DAN A. GATTIS
County Judge
WILLIAMSON COUNTY, TEXAS

June 16, 2008

Mr. Richard A. Hyde, P.E.
Air Permits Initial Review Team, MC161
Air Permits Division
Texas Commission on Environmental Quality
12100 Park 35 Circle
Austin, TX 78753

RE: Certification Application for Permit by Rule for New Unit
Asphalt Shingle Processing Facility – Williamson County Recycling and Disposal Facility

Dear Mr. Hyde:

Enclosed please find a completed Certification and Registration for Permits for Rule Application for a new unit to be installed and operated at the Williamson County Recycling and Disposal Facility (TCEQ RN225754) located near Hutto, Texas. The new unit is an asphalt shingle processing facility. This registration document follows the outline of TCEQ Form PI-7 Certification and Registration for Permits by Rule (Revised 07/07).

We appreciate your consideration of this application. Williamson County Recycling and Disposal Facility would like to commence operations as soon as possible. If you have any questions pertaining to the application, please contact Leslie Wong of Spirit Environmental at telephone number (281) 664-2880, or JRoy Murray, P.E. of RJR Engineering, Ltd., L.L.P., at telephone number (281) 293-8494.

Sincerely,

Dan A. Gattis
Williamson County Judge

Attachments

Cc: Steve Jacobs, Waste Management
JRoy Murray, P.E., RJR Engineering, Ltd., L.L.P.

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Phone 512.943.1550 Fax 512.943.1662 dgattis@wilco.org

Registration for Permit by Rule 30 TAC 106.261 for Facilities for an Asphalt Shingle Processing Unit

Williamson County Recycling & Disposal Facility

Prepared for:

Williamson County, Facility Owner

For Spirit Environmental, LLC

Leslie Wong

Christopher Allen

May 2008

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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND INFORMATION

On behalf of the Williamson County Recycling and Disposal Facility (the "Landfill"), Williamson County, the Facility Owner (the "Owner") is submitting this Registration in support of the Facility's claim of the Texas Commission on Environmental Quality's ("TCEQ's") Permit by Rule ("PBR") for Facilities published at 30 TAC 106.261 for its proposed Asphalt Shingle Processing Unit (the "Facility"). The Facility will process used asphalt shingle material delivered to the Landfill for disposal into raw material to be recycled into new asphalt shingles. Heat required for processing will be supplied by a heater fired with landfill gas ("LFG") generated by the Landfill, adding a second recycling element to the process and making the Facility a LFG Beneficial Use Facility ("LFGBUF"). LFG is generated as organic materials in a landfill naturally decompose. This process continues throughout the landfill's life and will continue after closure. LFG It consists of approximately 50% methane, 40% carbon dioxide and 10% nitrogen, oxygen and trace organic compounds. Methane is a clean burning fuel that is the primary component (99+%) of natural gas. Methane also is considered to be a significant contributor to global warming and the greenhouse effect when released to the atmosphere as a pollutant. The reduction of methane emissions to the atmosphere by diligent LFG collection and use is an important contributor to the international effort to reduce greenhouse gas emissions and the global warming effect.

Williamson County is proposing this project to provide a beneficial use for some of the LFG the Landfill generates and to allow for recycling of a material that otherwise would be disposed in the Landfill. The use of LFG as a fuel is encouraged by key environmental agencies such as the U.S. EPA. The U.S. EPA's Landfill Methane Outreach Program provides information and encouragement to LFG power projects to promote reductions in methane emissions to the atmosphere and the in the use of fossil fuels to produce energy. The energy that is produced by a "renewable" resource like LFG displaces an equal amount of energy produced from fossil fuels, resulting in

conservation of fossil fuel resources. "Renewable" fuels are those that are replaced as they are used, such as LFG continuously being generated as waste decays, plant matter regrowing after being harvested, sunlight hitting the earth each day and wind blowing across the earth at various times.

This registration is being submitted to TCEQ for approval prior to installation because the Facility will generate more than five tons per year of air emissions. Therefore, a TCEQ PI-7 Form as well as a PBR Applicability Checklist and 106.261 Checklist are attached to this document. Please note that this application is limited to a section 106.261 "Facilities" PBR and does not integrate a section 106.181 "Heater" PBR on advisement of Patricia Martin of TCEQ made on January 23, 2008. In addition, a check for the applicable processing fee of $100.00 is being submitted to the appropriate TCEQ office under separate cover.

In addition to this PBR Registration, the Owner also is submitting to the TCEQ solid waste management section an application for a Type IX Registration by Rule Application in accordance with the TCEQ requirements for permitting of LFGBUF's found at 30 TAC 330.9(k).

1.2 FACILITY LOCATION AND DESCRIPTION

The Landfill is located northeast of the City of Hutto in Williamson County, Texas. A General Location Map is included as Figure 1. A Landfill Gas Beneficial Use Facility (LFGBUF) Relative to Landfill Plan is included as Figure 2 depicting the Landfill permit boundary and the proposed location of the Facility. The acreage of the Landfill's Municipal Solid Waste Permit No. 1405 is 202 acres.

An active landfill gas collection system has been installed in filled areas of the Landfill throughout a portion of the site. As sections fill to capacity, additional portions of the gas collection system are installed. Currently the collected LFG is conveyed to a blower/flare

system for destruction as a waste. After installation of the Facility, a portion of the LFG will be rerouted to the Facility for beneficial use as a fuel. The current blower/flare system will be retained for use combusting LFG in excess of that needed to fuel the Facility.

The proposed location of the Facility is approximately 1,200 feet from the existing LFG blower/flare station within the permitted confines of the Landfill. This will allow for efficient rerouting of LFG from the flare to the Facility, as it is needed as fuel.

The Facility will consist of a hopper, feed screw conveyor that will receive and transport used asphalt shingle material into an agitated and jacketed processor. Hot fluid cycling through the jacket will be supplied by a thermal fluid heater fuelled by LFG. The heater will have a thermal input of about 1.4 million BTUs/hour and an output of 1.2 million BTUs/hour. Depending on the nature of the used shingle material, liquid asphalt may have to be added to create a consistent end product. This "make up asphalt" will be stored in a small holding tank.

Processed material will be discharged via a screw conveyor to a hammermill. VOC's collected from the Facility will be routed to a vapor condenser with a condensate receiver and pump. Any non-condensables passing through the condenser will be routed to dual carbon bed canisters. Each canister will contain approximately 180 pounds of carbon, and will be capable of adsorbing approximately 20 pounds of hydrocarbons. The carbon will absorb any of the hydrocarbon vapors. When regular monitoring via a handheld hydrocarbon analyzer detects that one carbon bed is saturated, the vapor flow will be switched to the other canister as the first canister awaits replacement. At a hydrocarbon concentration of 1,000 ppm and an air/nitrogen flow of 50 cfm, each cannister will operate for about 11 typical eight-hour working days. The small quantities of vapor (some light oils and water) that are evaporated in the processor will be condensed in the vapor condenser and the condensate will be collected in the receiver and pumped to 55-

gallon drums. Condensate will be evaluated and disposed in accordance with its characteristics.

The Facility will operate on a batch basis rather than continuous feed and output, with each batch processing six to ten tons of used asphalt shingles.

LFG will enter the Facility under vacuum from a blower through the inlet pipe to the heater. The LFG used for combustion in the thermal fluid heater will be treated prior to use via compression, dewatering and filtration. Compression will be achieved by the blowers, dewatering by a packaged chiller unit and filtration via a filter unit rated to capture particles to 10 microns. Treatment will remove the majority of the contaminants as well as a large part of the condensate (liquid fraction). Condensate generated within the Facility during LFG dewatering will be pumped from the 55-gallon drums used for collection into a condensate force main to the Landfill's leachate evaporation pond or used in recirculation within the Landfill.

Facility components will operate during regular landfill operating hours, except during planned and unplanned outages. The entire facility is designed to operate by facility personnel including all minor adjustments, monitoring, and routine surveillance being performed by facility personnel. The Facility will not be operated outside the normal working hours. When the Facility heaters and processing units are off-line, all LFG generated by the Landfill will be routed to the flare for combustion.

A process flow diagram for the Facility is included under Attachment A.

1.3 AIR REGULATORY & PERMITTING BACKGROUND

The Facility will be a new operating unit for the Landfill. As such, it has not yet been permitted, constructed or operated. It is not only new to the Landfill, but it is the first of its kind to be designed and constructed by its design company and the first asphalt shingle processor in Texas. The cost of building materials have only recently made

asphalt shingle recycling economically feasible. Therefore, there is no air permitting precedent set for the Facility.

In addition to the TCEQ regulations associated with this PBR, certain other TCEQ and Federal regulations are applicable to the Facility, as follows:

1.3.1 SOURCE STATUS AND PBR ELIGIBILITY

The Facility is located in Williamson County, Texas, which, while it is under and Early Action Compact in regard to ozone pollution, is classified as Attainment for all criteria air pollutants. Therefore, the Facility will not be subject to any Nonattainment-related air emissions restrictions.

As a small, low emitting process, the Facility will not approach the Prevention of Significant Deterioration ("PSD") emissions threshold for any criteria air pollutant, so it will be a minor source for PSD purposes. By the same token, it will emit less than 10 tons per year of any individual Hazardous Air Pollutant ("HAP") and less than 25 tons per year total HAPs, so it will be a minor source of HAP emissions and will not be subject to any of the National Emissions Standards for Hazardous Air Pollutants ("NESHAPs") published at 40 CFR 61.

As a minor source for Nonattainment, PSD, and NESHAPs, the Facility is eligible to claim a PBR pursuant to 30 TAC 106.261 if its emissions profile meets the requirements of the PBR, as discussed in detail herein. Title V coverage does not negatively impact the ability of a Facility to claim a PBR.

1.3.2 NSPS, SUBPART WWW AND MACT, SUBPART AAAA

Subpart WWW of the New Source Performance Standards ("NSPS") published at 40 CFR 60 is known as the "Standards of Performance for Municipal Solid Waste Landfills". This regulation establishes non-methane organic compounds ("NMOC") emission standards for any municipal solid waste landfill that commenced construction,

reconstruction, or modification or began accepting waste on or after May 30, 1991, and which meets certain volume and emissions rates. The Landfill has less than the threshold 50 megagrams of NMOC emissions required for Subpart WWW applicability, so it is not subject to that subpart. However, the Landfill has installed an active landfill gas collection facility, which is technically not required until a landfill is subject to NSPS, to provide for odor control on a practical basis. Because it will serve as one of the LFG control devices for the Landfill, the proposed Facility's status regarding NSPS, Subpart WWW, applicability will be that of the Landfill. So compliance with NSPS, Subpart WWW, requirements is not necessary for the Facility at this time. However, compliance will be required in regard to those specific sections of the NSPS, Subpart WWW, which regulate the control of NMOC emissions should the Landfill ever become an NSPS, Subpart WWW, landfill. In anticipation of eventual NSPS, Subpart WWW, applicability to the Facility, it has been designed to meet the requirements of §60.752(b)(2)(iii)(C), describing NMOC control via LFG treatment prior to reuse as a fuel by routing the LFG to a treatment system prior to using it as a fuel in the heater.

Applicability of NSPS, Subpart WWW, and 40 CFR Part 63 ("MACT" or Maximum Achievable Control Technology), Subpart AAAA – National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills, go hand in hand because they cover the same types of operations at MSW landfills. Because the Landfill of which it is a part is not an affected source under this rule, the Facility also will not be an affected source. However, as with NSPS, Subpart WWW, applicability, the Facility will become subject to the requirements of MACT, Subpart AAAA, at the same time as the Landfill. The primary requirement under MACT, Subpart AAAA, for LFGTE facilities is to develop, implement and maintain a written startup, shutdown, and malfunction plan ("SSMP") according to the provisions in 40 CFR 63.6(e)(3). The Facility will do this should it and the Landfill become subject to MACT, Subpart AAAA, in the future.

2.0 PBR REQUIREMENTS

The Facility, as proposed, will meet all of the general requirements for claiming a PBR, as specified at 30 TAC 106.4, and will meet all of the specific requirements for the PBR for Facilities as specified at 30 TACT 106.261. Following is a detailed assessment of each requirement.

2.1 GENERAL REQUIREMENTS 106.4

The general requirements applicable to all PBR applicants are published at 30 TAC 106.4. Following is a summary of those requirements and descriptions of the means by which the proposed Facility will meet and/or comply with them.

First, Facility emissions must not exceed 250 tons per year of carbon monoxide ("CO") or nitrogen oxides ("NOx"), 25 tons per year of volatile organic compounds ("VOC"), sulfur dioxide ("SOx"), particulate matter 10 microns or under in diameter ("PM_{10}") or any other pollutant other than carbon dioxide, water, nitrogen, methane, ethane hydrogen and oxygen. The Facility's emission profile, described below, meets these standards. See 30 TAC 106.4 (a) (1).

In addition, these emission limits will apply to the emissions of the proposed Facility combined with the Landfill's existing flare emissions because the Landfill has not yet been subject to public notice and comment for air emissions purposes, and the Landfill has permitted its existing flare via a PBR. The combined emissions of the proposed Facility and the Landfill's existing flare meet these standards as well. See 30 TAC 106.4 (a) (4).

Second, a Facility cannot use a PBR if it is a major source or constitutes a major modification under the PSD or Nonattainment standards. As described above, the Facility is a minor source for PSD and is located in a county that is Attainment for a criteria air pollutants. See 30 TAC 106.4 (a) (2, 3 and 8).

Third, a Facility claiming a PBR must comply with applicable NSPS and HAPs provisions. The Facilities compliance with these provisions is described above in section 1.3.2. See 30 TAC 106.4 (a) (6).

Finally, the Facility will comply with the version of the PBR which it is claiming that is in effect when it is constructed, will not circumvent the application of air emissions control regulations via artificial limits, will be operated so as to protect the health and property of the public and will operate pollution control equipment properly and maintain it in good operating condition. See 30 TAC 106.4 (a) (5), (b), (c) and (d).

2.2 FACILITIES (EMISSION REQUIREMENTS) 106.261

The specific requirements applicable to applicants for the Facilties (Emission Requirements) PBR are published at 30 TAC 106.261. Following is a summary of those requirements and descriptions of the means by which the proposed Facility will meet and/or comply with them.

2.2.1. LOCATION REQUIREMENTS

The Facilities (Emission Limitation) PBR is available only to new sources or changes to existing sources located at least 100 feet from any recreational area or any structure not occupied or used only by the Facility owner. Figure A-3 to this application demonstrates that the Facility is located at least 200 feet within the Landfill boundaries. See 30 TAC 106.261 (a)(1).

2.2.2. AVAILABILITY OF OTHER PERMITS

The Facilities (Emission Limitation) PBR is available only to new sources or changes to existing sources for which no other PBR or Standard Permit available from TCEQ. Due to the literally unique nature of the proposed Facility as the first asphalt shingle recycler in the State of Texas and the rare nature of the proposed Facility as a LFG beneficial use project as well, no other PBR or Standard Permit available from TCEQ is applicable to

the Facility. Therefore, the 106.261 PBR is the only means of air permitting available to the Facility short of an individual New Source Review Permit. See 30 TAC 106.261 (b).

2.2.3. EMISSION LIMITATIONS

The Facilities (Emission Limitation) PBR is available only to new sources or changes to existing sources that result in new or increased emissions of 6.0 pounds per hour or 10.0 tons per year or less of a list of common air pollutants published in the PBR at 30 TAC 106.261 (a)(2); in addition, emission of other listed pollutants must be 1.0 pound per hour or less and emissions of yet other listed pollutants published in the PBR at 30 TAC 106.261 (a) (3) are barred completely. The emissions profile for the proposed Facility is provided below in section 3.0, and it demonstrates the compliance of the proposed Facility with these emissions limitations. For ease of reference, the relation of pollutants reported in Section 3.0 are referenced back to the published list on which they occur, if any.

2.2.4. VISIBLE EMISSIONS

The Facilities (Emission Limitation) PBR is available only to new sources and changes to existing sources exhibiting visible emissions, other than those from uncombined water, of 5.0% opacity or less in a six minute period as required by 30 TAC 106.261 (a) (5). The Facility is designed to minimize dust generation by enclosing all but two operations: the feed to the processing system and the exit from the system. These materials entry and exit points will have water suppression available to ensure compliance with the 5.0% opacity requirement.

2.2.5. POLLUTION ABATEMENT

The Facilities (Emission Limitation) PBR is available only to changes to existed sources that do not require any changes or additions of air pollution abatement equipment as required by 30 TAC 106.261 (a) (4). The addition of the Facility will not change the operation or capacity of the Landfill's existing flare, and will not have any impact on the flare's PBR. The addition of the Facility is the addition of a new operating unit, an

Asphalt Shingle Processing Facility, that also serves as a LFG beneficial reuse facility. It is not a LFG destruction-only facility like the existing flare.

2.3 PERMIT FORMS AND FEE INFORMATION

For new sources and changes to existing sources that result in emission increases of give tons per year or more, a claim of the Facilities (Emission Limitation) PBR must be noticed to the TCEQ by submission of a PI-7 Form within 10 days of the installation of the new source or change. This document, which includes a PI-7 Form as well as a PBR General Checklist and Checklist for PBR 106.261, is being submitted prior to installation in order to confirm TCEQ's approval of the use of this PBR for the application at hand. It is the applicant's understanding that approval or comment will be issued by TCEQ within 45 days of submittal.

In keeping with the requirements for PBR agency notification and the proposed Facility owner's standing as a public entity, a fee in the amount of $100.00 is being submitted under separate cover to the appropriate location within TCEQ for proper processing.

3.0 EMISSIONS PROFILE

The emissions from the addition of the proposed Facility are described below and provided in Table 2. The asphalt processing emissions are estimated based on emission factors obtained from the Environmental Protection Agency's (EPA) 5th edition of Compilation of Air Pollution Emission Factors, Volume 1. Stationary Point and Area Sources (AP-42) and Power Flame Incorporated. All calculations are based on a maximum amount of shingles recycled of 48 tons of per hour. Based on conversations with specialist in the asphalt roofing industry, the average content of asphalt contained within roofing shingles is 30%. Thus the amount of asphalt contained in the 48 tons of shingles recycled per hour is on average 14.4 tons. All emission calculations are based on an operating schedule of 2,080 hours per year.

Emissions from the proposed asphalt shingle recycling operations are primarily volatile organic compounds ("VOC") and hazardous air pollutants ("HAP"), but also include particulate matter ("PM") and particulate matter with diameters of 10microns or less ("PM_{10}), and products of combustion including carbon monoxide ("CO"), Nitrogen Oxides ("NO_X"), sulfur dioxide ("SO_2").

3.1 TRANSFER POINT EMISSIONS

The process equipment that will be used to send the roofing shingles from the delivering vehicle to the 10,000 gallon jacketed agitated processor is a hopper combined with a screw conveyor, with a ten ton per hour capacity. The initial transfer point at which at the shingles are transferred from the delivering vehicle to the screw conveyor is left open to the atmosphere, and will be referred to as Transfer Point 1.

Once the asphalt and aggregates have been heated and mixed in the processor, the pliable mixture is then sent through a sizing auger into a size reduction hammer mill and into shipping containers for shipment offsite. The transfer area at which the pliable mixture is sent from the size reduction hammer mill to the shipping containers is open to the

atmosphere and generates emissions and will be referred to as Transfer Point 2.

PM and PM_{10} emissions are generated from the two transfer point areas by the movement of the roofing shingles through the processing area. The emissions that will be generated from the two transfer areas was calculated using emission factors obtained from TCEQ Guidance document RG 058 entitled *Rock Crushing Plants*. The calculations result in slightly higher than expected emissions due to the fact that the shingles will not behave solely as aggregate particulate, however there will be particulate matter generated from the transfer of the singles from the process equipment onto the screw conveyor.

Below are complete emission calculations detailing how the totals outlined in Table 2 for the facilities two transfer areas were calculated. These calculations include emissions due to the transfer to shingles from process equipment to the screw conveyor and from the size reduction hammer mill to the shipment containers. Emission factors from "Conveyor Transfer-Dry" as listed in RG 058 – Rock Crushing Plants for PM and PM10 are 0.0029 and 0.0014 lb/ton respectively. The throughput limits are 48 tons/hour and 100,000 tons/year. Given that on average only 70% of each shingle is aggregate, a control factor of 0.7 was introduced to account for the part of the shingle that is aggregate only.

Emission rate (E) = Emission Factor × Throughput × Control Factor

$$E(PM, \text{hourly}) = \frac{0.0029\ lb}{ton} \times \frac{48\ tons}{hr} \times .7 = 0.097 \text{ lb/hr}$$

$$E(PM, \text{annual}) = \frac{0.0029\ lb}{ton} \times \frac{100{,}000\ tons}{yr} \times \frac{1\ ton}{2000\ lb} \times .7 = 0.1 \text{ tpy}$$

$$E(PM_{10}, \text{hourly}) = \frac{0.0014\ lb}{ton} \times \frac{48\ tons}{hr} \times .7 = 0.047 \text{ lb/hr}$$

$$E(PM_{10}, \text{annual}) = \frac{0.0014\ lb}{ton} \times \frac{100{,}000\ tons}{yr} \times \frac{1\ ton}{2000\ lb} \times .7 = 0.049 \text{ tpy}$$

3.2 HEATER EMISSIONS

A 1.2 MMBtu/hr heater will be utilized at the Facility to transform the used shingle material into a pliable and consistent mass prior to size reduction processing. The landfill

gas fuel heater will emit NO_X, CO, VOC, SO_2, PM, and PM_{10}. Emission factor data from Power Flame Incorporated is included in Attachment C. Emission factor data for natural gas was applied to the LFG fuel used to fire the heater because LFG is 50%+ methane. The effect of using LFG is the consumption of more gas volume with relatively no additional effects because the remainder of the LFG is primarily carbon dioxide that passes through the unit during combustion.

The emissions generated from the operation of the heater were calculated using emission factor data obtained from Power Flame Incorporated. Below are complete emission calculations detailing how the totals listed in Table 2 for the facilities proposed burner were determined. These calculations include emissions due to the operation of the 1.2 MMBtu/hr heater fuel by landfill gas. Emission factors for "Natural Gas Emission Product" from Combustion in the heater for the thermal fluid, as listed in data obtained from Power Flame Incorporated, are: 0.037 lb per 10^6 Btu input CO, 0.0048 lb per 10^6 Btu input PM, 0.025 lb per 10^6 Btu input VOC, 0.092 lb per 10^6 Btu input NO_X, and (1.05) x (% S in LFG) lb per 10^6 Btu input SO_2, respectively.

Emission rate (E) = Emission Factor × Burner Capacity

$$\text{E(CO, hourly)} = \frac{0.037\ lb}{MMBtu} \times \frac{1.2\ MMBtu}{hr} = 0.044 \text{ lb/hr}$$

$$\text{E(PM, hourly)} = \frac{0.0048\ lb}{MMBtu} \times \frac{1.2\ MMBtu}{hr} = 0.0058 \text{ lb/hr}$$

$$\text{E(VOC, hourly)} = \frac{0.025\ lb}{MMBtu} \times \frac{1.2\ MMBtu}{hr} = 0.030 \text{ lb/hr}$$

$$\text{E(NOX, hourly)} = \frac{0.052\ lb}{MMBtu} \times \frac{1.2\ MMBtu}{hr} = 0.062 \text{ lb/hr}$$

$$\text{E(CO, annual)} = \frac{0.037\ lb}{MMBtu} \times \frac{1.2\ MMBtu}{hr} \times \frac{4000\ hr}{yr} \times \frac{1\ ton}{2000\ lb} = 0.09 \text{ tpy}$$

$$\text{E(PM, annual)} = \frac{0.0048\ lb}{MMBtu} \times \frac{1.2\ MMBtu}{hr} \times \frac{4000\ hr}{yr} \times \frac{1\ ton}{2000\ lb} = 0.01 \text{ tpy}$$

$$\text{E(VOC, annual)} = \frac{0.025\ lb}{MMBtu} \times \frac{1.2\ MMBtu}{hr} \times \frac{4000\ hr}{yr} \times \frac{1\ ton}{2000\ lb} = 0.06 \text{ tpy}$$

$$\text{E(NOX, annual)} = \frac{0.052\ lb}{MMBtu} \times \frac{1.2\ MMBtu}{hr} \times \frac{4000\ hr}{yr} \times \frac{1\ ton}{2000\ lb} = 0.12 \text{ tpy}$$

3.3 VOC & HAP EMISSIONS

Hazardous air pollutants will be generated at the Facility from the heated asphalt that will be present in the Facilities 10,000 gallon jacketed processer and routed through the Facility's sizing auger and size reduction hammer mill. The emissions generated by the heated asphalt will be routed through a manually reset carbon bed filtration system with a VOC removal efficiency of 95%. In order to classify the HAP's generated by heating roofing shingles, emission factors from AP-42 section 11.1 for organic pollutants, specifically those associated with natural gas-fired dryer with fabric filter, were compared with emission factors for VOCs generated via the same process. A comparison was done whereby the emission factors for each organic pollutant outlined in section 11.1 was compared to the emission factor for VOCs to generate the percentage of organic pollutants that comprise the total VOC emissions from the asphalt recycling process. The calculated percentages of specific organic pollutants, those outline in the MSDS for roofing grade asphalt provided by the Karmak Corporation, are provided in Table 1 on the following page.

Tank calculations have been based on the information obtained from the client. The rationale for the tank transfer emissions and breathing emissions are explained in Section 7.1 Organic Liquids Storage Tanks of AP-42. The vapor pressure for roofing grade asphalt, 10.0 mmHg at 200°C (0.2 psia), was obtained from an MSDS provided by the Karmak Corporation. For tank calculations temperature data for Austin, Texas was used due to the proximity of the Facility. The daily average surface temperature for the 10,000 gallon tank using meteorological data for the Austin area was determined to be 70.6°F. A tabulation of the annual VOC calculated emission results can be found in the five page printout from TANKS 4.09B, which is located in Attachment C. Only the heated scenarios are included in Attachment C, since the tank at the Facility will be jacketed by hot oil that is heated at the facilities heater. The resulting calculated annual VOC emissions that will be routed through the facilities carbon filtration system, for the 10,000 gallon jacketed tank were 5,556.17 lb/year or 2.78 tpy. Likewise the calculated hourly

VOC emissions for the jacketed tank were 2.67 lb/hr. As previously stated the manually reset carbon bed filtration system will have a VOC removal efficiency of 95%. This will reduce the VOC emission resulting from the jacketed tank to 0.14 tpy and 0.13 lb/hr.

Table 1 - Hazardous Air Pollutant Emission Factors for Asphalt

Chemical	CAS #	Emission Factor (lb/ton)	Percent Composition
2-Methylanphthalene	91-57-6	7.4×10^{-5}	0.17%
Acenaphthene	83-32-9	1.4×10^{-6}	0.0032%
Acenaphthylene	208-96-8	8.6×10^{-6}	0.020%
Anthracene	120-12-7	2.2×10^{-7}	0.0005%
Benzo(a)anthracene	56-55-3	2.1×10^{-7}	0.00048%
Benzo(a)pyrene	50-32-8	9.8×10^{-9}	0.000022%
Benzo(b)fluoranthene	205-99-2	1.0×10^{-7}	0.00023%
Benzo(e)pyrene	192-97-2	1.1×10^{-7}	0.00025%
Benzo(g,h,i)perylene	191-24-2	4.0×10^{-8}	0.000091%
Benzo(k)fluoranthene	207-08-9	4.1×10^{-8}	0.000093%
Chrysene	218-01-9	1.8×10^{-7}	0.00041%
Fluoranthene	206-44-0	6.1×10^{-7}	0.0014%
Fluorene	86-73-7	3.8×10^{-6}	0.0086%
Indeno(1,2,3-cd)pyrene	193-39-5	7.0×10^{-9}	0.000016%
Naphthalene	91-20-3	9.0×10^{-5}	0.20%
Perylene	198-55-0	8.8×10^{-9}	0.000020%
Phenanthrene	85-01-8	7.6×10^{-6}	0.017%
Pyrene	129-00-0	5.4×10^{-7}	0.0012%
Total HAPs			0.426%

Emissions will also be generated from the transfer of the heated asphalt and aggregate pliable mass through the sizing auger and finally through the size reduction hammer mill to the shipping containers. While this process is entirely contained, with the exception of the transfer point from the size reduction hammer mill to the shipping containers, the pliable mass will still be warm enough to generate VOC emissions that will be routed through the carbon filtration system. To calculate a 'worst case' emission scenario resulting from the transfer of a pliable asphalt mixture an equation published in the document titled 'Estimating Releases and Waste Treatment Efficiencies for the Toxic

Chemical Release Inventory from EPA 560/4-888-002' was used to determine what the average maximum hourly and annual emissions that would be generated from this transfer process. In order to determine the emissions from a pliable mass of asphalt, the molecular weight of asphalt is needed. Since asphalt can have a wide range of molecular weights ranging from several hundred to several thousand lb/lb mole it was conservatively chosen that the asphalt that would be recycled at the facility would be on average 1,000 lb/lb mole. The maximum vapor pressure of the pliable asphalt that would be transferred will be 0.2 psia, while the area of the pliable mass for this scenario is considered to be 4 ft^2. The absolute temperature of the mass during the transfer operation will conservatively be 150°F (610°R). Below are the detailed calculations for the hourly and annual emissions from the transferring of the pliable asphalt mass to the receiving shipment containers.

$$W\left(\frac{lb}{hr}\right) = \frac{M\left(\frac{lb}{lb-mole}\right) \times A(ft^2) \times P(psia) \times K\left(\frac{ft}{sec}\right) \times 3600\left(\frac{sec}{hr}\right) \times (1-C_F)}{R\left(\frac{psia\ ft^3}{°R\ lb-mole}\right) \times T_1(°R)}$$

Where A is the area of the asphalt mass, P is the vapor pressure of the asphalt, M is the molecular weight of the asphalt, K is the gas-mass transfer coefficient, R is the gas constant, T_1 is the absolute temperature of the solution in degrees Rankin, and CF is the control efficiency of the carbon filtration system.

$$W\left(\frac{lb}{hr}\right) = \frac{1000\left(\frac{lb}{lb-mole}\right) \times 4\,(ft^2) \times 0.2\,(psia) \times \left(\frac{0.011479}{\sqrt[3]{1000}}\right)\left(\frac{ft}{sec}\right) \times 3600\left(\frac{sec}{hr}\right) \times (1-.95)}{10.73\left(\frac{psia\ ft^3}{°R\ lb-mole}\right) \times 610\,(°R)}$$

$$W\left(\frac{lb}{hr}\right) = \mathbf{0.03}\ \frac{lb}{hr}\ \text{'Hourly'}$$

$$W_A\,(tpy) = \left(\frac{0.505\ lb}{hr}\right) \times \left(\frac{8\ hours}{day}\right)\left(\frac{5\ days}{week}\right) \times \left(\frac{52\ weeks}{year}\right) \times \left(\frac{1\ ton}{2000\ lb}\right)$$

$$W_A\,(tpy) = \mathbf{0.03\ tpy}\ \text{'Annual'}$$

3.4 EMISSIONS SUMMARY

Table 2 - Sitewide Emission Totals			
		Annual (tpy)	Hourly (lb/hr)
Transfer Point Emissions			
Transfer Point 1	PM	0.10	0.097
	PM_{10}	0.05	0.047
Transfer Point 2	PM	0.10	0.097
	PM_{10}	0.05	0.047
Heater			
	CO	0.09	0.044
	PM	0.01	0.006
	VOC	0.06	0.03
	NO_X	0.06	0.062
	SO_2		
Storage Tank			
	VOC	0.13	0.140
	HAPs	0.01	0.010
Processor & Size Reduction Unit			
	VOC	0.03	0.030
Sitewide Totals			
	PM	0.21	0.200
	VOC	0.22	0.200
	HAP	0.01	0.010
	NO_X	0.06	0.030
	CO	0.09	0.044
	SO_2		

4.0 ATTACHMENTS

A. Figures – Maps and Drawings

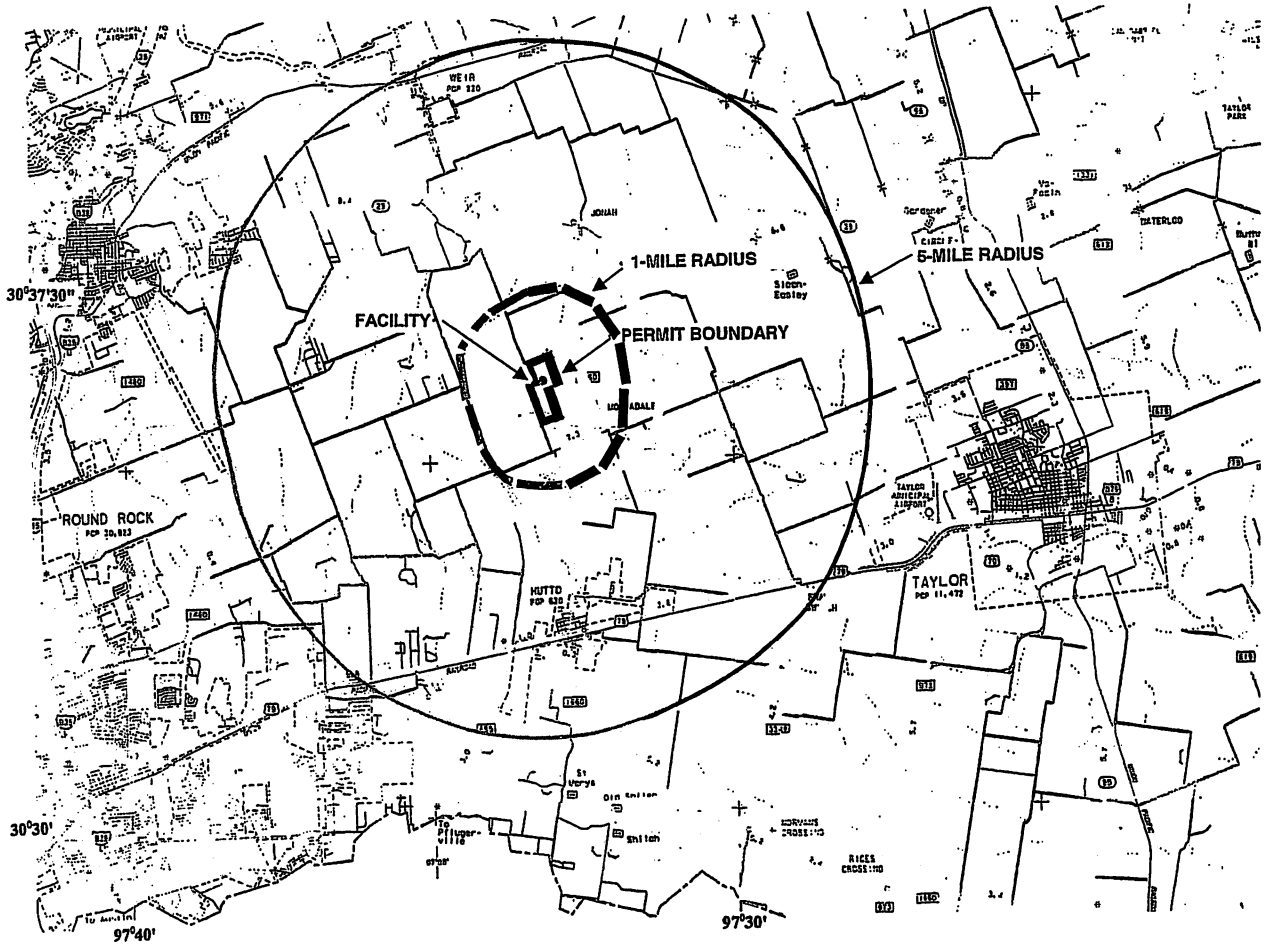
B. TCEQ Forms

C. Copy of Fee Check and Cover Letter

D. Supporting Data

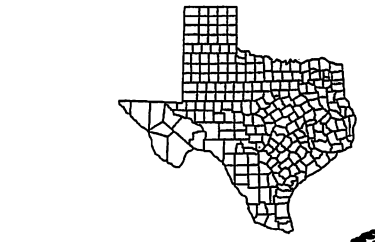
ATTACHMENT A

Figures: Maps and Drawings



LEGEND

- PERMIT BOUNDARY
- 1-MILE RADIUS FROM PERMIT BOUNDARY
- 5-MILE RADIUS FROM PERMIT BOUNDARY
- LANDFILL GAS BENEFICIAL USE FACILITY
  ASPHALT SHINGLE PROCESSING UNIT



KEY TO COUNTIES

SCALE IN MILES

STATE OF TEXAS
JAMES R. MURRAY III
73860
REGISTERED
PROFESSIONAL ENGINEER
4/15/08

REV.	DESCRIPTION	BY	APP	DATE

BASE MAP: TXDOT 2000 GENERAL HIGHWAY MAP
WILLIAMSON COUNTY, TEXAS

THIS DRAWING IS INTENDED FOR PERMIT PURPOSES ONLY AND IS NOT INTENDED FOR BIDDING OR CONSTRUCTION.

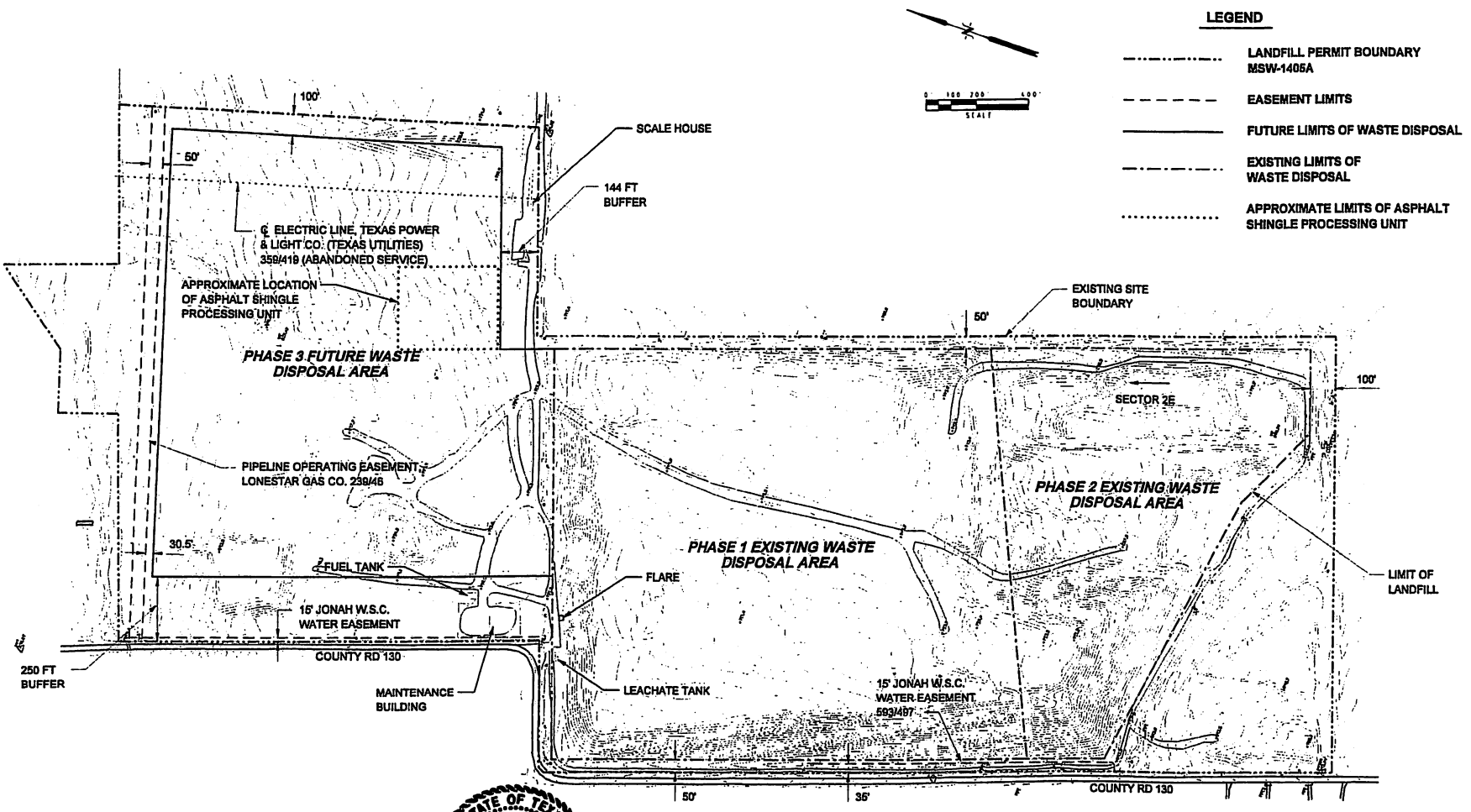
RJR ENGINEERING

April 2008
Project: 10121
File: fig1.dgn

WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILTY
TYPE IX REGISTRATION BY RULE
LANDFILL GAS BENEFICIAL USE FACILTY-ASPHALT
SHINGLE PROCESSING UNIT
NEAR HUTTO, WILLIAMSON COUNTY, TEXAS.

GENERAL LOCATION MAP FIGURE 1

\CADD\10121\cadd\fig1.dgn Apr 16 2008 14:55:21



NOTE:

PHASE 1 AND PHASE 2 CURRENTLY CONTAIN WASTE. ASPHALT SHINGLE PROCESSING UNIT WILL EITHER BE RELOCATED OR CLOSED PRIOR TO CONDUCTING WASTE DISPOSAL OPERATIONS AT ITS CURRENT LOCATION. TCEQ APPROVAL WILL BE OBTAINED PRIOR TO ANY RELOCATION.

STATE OF TEXAS
JAMES R. MURRAY III
73860
REGISTERED
PROFESSIONAL ENGINEER
4/15/08

REV.	DESCRIPTION	BY	APP	DATE

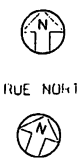
RJR ENGINEERING

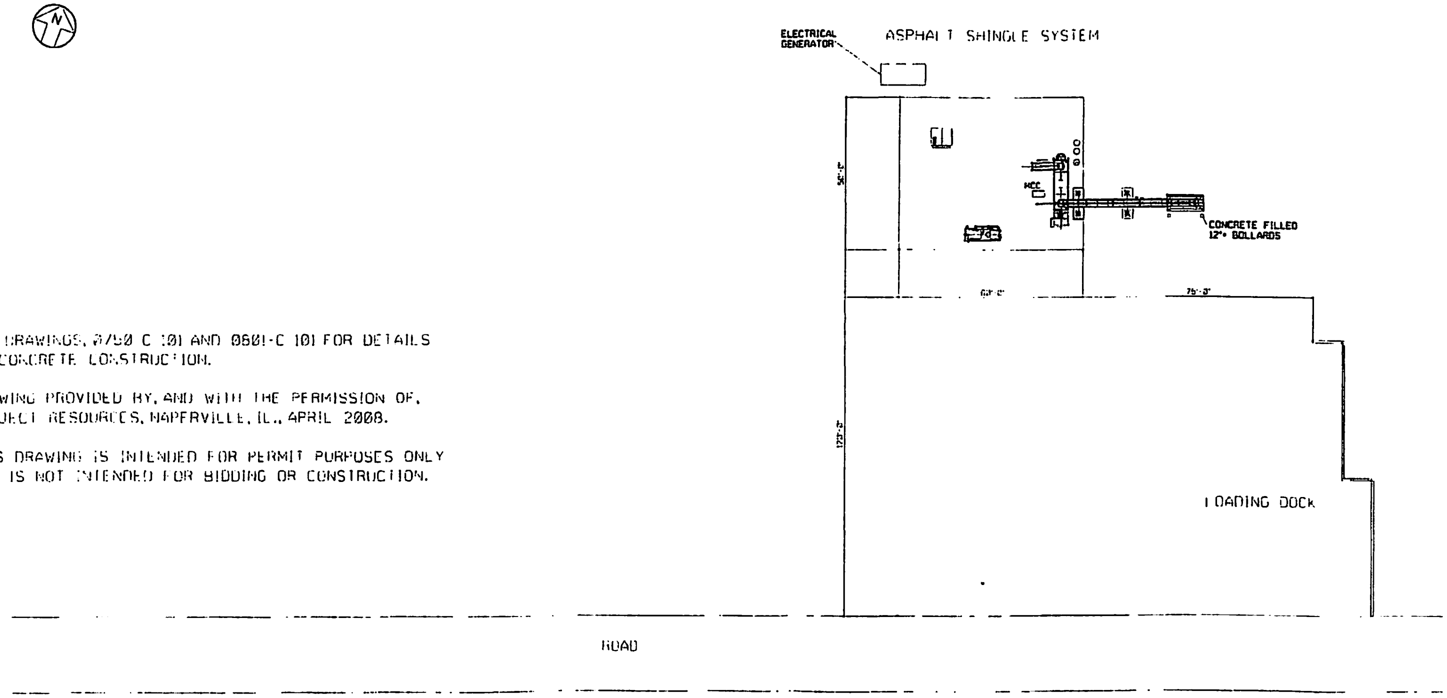
April 2008
Project: 11504
File: siteplan.dgn

WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILTY
TYPE IX REGISTRATION BY RULE
LANDFILL GAS BENEFICIAL USE FACILTY-ASPHALT
SHINGLE PROCESSING UNIT
NEAR HUTTO, WILLIAMSON COUNTY, TEXAS.

SITE PLAN

FIGURE 2





NOTES:

1. SEE DRAWINGS 0750-C-101 AND 0601-C-101 FOR DETAILS ON CONCRETE CONSTRUCTION.
2. DRAWING PROVIDED BY, AND WITH THE PERMISSION OF, PROJECT RESOURCES, NAPERVILLE, IL., APRIL 2008.
3. THIS DRAWING IS INTENDED FOR PERMIT PURPOSES ONLY AND IS NOT INTENDED FOR BIDDING OR CONSTRUCTION.

STATE OF TEXAS
JAMES R. MURRAY III
73860
REGISTERED PROFESSIONAL ENGINEER
4/15/08

REV.	DESCRIPTION	BY	APP	DATE

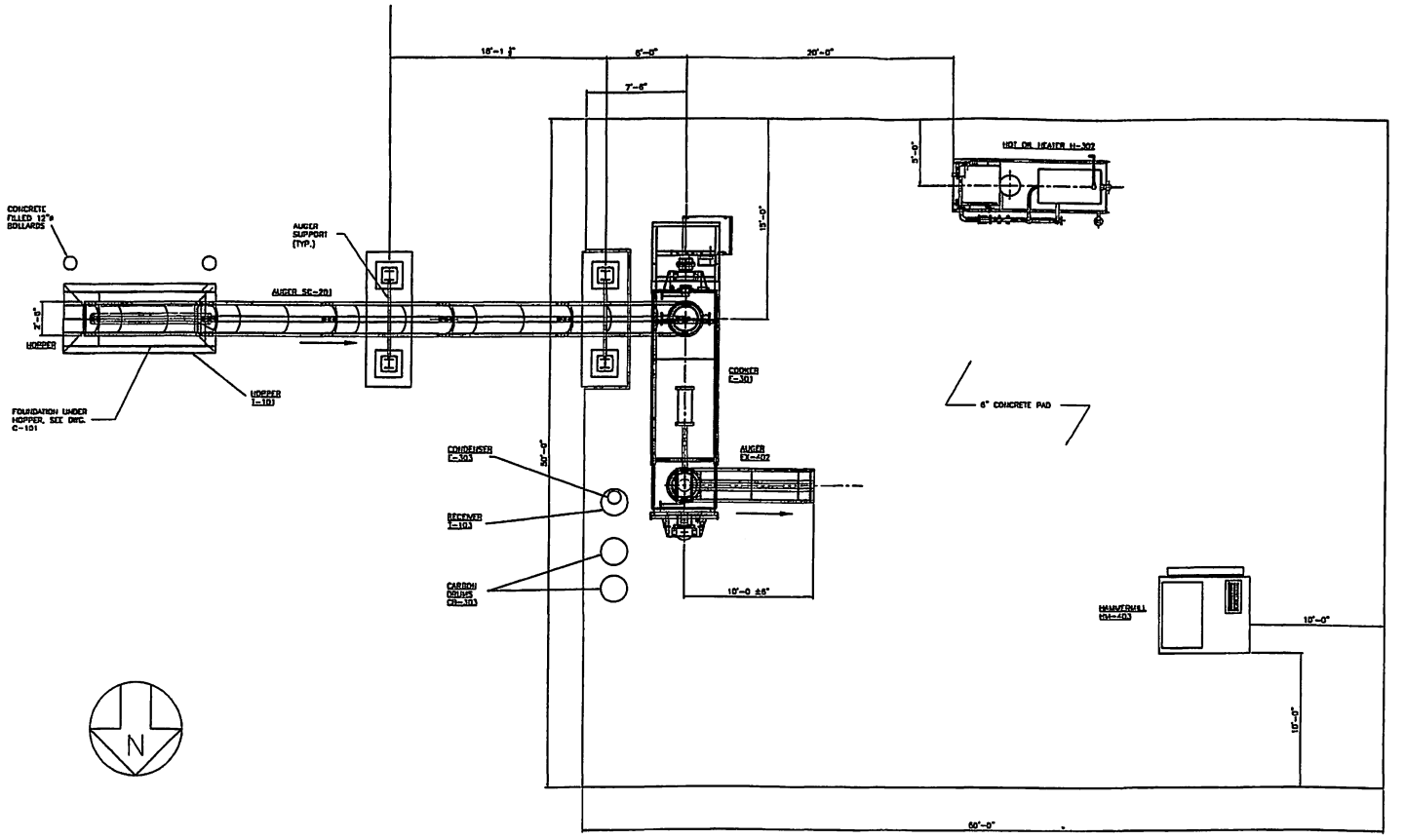
RJR ENGINEERING

April 2008
Project: 11504
File: foc-ap3.dgn

WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILTY
TYPE IX REGISTRATION BY RULE
LANDFILL GAS BENEFICIAL USE FACILTY-ASPHALT
SHINGLE PROCESSING UNIT
NEAR HUTTO, WILLIAMSON COUNTY, TEXAS.

FACILITY SITE PLAN

FIGURE 3



GENERAL ARRANGEMENT PLAN

SCALE: 1/4"=1'-0"

1/CONC PTG AS NOTED

0 2" 4" 6" 8" 10" 12"

STATE OF TEXAS
JAMES R. MURRAY III
73860
REGISTERED PROFESSIONAL ENGINEER
4/15/08

REV.	DESCRIPTION	BY	APP	DATE

NOTE:

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RJR ENGINEERING

April 2008
Project: 11504
File: fig4.dgn

WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILTY
TYPE IX REGISTRATION BY RULE
LANDFILL GAS BENEFICIAL USE FACILTY-ASPHALT
SHINGLE PROCESSING UNIT
NEAR HUTTO, WILLIAMSON COUNTY, TEXAS.

GENERAL ARRANGEMENT PLAN FIGURE 4

\CADD\11211\cadd\fig4.dgn Apr 15, 2008 16:30:06

H-101
HOPPER
C.S. CONSTRUCTION
3 CU. YD. CAPACITY

SC-201
SCREW CONVEYOR
18 TON/HOUR CAPACITY
VFD 60 HP DRIVE

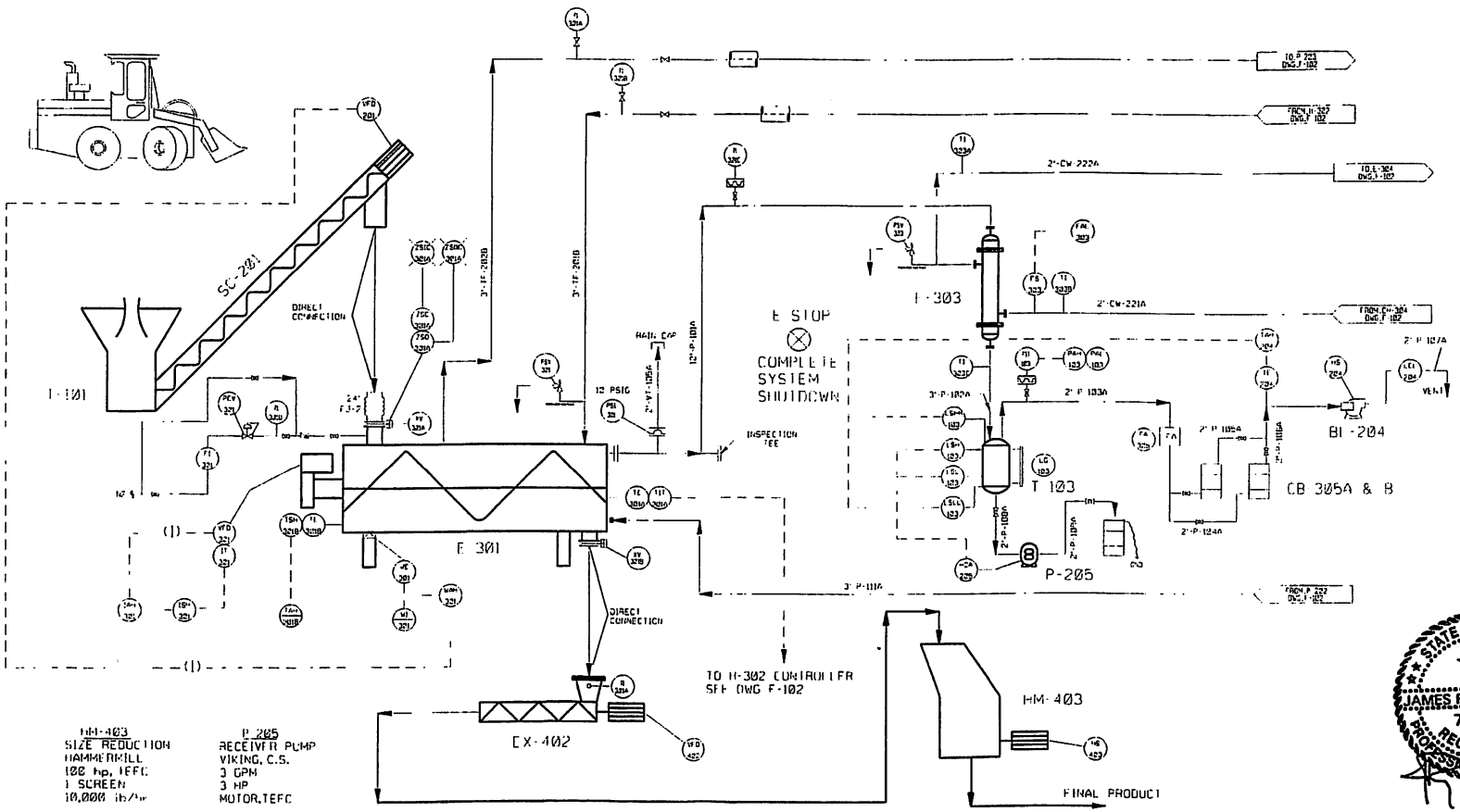
E-301
JACKETED AGITATED PROCESSOR
C.S. CONSTRUCTION
75 hp MOTOR
JACKET ASME CODE 60PSIG @ 650F
INTERNAL 15 PSIG@ 650•F

EX-402
SIZING AUGER
75 hp, VFD
C.S. CONSTR
10,000 lb/hr

E-303
CONDENSER
180 sq/ft
304 S/S TUBES
150 PSIG@ 350•F

T-103
RECEIVER
50 GAL
C.S. CONSTR
14.5 PSIG/FV

BL-204
BLOWER
CS CONSTRUCTION
1 HP, IEFC MOTOR
50 CFM @5 S.P.



CB-305A & B
ACTIVATED CARBON BED
55 GAL DRUMS

HM-403
SIZE REDUCTION HAMMERMILL
100 hp, TEFC
1 SCREEN
10,000 lb/hr

P-205
RECEIVER PUMP
VIKING, C.S.
3 GPM
3 HP
MOTOR, TEFC

STATE OF TEXAS
JAMES R. MURRAY III
73860
REGISTERED PROFESSIONAL ENGINEER
4/15/08

NOTES:

1. SEE DRAWINGS, 0750 C 101 AND 0801 C-101 FOR DETAILS ON CONCRETE CONSTRUCTION.
2. DRAWING PROVIDED BY, AND WITH THE PERMISSION OF, PROJECT RESOURCES, NAPERVILLE, IL., APRIL 2008.
3. THIS DRAWING IS INTENDED FOR PERMIT PURPOSES ONLY AND IS NOT INTENDED FOR BIDDING OR CONSTRUCTION.

REV.	DESCRIPTION	BY	APP	DATE

RJR ENGINEERING

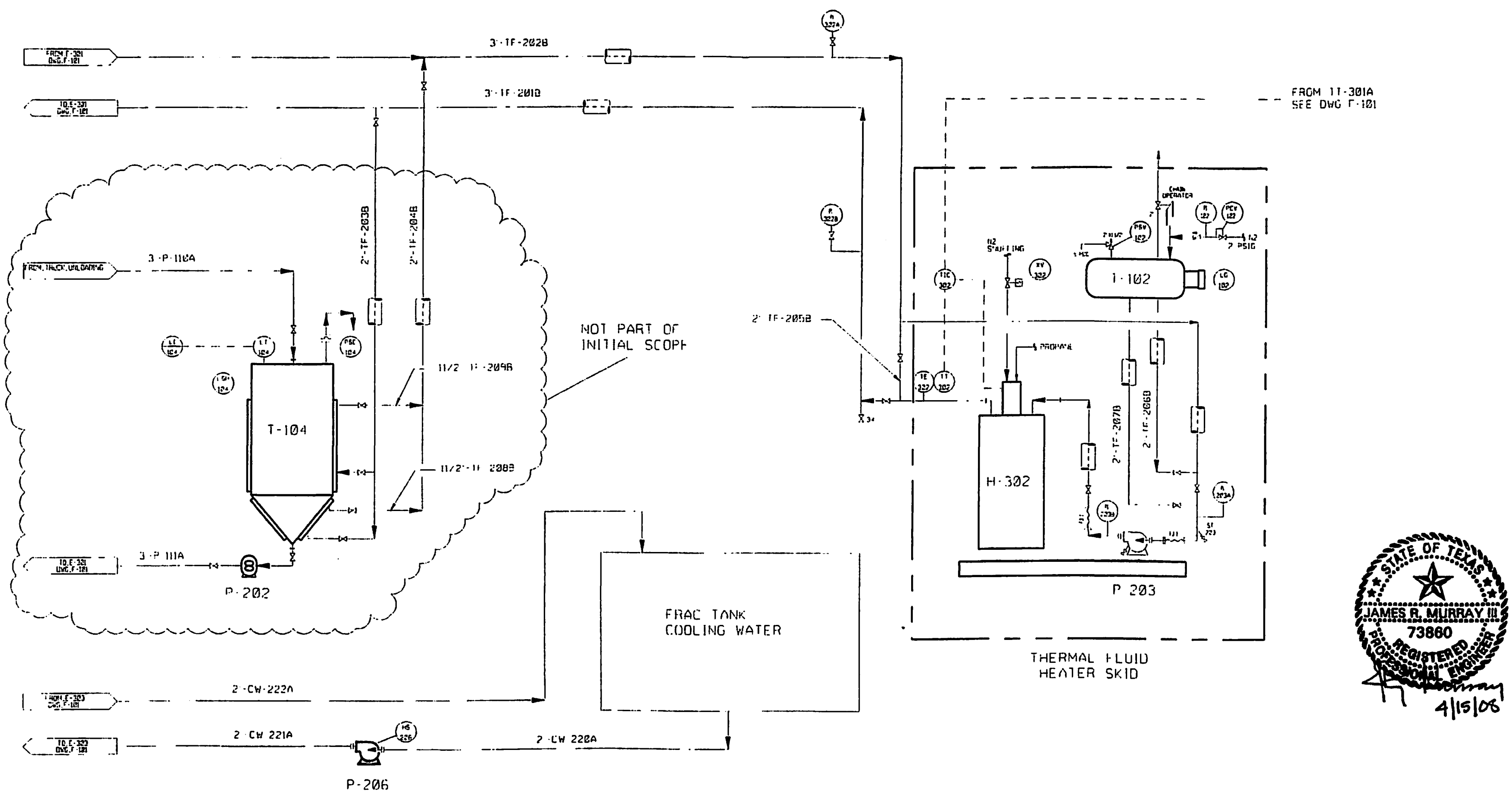
April 2008
Project: 11504
File: pro-sys5.dgn

WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILTY
TYPE IX REGISTRATION BY RULE
LANDFILL GAS BENEFICIAL USE FACILTY-ASPHALT SHINGLE PROCESSING UNIT
NEAR HUTTO, WILLIAMSON COUNTY, TEXAS.

PROCESSING SYSTEM FIGURE 5

\CADD\10121\cadd\pro-sys5.dgn Apr 09 2008 09:26:27

T-104	P-202	P-206	CH-304	H-302	P-203	T-102
10,000 GAL JKID TANK C.S. CONSTRUCTION	LOADING PUMP VIKING, C.S. 100 GPM 5 HP MOTOR,TEFC	COOLING WATER PUMP GOULD, D.I. 100 GPM 3 HP MOTOR,TEFC	PACKAGED CHILLER 10 TONS CAPACITY GLYCOL COOLANT	PROPANE FIRED HEATER 1,200,000 B/hr PUMP + EXPANSION TANK INCLUDED	HEATER SUPPLY PUMP 150 GPM @ 55' C.S. CONSTR. SINGLE MECH. SEAL	EXPANSION TANK C.S. CONSTR.



NOTES:

1. SEE DRAWINGS, 0750 C-101 AND 0801-C-101 FOR DETAILS ON CONCRETE CONSTRUCTION.
2. DRAWING PROVIDED BY, AND WITH THE PERMISSION OF, PROJECT RESOURCES, NAPERVILLE, IL., APRIL 2008.
3. THIS DRAWING IS INTENDED FOR PERMIT PURPOSES ONLY AND IS NOT INTENDED FOR BIDDING OR CONSTRUCTION.

REV.	DESCRIPTION	BY	APP	DATE

RJR ENGINEERING

April 2008
Project: 11504
File: pro-sys6.dgn

WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILTY
TYPE IX REGISTRATION BY RULE
LANDFILL GAS BENEFICIAL USE FACILTY-ASPHALT
SHINGLE PROCESSING UNIT
NEAR HUTTO, WILLIAMSON COUNTY,TEXAS.

PROCESSING SYSTEM

FIGURE 6

\CADD\10121\cadd\pro-sys6.dgn Apr. 09, 2008 00:41:34

ATTACHMENT B

TCEQ Forms and Fee Check

Texas Commission on Environmental Quality
Form PI-7-CERT
Certification and Registration for Permits by Rule

Overview:

Facilities that may release air contaminants, even in small amounts, are regulated by the Texas Commission on Environmental Quality (TCEQ) under its air permit rules. Facilities that do not emit a "significant" amount of air contaminants (as defined by rules) may claim a Permit by Rule (PBR) prior to constructing a new facility or making changes to an existing facility. A PBR claim must meet both the general and specific requirements in Title 30 Texas Administrative Code Chapter 106 (**30 TAC Chapter 106**), but does not require an extensive technical review. The TCEQ also has a Reference Table available to assist you in determining some of the other state or federal requirements you may need to know (see, "How to Contact the TCEQ" below for web sites).

This form should only be used if, along with a PBR registration, a facility or site needs to establish a federally enforceable emission limit. If certification and federally enforceable emission limits are not needed, use Form PI-7, "Registration for Permit by Rule." If a facility meets an historical Standard Exemption, meets a Standard Permit, or is otherwise authorized by a permit action, but needs to establish a federally enforceable limit, the Form APD-CERT, "Certification of Emission Limits" (not the PI-7-CERT) should be used.

A PBR may be claimed when both the following conditions are met;

1. the facility meets **all** applicable eligibility requirements of **30 TAC § 106.4**. These requirements include a limit on the amount of annual emissions to less than federal permit major source levels, and continuing compliance with all state and federal regulations; and

2. the facility meets **all** applicable conditions of one or more individual PBRs contained in **30 TAC Chapter 106**. These requirements may specify design requirements for certain facilities, production or material use limits, and operational restrictions.

A PBR may also have federally enforceable emission limits if one of the following is applicable:

1. Prevention of Significant Deterioration (PSD) or Non attainment (NA) review requirements applies to the use of any new authorization at the site. This certification will determine whether netting of the project is required, or when netting is performed.

2. The owner or operator wants to voluntarily establish federally enforceable emission limits for air pollutants below those allowed in 30 TAC Chapter 106 regulations so that the site can be considered minor for the Federal Operating Permit (Title V) program.

3. The facilities want to establish federally enforceable emission limits for hazardous air pollutants (HAPs) so that the entire site is not subject to Maximum Achievable Control Technology (MACT) standards (40 CFR 63). This form should not be used to limit individual emission units solely to avoid a MACT requirement where other units at the site are still subject to any MACT standards.

4. The owner or operator wants to voluntarily establish federally enforceable emission limits for other state and federal rules or standards for the facilities authorized under PBR.

To claim a PBR, you should;

1. read the requirements of **30 TAC § 106.4** and the specific PBR you want to claim;

2. determine if the facility meets all the eligibility requirements of **30 TAC § 106.4**;

3. determine if the facility meets all the applicable requirements of the specific PBR;

4. begin construction immediately if the facility meets the requirements of **30 TAC § 106.4** and the PBR does not require registration;

5. begin construction when the Form PI-7 and attachments are submitted to the TCEQ if the PBR requires registration, but does not require site approval; or

6. do not begin construction until you are notified by the TCEQ if the specific PBR requires registration and written site approval. If you are already operating, you still need air authorization. You should begin steps to seek an authorization as soon as you become aware that this requirement applies to you.

Question	Who	Phone	Web
TCEQ PBR Rules	Air Permits Division	(512) 239-1250	www.tceq.state.tx.us/nav.rules/rules_rulemaking.html or www.tceq.state.tx.us/permitting/central_registry/guidance.html
Revenue Section	Financial Administration	(512) 239-6260	TCEQ (Mail Code 181) P.O. Box 13087 Austin, Texas 78711-3087
Core Data Form Requirements	Central Registry	(512) 239-5175	www.tceq.state.tx.us/permitting/central_registry/guidance.html
Form PI-7 Requirements	Air Permits Division	(512) 239-1250	www.tceq.state.tx.us/nav/permits/air_permits.html
Receipt and Initial Review	Air Permits Initial Review Team (APIRT)	(512) 239-1250	www.tceq.state.tx.us/nav/data/permit_data.html
PBR Guidance and Checklists	Air Permits Division	(512) 239-1250	www.tceq.state.tx.us/nav/permits/air_permits.html
Confidential Information	Office of Legal Services	Written Requests	TCEQ (Mail Code 173) P.O. Box 13087 Austin, Texas 78711-3087
Emissions Cap and Trade Program	Banking & Trading Team, Air Permits Division	(512) 239-1255	www.tceq.state.tx.usnav/permits/air_permits.html
Federal Operating Permits	Operating Permit Section Air Permits Division	(512) 239-1250	www.tceq.state.tx.us/nav/permits/air_permits.html
Small Business Assistance	Small Business and Local government Assistance	(800) 447-2827	www.tceq.state.tx.us/assistance/sblga.html

Texas Commission on Environmental Quality
Form PI-7-CERT
Certification and Registration for Permits by Rule

I. REGISTRANT INFORMATION

A. TCEQ Customer Reference Number:	CN- 600897888	TCEQ Regulated Entity Number:	RN- 225754

Note: If "NO," CN or RN number was entered above; please fill out the required Core Data Form, which will be available in Step II of the submittal process.

B. Company or Other Legal Customer Name: Williamson County Recycling and Disposal Facility			
Company Official Contact Name: James Smith		Title: Landfill Manager	
Mailing Address: 301 S.E. Inner Loop, Suite 109			
City: Georgetown		State: Texas	Zip Code: 78626
Phone No.: 512-943-1550	Fax No.: 512-272-9370	E-mail Address: Jsmith18@wm.com	
C. Technical Contact Name: Leslie Wong			
Company: Spirit Environmental			
Mailing Address: 17350 SH 294, Suite 249			
City: Houston		State: Texas	Zip Code: 77064
Phone No. : 281-664-2880	Fax No.: 281-664-2841	E-mail Address: lwong@spiritenv.com	
D. Facility Location Information - Street Address: 600 County Road 128			
If "NO," street address, provide written driving directions to the site: (attach description if additional space is needed)			
City: Hutto	County: Williamson		Zip Code: 78634

II. FACILITY AND SITE INFORMATION

A. Name and Type of Facility: Asphalt Shingle Recycling System			☑ Permanent ☐ Portable
B. PBR claimed under **30 TAC § 106** *(List all)*:			
§ 106. **261 Facilities (Emission Limitations)**		§ 106. **PBR claimed under 30 TAC § 106**	
§ 106. **PBR claimed under 30 TAC § 106**		§ 106. **PBR claimed under 30 TAC § 106**	
§ 106. **PBR claimed under 30 TAC § 106**		§ 106. **PBR claimed under 30 TAC § 106**	
Are you claiming a **historical standard exemption or PBR**?			☑ YES ☐ NO
If "YES," enter effective date and Rule Number:	30 TAC 106.261	11/1/2003	
C. Is there a previous Standard Exemption or PBR for the facility in this registration? (Attach details regarding changes)			☐ YES ☑ NO
If "YES," enter Registration Number and Rule Number:			
D. Are there any **other facilities** at this **site** which are **authorized by an Air Standard Exemption or PBR**?			☑ YES ☐ NO
If "YES," enter Registration Number and Rule Number:		106.492	
E. Are there any **other air preconstruction permits** at this site?			☑ YES ☐ NO
If "YES," enter Permit Numbers:	13539	77359	
F. Is this site required to obtain an **air federal operating permit**?			☑ YES ☐ NO
If "YES," enter Permit Number:	GOP 1491		
G. TCEQ Account Identification Number *(if known)*:	WK0099C		

Texas Commission on Environmental Quality
Form PI-7-CERT
Certification and Registration for Permits by Rule

III. FEE INFORMATION

To determine if a fee is required answer the following question. If "YES," to question III. A., a fee is not required, skip to Section IV. If "NO," to answer II. A., then go to Section III. B. See Section VI. for address to send fee or go to www.2.tceq.state.tx.us/epay to pay online.

A. Is this registration an update to a previously registered facility and accompanied by a Certification Form solely to establish a federally enforceable emission limit?			☐ YES ☑ NO
B. What is the fee amount? *If "YES," to any of the following three questions, a **$100** fee is require. Otherwise, a **$450** fee is required.*			
Does this business have less than 100 employees?			☑ YES ☐ NO
Does this business have less than 6 million dollars in annual gross receipts?			☑ YES ☐ NO
Is this registration submitted by a governmental entity with a population of less than 10,000?			☑ YES ☐ NO
C. Check/Money Order or Transaction Number *(Payable to TCEQ)*:		*Was fee **Paid** online?*	☐ YES ☑ NO
Company name of check:		Fee amount:	$ $100.00

IV. SELECTED FACILITY REVIEWS ONLY—TECHNICAL INFORMATION

Note: If claiming one of the following PBRs, complete this section, then skip to Section VI., "Submitting your registration" below:

Animal Feeding Operations § 106.161 ***Livestock Auction Facilities § 106.162*** ***Saw Mills § 106.223***

Grain Handling, Storage and Drying § 106.283 ***Auto Body Refinishing Facilities §106.436*** ***Air Curtain Incinerator § 106.496***

A. Is the applicable PBR checklist attached which shows the facility meets all general and specific requirements of the PBR(s) being claimed? *(If submitting electronically, click "YES".)*		☐ YES ☐ NO
B. Distance from this facility's emission release point to the nearest property line:		feet
Distance from this facility's emission release point to the nearest off-property structure:		feet

V. TECHNICAL INFORMATION INCLUDING STATE AND FEDERAL REGULATORY REQUIREMENTS

Registrants must be in compliance with all applicable state and federal regulations and standards to claim a PBR.

A. Is Confidential information submitted and properly marked "CONFIDENTIAL" with this registration?		☐ YES ☑ NO
B. Is a process flow diagram or a process description attached?		☑ YES ☐ NO
C. Are emissions data and calculations for this claim attached?		☑ YES ☐ NO
D. Is information attached showing how the **general** requirements (**30 TAC § 106.4**) of the PBR is met for this Registration? (**PBR checklists** may be used, but are optional)		☑ YES ☐ NO

*Note: Please be reminded that if the facilities listed in this registration are subject to the Mass Emissions Cap & Trade program under **30 TAC Chapter 101, Subchapter H, Division 3**, the owner/operator of these facilities must possess NO_x allowances equivalent to the actual NO_x emissions from these facilities.*

E. Is information attached showing how the **specific PBR** requirements are met for this registration? (***PBR checklist** may be used, but are optional*)		☑ YES ☐ NO
F. Distance from this facility's emission release point to the nearest property line:	> 100	feet
Distance from this facility's emission release point to the nearest off-property structure:	> 100	feet

Note: In limited cases, a map or drawing of the site and surrounding land use may be requested during the technical review or at the request of the TCEQ Regional Office or local air pollution control program during an investigation.

Texas Commission on Environmental Quality
Form PI-7-CERT
Certification and Registration for Permits by Rule

VI. SIGNATURE FOR CERTIFICATION AND REGISTRATION

The signature below indicates that the Responsible Official has knowledge of the facts herein set forth and that the same are true, accurate, and complete to the best of my knowledge and belief. By this signature, the maximum emission rates listed on this certification reflect the maximum anticipated emissions due to the operation of this facility and all representations in this certification of emissions are conditions upon which the facilities and sources will operate. It is understood that it is unlawful to vary from these representations unless the certification is first revised. The signature certifies that to the best of the Responsible Official's knowledge and belief, the project will satisfy the conditions and limitations of the indicated exemption or permit by rule and the facility will operated in compliance with all regulations of the Texas Commission on Environmental Quality and with Federal U.S. Environmental Protection Agency regulations governing air pollution. The signature below certifies that, based on information and belief formed after reasonable inquiry, the statements and information above and contained in the attached document(s) are true, accurate, and complete. **If you questions on how to fill out this form or about air quality permits. Please call 512/239-1250.** *Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, call 512/239-3282.*

SIGNATURE: _____ *(ORIGINAL SIGNATURE REQUIRED)*	DATE: 6-17-08

VII. SUBMITTING COPIES OF THE CERTIFICATION AND REGISTRATION

Copies must be sent as listed below:
Processing delays may occur if copies are not sent as noted.

Who	*Where*	*What*
Air Permits Initial Review Team (APIRT)	Regular, Certified, Priority Mail MC161, P.O. Box 13087 Austin, Texas 78711-3087 Hand Delivery, Overnight Mail MC 161, 12100 Park 35 Circle, Building C, Third Floor Austin, Texas 78753 Fax No.: (512) 239-2123 *(do not follow fax with paper copies)*	Originals Form PI-7, Core Data Form. and all attachments
Revenue Section, TCEQ	Regular, Certified, Priority Mail MC 214, P.O. Box 13088 Austin, Texas 78711-3088 Hand Delivery, Overnight Mail MC 214, 12100 Park 35 Circle, Building A, Third Floor Austin, Texas 78753	Original Money Order or Check Copy of Form PI-7 and Core Data Form
Appropriate TCEQ Regional Office	To find your Regional Office address, go to the TCEQ Web site at www.tceq.state.tx.us, or call (512) 239-1250.	Copy of Form PI-7, Core Data Form, and all attachments.
Appropriate Local Air Pollution Control Program(s)	To Find your local or Regional Air Pollution Control Programs go to the TCEQ, APD Website at www.tceq.state.tx.us/nav/permits/air_permits.html or call (512) 239-1250	Copy of Form PI-7, Core Data Form, and all attachments.

Texas Commission on Environmental Quality
Permit by Rule Applicability Checklist
Title 30 Texas Administrative Code § 106.4

The following checklist was developed by the Texas Commission on Environmental Quality (TCEQ), **Air Permits Division**, to assist applicants in determining whether or not a facility meets all of the applicable requirements. Before claiming a specific Permit by Rule (PBR), a facility must first meet all of the requirements of **Title 30 Texas Administrative Code § 106.4** (30 TAC § 106.4), "Requirements for Permitting by Rule." Only then can the applicant proceed with addressing requirements of the specific Permit by Rule being claimed.

The use of this checklist is not mandatory; however, it is the responsibility of each applicant to show how a facility being claimed under a PBR meets the general requirements of 30 TAC § 106.4 and also the specific requirements of the PBR being claimed. If all PBR requirements cannot be met, a facility will not be allowed to operate under the PBR and an application for a construction permit may be required under 30 TAC § 116.110(a).

Registration of a facility under a PBR can be performed by completing **Form PI-7** (Registration for Permits by Rule) or **Form PI-7-CERT** (Certification and Registration for Permits by Rule). The appropriate checklist should accompany the registration form. Check the most appropriate answer and include any additional information in the spaces provided. If additional space is needed, please include an extra page and reference the question number. The PBR forms, tables, checklists and guidance documents are available from the TCEQ, Air Permits Division Web site at: **www.tceq.state.tx.us/permitting/air/nav/air_pbr.html**.

1. 30 TAC § 106.4(a)(1) & (4): Emission limits	
List emissions in tpy for **each** facility (add additional pages or table if needed): SO_2 = ? PM_{10} = ? VOC = ? NO_x = ? CO = ? Other _____ = _____ SO_2 = _____ PM_{10} = _____ VOC = _____ NO_x = _____ CO = _____ Other _____ = _____ SO_2 = _____ PM_{10} = _____ VOC = _____ NO_x = _____ CO = _____ Other _____ = _____ **Total** ? _____ ? _____ ? _____ ? _____ ? _____ ? _____	
• Are the SO_2, PM_{10}, VOC, or other air contaminant emissions claimed for **each** facility in this PBR submittal less than 25 tpy? • Are the NO_x and CO emissions claimed for each facility in this PBR submittal less than 250 tpy? *If the answer to both is "Yes," continue to the question below. If the answer to either question is "No," a **PBR cannot be claimed.***	☑ YES ☐ NO ☑ YES ☐ NO
Has any facility at the property had public notice and opportunity for comment under 30 TAC Section 116 for a regular permit or permit renewal? (This does not include public notice for voluntary emission reduction permits, grandfathered existing facility permits, or federal operating permits.) *If "Yes," skip to Section 2. If "No," continue to the questions below.*	☐ YES ☑ NO
If the site has had no public notice, please answer the following: • Are the SO_2, PM_{10}, VOC, or other emissions claimed for **all** facilities in this PBR submittal less than 25 tpy? • Are the NO_x and CO emissions claimed for all facilities in this PBR submittal less than 250 tpy? *If the answer to both questions is "Yes," continue to Section 2.* *If the answer to either question is "No," **a PBR cannot be claimed.** A permit will be required under Chapter 116.*	☑ YES ☐ NO ☑ YES ☐ NO
2. 30 TAC § 106.4(a)(2): Nonattainment check	
Are the facilities to be claimed under this PBR located in a designated ozone nonattainment county? *If "Yes," please indicate which county by checking the appropriate box to the right.* (Marginal) - Hardin, Jefferson, and Orange counties *(BPA)* (Moderate) - Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties *(HGA)* (Moderate) - Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant counties *(DFW)* *If "Yes," to any of the above, continue to the next question. If "No," continue to Section 3.*	☐ YES ☑ NO ☐ BPA ☐ HGA ☐ DFW

Does this project trigger a nonattainment review? To determine the answer, review the information below: • Is the project's potential to emit (PTE) for emissions of VOC or NO_x increasing by 100 tpy or more? *PTE is the maximum capacity of a stationary source to emit any air pollutant under its worst-case physical and operational design unless limited by a permit, rule, or made federally enforceable by a certification.* • Is the site an existing major nonattainment site and are the emissions of VOC or NO_x increasing by 40 tpy or more? If needed, attach contemporaneous netting calculations per nonattainment guidance. Additional information can be found at: **www.tceq.state.tx.us/permitting/air/forms/newsourcereview/tables/nsr_table8.html** and **www.tceq.state.tx.us/permitting/air/nav/air_docs_newsource.html** *If "Yes," to any of the above, the project is a major source or a major modification and* ***a PBR may not be used.*** *A Nonattainment Permit review must be completed to authorize this project. If "No," continue to Section 3.*	☐YES ☐NO ☐YES ☐NO
3. 30 TAC § 106.4(a)(3): Prevention of Significant Deterioration (PSD) check	
Does this project trigger a review under PSD rules? To determine the answer, review the information below: • Are emissions of any regulated criteria pollutant increasing by 100 tpy of any criteria pollutant at a named source? • Are emissions of any criteria pollutant increasing by 250 tpy of any criteria pollutant at an unnamed source? • Are emissions increasing above significance levels at an existing major site? PSD information can be found at: **www.tceq.state.tx.us/permitting/air/forms/newsourcereview/tables/nsr_table9.html** and **www.tceq.state.tx.us/permitting/air/nav/air_docs_newsource.html** *If "Yes," to any of the above,* ***a PBR may not be used.*** *A PSD Permit review must be completed to authorize the project. If "No," continue to Section 4.*	☐YES ☑NO ☐YES ☑NO ☐YES ☑NO
4. 30 TAC § 106.4(a)(6): Federal Requirements	
• Will all facilities under this PBR meet applicable requirements of Title 40 Code of Federal Regulations (40 CFR) Part 60, New Source Performance Standards (NSPS)? If "Yes," which Subparts are applicable?: 40 CFR 60, Subpart WWW • Will all facilities under this PBR meet applicable requirements of 40 CFR Part 63, Hazardous Air Pollutants Maximum Achievable Control Technology (MACT) standards? If "Yes," which Subparts are applicable?: 40 CFR 63, Subpart AAAA • Will all facilities under this PBR meet applicable requirements of 40 CFR Part 61, National Emissions Standards for Hazardous Air Pollutants (NESHAPs)? If "Yes," which Subparts are applicable?: *If "Yes" to any of the above, please attach a discussion of how the facilities will meet any applicable standards.*	☑YES ☐NO ☐N/A ☑YES ☐NO ☐N/A ☐YES ☐NO ☑N/A
5. 30 TAC § 106.4(a)(7): PBR prohibition check	
Are there any air permits at the site containing conditions which prohibit or restrict the use of PBRs? *If "Yes," PBRs may not be used or their use must meet the restrictions of the permit. A new permit or permit amendment may be required.* ***List permit number(s):***_____ *If "No," continue to Section 6.*	☐YES ☑NO

6. 30 TAC § 106.4(a)(8): NO_x Cap and Trade

- Is the facility located in Harris, Brazoria, Chambers, Fort Bend, Galveston, Liberty, Montgomery, or Waller County? ☐YES ☑NO

If "Yes," answer the question below. If "No," continue to Section 7.

- Will the proposed facility or group of facilities obtain required allowances for NO_x if they are subject to 30 TAC Chapter 101, Subchapter H, Division 3 (relating to the Mass Emissions Cap and Trade Program)? ☐YES ☐NO

7. Highly Reactive Volatile Organic Compounds (HRVOC) check

- Is the facility located in Harris County? *If "Yes," answer the next question. If "No," skip to the box below.* ☐YES ☑NO
- Will the project be constructed after June 1, 2006? *If "Yes," answer the next question. If "No," skip to the box below.* ☐YES ☐NO
- Will one or more of the following HRVOC be emitted as a part of this project? ☐YES ☐NO

If "Yes," complete the information below:	lb/hr	tpy
▸ 1,3-butadiene		
▸ all isomers of butene (e.g., isobutene [2-methylpropene or isobutylene])		
▸ alpha-butylene (ethylethylene)		
▸ beta-butylene (dimethylethylene, including both cis- and trans-isomers)		
▸ ethylene		
▸ propylene		

- Is the facility located in Brazoria, Chambers, Fort Bend, Galveston, Liberty, Montgomery, or Waller County? ☐YES ☑NO

If "Yes," answer the next question. If "No," the checklist is complete.

- Will the project be constructed after June 1, 2006? ☐YES ☐NO

If "Yes," answer the next question. If "No," the checklist is complete.

- Will one or more of the following HRVOC be emitted as a part of this project? ☐YES ☐NO

If "Yes," complete the information below:	lb/hr	tpy
▸ ethylene		
▸ propylene		

PRINT

Title 30 Texas Administrative Code § 106.261
Permit By Rule (PBR) Checklist
Facilities (Emission Limitations)

The following checklist is designed to help you confirm that you meet Title 30 Texas Administrative Code § 106.261 (30 TAC § 106.261) requirements. If you do not meet all the requirements, you may alter the project design or operation in such a way that all the requirements of the PBR are met or you may obtain a construction permit. The PBR forms, tables, checklists and guidance documents are available from the Texas Commission on Environmental Quality (TCEQ), Air Permits Division Web site at, www.tceq.state.tx.us/nav/permits/air_permits.html.

CHECK THE MOST APPROPRIATE ANSWER	
Is a description or checklist of how this claim meets the general requirements for the use of PBRs in 30 TAC § 106.4 attached?	☑ YES ☐ NO ☐ N/A
b1 Is this claim for construction of a facility authorized in another section of this chapter or for which a standard permit is in effect? *If "YES," this PBR cannot be used to authorize emissions from the project*	☐ YES ☑ NO ☐ N/A
b2 Is this claim for any change to any facility authorized under another section of this chapter or authorized under a standard permit? *If "YES," this PBR cannot be used to authorize emissions from the project*	☐ YES ☑ NO ☐ N/A
a1 Are facilities or changes located at least 100 feet from any recreational area or residence or other structure not occupied or used solely by the owner or operator of the facilities or the owner of the property upon which the facilities are located?	☑ YES ☐ NO ☐ N/A
a2 Are total new or increased emissions, including fugitives, less than or equal to 6.0 pounds per hour (lb/hr) and ten tons per year of the following materials (check all that apply):	☑ YES ☐ NO ☐ N/A

☐ acetylene	☐ helium	☐ propyl ether	☐ limestone
☐ argon	☐ isohexane	☑ sulfur dioxide	☐ magnesite
☐ butane	☐ isopropyl alcohol	☐ alumina	☐ marble
☐ crude oil	☐ methyl acetylene	☐ calcium carbonate	☐ pentaerythritol
☑ carbon monoxide	☐ methyl chloroform	☐ calcium silicate	☐ plaster of paris
☐ cyclohexane	☐ methyl cyclohexane	☐ cellulose fiber	☐ silicon
☐ cyclohexene	☐ neon	☐ cement dust	☐ silicon carbide
☐ cyclopentan	☐ nonan	☐ emery dust	☐ starch
☐ ethyl acetate	☑ oxides of nitrogen	☐ glycerin mist	☐ sucrose
☐ ethanol	☐ propane	☐ gypsum	☐ zinc stearate
☐ ethyl ether	☐ propyl alcohol	☐ iron oxide dust	☐ zinc oxide
☐ ethylene	☐ propylene	☐ kaolin	

☐ refinery petroleum fractions (except for pyrolysis naphthas and pyrolysis gasoline) containing less than ten volume percent benzene
☐ fluorocarbons Numbers 11, 12, 13, 14, 21, 22, 23, 113, 114, 115, and 116

a3 Are total new or increased emissions, including fugitives, less than or equal to 1.0 lb/hr of any chemical having a limit value (L) greater than 200 milligrams per cubic meter (mg/m^3) as listed and referenced in Table 262 of 30 TAC § 106.262 of this title (relating to Facilities (Emission and Distance Limitations)? List chemical: ☐ L value: ☐	☐ YES ☐ NO ☑ N/A
Are total new or increased emissions, including fugitives, less than or equal to 1.0 lb/hr of any chemical not listed or referenced in Table 262? List chemical: ☐	☐ YES ☐ NO ☑ N/A
Are total new or increased emissions, including fugitives, of a chemical with a limit value of less than 200 mg/m^3? *If "Yes" the authorization of the chemical is not allowed under this section. We suggest you use 30 TAC §106.262 to authorize the emissions, if applicable.*	☐ YES ☐ NO ☑ N/A

a4	Are there any changes to or additions of any existing air pollution abatement equipment?	☑YES ☐NO ☐N/A
a5	Will there be any visible emissions, except uncombined water, emitted to the atmosphere from any point or fugitive source in amounts greater than 5.0% opacity in any six-minute period?	☐YES ☑NO ☐N/A
a6	Are emission increases five tons per year or greater? If "YES," this checklist must be attached to a Form PI-7 within ten days following the installation or modification of the facilities. The notification shall include a description of the project, calculations, data identifying specific chemical names, limit values, and a description of pollution control equipment, if any.	☑YES ☐NO ☐N/A
a7	Are emission increases less than five tons per year? If "YES," this checklist must be attached to a Form PI-7 and include a description of the project, calculations, data identifying specific chemical names, limit values, and a description of pollution control equipment, if any. (pick one): □ Within ten days following the installation or modification of the facilities. The notification shall include a description of the project, calculations, data identifying specific chemical names, limit values, and a description of pollution control equipment, if any; or □ By March 31 of the following year summarizing all uses of this permit by rule in the previous calendar year.	☐YES ☑NO ☐N/A

PRINT

RJR

May 12, 2008

MC-214
Ms. Jacqueline Mgebroff
Revenue Section
Office of Administrative Services
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Re: Registration for Air Permit by Rule 30 TAC 106.261 Application Fee Submittal
Asphalt Shingle Processing Unit
Williamson County Recycling and Disposal Facility – Permit No. MSW 1405A
Williamson County, Texas

Dear Ms. Mgebroff:

On behalf of Williamson County, RJR Engineering, Ltd., L.L.P. (RJR) is pleased to submit the attached $100 application fee for an Air Permit by Rule Registration for an asphalt shingle processing unit for the Williamson County Recycling and Disposal Facility, Permit No. MSW 1405A, Williamson County, Texas.

If you have any questions regarding this information, please feel free to contact me at (281) 397-6747.

Sincerely,
RJR Engineering, Ltd., L.L.P.

J. Roy Murray, P.E.
Vice President

Cc: Honorable Judge Dan A. Gattis, Williamson County
Steve Jacobs, WMTX
Tim Champagne, WMTX

RJR ENGINEERING, Ltd., L.L.P. 5214

Application Fee 100.00

5/12/08 5214 TCEQ $100.00

RJR ENGINEERING, Ltd., L.L.P.
P.O. BOX 366
BARKER, TX 77413

COMMUNITY BANK
WHEATON/GLEN ELLYN

70-2543/719

5214

Check Number: 5214

DATE
May 12, 2008

AMOUNT
$ 100.00

PAY One Hundred and 00/100 Dollars

TO THE ORDER OF: TCEQ

AUTHORIZED SIGNATURE

⑈005214⑈ ⑆071925431⑆ 122412⑈

ATTACHMENT C

Supporting Data

POWER FLAME INCORPORATED

10/0
Rev. 03/2

TYPICAL FLUE PRODUCT EMISSION DATA FOR POWER FLAME BURNERS

FLUE GAS EMISSION PRODUCT	EMISSION LEVEL		
	NATURAL	#2 FUEL OIL	#6 FUEL OIL
CARBON MONOXIDE-CO	.037lb CO 10^6 BTU Input (50 ppm)	.037 lb CO per 10^6 BTU Input (50 ppm)	Same as # 2 Oil
SULPHUR DIOXIDE - SO_2	(1.05) x (% Sulphur by weight in fuel) = lb SO_2 per 10^6 BTU Input		
PARTICULATE MATTER	.0048 lb PM per 10^6 BTU Input	.0143 lb PM per 10^6 BTU Input	.34 lb PM per 10^6 BTU Input
HYDROCARBONS	.025 lb HC's per 10^6 BTU Input	.038 lb HC's per 10^6 BTU Input	.052 lb HC's per 10^6 BTU Inp
NITROGEN OXIDES-NO_x STANDARD BURNER	.052 lb NO_x per 10^6 BTU Input (75 ppm)	.14 lb NO_x per 10^6 BTU Input (110 ppm) *	Consult PFI
NITROGEN OXIDES-NO_x NOVA® LOW-NO_x BURNER	.031 lb NO_x per 10^6 BTU Input (25 ppm)	.073 lb NO_x per 10^6 BTU Input (60 ppm) *	

* NO_x emissions will vary based on percent Fuel Bound Nitrogen and Boiler Configuration.

NOTE: These emission rates are general estimates and do not constitute guarantees by Power Flame, Inc. In instances wher guarantees are required, please consult PFI.

Table 6 - Summary of Rock Crushing Plant Emission Factors

Emission Source[a]	Emission Factors	
	PM, lb/ton	PM_{10}, lb/ton
Primary Crushing(Jaw)-Dry[b]	0.0007	0.00033
Primary Crushing(Jaw)-Wet[c]	0.00021	0.0001
Secondary Crushing(All crushers)-Dry[d,e]	0.00504	0.0024
Secondary Crushing(All crushers)-Wet[d,e]	0.0012	0.00059
Tertiary Crushing(All crushers)-Dry[d]	0.00504	0.0024
Tertiary Crushing(All crushers)-Wet[d]	0.0012	0.00059
Fines Crushing-Dry[d]	0.0315	0.015
Fines Crushing-Wet[d]	0.0042	0.002
Screening(All)-Dry[d]	0.0315	0.015
Screening(All)-Wet[d]	0.001764	0.00084
Fines Screening-Dry[d]	0.149	0.071
Fines Screening-Wet[d]	0.0044	0.0021
Front-End Loader/Truck Unloading-Fragmented Stone[d]	0.000034	0.000016
Truck Loading-Crushed Stone[d]	0.00021	0.00010
Conveyor Transfer-Dry[d]	0.0029	0.0014
Conveyor Transfer - Wet[d]	0.00011	0.000048
Conveying (per 300 feet of a single conveyor)[f]	0.0029	0.0014

[a] Sources controlled with wet suppression maintain a material moisture content of ≥1.5 percent. Sources that process material with a moisture content of < 1.5 percent are considered dry and uncontrolled.

[b] PM from AP-42, PM_{10} = PM/2.1

[c] PM = PM(dry) x 0.3 for water spray conditions, PM_{10} = PM/2.1

[d] PM_{10} from AP-42, PM = PM_{10} x 2.1,

[e] Emission factors for tertiary crushing are used for secondary crushing per EPA guidance, see Table 11.19.2-2, note c (1/95).

[f] PM from AP-42, Table 7.19.2-2 (9/88). Conveying length based on results of CHEER Workshop 5/16/96.

Mechanical Section Notes:

g. Emission factors for crushers and screens include drops to equipment and drops off equipment.

H. Radial stacker emissions are included in the stockpile equation calculations.

9. Although total suspended particulate (TSP) is not a measurable property from a process, some states may require estimates of TSP emissions. No data are available to make these estimates. However, relative ratios in AP-42

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	HT1
City:	
State:	
Company:	
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):		25.00
Diameter (ft):		8.50
Volume (gallons):		10,000.00
Turnovers:		60.00
Net Throughput(gal/yr):		600,000.00
Is Tank Heated (y/n):	Y	
Is Tank Underground (y/n):	N	

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meterological Data used in Emissions Calculations: Austin, Texas (Avg Atmospheric Pressure = 14.41 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

HT1 - Horizontal Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Asphalt	All	230.00	200.00	250.00	225.00	0.2000	0.0750	0.5000	2,000.0000			2,000.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

HT1 - Horizontal Tank

Annual Emission Calcaulations

Standing Losses (lb):	1,746.6466
Vapor Space Volume (cu ft):	903.5831
Vapor Density (lb/cu ft):	0.0540
Vapor Space Expansion Factor:	0.1024
Vented Vapor Saturation Factor:	0.9569
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	903.5831
Tank Diameter (ft):	8.5000
Effective Diameter (ft):	16.4530
Vapor Space Outage (ft):	4.2500
Tank Shell Length (ft):	25.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0540
Vapor Molecular Weight (lb/lb-mole):	2,000.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.2000
Daily Avg. Liquid Surface Temp. (deg. R):	689.6700
Daily Average Ambient Temp. (deg. F):	68.5250
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	684.6700
Tank Paint Solar Absorptance (Shell):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,540.2401
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1024
Daily Vapor Temperature Range (deg. R):	50.0000
Daily Vapor Pressure Range (psia):	0.4250
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.2000
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0750
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.5000
Daily Avg. Liquid Surface Temp. (deg R):	689.6700
Daily Min. Liquid Surface Temp. (deg R):	659.6700
Daily Max. Liquid Surface Temp. (deg R):	709.6700
Daily Ambient Temp. Range (deg. R):	20.6667
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9569
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.2000
Vapor Space Outage (ft):	4.2500
Working Losses (lb):	3,809.5238
Vapor Molecular Weight (lb/lb-mole):	2,000.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.2000
Annual Net Throughput (gal/yr.):	600,000.0000
Annual Turnovers:	60.0000
Turnover Factor:	0.6667

Tank Diameter (ft):	8.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	5,556.1704

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

HT1 - Horizontal Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Asphalt	3,809.52	1,746.65	5,556.17

TABLE 1
EMISSIONS FACTORS AND USAGES SUMMARY
WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILITY, HUTTO, TEXAS

Parameters	Data	Units	
Annual Shingle Throughput	100,000	tons/yr	
Heater Capacity	1.2	MMBtu/hr	
Hours of Operation	2,080	hours	
Daily Shingle Throughput	48	tons/day	
Tank Emissions	2.778	tons/yr	
Percent Aggregate	70%	aggregate	
Percent Aspalt	30%	asphalt	
Percent Emitted (Incomplete Phase)	25%		this is for incomplete phase change
Carbon Filtration Efficiency	95.00%	-	BACT

Emission Factors	Data	Units	Information Source	Notes
PM - Conveyor Transfer Point	0.0029	lb/T	RG 058 - Table 6	
PM10 - Conveyor Transfer Point	0.0014	lb/T	RG 058 - Table 6	
VOC - (TOC) Shingle Saturation Dip	0.044	lb/T	AP-42 Table 11.1	
CO - Natural Gas Emission Product	0.037	lb/MMBtu	Power Flame Incorporated	
PM - Natural Gas Emission Product	0.0048	lb/MMBtu	Power Flame Incorporated	
VOC - Natural Gas Emission Product	0.0250	lb/MMBtu	Power Flame Incorporated	
NO_X - Natural Gas Eimssion Prodcut	0.0520	lb/MMBtu	Power Flame Incorporated	
SO_2 - Natural Gas Emission Product		lb/MMBtu	Power Flame Incorporated	
2-Methylnaphthalene - Dip Asphalt Roof Shingle	7.40E-05	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Acenaphthene - Dip Asphalt Roof Shingle	1.40E-06	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Acenaphthylene - Dip Asphalt Roof Shingle	8.60E-06	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Anthracene - Dip Asphalt Roof Shingle	2.20E-07	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Benzo(a)anthracene - Dip Asphalt Roof Shingle	2.10E-07	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Benzo(a)pyrene - Dip Asphalt Roof Shingle	9.80E-09	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Benzo(b)fluoranthene - Dip Asphalt Roof Shingle	1.00E-07	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Benzo(e)pyrene - Dip Asphalt Roof Shingle	1.10E-07	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Benzo(g,h,i)perylene - Dip Asphalt Roof Shingle	4.00E-08	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Benzo(k)fluoranthene	4.10E-08	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Fluoranthene - Dip Asphalt Roof Shingle	6.10E-07	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Fluorene - Dip Asphalt Roof Shinge	3.80E-06	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Indeno(1,2,3-cd)pyrene - Dip Asphalt Roof Shingle	7.00E-09	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed
Naphthalene - Dip Asphalt Roof Shingle	9.00E-05	lb/T	AP-42 Table 11.1-10	Tons Asphalt Processed

TABLE 2
TRANSFER POINT EMISSIONS - ANNUAL
WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILITY, HUTTO, TEXAS

Process Description	Permitted Tons Shingles Processed	Emisson Factors		Percent Aggregate	Calculated tpy	
					Fugitive	Point
EPN - DP1-FUG *(fugitives)*						
Drop point from Screw Conveyor to Agitated Processor						
Drop point 1 - PM	100,000	0.0029	lb/ton shingles	70%	0.10	---
Drop point 1 - PM_{10}	100,000	0.0014	lb/ton shingles	70%	0.05	---
EPN - DP1-FUG *(fugitives)*						
Drop point from size reduction unit to final shipment						
Drop point 2 - PM	100,000	0.0029	lb/ton shingles	70%	0.10	---
Drop point 2 - PM_{10}	100,000	0.0014	lb/ton shingles	70%	0.05	---

(1) - Emission Factors where obtained TCEQ Guidance Document RG 058 Table 6

TABLE 3
HEATER VOC EMISSIONS - ANNUAL
WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILITY, HUTTO, TEXAS

Process Description	Molecular Weight	Surface Area	Vapor Pressure	Surface Temperature	Control Efficiency	Calculated tpy	
						Fugitive	Point
EPN - TRN-FUG *(fugitives)*							
Transfer Process							
Heater	1,000	4	0.2	610	95%	0.03	---

TABLE 4
HEATER CRITERIA EMISSIONS - ANNUAL
WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILITY, HUTTO, TEXAS

	Heater Capacity	Emisson Factors	Hours Operation	Calculated tpy	
				Fugitive	Point
EPN - HTR-FUG *(fugitives)*					
1.2 MMBtu/hr Fired Heater Tank					
Carbon Monoxide	1.2	0.037 lb/MMBtu	2080	0.05	---
Particulate Matter	1.2	0.0048 lb/MMBtu	2080	0.01	---
VOC's	1.2	0.025 lb/MMBtu	2080	0.03	---
NO_x	1.2	0.05 lb/MMBtu	2080	0.06	---
Sulfur Dioxide	1.2	0.00 lb/MMBtu	2080	0.00	---

(1) - Emission Factors where provided by Power Flame Incorporated

TABLE 5
HAP EMISSIONS - ANNUAL
WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILITY, HUTTO, TEXAS

	Tank VOC Emissions	Emisson Factors	Percent Composition	Calculated Emissions tpy	
				Fugitive	Point
EPN - TNK-FUG *(fugitives)*					
Jacketed Tank					
2-Methylnaphthalene	2.778	7.40E-05 lb/T	0.17%	0.0047	---
Acenaphthene	2.778	1.40E-06 lb/T	0.003%	0.0001	---
Acenaphthylene	2.778	8.60E-06 lb/T	0.02%	0.0005	---
Anthracene	2.778	2.20E-07 lb/T	0.0005%	0.000014	---
Benzo(a)anthracene	2.778	2.10E-07 lb/T	0.0005%	0.000013	---
Benzo(a)pyrene	2.778	9.80E-09 lb/T	0.00002%	0.0000006	---
Benzo(b)fluoranthene	2.778	1.00E-07 lb/T	0.0002%	0.0000063	---
Benzo(e)pyrene	2.778	1.10E-07 lb/T	0.0003%	0.0000069	---
Benzo(g,h,i)perylene	2.778	4.00E-08 lb/T	0.00009%	0.0000025	---
Benzo(k)fluoranthene	2.778	4.10E-08 lb/T	0.00009%	0.000003	---
Chrysene	2.778	1.80E-07 lb/T	0.0004%	0.000011	---
Fluoranthene	2.778	6.10E-07 lb/T	0.0014%	0.000039	---
Fluorene	2.778	3.80E-06 lb/T	0.009%	0.0002	---
Indeno(1,2,3-cd)pyrene	2.778	7.00E-09 lb/T	0.00002%	0.00000044	---
Naphthalene	2.778	9.00E-05 lb/T	0.20%	0.0057	---
Perylene	2.778	8.80E-09 lb/T	0.00002%	0.0000006	---
Phenanthrene	2.778	7.60E-06 lb/T	0.02%	0.0005	---
Pyrene	2.778	5.40E-07 lb/T	0.001%	0.000034	---
Totals				**0.0118**	

(1) - Emission Factors where obtained from AP-42 Table 11.1-10

(3) - Hazardous Air Pollutants (HAP)s where determined by using an MSDS provided for Roofing Grade Aspalt provided by Karmak Corporation.

TABLE 6
TRANSFER POINT EMISSIONS - HOURLY
WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILITY, HUTTO, TEXAS

Process Description	Permitted Tons Shingles Processed	Emisson Factors		Percent Aggregate	Calculated lb/hr	
					Fugitive	Point
EPN - DP1-FUG *(fugitives)*						
Drop point from Screw Conveyor to Agitated Processor						
Drop point 1 - PM	48	0.0029	lb/ton shingles	70%	0.10	---
Drop point 1 - PM_{10}	48	0.0014	lb/ton shingles	70%	0.05	---
EPN - DP1-FUG *(fugitives)*						
Drop point from size reduction unit to final shipment						
Drop point 2 - PM	48	0.0029	lb/ton shingles	70%	0.10	---
Drop point 2 - PM_{10}	48	0.0014	lb/ton shingles	70%	0.05	---

(1) - Emission Factors where obtained TCEQ Guidance Document RG 058 Table 6

TABLE 7
HEATER VOC EMISSIONS - HOURLY
WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILITY, HUTTO, TEXAS

Process Description	Molecular Weight	Surface Area	Vapor Pressure	Surface Temperatu	Control Efficiency	Calculated tpy	
						Fugitive	Point
EPN - TRN-FUG *(fugitives)*							
Transfer Process							
Heater	1,000	4	0.2	610	95%	0.03	---

TABLE 8
HEATER CRITERIA EMISSIONS - HOURLY
WILLIAMSON COUNTY RECYCLING AND DISPOSAL FACILITY, HUTTO, TEXAS

	Heater Capacity	Emisson Factors	Calculated lb/hr	
			Fugitive	Point
EPN - HTR-FUG *(fugitives)*				
1.2 MMBtu/hr Fired Heater Tank				
Carbon Monoxide	1.2	0.037 lb/MMBtu	0.04	---
Particulate Matter	1.2	0.0048 lb/MMBtu	0.01	---
VOC's	1.2	0.025 lb/MMBtu	0.03	---
NO_x	1.2	0.05 lb/MMBtu	0.06	---
Sulfur Dioxide	1.2	0.00 lb/MMBtu	0.00	---

(1) - Emission Factors where provided by Power Flame Incorporated