

# King County Multi-Family Recycling Education Pilot Program

## Section I. Executive Summary

### Pilot Program Overview

In late 2006 and early 2007 the King County Solid Waste Division (the division) conducted a pilot education outreach campaign to increase recycling in five large multi-family complexes in the county. Because nearly all multi-family complexes in King County have access to some recycling services, the pilot program focused on efforts to improve recycling in those complexes by providing education, better accessibility, clear signage in languages other than English, newsletters to tenants, and individual assistance to property managers. In three of the complexes, recycling tote bags were offered to tenants to make recycling easier. The program had a budget of \$71,000 and expended approximately \$65,000.

The selected complexes were large (200+ units) and were geographically dispersed throughout King County. A profile of residents and a study of the location and set up of garbage and recycling system were done prior to the program to allow recycling assistance to be individualized. (See Additional Materials for detailed descriptions.) The profile included:

- Size and location of complex
- Current recycling services
- Quantity, type and location of recycling containers
- Quality and quantity of signage
- Ethnicity of tenants
- Communication opportunities with tenants (newsletters, bulletin boards, etc.)
- Service provider, including frequency of pick-ups
- Turnover rate of renters
- Recycling rate
- Contamination rate (garbage in recycling containers)

The primary outreach strategies for the pilot were to provide increased recycling education to tenants and property managers and to make recycling easier and more convenient. The following tactics were used:

- Bi-lingual kitchen magnets and newsletters
- Visits by Master Recycler Composters (MRCs) to provide assistance to residents, inspect the collection areas, and give feedback to project managers
- Coordination with the waste hauler to improve the garbage and recycling collection area
- Better signage for both garbage and recycling containers

- Regular contact with the property managers
- Recycling tote bags for residents in three of the five complexes

### Pilot Program Results and Key Findings

A pre- and post-campaign waste sort was done at each complex and program results were compared using the following:

**Capture Rate** The proportion of recyclable material that was recycled. That is: the total pounds of recyclables in recycling bins divided by the total pounds of recyclables in recycling bins plus total pounds of recyclables in garbage containers.

#### Capture rates by complex

Apartment Complex	City	Pre	Post
Excalibur	Bellevue	45%	57%
Inglenn Court	Bothell	60%	54%
La Mirage	Kent	16%	15%
Rock Creek Ridge	North Bend	56%	62%
Avalon at Bear Creek	Redmond	63%	50%
<b>Overall</b>		<b>50%</b>	<b>49%</b>

#### Capture rates by material

Material Category	Pre	Post
<b>Paper</b>		
Cardboard	76%	63%
Newspaper	70%	69%
Mixed Paper	39%	53%
<b>Plastic</b>		
Plastic Bottles & Jars	32%	28%
Plastic Dairy Tubs	17%	9%
<b>Glass</b>		
Glass Bottles & Jars	43%	43%
<b>Metal</b>		
Aluminum Cans	18%	18%
Steel or Tin Cans	33%	18%
Scrap Metal	2%	7%
<b>Overall</b>	<b>50%</b>	<b>49%</b>

**Recycling Rate** The amount of recyclable materials recycled compared to the total generation of waste and recyclables. That is: the total pounds of material in recycling bins divided by the total pounds in recycling bins plus the total pounds in garbage containers.

## Recycling rate by complex

Apartment Complex	City	Pre	Pre*	Post	Post*
Excalibur	Bellevue	24%	21%	33%	28%
Inglenook Court	Bothell	26%	24%	24%	22%
La Mirage	Kent	8%	5%	5%	4%
Rock Creek Ridge	North Bend	31%	29%	33%	29%
Avalon at Bear Creek	Redmond	32%	24%	29%	24%
<b>Overall</b>		24%	21%	23%	20%

\*Recycling rate with weight of contamination removed.

**Contamination Rate** The percentage of garbage in the recycling bin. That is: the total pounds of garbage in recycling bins divided by the total pounds of garbage in recycling bins plus total pounds of recyclables in recycling bins

## Contamination rates by complex

Apartment Complex	City	Pre	Post
Excalibur	Bellevue	13%	17%
Inglenook Court	Bothell	7%	8%
La Mirage	Kent	40%	28%
Rock Creek Ridge	North Bend	5%	15%
Avalon at Bear Creek	Redmond	23%	17%
<b>Overall</b>		14%	15%

**Diversion Potential** The percentage of recyclable materials in the garbage container. That is: the total pounds of recyclables in garbage containers divided by the total pounds of recyclables in garbage containers plus total pounds of garbage in garbage containers.

## Diversion potential by complex

Apartment Complex	City	Pre	Post
Excalibur	Bellevue	33%	31%
Inglenook Court	Bothell	22%	24%
La Mirage	Kent	27%	23%
Rock Creek Ridge	North Bend	33%	25%
Avalon at Bear Creek	Redmond	21%	33%
<b>Overall</b>		27%	27%

## Key Findings

The pre- and post-sorts of garbage and recycling were done in November 2006 and November 2007 respectively, but the actual education effort took place between May 1 and September 30, 2007. As the above tables show, some success in recycling improvement was achieved at some of the complexes during this time, but overall, the strategies used did not appear to affect the amount of materials residents recycled. The total capture rates for the five

complexes had not changed following the campaign; the average capture rate for the five complexes was 50% in the pre-test and 49% in the post-test.

However, an interesting aspect with regard to all residences was that capture rates overall (that is, the percentage of total recyclables that are recycled) compare very favorably with rates found in other urban areas. This indicates that while multi-families may have high contamination in their recycling bins, they do divert a high percentage of recyclables.

Notable differences between complexes were:

- Bellevue and North Bend complexes increased their capture rates.
- Kent complex remained least affected - low recycling rate, low capture rate, and high contamination rates
- Redmond and Bothell complexes showed decreases in recycling behavior.

Pre-campaign capture rates for cardboard and newspaper were especially high (except for La Mirage), ranging from 64% to over 88%. The post-campaign capture rates showed capture rates were maintained or improved in all but one complex. Capture rates for mixed paper were improved in some complexes during the pilot program. Pre-campaign capture rates for mixed waste paper ranged from 12% to 66%. Post-campaign waste sorts revealed capture rates ranging from 16% to 61%.

In both the pre- and post-campaign waste sorts, contamination rates were high, 14% and 15% respectively. This is twice the average amount of contaminants found in comingled recyclables received at the materials recycling facilities (MRFs) from other sources. The high level of contamination is documented for the first time, but has been noted in other studies of multi-family recycling. Because of the nature of multi-family recycling (many people, short tenure in apartments, and difficulty of pinpointing the contamination source) this should be analyzed further to determine if the contamination rate is acceptable at MRFs.

[Note: Following this study, inquiry into the opinions of waste haulers regarding contamination yielded varying viewpoints. One hauler stated that the contamination is unacceptable, but the company is currently accepting it and has no plans to discontinue collecting from multi-family complexes. The level of contamination often is no worse than what often is in the commercial recycling stream. However, he believes more education is needed and that managers should be either financially rewarded or penalized based on periodic audits of recycling bins. A second waste hauler indicated that their company could live with the current level of contamination, but they would like county supported help to continue clean up the recycling stream. Improved signage and financial assistance to help implement education programs would be helpful, along with continuation of a general advertising/media campaign.]

### **Implications for Future Multi-family Outreach**

Increasing recycling at multi-family complexes is difficult. This pilot was conducted with the assumption that a strong, multi-faceted education program

along with one-to-one contact with property managers by MRCs, and improvements to the recycling/garbage collection areas could increase recycling participation by residents and decrease the amount of recyclables in the garbage.

But the results were disappointing. It is possible that extending the outreach for a full year or longer may have led to more improvement, but this would have to be balanced against budgetary considerations. Cost analysis shows that the program cost per residential unit was \$57 and \$13,000 per complex. Clearly, a mission to provide this type of assistance to all multi-family residences is beyond the ability of the county.

The pilot did identify clear and specific barriers to recycling improvement: confusion about recycling, language differences, disinterest among residents and staff, and problems with difficult or poorly signed containers. Some or all of these challenges were at every complex, leading to the conclusion that these are general problems, not specific ones.

These factors were considered when planning the pilot program, and should be considered for future multi-family education campaigns:

- **Research before education:**
  - Languages spoken
  - Property manager ability to support program
  - How management gives tenants information
  - Garbage and recycling container accessibility
  - How waste hauler communicates to management and tenants
  - The person responsible for maintaining recycling/garbage areas

Once a complex is “understood” the following program components are important to ensure program success:

- **Manager and maintenance staff education:** Involvement and support from the apartment manager and staff is important to long-term success of multi-family recycling. With high turnover of residents, the management becomes the entity with the institutional knowledge to guide resident education. Inspection for contamination in the recycling containers, posting adequate signage and providing feedback to tenants is necessary to the success of the recycling program.
- **Ongoing recycling education:** Because of high turnover rates in multi-family complexes and tenants moving in from different locales, recycling education will always be needed. But the commitment of county resources should be made only if it can be on a continuing basis and if the complex management takes an active role in implementation. Recycling information should be provided in the lease agreement and distributed to

all tenants at least annually. On a periodic basis, through newsletters and posters, tenants could get information about the recycling program.

- **Hauler involvement:** The waste haulers should be involved to both provide insight and information about the complexes' recycling system and to help with the program. Haulers should monitor the recycling performance of the complexes and tag or refuse pick-up of contaminated containers. The haulers can also help with recycling education through on-container signage.
- **Financial incentives:** Financial incentives for both the apartment complex management and tenants should be considered. Reduced garbage rates that are passed to the tenants, because of successful recycling participation, may be an effective motivator to increase recycling capture rates and decrease contamination rates.
- **Peer pressure:** Social marketing research shows that peer pressure and peer-to-peer education is one of the most effective ways to change behavior. Looking for ways to have tenants help educate other tenants is an effective way to increase recycling behaviors at multi-family complexes.

In the final analysis, any entity considering an outreach program as extensive as the 2007 pilot should weigh the costs against the projected outcome. For this pilot, even with significant effort in education, system improvements and assistance, the results may not be satisfactory.

## Section II. Case Studies of Three Complexes

Three of the five complexes were selected for case studies as they presented diverse needs for recycling success. These apartments were in North Bend, Kent and Bellevue. The other two, located in Redmond and Bothell were similar to the others and are not included here, although details are included in the Additional Materials at the end of this report.

### North Bend

With a population of 4,705, North Bend is one of the smallest cities in King County. Approximately 19 percent of North Bend's residential population lives in multi-family housing. Nine percent of the population speak a language other than English. The median household income is \$61,500<sup>1</sup>.

### Multi-Family Complex Profile

Location	North Bend, WA
Number of Units	233

<sup>1</sup> King County OFM, Chandler Felt, 2/1/2008

Rent comparison 2 bedrm/1bath	Ranges from \$1,250-\$1,850, compared to the King County 2007 average of \$934 in North Bend.
Languages	Primarily English, but also Spanish
Garbage & Recycling Infrastructure	<ul style="list-style-type: none"> <li>• Seven 4-yard blue recycling dumpsters</li> <li>• Seven 6- and 8-yard garbage dumpsters, roll-away design.</li> <li>• Once a week recycling pickup service</li> <li>• Twice a week garbage pickup service</li> <li>• Garbage and recycling dumpsters are located in seven locations.</li> </ul>
Property description	<ul style="list-style-type: none"> <li>• Twenty-eight townhomes on 60 acres.</li> <li>• Community center with a pool and workout room.</li> <li>• Common area mail station located outside complex center</li> </ul>

### Recycling Efforts Prior to the Pilot Program

The North Bend complex had recently changed from recycling bins to recycling dumpsters. Residents were notified of this change in their monthly newsletter, and all of the recycling bins at the complex were labeled with a “Recycle” sticker. This was the only signage prior to the launch of the pilot program.

### Pilot Program Educational Outreach Strategies

The outreach strategy focused on signage changes and information to residents:

- Large, weatherproof signs detailing what can and cannot be recycled were placed next to recycling dumpsters.
- Posters highlighting which materials can be recycled were placed in common areas throughout the complex.
- Information about the pilot program was distributed through the monthly newsletter for six issues.
- Bilingual refrigerator magnets (English/Spanish) highlighting which materials can be recycled were stapled to the newsletters and distributed to every unit.
- A Master Recycler Composter (MRC) education volunteer assisted with container labeling, monitored the contamination in the recycling containers and notified the manager when changes were needed.

### Pilot Program Results

A post-campaign waste sort of garbage and recycling was done in November 2007 and compared to the results of the November 2006 pre-campaign waste sort. A summary of the results of this study is listed in the chart below. The complete results are in Section III, *Consultant Report - Outreach Evaluation*.

Description	Before	After
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	<b>pilot</b>	<b>pilot</b>
Capture Rate (proportion of recyclable materials recycled)	56%	62%
Overall Recycling Rate (recyclables/total waste including recyclables and garbage)	31%	33%
Contamination Rate (% of garbage in recyclables)	5%	15%
Diversion Potential (% of recyclables in garbage)	33%	25%

Both the capture rate of recyclables and the contamination rates increased at North Bend during the pilot. In particular, cardboard, newspaper, mixed paper and scrap metal recycling was increased, and the apartment had among the highest recycling rates of all complexes participating in the pilot program. However, along with this, the complex also experienced an increase in contamination toward the end of the pilot. It is possible that enthusiasm about recycling and new larger containers caused the greater amount of recycling, but lack of understanding what to recycle also increased contamination. When contacted by the MRC assistant, residents indicated that they were enthusiastic about the program, and saw value in the service being offered by King County.



Signage at North Bend Complex – Rock Creek Ridge

Several factors worth noting about the pilot at the North Bend complex:

- **Responsiveness of complex management.** Management was willing to include information on the pilot program in their newsletter
- **Posters and signage.** Management allowed container signage and stickers around the common areas, and ensured that signage was up at the start of the program.
- **Bilingual materials.** Materials were provided in English and Spanish, which proved beneficial to reaching a diverse audience.
- **Contamination levels.** Contamination levels at this complex were very low during the initial months of the pilot, but inexplicably increased by 10 percent by the completion of the program.

**Recommendations for future activities at this complex** This pilot program is over. If the building owner, property manager or waste/recycling haulers find it feasible to continue with education and outreach at this complex, the following should be components of any program for residents:

- **Provide education about contamination.** Since recycling contamination increased over the course of the pilot program, communication with tenants should focus on reducing contamination. Provide information in the monthly newsletter about how to avoid contamination and encourage residents to continue their success at paper recycling.
- **Consider containers or recycling tote bags for residents.** The North Bend complex residents expressed the desire to have recycling containers for each of their 233 units. They felt that one of the main reasons that people were not recycling was due to the lack of a suitable container.
- **Provide a recycling container at outdoor mail station.** Due to high winds that frequent the North Bend area, having a container there did not work unless it was weighted. An affordable one was not located during the pilot program, but if available, it could increase paper recycling collection.

## Bellevue

The City of Bellevue is the second largest city in King County with a population of about 118,100. Approximately 27 percent of Bellevue's residential population lives in multi-family housing. Thirty-two percent of the population speak a language other than English. The median household income is \$76,800<sup>2</sup>.

## Multi-Family Complex Profile

Location	Bellevue, WA
Number of Units	213

<sup>2</sup> King County OFM, Chandler Felt, 2/1/2008

Rent comparison 2 bedrm/1bath	Ranges from \$750-1250 compared to the King County 2007 average rent for a 2 bedroom/1bath apartment in Bellevue which is \$1,100.
Languages Spoken	English, Chinese, Korean, and Japanese
Garbage & Recycling Infrastructure	One 4-yard recycling dumpster and one 4-yard garbage dumpster. Recycling pickup service is twice per week. Garbage pickup service is four times per week.
Additional Information	This complex had few tenants with children, and adults were primarily responsible for taking the recycling out to the dumpster. Many residents are corporate professionals who work in downtown Bellevue or nearby. The building is a mid-rise apartment complex. Most units are studio apartments and all units are in one, 5-story building located in downtown Bellevue. Both dumpsters are in the garage of the complex, although the recycling dumpster is in its own room. Both are inside, under cover and conveniently located. Common areas include two laundry rooms and the mail room, all of which have bulletin boards. The mail area has a recycling bin for junk mail. The complex has a monthly tenant newsletter.

### **Complex Recycling Efforts Prior to the Pilot Program**

Prior to the recycling pilot, the Bellevue complex had done very little to promote recycling other than to include recycling signs on the recycling dumpster.

### **Pilot Program Educational Outreach Strategies**

The outreach strategy included the following:

- Large, weatherproof signs detailing what can and cannot be recycled were placed next to the recycling dumpster.
- Posters highlighting which materials can be recycled were placed in common areas throughout the complex.
- Special-emphasis signage focusing on the recycling of glass and newspaper and the need to break down cardboard were distributed.
- Bilingual magnets (English/Korean and English/Chinese) and recycling tote bags were distributed to every unit.
- A recycling bin and a garbage bin were labeled and placed in the indoor mail center.

### **Pilot Program Results**

A post-pilot test of garbage and recycling was done in November 2007 to determine the success of the pilot program. The results were compared to the results of a pre-pilot sort that was done in November 2006. A summary of the

results of this study is listed in the chart below. The complete results can be found in Section III, *Consultant Report - Outreach Evaluation*.

<b>Description</b>	<b>Before pilot</b>	<b>After pilot</b>
Capture Rate (proportion of recyclable materials recycled)	45%	57%
Overall Recycling Rate (recyclables/total waste including recyclables and garbage)	24%	33%
Contamination Rate (% of garbage in recyclables)	13%	17%
Diversion Potential (% of recyclables in garbage)	33%	31%

The Bellevue complex increased its capture rate by twelve percent, while experiencing a small increase in their contamination rate over the course of the pilot. It had among the highest recycling rate of the pilot complexes. The complex showed an overall increase in recycling of newspaper, mixed paper, plastic and glass bottles and jars, plastic dairy tubs, aluminum cans, and scrap metal. However, the complex showed a marked decrease in steel and tin can recycling (pre = 30 percent, post = 13 percent). Because the sample size by individual material is small, this could be anomaly in the data. On the whole, the pilot program greatly improved the recycling behaviors of the complex residents. The results indicate a fundamental understanding of recycling and increased participation by tenants.

There were several factors that contributed to the success of the pilot at the Bellevue complex, including:

- **Distribution of materials.** The complex’s management allowed King County staff to distribute materials, including recycling tote bags and magnets, to each tenant in the complex.
- **Posters and signage.** Posters were hung in the common areas and signage was placed near the recycling dumpsters. Signage remained posted throughout the pilot.
- **Multi-language materials.** Materials were provided in English, Korean, and Chinese, which proved beneficial to reaching a diverse audience.
- **Low contamination levels.** Contamination levels at this complex were moderate, compared with the other complexes in the pilot and remained steady at 15 to 17 percent throughout the pilot program.

**Recommendations for future activities at this complex** The pilot program at this complex is over; if education and outreach are continued by the waste hauler, property manager or city of Bellevue recycling staff, the following steps are recommended:

- **Narrow the focus of the education outreach.** Education should focus more on recycling steel and tin cans, as the recycling rate of these

materials dropped by over 50 percent of their original rate through the course of implementing the program. A focus on recycling of all types of paper and the importance of breaking down cardboard boxes will improve recycling at this complex.

- **Monitor recycling and garbage containers.** Have garbage and recycling containers distinguished from one another by color, size or shape. The manager and maintenance staff should be held responsible for monitoring the status of containers. Develop signage with recycling messaging and make sure that they are clearly displayed.
- **Communicate recycling fundamentals in lease/rental agreements, newsletters or tenant letters.** Work with complex managers to provide recycling program information to new tenants and include the information in the lease agreement. In addition, current tenants should be reminded about recycling in other tenant communications (e.g. newsletters, office signage, renewal letters). This communication could include feedback to tenants about extra charges levied by the garbage hauler for contaminated recycling. To increase interest in recycling, consider hosting recycling contests or competitions between buildings in the complex.
- **Ensure that haulers are tagging contaminated containers.** Work with garbage and recycling haulers to make sure they are tagging contaminated containers. It is essential that haulers tag these containers and charge extra fees for contaminated recycling. These fees should be visible to the manager, and ideally, passed on to the tenants for payment in their monthly rental fee.

## Kent

The City of Kent is the fourth largest city in King County with a population of roughly 86,660. Approximately 36 percent of Kent’s residential population lives in multi-family housing. Thirty-two percent of the population speak a language other than English. The median household income is \$50,100<sup>3</sup>.

### Multi-Family Complex Profile

Location	Kent, WA
Number of Units	216
Rent comparison 2 bedrm/1bath	Ranges from \$621-\$821 compared to the King County 2007 average rent of \$735 in Kent
Languages Spoken	English, Spanish, Ukrainian, Russian, and Turkish

<sup>3</sup> King County OFM, Chandler Felt, 2/1/2008

Garbage & Recycling Infrastructure	Six 96-gallon recycling totes Garbage is collected in a half-yard trash compactor Recycling pickup service is once a week. Trash compactor is collected on call. Collection area is in the center of the complex requiring tenants to walk some distance to deposit materials.
Additional Information	The buildings are spread out across a large area. Individual mail stations are in each building. Each mail station has a bulletin board.

**Complex Recycling Efforts Prior to the Pilot Program**

Prior to participating in the pilot program, the Kent complex had last distributed flyers with recycling information from the City of Kent in 2004. The complex had no recycling signage near the dumpsters. Recycling and garbage dumpsters were not well labeled, and when the trash compactor was being serviced, it was inaccessible so some residents put their garbage in the recycling totes. The garbage service provider did not tag contaminated recyclables as garbage and no additional fees had been levied. Many residents have children and many are non-English speaking.



Recyclable materials in garbage

**Pilot Program Educational Outreach Strategies**

The outreach strategy included the following:

- Indoor recycling and garbage bins were placed at mail stations with signage.

- Signs were posted on the compactor and near the recycling totes indicating which materials can be recycled. Special emphasis signs were produced, including “Garbage Only” and “Recycling Only” signs, highlighting mixed paper recycling. The signs were translated into Russian midway through the pilot.
- Posters and refrigerator magnets describing which materials can be recycled were produced in English, Spanish and Ukrainian. The posters were displayed in common areas and the magnets were distributed to each resident.
- Tote bags for carrying recycling to the recycling containers were distributed to all tenants.
- A Master Recycler Composter (MRC) was assigned to the complex and visited throughout the program to check in with the complex and make sure signage was up.

### Pilot Program Results

A post-campaign waste sort of garbage and recycling was done in November 2007 and the results were compared to the pre-campaign waste sort that was done in November 2006. A summary of the results of this study is listed in the chart below. The complete results can be found in Section III, *Consultant Report - Outreach Evaluation*.

Description	Before pilot	After pilot
Capture Rate (proportion of recyclable materials recycled)	16%	15%
Overall Recycling Rate (recyclables/total waste including recyclables and garbage)	8%	5%
Contamination Rate (% of garbage in recyclables)	40%	28%
Diversion Potential (% of recyclables in garbage)	27%	23%

The Kent apartment complex had the lowest recycling and capture rates and highest contamination rates of all the complexes in the pilot program (both pre and post pilot). The complex showed an increase in newspaper recycling (from 30 percent to 46 percent) but there was a decrease in plastic, aluminum and tin cans and metal. Overall, the pilot program did not change recycling. The results indicate a fundamental misunderstanding about recycling and an overall lack of participation by tenants.

Many issues may have contributed to the program’s lack of success:

- **Language barriers.** Many of the families living at this complex do not speak English as their first language. We suspect this is a significant

barrier and contributes to confusion about recycling and to the high level of contamination in the recycling totes.

- **Lack of cooperation by the complex.** The complex management was slow to distribute materials and was not proactive in putting up and maintaining signage.
- **One on one education opportunities.** The complex management did not facilitate opportunities where volunteer MRCs could teach recycling basics to families and their children.
- **Garbage/recycling logistics.** The garbage and recycling set up at the complex was a barrier to convenient recycling. When the garbage compactor was being serviced, residents threw garbage in the recycling totes because no garbage containers were available. There is only one recycling and garbage station at the complex, which means residents carry garbage and recycling some distance to deposit materials in the compactor or recycling totes.
- **Children handling recycling.** Many residents reported that they had their children take out the garbage and recycling. The children were not sure what container to put the materials in or were unable to reach the recycling containers to open them.

**Recommendations for future activities at this complex** The pilot program at this complex is over; if education and outreach are continued by the waste hauler, property manager or city of Kent recycling staff, the following steps are recommended:

- **Translate materials as necessary for residents** Materials must be translated to Russian at the very least, and should rely on visual images rather than words whenever possible.
- **Narrow the focus of the education outreach.** Education should focus on recycling paper and cardboard, as both are easy to recycle and their recycling rates were extremely low: mixed paper percentages increased from 12 percent to only 16 percent, and cardboard remained at ten percent for both pre- and post-sorts, indicating that these items are “low-hanging fruit” and should be pursued. Plastic recycling was also low, but is sufficiently confusing that paper is a better first item.
- **Monitor recycling and garbage containers.** Have garbage and recycling containers distinguished from one another by color, size or shape. The manager and maintenance staff should be held responsible for monitoring the status of containers. Develop signage with recycling messaging and make sure that they are clearly displayed.
- **Work with haulers to improve recycling system.** Distance to the recycling center, and having the dumpster unavailable at some times are both deterrents to good recycling behavior.
- **Communicate recycling fundamentals in lease/rental agreements, newsletters or tenant letters.** Provide recycling program information to new tenants and include the information in the lease agreement. In

addition, current tenants should be reminded about recycling in other tenant communications (e.g. newsletters, office signage, renewal letters). Provide feedback to tenants about extra charges levied by the garbage hauler for contaminated recycling. To increase interest in recycling, consider hosting recycling contests or competitions between buildings in the complex.

- **Ensure that haulers are tagging contaminated containers.** Garbage and recycling haulers should make sure contaminated containers are tagged and fees charged for contaminated recycling. These fees should be visible to the manager, and, if feasible, passed on to the tenants for payment in their monthly rental fee.

## Section III. Consultant Report – Outreach Evaluation

### Objective and Summary

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In late 2006 and early 2007, King County contracted with PRR Inc. and Cascadia Consulting Group to conduct a pilot outreach campaign to increase recycling in five large multi-family complexes in the county. The outreach included coordinating with facility managers to place multi-lingual program signage in key areas, place program messaging in facility newsletters (when available), distribute one multi-lingual program magnet to each household, and distribute recycling tote bags at selected facilities.

This document evaluates the effectiveness of the outreach campaign by comparing the actual quantity and composition of materials disposed and recycled by the participating complexes before and after the outreach.

Factors used to evaluate the pilot include:<sup>4</sup>

- Capture rates for individual recyclable materials – the proportion of an individual material that is recycled;
- Overall recycling rate – the amount of recyclable materials recycled compared to total generation of waste and recyclables;
- Recycling contamination rate – the percentage of garbage in the recycling bin; and
- Diversion potential – the percentage of recyclable materials in the garbage container.

The outreach campaign appears to have had a mixed effect on recycling practices by participating multi-family residents. Over the course of the outreach none of the evaluation factors changed significantly for the complexes as a

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<sup>4</sup> Detailed definitions provided in the methodology and results sections.

group, although results varied by complex with some showing more change than others. Although the overall capture rate did not materially change, the capture rate for mixed waste paper increased from 39% to 53%.

This technical memo contains two sections: an evaluation methodology and the results.

## **Evaluation Methodology**

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This evaluation compares pre-outreach and post-outreach values based on the following measurements for the five participating complexes:

- Capture rates for individual recyclable materials;
- Overall recycling rate for recyclable materials;
- Recycling contamination rate; and
- Diversion potential.

The capture rate compares the amount of recyclables being recycled to the amount of recyclables that are either recycled or disposed in the garbage. For example, if 80 out of 100 pounds of newspaper generated by multi-family households were recycled, the capture rate would be 80%.

- Capture rate = total pounds of recyclables in recycling bins / (total pounds of recyclables in recycling bins + total pounds of recyclables in garbage containers)

The recycling rate compares the amount of recyclables being recycled to the total amount of wastes that are generated (all materials that are recycled and disposed). In this study, pounds in recycling bins include contamination

- Recycling rate = total pounds in recycling bins / (total pounds in recycling bins + total pounds in garbage containers)

The contamination rate is the percentage of material placed in the recycling bin that is garbage and is not recyclable.

- Contamination rate = total pounds of garbage in recycling bins / (total pounds of garbage in recycling bins + total pounds of recyclables in recycling bins)

Conversely, the diversion potential is the percentage of materials disposed in the garbage container that could be recycled.

- Diversion Potential = total pounds of recyclables in garbage containers / (total pounds of recyclables in garbage containers + total pounds of garbage in garbage containers)

The capture rate, which only considers the recyclable portion of the waste stream, is the most sensitive way of measuring changes in recycling. It isolates changes in the recycling and disposal of an individual material from changes in the recycling and disposal of all other materials. For example, suppose a complex recycled more aluminum cans. The recycling rate would increase only slightly, because aluminum cans are very light compared to other materials, which downplays the behavior change. On the other hand, the capture rate would isolate and highlight the change by comparing only aluminum cans recycled to those disposed.

### ***Sampling Strategy***

The waste and recycling streams of each apartment complex were sampled, characterized, and quantified in November 2006 (pre-outreach) and November 2007 (post-outreach). A total of 80 waste and recycling samples (40 pre-outreach and 40 post-outreach) were collected at the following five multi-family complexes:

- Excalibur Apartments, Bellevue
- Inglenook Court Apartments, Bothell
- La Mirage Apartments, Kent
- Rock Creek Ridge Apartments, North Bend
- Avalon at Bear Creek Apartments, Redmond

Waste was characterized into ten categories: nine categories of recyclable materials plus unrecyclable garbage. Waste quantities were measured by volume then converted to pounds generated per day. The methodology for characterizing waste is described below, followed by the methodology for measuring waste quantities.

### ***Characterize Waste***

At each multi-family complex, sampling staff ensured that unbiased, random samples were safely obtained for waste characterization using the following steps.

**Step 1. Inspect recycling and disposal bins:** All the waste recycling and disposal bins at the site were inspected to determine whether any substantial and obvious differences existed among waste in the bins.

**Step 2. Randomly select bins:** In most cases, the waste sample was obtained from a single bin chosen at random from among those present at the site. If

clear differences were apparent in the waste from bin to bin, then subsamples from multiple bins were taken to ensure a representative sample.

**Step 3. Extract samples from selected bins:** Each waste sample was extracted from the bin by pulling out a vertical cross-section of waste weighing at least 125 pounds.<sup>5</sup> The study team collected four waste samples and four recycling samples from each site for the pre-outreach phase. The post-outreach phase included an equal number of samples. The number of samples collected over the course of the study is presented in Table 1.

**Table 1. Number of samples collected**

Apartment Complex	Number of samples				Total
	Pre-outreach		Post-outreach		
	Recycling	Garbage	Recycling	Garbage	
Excalibur	4	4	4	4	16
Inglenook Court	4	4	4	4	16
La Mirage	4	4	4	4	16
Rock Creek Ridge	4	4	4	4	16
Avalon at Bear Creek	4	4	4	4	16
<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>80</b>

**Step 4. Sort samples into material categories:** After the sample was acquired and placed on a tarp, the material was sorted by hand into the material categories listed in Table 2. Plastic laundry baskets were used to contain the separated components. Four crew members sorted the contents of each sample and placed each material type in the appropriate basket, while the field crew supervisor monitored the consistency and accuracy of each crew member's work; material was returned to the disposal bin after being sorted.

**Table 2. Material Categories**

<b>Paper</b> Cardboard Newspaper Mixed Paper
<b>Plastic</b> Plastic Bottles & Jars Plastic Dairy Tubs
<b>Glass</b> Glass Bottles & Jars
<b>Metal</b> Aluminum Cans Steel or Tin Cans Scrap Metal
<b>Garbage</b>

<sup>5</sup> The desired sample weights were not met at Excalibur and La Mirage apartment complexes due to a lack of material present on-site. In these cases, the field crew sampled all of the material present.

### ***Estimate Generation Quantities***

The quantity, in pounds per day, of recycling and disposed waste generated by each complex was estimated using the following steps.

**Step 1. Measure waste in bins:** The sampling crew measured the volume of waste in each waste and recycling bin associated with the complex using a tape measure along each dimension; they recorded the data.

**Step 2. Determine length of waste accumulation cycle:** The sampling team then determined the number of days (from 2 to 7, depending on the complex) that had elapsed since the last waste or recycling pick-up.

**Step 3. Calculate daily waste and recycling volumes:** Using the waste volume measurements and length of the waste accumulation cycle, daily waste and recycling volumes were calculated by dividing the total volume over the accumulation cycle by the number of days in the accumulation cycle.

**Step 4. Convert volumes to pounds per day:** Daily volumes (cubic yards) were converted to weight (pounds per day) using material densities (pounds per cubic yard). Densities to convert *recycling* volumes to weight were based on the average densities of measured volumes and weights of the recycling samples. The density of recyclables averaged 104 pounds per cubic yard. To convert *waste* volume measurements to weight, the sampling team used a density of 110 pounds per cubic yard.<sup>6</sup> This density figure is based on more than 50 measurements of multi-family waste in California.<sup>7</sup>

### ***Data Limitations***

The number of samples examined permits a valid comparison of pre- and post-outreach recycling behavior for the participating complexes as a group. However, too few samples were collected to draw statistically valid conclusions at individual complexes. In addition, findings apply only to the complexes studied; results should not be applied to other multi-family complexes in King County.

## **Results**

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### ***Summary of Findings***

Overall, the outreach campaign appears to have had a mixed effect on recycling practices by participating multi-family residents. Over the course of the outreach none of the evaluation factors exhibited much change for the complexes as a group, although results varied by complex with some showing more change than others.

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<sup>6</sup> This method was used for all material streams except for the waste stream at La Mirage apartments. Since this apartment's waste is collected in a compactor, calculating waste quantities by volume measurements and density conversions is not necessary. Instead, the study obtained the actual net weight of the compactor load.

<sup>7</sup> Characterization of Municipal Solid Waste for the City of Los Angeles, page 7. City of Los Angeles Bureau of Sanitation, 2001.

## Overall Capture Rates

The capture rate compares the amount of recyclables being recycled to the amount of recyclables that are either recycled or disposed in the garbage.

- Capture rate = total pounds of recyclables in recycling bins / (total pounds of recyclables in recycling bins + total pounds of recyclables in garbage containers)

The overall capture rate for recyclable materials did not change considerably over the course of the outreach. Prior to the outreach, the overall capture rate was 50%, meaning that half of all recyclable materials were recycled and half were disposed as garbage, as shown in Table 3. After the outreach the overall capture rate was 49%.

**Table 3. Capture rates by apartment complex**

<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	45%	57%
Inglenook Court	Bothell	60%	54%
La Mirage	Kent	16%	15%
Rock Creek Ridge	North Bend	56%	62%
Avalon at Bear Creek	Redmond	63%	50%
<b>Overall</b>		<b>50%</b>	<b>49%</b>

Capture rates and changes in capture rates varied by material (shown in Table 4). The capture rate for mixed paper, which accounted for over a third of all recyclable materials generated, increased from 39% to 53%. Similarly, the capture rate for scrap metal increased from 2% to 7%, although scrap metal made up less than 5% of all recyclable materials generated. Capture rates for steel or tin cans, cardboard, and plastic dairy tubs decreased over the course of the outreach. Capture rates for the remaining recyclable materials (glass, aluminum cans, plastic bottles and jars, and newspaper) remained relatively constant or decreased only slightly.

**Table 4. Capture rates by material**

<b>Material Category</b>	<b>Pre</b>	<b>Post</b>
<b>Paper</b>		
Cardboard	76%	63%
Newspaper	70%	69%
Mixed Paper	39%	53%
<b>Plastic</b>		
Plastic Bottles & Jars	32%	28%
Plastic Dairy Tubs	17%	9%
<b>Glass</b>		
Glass Bottles & Jars	43%	43%
<b>Metal</b>		
Aluminum Cans	18%	18%
Steel or Tin Cans	33%	18%
Scrap Metal	2%	7%
<b>Overall</b>	<b>50%</b>	<b>49%</b>

For more details on capture rates by material and apartment complex, refer to Table 5 (below).

**Table 5. Capture rates by material and apartment complex**

<b>Cardboard</b>			
<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	77%	76%
Inglenook Court	Bothell	64%	80%
La Mirage	Kent	10%	10%
Rock Creek Ridge	North Bend	83%	92%
Avalon at Bear Creek	Redmond	88%	40%
<b>Overall</b>		<b>76%</b>	<b>63%</b>

<b>Newspaper</b>			
<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	78%	87%
Inglenook Court	Bothell	91%	77%
La Mirage	Kent	30%	46%
Rock Creek Ridge	North Bend	65%	88%
Avalon at Bear Creek	Redmond	73%	51%
<b>Overall</b>		<b>70%</b>	<b>69%</b>

<b>Mixed Paper</b>			
<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	33%	57%
Inglenook Court	Bothell	44%	61%
La Mirage	Kent	12%	16%
Rock Creek Ridge	North Bend	44%	59%
Avalon at Bear Creek	Redmond	66%	58%
<b>Overall</b>		<b>39%</b>	<b>53%</b>

<b>Plastic Bottles &amp; Jars</b>			
<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	16%	43%
Inglenook Court	Bothell	36%	36%
La Mirage	Kent	12%	4%
Rock Creek Ridge	North Bend	45%	45%
Avalon at Bear Creek	Redmond	43%	24%
<b>Overall</b>		<b>32%</b>	<b>28%</b>

<b>Plastic Dairy Tubs</b>			
<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	21%	28%
Inglenook Court	Bothell	42%	13%
La Mirage	Kent	9%	1%
Rock Creek Ridge	North Bend	24%	20%
Avalon at Bear Creek	Redmond	32%	9%
<b>Overall</b>		<b>17%</b>	<b>9%</b>

**Table 5 cont'd. Capture rates by material and apartment complex**

<b>Glass Bottles &amp; Jars</b>			
<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	32%	45%
Inglenook Court	Bothell	40%	27%
La Mirage	Kent	30%	12%
Rock Creek Ridge	North Bend	60%	56%
Avalon at Bear Creek	Redmond	41%	50%
<b>Overall</b>		<b>43%</b>	<b>43%</b>

<b>Aluminum Cans</b>			
<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	28%	51%
Inglenook Court	Bothell	19%	15%
La Mirage	Kent	7%	5%
Rock Creek Ridge	North Bend	16%	20%
Avalon at Bear Creek	Redmond	32%	23%
<b>Overall</b>		<b>18%</b>	<b>18%</b>

<b>Steel or Tin Cans</b>			
<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	30%	13%
Inglenook Court	Bothell	41%	41%
La Mirage	Kent	7%	1%
Rock Creek Ridge	North Bend	45%	39%
Avalon at Bear Creek	Redmond	31%	20%
<b>Overall</b>		<b>33%</b>	<b>18%</b>

<b>Scrap Metal</b>			
<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	1%	38%
Inglenook Court	Bothell	13%	0%
La Mirage	Kent	1%	100%
Rock Creek Ridge	North Bend	0%	5%
Avalon at Bear Creek	Redmond	8%	15%
<b>Overall</b>		<b>2%</b>	<b>7%</b>

<b>Overall</b>			
<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	45%	57%
Inglenook Court	Bothell	60%	54%
La Mirage	Kent	16%	15%
Rock Creek Ridge	North Bend	56%	62%
Avalon at Bear Creek	Redmond	63%	50%
<b>Overall</b>		<b>50%</b>	<b>49%</b>

## Overall Recycling Rate

The recycling rate compares the amount of materials being recycled to the total amount of waste that is generated (all wastes that are recycled and disposed).

- Recycling rate =  $\frac{\text{total pounds in recycling bins}}{\text{total pounds in recycling bins} + \text{total pounds in garbage containers}}$ <sup>8</sup>

Very little change was observed in the overall recycling rate (percentage of total waste recycled) over the course of the outreach. Prior to the outreach, the overall recycling rate for the multi-family complexes was 24%, ranging from 8% to 32%. After the outreach, the overall recycling rate was 23%, ranging from 5% to 33%.

**Table 6. Overall recycling rate by apartment complex**

Apartment Complex	City	Pre	Pre*	Post	Post*
Excalibur	Bellevue	24%	21%	33%	28%
Inglennook Court	Bothell	26%	24%	24%	22%
La Mirage	Kent	8%	5%	5%	4%
Rock Creek Ridge	North Bend	31%	29%	33%	29%
Avalon at Bear Creek	Redmond	32%	24%	29%	24%
<b>Overall</b>		24%	21%	23%	20%

\*Recycling rate with contamination removed.

## Contamination Rate

The contamination rate is the percentage of material placed in the recycling bin that is garbage and is not recyclable.

- Contamination rate =  $\frac{\text{total pounds of garbage in recycling bins}}{\text{total pounds of garbage in recycling bins} + \text{total pounds of recyclables in recycling bins}}$

Overall, the contamination rate showed little or no change over the course of the outreach. Prior to the outreach, the overall contamination rate for the participating complexes was 14%, ranging from 5% to 40%. After the outreach the overall contamination rate was 15%, ranging from 8% to 28%. Table 6 presents the contamination rates by complex.

**Table 6. Contamination rates by complex**

Apartment Complex	City	Pre	Post
Excalibur	Bellevue	13%	17%
Inglennook Court	Bothell	7%	8%
La Mirage	Kent	40%	28%
Rock Creek Ridge	North Bend	5%	15%
Avalon at Bear Creek	Redmond	23%	17%
<b>Overall</b>		<b>14%</b>	<b>15%</b>

<sup>8</sup> Total pounds in recycling bin include both recyclable materials and unrecyclable contamination.

## ***Diversion Potential***

The diversion potential is the percentage of materials disposed as garbage that could have been recycled. It represents both the remaining potential to increase recycling and the amount of recyclables lost to landfills.

- Diversion Potential = total pounds of recyclables in garbage containers / (total pounds of recyclables in garbage containers + total pounds of garbage in garbage containers)

Overall the diversion potential did not change over the course of the outreach, remaining 27% before and after the outreach. Before the outreach, diversion potential ranged from 21% to 33%; after the outreach, diversion potential ranged from 23% to 33%. Table 7 presents the diversion potential at each complex.

**Table 7. Diversion potential by complex**

<b>Apartment Complex</b>	<b>City</b>	<b>Pre</b>	<b>Post</b>
Excalibur	Bellevue	33%	31%
Inglennook Court	Bothell	22%	24%
La Mirage	Kent	27%	23%
Rock Creek Ridge	North Bend	33%	25%
Avalon at Bear Creek	Redmond	21%	33%
<b>Overall</b>		<b>27%</b>	<b>27%</b>

## **Section IV. Recommendations**

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Three questions arise from the study. 1) Was it worth the time and money? 2) What was effective? 3) Would the division continue this type of assistance?

1) Cost for the pilot was divided among the pre- and post-recycling evaluation (\$23,000), assistance from consultants who visited the sites and provided materials (\$30,000), and expenses for brochures, magnets, signs and tote bags (\$6000 including \$3600 for the totes). Divided by the complexes that received assistance, the cost was \$13,000 for each. When the cost of the pre- and post-evaluation of recycling at the buildings is removed, the cost per complex is \$6480 and \$29.00 per residential unit.

Pre- and post-evaluation This need not be repeated as the division now has a baseline of recycling behaviors from five apartment complexes that can be used for continued program planning. None of the strategies presented resulted in measurable recycling increases; however, the strategies were very basic so should be continued, but should be combined with additional efforts on the part of the waste hauler and property managers.

Assistance from consultants Using consultant assistance to assess the collection system and make recommendations for improvement was helpful. Using consultants to deliver information and check up on recycling is probably not an efficient use of division funds. However, use of volunteer Master Recycler Composters (MRCs) is not without problems. Further analysis is needed to determine the best means of monitoring recycling and staying in touch with residents.

Material expenses Brochures, magnets, signs and information for newsletters is part of the division's education and outreach and should be continued. Use of the toters did not make an appreciable difference, so shouldn't be part of an outreach program.

## 2) What was effective?

The pre- and post-evaluations of the five complexes would indicate that the program was not effective, but any program that raises awareness of recycling and its importance is valuable as a starting point if nothing more. Beyond the disappointing statistics, the effectiveness of the program can be measured by lessons learned about the nature of multi-family recycling, the differences between various complexes' collection systems, and the way information is communicated to residents by property managers. For example, not all multi-family residences receive newsletters or information on a regular basis; not all apartments have common areas for mail or recreation where information can be posted; the size and number of garbage and recycling containers varies greatly; not all garbage/recycling areas are monitored to make sure recycling is separated correctly. To be effective, a multi-family residence must have, at a minimum:

- Information about recycling for tenants
- Contact and communication between property manager and hauler
- Accessible recycling and garbage areas that are well signed and emptied regularly

## 3) Should the division continue this type of assistance?

According to the January 2006 King County Demographic Summary (King County Growth Report) there are 144,646, multi-family units in King County, representing 30 percent of households. This fact alone is cause to continue education and outreach in a multi-family recycling program. While waste from multi-family complexes is of a different nature (less yard waste, more move in/move out materials such as cardboard and packaging due to turnover) a program tailored to multi-families can result in improved county-wide recycling rates. Future programs should:

- **Narrow the focus of the education outreach.** Education should focus on the basic and convenient recyclables, especially recycling the kind of materials most commonly found in multi-family waste, e.g. paper, paper packaging and cardboard, as paper recycling is easy to teach.

- **Communicate recycling fundamentals when people move in through in lease/rental agreements.** Work with the complex managers to provide recycling program information to new tenants and include the information in the lease agreement. Consider specific information when people move in (cardboard recycling and do's/don'ts) or move out (where to donate unwanted household materials).
- **Frequently monitor recycling and garbage containers.** Work with garbage and recycling haulers to make sure that they are informing managers about contaminated containers. The manager and maintenance staff should be held responsible for monitoring the contamination in the recycling containers and presence of signage in the dumpster area and letting residents know
- **Develop signage** that is clearly and consistently displayed, and use visual images rather than words whenever possible. Have garbage and recycling containers distinguished from one another by color, size or shape.
- **Provide regular tenant education** Current tenants should be reminded about recycling newsletters, office signage, and renewal letters. Communications could include feedback to tenants about recycling rates, successes, or extra charges levied by the garbage hauler for contaminated recycling. To increase interest in recycling, consider hosting recycling contests or competitions between buildings in the complex.
- **Ensure that haulers are tagging contaminated containers.** It is essential that haulers tag contaminated containers and consider charging extra fees for contaminated recycling. These fees should be visible to the manager and passed on to the tenants for payment in their monthly rental fee.

## **Additional materials**

Master Recycler Composter Comments

King County Multi-Family Recycling Program - Apartment Complex Strategies

Selected photos

## **Multi-Family Outreach Comments from MRCs**

### **Avalon at Bear Creek**

MRC=Martin Gosciniak

- 8/13/2007: Marty asked for two signs for the apartment complex. He will also be filling in for multi-family complex in Bellevue while Tracie is on vacation

### **Excalibur Apartments**

MRC=Tracie Walters

- 5/31/2007: I have called twice this week and have left messages both times, but so far have received no call back from Teniele. I was hoping to go out there this week while I have time off work, however, that doesn't look like it is going to happen. Oh well, I guess I will try and be there on the weekend.
- 6/02/2007: I called a couple of times to offer educational assistance, but it wasn't very fruitful.
- 7/27/2007: I have called several times, but no one has wanted to schedule anything.
- 8/13/2007: Would like to schedule a time to meet with Gerty and the complex manager to try to get more involvement; is on vacation (Marty will fill in while she's gone)

### **Inglenook Court Apartments**

MRC=Patricia Evans

- 6/9/2007: Coordinated over the phone with complex manager (2 separate conversations)
- 7/16/2007: I've talked to them, but haven't made a site visit. When I talked with them, they said they had received the packet of goodies, and had put everything up/out...etc...I asked them if they wanted to schedule a tenant event, and she said "maybe later"...she didn't seem overly interested in actually seeing me, but said I could stop by anytime. She didn't want to make an appointment.
- 7/31/2007: Their signs are posted, and there are no obvious problems. All their recycling/garbage sites are well marked, and tidy. I did not observe any contamination.
- 8/13/2007: Management has said they don't need additional outreach, signs or magnets. I have seen tenants taking out garbage and properly sorting recyclables. I will call again to offer outreach, but I'm not sure how useful it will be.
- 8/18/2007: Took photos of recycling areas to show contamination levels.

## **La Mirage Apartments**

MRC=Emily Weisenburger

- 7/24/2007: This is going to be a challenging project, so I could use any insight you or maybe Katie might have as to how best approach this apartment complex. Our first attempt is trying to get some more signage, some information about recycling in the laundry rooms where the mostly women will read likely read it.
- 7/31/2007: I met with about 10 kids today and chatted about recycling and bribed them with candy. My total time today was 90 minutes. I am working with Mina to have signage put up and a notice put in the newsletter regarding recycling. Gerty, Mina seems on board, but she didn't seem worried that we were running out of time. She did find a few signs for me, though not many. We're having the kids make posters and they should be up very soon.
- 8/07/2007: I have been at Girl Scout Camp with my kids, so I wasn't able to get to La Mirage today. I called Mina and she was ok with that as it is raining and no kids are out anyhow. I won't be able to make it with her schedule or mine until next Tuesday when life returns to normal. I did ask Mina about the signs and she said none of the kids have come forward wanting to make them. That is discouraging as they seemed so ready to go last week. But maybe that was just for candy.
- 8/08/2007: By the time I got out of there at 4 it was raining, so I called Mina and she said none of the children had come by to make signs for her. I was surprised. I am going to go by on Saturday and I can check how the bins are doing and if any of the signs she said she'd put up are up. I will try and talk with the kids and moms next Tuesday and will check the bins. Hopefully by then I will have some of the stuff you have for me and you will have spoken with Waste Management to see where we are with that. I did try and make it clear to Mina that time was running out, but I don't know what impact was made. You can't really tell with her as she is so agreeable. She said she'd put an article in their monthly newsletter, but I didn't hear when that was going out.
- 8/14/2007: I just got back from a very big waste of time I suppose or at the very least frustrating bit of time at La Mirage. I understand, I do, but it is still frustrating...The contamination was high, there were no additional signs posted, and no one was out to talk to. I spoke with Mina and she was ill and terrifically short staffed. She has no extra signs and those she showed me two weeks ago were not posted. I do not know how much time Waste Management is willing to give them, but I told Mina I would write a letter to the residents of La Mirage explaining what needs to happen and the consequences if they don't. (That sounds harsh, like I will come and torture them, but it really means their garbage bill will go up.) So, from you I need to first find out how much time they have left to get their act in gear. If there is still time before it all goes to garbage, I would like 6 bilingual signs to post in the laundry rooms. Also, another "garbage

- only" in Russian if you have that. I will write the letter and set a date where people can come and talk to me about any questions they have. At that time, I will give out the cups (which are very cool by the way) and the other stuff. I will take a closer look at the coloring books from the EPA you sent me the links for. The first one didn't seem exactly right, but I will look more closely.
- 8/22/2007: Emily left me a voice message today to let me (MRC Volunteer Coordinator) know she went out to the complex, and Mina hadn't gathered anyone or told them she was coming. She is feeling very frustrated with this complex and that her efforts aren't making much of a difference. I thanked her again for her commitment and let her know Gerty and I both think she's doing an excellent job. I also told her that Gerty said she is great with multi-family and would be a wonderful person to have doing multi-family outreach in the future.
  - 8/28/2007: I spent an hour at La Mirage today (2 if you include travel time) and saw probably 15 kids. No adults to be seen. I have some supplies left, but I will bring them to the event at Glacier Park since it is relevant. Most recycle bins were contaminated.

### **Rock Creek Ridge Apartments**

MRC=KirstenWeinmeister

- 7/19/2007: I mailed some information, but have not gone there a second time. I will make it a point to get out there next week.
- 7/31/2007: Today I went up to Rock Creek Ridge Apts. in North Bend to check on the recycle. I gave the receptionist some Wastemobile cards. They will put it in the newsletter. I didn't see the cardboard flyers anywhere that I sent to Jayme last month, on June 7th. I took some photos, attached. It looks as if cardboard is still an issue, and when people are moving, it looks as if they don't break it down and toss garbage in as well. I'm not sure why there are blue containers used for recycling and garbage. Photo 23 is the cubicle that Rock Creek Ridge has asked for a larger recycle container for.
- 8/13/2007: She'll go by there this week, and call to see if they'd like her to do outreach with the kids
- 8/14/2007: Kirsten sent an email to the complex manager offering to do outreach with kids, asked about staffing a pool party or other upcoming events, and asked if they would advertise a time when she would be there to answer questions in their newsletter.
- 9/14/07: Spoke with Jason about recycling totes