ESSROC SAN JUAN INC.
SAMPLE CALCULATIONS AVERAGE HEAT TO PRODUCE CLINKER

COAL: Permit limit: 90,000 tons coal/ year Average Heat Content: 22 MM Btu/ton coal

$$\frac{90000\ \text{ton coal}}{\text{year}} \cdot \frac{22\ \text{MM Btu}}{\text{ton coal}} = \frac{1980000\ \text{MM Btu}}{\text{year}}$$

The estimated heat to produce a pound of clinker using coal is the following:

$$\frac{1980000\ \text{MM Btu}}{\text{year}} \cdot \frac{\text{year}}{682550\ \text{ton clinker}} = \frac{2.90\ \text{MM Btu}}{\text{ton clinker}} \cdot \frac{1.00\text{E+06}\ \text{Btu}}{1\ \text{MM Btu}} \cdot \frac{1\ \text{ton}}{2000\ \text{lb}} = \frac{1{,}450.44\ \text{Btu}}{\text{lb clinker}}$$

BIOMASS: Permit Limit Request: 70,000 tons biomass/year Average Heat Content: 10 MM Btu/ton biomass

$$\frac{70000\ \text{ton biomass}}{\text{year}} \cdot \frac{10\ \text{MM Btu}}{\text{ton biomasa}} = \frac{700000\ \text{MM Btu}}{\text{year}}$$

The estimated heat to produce a pound of clinker using biomass is the following:

$$\frac{700000\ \text{MM Btu}}{\text{year}} \cdot \frac{\text{year}}{241305\ \text{ton clinker}} = \frac{2.90\ \text{MM Btu}}{\text{ton clinker}} \cdot \frac{1.00\text{E+06}\ \text{Btu}}{1\ \text{MM Btu}} \cdot \frac{1\ \text{ton}}{2000\ \text{lb}} = \frac{1{,}450.45\ \text{Btu}}{\text{lb clinker}}$$

Used Oil: Permit Limit: 69657 tons of Used Oil/year Average Heat Content: 34MM Btu/ton Used Oil

$$\frac{69657\ \text{tons used oil}}{\text{year}} \cdot \frac{34\ \text{MM Btu}}{\text{ton biomasa}} = \frac{2368338\ \text{MM Btu}}{\text{year}}$$

The estimated heat to produce a pound of clinker using used oil is the following:

$$\frac{2368338\ \text{MM Btu}}{\text{year}} \cdot \frac{\text{year}}{682550\ \text{ton clinker}} = \frac{3.47\ \text{MM Btu}}{\text{ton clinker}} \cdot \frac{1.00\text{E+06}\ \text{Btu}}{1\ \text{MM Btu}} \cdot \frac{1\ \text{ton}}{2000\ \text{lb}} = \frac{1{,}734.92\ \text{Btu}}{\text{lb clinker}}$$