wastes when discarded. This is often referred to as the Precautionary Principal or Chemicals Policy.

State and local agencies, non-profit organizations, and various legislative bodies in California are advancing initiatives in the product stewardship and chemicals policy arena which often include HHW and CESQG type wastes. One of the benefits to local government waste management is the opportunity to be reimbursed for the cost of collection of problem wastes by producers who take responsibility for their products' transportation and recycling or disposal. For the local waste management agency the product stewardship program removes the expense of disposal for problem waste which is often an added surcharge to solid waste tip fees.

If product stewardship and chemicals policy initiatives are passed and cover large proportions of the HHW and CESQG product spectrum, there is the potential for SCWMA to need a smaller proportion of its resources to manage these wastes. As such, it would be wise for SCWMA staff to be engaged with and support statewide and even national efforts regarding product stewardship and chemicals policy. The following text describes some recent and ongoing work in these emerging initiatives.

California Take-It Back Partnership

In response to the February 8, 2006 landfill ban on universal wastes, the Department of Toxic Substances Control (DTSC) initiated the California Take-It-Back Partnership which is a collaboration of state government; city and county government; businesses; non-profit agencies and non-governmental organizations. The intent is to provide "free; local and convenient ways for California residents to recycle everyday household wastes such as batteries, fluorescent lamps and electronic devices that can no longer be disposed in the trash". DTSC is promoting the involvement of local businesses to accept universal wastes from the public to ease the burden on local government Household Hazardous Waste Collection Programs. Additional information on the Take-It Back Partnership is at http://www.dtsc.ca.gov/TIB/index.cfm.

Sonoma could solicit more businesses to participate in this program especially if the business can be persuaded to pay for the processing costs of the wastes rather than relying on the SCWMA HHW program funding.

Product Stewardship

Product stewardship most frequently starts by addressing products at the waste phase of their life cycle. Bottle deposit systems are an early form of this type of program. The rechargeable battery industry has been working with retail and government agencies to recover and recycle rechargeable batteries through the Rechargeable Battery Recycling Corporation, RBRC. More recently there has been legislation in four states to require manufacturers of electronics to take

responsibility for their products. The most progressive of these bills has been passed in CA and WA.

There are other ongoing programs or negotiations occurring at the national stage that also have relied on local and state governments to be implemented effectively. Mercury thermostats are about to be collected from any HHW programs at no charge based on work over the past few years with the manufacturers of those devices. Local and state governments were instrumental in pushing for that program.

There is an ongoing stakeholder group, including local and state representatives, that is negotiating with the National Paint and Coatings Association to create an industry funded nationally-coordinated leftover paint management system. This process has been ongoing for a few years and it should be clear within the next year whether this will be successful from the governments' perspective. Depending on the outcome of this process, there could be a significant reduction in paint management costs to local HHW programs. Paints are usually one of the largest volume HHW categories and represent a significant cost. Some or all of those costs may be absorbed if there were a national industry-sponsored system to manage that single waste stream.

Other products are subject of local, state and national product stewardship initiatives. There are various ways for local agencies to support these efforts. At the national level the Product Stewardship Institute (PSI) is leading on many product stewardship initiatives. Many state and local governments are dues paying members and also participate directly in these initiatives. See their website for more information at www.productstewardship.us.

A newer organization also working at the local level for product stewardship is the Product Policy Institute (www.productpolicy.org). In addition, there has been a new local and state consortium formed called the California Product Stewardship Council, modeled after a similar successful coalition in the northwest US. The CA Chapter of the North American Hazardous Materials Management Association (www.NAHMMA.org) is also working actively in supporting product stewardship in CA on behalf of local and state government programs. There are other CA groups which are also engaged with product stewardship issues such as the Californians Against Waste which works with legislators and regulatory agencies in Sacramento.

Chemicals Policy

Chemicals Policy is a broader but complementary approach to product stewardship. Whereas product stewardship efforts typically focus on an individual product type, Chemicals Policy typically looks broadly at human health and impacts and tries to find systemic solutions. This has been highlighted recently by the extensive research work, Framework for California Leadership in "Green Chemistry" Policy, by Dr. Michael Wilson from UC Berkeley's Center for Occupational and Environmental Health. The full report is available at - http://coeh.berkeley.edu/docs/news/06_wilson_policy.pdf

Senator Simitian accepted Wilson's research report and held a hearing at which he expressed his view that California can and should be the first U.S. state to implement a modern, comprehensive approach to chemicals policy. As this initiative moves forward there may be opportunities for SCWMA to provide input and support. Working with the CA NAHMMA Chapter, the CA Product Stewardship Council, Californians Against Waste and other interested organizations would also be a productive use of SCWMA efforts in supporting Chemicals Policy in CA.

IX. Recommendations

The Sonoma County Household Hazardous Waste Program, administered by Sonoma County Waste Management Agency, has provided a full spectrum of opportunities for residents to safely manage their household hazardous waste. As regulatory changes result in more reclassifications of solid waste as hazardous and population increases, the amount of wastes needing disposal continues to increase. The existing program of one permanent facility, weekly Community Toxic Collections, a mobile Toxic Rover, and Small Business Collection is operating at maximum capacity.

After extensive review of the program, Sweetser & Associates and Special Waste Associates are recommending a number of operational and infrastructure improvements. These recommendations can be implemented over the next few years and include the following major recommendations:

- Expand the storage capacity of the existing facility by relocating low hazard operations to a newly covered storage area and consider adding walls for a latex processing area.
- Add one additional full service facility in the southern part of the county with ability to process incoming wastes.
- Add one collection facility in the north central county with limited ability to process incoming wastes.
- Add three satellite collection sites for storage of incoming wastes.
- Transition away from the weekly, more costly CTC's in the urban areas to more reliance on the new facility system
- Increase disposal fees for small businesses and large volume mobile customers to reduce current subsidized rates
- Reorganize the material reuse program to more accurately track the quantity of materials distributed.
- Incorporate design and operating efficiencies into the latex paint bulking activity
- Now that the permanent facility has been operating for nearly two years, the allocation of the mobilization costs should be reevaluated by the contractor to provide for more accurate program evaluations in the future.
- Investigate implementation of product stewardship programs to ease the operational and expenses of collecting HHW

These recommendations will position Sonoma County to meet the increasing needs of its citizens, while maintaining a cost effective program.