2012 WASTE-TO-ENERGY EXCELLENCE AWARD
CHECKLIST AND RELEASE

2012 Applications must be submitted to SWANA no later than Friday, April 13, 2012

*** PLEASE NOTE THAT ENTRY REQUIREMENTS HAVE CHANGED ***

Application Checklist (Please make sure the following items are included in your submittal packet)

- Completed release statement (this page), to be scanned and included in digital submission
- Check (made payable to SWANA) or credit card payment for nomination fee (in U.S. dollars) via Excellence Award Nominations
- At least 2 pictures of your operation (may be included in nomination text)
- One copy of your award submittal uploaded using your purchased 2012 SWANA Excellence Awards Application Uploading Instructions
- If you would like to mail your submission, please contact Jesse Maxwell, Program Coordinator, at jmaxwell@swana.org or (240) 494-2237.

Release Statement: I certify that the information provided in this application is accurate and correct to the best of my knowledge. SWANA reserves the right to publish the enclosed information. Nominations become the property of SWANA. My signature gives SWANA the right to reprint or make available for purchase any portion of this submittal.

Signature: ________________________ Date: 4/5/12
2012 Waste-To-Energy Excellence Award
Covanta Marion, Inc.
EXECUTIVE SUMMARY

Covanta Marion, Inc. (CMI), formerly known as the Marion County Waste to Energy Facility, began commercial operations in 1986. It was the first energy from waste facility in the US to be equipped with state of the art scrubber baghouse pollution control and pollution monitoring equipment. In 1986, the US Environmental Protection Agency (EPA) used CMI to set the standards for the industry. Twenty-eight years later, CMI has kept pace with new technologies and still maintains its compliance and production record that’s one of the best in the industry. CMI continues to look for ways to improve through innovative ideas the energy from waste industry. We are proud to serve the people of Marion County providing a clean sensible solution to their solid waste disposal needs and to their innovative solutions to reduce, reuse, and recycle their solid waste. Marion County maintains a consistent tip fee for waste disposal and a 58 % recycling rate. The CMI energy from waste facility is proud to be part of Marion County’s solid waste program.
1.) Engineering Design Systems and Technologies:

The Covanta Marion Inc. (CMI) municipal solid waste combustion (MWC) facility is located in Brooks, Oregon. The facility consists of two identical mass burn boilers of Martin GmbH Stoker Combustion System design. Each boiler is rated at 275 tons of municipal solid waste per day and generates up to 13.1 megawatts of renewable energy that is sold to Portland General Electric. The MWCs were constructed in 1985 and installed in 1986. The Marion facility was the first mass burn waterwall resource recovery facility burning municipal solid waste in the United States to use dry flue gas scrubbers and fabric filter baghouse to control acid gases and particulates. In addition to municipal solid waste, CMI processes about 90 tons per month of supplemental waste including non-hazardous medical waste.

<table>
<thead>
<tr>
<th>FACILITY EQUIPMENT</th>
<th>SUPPLIER</th>
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<tbody>
<tr>
<td>Stoker</td>
<td>Martin GmbH</td>
</tr>
<tr>
<td>Combustion Units</td>
<td>Two waterwall furnaces.</td>
</tr>
<tr>
<td>Refuse Cranes</td>
<td>Two cranes with 100% redundancy - 6 tons, 4 cubic yards (approx.) each grapple.</td>
</tr>
<tr>
<td>Turbine Generator</td>
<td>Rated at 13.1 megawatts; 15,412 kVA/13.8 kV 3 phase, 60Hz uncontrolled extraction-condensing type.</td>
</tr>
<tr>
<td>Air Pollution Control</td>
<td>Two dry scrubbers and two fabric filter baghouses for SO₂, HCl and particulate control. Activated carbon injection for Mercury control and Aqueous Ammonia injection for NOₓ control.</td>
</tr>
<tr>
<td>Stack</td>
<td>258 feet (twin flue), steel</td>
</tr>
<tr>
<td>Truck Scale</td>
<td>120,000 lbs, all axles</td>
</tr>
<tr>
<td>Continuous Emission Monitoring</td>
<td>Inlet: O₂, CO and SO₂ Outlet: O₂, NOₓ, SO₂ and Opacity</td>
</tr>
</tbody>
</table>

Facility construction began in September, 1984, and was completed in May, 1986. CMI began commercial operations on May 10, 1986. CMI operates 24 hours/day, 365 days/year. The facility, owned and operated by Covanta Energy Corporation, provides over 315,000 Marion County residents with a reliable and environmentally safe means of refuse disposal. It is the first resource recovery facility in the United States to use dry gas scrubbers and fabric filter baghouses to control acid gases and particulate.

The facility is located on a 16-acre site, approximately five miles north of Salem. By incinerating 550 tons per day of municipal solid waste, the facility provides 11 megawatts per hour of electricity to Portland General Electric Company (PGE).
2.) Environmental Impacts & Regulatory Compliance

<table>
<thead>
<tr>
<th></th>
<th>EPA Permit Limit</th>
<th>Oregon DEQ limits</th>
<th>CMI 2011 Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (mg/dscm)</td>
<td>0.400</td>
<td>0.200</td>
<td>0.0008</td>
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<tr>
<td>Cadmium (µg/dscm)</td>
<td>0.035</td>
<td>0.020</td>
<td>0.00274</td>
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<tr>
<td>Dioxin/Furan (ng/dscm)</td>
<td>30</td>
<td>15</td>
<td>1.06</td>
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<tr>
<td>Particulate (mg/dscm)</td>
<td>25</td>
<td>25</td>
<td>0.00404</td>
</tr>
<tr>
<td>Mercury (µg/dscm)</td>
<td>0.080</td>
<td>0.050</td>
<td>0.004</td>
</tr>
</tbody>
</table>

- Reducing greenhouse gas emissions
  - Avoids a nominal one ton of CO₂ equivalent for each ton of waste processed.

- Provide sustainable waste disposal practices as part of an integrated waste management system
  - Global community recognizes EfW as a preferred disposal alternative to landfills
  - EfW compliments recycling and recovers metals and energy from residual waste
  - Reduces volume of waste by 90%
  - Reduces long haul trucking of waste to distant landfills
  - Doesn’t shift trash burden to distant communities or future generations

- CMI participates in the Fishing for Energy program. This program, in partnership with the National Fish and Wildlife Foundation and National Oceanic and Atmospheric Administration, and Schnitzer Steel, which allows fisherman from our local coastal communities free disposal their derelict fishing gear and old gear that is found in open waters that is a hazard to our local fisheries and wildlife.

- CMI is partnered with Marion County on a mercury take back program where citizens can bring in florescent lamps and other mercury-containing materials to be recycled. CMI is also involved in the citizen’s pharmaceutical disposal program where citizens from all over the state can dispose of their unused or outdated pharmaceuticals that will be processed at our facility.

(See attached Solid Waste Permit Inspection Report.)
CMI received its EarthWISE certification in 2011 from Marion County. This is recognition for being an environmentally conscientious company that does its part to reduce its carbon footprint on the environment. Some key elements to achieving this certification:

- Replacing the lighting around the facility with high-efficiency compact fluorescent lighting.
- Putting lighting on motion detectors so they shut off when no one is around.
- Replacing induced draft fan controls with variable frequency speed drives to save power.
- Installed dishwashers in the lunch room and control room and the use of dishes and silverware instead of paper products.
- Using recycled copy paper.
- Purchase of Energy Star-rated washer and dryer.

3.) Performance

CMI plays a key role in Marion County’s integrated waste management system. The facility processes approximately 180,000 tons of Marion County’s MSW annually. CMI processes medical waste from Oregon, Washington, California, and Canada and evidence from law enforcement agencies all over the State of Oregon. The facility works with the Department of Agriculture and US Customs to process international waste and seized materials that may be harmful to the eco-systems in Oregon. Incineration is a clean assured disposal method while producing clean energy and is the best way to dispose of these materials.

SCALE & SCALE HOUSE

Approximately 130 loaded refuse trucks arrive at the facility daily. Each vehicle is weighed by a scale attendant. A computer located in the scale house calculates the weight of the vehicle’s refuse by subtracting its empty weight, which the computer has on file, from its loaded weight.
TIPPING FLOOR & REFUSE PIT

After being weighed, the trucks proceed to the tipping floor where they unload their garbage into a refuse storage pit. Measured from the tipping floor, the pit is 34 feet deep. Over 2,000 tons of garbage cans are stored in the pit.

CRANES

The facility is provided with two six-ton overhead cranes which mix the refuse in the pit and lift it into the feed hoppers. The refuse moves down through a water-cooled feed chute. The chute is equipped with hydraulically-operated safety shutoff gates for use when the furnace is not in operation.

RAM / FEEDTABLE

From the feedchutes, the refuse is uniformly distributed across the furnace grate by hydraulically-operated feed rams. These rams meter a uniform quantity of waste onto the grates during operation.

STOKER / BOILER

Refuse is incinerated on a specially-designed stoker grate supplied by Martin GmbH of Munich, West Germany. The Martin stoker grate is the heart of the Covanta process. Each grate consists of 15 individual steps sloped down and away from the feedchute. Each step represents a row of fixed or moving grate bars. The fixed grate bars alternate with rows of moving grate bars, which push upward against the natural downhill movement of the refuse at 30 to 50 strokes per hour. The movement agitates the burning refuse to form an even depth in the fuel bed. As a result of this agitation, uniform burnout of 98% of all combustible matter is achieved. Air used for combustion travels through the furnace which is surrounded by tubes filled with water for absorption of heat for steam production. Good combustion practices are used to control emissions. In addition, aqueous ammonia is injected at the top of the furnace to provide additional control of nitrogen oxide emissions as mandated by the Clean Air Act.

THE COOLING TOWER

The cooling tower provides cooling water that is circulated through pipes in a continuous loop from the cooling tower through the main turbine steam condenser system and back to the cooling tower. The water from the cooling tower is used to cool the steam that has gone through the turbine. The cold water from the cooling tower turns the steam back to liquid condensate so the condensed steam can be reused in the boilers as make up water to make steam in a continuous cycle. The cooling water that has removed the heat from the steam returns to the cooling tower where the water is cooled much like a car radiator. Fans blow across the cooling water as it cascades through the cooling tower fill. The cooled water collects in the cooling basin and is then pumped back to start the process over again. This process is done on a continuous basis flowing 12,000 gallons/minute of cooling water to cool 22,000 pounds/minute of steam.

TURBINE GENERATOR AND DEAERATOR/HEATER

The turbine generator is capable of producing 13.1 megawatts per hour of electricity of which 11 megawatts per hour are sold to Portland General Electric, enough to supply approximately 5,200 homes. It is a full-condensing turbine with uncontrolled extraction. The plant uses between 1 1/2 & 2 megawatts per hour to operate. The deareator/heater removes oxygen from the water and preheats it before it re-enters the boiler.

CONTROL ROOM
The control room is the nucleus of the plant. Instrumentation and controls enable the operators to monitor and control the Martin stoker grate, the boilers, the turbine generator, the pollution control equipment, and all plant auxiliary equipment. Additionally, in the control room the operator has continuous emission monitoring for nitrogen oxides, carbon monoxide, sulfur dioxide, oxygen, opacity, steam flow and baghouse inlet temperatures to assure good combustion and compliance with existing permit conditions.

ADMINISTRATIVE AREA

The administrative areas include the lobby and locker rooms on the first floor; the employees' lunch room, drafting room, and maintenance office, facility manager’s office on the second floor; and management offices and conference room on the third floor. The conference room will accommodate 30 people.

STAFFING

The following is a list of key personnel:

Western Region Operations Manager – 1 full time
Western Region Environmental Manager – 1 full time
Western Region Engineer – 1 full time
Western Region CEMS Coordinator – 1 full time
Western Region Procurement Manager – 1 full time
Facility Manager – 1 full time
Business Manager – 1 full time
Maintenance Manager – 1 full time
Chief Engineer – 1 full time
Environmental/Safety Specialist – 1 full time
Administrative Assistant – 1 full time
Operations Personnel – 17 full time
Maintenance Personnel – 5 full time
Equipment Operators – 2 full time
Electricians – 2 full time
Storekeeper – 1 full time

Ash Management

The facility produces both fly ash and bottom ash. Fly ash is collected in the baghouse and transported via enclosed screw conveyors to the ash dischargers where it is commingled with bottom ash. The ash is then discharged onto enclosed conveyors. Large items are separated from the ash by the grizzly scalper prior to transport on the incline belt to the ash building. The incline belt is equipped with two magnetic separators that remove ferrous metal. The ferrous metal is transported from the magnets to a designated area within the ash building. The remaining ash, after ferrous metal separation, is then deposited in the ash building. The ash is loaded via a front end loader onto trucks contracted by Marion County for final disposition at the County-owned ash monofill.

CMI helped Marion County set up a pilot program where Marion County is processing the combustion by-product (ash) that is currently being stored in the monofill. After screening and sizing, the ash is being used as daily landfill cover. To date, over 40,000 tons have been processed and used as daily cover. With the enhanced screening and ferrous recovery, the ferrous recovered in the process pays for the screening plant to operate. After the pilot study is complete in late 2012 it is anticipated that most of the ash that has been stored at the monofill will be mined and used for daily cover at the landfill reducing the amount of ash to be disposed of in the monofill.
Emission Controls and Design

CMI utilizes dry scrubber technology and fabric filter baghouses to control emissions. After leaving the boiler, the cooled combustion gases are cleaned in dry scrubbers. Prior to entering the scrubbers activated carbon is injected into each duct for control of mercury as mandated in the Clean Air Act. Lime injection, which acts as a reagent, the acid gases are "scrubbed clean." The dry scrubbers are designed to remove 90% of chloride gases and 70% of the sulfur dioxide. However, testing has shown removal of chloride above 99% and sulfur dioxide above 90%.

After passing through the scrubbers, the gas enters the fabric filter baghouses where particulate emissions are reduced. Each of the two baghouses consists of 720 individual bags that reduce 99% of the particulate emissions.

4.) Program Planning

Covanta 4 Recovery (C4R) and Covanta Energy Group, Inc. (CEG) have established a process to review waste materials prior to their acceptance at CMI. The customer, or authorized representative, submits a Request for Disposal (RFD) to the C4R for review. A representative from the Environmental Health and Safety (EH&S) Group, along with Facility Management, reviews the information submitted by the customer to ensure that the waste can be processed safely.

The review process involves five areas:

- Technical Completeness of the RFD
- Environmental Compliance Review
- Health and Safety Review
- Operations Review
- Final C4R Review

Technical Completeness

The Request for Disposal (RFD) will be composed of various documents submitted by the customer and assembled by the C4R Account Executive (AE):

- Supplemental Waste Request Form ('Yellow Sheet')
- Material Characterization Form (MCF)
- Back-up information such as Material Safety Data Sheets (MSDS), product inserts or labels, analytical results, formulation sheets, etc.

A C4R EH&S Group representative works with the customer to ensure that the information submitted in these documents is complete, accurate and sufficiently representative of the proposed waste stream.

Environmental Compliance Review

The C4R EH&S Group then compares the material characteristics outlined in the RFD with CMI permits (air and solid waste) and federal, state and local regulations. This determines if the facility can process the profiled waste without violating permits or applicable regulations. During this review, specific processing requirements and handling precautions are identified to maintain environmental compliance.

Health and Safety Review

The EH&S Group analyzes the material in the supplemental waste stream to determine how, or if, they may be safely handled at CMI. Standards established by OSHA, ACGIH and other recognized industrial hygiene and occupational health organizations are used. Specific processing requirements, handling precautions, PPE and IH Monitoring
requirements are then identified to ensure worker and public safety.

Upon successful completion of the Environmental Compliance and Health and Safety Reviews, C4R EH&S will 1) use the Supplemental Waste Request Form ('Yellow Sheet') to communicate the profiled waste stream's acceptability parameters and approval specifications, and 2) send a copy of the RFD, with all environmental and health & safety considerations, to the Facility Manager for the Operations Review.

**If the material is unacceptable from either an environmental or health and safety perspective, the RFD is rejected.**

**Operations Review**

The process ensures that the Facility Manager reviews the RFD and the comments provided by the EH&S Group to determine if the material can be processed at CMI. This review focuses on the logistics and mechanics of safe processing at CMI.

*The Facility Manager makes the final determination of the acceptability of the waste stream based on the facility's capabilities and permits.*

5.) **Worker Health and Safety**

CMI is a Voluntary Protection Program (VPP) Star Site and as such, goes above and beyond Occupational Safety and Health Act (OSHA) regulatory requirements to protect the workforce. CMI has participated in Oregon’s Safety and Health Achievement Recognition Program (SHARP) since 2004 and applied to the VPP in 2007 upon successful completion of the SHARP.

Employees are required to attend monthly safety meetings where training on specific topics is conducted. Some of the programs include respiratory protection, fall protection, emergency preparedness, hearing conservation, etc. In addition, employees attend weekly tailgate meetings. CMI has 45 written safety procedures and 52 job safety analyses. All
employees receive initial training in the requirements of the safety procedures with refresher training during monthly safety meetings or in tailgates.

As of the end of March 2012, CMI has worked over 1000 days since the last recordable injury and has had a total case incident rate of zero for the past two years.

Covanta Marion is highly involved in local safety programs. An employee is a board member of the Oregon SHARP Alliance, a safety and health recognition program that helps other companies in our area improve their safety programs with the goal of becoming a VPP site. CMI has a Special Government Employee who volunteers to help Oregon OSHA perform onsite evaluations of other companies in Oregon that are applying for or recertifying in the VPP program.

CMI participates in several safety events in the area such as Safety Break for Oregon, the Blue Mountain Safety conference, Hauler Safety days, the Governor's Occupational Safety and Health conference, Region X VPPPA conference and the National VPPPA conference.

6.) Economics and Cost-Effectiveness

On September 20, 1984, $57.3 million in tax-exempt revenue bonds and $12.6 million in company equity were issued to finance the building of the CMI facility. The guaranteed construction price was $47.5 million. This was the first WTE project financing to initially use variable rate tax-exempt debt to achieve optimum tipping fees in the first years. The project came in under budget and on time.

CMI operates within budget and often below budget by continually looking for better purchasing opportunities. Comparing operating costs for a similar facility operating in the western United States, operation costs for both CMI and the similar facility are in the range of $62 per ton. The cost of ash disposal for the similar facility is $47 per ton while CMI does not have any costs associated with ash disposal. CMI has $0 debt costs while the similar facility has $9 million in debt costs.

The tipping fee at CMI is set by our client (Marion County) and is currently $67.50 per ton. In 1986 dollars, the fee was higher than surrounding landfills in the area, but over the years tipping fees at other operations have risen (currently at an average of $72 per ton) while remaining stable at this facility. The money generated and paid to the client has funded many recycling programs and has been used for other in-county projects. Marion County Environmental Services is one of the only government agencies that is self-sufficient, largely due to the facility in Brooks.

Covanta Marion has a Supplemental waste program that provides assure destruction of their products and confidential documents. We also provide law enforcement with a means to dispose of evidence in a safe and secure manner. Covanta Marion also processes medical waste and Pharmaceutical waste in a safe and secure manner. These services also provide Covanta and Marion County with additional revenue streams the support Covanta’s and Marion counties bottom line.
7.) Utilization of Equipment/Systems and Technologies

The Marion County Resource Recovery Facility uses two parallel combustion trains, utilizing the Martin Reverse-Reciprocating Stoker technology. The success of the system can be seen by the quality of the resulting ash. The plant has consistently produced ash averaging slightly better than 70 percent reduction by weight of the process tonnage.

Above each grate system is a Zurn Corporation boiler equipped with natural gas burners and lance and stationary rotary soot blowers. These boilers have consistently operated at 67-69 percent efficiency. Annual boiler availability over the life of the facility’s 27 years ranges from 90 to 96 percent with total boiler availability averaging 93 percent.

Steam from the boilers is used to drive a Mitsubishi turbine generator set complete with main condenser, steam jet air ejectors, and oil lubricating system. The rated capacity of the generator is 13.1 MW at 100 percent design conditions. Should the turbine generator set be unable to accept the steam from the boilers, the bypass condenser is capable of condensing 100 percent of the steam generated. Turbine generator availability typically averages around 99 percent.

Flue gases in the boilers are subjected to several pollution control devices designed to remove metals, acid gases, nitrous oxides, and particulate matter prior to the gases being exhausted to the air. A thermal DeNOx system uses aqueous ammonia to remove nitrous oxides without ammonia slip.

A hydrated lime injection system and a spray dryer absorber remove acid gasses such as sulfur dioxide and hydrogen chloride. According to stack testing data, SO2 removal efficiencies are typically in the mid-90 percent removal. We are currently utilizing carbide lime, a byproduct form the chemical industry, as a supplement to our pebble lime which is proving to be a good beneficial use for this byproduct.

A carbon injection system removes mercury vapors, dioxins, and furans. According to stack testing data; mercury removal efficiencies range up to 99 percent. Through recycling and household hazardous waste programs in the County, alternate disposal opportunities are available for mercury containing waste such as batteries, CFLs and thermometers.

At the end of the air pollution controls, baghouse cells remove particulate matter in the flue gas. The fabric filter bughouses remove over 99.9 percent of the particulates, and the opacity readings have been less than 1 percent, compared to the permit limit of 10 percent. We are currently using a new type of filter bag in our unit #1 with the hope of lowering our emissions even further.

Ferrous removal from the ash is achieved in two ways. A grizzly separator removes oversized items larger than 8 inches. The oversized items are further sorted by an operator using a front end loader. Non-ferrous materials are caught in the loader bucket as they vibrate across the Grizzly separator. The system also has the flexibility to pull concrete and tree stumps for recycling, if desired. Ferrous material which vibrates across the grizzly separator falls in a pile and is periodically removed with the loader bucket. The undersized material falls through the grizzly and is conveyed to a combination belt magnet then what is left of smaller material runs through a drum magnet. Ferrous recovery from the ash averages 3.2 percent by weight.
Covanta Marion participates in the Fishing for Energy Program. CMI supplies disposal drop boxes at several Oregon ports providing free disposal of derelict fishing gear that has been collected along our coastlines.
Fishing for Energy launched in 2008 through a partnership among Covanta Energy Corporation, the National Fish and Wildlife Foundation (NFWF), the National Ocean and Atmospheric Administration (NOAA), and Schnitzer Steel Industries, Inc., with the stated goal of providing a cost-free solution to fishermen to dispose of old, derelict (gear that is lost in the marine environment) or unusable fishing gear and to reduce the amount of derelict fishing gear in and around coastal waterways.

Working with Communities, for Communities
The partnership continues to work closely with state and local agencies, community groups, and local ports to install bins at convenient and strategic locations into which fishermen can deposit fishing gear. When these bins fill up, the gear is collected and transported to a nearby Schnitzer Steel facility where the metal (i.e. crab pots, gear rigging) is pulled for recycling, and rope or nets are sheared for easier handling for disposal. From there it is brought to the nearest Covanta Energy-from-Waste (EfW) facility where the gear is converted into clean, renewable electricity for local communities.

Our Strategy
Fishing for Energy works through four strategic areas that seek to establish voluntary removal of derelict gear by fishermen:

1. Prevention: no-cost collection bins at strategic ports for commercial fishermen to unload gear;

2. Direct removal: funding opportunities for the direct removal of derelict fishing gear from the marine environment;

3. Education: through public and targeted media; and

4. Regulation: work with state regulators to address legal impediments of derelict fishing gear removal.

A New Approach to Reducing Marine Debris
The NOAA Marine Debris Program has identified derelict fishing gear as one of the major types of debris impacting the marine environment. Marine debris in general threatens important living marine resources and their habitat, as well as hinders navigational safety. Derelict fishing gear has been known to continue to “fish” commercially valuable species targeted by fishermen and can snag on active...
CMI provides free and safe pharmaceutical waste disposal for the public so pharmaceutical waste is not dumped into our sewer systems that eventually make it into our water systems. This program helps keep our waters free from pharmaceutical contamination.

In past years, several private environmental groups voiced concerns about the facility’s emissions and other environmental media. CMI has always worked with the State regulatory agency, as well as the public to address any concerns brought forth with honesty and facts. In a recent solid waste permitting renewal process, the State regulatory agency received no comments after the permit was placed on public notice, nor did anyone request a hearing on the matter.

CMI opens its doors to the general public for tours so that we can better communicate what we do and how we do it. These tours are very well received. CMI also has several community outreach programs such as sponsorship of the local baseball team, the Powerland Museum, Exhibiting at the Association of Oregon Recyclers (AOR) and Keizer/Salem sustainability conferences and the Willamette University Science Exposition. CMI also produces 80 community service radio announcements annually and actively participates in Marion County Earth Day activities.

CMI is an active member of the Stewardship Action Council, Associated Oregon Industries, Oregon Refuse and Recycling Association, the Salem Chamber of Commerce, Sedcor, AOR, Cascade Employers Association, the National Safety Council, the Voluntary Protection Programs Participants’ Association and has a seat on the Marion County Solid Waste Advisory Board.

**Appearance and Aesthetics**

CMI strives to maintain the grounds and facility in an aesthetically pleasing manner. The property is fully landscaped with trees, rose bushes, and flowering shrubs. CMI has a contracted landscaping company that regularly attends to the grounds. The building is periodically steam cleaned and/or painted. Any garbage spilled or blown onto the grounds is picked up by facility personnel on a regular basis.
9.) Innovation and Creativity

CMI was the first energy from waste facility in the U.S. to be equipped with a scrubber/baghouse (1986). The facility has undergone retrofits over the years to keep up with new technology adding mercury control and NOx control in the mid 90s. We are currently running a pilot study using new filter bag material in our baghouse that will hopefully reduce our emissions even more.

The CMI facility is currently using carbide lime, a waste product of the chemical manufacturing industry, as a scrubber reagent in our quench reactors. We are working on using other liquid wastes beneficially as cooling agents to the quench reactors.

The lime nozzles have been changed to a lighter version costing less money for parts to make them. The old style nozzles needed a purge air blower to run them; the new style does not require a purge air blower saving money on fan up keep and electricity to run the blower 24 hours a day.

Enhanced ferrous recovery - CMI has installed equipment to increase its ferrous metal recovery from 2.8% to 3.2% which equates to an additional 400 tons per year of ferrous recovered from our ash.

CMI’s ash is currently being screened at the monofill site by Marion County and the screened ash is used as daily cover at a local landfill. This is a pilot project with Marion County and DEQ, and if approved, will start a full time operation to mine existing ash to recover metals and use the screened ash as daily cover.

CMI is currently investigating the use of process wastewater to irrigate facility landscaping. This project would significantly reduce wastewater discharges to the Willamette River during the summer months.
Operational Innovations

Added pressure relief valves to the lime distribution header to bleed off excess pressure prior to working on the lime nozzles.

CMI constructed an exhaust fan for the feed chute cover to increase boiler ventilation during maintenance activities. This project reduces the use of the ID fan for this purpose.
CMI installed a lifting beam for use when removing ash discharger plugs.

CMI is installing new larger boiler access doors.
CMI installed motion detector, automatic, energy efficient lighting throughout the facility to light areas when employees enter. These fixtures employ the use of “green” lamps.

The installation of anti-skid treads on all fixed ladders.
Several CMI employees have received awards for their innovative ideas. The following is a partial list.

1. Working on the hopper cameras posed a fall hazard risk because of their elevated location. An employee suggested that the cameras be mounted on swing arms with access doors from the boiler house. The cameras can be maintained without the use of a ladder and without being in close proximity and above the feed chute hoppers.

3. When a tie rod fails on the crane gearbox, the gearbox and motor would tear loose from the torque arm and rip all the wiring and bolts and has caused the gearbox internals to be destroyed. An employee suggested installing a chain attached between the framework of the crane bridge, crane bridge drive motor, and the dead man switch assembly. The system was set up so that if a tie rod fails, the chain stops the motor and gearbox from over rotating and the switch is pulled which cuts the power to the drive motor. This was put to the test and worked as the bolt broke, the chain held the gearbox, and the switch stopped the motor. The crane was up and running within an hour with no major damage. This idea has saved thousands of dollars and hours of downtime.
In order to protect workers below, an employee suggested adding toe boards to the swing gates. The toe board moves with the swing gate when it is opened.
MEMORANDUM

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

To: File

Facility Name: Marion County Solid Waste-to-Energy Facility

Owner of Facility: Covanta/Marion, Inc, P.O. Box 9126, Brooks, OR 97305

Facility Representative: Eileen Tanner, 503 393-0890, Ext. 254

Date Inspected: September 10, 2010, Hugh Gao, PE, Senior Engineer

Project No: 5223

Permit No: 364

September 29, 2010

Summary of Inspection:

The purpose of this inspection was to ensure the site is in compliance with all applicable requirements in the permit.

The entire facility is restricted at the guard house. A sign indicating no public entry allowed is posted to prevent public access to the operation area.

The solid waste tipping floor is clean with all solid waste in the solid waste storage pit. The leachate from the solid waste is collected under the solid waste storage area, and the treatment is managed under the water quality storm water permit. According to Eileen Tanner, representative of the facility, the receiving and storage pit are inspected weekly to verify the integrity of the pit. Medical wastes are delivered in containers, recorded, and conveyed directly from the delivered vehicle into the boiler’s feed chute.
The loading floor of the ash storage building is clean, and there is no excessive ash or recovered metal collected and stored in the area.

Roads and driveways were clean and free from debris. As stated in the operations plan, the received medical wastes are delivered in containers and recorded. Any medical waste containing radioactive materials are isolated. The Oregon Health Division Radiation Control is notified when radioactive materials are discovered. The Permittee follows up with a report to DEQ. There were no infectious wastes stored in the facility during the inspection.

As observed in the inspection, there were no violations noted. The operation of the site complies with the provisions/requirements of Permit #364.