

# SWANA Presentation April 2016

## Design of a Recycling Plan for a larger size Rural County

### Nevada County

#### Agenda

1. Introduction and background of speaker
2. Introduction of participants.
3. Review and discuss “Nevada County- Summary of programs”.
4. Review and discuss “Summary of Nevada County Solid Waste”.
5. Evaluate use of a sort belt in the transfer station.
  - a. This is a “dirty MRF” type sort belt. Describe what sort belt might look like.
  - b. Show presenters estimate of commodities that I think could be sorted and expected %.
  - c. Show sort belt design, transfer station layout, equipment and labor costs, possible incomes.
  - d. Show “Summary of Nevada County Waste- with sort belt”. Especially note changes in recycling % and #/person/day of trash.
6. Discuss “other potential programs” to reduce the amount of trash sent to the landfill.
  - a. Especially discuss assuming there may or may not be a sort belt.
  - b. For each optional program, estimate reduced number of tons per year (reduction in #/person/day)
  - c. List all programs discussed, prioritize and benefits expected.
7. Presentation complete. Thanks to everyone for helping Nevada County look to the future for improved recycling operations



Western Baler & Conveyor

**Tom Jacobs**

**Nevada County Solid Waste Commission**

**Western Baler & Conveyor and Enterprise Balers**

**Email: [tomjacobs@cebridge.net](mailto:tomjacobs@cebridge.net) cell: 916-870-8269**

**ENTERPRISE BALER CO.**  
★★★★★

# Nevada County- Summary of programs

## 1. Organization

### a. County Staff:

i. Mgr. of Public Works

ii. Mgr. of Solid Waste

iii. Solid Waste Secretary

**b. All solid waste operations** are performed by Waste Management on 20 year contract. Contract requires WM to achieve 75% recycling by a specific date

**c. NCSWC-** Nevada County Solid Waste Commission is composed of 2 supervisions, a councilman from each of the three cities and 4 laymen volunteers. Commission is advisory to County supervisors.

## 2. Operations:

**a. Residential collection-** not mandatory- garbage, recyclables and yard waste

### **3. Transfer Station- no landfill**

#### **Transfer station building for transfer to landfill**

Self- haul

Residential garbage

Top load trucks

Debris box trucks

#### **Transfer Station- other operations (outside of building)**

Yard waste pile (transferred off site)- WM residential collection trucks and self-haul.

C&D pile (transferred off site)- self-haul and WM loads of clean C&D.

Electronics and hazardous drop-off

OCC and Metals drop-off.

Buy back center for containers

Rock and concrete drop off.

## **4. Off Site Operations**

2 remote transfer stations, 3 buy back centers and a ReStore Waste Management clean OCC route.

Waste Management transfers recyclables for out-of-county processing.

Commercial Food Waste Program being implemented.

## **5. Operational Area**

Western Nevada County

66,000 residents, 41,000 residences

17,500 with garbage service and recycle bins, 6,150 with yard waste bins

# Summary of Nevada County Solid Waste

## Tons per Year- Est. 2015

### Non recycle- Transfer Station

|                           |              |
|---------------------------|--------------|
| - Self-Haul               | 13,980       |
| - W/M Residential garbage | 12,173       |
| - Commercial (front load) | 7,858        |
| - Loose (debris box)      | <u>3,842</u> |
| - Total to landfill       | 37,853       |

### Recycled

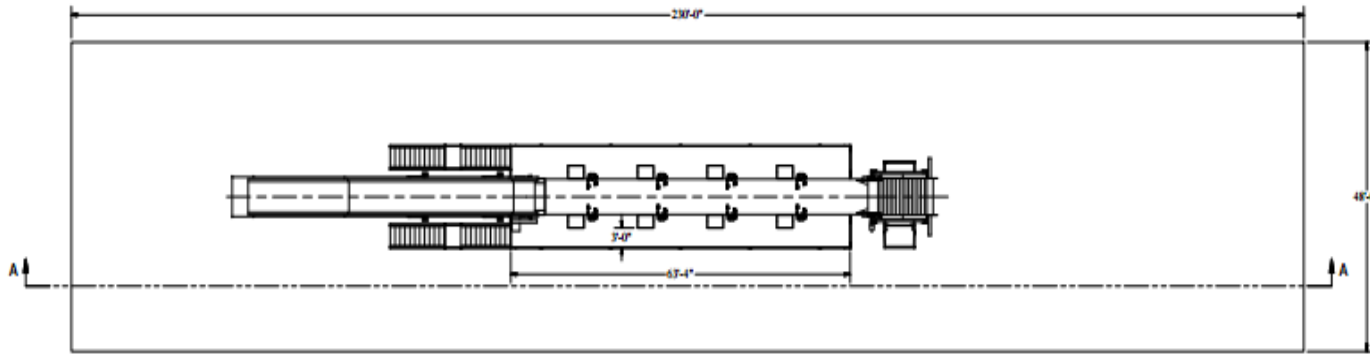
|                                 |            |
|---------------------------------|------------|
| - Recycle outside*              | 15,400     |
| - W/M single stream (to Sacto.) | 10,200     |
| - Yard Waste- W/M residential   | 2,800      |
| - Yard Waste- self haul         | 4,100      |
| - C&D- self haul (to Sacto.)    | 13,200     |
| - Buy back                      | <u>500</u> |
| - Total recycle                 | 46,400     |

Total Solid Waste- tons per year 84,053

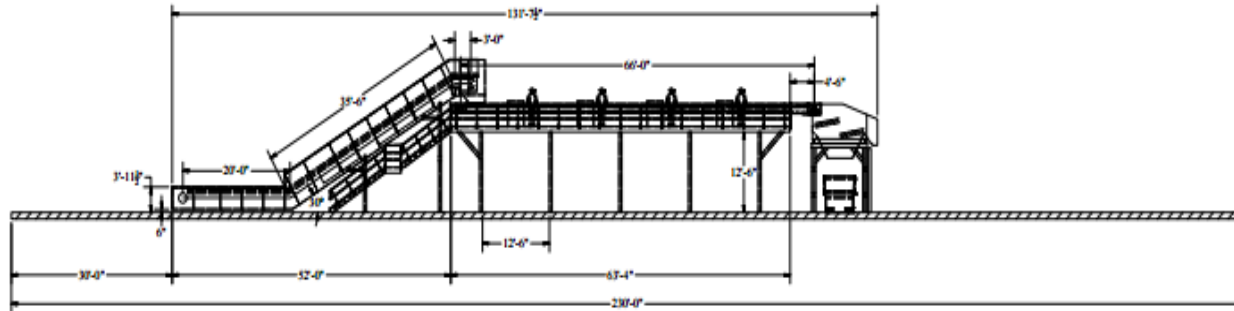
Recycling percent 55%

#/person/day-trash (66,000 people) 3.1

- Safeway, Robinsons, Ralphps, etc.



**PLAN VIEW**  
SCALE 3/32" = 1'-0"



**SECTION A-A**  
SCALE 3/32" = 1'-0"

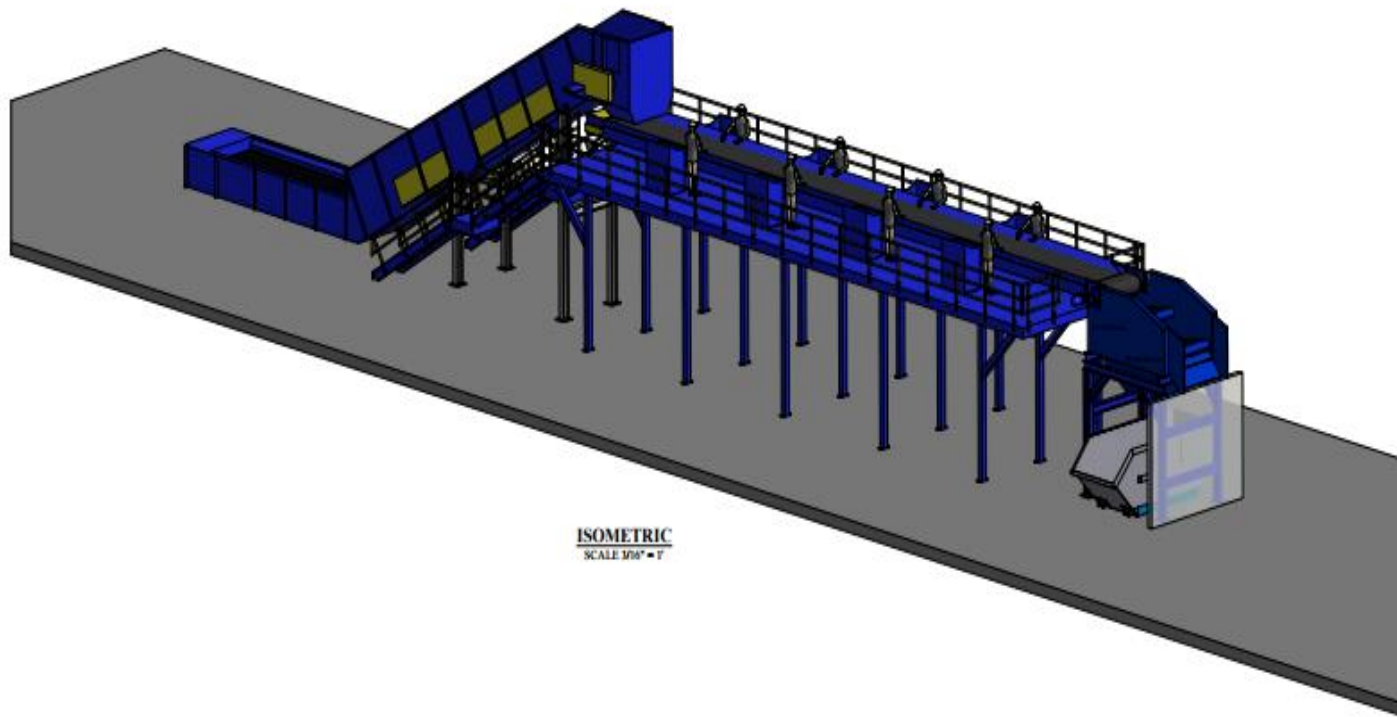
**DO NOT SCALE DRAWING**




4181 CRUSHER DRIVE  
O'FALLON, MISSOURI 63368-8495  
PHONE: 636-441-8600  
FAX: 636-441-8611  
www.hustler-conveyor.com

THIS DRAWING IS THE PROPERTY OF HUSTLER CONVEYOR COMPANY. IT SHALL NOT BE COPIED OR REPLICATED IN ANY MANNER AND SHALL NOT BE PERMITTED TO ANY OTHER PARTY FOR EXAMINATION WITHOUT OUR CONSENT. IT SHALL BE USED FOR REFERENCE TO WORK ON CONTRACT OR PROPOSAL SUBMITTED BY THIS COMPANY ONLY.

| DATE    |           | TYPE        |        |
|---------|-----------|-------------|--------|
| DATE    | 1/14/2016 | DRAWING NO. | H      |
| CHECKED | DAVE W    | SHEET       | 1 OF 2 |
| FOR:    |           |             |        |



**ISOMETRIC**  
SCALE 1/8" = 1'

|   |  |  |  |
|---|--|--|--|
| <b>DO NOT SCALE DRAWING</b>   |  | THIS DRAWING IS THE PROPERTY OF HUSTLER CONVEYOR COMPANY. IT SHALL NOT BE COPIED OR REPLICATED IN ANY MANNER AND SHALL NOT BE SUBMITTED TO ANY OUTSIDE PARTY FOR EXAMINATION WITHOUT OUR CONSENT. IT SHALL BE USED FOR REFERENCE TO WORK ON CONTRACT OR PROPOSAL SUBMITTED BY THIS COMPANY ONLY. |  |
| R.D.  |  | TYPE   |  |
|    |  |  |  |
| 4101 CRUSHER DRIVE<br>O'FALLON, MISSOURI 63368-9499<br>PHONE: 636-441-2000<br>FAX: 636-441-2011<br><a href="http://www.hustler-conveyor.com">www.hustler-conveyor.com</a> |  | DRAWN: DaveW<br>CHECKED:<br>FOR:   | DATE: 1/14/2016<br>SHEET: 2 OF 2<br>DRAWING NO.:<br><b>H</b><br>REV. |

## Nevada County- Solid Waste Compositition 2016

|                      | Total        | Tons/ Year   |              |              |            | Rec Y/N | Tons/ Year Rec |
|----------------------|--------------|--------------|--------------|--------------|------------|---------|----------------|
|                      | Tons/ Year   | Self Haul    | Res. Gar     | Commerical   | Loose      |         |                |
| <b>PAPER</b>         | <b>6,168</b> | <b>1,286</b> | <b>2,681</b> | <b>2,017</b> | <b>184</b> | -       | 1,545          |
| OCC/ PAPER BAGS      | 824          | 231          | 254          | 286          | 56         | Y       | 285            |
| MIX REC. PAPER       | 2,548        | 548          | 1,190        | 738          | 72         | Y       | 680            |
| SOILED COMP PAPER    | 2,202        | 326          | 1,041        | 823          | 12         | Y       | 580            |
| RIGID CARTONS        | 114          | 36           | 37           | 40           | 1          | N       | -              |
| R/C PAPER OTHER      | 480          | 145          | 159          | 130          | 46         | N       | -              |
|                      |              |              |              |              |            |         |                |
| <b>GLASS</b>         | <b>1,248</b> | <b>522</b>   | <b>329</b>   | <b>368</b>   | <b>32</b>  | -       | 410            |
| GLASS BOTTLES        | 1,114        | 484          | 293          | 327          | 10         | Y       | 410            |
| R/C GLASS            | 134          | 38           | 32           | 41           | 22         | N       | -              |
|                      |              |              |              |              |            |         |                |
| <b>METAL</b>         | <b>1,973</b> | <b>404</b>   | <b>980</b>   | <b>361</b>   | <b>228</b> | -       | 481            |
| TIN/STEEL CANS       | 394          | 69           | 176          | 136          | 12         | Y       | 109            |
| OTHER FERROUS        | 768          | 201          | 232          | 127          | 209        | Y       | 266            |
| ALUM. CAN            | 133          | 32           | 61           | 39           | -          | Y       | 56             |
| OTHER NON FERROUS    | 397          | 76           | 297          | 22           | 3          | Y       | 50             |
| R/C METAL            | 280          | 26           | 214          | 37           | 4          | N       | -              |
|                      |              |              |              |              |            |         |                |
| <b>PLASTIC</b>       | <b>4,294</b> | <b>440</b>   | <b>2,215</b> | <b>1,520</b> | <b>119</b> | -       | 140            |
| PET #1- CONT.        | 360          | 40           | 176          | 141          | 3          | Y       | 92             |
| HDPE #2- CONT.       | 214          | 18           | 115          | 89           | 1          | Y       | 50             |
| MISC. PLASTIC- CONT. | 325          | 27           | 177          | 116          | 4          | N       | -              |
| PLASTIC TRASH BAGS   | 550          | 34           | 276          | 232          | 9          | N       | -              |
| PLASTIC GROCERY BAGS | 140          | 22           | 84           | 34           | -          | N       | -              |
| OTHER FILM           | 1,237        | 89           | 747          | 371          | 30         | N       | -              |
| PLASTIC RIGID        | 544          | 128          | 188          | 172          | 57         | N       | -              |
| R/C PLASTIC          | 923          | 82           | 452          | 374          | 15         | N       | -              |



Nevada County- Solid Waste Composition 2016

|                            | Total         | Tons/ Year    |               |              |              | Rec<br>Y/N | Tons/ Year<br>Rec |
|----------------------------|---------------|---------------|---------------|--------------|--------------|------------|-------------------|
| <b>ORGANICS</b>            | <b>10,231</b> | <b>3,736</b>  | <b>3,071</b>  | <b>2,176</b> | <b>1,248</b> | -          | 1,247             |
| FOOD                       | 4,854         | 1,166         | 1,824         | 1,542        | 272          | N          | -                 |
| YARD DEBRIS                | 2,685         | 1,756         | 241           | 135          | 553          | Y          | 1,222             |
| BRANCHES & STUMPS          | 47            | -             | -             | -            | 47           | Y          | 25                |
| MANURES                    | 11            | -             | 11            | -            | -            | N          | -                 |
| TEXTILES                   | 879           | 248           | 265           | 275          | 91           | N          | -                 |
| CARPET                     | 872           | 441           | 106           | 57           | 268          | N          | -                 |
| R/C ORGANICS               | 883           | 125           | 574           | 167          | 17           | N          | -                 |
|                            |               |               |               |              |              |            |                   |
| <b>INERTS &amp; OTHERS</b> | <b>7,258</b>  | <b>5,006</b>  | <b>688</b>    | <b>250</b>   | <b>1,368</b> | -          | 2,887             |
| CLEAN DIM. LUMBER          | 1,690         | 179           | 29            | 37           | 447          | Y          | 330               |
| CLEAN ENG. WOOD            | 531           | 297           | 12            | 52           | 170          | Y          | 250               |
| OTHER WOOD WASTE           | 978           | 630           | 130           | 82           | 130          | Y          | 420               |
| INERTS                     | 4,171         | 3,108         | 396           | 67           | 601          | Y          | 1,887             |
| R/C INERTS & OTHERS        | 895           | 792           | 71            | 12           | 20           | N          | -                 |
|                            |               |               |               |              |              |            |                   |
| <b>HAZARDOUS WASTE</b>     | <b>83</b>     | <b>47</b>     | <b>17</b>     | <b>8</b>     | <b>-</b>     | N          | -                 |
|                            |               |               |               |              |              |            |                   |
| <b>SPECIAL WASTES</b>      | <b>1,847</b>  | <b>1,129</b>  | <b>312</b>    | <b>218</b>   | <b>188</b>   | -          | -                 |
| BULKY ITEMS                | 1,272         | 1,059         | 82            | 32           | 99           | N          | -                 |
| TIRES                      | -             | -             | -             | -            | -            | N          | -                 |
| E WASTE                    | 492           | 70            | 174           | 159          | 87           | N          | -                 |
| R/C SPECIAL WASTE          | 82            | -             | 56            | 27           | -            | N          | -                 |
|                            |               |               |               |              |              |            |                   |
| <b>MIXED RESIDUE</b>       | <b>4,201</b>  | <b>1,410</b>  | <b>1,930</b>  | <b>940</b>   | <b>420</b>   | Y          | 1,390             |
|                            |               |               |               |              |              |            |                   |
| <b>TOTAL</b>               | <b>37,804</b> | <b>13,980</b> | <b>12,173</b> | <b>7,858</b> | <b>3,842</b> |            | 8,096             |
| <b>TONS/DAY</b>            | 151           | 56            | 49            | 31           | 15           |            | 32                |
| %                          |               | 37%           | 32%           | 21%          | 10%          |            | 21%               |

**Summary of Nevada County Solid Waste  
Tons per Year- Est. 2015**

| <b>Non recycle- Transfer Station<br/>Recycling</b> |                  | <b>With Sort Belt</b> | <b>75%</b>       |
|--|------------------|-----------------------|------------------|
| - Self-Haul  | 13,980           |                       |                  |
| - W/M Residential garbage                          | 12,173           |                       |                  |
| - Commercial (front load)                          | 7,858            |                       |                  |
| - Loose (debris box)                               | <u>3,842</u>     |                       |                  |
| - Total to landfill                                | 37,853           | 29,708                | 21,003           |
| <br><b>Recycled</b>                                |                  |                       |                  |
| - Recycle outside*                                 | 15,400           |                       |                  |
| - W/M single stream (to Sacto.)                    | 10,200           |                       |                  |
| - Yard Waste- W/M residential                      | 2,800            |                       |                  |
| - Yard Waste- self haul                            | 4,100            |                       |                  |
| - C&D- self haul (to Sacto.)                       | 13,200           |                       |                  |
| - Buy back   | <u>500</u>       |                       |                  |
| - Total recycle                                    | 46,200           | 54,345                | 63,039           |
| <br>Total Solid Waste- tons per year               | <br>84,053       | <br>84,053            | <br>84,063       |
| <br><b>Recycling percent</b>                       | <br><b>51.0%</b> | <br><b>64.7%</b>      | <br><b>75.0%</b> |
| <br><b>#/person/day-trash (66,000 people)</b>      | <br><b>3.10</b>  | <br><b>2.46</b>       | <br><b>1.75</b>  |

**Note: it takes 1,250 tons reduction in tons per year of trash to make a 0.1 reduction in #/person/day.**

- Safeway, Robinsons, Ralphs, etc.

**Transfer Station Sort Line**  
**Estimated Volume, Manpower, Cost and Savings**

**Sorted Materials:**

- Mix paper- add to single stream pile
- Containers- add to single stream pile.
- Metal- add to metal pile
- Yard waste- add to yard waste pile.
- Wood waste- add to the C&D pile
- Fines- to landfill as top cover.

**Tonnage Picked and Manpower**

|              | <b>TPY</b>   | <b>TPD</b> | <b>TPH</b> | <b>#/HR</b> | <b>#/MH</b> | <b>MR</b> |
|--------------|--------------|------------|------------|-------------|-------------|-----------|
| - Paper      | 1,545        | 6.2        | 0.80       | 1,608       | 750         | 2.0       |
| - Containers | 714          | 2.9        | 0.35       | 714         | 350         | 2.4       |
| - Metal      | 316          | 1.3        | 0.16       | 300         | 1,000       | 0.3       |
| - Yard waste | 1,247        | 5.0        | 0.62       | 1,247       | 1,000       | 1.3       |
| - Wood waste | 1,050        | 4.2        | 0.53       | 1,050       | 1,000       | 1.0       |
| - Fines      | <u>3,277</u> | <u>-</u>   | <u>-</u>   | <u>-</u>    | -           | <u>-</u>  |
| - Total      | 8,149        | 19.6       | 2.46       | 4,872       |             | 7.0       |

**System Costs and Savings**

|   |                                       |
|---|---------------------------------------|
| Tons/hour run down the line                     | 12                                    |
| Tons/hour picked                                | 2.46                                  |
| Equipment Cost (\$500,000 total) per month      | \$10,000                              |
| Manpower cost per month-\$20/hr plus 30% fringe | \$32,000                              |
| Total system cost per month                     | \$42,000                              |
| Saving in landfill cost - 675 TPM @ \$45/ton    | <\$30,000>                            |
| Added cost to tipping fee                       | \$12,000 for 3,000 TPM is \$4 per ton |