6. MRF Assessment

6.1 Introduction

The City of Victorville and Town of Apple Valley own the Victor Valley Materials Recovery Facility (MRF) located at 17000 Abbey Lane, Victorville, CA. The JPA financed the original MRF construction through system revenue bonds, secured by the participating municipalities (Victorville and Apple Valley). The MRF is operated by Burrtec Waste Industries, Inc., under contract to the JPA and receives, processes and markets residential and commercial recyclable material streams as generated and delivered by JPA member communities. The MRF operated at its original capacity of 100 TPD (12.5 tons per hour or TPH) for approximately 10 years before being expanded in 2005 to 160 TPD (20 TPH). The expansion included the addition of commercial material infeed, presort, optical and screening systems as well as a major equipment expansion to a full-scale, single-stream residential material processing system. The system operates as a hybrid, with the commercial infeed design used to process all incoming material to maximize cardboard recovery and fines removal, with remainder processed on the commingled system.

The objective of this Chapter is to document the efficiency, effectiveness and adequacy of five aspects of the MRF:

1. Physically assess the site, buildings and MRF equipment systems
2. Assess operations efficiencies and describe improvements and revisions
3. Review agreements and operational data
4. Review commodity marketing process, results and opportunities
5. Discuss alternative contract provisions to encourage additional recycling

In addition to these five aspects, the viability of the existing MRF to handle expansion of mixed waste processing in line with JPA's goal of increased recycling and composting was closely evaluated and discussed throughout this Chapter of the Report. Existing MRF expansion for mixed waste processing is also discussed in detail in the Pre-Processing Chapter of the Report. The GBB team, consisting of representatives from GBB and RRT Design & Construction, were present at the MRF for a three-day assessment, conducted September 29 through October 1, 2008. The review of data and information, MRF site, building, system and equipment observations, recommendations and photos are provided throughout this Chapter.

6.2 Review of MRF Site, Building and Operations

6.2.1 MRF Operations

6.2.1.1 Review of Operational Data

The MRF is designed to process an average rate of 20 TPH (160 TPD in an eight-hour shift) of single-stream residential and commercial material through the processing systems. The JPA reports that recent monthly quantities average 3,000 TPM and daily quantities average between 130 to 140 TPD. As part of the MRF Assessment, we performed a thorough analysis of operational data and tonnage summaries provided to our team by the JPA. The data included:

- Burrtec Victorville MRF Month-End Summary Activity Reports for 2006 and 2007
- Burrtec Victorville MRF Year-End Summary Activity Report for 2008
- MRF Recycling Statistics and Annual Summaries (2000 to present) from the City of Victorville and the Town of Apple Valley.
- Victorville MRF 2005/2006 Commodity Variance Report
- Victorville MRF 2007/2008 Commodity Variance Report
- Burrtec July 2008 Monthly Report and Invoice to the JPA
- MRF Residue Tonnage Reports
- Victorville Landfill Tonnage Reports

A summary of MRF tonnages by type of load and by community for the most recent three fiscal years and for the most recent year (FY 2008) are presented in Tables 6.1 and 6.2, respectively.

Table 6-1 - Three-Year Total MRF Tonnages Delivered by Load Types and Communities - 2006–2008

Material Load Types	2006-2008 Three-Year Total MRF Tonnages from Sources by Community[1]						Total Tons by Material Load Type	Percentages by Material Load Type
	Victorville	Apple Valley	Adelanto	Barstow	County	Other Commu-nities[2]		
Residential Materials	22719.74	21352.33	5743.15	6771.09	5226.53	7560.33	69,373	66.65%
Commercial Materials	8883.48	2575.27	1311.91	3678.79	9.34	28.40	16,487	15.84%
Roll-off Select Materials	6763.49	439.01	13.52	68.31	141.28	0.00	7,425	7.13%
Roll-off Recycling Materials	621.77	687.61	12.72	180.26	26.89	0.00	1,529	1.47%
Commercial Select Materials	5367.50	3270.57	7.47	0.52	0.00	0.00	8,646	8.31%
Drop-Off Box Materials	0.00	0.00	0.00	0.00	0.00	628.24	628	0.60%
Total Tons by Community	44355.98	28324.79	7088.77	10698.97	5404.04	8216.97	104,089	100.00%
Percentages by Community	42.61%	27.21%	6.81%	10.28%	5.19%	7.89%	100.00%	
Total Buy-Back Tons	-	-	-	-	-	-	7,726	
Overall Total MRF Tons							111,816	

Table 6-2 - Annual MRF Tonnages Delivered by Load Types and Communities-2008 Only

Material Load Types	2008 Annual MRF Tonnages from Sources by Community[1]						Total Tons by Material Load Type	Percentages by Material Load Type
	Victorville	Apple Valley	Adelanto	Barstow	County	Other Commu-nities[2]		
Residential Materials	7325.47	6727.14	1847.61	1772.90	1573.21	1257.01	20,503	64.08%
Commercial Materials	2934.37	897.46	473.73	1224.33	0.47	0.00	5,530	17.28%
Roll-off Select Materials	1880.76	216.76	8.30	15.54	97.40	0.00	2,218	6.93%
Roll-off Recycling Materials	227.55	449.07	0.92	16.12	21.13	0.00	715	2.23%
Commercial Select Materials	1691.91	1077.32	0.00	0.00	0.00	0.00	2,769	8.66%
Drop-Off Box Materials	0.00	0.00	0.00	0.00	0.00	259.07	259	0.81%
Total Tons by Community	14060.06	9367.75	2330.56	3028.89	1692.21	1516.08	31,996	100.00%
Percentages by Community	43.94%	29.28%	7.28%	9.47%	5.29%	4.74%	100.00%	
Total Buy-Back Tons	-	-	-	-	-	-	1357	
Overall Total MRF Tons							33,352	

Notes
1. 2008 total tons are projected from January through November actual tons.
2. Other Communities include Big Bear Lake, Needles, Lucerne Valley, and Phelan.

Analysis of the 2006 through 2008 MRF tonnage data indicates an approximate ten percent reduction over the three periods. There have been no drastic changes, however, there has been a slight increase in overall tonnage received from Victorville, Apple Valley and Adelanto and a slight drop in overall tonnages received from other communities. The rate of residential materials has dropped slightly, offset by a slight increase in Commercial material. Roll-off Recycling materials has essentially doubled in 2008, while the other select materials category has remained relatively consistent. Buy-Back tonnage has dropped significantly from a total of approximately 3,660 tons in 2006 to approximately 1,360 in 2008.

Analysis of the July 2008 data as provided in the monthly invoice from Burrtec to the JPA indicates that the tonnages were relatively consistent with the overall 2008 data, as presented in Table 6-3.

Table 6-3 - July 2008 Tonnage by Load Types

MATERIAL RECEIVED AND PROCESSED	TONS	PERCENT DISTRIBUTION
Residential Materials	1804.97	60.46%
Commercial Materials	463.20	15.52%
Commercial Select Loads Processed:	251.25	8.42%
Roll-off Recycling Routes Processed:	93.67	3.14%
Roll-off Select Loads Processed:	169.89	5.69%
Drop-off Box:	37.50	1.26%
Buy Back Materials Processed:	165.00	5.53%
TOTAL INCOMING / PROCESSED TONS	**2985.48**	**100.00%**
AVERAGE TONS PROCESSED PER DAY:	**135.70**	

Tables 6-4 through 6-7 below present another breakdown by proportion of the two major types of materials processed, paper and containers. This presentation is based upon material types as marketed from 2006 through 2008, which provides an indication of relative sorting loads for the various materials.

Table 6-4 - Annual MRF Tonnage and Compositional Analysis - 2006

MATERIAL TYPES	TONS	Composition Percentage by Matl. Type	Composition Percentage Total MRF
OCC	7602.93	35.79%	19.27%
Mixed Paper	9808.29	46.17%	24.86%
Newspaper	3787.99	17.83%	9.60%
Butt Rolls	43.56	0.21%	0.11%
Subtotal Paper	**21242.77**	**100.00%**	**53.84%**
Aluminum Cans	115.84	1.95%	0.29%
Tin	451.55	7.60%	1.14%
Scrap Metal	663.45	11.17%	1.68%
Glass (Amber, Flint, Green)	578.34	9.74%	1.47%
Mixed Glass	1820.55	30.66%	4.61%
PET	299.80	5.05%	0.76%
HDPE (C)	208.24	3.51%	0.53%
HDPE (N)	187.91	3.16%	0.48%
Mixed Plastics	552.33	9.30%	1.40%
Plastic Film	19.74	0.33%	0.05%
Fines	1040.61	17.52%	2.64%
Shipped Containers	0.00	0.00%	0.00%
Subtotal Containers	**5938.36**	**100.00%**	**15.05%**
Other Materials	95.07		0.24%
Residue	12175.73		30.86%
TOTAL RECOVERED	**27276.20**		**69.14%**
TOTAL PROCESSED	**39451.93**		**100.00%**

Table 6-5 - Annual MRF Tonnage and Compositional Analysis - 2007

MATERIAL TYPES	TONS	Composition Percentage By Matl. Type	Composition Percentage Total MRF
OCC	7529.00	37.11%	19.36%
Mixed Paper	6843.15	33.73%	17.60%
Newspaper	5876.11	28.97%	15.11%
Butt Rolls	38.62	0.19%	0.10%
Subtotal Paper	**20286.88**	**100.00%**	**52.18%**
Aluminum Cans	95.30	1.64%	0.25%
Tin	469.05	8.09%	1.21%
Scrap Metal	644.99	11.13%	1.66%
Glass (Amber, Flint, Green)	509.67	8.79%	1.31%
Mixed Glass	1924.47	33.21%	4.95%
PET	290.78	5.02%	0.75%
HDPE (C)	249.39	4.30%	0.64%
HDPE (N)	187.98	3.24%	0.48%
Mixed Plastics	562.19	9.70%	1.45%
Plastic Film	14.38	0.25%	0.04%
Fines	846.99	14.62%	2.18%
Shipped Containers	0.00	0.00%	0.00%
Subtotal Containers	**5795.19**	**100.00%**	**14.90%**
Other Materials	139.54		0.36%
Residue	12660.74		32.56%
TOTAL RECOVERED	**26221.61**		**67.44%**
TOTAL PROCESSED	**38882.35**		**100.00%**

Table 6-6 - Annual MRF Tonnage and Compositional Analysis - 2008

MATERIAL TYPES	TONS [1]	Composition Percentage By Matl. Type	Composition Percentage Total MRF
OCC	6416.49	38.34%	18.85%
Mixed Paper	5049.70	30.17%	14.83%
Newspaper	5252.87	31.39%	15.43%
Butt Rolls	17.18	0.10%	0.05%
Subtotal Paper	**16736.24**	**100.00%**	**49.15%**
Aluminum Cans	57.14	1.12%	0.17%
Tin	366.25	7.19%	1.08%
Scrap Metal	578.40	11.36%	1.70%
Glass (Amber, Flint, Green)	381.84	7.50%	1.12%
Mixed Glass	2036.81	40.01%	5.98%
PET	224.97	4.42%	0.66%
HDPE (C)	185.77	3.65%	0.55%
HDPE (N)	174.88	3.44%	0.51%
Mixed Plastics	644.75	12.67%	1.89%
Plastic Film	20.71	0.41%	0.06%
Fines	418.95	8.23%	1.23%
Shipped Containers	0.00	0.00%	0.00%
Subtotal Containers	**5090.47**	**100.00%**	**14.95%**
Other Materials	133.81		0.39%
Residue	12088.00		35.50%
TOTAL RECOVERED	**21960.52**		**64.50%**
TOTAL PROCESSED	**34048.52**		**100.00%**

Notes
1. Average 2008 TPM data from January through November 2008 was used to estimate the December 2008 TPM data.

A review of the marketed tonnage report tables above indicates a drop of approximately 5,400 tons per year marketed from 2006 to 2008. This included a drop in about 4,500 TPY of paper and 850 TPY of containers. The JPA has indicated that these reductions are primarily due to decreases in quantities delivered to the buy-back operation at the MRF over that time period.

Table 6-7 - July 2008 Tonnage and Composition Summary

	RECOVERED MATERIALS		MARKETED MATERIALS	
MATERIAL TYPES	**RECOVERED TONS**	**COMPOSITION PERCENTAGE**	**MARKETED TONS**	**COMPOSITION PERCENTAGE**
OCC	485.79	15.94%	605.09	19.93%
Mixed Paper	478.21	15.69%	544.32	17.92%
News (ONP, Over-Issue, Buttroll)	350.42	11.50%	437.59	14.41%
Buyback Paper Tonnage	157.03	5.15%	0.00	0.00%
SUBTOTAL PAPER	**1471.45**	**48.27%**	**1587.00**	**52.26%**
Mixed Glass	182.43	5.99%	209.72	6.91%
Mixed Plastics	48.65	1.60%	61.72	2.03%
Scrap Metal	52.42	1.72%	52.72	1.74%
Glass (Amber, Flint, Green)	33.08	1.09%	31.70	1.04%
Glass (CRV)	62.16	2.04%	0.00	0.00%
Tin	32.82	1.08%	24.79	0.82%
HDPE (N)	22.61	0.74%	20.68	0.68%
HDPE (C)	26.08	0.86%	18.19	0.60%
HDPE (CRV)	7.05	0.23%	0.00	0.00%
PET	23.24	0.76%	17.09	0.56%
PET (CRV)	16.88	0.55%	0.00	0.00%
Film Plastic	0.64	0.02%	0.00	0.00%
Carpet Recycling	8.44	0.28%	9.73	0.32%
Aluminum	6.86	0.23%	0.00	0.00%
Wood	4.08	0.13%	0.00	0.00%
CRT	4.61	0.15%	0.00	0.00%
Tires	0.00	0.00%	0.00	0.00%
Buyback Container Tonnage	7.97	0.26%	0.00	0.00%
SUBTOTAL CONTAINERS	**540.02**	**17.72%**	**446.34**	**14.70%**
Fines	76.51	2.51%	0.00	0.00%
Residue	960.13	31.50%	1003.35	33.04%
SUBTOTAL FINES/RESIDUE	**1036.64**	**34.01%**	**1003.35**	**33.04%**
TOTAL TONS	**3048.11**	**100.00%**	**3036.69**	**100.00%**

6.2.1.2 General Review and Observations of MRF Operations

Plant safety procedures were observed to be excellent. No significant safety infractions were observed during the three-day assessment. Lockout/tagout procedures were observed as being followed at all breaks when the screens are cleaned.

The level of dust is quite heavy in several locations in the facility as further described in this Chapter. There is no dust collection system in the facility. We recommend adding dust collection in certain areas as noted. In the event that the system is expanded to include mixed waste processing, the building ventilation system must be evaluated and consideration given to a misting system for the tipping area as well as an odor control system for the building. Further, a full-scale dust collection system will be required.

Lighting in the facility was observed to be adequate. Burrtec should consider cleaning the sky lights as they are quite dirty with dust and dirt buildup. If they were cleaned, a dramatic improvement in facility lighting would result.

The typical operating day consists of 5.5 processing hours, 1 hour for breaks, approximately 1 hour of downtime and 0.5 hours of cleanup and daily safety meetings. Baling of materials was observed to be performed approximately 8 hours per day during each day of the assessment. At approximately 135 tons per day processed, these operating hours result in an average actual MRF processing rate of 24 to 25 tons per run hour, somewhat greater than the stated design processing rate. The MRF keeps daily operating reports that are transferred to a running log and sent to Burrtec's General Manager. In the daily report, the plant tracks run time, downtime, tons processed, TPH, maintenance lockout/tagout events and hazardous material events.

Cleanup conducted after processing ceased each day was observed to be extremely thorough. Daily startup is at 7:00 a.m. The plant shut down at 2:00 p.m. on Monday, 9/29, and Tuesday, 9/30, in order to bale all material for month-end inventory. The plant shut down at 2:30 p.m. on Wednesday 10/1.

The best opportunity for immediate capacity expansion is by increasing the hours per day of operation. The MRF currently runs approximately 5.5 hours per day, with the balance of 2.5 hours for breaks, lunch, cleanup and downtime. It is highly recommended that Burrtec investigate further the specific reasons for and lengths of downtime periods and evaluate their overall daily run schedule. 5.5 run hours per day over 7.5 paid hours per day results in a 73 percent ratio of run hours to paid hours, which is very low as compared to the industry standards of 85 percent to 90 percent. By isolating and correcting downtime problems, daily run time would increase as would production. As incoming tonnage rates grow, increasing the hours per day of processing would provide further processed tonnage expansion capabilities without capital investment. Nearly 8 hours of actual processing could be achieved with a total work day in the 9 to 9.5 hour range.

The staffing of the facility has been consistent since the expansion and does not vary from day to day, even as tonnages may fluctuate. The management and equipment operator staff are all Burrtec employees; the sorting staff consists of all temporary employees. Observations were made of all sorting positions throughout the three-day assessment.

Comments regarding sorter activity and productivity levels are included in subsequent subsections. The staffing plan for the facility is presented in Table 6-8.

Table 6-8 - MRF Staffing Plan

POSITION	NUMBER OF STAFF	EMPLOYMENT STATUS
Plant Manager	1	Burrtec Employee
Plant Supervisor	1	Burrtec Employee
Equipment Operators	5	Burrtec Employees
Line Sorters	21	Temporary Employees
Material Handlers	8	Temporary Employees

It must be noted that every employee that RRT spoke to during the evaluation, from MRF management to the sorters, as well as the landfill personnel, were extremely helpful, informative and courteous. The morale in the MRF and at the landfill was observed to be very high, indicating that Burrtec does an excellent job in managing their personnel.

As part of our analysis of MRF data, our team was provided with a copy of the five-page State of California Solid Waste Facilities Permit, Facility Permit Number 36-AA-0346, dated June 1, 1994. Though the multiple additional codes and regulations referenced in the permit were not provided to or reviewed by our team, as observed during the three-day assessment, the facility appears to operate in accordance with the permit requirements presented. These include:

- Commingled Recyclables - Maximum Received and Processed per Day: 200 TPD
- Commingled Recyclables and MSW – Maximum Received and Transferred per Day: 600 TPD
- Permitted Total Traffic Volume: Up to 96 Trucks per Day
- Inbound Vehicles: Up to 60 Collection Trucks per Day
- Outbound Vehicles: Up to 16 Transfer Trucks and 20 Recovered Material Trucks per Day

6.2.2 MRF Site and Building

6.2.2.1 MRF Site

The MRF facility is located in the southeast portion of an approximately 12-acre site located on the corner of Abbey Lane and Biminy Lane in Victorville, CA. An aerial photo of the area that includes the MRF is presented in Figure 6-1. The southeastern portion of the site is paved. Travel lanes from the entrance gate located in the northeast corner of the site extending south to the truck scale and to the MRF building are also paved. The entire western half of the site as well as a large majority of the northern half of the site is unpaved and undeveloped.

Figure 6-1 – Aerial Photo

Vehicles enter and exit the facility through the Northeast Gate on Biminy Lane and proceed south across the scale, which is located approximately 65 feet north of the MRF building. Vehicles then access the MRF through the tipping doors located on the north wall of the building. Trailers for baled products proceed to the south side of the site and are loaded in the bale storage area. Roll-off trucks also proceed to the bale storage area to pick up stored loose glass and fines.

The east side of the site contains a vehicle parking area, a travel lane which runs between the east wall of the MRF and the east fence, and access to the public buy-back center. There is no room for any MRF expansion on the east side of the site.

The south side of the site contains the employee parking area, access to the administrative office building and the bale storage area which are all located between Biminy Lane and the MRF Building. There is very little room for MRF expansion on the south side of the site.

The north and west sides of the site are unpaved and undeveloped. Further, the JPA owns considerable acreage of land to the north of the building. There is considerable

room for facility expansion to the north and west as discussed in "Pre-Processing," Chapter 7 of this report.

6.2.2.2 MRF Building

The MRF building is adequately sized for the current processing system with the exception of the mixed glass handling system and the location of the two-ram baler, which are discussed later. The specific areas where the building size impacts the current system, as well as potential equipment system upgrades, are addressed in the appropriate equipment discussions herein.

The east side of the building contains the tipping floor, and a roll-up door is located in the southeast corner. The public buy-back area with an overhead access door is also located in the southeast corner of the building. The east side of the building is completely constrained for any system expansion due to the size of the tipping floor and the facility traffic lane located immediately outside the east wall.

The south side of the building contains a ramp from the bale storage area to the process floor as well as the facility's loading docks. The two-story administrative office building is located in the southeast corner of the building. The south side of the building is somewhat constrained for further system expansion due to the lack of available floor space inside the building and the presence of the bale storage area to the south of the building.

The residue loadout canopy and trailer traffic lane to and from the residue loadout system runs the entire length of the west side of the building. The process system inside the building runs right up to the west wall providing no room for any further system expansion to the west inside the building. The facility's air handling system which includes the blower system for PET, HDPE and aluminum and the compressed air system for the optical sorters are located against the west wall of the MRF building. The north side of the building contains overhead tipping doors, a maintenance area, receiving areas for loose material for direct baling (such as OCC) and storage areas for loose material for baling (such as rigid and mixed HDPE). Storage of trash, tires and mixed plastics occurs in roll-off containers and self-dumping hoppers located just outside the north wall of the MRF building. As discussed in the MRF Site section, the north side of the building provides the most opportunity for system expansion.

Photo 6-1: Tipping Floor and Residential Infeed

The processing system is primarily located in the central part of the building. The processing system occupies over 85 percent of the processing building area, providing virtually no

room for system or equipment expansion inside the building without increasing the size of the building in the north direction.

The north and west sides of the site are unpaved and undeveloped. Further, Burrtec owns five acres of land to the north of the site. Considerable room exists for facility expansion to the north and west as discussed in the "Potential Expansion for Processing Additional Materials" subsection.

6.2.2.3 Tipping Floor

The tipping floor appears adequate in size to handle the amount of materials received and processed during the days of the analysis (Photos 6-1 and 6-2). Any significant increase in tonnage, however, would pose a storage handling problem, and an expansion of the tipping area would likely be required. There is very little room for any additional equipment on the tipping floor. In the afternoon of Monday, 9/29, the tipping floor was 40 to 50 percent full. By the afternoon of Wednesday, 10/1, the tipping floor was close to 60 percent full. This practice is consistent with Burrtec's operational approach to have quantities available for processing the following morning.

On the tipping floor, Burrtec personnel (two sorters) perform floor sorting of "select loads" which consist of dry commercial and industrial solid waste loads diverted to the MRF. These loads are rich in plastics, metals, OCC and wood as shown in the photo. The sorters manually remove these materials from the pile and transfer the recoverable materials to roll-off containers and self-dumping hoppers located just outside of the north wall of the building. The wheeled bucket loader assists in the transfer of these materials as well as transferring the remaining non-recoverable material.

Photo 6-2: Manual Floor Sorting of Select Load on Tipping Floor

The only observed area of concern on the tipping floor during the assessment was the actual location of the stockpile of material on the tipping floor. The material is stored very close to the southeast tipping door when much of the rest of the floor is empty. This results in material migrating from the floor and blowing out onto the site. Burrtec could perhaps better position the pile away from the southeast door in order to reduce the amount of material blowing onto the site and elsewhere, especially when there is sufficient, less utilized space in the central part of the tipping floor. Burrtec could also consider keeping this door partially closed when not in use.

6.2.2.4 Drop Off and Buy Back

6.3 Review of MRF Process Systems

The MRF combines manual and automated sorting technologies for processing both residential and commercial material streams. The MRF consists of numerous types of equipment described herein. The MRF equipment manufacturers include:

- The screens and a majority of the conveyors were manufactured by CP Manufacturing, Inc.
- The chain belt conveyors were manufactured by Mayfran International.
- The optical sorters were manufactured by MSS, Inc.
- The two-ram baler was manufactured by IPS Balers, Inc.

6.3.1 Commercial System

The Commercial System was installed as part of the facility expansion in 2005. The Commercial System, sharing an infeed system with residential material infeed, combines feed conveyors, a pre-sort conveyor, and manual sorting through chutes to roll-off containers located below. Manual sorting on two elevated pre-sort platforms provides for removal of OCC, film, bulky trash, bulky plastics and bulky metals. An OCC screen also is employed to automatically separate OCC. All incoming material is fed over the commercial infeed and flows to the residential commingled system. The infeed system could be characterized as a hybrid system.

6.3.1.1 Infeed and Pre-Sort

Commercial material is fed by wheeled bucket loader into an above-ground hopper which transfers it to an infeed conveyor and inclined transfer conveyor. There is a 90-degree transition between these two conveyors. Photoeyes used to regulate the feed from the infeed conveyor to the inclined conveyor are a common industry practice, however photoeyes are not used in the JPA's MRF. This transition, however, due to the widths of the conveyors, works well. If a significant expansion of material or material types were to occur, straightening out the infeed system to an in-line system to eliminate the 90-degree transition should be considered in order to minimize potential blockages of material as it makes the turn. This will also provide improved access to the infeed hopper in the event that system expansion occurs in the north direction. The infeed and inclined conveyors are steel belt in order to withstand the impact of the feedstock. The feed rate to the commercial system by the wheeled bucket loader was observed to be consistent with no blackbelt (periods where no material is present on the conveyor) observed.

There are four sorters located on the elevated pre-sort platform that remove bulky metals and plastics (that are stored in toters on the sort platform) and trash and film (that are dropped through chutes into two roll-off boxes located on the floor below). We observed a large number of stops and starts of the commercial infeed and pre-sort

conveyors. The pre-sorters stop the line when bulky materials need to be removed from the belt. The stoppages were frequent, generally every 30 to 60 seconds or so for up to 45 to 60 seconds per stop. At times, it appeared that the commercial system did not need to be stopped, or could have been re-started quicker. When the system is running, all four sorters are very well utilized and busy. Their overall utilization, however, is impacted by the stops, as they tend to stand around once all the material has been picked before the system is re-started. Burrtec should closely review the operating methodology and provide retraining for sort line personnel. From a controls standpoint, the commercial system is separate from the residential system; therefore, stoppages of either system do not affect each other.

In addition to the aforementioned controls, the integrated design of the commercial system and residential system is interesting and provides excellent dual-system flexibility. The residential infeed hopper collects material from the unders of the OCC Screen and is able to be fed by the wheeled bucket loader concurrently with commercial material. The loader can feed both the commercial and residential systems consecutively; therefore, the downstream impact of commercial system stoppages to the residential system is negated.

The number of sorters, sorting stations and chutes on the pre-sort line appears to be sufficient for current tonnages. There is considerable use of toters on the pre-sort platform for materials other than trash. If mixed waste processing expansion were to occur, the facility should consider expanding the pre-sort platform so that additional chutes and roll-off containers could be used for trash, bulky metals and bulky plastics. This would provide a more efficient bulk handling system for these materials. An automated film removal system could also be added to the pre-sort line in order to enhance recovery of film.

Should expansion considerations include the building, providing for expansion of the tipping floor to provide for more room for deliveries and/or for conveyor reconfiguration is recommended. Another consideration would be to add a dedicated commercial floor and sort line. These approaches would be viable if a Pre-Processing System is not implemented, see Chapter 7.

6.3.1.2 OCC Screen

Overs from the pre-sort platform transfer to the OCC Screen. The OCC Screen is constructed of steel stars which separate OCC from the remaining material. The screen does a very good job of separating OCC, which is transferred approximately 180 degrees via conveyors to a stockpile on the process floor prior to baling. The OCC quality was observed to be excellent. The facility should consider installing a bunker wall in a north-south direction to

Photo 6-3: OCC Pile – Consider Installation of Bunker Wall Running North-South at Building Column

separate the OCC pile from the other materials that are unloaded on the floor for direct baling. For example, at 2:00 p.m. on Tuesday (September 30, 2008), the OCC pile was observed as being contaminated by a large pile of rigid plastics that were unloaded for baling.

The Commercial pre-sort and OCC screen areas are very dusty. Sorters on the pre-sort line wear dust masks due to the level of dust. Dust collection should be considered in this area. In the event the system is expanded to include mixed waste processing, dust collection will definitely be required at the Commercial Pre-Sort area and at the OCC Screen.

6.3.2 Residential System

6.3.2.1 Infeed System

The residential infeed conveyor is fed by wheeled bucket loader. This material is combined with the OCC screen unders and transfers to a second inclined conveyor equipped with a load leveler. The load leveler is adjustable, runs in the opposite direction of the conveyor and pushes material back which does a good job in keeping the material burden even to the downstream system. The feed rate to the residential system by the wheeled bucket loader and OCC screen was observed to be consistent with no blackbelt observed.

6.3.2.2 Residential Pre-Sort

Residential material then transfers to the Residential pre-sort line. There are four sorters located on the pre-sort line who remove bulky metal, which is stored in wheeled containers located on the platform, trash, which is dropped through sorting chutes to the trash conveyor located below the platform, and small OCC, which is dropped through sorting chutes to the walking floor storage bin located below the platform. Bag opening is not performed at the pre-sort portion of the conveyors, however minimal amounts of full bags were observed on this line. Typically, the bags are pulled from the line and transferred to the trash conveyor. All four sorters are very well utilized and were observed to be busy. The feed of material was observed to be very consistent. There are stoppages of this line, though not nearly as frequent as the commercial pre-sort. When the line is stopped, the sorters do a good job of cleaning up and emptying the wheeled containers.

6.3.2.3 Fines Screen and Mixed Glass Processing System

Material is then transferred to a disc screen for removal of broken glass and fines material. The screen is constructed of rubber discs. Unders from the screen consist of glass, shredded paper, lids, caps, small containers and small papers and transfer to the mixed glass processing system. A trommel screen separates minus 3/8" "fines" from the broken glass stream. The fines consist of very fine shredded paper, grass, dirt and small debris which are transferred to a two-cubic-yard hopper. As the hopper fills, it is transferred by forklift to a roll-off box outside. This material is then transferred to the landfill; however, it is distinguished separately from MRF residue. In October 2008, Burrtec was working with the landfill management to obtain approval for use of this material as ADC (alternative daily cover); however, these discussions are in progress. The fines material as described above represents approximately three to four percent by weight of the total mixed glass stream.

Overs from the trommel, consisting of broken glass, small containers, small paper and small trash transfer via conveyor to a two-cubic-yard hopper. A vacuum system mounted above the transfer conveyor removes "lights" from this material stream. The lights, which consist primarily of shredded paper and dust, are dropped onto the residue transfer conveyor. The vacuum system does an effective job in removing light materials as verified through observing the separated streams. Burrtec should clean the filter bag more frequently as it may further improve performance. As the mixed glass hopper fills, it is transferred by forklift to a roll-off box outside. This material is then transferred to Strategic Materials, Inc. (SMI), for further processing, i.e., separation of glass from the other materials. SMI runs monthly audits of this material for the purposes of establishing payments to Burrtec. Recent studies indicate this material is 64 percent glass, and 36 percent trash and small containers.

Photos 6-4 and 6-5: Mixed Broken Glass System – Undersized Hopper Storage System

The mixed glass processing system is the primary system in the MRF that is not sufficiently designed for proper material handling, even at the current tonnage levels. The two-cubic-yard hoppers, shown in Photos 6-4 and 6-5, used for fines and mixed broken glass are undersized and present significant material handling problems. Due to inadequate storage capacity, the hoppers must be removed and dumped numerous times per day during regular operations. This results in excessive material handling and spillage around the hoppers that must be frequently cleaned. The proper design, which the facility should still consider, especially if mixed waste material is introduced to the system, would be to convey these materials to storage bunkers located outside the south wall of the building, perhaps adjacent to the ramp where paper and plastic bales are currently stored. There appears to be sufficient room in the bale storage area (Photo 6-6). This material should be handled in bulk, which is the industry standard, as opposed to the "two-cubic-yard at a time" handling method.

The facility should also consider installing rotating brushes on the top sides of the trommel in order to clean the screen which appears to plug with material. This would especially be necessary if mixed waste processing were introduced to the system. Dust in the mixed glass system did not appear to be a problem, perhaps due to the vacuum system as well as the proximity to the overhead door on the south wall.

Photo 6-6: Bale Storage Area – Location to Consider for Glass Storage Bunkers

6.3.2.4 V-Screen Separator

Overs from the fines screen transfer to the V-Screen Separator. The V-Screen Separator is CP technology that combines the use of gravity, a pair of upward inclined rubber disc screens and an air system to separate containers, paper and mixed glass fines material, as follows:

- Material is fed to the center section of the screen. Mixed glass fines drop through the bottom of the screen at the base of the "V" section and transfer to the aforementioned mixed glass processing system. The mixed glass from the V-Screen appears to have properties similar to that of the mixed glass separated by the fines screen, just less of it from the V-Screen. A small amount of flattened aluminum cans are discharged with the mixed glass fines; however, it did not appear to be an amount sufficient for concern.

- Containers are transferred up both of the disc screens, drop through the openings of the screens (screen unders) and are conveyed to the Container Processing System.

- Paper (all grades) is transferred up both of the disc screens, drop over the top of each screen (screen overs) and are conveyed to the Paper Processing System. The blower/duct system located above both screens provides an air stream that keeps the paper on the surface of the screen and assists the upward directional transfer of the paper.

We observed that the V-Screen system provides a very good separation of paper from containers. The paper stream was observed to be in excess of 95 percent paper. The containers in the paper stream included aluminum cans and small PET. Container separation also was good; we observed approximately 85 percent containers and 15 percent paper in the separated container stream. Note that the separation efficiencies stated herein are based on visual observation while the system operated in excess of 20 tons per run hour. The efficiencies are also based on volume rather than weight. The paper that was in the container stream consisted primarily of "heavy" pieces of paper, i.e., books, magazines, bundled and clumps of newspaper, and small bags of paper.

The V-Screen system, including the maintenance access ladder and platform, is a very dusty area. The facility should consider adding dust collection in this area, especially if the system is expanded to include mixed waste processing.

6.3.2.5 Container Processing

After the V-Screen, containers transfer to the Container Processing System. The first manual sorting operation is HDPE sorting. One sorter is stationed on the platform and sorts both HDPE Natural (N) and HDPE Colored (C) into two separate toss-across chutes on the opposite side of the conveyor. HDPE (N) is pneumatically conveyed to a storage bin; HDPE (C) drops into a walking floor storage bin located below. This sorter also removes trash and any remaining bulky non-container items and deposits them into toters. This sorter's utilization was observed to be relatively low, between 50 and 75 percent busy.

An area of concern in the Container Processing System is that the facility does not have one person dedicated to removing paper that was incorrectly sorted with containers. This is a design flaw that should be addressed. The HDPE sorter does not sort paper as the system does not have the capability of transferring paper from this sorting station to the paper storage bins. The HDPE sorter is relatively underutilized and could sort paper if the design allowed. As a result, the downstream glass sorters must remove the paper; however, they are very busy color sorting glass and end up missing a relatively high amount of paper that ends up being transferred to residue.

After removal of HDPE, the stream passes under an overhead electromagnet that automatically removes ferrous cans and discharges them to a walking floor storage bin located below. The efficiency of the magnet was observed to be very high.

After the magnet, the stream drops onto the glass sorting conveyor where four sorters are stationed for colored glass sorting. Green glass, clear glass and brown glass are sorted respectively by the first three glass sorters into toss across chutes. The glass containers transfer to 3-cubic yard self dumping hoppers located on the floor below. The hoppers are then transferred by forklift to roll-off containers for bulk storage. Each of the sorters also sort mixed paper into chutes which transfer to the mixed paper walking floor storage bin located below. Remaining plastics (HDPE and rigid plastics), film bags and trash are also sorted by the sorters and placed into barrels located on the sorting platform.

Photo 6-7: Glass Sorters and Paper Observed on the Glass Sort Line

The fourth sorter is a final Quality Control (QC) of all remaining material. This sorter also sorts PET bottles that contain liquid and would not be properly separated by the downstream optical sorter. These bottles fall through a chute to a two-cubic-yard hopper located on the floor below. All four glass sorters are highly utilized and were observed to be 100 percent busy throughout the entire evaluation.

There is a considerable amount of paper on the glass sort line which is not able to be completely removed by the four glass sorters. This paper ends up being transferred to the residue system. In order to reduce the paper going to residue, it is strongly recommended that the facility dedicate one person to removing only paper from the container sorting line.

The remaining stream of PET, aluminum, trash and paper is negatively sorted from the glass line and transfers via a conically shaped chute to the optical sorter. This chute does a very effective job in spreading material from the 30" wide glass sort conveyor onto the 60" wide optical sorter accelerator conveyor.

The optical sorter first ejects PET onto a Quality Control (QC) sort line where one QC sorter removes all non-PET material. The optical sorter then ejects aluminum onto a second QC sort line where one QC sorter removes all non-aluminum material. Paper and trash transfer through a central chute underneath the optical sorter to the residue line below. We observed that a significant amount of non-PET (primarily paper) is present on the PET line, and the QC sorter is quite busy removing this material. The aluminum stream is considerably cleaner but still requires a QC sorter. We observed very little cross contamination of PET and aluminum as these lines were observed for over 30 minutes. Both PET and aluminum are transferred to storage bins via a pneumatic conveying system.

6.3.2.6 Paper Processing

The Paper Processing System is fed from two conveyors which transfer paper from the overs of the V-Screen Separator. This material is first transferred to the Paper Screen which is constructed of rubber stars and provides a separation of newspaper (ONP/screen overs) from mixed paper (MP/screen unders).

We observed a very good separation efficiency of MP and ONP as there was very little ONP in the MP. The MP was visually estimated to be 90 percent fiber grades, including magazines, envelopes, office paper, a small quantity of shredded paper, and small OCC and Kraft. The containers incorrectly sorted by the V-Screen end up primarily in the MP stream. These include small metals, small plastics and aluminum cans. No glass was observed on the MP sorting conveyor.

A total of four sorters perform sorting and quality control of the negatively sorted MP, resulting in a very high quality MP grade. Each of the sorters removes containers and drops them into sorting chutes which recirculate back to the container system. Rigid plastics and metals are also sorted and deposited into toters located on the sort platform. The sorters were observed to be consistently busy, with estimated utilization of 90 to 100 percent.

The biggest issue we saw on the MP sorting line is that sorters are actually contaminating the container line with paper. The large majority of the paper that ends up on the container line is coming from the MP sorting line. As they sort containers, sorters assigned to remove containers from the MP sorting line accidentally drag pieces of MP into the sorting chutes, and these pieces of mixed paper get recirculated back to the container line.

Photo 6-8: Paper Dropping Into Container Sorting Chute

These sorters should be sorting containers by grabbing and dropping the containers into the chutes, rather than grabbing and sliding or dragging the containers into the chute, thereby catching paper along the way. It is highly recommended that Burrtec evaluate these activities and retrain the sorters to properly sort the containers. The residue rate will drop as will the amount of paper being lost to residue.

The overs from the Paper Screen are transferred to the Paper Optical Sorter which automatically separates ONP from the remaining MP and containers. The optical sorter detects dark and light papers. MP (including OCC, Kraft and chipboard) is ejected downwards to the MP walking floor storage bin. ONP is ejected as overs to the ONP sort conveyor and containers are ejected upwards to a chute which recirculates back to the container line. We observed that there is a small amount of paper contamination in the separated containers, further exacerbating the paper in residue issue.

The separated ONP drops onto the ONP sorting line where four sorters perform sorting and quality control of the ONP. All sorters were observed to be highly utilized and very busy. The first two sorters were 100 percent utilized and sort OCC, film, plastics, trash and containers. The second two sorters were not quite as busy, 80 – 90 percent utilization, and sort containers, MP, trash, plastic-coated OCC boxes and perform a final QC of ONP. The quality of the ONP was observed to be excellent with virtually no non-ONP and no glass contained in the stream. The ONP is then conveyed to a reversible overhead conveyor that alternately feeds two walking floor storage bins.

6.3.2.7 Material Storage System and Baling

The facility utilizes a series of walking floor storage bins and sloped floor storage bins that automatically feed the baler infeed conveyor. The bin storage system works well. The baler infeed conveyor is a pit style conveyor located in the central part of the process floor and receives direct loads of material for baling in addition to material from the storage bins. The two-ram baler does an effective job in baling material and appears to be sufficient in handling the daily amount of materials to be baled.

Photo 6-9: Constrained Baler Eject Area and Traffic Lane

The location and orientation of the baler in the MRF building is a design flaw and presents a significant bale handling and traffic problem to operations. The baler is located approximately 15 feet from the south wall of the building. With a safety bollard added to protect the wall, there is only about ten feet of space for bales to eject from the baler. This ten feet is also a forklift access route from one side of the process area to the other. This requires the baler/ forklift operator to have to move each bale to storage as it is created, as opposed to allowing several bales to be created and then moving multiple bales at a time, a standard design feature in the industry. Without a major redesign of the system and relocation of the baler, it would be difficult to correct this issue.

6.3.2.8 MRF Residue and the Residue Handling System

Residue is collected from five points throughout the Residential Processing System and is transferred by way of a conveyor located underneath the sorting system. The five collection points (described from east to west in the system) are:

1. Residue from the residential pre-sort line, which includes full and empty film bags, rigid plastics, a relatively small amount of paper that is accidentally sorted into the residue chutes, styrofoam and other non-recyclable materials.

2. Shredded paper from the vacuum system of the glass trommel overs.

3. Residue from the paper sort line, which includes empty film bags, non-recyclable materials and a relatively small amount of paper that is accidentally sorted into the residue chutes.

4. Residue from the center chute of the PET optical sorter, which includes film bags, non-recyclable materials and paper that was unable to be sorted by the container sorters.

5. Residue from the PET and aluminum QC sort positions, which includes film bags, non-recyclable materials and paper that was unable to be sorted by the container sorters.

The majority of the paper that ends up in residue comes from points 4 and 5 noted above. The residue is then conveyed through the west wall to a trailer which transfers the residue to the landfill.

For 2008, the MRF reports that an average of approximately 1,000 tons per month of residue is transferred from the MRF to the landfill (an average of 44 tons per day). Review of the tonnage data supports these figures. This includes residue from the residential stream, commercial stream, commercial select loads, roll-off routes, roll-off select loads, drop-off boxes and buy-back materials. At the currently reported average processing rate of 136 tons per day, the resulting overall MRF residue rate is approximately 32 percent, see Table 6-9. This is very high as compared to industry standards, which average 10 percent or less for residential curbside programs.

Table 6-9 presents residue and fines tonnages as generated by the towns from Burrtec's July 2008 Monthly Report and Invoice.

Table 6-9 - July 2008 Residue / Fines Analysis by Origin

ORIGIN	TONS	PERCENTAGE BY ORIGIN
City of Victorville	506.74	50.50%
Town of Apple Valley	324.14	32.31%
City of Barstow	72.93	7.27%
Unincorporated San Bernardino County	39.55	3.94%
Helendale	34.19	3.41%
City of Needles	13.87	1.38%
Big Bear Lake	6.70	0.67%
Phelan	3.27	0.33%
City of Big Bear	1.96	0.20%
TOTAL MRF RESIDUE – JULY 2008	**1003.35**	**100.00%**
AVERAGE MRF MATERIAL PROCESSED PER DAY	**136 TPD**	
AVERAGE MRF RESIDUE TONS PER DAY	**44 TPD**	
MRF RESIDUE RATE	**32%**	

As expected, the majority of MRF residue is generated through the City of Victorville and Town of Apple Valley accounts, which is in line with source generation data. Based on the Source Recycling Statistics for 2005 through 2007 provided by the JPA for the City of Victorville and the Town of Apple Valley, we examined the total residential and commercial stream data. Table 6-10 presents a breakout of recovery and residue rates from aggregated residential and commercial quantities received from Victorville and Apple Valley combined.

Table 6-10 - Victorville and Apple Valley Recovery and Residue Rates - Residential and Commercial Stream Data 2005 – 2007

MATERIAL	TONNAGE DATA BY YEAR				2005-2007 MONTHLY AVERAGES
	2005	2006	2007	TOTALS	
Total Tons Collected and Processed	25266.68	24869.69	24536.21	74672.58	2074.24
Total Tons Diverted	14512.16	15013.23	13265.84	42791.23	1188.65
Total Tons Residue	10672.23	9856.95	10354.71	30883.89	857.89
Overall Recovery Rate	57.76%	60.37%	57.80%	58.64%	58.64%
Overall Residue Percentage	42.24%	39.63%	42.20%	41.36%	41.36%

The data indicates that from 2005 to 2007, the MRF commercial and residential streams from Victorville and Apple Valley generated an average of approximately 40 percent residue with a MRF recovery rate for this material of approximately 60 percent. In order to better understand the components of the MRF residue stream, as part of the Waste Characterization Study, we observed 15 loads of MRF residue as it was unloaded at the landfill during the week of September 29 through October 3, 2008.

Table 6-11 below summarizes the composition (by weight) of MRF residue as observed at the landfill. Note these loads included residue from residentially and commercially generated loads.

Table 6-11 - MRF Residue Analysis

Material Type	Composition Percentage
OCC	0.7%
Paper	35.2%
Containers	0.5%
Wood	0.6%
Film	1.4%
Yard Waste	3.7%
Food / Organics	27.7%
Non-Recoverable Residue	30.2%
Total	100.0%

As can be seen, there is significant opportunity for additional recovery of materials, primarily compostable organics (up to 28 percent of residue, with methods as discussed in Chapter 7 of this report) and significant opportunity for improved recovery of paper at the MRF (up to 35 percent of residue). It is our recommendation that Burrtec closely evaluate the loss of paper within the current MRF system, as well as consider the observations and recommendations of this Report in order to reduce the amount of paper currently lost to residue.

Further insight into MRF residue was provided by the Plant Manager during the Stakeholder's Interview Task of the project. The Plant Manager indicated that 30 percent of all incoming loads to the plant (both commercial and residential) consist of contaminated material. Residential contamination consists largely of food waste and also includes items such as diapers, wet paper and plastic bags. Commercial contamination is largely unrecoverable plastic waste and packing materials.

It is the opinion of the Plant Manager that many residents fill up their green collection carts with trash and then dump any remaining trash into their recycling bins. He suggests that better enforcement is necessary at the curb to reduce the contamination of trash into the recyclables containers, including warnings and then fines for such violators.

Photos 6-9 and 6-10: Paper on Residue Line

The GBB Team recommends that the facility immediately implement a program to evaluate and reduce the residue rate. This program would include:

- Assigning one person with ultimate responsibility for evaluating and developing action items necessary to reduce residue.
- Evaluate and implement recommendations in this Report that deal with residue reduction.
- Evaluate costs and benefits of the current Select Load processing methods.
- Develop recommendations for improving curb enforcement in order to reduce the contamination of residential loads when picked up at the curb.

6.4 Review of Operating Contract and Marketing Information

To conduct this part of the assessment, the GBB Team reviewed three documents:

- Amended and Restated Materials Recovery Facility Operating Agreement between Mojave Desert and Mountain Integrated Waste Management Authority and Burrtec Waste Industries, Inc., March, 2004.
- The July 2008 Monthly Report & Invoice prepared by Burrtec Waste Industries to the JPA.
- Graphs presenting the price of containers over a 33-month period from January 2006 through September 2008 and a listing of markets for all commodities.

6.4.1 Operating Contract

Primary to consideration of any revisions to the JPA's contract with Burrtec would be revisions to reflect current processing of mixed commercial and/or residential waste. Several contract provisions need to be modified, added or deleted. The contract would need to be similarly revised should any revision be contemplated for the facility to increase or change the type and quantity of material delivered to the MRF. Recommendations are summarized in this Subsection.

Article 1 Definitions and Interpretation

- "Acceptable Recyclable Materials"

    - Potentially add #3-#7 Plastics
    - Modify or add size definitions to HDPE and Ferrous Containers

- "Unacceptable Waste" needs to be modified to draw a distinction between what is unacceptable in Acceptable Recyclable Materials and what is unacceptable in the new classes of mixed commercial or mixed residential waste delivered for the recovery of marketable recyclables.

- Class of Mixed Commercial and/or Mixed Residential Waste delivered for recovery of marketable recyclables needs to be defined as a distinct stream of material separate from Acceptable Recyclable Materials. The residue from these operations needs to be defined separately from that derived from Acceptable Recyclable Materials.

- A new set of marketable recyclable materials may need to be identified as those marketable materials recovered from Mixed Commercial or Mixed Residential Waste.

- "Transfer Activity" - A new definition for acceptance and out-loading of materials not requiring any type of mechanical sorting or processing.

Article 5 Facility Operations

- Add a new Section following 5.2 describing the acceptance and processing of Mixed Commercial and/or Mixed Residential Waste for recovery of recyclable materials. Consideration of the meaning of "Excess Residue" (5.2.e) for the new classes of waste should be determined and may not be applicable.

- Add a new Section describing the acceptance and out-loading of materials not requiring any mechanical sorting or processing - Transfer Activity.

- Section 5.6 needs to be modified to account for the new classes of waste.

- Section 5.11 needs to be modified to account for the new classes of waste.

Article 6 Contractor Compensation

- Section 6.1.a: The potential for different tip fees for different classes of waste or different activities needs to be incorporated into this section.

- Section 6.2.b: A tonnage-based compensation fee for processing Mixed Commercial and/or Mixed Residential Waste for recovery of marketable recyclables should be agreed upon and added to Base Fee.

- Section 6.6.b: The payment, where documented, of transportation fees to markets or to export ports are a reasonable expense to be deducted off the gross receipts from materials sales. However, this section also appears to allow for the payment of costs associated with the actual marketing activities undertaken by the contractor. It is suggested that such costs should be considered part of the costs covered by the tonnage-based Base Fees and not as additional compensation to the contractor.

- Section 6.6.b: – The agreement between the JPA and Burrtec requires Burrtec to maintain a specified account, the "Recovered Materials Revenue Fund." All monies collected by Burrtec from the sale of recovered commodities are deposited into this fund. Burrtec pays transportation costs associated with moving commodities from the MRF to markets from the Recovered Materials Revenue Fund.

  On a monthly basis, 75 percent of the monies remaining in the fund are disbursed by Burrtec to the Authority. Burrtec may disburse the remaining 25 percent to itself. The disbursement to the Authority must be accompanied by Burrtec's estimate of the portion of those revenues attributable to each participating municipality. The Authority may audit the fund at any time.

  It is suggested that the contractor portion have both a threshold and a cap in absolute dollar terms. For example, if the cap number were to be $35,000 per month, when 25 percent of available monies in the Fund reaches $35,000 or more, the contractor payment would be $35,000, with the balance going to the JPA. Conversely, if the threshold were to be $20,000, the contractor would receive no less than $20,000 per month regardless of actual monies available in the Fund times 25 percent. Such provisions would give the JPA more up-side potential while limiting the contractor down-side risk.

6.4.2 Other Considerations

It is suggested above that a new class of materials be created consisting of Mixed Commercial and/or Mixed Residential Waste for recovery of marketable recyclable materials. From a financial point of view, it is suggested that the Base Fee be expanded to include a tonnage-based fee chart for these materials. The principle is that the contractor would be compensated on a separate tonnage-based fee for the traditional Acceptable Recyclable Materials (source-separated materials) and the new class of mixed waste (non-source-separated).

Residue definitions for the non-source-separated class of waste need to be defined carefully in the Operating Agreement as outside the limits (which would remain) for source-separated materials. This is somewhat problematic because it is being suggested that the existing facility be used to sort and process certain materials from the mixed waste system. This problem can be overcome by the contractor processing the streams separately or through a sampling program.

The concept of determining guaranteed recovery percentages from mixed waste needs to be discussed. The existing contract allows for up to 15 percent of residue to actually

be Acceptable Recyclable Materials. A similar provision could be considered for any residue from the mixed waste modules. Alternatively, quantifiable definitions for each of the different output streams (fuel, compost, containers, fiber, etc.) should be considered.

The financial considerations of a revised contract could include provisions in three areas:

1. Modify Base Fee calculation to include:

    a. New tonnage-based Acceptable Recyclable Materials fee chart
    b. New tonnage-based mixed waste fee chart
    c. New tonnage-based Transfer Activity fee chart

2. Modify fees associated with Excess Residue or not meeting contractual definition of output streams (mixed waste) where applicable.

3. In terms of sharing of material revenues, it is suggested that material revenues from all sources be pooled in the existing Fund. The current 75 percent/25 percent revenue split between the JPA and the Contractor is fair in most "normal" markets. However, during times of abnormally inflated prices (such as 2007 and the first three quarters of 2008), the Contractor may receive a profit windfall having no relationship to the quality of their marketing efforts or management expertise. Conversely, during times of abnormally distressed markets (such as what we are experiencing in the fourth quarter of 2008, expected to continue into 2009), the Contractor may experience a substantial shortfall to its operating needs and expectations. It is assumed that the goal of the JPA is to maintain a stable Contractor in times of distress and for the JPA itself to reap the rewards of abnormally high markets. While this assumption may change based upon who provides capital funding for the facility, if the assumption is accepted, we suggest that a maximum and minimum per month revenue share (in absolute dollars) for the Contractor be established. Such a provision would limit the Contractor's up-side profit potential on the one hand, and negate the potential for operating cost losses on the other.

6.4.3 July 2008 Monthly Report & Invoice

The JPA provided the July 2008 Monthly Report & Invoice prepared by Burrtec Waste Industries to the GBB Team for their review. This report was provided as a sample monthly report to be reviewed for format and completeness, not for the accuracy of the content.

We find the report to be complete and to contain all information required by the Operating Agreement. We note, however, two comments:

1. Burrtec reports that the waste characterizations detailed in the report for the various communities, individual customers and types of delivery are derived from waste characterizations that are performed on the residential recycling streams every three months (See Table 6-9 for July 2008 residue rate by community) and on the commercial recycling streams every six months. All Commercial and Roll-off Select loads are all visually checked as they are received at the facility. The resulting waste characterizations are then applied to the relative monthly incoming tonnages in order to generate the data for the

monthly reports. As considerable financial impact is derived from these studies, the actual protocol should be periodically reviewed for accuracy.

2. The residue rate for residential curbside materials is approximately 33 percent. We note that this is on the high end of reported single-stream collection programs. What steps are being taken, if any, to minimize this percentage? Is the Contractor performing regular sampling of residue (per the Agreement) to assure the JPA that no more than 15 percent of residue is Acceptable Recyclable Materials?

6.4.4 Marketing Agreements and Commodity Data

33-Month Price Charts and Market Listings

The JPA provided the GBB Team with graphs showing the price of containers over the last 33 months and a listing of markets for all commodities.

The market pricing appears in line with pricing in the Southwest market place. The markets listing is voluminous for many of the commodities, and one must conclude that it is a general listing of many of the available markets in the Southwest, not a listing of specific markets that purchase materials from this facility. We note positively that these listings contain, for most commodities, both brokers and final consumers. Our experience dictates that such a mixture allows an operator to access a broader range of potential markets.

6.5 Recommendations

The following subsections summarize recommendations from the MRF Assessment:

6.5.1 Operational Recommendations

- Our analysis concluded that the MRF currently runs approximately 5.5 hours per day, with the balance of 2.5 hours for breaks, lunch, cleanup and downtime. It is highly recommended that further investigation of the specific reasons for and lengths of downtime periods be conducted and the overall daily run schedule be closely evaluated. 5.5 run hours per day over 7.5 paid hours per day results in a 73 percent ratio of run hours to paid hours, which is very low as compared to the industry standards of 85 percent to 90 percent. By isolating and correcting downtime problems, daily run time would increase, as would production.

- At the currently reported average processing rate of 136 tons per day, the resulting overall MRF residue rate is approximately 32 percent, a high rate. It is recommended that the facility immediately implement a program to evaluate and reduce the residue rate. This program would include:

    - Assigning one person with the ultimate responsibility for evaluating and developing the action items necessary to reduce residue.
    - Evaluate and implement the recommendations in this report which deal with residue reduction.
    - Evaluate the costs and benefits of the current Select Load processing methods.

- o Develop recommendations for improving curb enforcement in order to reduce the contamination of loads when picked up at the curb.

Specifically, the loss of paper within the current MRF system should be closely evaluated, including consideration of the observations and recommendations of this report, in order to reduce the amount of paper currently being lost to residue. A primary recommendation is that one person be dedicated to removing only paper from the container sorting line. Further, the activities of the paper sorters need to be evaluated and retraining provided in order to reduce the paper being accidentally dragged into the containers sorting chutes.

The goal should be a reduction in residue to below 10 percent based on as-received residential tonnages.

- The pre-sorters stop the line when bulky materials need to be removed from the belt. The stoppages were observed to be frequent, generally every 30 to 60 seconds or so for up to 45 to 60 seconds per stop. At times, it did not seem as though the commercial system needed to be stopped, or could have been re-started quicker. When the system is running, all four sorters are very well utilized and busy. Their overall utilization, however, is impacted by the stops, as they tend to stand around once all the material has been picked before the system is re-started. We recommend that this operating methodology be reviewed and retraining provided for sort line personnel.

- Lighting in the facility was observed to be adequate. Consider cleaning the sky lights as they are quite dirty with dust and dirt buildup. If they were cleaned, a dramatic improvement in facility lighting would result.

6.5.2 Building and Equipment-related Recommendations

- The material on the tipping floor is stored very close to the southeast tipping door when much of the rest of the floor is empty. This results in material migrating from the floor and blowing out onto the site. The pile of material could perhaps be better positioned away from the southeast door in order to reduce the amount of material blowing onto the site and elsewhere, especially when there is sufficient, less utilized space in the central part of the tipping floor. The southeast door could also be kept closed when not in use.

- A bunker wall which would run in a north-south direction to separate the OCC pile from the other materials that are unloaded on the floor for direct baling should be considered. For example, at 2:00 p.m. on Tuesday, 9/30, the OCC pile was observed as being contaminated by a large pile of rigid plastics that were unloaded for baling.

- The Commercial pre-sort and OCC screen areas are very dusty. Sorters on the pre-sort line wear dust masks due to the level of dust. Dust collection should be considered in this area. In the event the system is expanded to include mixed waste processing, dust collection will definitely be required at the Commercial Pre-Sort area and at the OCC Screen.

- The V-Screen system, including the maintenance access ladder and platform, is a very dusty area. The facility should consider adding dust collection in this area, especially if the system is expanded to include mixed waste processing.

- The mixed glass processing system is the primary system in the MRF that is not sufficiently designed for proper material handling, even at the current tonnage levels. The two-cubic-yard hoppers used for fines and mixed broken glass are undersized and present significant material handling problems. Due to inadequate storage capacity, the hoppers must be removed and dumped numerous times per day during regular operations. This results in excessive material handling and spillage around the hoppers that must be frequently cleaned. The proper design, which the facility should still consider, especially if mixed waste material is introduced to the system, would be to convey these materials to storage bunkers located outside the south wall of the building, perhaps adjacent to the ramp where paper and plastic bales are currently stored. There appears to be sufficient room in the bale storage area. This material should be handled in bulk, which is the industry standard, as opposed to the "two-cubic-yard at a time" handling method.

- Rotating brushes installed on the top sides of the trommel in order to clean the screen which appears to plug with material should be considered. This would especially be necessary if mixed waste processing were introduced to the system.