BROWN, VENCE & ASSOCIATES

Construction and Demolition Debris Diversion Strategic Planning

Napa-Vallejo Waste Management Authority

Report | September 2005

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Napa-Vallejo Waste Management Authority

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Section 1

Introduction

Background

Brown, Vence & Associates, Inc. (BVA) was initially retained by the Napa-Vallejo Waste Management Authority (Authority) in 2004 to develop options for the diversion of Construction and Demolition (C&D) waste materials by its member agencies. These members include the cities of American Canyon, Napa, and Vallejo, and the unincorporated southern portion of Napa County. These member agencies currently deliver the majority of their C&D waste materials to the Devlin Road Transfer Station (DRTS) for disposal. The City of Vallejo delivers its inert materials generated from City projects to their Lemon Street collection site for disposal. To assist the member agencies in seeking strategies to increase their C&D waste diversion potential, BVA conducted the following analyses:

- Characterization of the C&D materials
- Review of potential diversion options
- Economic analysis of the diversion options, and
- Review of the DRTS operator's C&D diversion proposal.

From this analysis, BVA recommended implementing a two-phase approach for developing C&D facilities and operation. Phase 1 includes a simple floor sorting operation with mobile equipment and sorters behind the DRTS; Phase 2 includes potential development of an indoors processing operation with stationary equipment to screen and sort materials adjacent to the DRTS. As discussed below, BVA assisted the Authority in the development of Phase 1. The Authority, in conjunction with the DRTS's operator, the Devlin Road Recycling and Transfer Facility, (DRRTF) have implemented Phase 1 and are currently under operation. Phase 2 is scheduled potentially as part of the DRTS procurement in 2007.

Study Overview

As part of this study, BVA assisted the Authority in development of Phase 1 C&D Facility through:

- Contract negotiations with the Devlin Road Recycling and Transfer Facility (DRRTF),
- Permitting and California Environmental Quality Act (CEQA) assessment,
- Developing the Storm Water Pollution Prevention Plan (SWPPP) for the C&D operations, and
- Assessment of certain design and engineering issues.

As one of the greatest factors underlying the financial feasibility for the development of a C&D Facility is the avoided cost of transferring and disposing the Authority's waste, BVA conducted a market study of general solid waste rates in Northern California to project feasible costs. In addition, BVA analyzed certain institutional issues such as ownership, operation, public vs. private opportunities, and financing options.

A future needs assessment was conducted analyzing diversion needs and improvements at the DRTS as part of the development of a Long-Term Strategic Plan for the Authority.

Section 1 of this report describes the background to this study and provides a general overview of the components studied; Section 2 details the market study conducted; Section 3 includes the assessment of institutional issues; Section 4 develops the future needs assessment, and Section 5 summarizes our findings for the Long-Term Strategic Plan.

Section 2

Market Study - Analysis of Future Options for Transfer and Out-of-County Disposal

Background

The current operations contract for the DRTS expires in 2007. At that time, the Authority will procure a new operator and long-term out-of-County disposal capacity. The purpose of this section is to identify likely ranges of cost for transfer station operations, including transfer, transport, and disposal costs. In addition, the Authority was interested in review of other jurisdiction's fee schedules for assistance in development of a new fee schedule for the DRTS. Three tables were developed to summarize our findings. Table 1 provides survey information regarding disposal costs at likely landfills. Table 2 adds information on transfer station operations and transfer costs in order to determine total costs for transfer and disposal. Table 3 reviews other jurisdiction's fee schedules.

Disposal Survey

BVA conducted a survey to gather information for eleven out-of-County landfills that could potentially serve as a disposal site(s) for some or all of the waste that is generated by the members of the Authority and that is now transferred at the Devlin Road Transfer Station. Table 1 provides information for nine privately owned and operated sites, and two that are publicly owned and operated. All eleven landfills were assumed to use the Devlin Road Transfer Station with long-distance truck transfer. These landfills may be economically feasible, should capacity be available and given the combined cost of the transfer and disposal fee. A summary of the survey is shown in Table 1 and includes:

- One landfill site, Potrero Hills, that is less than 50 miles roundtrip from the DRTS and, in some cases, is currently taking waste from the immediate region.
- Five landfill sites that are more distant, between 50 and 100 miles roundtrip, including Clover Flat, Central (Yolo County), Hay Road, Keller Canyon, and Redwood.
- Five more remote landfill sites that are over a 100 miles roundtrip, but may be able to offer relatively low gate rates that offset the higher cost of transfer. These sites include Anderson, Forward, Kiefer, Lockwood, and Vasco Road.

The data in Table 1 compares two types of cost:

- Published gate rates, which will provide an upper bound for possible tip fees.
- Contractual disposal fees for longer-term capacity that landfill owners either have recently offered to, or have negotiated with specific jurisdictions. In general, proposals in response to an Authority RFP (or subsequent negotiations) should

result in disposal fees that are significantly lower than the published gate rates, and closer to those offered or negotiated on a bilateral basis.

Note that some of the landfills in Table 1 may be later dropped from further consideration for factors including, but not limited to:

- A total cost, inclusive of transfer that is prohibitive.
- Inability to provide adequate capacity in the short-term and/or the long-term.
- County ordinances, permit caps, or other restrictions on waste imports.
- Site-specific issues of short-term and/or long-term concerns such as permit compliance, environmental or geological integrity, traffic access, etc.

The Altamont Landfill (Waste Management, Inc.) is located in Alameda County. Altamont is not included in Table 1 because Alameda County limits imports to Altamont to two jurisdictions that have been importers for a number of years (City and County of San Francisco and the City of San Ramon in Contra Costa County). In the unlikely event that additional imports would be allowed, State and County fees totaling approximately $13 per ton would likely result in a prohibitive cost for disposal. Republic's Vasco Road Landfill is not currently subject to these import restrictions and has sizable available capacity. However, as with Altamont, government fees may result in an excessive total cost for disposal.

Note that Allied's Forward Landfill has a very large capacity that has been actively marketed in recent years. However, Forward would not disclose current tons per day of disposal, but recent indications are that the facility is nearing its daily capacity.

BVA staff also interviewed County staff regarding publicly-owned landfills in Lake and San Joaquin counties that do not appear in Table 1:

- Lake County's Eastlake Landfill was included in the survey due to relative proximity. Like the privately-owned Clover Flats, Eastlake Landfill is relatively nearby, but quite small. We were informed that Lake County does not accept waste from outside the County.
- San Joaquin County has several landfills that potentially have the necessary capacity, and in recent years have lost waste to Forward. County policy currently does not allow waste imports unless an agreement is signed that requires the importer to pay a mitigation fee for impacts to air, traffic, etc. There is no precedent for importing waste, so pricing is unknown. San Joaquin County is now in the process of expanding permit capacity, and in addition, County policy may change regarding mitigation for imports. Our staff was told to check back in one month for more concrete information.

Total Cost of Transfer and Disposal

Table 2 provides two total transfer and disposal costs based on the negotiated and gate rates for disposal, the roundtrip distances from Table 1, and the addition of assumed transport and transfer facility operations costs. Assumptions include:

- Transport cost of $80 per hour.
- Average speed of 50 miles per hour.
- 24 ton payload for transfer vehicles.
- Roundtrip distances from the DRTS estimated using www.mapquest.com; note that actual mileages may vary according to routing requirements or preferences.
- Loading and unloading turnaround times of a half-hour.
- Transfer station operations costs of $13 per ton.

Other Jurisdiction's Fee Schedules

BVA reviewed fee schedules from five other near-by facilities, as shown in Table 3. The fees for refuse were somewhat comparable at all the facilities, except that costs at the Hay Road and Potrero Hills landfills were less than at the DRTS. However, the cost differential for the average self-haul customer is not believed to be significant enough to cause loss of flow, especially if there is a moderate difference in travel distances between the DRTS and other facility. Several of the other jurisdiction's fee schedules included more chargeable items than that at the DRTS. Many of the items included reduced rates for recyclable materials. We would like to discuss these findings with the Authority to assist in developing a revised fee schedule for the DRTS.

Conclusions

Based on the data in Table 2, negotiated total costs are in range of $39 to $67 per ton. Based on total negotiated costs, Potrero Hills, Kiefer, and Keller Canyon appear to be the least expensive. Full costs based on published tip fees are in a larger range of about $50 to $86 per ton. Assuming the Authority's current rate, in excess of $49 per ton, a savings on the order of approximately $10 per ton might be achievable under negotiated conditions. In addition, a fee schedule including more chargeable items could be developed for DRTS.

Table 1 - Market Survey of Out-of-County Landfills and Disposal Rates

Landfill Name, Owner/Operator	County, Roundtrip Distance from DRTS	Estimated Closure Date	Capacity		Bilateral Arrangements					Published Gate Rate	Comments
			Permitted (TPD)	Current Disposal (TPD)	Jurisdiction, Term	Effective Date of Rate (per ton)	Base Fee (per ton)	Govt Fees (per ton)	Total Disposal Fee (per ton)		
Vasco Road Republic	Alameda County 120 miles	2015	2,518	1,500	Livermore 10 years	1/1/2004	$13.85	$12.37	$26.22	$15.85/cubic yard estimated $63.40/ton	Negotiated price offered during a competitive procurement of collection and disposal.
Keller Canyon Allied	Contra Costa County 62 miles	2040-2070	3,500	2,940	Central Contra Costa SWA 10 yrs	3/1/2005	$16.40	$5.50	$21.90	$40.00/ton	Current disposal at Keller Canyon is a 12-month rolling average. Contra Costa County has fee equal 25 percent of total disposal fee.
Redwood Waste Management	Marin County 60 miles	2039	2,300	1,200	Petaluma 10 yrs	7/1/2004	$31.45	$5.42	$36.87	n/a	Current disposal is based on annual total for 2002 from CIWMB. Redwood representative would not disclose current actual disposal or gate fee for compacted MSW.
Clover Flat Upper Valley Disposal	Napa County 66 miles	2021	300	200	Upper Valley					$54.00/ton	Currently paying $54.00/ton, but negotiating for a rate in the upper $40s
Kiefer Sacramento County	Sacramento County 145 miles	2064	6,300	2,500	n/a	n/a	n/a	n/a	n/a	$26.00/ton	Interested in imports; currently taking waste from Amador County. Can do longer-term deals in the +/- $20 range. Have negotiated rates as low as $15 per ton. Can take additional waste as beginning January '05, once have final Corp of Engineers 404 permit.
Forward Allied	San Joaquin County 155 miles	2020	8,668	n/a	Fremont, 10 yrs	9/1/2004	$16.90	$1.90	$18.80	$40.00/ton	Fremont negotiated the rate of $18.80 with Forward, but due to a legal challenge is instead using Altamont. Also awaiting a response from Manteca which uses Forward.
Anderson Waste Connections	Shasta County 350 miles	2036	1,018	700	Humboldt Waste Management Authority 15 yrs	7/1/2004	n/a	n/a	$23.51	$7.00/cubic yard estimated $28.00/ton	Actively marketing capacity, but long distance.
Potrero Hills Republic	Solano County 40 miles	2015-2063	4,330	3,049	Ross Valley San Dist (Marin Co) 10 yrs West Contra Costa SWA 7yrs, 21 yrs	10/01/02 2004	n/a $18.36/$15.26	n/a $6.10/$6.10	$36.00 $24.46/$21.36	$40.00/ton for commercial or hydraulic trucks	Ross Valley gate fee proposed during a competitive collection procurement. WCCSWA fees proposed by Republic as part of a negotiation regarding long-term transfer, siting of a new facility, ongoing MRFing and other issues. Rates for for 7 yrs and 21 yrs, respectively. Mendocino County staff state that Portreo Hills "most favored rate" is $19.57.
Hay Road Norcal	Solano County 70 miles	2070	2,400	550	Solano County jurisdictions	n/a	n/a	n/a	n/a	$36.00/ton	Up until the late 1990's Hay Road had a "most favored nation" price, but no longer does. Solano County jurisdictions are paying $36.00 per ton, and if Sonoma County used the landfill Norcal would recalculate system costs and decrease the $36 gate rate for both Solano and Sonoma counties.
Lockwood Waste Management	Washoe County, Nevada 390 miles	2026	no TPD limit	8,000	Northern California JPA	n/a	n/a	n/a	$14.00	$3.45/cubic yard estimated $13.80/ton	Lockwood rates have in recent years been in the $12/ton range. A BVA client was recently quoted the $14 per ton figure for long-term disposal of sizable tonnage.
Central Yolo County	Yolo County 85 miles	2045	1,800	500	n/a	n/a	n/a	n/a	n/a	$36.00/ton	Yolo County staff indicated interest in out-of-county tonnage and noted that the cap is kept higher than current need.

General Notes:
1. Distance is roundtrip from Devlin Road Transfer Station.
2. Assumes transfer/haul, except for direct haul to Clover Flat and Potrero Hills landfills.
3. Published gate rates are inclusive of government fees and except as otherwise noted are for transferred MSW.
4. Converted compacted gate rates in $ per cubic yard to $ per ton using 500 lbs per cubic yard.

Table 2 - Transfer, Transport and Disposal Costs

		Transfer/Transport Cost		Disposal Cost		Total Cost	
Landfill Name, Owner/Operator	Roundtrip Distance (miles)	Roundtrip Transport Cost (per ton)	Transfer Facility Cost (per ton)	Negotialed Disposal Fee (per ton)	Gate Rate Disposal Fee (per ton)	Negotiated Disposal Fee (per ton)	Gate Rate Disposal Fee (per ton)
Vasco Road Republic	120	$ 9.67	$ 13.00	$ 26.22	$ 63.40	**$ 48.89**	**$ 86.07**
Keller Canyon Allied	62	$ 5.80	$ 13.00	$ 21.90	$ 40.00	**$ 40.70**	**$ 58.80**
Redwood Waste Management	60	$ 5.67	$ 13.00	$ 36.87	n/a	**$ 55.54**	**n/a**
Clover Flat Upper Valley Disposal	66	$ 6.07	$ 13.00	$ 48.00	$ 54.00	**$ 67.07**	**$ 73.07**
Kiefer Sacramento County	145	$ 11.33	$ 13.00	$ 15.00	$ 26.00	**$ 39.33**	**$ 50.33**
Forward Allied	155	$ 12.00	$ 13.00	$ 18.80	$ 40.00	**$ 43.80**	**$ 65.00**
Anderson Waste Connections	350	$ 25.00	$ 13.00	$ 23.51	$ 28.00	**$ 61.51**	**$ 66.00**
Potrero Hills Republic	40	$ 4.33	$ 13.00	$ 24.46	$ 40.00	**$ 41.79**	**$ 57.33**
Hay Road Norcal	70	$ 6.33	$ 13.00	n/a	$ 36.00	**n/a**	**$ 55.33**
Lockwood Waste Management	390	$ 27.67	$ 13.00	$ 12.00	$ 13.80	**$ 52.67**	**$ 54.47**
Central Yolo County	85	$ 7.33	$ 13.00	n/a	$ 36.00	**n/a**	**$ 56.33**

General Notes:
1. Distance is roundtrip from Devlin Road Transfer Station.
2. Assumes transfer/haul, except for direct haul to Potrero Hills & Clover Flat landfills.
3. Published gate rates are inclusive of government fees and except as otherwise noted are for transferred MSW.
4. Converted compacted gate rates in $ per cubic yard to $ per ton using 500 lbs per cubic yard.
5. Transport costs based on $80/hr cost; 50mph speed, 24 ton payload, and 1/2 hour load/unload time..
6. Potrero Hills negotiated rate based on 7 year contract.
7. Clover Flat negotiated rate assumed as high $40's per converstaion with Jill Pahl regarding current negotiations with Upper Valley Disposal.

Table 3 - Comparison of Fee Schedules

Items	Devlin Road Transfer Station	Hay Road Landfill	Potrero Hills Landfill	Contra Costa Transfer & Recovery	Clover Flat Landfill	Redwood Landfill
Refuse ($/ton)	$54.00	$36.00	$44.00	$13.00/cy	$56.00	$25.00/cy
Tires (each)	$4.40-$107.40		$5.25-$21.50		$5-$100	
Hard to Handle ($/ton)			$12.50-$23.00		$38/hr	$25.00-$50.00
Appliances (each)	$11.75-$26.75	$5.00-$15.00	$10.50	$15.00-$30.00	$12-$30	$25.00-$50.00
CRTs (each)			$26.50		$35.00	
Clean wood/yard waste (ton)		$25.45/cy	$30.00	$12.50/cy	$48.00	$20.00/cy
Clean Rock/Brick/Asphalt ($/ton)					$56.00	$10.00/cy
Clean Mixed Conc/Asp ($/ton)			$0		$56.00	$10.00/cy
Mixed Conc/Asp w/rebar ($/ton)				$62.25	$56.00	$45.00/cy
Asbestos ($/cy)					$30.00	

Section 3

Institutional Arrangements

Introduction

There are an array of institutional arrangements that may be considered in the development and implementation of the Phase 2 Construction and Demolition Diversion Facility (C&D Facility) at the DRTS. This section outlines the advantages and disadvantages of each selected structure and the risk the Authority may face in implementing such arrangements. In conducting the analysis, BVA has analyzed both institutional arrangement alternatives as well as possible financing options for the Authority to consider. Based on the review and analysis, an institutional arrangement and financing plan is recommended that would best fit the Authority. Taking into consideration the existing DRTS operating structure, BVA has also outlined the recommended next steps the Authority should take to implement the project.

Institutional Arrangements

Based on the Authority's existing situation, BVA selected possible institutional arrangements for consideration, including:

- Authority currently owns the land proposed for the C&D Facility development
- New building structure will be physically tied to existing transfer building
- Estimated capital costs of $3-5 million
- Authority has historically owned its facilities and contracted operations, but would consider public ownership/operations

BVA has selected the four most viable institutional options available, consisting of various facility ownership/operations combinations. In each of the options illustrated below, all of the conditions listed above were considered.

Alternative 1 | Operating Agreement

This alternative corresponds to the existing institutional arrangement that the Authority currently uses to manage the DRTS. In this alternative, the Authority would design and construct the C&D Facility to meet their needs using assistance from their consultants, staff, and operator.

Another methodology available to receive development assistance can be managed through the operator procurement process. During procurement for the next DRTS operator, the Authority could request, as a condition of the request for proposals (RFP), for the proposers to provide a conceptual design of the C&D Facility. The selected proposer would then be required to finalize the design with input from the Authority and their consultant. If the

Authority chooses to use this methodology, the procurement process must begin earlier than planned to allow time for development of the C&D Facility.

In this alternative, the Authority would also provide financing, and own the C&D Facility. The operator's only equity contribution would be the purchase of rolling stock. The C&D Facility would be managed through an operations agreement with the selected private operator. The Authority would set the gate rates and pay the private operator a set fee for operations. This will allow the Authority to generate enough revenues to support Authority management, invest in new programs, and pay debt service on capital projects. The Authority and operator would need to agree on who would collect the gate fees and who will be responsible for determining which loads should be processed at the C&D Facility versus those loads which go directly to the tipping floor for disposal.

As an option under this alternative, the Authority may want to split the contract for: 1) operations of the transfer station and 2) disposal of the residue from transfer station operations. The disposal portion of the contract could be further split between disposal sites to realize the best economic advantages and insure capacity for future disposal. Splitting the contract has an advantage to increase diversion potential, since the contractor will not have the incentive for disposal. In fact, the Authority could implement incentives to the transfer station contractor for diversion from disposal. This would work to increase diversion and lower overall facility disposal costs. The only drawback is the Authority will need more time to manage the contracts, as more than one entity will be involved.

Alternative 2 | Publicly Owned and Operated

As governmental agencies seek more and more control over waste disposal and diversion activities, they are delving into the business of facility ownership and operation. In this alternative, the Authority would again be responsible for development and financing of the C&D Facility, including design and construction. In this alternative, the Authority would operate the Transfer Facility as well, hiring additional staff and management personnel. Also, in this alternative, the Authority would be responsible for marketing the recovered products and maintaining quality control, both of which are key to the project's success. Although this alternative allows for the most control, this option poses the largest risk for the Authority with regard to both ownership and operational liability.

Alternative 3 | Joint Venture

Alternative 3 allows for a greater balance of public/private contribution. In a public/private partnership arrangement, the Authority and selected operator would agree upon a facility design, with the operator providing financing for the construction of the C&D Facility. The private financing could be through the low interest California Pollution Control Financing Authority (CPCFA) program. This option would put the risk of construction, as well as financing and operations on the operator. The downside to the Authority is that the private operator would require a much longer contractual term to pay off the financing and would

allow more room for operator overhead and profit (O&P). The Authority would still set the gate rate (although it may be somewhat higher to cover operator's costs) and be allowed input to design, construction, and operations. This alternative may not be feasible considering the new C&D Facility will need to be constructed abutting the existing Transfer Station Building with common walls. It is probably not in the Authority's best interest to allow for private investment within an Authority owned facility. Another approach to structuring the Joint Venture is to make the private operator responsible for all of the stationary and mobile equipment, with the Authority providing the building and land. The Authority could structure a clause in the contract that after the contractor's term (normal operating term, approximately seven years), the Authority would have the discretion to purchase the stationary equipment. This would take the risk away from the Authority and place it on the private operator. The Authority would have several years to observe operations and see if the equipment worked effectively; if not, the private operator would need to remove the equipment at the end of their contractual term.

Alternative 4 | Build Own Operate Transfer (BOOT)

In this alternative, the private developer would have full control over the design and construction of the C&D Facility. The private developer would own and operate the C&D Facility under a land lease contract with the Authority. The Authority could opt to implement a private Build-Own-Operate system; however, if this alternative were selected, BVA recommends a modified Build-Own-Operate-Transfer (BOOT) option that provides for contractual language giving the Authority the right to purchase the C&D Facility at the end of the operating contract or at an agreed upon future date. This alternative provides the Authority with a land lease revenue stream in addition to the facility franchise fees. As in the Joint Venture Alternative discussed above, this alternative is complicated by the fact that the new C&D Facility Building would be attached to the Transfer Station Building, an existing structure owned by the Authority. Again, this is probably not in the best interest of the Authority.

Analysis of Institutional Arrangements

Each of the institutional arrangements described above has advantages and disadvantages based on the Authority's responsibilities, level of control, and the potential revenue stream available. Table 1 provides a summary of the pros and cons and the level of risk for each institutional option.

Alternative 1 | Operating Agreement - provides control over development and construction of the C&D Facility, allowing ownership by the Authority. Its drawbacks include having to finance the debt and some risk with the development and ownership of the Facility. However, if the Authority realizes surplus funds from the sale of the Oat Hill Quarry, this may eliminate or greatly reduce the financing debt.

Alternative 2 | Publicly Owned and Operated - provides the most control to the Authority over development and operations of the C&D Facility. However, this alternative puts the maximum responsibility and risk on the Authority to hire and manage staff to operate the facility, maintain product quality, and profitably market the end products. In addition, the Authority will have to fund the development cost as well as get into the unfamiliar business of day-to-day operations.

Alternative 3 | Joint Venture - allows for the sharing of control and risks between the Authority and the private operator. This alternative may not be feasible as discussed above, considering the new C&D Facility will need to be constructed abutting the existing Transfer Station Building with common walls. It is probably not in the Authority's best interest to allow for private investment into an Authority owned facility. As mentioned above, a joint venture could work in this instance if the private operator was responsible for supplying all stationary and mobile equipment, while the Authority supplies the building and land.

Alternative 4 | Build Own Operate Transfer (BOOT) - allows for most all risk and responsibility to be transferred to the private operator. However, this alternative also allows for most all control for development and operations to be shifted to the private operators. Again, this alternative may not be feasible as discussed above, considering the ownership and construction issues with the existing facilities as discussed above.

Table 1 | Institutional Arrangement Analysis

Ownership and Operating Structure	Advantages	Disadvantages	Risks
1. Long Term Operating Contracts	▪ Maintains existing Authority's institutional arrangements ▪ Allows setting of gate rates ▪ Ability to establish development schedule ▪ Maximizes Authority's control over building design and construction ▪ Some control over operations and AB 939 objectives can be achieved by splitting the contract between operations and disposal ▪ Relatively typical arrangement	▪ Authority will have to finance the development and construction of the C&D Facility ▪ Loss of some control of operations; this could be somewhat minimized by splitting the contract between operations and disposal ▪ If Authority splits the contract, more administration time may be needed for additional contract(s)	▪ Moderate risk to the Authority with building development and ownership

Ownership and Operating Structure	Advantages	Disadvantages	Risks
2. Publicly Owned and Operated	▪ Allows setting of gate rates ▪ Ability to establish development schedule ▪ Maximizes Authority's control over building design and construction ▪ Maximizes Authority control over operations and AB 939 objectives ▪ Increased jobs	▪ Must finance full design and construction of the facility ▪ Increased management of staff ▪ Authority would be responsible for product quality and marketing	▪ Authority bares full risk of development and operations
3. Joint Venture	▪ Financing reduces public sector debt burden ▪ Allows setting of gate rates ▪ Allows Authority's input to building design & construction ▪ Some control over operations and AB 939 objectives • Increased jobs	▪ May require longer term contract with private operator ▪ Likely to result in higher costs to cover payback on private operator's investment ▪ Requires close coordination with operator during facility development, design, and start up ▪ Increased potential for interrupted schedule with required coordination ▪ Development of side-by-side facilities with different owners will be difficult unless structured with Authority owning building and land, operator all equipment	▪ Share risks of facility with operator

Ownership and Operating Structure	Advantages	Disadvantages	Risks
		▪ Allows private investment into Authority owned facilities	
4. Build-Own-Operate-Transfer (BOOT)	▪ Cost of operations and financing are the sole responsibility of the private developer/operator ▪ Set franchise fees and land lease rates ▪ Provides for eventual transfer of C&D Facility to the Authority by an agreed upon date	▪ Limited control of operations, and meeting AB 939 objectives ▪ Permitting and franchise agreement terms are the only oversight mechanisms provided to the Authority. Strong contract language crucial. ▪ Development of side-by-side facilities with different owners will be difficult ▪ Allows private investment into Authority owned facilities	▪ Minimal ownership or financial responsibilities ▪ Risk imbalance – Authority has long term risk associated with AB 939 goals with relatively little control over operations

Financing Options

There are various financing options that can be implemented in the development of the Authority's C&D Facility. The mechanism that best fits the Authority's needs will be based on the institutional arrangement that the Authority selects. As Alternatives 3 and 4 allow for private financing, they seem less appropriate for this project, as discussed above.

Authority Public Financing

The Authority has three options available for financing the C&D Facility: 1) use of internal funds, 2) debt financing, or 3) a combination of the two. Use of internal funds saves costs and staff time associated with issuance fees, usually 3% to 7% of the total finance amount. It also saves interest payments and allows for a more expedient schedule. We understand that the Authority may consider this, especially if they can sell the Oat Hill Quarry. The Authority may also have monies available to fund this project in their ACSL closure and operator liability funds. The Authority may also want to consider this option to save the time intensive administrative effort associated with financing.

If the Authority cannot make available all of the internal funds necessary for this project, debt financing is another option. This option will take a little more time to implement and be somewhat more costly overall. However, it is very common for governmental agencies to use this financing, covering the debt service payments through operational savings (such as decreased transportation and disposal costs) or increases to the tip fees. The Authority should be able to obtain tax-exempt financing for this nature of project. In addition, interest rates continue to remain low in the 4% to 5% range. The Authority is very familiar with this type of financing, having just completed the process for another project at the end of 2004. The Authority may also attempt to refinance other current debt during the bond issuance for the C&D Facility if the terms are more favorable.

Sometimes entities prefer combining the two approaches by funding part of the debt through equity contributions. This may not make sense as the total project cost is estimated to be only in the $3 to $5 million range. Financing a smaller project amount may increase the potential interest rate as well as the up-front financing costs equal to a larger percentage of the overall financing amount.

Operator Private Financing

The private operator has several options for financing as well: 1) use of internal funds, 2) commercial bank debt financing, 3) CPCFA financing, or 4) a combination of using internal funds with a financing method. If the operator uses their internal funds, they usually will require a certain level of earning on their money, typically as high as 10% to 20% (much higher than the current interest rates). If the operator needs to finance some or all of the required capital, interest costs can be somewhat high unless they qualify for CPCFA or other tax exempt financing. Commercial bank debt financing has a higher interest rate than

CPCFA because the lender must pay taxes on the interest earned on the loan. Also, commercial banks typically require shorter repayment terms, particularly on stationary and mobile equipment.

Through CPCFA's Small Business Pollution Control Tax-Exempt Bond Financing Program (SBAF Tax-Exempt Bond Program) loans are provided to creditworthy small businesses for the acquisition, construction, or installation of qualified pollution control, waste disposal, and resource recovery facilities in California. Loans are funded from the sale of tax-exempt bonds issued by the California Pollution Control Financing Authority on behalf of the eligible small business. Tax-exempt bond financing provides qualified small businesses with lower interest costs than are available through conventional financing mechanisms. The California Pollution Control Financing Authority uses its Small Business Assistance Fund to pay for the costs of issuance of tax-exempt bonds issued on behalf of small businesses. The SBAF also pays for letter of credit fees, transaction fees, and other costs associated with the issuance of bonds. This assistance reduces the net cost of financing to the small business. Loan amounts ranging from $1 million to $20 million can be obtained through the SBAF Tax-Exempt Bond Program. Most financings take anywhere from 3 to 6 months. Some transactions take longer than that because the borrower needs to:

- Finalize engineering details and obtain necessary engineering and environmental clearances for the project
- Obtain all relevant state, federal, and local permits and environmental clearances
- Arrange financing guarantees required under the program, such as obtaining a Letter of Credit from a commercial bank which guarantees repayment of the loan.

Table 2 presents the advantages and disadvantages to each financing option.

Table 2 | Financing Options

Financing Option	Advantages	Disadvantages
Authority Public Financing		
Use of Surplus Funds	• No issuance costs • No interest cost • Requires little administrative time • Quicker schedule	• Decreases funds available for other needs
Use of Bonded Debt	• Small debt payments usually covered by small increase in tip fees or operational savings	• May reduce availability of additional bonded debt, if needed later

	• Requires little to no upfront monies	• Increased cost • Increase in schedule
Operator Private Financing		
Use of Private Funds	• No issuance costs • No interest cost • Quicker schedule	• Private companies will usually charge 10% to 20% annually for use of their investment monies
Commercial Bank Debt Financing	• Requires little time and effort for financing	• Relatively higher cost of capital and shorter repayment time frames (typically 6 to 10% interest and five to seven year repayment terms)
California Pollution Control Financing Authority Funds	• Reduced cost tax-exempt financing	• May require more upfront work to gain CPCFA approvals • Limited availability for large waste management companies

Section 4

Future Needs Assessment

Background

Since its inception, the Napa-Vallejo Waste Management Authority (Authority) has been focused on obtaining long-term disposal capacity on behalf of its member agencies. The Authority owns and manages the Devlin Road Transfer Station which is operated by Allied Waste Systems, Inc. (Allied). Solid waste collected at the transfer station is transported by Allied to its Keller Canyon Landfill in Contra Costa County. The Authority's agreement with Allied is scheduled to expire in 2007. The Authority must consider its short- and long-term options for future operation of the transfer station and ultimate disposal of the residual waste generated by the member agencies.

Currently, approximately 50 percent of the waste generated in the Authority system is from the City of Vallejo, 30 percent is from the City of Napa, 7 percent is from the City of American Canyon and the remaining 13 percent is from the unincorporated area of Napa County and from generators outside of the Authority's system. Self-hauled material makes up a significant portion of the waste at 40 percent. The remaining 60 percent is from franchise loads. A significant fraction of the self-hauled material consists of construction and demolition debris. The current tipping fees at the transfer station are:

- $54 per ton for franchise waste
- $56 per ton for non-franchise waste
- $56 per ton for C&D materials, including concrete, asphalt, sheet rock, metals, wood, and yard waste
- $19 minimum charge for loads up to 667 pounds.

The Authority has developed several diversion programs at the transfer station to reduce the amount of material sent to the landfill. These programs include:

- **Hazardous Collection Facility** for households and small quantity generators, including batteries, motor oil, paint, and other household chemicals. The facility includes a materials exchange for reusable household chemicals and paint.
- **Reuse Yard** for collection and sales of reusable household goods including building materials, furniture, tools, bicycles, and toys. Television, computer monitors, and large appliances are not accepted for reuse.
- **C&D Processing Facility** for mixed loads of C&D materials.
- **Drop-off Recycling Stations** for cardboard, newspaper, magazines, mixed paper, glass, plastic, aluminum, tin and scrap metal.

The transfer station is located adjacent to the City of Napa Materials Diversion Facility (MDF). By agreement, as codified in the Authority's formation documents, the transfer station is not designed to compete with the City's facility for source-separated materials. The MDF accepts the following source-separated materials for the fees listed below:

- $20 per ton for source-separated concrete
- $5 per ton for source-separated metal
- $43 per ton for source-separated yard waste
- $38 per ton for source-separated wood
- $10 each for electronic waste
- $10 minimum charge for all loads except metals

The member agencies are each responsible for implementing diversion programs to achieve the 50 percent diversion requirements under the California Integrated Waste Management Act of 1989 (AB 939). Based on the most recent information listed on the California Integrated Waste Management Board's website, the member agencies have achieved the following diversion rates.

- American Canyon - 53 percent
- Napa – 56 percent
- Napa County unincorporated area – 69 percent
- Vallejo – 42 percent

The City of Vallejo has received a time extension to achieve 50 percent diversion by December 2005 and has implemented several new diversion programs including a new C&D diversion ordinance.

The Authority needs to develop a long-term strategic plan to identify the potential diversion and disposal activities and the related costs and revenues spanning a ten-year planning period. The strategic plan will assist the Authority in identifying the components to include in the upcoming procurement for a transfer station operator. The Authority will also need to identify appropriate long-term disposal options for its residual waste.

Member Agency Input

At the request of Authority staff, BVA contacted the following staff representatives for each of the member agencies to obtain input on each representative's long-term vision for the transfer station.

- American Canyon – Robert Weil, Public Works Director
- Napa – Kevin Miller, Recycling Coordinator, Jed Christensen, Finance Director

- Napa County – Amy Garden, Environmental Resource Specialist, John Kara, Environmental Health Manager, Jill Pahl, Acting Director of Environmental Management
- Vallejo -- Derek Crutchfield, Recycling Coordinator

Based on these interviews, we identified the following issues at the transfer station.

Traffic Flow. A key impediment to reuse and recycling at the transfer station is traffic flow and queuing. Users need to understand that if they have recyclables or reusables they should visit the Reuse Yard before queuing up. Some users become frustrated and bypass the Reuse Yard in order to get into the long line for the fee gate. Once they get to the fee gate they do not want to be directed back to the Reuse Yard. Users with C&D or solid waste must all go through the same fee gate. However, once through the fee gate, users with C&D loads need to be directed to the C&D facility instead of automatically unloading at the transfer station.

Load Spotting. The transfer station needs improvements for directing users with recyclable-rich loads, reusables or C&D away from the transfer station unloading area and to the appropriate diversion location. As in the traffic flow discussion above, physical changes to the queuing area and education and incentives for the users and workers would result in more efficient and effective use of the Authority's diversion programs.

Signage. Several representatives would like to see improvements in signage directing users to the C&D Facility, the Reuse Facility, and the recycling drop-off areas. Concern is that many users are unaware of the appropriate diversion opportunities at the facility.

Serial Materials Recovery Facility (MRF). Several representatives mentioned the concept of a Serial MRF where users are incentivized or required to separate materials prior to unloading residuals at the transfer station. For example, users of the Sonoma Central Landfill can drop materials off at Recycle Town prior to going through the fee gate to lighten their loads before dumping. However, at the San Luis Obispo Cold Canyon Landfill, all users pay a fee to get in the gate ($48 per ton). Users are then directed to separate their loads prior to unloading at the landfill face. If they want to by pass the recycling area, they must pay an additional $20 fee. Cold Canyon's Serial MRF consists of an asphalt pad and movable K-rails and was built for approximately $100,000. The Serial MRF has two staff dedicated to spotting loads and assisting customers. These positions were transferred from the landfill face. Santa Cruz County has recently adopted a ban of recyclable materials at the landfill and transfer stations. Currently, the County is educating users about the ban which will be enforced beginning next year. All users will be required to source-separate materials for recycling prior to disposing of residual waste.

Improvements to the Reuse Yard. All representatives agreed that significant improvements could be made to the Reuse Yard. The facility would be more successful if the materials could be better protected from the elements and stored in a covered building. The Last Chance Mercantile at the Monterey Waste Management District Landfill was

suggested as a model, along with Urban Ore in Berkeley. Urban Ore receives materials directly from the public and also has a contract from the City of Berkeley to scavenge from the floor of the Berkeley Transfer Station. Specialists in the reuse market are needed to identify items that can be reused and price them appropriately. The SF Recycling & Disposal (formerly Sanitary Fill in San Francisco) has an arrangement with St. Vincent de Paul in Eugene, Oregon. St. Vincent de Paul provides trailers for reusable items to be shipped up to Oregon for resale. Users of the transfer station drop-off items at the public drop-off area. SF Recycling staff load the reusable items into the trailers for transfer to Oregon.

Improvements to the C&D Facility. Each of the representatives would like to see improvements at the C&D Facility. Currently, the Authority has implemented Phase 1 of a two phase plan. We understand from representatives that the Phase 1 Facility may be understaffed and C&D diversion does not happen consistently on the weekends. Many users of the transfer station are unaware of the opportunity to divert materials at the C&D facility. Several representatives expressed the concern that materials are not tracked effectively back to the jurisdictions for diversion documentation. The City of Vallejo requires its C&D contractors to document C&D diversion as a component of the permit process. Currently, the City is not able to verify whether C&D materials delivered to the transfer station have been diverted.

Multi-Material Diversion. The Authority is careful not to compete with the source-separated diversion programs offered at the City of Napa's MDF. However, the City of Napa representatives clarified that processing of mixed loads of recyclable materials would not conflict with the City's program. For example, loads that contain 50 percent yard waste, 30 percent wood, 10 percent metals and 10 percent residuals could be targeted by the Authority for diversion, even though the City's facility accepts source separated yard waste, wood and metals. The Authority may wish to codify this understanding with the City through a Memorandum of Understanding and pursue processing of more mixed loads.

E-waste Diversion. E-waste is currently accepted at the City of Napa's MDF. However, City of Napa representatives saw no conflict in having the Authority also provide e-waste diversion at the transfer station. Each of the other representatives identified e-waste diversion as an appropriate addition to the transfer stations other diversion programs.

Diversion Tracking. As mentioned above, there is a need to improve diversion tracking for diverted materials. Each of the member agencies should benefit from receiving diversion credit from the Authority's diversion programs. Currently, diversion credit is allocated based on each jurisdiction's disposal percentage. This approach provides a disincentive to the member agencies to encourage their generators to increase diversion and decrease disposal. The C&D Facility bases diversion tracking on the amount of materials delivered to it by jurisdiction. The jurisdiction percentage is then applied to the overall diversion from the C&D Facility. The percentage residual waste is also indicated on the C&D reporting form.

Salvaging. Currently, a limited amount of recyclable materials, such as large pieces of metal and cardboard, are salvaged from the transfer station floor by transfer station staff.

The current use of the transfer station makes salvaging a safety concern. However, some additional recyclables and reusable materials could be diverted from disposal through salvaging. SF Recycling & Disposal has recently reconfigured its public drop-off area to enhance salvaging. Users of the SF Recycling & Disposal transfer station are directed to a separate covered area, where materials are salvaged by transfer station staff. Recyclable materials are placed in appropriate bays and boxes and reusable items are diverted to transfer trailers for shipment to Eugene, Oregon. The Authority may wish to examine alternate configurations to enhance salvaging from the public drop-off area.

Alternatives for Residual Waste. Currently, the member agencies' diversion programs do not include source-separated organics diversion. The City of Napa and the unincorporated area designated as County Zone 1 will implement pilot food waste programs within the next few years. However, the City of Napa's compost facility is not currently permitted to handle food waste or other source-separated organics and there may be tonnage limitations at the MDF that preclude expansion. Several communities, including Sacramento, San Francisco, the Salinas Valley Solid Waste Authority, Santa Cruz and Sonoma counties are considering alternative technologies to address organics-rich loads of residual waste. These technologies include anaerobic digestion and steam conversion, both of which create energy from organics-rich loads and reduce the residual to compostable or recyclable materials. The Authority may wish to examine alternatives to disposal for some of its organics-rich streams, such as residential and multi-family waste.

Collection Contractor Input

At the request of Authority staff, BVA contacted the following collection contractors that utilize the DRTS on a daily basis to obtain input on long-term vision for the transfer station.

- Vallejo Garbage – Peter Friesen/Scott Pardini
- Napa Recyclers – Greg Kelly
- Waste Management, Inc. – Mike Howell

Traffic Flow. The collectors agreed that the most important issue from their perspective is traffic flow. Some contractor's have witnessed individual vehicles waiting up to 45 minutes in queue to get into the DRTS to unload. One idea is to add a second scale and lane at the DRTS to allow the contractor's to enter the DRTS and unload separately from the public.

Tipping Floor. Another traffic issue is that sometimes public vehicles end up on the tipping floor which causes safety as well as liability issues for the contractors. Keeping at least those vehicles that do not have an automatic unloading (dumping) mechanism off the tipping floor should be implemented. Making sure that a full-time spotter is on the floor at all times during operations should also be considered. Currently there are times that the loader operator serves as both a spotter as well as a loader operator.

Signage. The contractors would also like to see improvements in signage; their major concern is making sure the public self-haulers remain off the DRTS tipping floor and not get mixed in with their commercial vehicles. They would like it to be very clear to the public where they must go to unload their materials.

Additional Area. To garner additional diversion, some contractors suggested that the DRTS acquire additional acreage for these operations. Napa Recyclers suggests maybe acquiring the land between the DRTS and the City of Napa's MRF. This could also serve the purpose of having direct access between the facilities to allow the most efficient operation and potential for diversion. It was acknowledged by all parties that locating "usable" acreage adjacent to the DRTS may be difficult due to wetland issues.

System Improvement Components

Based on input from member agency staff representatives and the collection contractors, we have identified the following components for future system improvements to the management of the Authority's waste steam. Each component includes a cost estimate and, if applicable, a diversion estimate, based on other comparable programs.

Vehicle Segregation to Improve Traffic Flow

From observations at the DRTS and discussions with the local jurisdictions as well as the collection contractors, addressing the issue of traffic flow is a top priority. The queues waiting for entrance to the scales as well as entrance to the transfer station after being weighed are normally congested. As discussed above, some contractors have witnessed individual vehicles waiting up to 45 minutes in queue to get into the DRTS to unload. One solution discussed with the collection contractors was to separate the contractor's vehicles from the public by developing a new entrance into the tipping building with a new scale. This would allow all self-haul/non-contractor vehicles to utilize the current scales and queuing scheme, while developing the new queuing scheme for the contractor vehicles. Under one scenario, one inbound scale would be installed on the current outbound contractor vehicle roadway, located northeast of the transfer building, between the building and the inbound transfer vehicle road. We assume this roadway would need to be widened with additional queuing lanes added. We have not assumed a second outbound scale as most of the contractor vehicles have recorded tare weights. From discussions with the collection contractors the only vehicles that potentially do not have tare weights are the roll-offs. Empty roll-off trucks as well as the roll-off boxes have pre-recorded tare weights individually; however, they are never combined as one truck may pick up many different boxes. The solution is to be able to add the "tares" from the vehicle and box to obtain a total tare weight. Based on input from the operator, the Authority may wish to consider alternative traffic flow scenarios.

As discussed, the required infrastructure improvements described above would be approximately 250 square yards of additional asphalt roadway, the purchase and installation

of a 70 x 11 foot truck platform scale and a gated, automated system for tracking and weighing of these inbound vehicles without the need for a scalehouse or attendant. We are assuming that the contractor vehicles could be outfitted with ID tags consistent with automated system proposed. The estimated cost including design, engineering, installation and contingency would be approximately $100,000 or more depending on the amount of additional road construction. The additional benefit to segregating the vehicles besides safety and liability issues would be to lessen the burden at the self-haul scale to allow better directing of vehicles to the C&D area to lessen the congestion of traffic into the self-haul tipping area in the transfer building.

Development of a Serial MRF

The term “serial MRF” was first coined by Urban Ore in their conceptual design of the reuse and recycling operation at the Sonoma Central Landfill. The Monterey Resource Recovery Park was also designed as a serial MRF. Another term for this concept, used by the CIWMB, is “resource recovery park”. The CIWMB has documented examples of the resource recovery parks in Monterey, Berkeley and San Leandro on its website at:

http://www.ciwmb.ca.gov/LGLibrary/Innovations/RecoveryPark/CaseStudies1.htm

Components of a serial MRF or resource recovery park include:

- Traffic flows and configurations to enhance separation of materials.
- Economic incentives to encourage users to separate materials
- A full compliment of reuse, recycling and composting options

Serial MRFs can also include manufacturing facilities using recycled materials as feedstock and retail stores for reusable items and materials created from recycled or composted feedstock. The concept of a serial MRF incorporates many of the elements listed below, including improvements to the reuse yard, C&D facility, multi-material diversion, e-waste, traffic flow, scavenging, etc. Please see the descriptions below for capital and operating costs and potential diversion rates associated with these activities.

Improvements to the Reuse Yard

The Authority may wish to consider improvements to the Reuse Yard to enhance diversion. Improved signage, traffic flow, load spotting, and customer education will improve the effectiveness of this facility. A key component will be providing adequate staffing for the facility so that it is adequately staffed at all times when the transfer station is open. Providing a separate contractor or specially trained staff for the reuse facility may also be desirable. Both Sonoma County and the City of Berkeley contract with reuse specialists, Garbage Reincarnation and Urban Ore to enhance their reuse operations. The Monterey Resource Recovery Park employs a staff of 10 for operating the landfill, recycling area, and the Last Chance Mercantile reuse store. In 2004, Last Chance Mercantile diverted 1 percent of the total tons coming into the facility. They achieved $435,000 in sales with $450,000 in

operating costs. The Last Chance Mercantile was built in conjunction with Monterey's Material Recovery Facility. Total capital costs for that project was $9.6 million. The Sonoma Recycle Town, including both the recycling drop-off area and reuse buildings, was constructed for $1.8 million as a part of the Sonoma Central Landfill site improvement project. Adding a simple covered building located at the Authority's existing reuse yard site could cost approximately $100,000.

An enhancement or alternative approach to the Authority's reuse yard would be to contract with a third party such as St. Vincent de Paul (SVdP) of Lane County, Oregon. SVdP operates a mattress recycling facility in San Leandro and a number of reuse stores in Oregon. This non-profit organization is very entrepreneurial and is focusing its diversion efforts in the Bay Area. Currently, SVdP provides reuse diversion for both SF Recycling & Disposal (formerly the Sanitary Fill Transfer Station) and the Contra Costa County Solid Waste Authority. They are working on a project to enhance reuse diversion of unsold materials (such as magazines and books) at Monterey's Last Chance Mercantile. Costs for SVdP services are minimal. At SF Recycling, SVdP provides 28 foot trailers for reusable items. A Norcal staff member (1.4 full-time equivalent) trained by SVdP, loads reusable items into the trailers. SVdP pays for the transportation to their facilities in Oregon. Mattress recycling costs $6 per unit plus transportation to SVdP's DR3 mattress recycling facility in San Leandro. In 2004, the SVdP program diverted 1.4 percent of the self-haul tons entering SF Recycling (525 tons of mattresses representing 17,500 units and 216 tons of other reusable items). SVdP provides 48 foot trailers for mattress collection. Costs for providing one reuse staff on-site seven days per week would be approximately $60,000 (1.4 full time equivalents).

Improvements to the C&D Facility

As discussed above, each of the jurisdictional representatives would like to see improvements at the C&D facility. The Authority's overall plan includes two phases. The Authority is currently operating under Phase 1, which includes development of a pad behind the transfer building to receive process and recover materials from the C&D waste stream directed to the operation. The Phase 1 operation was developed to begin diverting C&D materials through small-scale operations utilizing available labor and mobile equipment. Phase 1 is partially a learning process to better understand the types and amounts of materials available in the waste stream and how to best handle these materials. Phase 2 is planned as part of the scheduled procurement process for a transfer station operator in 2007. Phase 2 is anticipated to include development of an enclosed building adjacent to the transfer building with stationary equipment, an assigned staff and mobile equipment to receive process and recover materials from the C&D waste stream. In BVA's June 2004 Report, "Construction & Demolition Waste Materials Study – Interim Report", Phase 2 costs were estimated at approximately $4.1 million for construction with annual operating costs at about $800,000 per year. The Report further states that potential cost reductions for Phase 2 processing, could allow a reduction in rates of $1 to 2 per ton.

Multi-Material Diversion

Codifying the Authority's concept of multi-material diversion through a Memorandum of Understanding or other appropriate mechanism is necessary because of the Authority's obligation not to compete with the City of Napa's MDF for source-separated materials for which the MDF charges a fee (concrete, metal, yard waste and wood). However, representatives from each of the member agencies, including the City of Napa, indicated that targeting of mixed loads for diversion is desirable. The Authority's current approach to mixed C&D diversion is based on this concept. In addition to mixed C&D loads, it may be appropriate for the Authority to target other mixed loads for diversion. A cost-effective and practical way of accomplishing this is the program operated at the Cold Canyon Landfill in San Luis Obispo. Landfill customers are required to drop-off recyclable items from their loads (including metals, yard waste, paper and cardboard) prior to unloading at the landfill face or pay an additional $20 fee. Contractors or self-haulers with mixed loads of yard waste, metals, etc. pay the $48 per ton tipping fee at the landfill gate and proceed to the recycling drop-off area where two spotters are employed to assist them in depositing materials correctly. Small amounts of residual waste can be dropped-off in this area or the customer may proceed to the landfill face for unloading. Thus, the landfill experiences no loss of revenue associated with the diversion effort. To implement this program at the DRTS, the Authority would have to reconfigure the self-haul drop-off area. The Cold Canyon Landfill was able to implement this program with very few capital improvements (total of $100,000). However, costs for the DRTS, could be significantly higher depending on other site improvements for traffic flow and enhanced salvaging. At the Cold Canyon Landfill, there was no increase in operating costs as a result of improving the drop-off area and requiring all customers to source-separate or pay the extra $20 per load. The two spotters for the drop-off area were taken from positions at the landfill face. If the DRTS was unable to achieve this level of efficiency, then the operating costs could increase to account for the additional spotters or about $85,000 per year.

Install Additional Signage

The jurisdictional representatives as well as collection contractors would like to see improvements in signage directing users to the appropriate self-haul unloading area, C&D facility, the Reuse Facility and the recycling drop-off areas. Concern is that many users are unaware of the appropriate diversion opportunities at the facility as well as the area to unload their refuse. They would like it to be very clear to the public where they must go to unload their materials. There are several signs already in place; however we recommend that the Authority install four (4) additional signs. The cost of these four (4) signs is estimated to be approximately $1,000 installed.

Load Spotting

Improvements are needed at the Facility for directing users with recyclable-rich loads, reusables or C&D away from the transfer station unloading area and to the appropriate

diversion location. Some of the necessary directing could be accomplished through increased signage as discussed above. Improvements to traffic flow through the segregation of vehicles (public vs. contractor); also as discussed above will assist in alleviating some of these load spotting needs. Additional improvements could result from education and incentives for the users. The Authority could develop a short promotional piece that outlines how the public could best use the DRTS to divert materials and save monies. This piece could be distributed in electronic form to the jurisdictions so that they could use it in their mailers or it could be sent to the local newspaper for publication. Another possibility is for the Authority to produce one page flyers to distribute at the scale house to the public for a month describing how next time they could save time, money and help the environment by using the recyclables drop-off, re-use area and C&D Facility. This could cost the Authority approximately $2,500 and divert approximately 1% or less.

Provide E-Waste Diversion

Currently, the City of Napa's MDF accepts e-waste at $10 per unit. However, to increase the convenience of DRTS customers, the Authority could implement an e-waste program as well. City of Napa representatives did not view this as a conflict with the Authority's agreement not to compete with the City's MDF.

At the Monterey Resource Recovery Park, e-waste is collected both from the MRF operation and from self-haul customers. Reusable electronic items are directed to the Last Chance Mercantile. All other e-waste is placed in an enclosure for shipment to a third party recycler. About 60 hours per month are spent managing the e-waste program. Recycling costs for e-waste range from no cost to paying for transportation only to paying $0.15 per pound for e-waste. The Salinas Valley Solid Waste Authority pays its contractor for transportation only and spent approximately $60,000 on e-waste recycling in 2004.

Improve Diversion Tracking

Currently, the Authority tracks diversion in two ways. For C&D, loads are tracked by jurisdiction of origin. For all other diversion activity, diversion is calculated and attributed to each jurisdiction based on total incoming tons to the facility. BVA surveyed a number of comparable jurisdictions and facilities to identify alternative methods of diversion tracking.

- The Sunnyvale SMaRT Station uses the same method as the Authority, diversion tonnage is apportioned to each jurisdiction based on total incoming tonnage. Yard waste is tracked on a load by load basis.
- The Western Placer MRF uses the same method as the Authority.
- Monterey Resource Recovery Park uses the same method as the Authority.
- The David Street Transfer Station tracks all incoming loads by jurisdiction. Diverted materials for which there is a fee (yard waste, mattresses, C&D) are also tracked by jurisdiction.

- Sonoma County's Recycle Town does not track reuse or recycled materials by jurisdiction. Sonoma County reports diversion rates as a Regional Agency under AB 939. However, yard waste and solid waste loads are tracked by jurisdiction.
- San Jose certifies C&D facilities that divert 50 percent or more of incoming materials and provides credit to C&D generators who use certified facilities. Thus, an individual generator is not responsible for demonstrating 50 percent diversion for each project, but receives credit for diverting 50 percent by using the certified facilities.
- The San Carlos Transfer Station uses the same method as the Authority, diversion tonnage is apportioned to each jurisdiction based on total incoming tonnage. However, yard waste and wood waste is tracked on a load by load basis.

None of the tracking systems identified above offer a significant improvement over the Authority's current tracking system. The Authority may wish to investigate additional options for diversion tracking that could improve accuracy without increasing traffic congestion.

Development of an Organics Processing Facility for Residual Waste

The Authority should consider the benefits of constructing an organics processing facility at the transfer station or elsewhere within the Authority system. This facility would utilize new technologies such as anaerobic digestion or steam conversion to handle the organics collected in the County (with the exception of green waste collected from the residential curbside program). The process of each technology is described below.

Anaerobic digestion is a biological process that produces a gas principally composed of methane (CH4) and carbon dioxide (CO2) otherwise known as biogas. These gases are produced from organic wastes such as livestock manure, food processing waste, etc. The process of anaerobic digestion consists of three steps. The first step is the decomposition (hydrolysis) of plant or animal matter. This step breaks down the organic material to usable-sized molecules such as sugar. The second step is the conversion of decomposed matter to organic acids. And finally, the acids are converted to methane gas.[1] The process also yields a compost product.

Another emerging technology which holds promise is the use of steam to separate the organic materials in the waste stream from the inorganic portions (glass, metals etc.). The organic fraction can then be further separated into long fibers which can be used as feedstock for pulp and paper mills and short fibers which can be digested to produce biogas and compost. The traditional recyclable materials are also recovered. There is one small pilot plant utilizing this technology in Nevada. The first small commercial scale (250 ton per day) demonstration project is currently under construction in St. Paul, Minnesota. If this

[1] Defined by the California Energy Commission
http://www.energy.ca.gov/development/biomass/anaerobic.html

demonstration project proves successful, this technology may be appropriate for consideration by the Authority.

Either of these technologies or a similar process for converting organic wastes to energy could be suitable for Authority. The cost, permitting, and schedule for implementation and operating history at full scale will need to be identified. According to both the International Energy Agency (IEA) and Associates in Industrial Ecology (AIE) studies, operating costs would be in the range of approximately $50 to $70 per ton. Including capital repayment and deducting for potential energy sales the overall tip fee for a municipal solid waste anaerobic digestion processing system could be in the range of $70 to $100 per incoming ton. Steam classification is an emerging technology and still within its pilot project stages. World Waste Technologies, Inc., a steam classification technology company, is attesting to up to 85% diversion while producing profitable commodities and saving the trucking and disposal costs associated with landfilling.[2] The level of diversion, however, varies on the type of feedstock and the market ability of the fiber product once the steam conversion process is complete. We recommend that the Authority closely monitor developments in these technologies and pilot projects sponsored by other agencies.

[2] http://www.worldwastetech.com/Challenge/index.htm

Section 5

Long-Term Strategic Plan

Introduction

The long-term strategic plan has been developed to assist the Authority in planning for the next phase of its transfer station operations and disposal agreement(s), and to identify appropriate short- and long-term system improvements to enhance operations, increase diversion and potentially reduce system costs. The Authority's existing transfer station/disposal agreement expires on June 30, 2007. The Authority will need to conduct a procurement process to obtain a new operator(s). The procurement process will allow the Authority the opportunity to combine development of the described long-term system improvements with selection of an operator(s). Short-term system improvements that could not be accomplished prior to the procurement can also be combined into the selection process.

We have described the recommended institutional arrangements and procurement process, the short-term as well as long-term system improvement components recommended for implementation, and included a table (Table 5-1) displaying by system improvement component, the estimated potential diversion, cost estimate, and target implementation date.

Institutional Arrangements and Procurement

To procure a contractor(s) to operate the Devlin Road Transfer Station (DRTS), divert materials, and transfer as well as dispose of refuse by July 1, 2007, the procurement process must begin as soon as possible (Fall 2005). Prior to the formal procurement, the Authority may wish to enter into discussions with alternative disposal facilities, including local, regional and out-of-state landfills to understand the current market for long-term disposal.

The procurement process will need to include:

- Preparation of the request for proposals (RFP),
- Soliciting contractors,
- Releasing the RFP,
- Conducting pre-bid conference(s),
- Clarifications,
- Allowing the contractors to prepare their proposals,
- Selecting a contractor,

- Negotiating a contract with the selected contractor,
- Receiving contractor input on the Phase 2 C&D Facility as well as other components described below, and
- Time allotment for contractor start-up or change-over (as necessary).

Based on this analysis, the most feasible approach would be for the Authority to continue to use the Operations Agreement approach as the preferred institutional arrangement. This approach is recommended as this structure is already in place and does not require the Authority to develop an operating plan, hire staff, management, etc. as in other alternatives. We recommend that the Authority split the contract between; 1) transfer station operations and diversion activities and 2) disposal. This will allow the Authority more control over operations and facility diversion and thus the potential for reducing disposal costs. In addition, the Authority should require all bidders through the RFP, to meet certain diversion requirements and develop and implement the diversion plans listed below. A flexible RFP should be developed that allows and fosters bidders to "team-up" with diversion experts (i.e., C&D specialists, reuse specialists, etc.) to develop the best teams possible.

The Authority should attempt to finance the Long-Term System Improvement Components using surplus funds if available. This will require less time and overall monies. If funds are not available, tax-exempt financing should be acquired. The project costs could be separated into two categories: 1) building and site improvements, and 2) stationary and mobile equipment. The first category could be funded with internal resources if available, or tax exempt debt. The second could utilize either of these two funding sources as well as utilizing leasing, vendor financing, or operator financing.

In summary, BVA recommends that the Authority implement the following institutional arrangements and procurement processes:

- Using the Operating Agreement institutional arrangement structure and the assumption of splitting the contract, combine the Long-Term System Improvement Components operation procurement with Transfer Station operations procurement; contract expires on June 30, 2007,
- Continue and/or initiate CEQA and permit process for the Long-Term System Improvement Components including the full Phase 2 C&D Facility – now through June 30, 2007,
- With input from the Authority, Allied and BVA, complete a Phase 2 C&D Facility Conceptual Design, appropriate for the procurement process – now through early-2006,
- Prepare for a full competitive procurement, splitting the contract between transfer station operations and disposal, inviting all qualified firms to propose,

- The Request for Proposals (RFP) should include a copy of the Long-Term System Improvement Components and Phase 2 C&D Conceptual Design for the transfer station operations proposers to review and include comments, modifications, etc. to the design; the RFP could also include an option for the transfer operations proposers to submit a bid on supplying all the stationary equipment as well as the rolling stock for the C&D Facility (analogous to the Joint Venture scenario listed in Section 3) – release RFP to proposers early-2006, request submittals back mid-2006
- The RFP should allow for the selection of more than one disposal contractor; the Authority will need to analyze the submittals to make a decision on one or more disposal contractors – after receipt of proposals, mid-2006
- The selected transfer station operations proposer will be required to work with the Authority and their consultant to complete the Long-Term System Improvement Components including the Phase 2 C&D Facility design and construct the project(s) – select and negotiate with proposer mid-2006; complete final design(s) and begin construction Fall 2006
- The Authority will need to make a decision on their financing methodology; if possible, we recommend funding from surplus funds, if available.

It should be noted that any of the Short-Term System Improvement Components not accomplished prior to the procurement process could be rolled into the procurement. In addition, the Long-Term System Improvement Component, “Development of an organics processing facility for residual waste” should not be considered as part of the procurement process. This component requires time for the technology to advance and should be reviewed as an on-going process. However, the Authority should seek information about the near-term feasibility of some conversion technology projects that are currently in the pilot phase.

Short-Term System Improvement Components

We have identified eight system improvement components for implementation in the short-term (2005-2007). These components, as described in Section 4 are:

- **Vehicle segregation to improve traffic flow**. This project would require only a moderate level of effort to implement and would improve efficiencies at the DRTS for both the commercial haulers and self-haul customers. Improved efficiencies could have the effect of improving diversion by allowing self-haulers to take the time to segregate loads prior to lining up for the disposal area. Currently, many customers are discouraged about the long-lines and do not want to take the time to source-separate.
- **Development of a serial MRF**. The serial MRF concept is incorporated in each of the components listed below. The serial MRF would provide ample opportunities for

customers to source-separate loads and drop-off recyclables and reusables prior to disposal. The serial MRF may also include economic incentives to encourage recycling.

- **Improvements to the reuse yard**. Improving the reuse yard, by constructing a simple covered building would enhance diversion by protecting the materials segregated for reuse and provide a retail environment to encourage sales.
- **SVdP reuse trailer**. SVdP of Lane County, Oregon is eager to provide trailers for reusable materials that may not be marketable at the DRTS. Target items include books, shoes, purses, toys, furniture, and other reusable items. This turn key approach would allow the Authority to increase diversion without incurring direct costs.
- **SVdP mattress recycling**. SVdP of Lane County, Oregon provides mattress recycling at its DR3 facility in San Leandro. SVdP is working with several transfer stations including SF Recycling & Disposal and Davis Street Transfer Station to divert mattresses from disposal. The cost of the operation would be minimal and could be off-set by reductions in disposal costs.
- **Install additional signage**. Improvements to the signage at the DRTS directing self-haulers to the reuse and recycling facility and to the C&D facility would increase the efficiencies and may have the effect of increasing diversion. We recommend that these improvements be made as soon as possible.
- **Load spotting**. Currently, loads of recyclable-rich materials by-pass the reuse yard, recycling drop-off areas, and C&D facility and are disposed at the tipping area. We recommend that the Authority implement a more effective customer education program, load spotting and re-direction of customers to the appropriate areas of the DRTS. For this component, we recommend that the Authority publish and print flyers describing the diversion opportunities at the DRTS and the nearby MDF. The Authority could provide this information as a bill insert for the member agencies or distribute the flyers on-site. This is a relatively low cost effort that could increase diversion and improve efficiency.
- **Provide e-waste diversion**. Providing opportunities for e-waste diversion would have a modest impact on the DRTS operations, but would increase convenience for customers who are otherwise directed to the City of Napa's MDF and improve diversion of these materials.

Long-Term System Improvement Components

We have identified four system improvement components that are more appropriate for implementation in the long-term (post 2007) or as part of the 2007 operator(s) procurement. As described in Section 4, these components are:

- **Improvements to the C&D facility (Phase 2)**. We recommend that the Authority undertake the planning and permitting process in the short-term for development of Phase 2 of the C&D processing facility after 2007.
- **Multi-materials diversion**. In conjunction with the C&D operation described above, the Authority should target mixed loads of recyclables-rich materials, including yard waste, metals, and cardboard.
- **Development of an organics processing facility for residual waste**. The Authority should closely monitor developments in technology and should consider directing organics-rich materials to off-site processing facilities or developing an organics processing facility on-site or adjacent to the DRTS. Several new technologies for addressing residual waste are in the pilot project stage and may be promising for increasing diversion of residual waste.

Table 5-1 | Integrated System Improvement Components

System Improvement Components	Diversion Estimate	Cost Estimate	Target Implementation Date
Short-Term Components			
Vehicle segregation	>1%	$100,000 capital	Early 2006
Serial MRF (components included below)			
Reuse building	~1%	$100,000 capital $60,000 annual operating	Late 2006
SVdP reuse trailer	>1%	$0 capital $85,000 annual operating	Early 2006

System Improvement Components	Diversion Estimate	Cost Estimate	Target Implementation Date
SVdP mattress recycling	~1%	$0 capital $6 per unit plus transportation (net of disposal cost)	Early 2006
Signage	>1%	$1,000	Late 2005
Load spotting	>1%	$2,500	Late 2005
E-waste diversion	>1%	$60,000 annual operating	Late 2006
Long-Term Components			
C&D Facility Phase 2	~7-8%	$4.1 million capital $800,000 annual operating	2007
Multi-material diversion	~3-5%	Capital improvements made in conjunction with reconfiguration of drop-off area $85,000 annual operating	Post 2007
Organics processing facility	<50%	$50-100 per ton	Post 2007