

# **Golf Products Company**

## **Waste Reduction Recommendation Report**

*Prepared by Solana Recyclers, Inc.*  
*Sponsored by region IX of the US EPA*  
*June 28, 1999*

**Summary**

XXXXX Golf manufactures a variety of golf clubs which are distributed all over the world. The facility recycles mixed paper, graphite, clean Styrofoam, green waste, and cardboard. On January 22, 1999 a waste assessment was performed at the facilities located on XXXX Road. As of late June, Solana Recyclers received the pertinent purchasing information to complete this report. The following locations were toured: shipping, receiving, grounds, cafeteria, manufacturing, and employee restrooms.

**Background Information**

**Address**                    XXXXXXXXX

**Contact**                    XXXXXXXXXXXX

**Phone**                      XXXXXXXXXXXX

**Waste Characterization Methodology**

In order to obtain a representative waste sampling, waste collection containers were surveyed and analyzed from different locations throughout the facility. Individual waste materials were categorized and percentages were estimated based on the overall volume of each identified material in reference to the total waste volume.

## Waste Characterization

Paper*	13%	corrugated cardboard mixed paper	6% 7%
Plastics	47%	PET bottles (1) HDPE bottles (2) LDPE (4) (stretch wrap and plastic film) Polystyrene (6) Other	2% 2% 25% 3% 8% 7%
Glass	3%	other glass	3%
Metals	5%	#10 tin coated steel cans aluminum cans	3% 2%
Green Waste	13%	grass and tree trimmings	13%
Other Organics	7%	wood waste Miscellaneous Organics	3% 4%
Other Waste	12%	All types rubber grips, shredded nylon, graphite clips, etc.	12%
<b>Total</b>	<b>100%</b>		<b>100%</b>

### Waste Characterization Discussion

Waste was characterized based on volume estimations after analysis of the 40 cu. yard roll-offs, compactor, and 3 cu. yard bins located throughout the facility.

## Waste Reduction Recommendations

### I Implement a Completely Reusable Cafeteria

Solana Recyclers was unable to acquire XXXXX Golf's actual concession supply cost estimates relative to the use of disposable food service items in the cafeteria. Accordingly, SRI is providing the following cost analysis comparing disposable to reusable food service items. The following cost estimates were from a similar sized cafeteria which services approximately 200-300 people per day.

<b>Disposables</b>	<b>Annual Costs</b>	<b>Reusables</b>	<b>Annual Costs</b>
Trays 50 cases	\$1011.50	10x14 trays (240 qty.)	\$240.60
9 inch plate 50 cases	\$694.50	9 inch plate (240 qty.)	\$555.65
6 inch plate 48 cases	\$682.56	6 inch plate (240qty.)	\$405.00
12 oz. cup 55 cases	\$838.75	16 oz. cup (360 qty.)	\$210.00
16 oz. cup 50 cases	\$594.00	7 oz. hot bev. mug (240)	\$411.75
20 oz. Cup 45 cases	\$1,908.00	10 oz. soup bowl (144)	\$270.00
32 oz. Cup 45 cases	\$1072.80	Knife (240 qty.)	\$130.00
Fork 48 cases	\$598.08	Fork (240 qty.)	\$69.50
Knife 45 cases	\$622.35	Teaspoon (240 qty.)	\$76.50
Spoon 40 cases	\$553.20	Low Temp Dishwasher	\$4,500.00 (w/ install.)
Soup Spoon 40 cases	\$553.20	Detergents	\$1,200
12 oz. Bowl 12 cases	\$220.80	Utility/Water Increases	\$540.00
Small Bowl 10 cases	\$412.60	Replacement Costs	\$500.00
8 oz. Cup 50 cases	\$471.50	Labor Cost Increases	\$0.00
<b>Disposable Annual Total</b>	<b>\$10,233.84</b>	<b>Reusable 1st year Total</b>	<b>\$9,109.00</b>

**Successive Year  
Operating Totals      \$2,240.00**

**Note: Napkins are not figured into either column and will be included as necessary cost.**

**\*\*Successive year purchasing totals reflect the fact that the dishwasher and food service items were purchased in year one.**

For the above mentioned cafeteria, it was determined that the existing cafeteria staff could handle bussing and loading the dishwasher without a need to hire additional help. There are two types of dishwashers available. Both washers uses approximately 1.7 gallons of water per wash. The low temperature washer uses phosphate free detergents with a chlorine based sanitizer. The high temperature dishwasher also uses phosphate free detergents, but uses 180 degree temperature to sanitize--eliminating the need for a chlorine based sanitizer. The high temperature unit is approximately \$2,400 more than the low temperature unit and will result in higher utility costs and potential increased installation costs. The figures above provide a basis for the following cost comparison for switching to a reusable cafeteria:

<b>First Year Purchasing Cost Savings</b>	<b>\$1,124.84</b>
<b>Successive Year Purchasing Cost Savings</b>	<b>\$7,993.84</b>
<b>Estimated Waste Diversion</b>	<b>1.4 tons</b>

Cost estimates were received from the following:

Food Service Items	SYSCO (Stu Press) (Supplier of washer/concession supplies)	619/ 513-7563
Utilities	SDGE	1-800-411-7343
Water Costs	ECOLAB (Don Vacca)	1-800-352-5326

## II Install Warm Air Hand Driers in Bathrooms

There are approximately 25 male and female bathrooms located in all of the facility's various facilities. The purchasing costs for multi-fold paper towels amounts to \$30,546 annually. It is suggested that the facility use air driers in all bathrooms. It is recommended that rubber mats be placed under air driers to reduce wetness on the floor. The cost break down for 50 air driers with automatic shut off sensors and associated costs are as follows:

### Costs for Installing Air Driers:

Materials Costs (50 Driers @ \$280 each + tax)	\$15,085.00
Installation Costs (labor and electrical wiring)	\$7,500.00
Increased Utility Costs (added 20,000 kw hours yearly)	\$2,200.00
Maintenance Costs (ea)	\$1,400.00
 Total Initial Annual Expenditure	 \$26,185.00
 Current Paper Towel Purchasing Cost	 \$30,546.00

<b>First Year Savings</b>	<b>\$4,361.00</b>
<b>Successive Year Savings</b>	<b>\$26,946.00</b>

(utility & maintenance costs subtracted from  
total spent amount spent yearly on paper towels = savings)

**Waste Diversion** **8.5 tons**

Cost estimates were received from the following:		
<b>Warm Air Hand Driers</b>	WAXIE Janitor Supply	619/292-8111
<b>Installation</b>	More Power Electric	619/566-1363
<b>Utilities</b>	SDG&E	800/411-7343

### III Replace Disposable Golf Head Wipes with Reusable Cloth Wipes

Each day, it is estimated that 4,500 golf club wipes are used in the production process of the various clubs. These wipes are used with an acetone-based cleaner to wipe down the golf heads. The wipes are disposable and represent ongoing purchasing and related disposal costs. Listed below is a cost analysis for using a reusable lint free cotton towels:

#### Annual Costs - Disposable Wipes

4 x 6 Blue Wipers (22,057 lbs./yr)	\$67,714.99
5 x 5 White Wipers (13,900 lbs./yr)	\$23,491.00
Disposal Fees 17.9 tons/yr & Service Fees for five 40 yd. pulls	\$1,244.00

**Subtotal** **\$92,449.00**

#### Annual Costs - Reusable 12 x 12 Cloth Wipes

4,500 wipes/day or 1,080,000 cloth wipes/year	\$.04/cloth wipe	\$43,200.00
(Cost per unit includes actual product and service fees for pick up and cleaning.)		
Replacement Costs		\$2,808.00/yr

\*\*Note: Cloth wipes are a tight knit cotton variety; virtually lint free.

**Subtotal** **\$46,008.00**

<b>Annual Cost Savings</b>	<b>\$46,441.00</b>
<b>Annual Waste Diversion</b>	<b>17.9 tons</b>

Cost Estimates Were Received From the Following:

Aramark Uniform Services	800/ 789-7441 x 5034
Bruce Crow (can come to site to provide samples and assess needs)	

**IV Use Reusable Nylon Gloves For Production Processes**

The use of latex/vinyl gloves is understood as a necessary measure for ensuring proper handling and product integrity. However the purchasing cost associated with this product is substantial. In addition, there is no market for spent latex/vinyl gloves. Accordingly it is recommended that the facility consider reusable nylon gloves in place of the disposables. The nylon glove has been used successfully by Boeing Corporation for similar purposes. Listed below is a cost analysis for implementation:

**Annual Costs - Disposable Gloves**

5,500 Boxes/yr.	\$7.43/box	\$40,865.00/year
Annual Disposal Fees	5.5 tons, (\$200 service fees)	\$447.50/year
<b>Subtotal</b>		<b>\$41,312.50/yr</b>

**Annual Costs Reusable Gloves**

**100 employees changing nylon gloves two pairs per day (1000/week - 3000 pair inventory)**

<b>Description</b>	<b>Quantity</b>	<b>Rate</b>	<b>Total</b>
Nylon Glove (Direct Purchase)	3000 pair	\$2.66	\$7,980.00 (one time)
Cleaning Service	1000 pair	\$0.50/pr.	\$26,000.00/year
Replacement Costs	100 pair	\$2.66	\$266.00/year
Bar Code Fee (one time)	3000	\$1.00	\$3000 (one time)
<b>Total First Year Cost (for reusable nylon gloves)</b>			<b>\$37,246.00/yr</b>
<b>Successive Year Costs (Total minus initial purchase/bar code fee)</b>			<b>\$26,266.00/yr</b>

<b>First Year Cost Savings</b>	<b>\$4,066.50</b>
<b>Successive Year Cost Savings</b>	<b>\$15,046.50/yr</b>
<b>Annual Waste Diversion</b>	<b>5.5 tons</b>

Cost estimates were received from:

ARAMARK Clean Room Services Peter Frey	714/ 538-1445 or (fax) 714/538-5925
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**V Recycle All LDPE Plastic Film and Stretch Wrap**

The facility's receiving department is the source of a significant amount of LDPE film plastic and stretch wrap from pallets. The majority of this plastic includes the bags surrounding the shafts and golf heads, and the stretch wrap from the pallets. This material represents a significant volume and thus a significant disposal cost. KAHO Plastics recently purchased a baler and is now able to accept this plastic even with labels and silk-screened ink labels on the bags. It is recommended that The facility revisit recycling this material and use existing 55 gallon drums for this purpose at all relevant facilities. KAHO will provide Gaylord boxes for storage of plastic and can haul materials daily or weekly at no cost. The facility will need to provide a forklift to load the Gaylords. Listed below is a cost savings analysis:

**Current Waste Disposal Costs**

<b>Ten 3 cu. yd bins (serviced average of 5x week)</b>	<b>\$3,240/month</b>
<b>40 Yd. Service Fees (Average 3 pulls/month)</b>	<b>\$766.68/month</b>
<b>Tonnage Fees (61 Tons/month avg. For Compactors and Roll Offs)</b>	<b>\$2,745/month</b>
 <i>Subtotal</i>	 <i>\$6,751.68/month</i>

It is estimated that the LDPE plastic film and stretch account for 25% of The facility's waste stream by volume and 5% by weight. Accordingly it is recommended that if this material is recycled and removed from the waste stream, The facility can move from 5x/week service to 4x/week service for its 3 cubic yd. containers facility-wide. In addition, The facility can potentially reduce its number of 40 yd. roll off pulls from an average of 36 annually to 27 annually. Cost savings are listed below:

**Waste Disposal Costs With LDPE Plastic Recycling**

<b>Recycling Service w/ KAHO Plastics</b>	<b>\$0.00/month</b>
<b>Ten 3 cu. yd. bins service (serviced average of 4x week)</b>	<b>\$2,617.30/month</b>
<b>40 Yd. Roll Offs/ Compactors (serviced avg. 2.3x month)</b>	<b>\$587.78/month</b>
<b>Tonnage Fees (58.5 tons/month average for compact/roll offs)</b>	<b>\$2,632.50/month</b>
<b>Staff Time Estimated</b>	<b>\$200.00/month</b>
 <i>Subtotal</i>	 <i>\$6,037.58/month</i>

<b>Annual Cost Savings</b>	<b>\$8,569.20/year</b>
<b>Annual Waste Diversion</b>	<b>30 tons</b>

Cost Estimates Were Received From:

Coast Waste Management	760/929-9400
KAHO Plastics	760/591-7888
Nora Tho	

## **VI Work With Vendors to Reduce Packaging**

Working with vendors to use reusable packaging materials can also address the above-mentioned LDPE plastic waste issue. Vendors can ship golf heads and shafts in reusable cloth or vinyl bags or with paper packaging (paper is a more stable recycling market.) These reusable materials can be stockpiled and back-hauled to vendors when new shipments are received.

## **VII Recycle Graphite Clips**

Based on visual observations and interviews with facilities staff, it is estimated that approximately 3 cu. yds. per week of small graphite clips are found in the waste stream at the time of the waste assessment. This volume equates to approximately 7.2 tons per year. Given the existing recycling infrastructure for large pieces of this material, it is suggested that even the small clips be recycled.

<b>Annual Cost Savings</b>	<b>\$324.00/year</b>
<b>Waste Diversion</b>	<b>7.2 tons/year</b>

## **VIII Purchase Recycled Paper Through The Recycled Products Purchasing Cooperative**

With a grant from the US EPA, Solana Recyclers is coordinating the Recycled Products Purchasing Cooperative. The goal of this cooperative is to increase the amount of recycled paper purchased by businesses and public agencies. The Co-op is accomplishing this goal by providing 30% postconsumer recycled paper at prices competitive with virgin paper. In fact, the Co-op can provide The facility with recycled paper for \$1.50 cheaper/case than what the company currently pays for recycled paper. Contact Tyson Miller w/ any questions at 760/436-7986 or visit the website at [www.recycledproducts.org](http://www.recycledproducts.org).

<b>Annual Cost Savings</b>	<b>\$750.00/year</b>
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## **IX Miscellaneous Recommendations**

- Ensure that the landscape service hauls away tree trimmings and grass clippings to be mulched or composted instead of disposed of in The facility s waste stream.
- Recycle all #10 tin cans and HDPE plastic from food service (1,920 #10 tin cans, 960 HDPE plastic bottles/year)
- Purchase reusable cups/mugs for employees
- Post double-sided copying reminders above all copiers and train employees how to copy on both sides of the paper
- Put company bulletins on voice or electronic mail or post on a central bulletin board
- Reuse large envelopes and packing material like bubble wrap

## Summary of Waste Reduction Recommendations

Description	Year 1 Savings	Successive Yr. Savings	Waste Diversion
Reusable Cafeteria	\$1,124.84	\$7,993.84	1.4 tons
Air Driers	\$4,631.00	\$26,946.00	8.5 tons
Reusable Wipes	\$46,441.00	\$46,441.00	17.9 tons
Reusable Nylon Gloves	\$4,066.50	\$15,046.50	5.5 tons
Recycle LDPE Plastic	\$8,569.20	\$8,569.20	30 tons
Recycle Graphite Clips	\$324.00	\$324.00	7.2 tons
Buy Recycled Paper	\$750.00	\$750.00	
<b>Totals</b>	<b>\$65,906.04</b>	<b>\$106,070.54</b>	<b>70.5 tons</b>

Please feel free to call Tyson Miller at Solana Recyclers with any questions concerning this report at 760/ 436-7986. Solana Recyclers, Inc. was able to perform this waste assessment service for XXXX Golf under the Sustainable Futures Project. This project is funded by region IX of the US EPA. The statements and conclusions of this report are those of the contractor and not necessarily those of the US EPA, its employees, or the federal government. The contractors make no warranty, express or implied, and assume no liability for the information contained in the preceding text. Reports are available for review by the US EPA grant manager. Otherwise, all information obtained in this assessment is confidential unless granted permission for public issuance.