ANIMAL CREMATORY
AIR GENERAL PERMIT REGISTRATION FORM

Part II. Notification to Permitting Office

(Detach and submit to appropriate permitting office; keep copy onsite)

Instructions: To give notice to the Department of an eligible facility's intent to use this air general permit, the owner or operator of the facility must detach and complete this part of the Air General Permit Registration Form and submit it to the appropriate Department of Environmental Protection or local air pollution control program office which has permitting authority. Please type or print clearly all information, and enclose the appropriate air general permit registration processing fee pursuant to Rule 62-4.050, F.A.C. *($100 as of the effective date of this form)*

0170372-001

Registration Type

Check one:

INITIAL REGISTRATION - Notification of intent to:

- ☒ Construct and operate a proposed new facility.
- ☐ Operate an existing facility not currently using an air general permit (e.g., a facility proposing to go from an air operation permit to an air general permit).

RE-REGISTRATION (for facilities currently using an air general permit) - Notification of intent to:

- ☐ Continue operating the facility after expiration of the current term of air general permit use.
- ☐ Continue operating the facility after a change of ownership.
- ☐ Make an equipment change requiring re-registration pursuant to Rule 62-210.310(2)(e), F.A.C., or any other change not considered an administrative correction under Rule 62-210.310(2)(d), F.A.C.

Surrender of Existing Air Operation Permit(s) - For Initial Registrations Only

If the facility currently holds one or more air operation permits, such permit(s) must be surrendered by the owner or operator upon the effective date of this air general permit. In such case, check the first box, and indicate the operation permits being surrendered. If no air operation permits are held by the facility, check the second box.

- ☐ All existing air operation permits for this facility are hereby surrendered upon the effective date of this air general permit; specifically permit number(s): _____
- ☐ No air operation permits currently exist for this facility.

General Facility Information

Facility Owner/Company Name (Name of corporation, agency, or individual owner who or which owns, leases, operates, controls, or supervises the facility.)
~~Citrus County Animal Services~~ Citrus County Board of County Commissioners

Site Name (Name, if any, of the facility site; e.g., Plant A, Metropolis Plant, etc. If more than one facility is owned, a registration form must be completed for each.)
Citrus County Animal Services

Facility Location (Provide the physical location of the facility, not necessarily the mailing address.)
Street Address: 4030 South Airport Road
City: Inverness County: Citrus Zip Code: 34450 – 8545

Facility Start-Up Date (Estimated start-up date of proposed **new** facility.) (N/A for existing facilities)
The start-up date is expected around October - November 2009.

Owner/Authorized Representative

Name and Position Title: (Person who, by signing this form below, certifies that the facility is eligible to use this air general permit.)
Print Name and Title: Charles Gatto, Director, Maintenance and Operations

Owner/Authorized Representative Mailing Address
Organization/Firm: ~~Citrus County Animal Services~~ Citrus County Maintenance Operations
Street Address: ~~1300 S. Lecanto Hwy, Bldg. 11033.1~~ PO Box 143
City: Lecanto County: Citrus Zip Code: 34461

Owner/Authorized Representative Telephone Numbers
Telephone: 352-527-7600 Fax: 352-527-7603
Cell phone (optional):

Facility Contact (If different from Owner/Authorized Representative)

Name and Position Title (Plant manager or person to be contacted regarding day-to-day operations at the facility.)
Print Name and Title: ~~Same as Above~~ Dr Julie Rosenberger, Veterinarian

Facility Contact Mailing Address
Organization/Firm: ~~Same as Above~~ Citrus County Animal Services
Street Address: 4030 S. Airport Rd.
City: Inverness County: Citrus Zip Code: 34450

Facility Contact Telephone Numbers
Telephone: ~~Same As Above~~ 352-726-7660 Fax: 352-726-4120
Cell phone (optional):

Owner/Authorized Representative Statement

This statement must be signed and dated by the person named above as owner or authorized representative

I, the undersigned, am the owner or authorized representative of the owner or operator of the facility addressed in this Air General Permit Registration Form. I hereby certify, based on information and belief formed after reasonable inquiry, that the facility addressed in this registration form is eligible for use of this air general permit and that the statements made in this registration form are true, accurate and complete. Further, I agree to operate and maintain the facility described in this registration form so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof.

I will promptly notify the Department of any changes to the information contained in this registration form.

Charles Gatto
Signature

10/26/09
Date

Design Calculations

If this is an initial registration for a proposed new animal crematory unit, provide design calculations to confirm a sufficient volume in the secondary chamber combustion zone to provide for at least a 1.0 second gas residence time at 1800 degrees F.

☒ Manufacturer's' design calculations attached.

☐ Registration is not for proposed new animal crematory unit(s).

Description of Facility

Below, or as an attachment to this form, provide a description of all crematory operations at the facility in sufficient detail to demonstrate the facility's eligibility for use of this air general permit and to provide a basis for tracking any future equipment or process changes at the facility. Describe all air pollutant-emitting processes and equipment at the facility, and identify any air pollution control measures or equipment used.

The facility is installing a KM800 animal cremator manufactured by Keller Mechanical and Engineering of Lakeland, Florida. The equipment is rated at 200 lbs/hr hour or 800 pounds per 4 to 5 hour batch of animal remains. The primary chamber burner is rated at 500,000 Btu/hr and the secondary chamber burner is rated at 1,500,000 Btu/hr, for a total of 2,000,000 Btu/hr. The fuel to be used is LPG. Control of air pollution is achieved through the design of the KM800 crematory, including its ability to operate the secondary chamber between 1600 - 1850 degrees Fahrenheit at a residence time in excess of 1.0 second. The design also includes fully automatic PLC based controls, independent fuel/air systems, preheated combustion air, secondary chamber temperature monitor and recorder, primary burner temperature interlock (prevents primary burner from firing prior to the secondary chamber reaching it's set point temperature), UV continuous scanning flame detectors on burners, and an opacity sensor which can temporarily suspends operation of the primary chamber burner. No objectionable odors or visible emissions are expected from this crematorium in excees to the requirements of the general permit.

Attachment 1

Residence Time Calculation

370 S. North Lake Blvd, Ste. 1004, Altamonte Springs, Florida 32701 - Phone: (407) 574-2021, FAX: (407) 574-2456
AI@CFL.RR.COM

KM800 200 lb/hr, 1800F Heat and Mass Balance

Heat and Mass Balance				Basis one Hour			Waste Type and Description - Generalities									
	Enter the following:			This Run		0-Trash		1-Rubbish		3-Garbage		4-Animal		MSW		
	Percent Carbon Combustion			95		95		95		95		95		95		
	Feed Compos. %		Carbon	33		47		33		12		7		25		
			Hydrogen	3		6		5		3		2		4		
			Oxygen	10		30		26		10		6		20		
			Water	70		10		25		70		82		30		
			Chlorine	0.4		2		1		0.4		0		1		
			Sulfur	0.1		0.1		0.1		0.1		0.1		0.1		
			Nitrogen	0.2		0.2		0.2		0.2		0.4		0.5		
			Ash	4.3		4.70		9.70		4.30		2.5		19.4		
Stated HHV of waste feed, Btu/lb				2500		8500		6500		2500		1000		5000		
Calculated LHV by Dulong's eq, Btu/lb				4437		7147		4909		1644		630		3679		
& subtracting heat to vaporize water																
	Density of Waste, lb/cu ft			23		10		10		35		55		25		
	Heat value of waste, Btu/cu ft			57500												
						Paper, carboard,		paper, rags,cartons		Food wastes, paper		All animal & human		Municipal		
						wood-10%plastics		floor sweepings		resta/hotels/clubs		tissue; labs; hosp.		Solid		
							<-Typical Ranges->									
	Percent carbon combustion			95			95-98%									
	Percent Excess Air			100			40-150% Excess Air (=140-250% total air) for solid waste									
	Percent of Total Air			200												
	Feed rate Lbs per hour			200												
	Target Comb gas temp. deg F			1800			1700-2200									
	Target stack gas temp. deg F			350			300-600									
	True heat loss, %			5		<-----	Losses (2-6%) due to rad./ cond./conv. Does not									
							reflect HHV-LHV differences or delta H H2O vapz.									
	O2 Req. for	6.10	lbmol/hr													
	Dry air req	837	lb/hr													
				CO2	HCl	SO2	H2O									
	Moles from combustion			5.23	0.02	0.01	2.99									
	Moles from evap						7.78									
	Actual O2 in inlet air		lbmol/hr	12.20			Humidity Input									
	Water vapor in Air			0.008	lbs water/ lbs dry air		0.37	lbmol/hr								
	Tot. dry air, lbmol/hr		58.10				7	lb/hr								
		lb/hr	1676													
				CO2	HCl	SO2	N2	O2	H2O							
	Total moles before aux fuel			5.23	0.02	0.01	45.89	6.10	11.14							
	Total flue gas, wet			68.38	lbmol/hr		1912	lb/hr								
	Total flue gas, dry			57.25	lbmol/hr		1711	lb/hr								
	Mole Weight, wet/dry			27.96	29.89											
	Temperature with no heat added, deg F				1,645											
	Heat needed BTUs/Hour				8.64E+04											
If heat needed is positive, then add methane fuel:																
	Heat balance calculations, based on LHVs and net available heat for methane															
	T (w/o) fuel	1645	deg F													
	Ht need	86410	Btu/hr													
	NAH	190975	Btu/lbmol	Net Avail heat of methane at T= target temp												
	Fuel need	0.45	lbmol/hr													
	Mol O2	0.95	lbmol/hr	(includes 10% excess air at burner)												
	Air added	130	lb/hr													

KM800 200 lb/hr, 1800F Heat and Mass Balance

If heat needed shows negative, then add cooling air:															
	Heat in actual flue gas		836753.6	btu/hr											
	Mass cooling air		-189	lb/hr											
						Inlet air	Inlet air	Inlet air	Fr Humid	Fr Comb	Fr Comb	Fr Comb			
	Moles of air added (to cool or burn gas)			4.52		MWwet	Moles O2	Moles N2	Mol H2O	Mol CO2	Mol H2O	Mol O2			
						28.70	0.95	3.57	0.06	0.45	0.90	-0.90			
	Stack gas lb mol/hr, wet		73.42												
	Stack gas lb mol/hr, dry		61.32												
			CO2	HCl	SO2	N2	O2	H2O	Total						
	Total	Moles out stack	5.68	0.02	0.01	49.47	6.15	12.10	73.42						
		Pounds	249.81	0.82	0.40	1,385.03	196.67	217.83	2051						
		Vol % dry	9.26	0.04	0.01	80.67	10.02								
		Mole wt of flue gas, wet		27.93											
		Actual flu gas, acfm	2,019	at	1800	deg F		**Residense Time: 50.53 CF SCC/2019 ACFM at 1800F x 60 min/hr =1.50 seconds**							
		Actual flue gas acfm	723	at	350	deg F									
		scfm	473	For this cell, Std Temp == 70											
	Mass Balance: Pounds per hour														
		In			Out										
	Feed	200		ash out	12										
	Air	1814		flue gas	2051										
	Fuel	7													
	Total	2021		Total	2062										
	Error in Mass Balance, %		2.04%												
	Heat Balance: BTUs per hour														
		In			Out										
	Feed	8.94E+05		Ash	6.21E+03										
	Fuel	1.57E+05		Flue Gas	9.87E+05										
	Air(h2o)	1.42E+04		Loss	5.26E+04										
	Total	1.07E+06		Total	1.05E+06										
	Error in heat balance, %		-1.85%												
		Maximum Heat available in flue gas BTUs/Hour				8.22E+05									

Attachment 2

Keller Mechanical KM1600 Specifications & Engineering Drawings

370 S. North Lake Blvd, Ste. 1004, Altamonte Springs, Florida 32701 - Phone: (407) 574-2021, FAX: (407) 574-2456
AI@CFL.RR.COM

KELLER MECHANICAL SPECIFICATIONS MODEL KM800 (gas fired)

Primary Chamber

	Unit of Measure	KM800
Chamber Volume	Cu. Ft.	74.3
Primary Burner(s)	Btu's/hr	500,000
Burner Control	Temp. Act.	Modulating
Diameter – Outside	Inches	60
Diameter – Inside	Inches	49.5
Length - Outside	Inches	72
Length – Inside	Inches	67
Loading/Clean Out Door	Inches	60
Metal Thickness	Inches	.250
Refractory Thickness	Inches	4
Refractory Temp. Rating	Deg. F	3,100 max
Insulation Thickness	Inches	1
Insulation Temp. Rating	Deg. F	1,900
Weight	Lbs	8,500
Operating Temperature	Deg. F	1,200-1,400

Secondary Chamber

Chamber Volume	Cu.Ft.	50.53
Secondary Burner, one (1)	Btu's/Hr.	1,000,000
Burner Control	Temp. act.	Modulating
Diameter - Outside	Inches	60
Diameter - Inside	Inches	49.5
Length - Outside	Inches	60
Length - Inside	Inches	50
Residence Time	Seconds	>1
Metal Thickness	Inches	0.250
Refractory Thickness	Inches	4
Refractory Temp. Rating	Deg. F	3,100 max
Insulation Thickness	Inches	1
Insulation Temp. Rating	Deg. F	1,900
Weight	Pounds	6,500
Operating Temperatures	Deg. F	1,600-1,850

Refractory Lined-Stack

	Unit of Measure	KM800
48" Stack Sections	Sections	TBA
Metal Thickness	Inches	.102
Stack Diameter - Outside	Inches	24
Stack Diameter - Inside	Inches	18
Refractory Thickness	Inches	3
Refractory Rating	Deg. F	2,400
Weight Each Section	Pounds	600

System Dimensions/Weight

Width	Inches	96
Length	Inches	120
Height to Base of Stack	inches	144
Approx. Weight of Syst.	Pounds	16,200

Systems Capacity

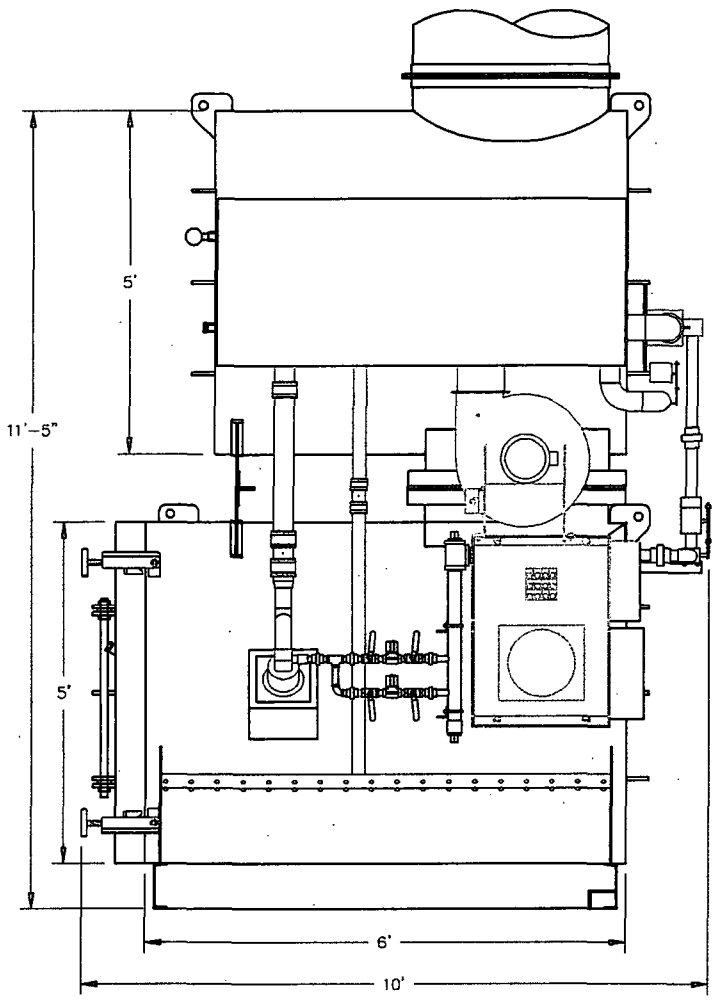
Batch Load Rate	Lbs. (kg)	780 (360)
Combustion Rate*	Lbs. (kg)/hr	195 (90)
Waste Reduction Rate	Percent	95

Utility Requirements

Fuel Connection	Inches	2
Req. Fuel Flow Rate	Btu/hr.	2 mil.
Req. Pressure @ header	Inches W.C.	9 nat./11 LPG
Combustion Air Motor	Hp	5
115 Volt Electric Service	Amps	10
208-230/460V 3 ∅ Serv.	Amps	13-12/6
380V, 50 Hz available		

*The rate of combustion is based on a waste stream with an average BTU value of 5,500 BTUs per pound & 20,000 Btu/c.f. PCC heat release. Specifications subject to change or modification without notice.

KM800



LEFT SIDE ASSEMBLY VIEW

NOTES:
1) ALL DIMENSIONS ARE APPROXIMATE.
2) CAPACITY OF CMKM800 MODEL IS 800 lb/batch AT 1000 btu/lb.
3) PRIMARY CHAMBER VOLUME IS APPROXIMATELY 75 CUBIC FEET.

Keller Mechanical & Engineering 305 WINSTON CREEK PARKWAY LAKELAND FL 33810				
TITLE	**DISPOSAL UNIT ASSEMBLY VIEWS**			
DRAWN	DATE 2/27/05	DWG. NO.	SCALE NTS	SHEET 1 OF 1	REV. 0

Attachment 3

Emission Calculations based on AP-42 Table 2.1-12, Process Flow Diagram

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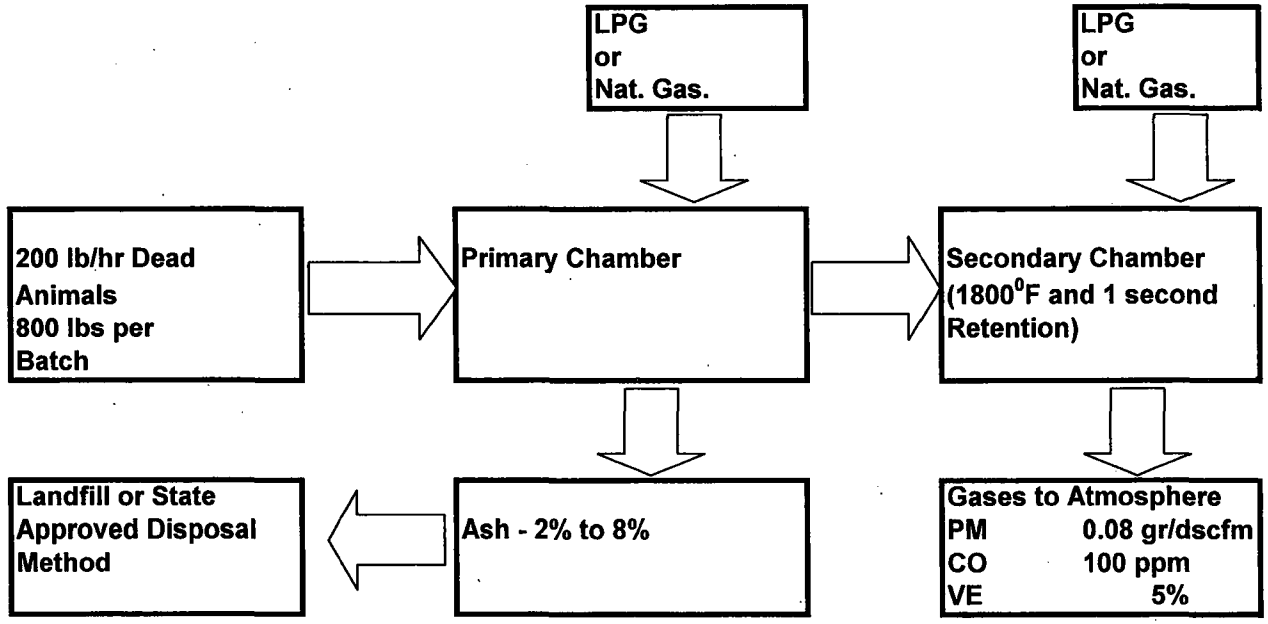
Pounds Incinerated Per Hour (Average)	Hours Per Year	SO2 lb/ton	SO2 lb/hr	SO2 TPY	Nox lb/ton	Nox lb/hr	Nox TPY	TOC lb/ton	TOC lb/hr	TOC TPY
200	8760	2.5	0.25	1.1	3	0.3	1.314	3	0.3	1.314

CO=100 PPM @ 7% O2 based on manufacturers warranty

PM = 0.08 gr/dscf based on manufacturers warranty

Process Flow Diagram



Attachment 4

Area Map

370 S. North Lake Blvd. Ste. 1004, Altamonte Springs, Florida 32701 - Phone: (407) 574-2021, FAX: (407) 574-2456
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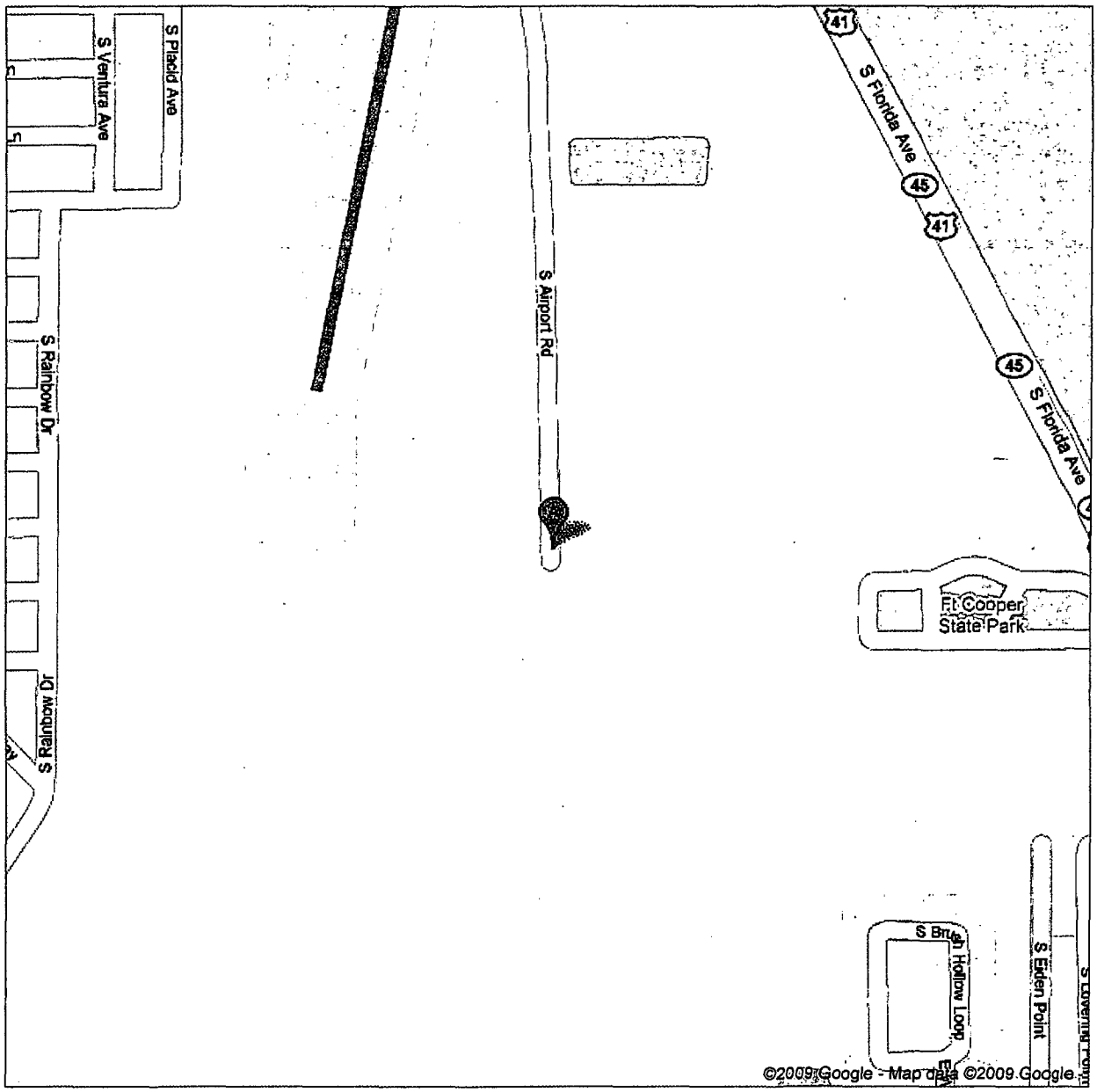
Google maps Address **4030 S Airport Rd**
Inverness, FL 34450



Air General Permit Registration Form

Prepared for:

Citrus County Animal Services
4030 South Airport Road
Inverness, Florida 34450

Animal Cremation Facility

Prepared By:

AI Environmental Consulting Services, Inc.
370 S. North Lake Blvd, Suite 1004
Altamonte Springs, Florida 3270

October, 2009

370 S. North Lake Blvd, Ste. 1004, Altamonte Springs, Florida 32701 - Phone: (407) 574-2021, FAX: (407) 574-2456
AI@CFL.RR.COM

Application Contents

- DEP 62-210-920(10) Air General Permit Registration Form

Attachments

Attachment 1 Residence Time Calculation
Attachment 2 KM800 Specifications & Engineering Drawings
Attachment 3 Emission Calculations based on AP-42 Table 2.1-12, Process Flow Diagram
Attachment 4 Area Map

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