



THE AMALGAMATED SUGAR COMPANY LLC



50 SOUTH 500 WEST • P.O. BOX 700 • PAUL, ID 83347
PHONE: (208) 438-2115 • FAX: (208) 438-5485

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DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE A Q PROGRAM

February 9, 2012

Idaho Department of Environmental Quality
Air Quality Permit to Construct Fees
Fiscal Office
1410 N. Hilton
Boise, ID 83706-1255

RE: Permit to Construct Application Fee
Modification Request for No. 6 Evaporator Permit to Construct (No. 067-00001)
The Amalgamated Sugar Company LLC (TASCO) Mini Cassia Facility

Dear Sir or Madam:

Attached is the \$1,000.00 application fee for the February 9, 2012 requested modifications to the No. 6 Evaporator Permit to Construct (No. 067-00001).

If you have any questions please call Larry Lloyd at (208) 438-2115 or Dean DeLorey at (208) 383-6500.

Sincerely,

Larry Lloyd
Plant Manager
The Amalgamated Sugar Company LLC
Mini Cassia Facility

DCD/ss

Enc.

cc: Boise – Dean C. DeLorey, Bob Braun
Mini Cassia – Galan Rogers, Karen Cummings



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February 9, 2012

Steve VanZandt
Air Quality Science Officer
Idaho Department of Environmental Quality
1363 Fillmore Street
Twin Falls, ID 83301

RE: Modification Request No. 6 Evaporator Permit to Construct (No. 067-00001)
The Amalgamated Sugar Company LLC (TASCO) Mini-Cassia Facility

Dear Steve:

The Amalgamated Sugar Company LLC (TASCO) requests to modify the annual beet slice limitation in Permit to Construct (PTC) No. 067-00001. In addition, the Mini Cassia facility also requests to modify the boiler steam loading limit permit language to account for the use of natural gas. This application has been prepared in accordance with Idaho's procedures for revising Permits to Construct in IDAPA 58.01.01.209.04. Supporting documentation for this permit modification request is included in the following attachments:

- Attachment A - Certification Statement
- Attachment B - PTC Modification Analysis – Annual Slice Limitation
- Attachment C - PTC Modification Analysis – Steam Loading
- Attachment D - Proposed Revisions to Permit to Construct No. 067-00001

If you have any questions, please contact either Dean C. DeLorey at (208) 383-6532 or me at (208) 438-2115.

Sincerely,

Larry Lloyd
Plant Manager
The Amalgamated Sugar Company LLC
Mini-Cassia Facility

Attachment

Cc: IDEQ – Bill Rogers, Boise
Boise – Joe, Huff, John McCreedy, Dean DeLorey, Bob Braun
Mini-Cassia – Galan Rogers, Karen Cummings

Attachment A

Certification Statement

Based on information and belief formed after reasonable inquiry, I certify the statements and information in this document are true.

Signature of Owner or Responsible Official

Date

Larry Floyd

2/9/12

Attachment B

PTC Modification Analysis

Annual Beet Slice Limitation

ATTACHMENT B

Proposed Permit Modification Annual Limitation Permit to Construct (No. 067-00001) January 2012

Overview

The Amalgamated Sugar Company LLC (TASCO) proposes to modify the No. 6 Evaporator Permit to Construct (PTC) (No. 067-00001) to increase the annual beet slice limitation in Permit Condition 2.3 from 3,200,000 tons per year to 3,600,000 tons per year.

Increasing the annual slice limitation will allow the Mini Cassia facility to process additional beets provided by the growers. Farming practice improvements along with increased beet growing acreage have increased the tons of beets per acre and the total tons of beets required to be processed. This PTC modification will allow the Mini Cassia facility to process most of the beets grown in the Mini Cassia District and offers two significant environmental benefits. First, of the three TASCO facilities, the Mini Cassia facility is the most energy efficient. Therefore, less emissions are generated per ton of beets sliced. Secondly, allowing the beets to be processed where they are grown minimizes the need to transport the beets to either the Twin Falls or Nampa facility for processing. Diesel fueled trucks or trains are required to transport beets. Minimizing the beet transport reduces company-wide facility emissions and vehicle transport emissions. This project also saves the company money since less overall fuel will be used by the processing facilities per ton of beet sliced and reduces transportation fuel costs.

Emissions

Estimated projected emissions changes and calculations for increasing the annual beet slice by 400,000 tons per year are provided in Attachment B-1. Based on these estimates, the increased annual slice would only result in minor increases of VOC's and sulfur dioxide (SO₂) from the main mill vents and sulfur stove. For this request, estimated VOC's and SO₂ emissions would increase by 15.1 and 1.3 tons per year, respectively.

Regulatory Analysis – Criteria Pollutants

The 3,200,000 ton per year limit was previously incorporated into the No. 6 Evaporator Permit to Construct No. 067-00001 issued on June 14, 2006. Increasing the annual beet slicing limit to 3,600,000 tons per year does not involve any process or equipment changes. TASCO requests approval of this permit modification in accordance with 58.01.01.203 (Permit Requirements for New and Modified Stationary Emissions Sources).

Regulatory Analysis – Toxic Air Pollutants (TAP's)

Based on previous emissions estimates, acetaldehyde and formaldehyde TAP's emissions were evaluated from the main mill vents. As shown in Attachment B-1, the estimated net increases are: 1) For acetaldehyde, 0.494 tons per year or 0.217 lbs per hour(annualized) and, 2) For formaldehyde, 0.00454 tons per year or 0.00199 lbs per hour(annualized). Since estimated net annualized hourly emissions are greater than the screening levels in IDAPA 58.01.01.586 an air quality impact analysis was conducted and is provided in Attachment B-2. This analysis demonstrates that conservative model predicted ambient concentrations of acetaldehyde and formaldehyde are below Idaho's acceptable ambient concentrations (AACC).

Attachment B-1

Emission Estimates

Annual Beet Slice Limitation

Main Mill, Process Slaker & Sulfur Stoves
Net Annual Emissions Increases
Increased Annual Beet Slice to 3,600,000 tons/y
Mini Cassia Facility

400,000 = slice increase from 3,200,000 to 3,600,000 tons per year (tons/y)

Sulfur Stove

0.13 = lbs sulfur per ton beet slice (lbs/tons)

26.0 = tons additional sulfur per year thru sulfur stoves (tons/year)

0.006 = lbs SO₂ per ton beets (lbs/ton) - 1992 Stack Test

1.2 = tons SO₂ per year net increase from sulfur stoves (tons/year)

Main Mill

0.0756 = lbs VOC's per ton beets (lbs/ton) - Engineering estimates

15.1 = tons VOC's per year net increase from main mill (tons/year)

Main Mill Vents
Net Annual Emissions Increases
Increased Annual Beet Slice to 3,600,000 tons/y
Mini Cassia Facility

| Source | Acetaldehyde | Formaldehyde |
|---|--------------|--------------|
| Emission Factor ¹ (lbs/tons beets) | 2.47E-03 | 2.27E-05 |
| Annual Beet Slice Increase (10 ⁶ ton/yr) | 0.4 | 0.4 |
| Annual Emissions Increase (tons/y) | 4.94E-01 | 4.54E-03 |
| Annualized Emissions Increase (lbs/h) ² | | |
| -Total | 2.17E-01 | 1.99E-03 |
| -1st Carb Tank Vent | 8.45E-02 | 9.16E-04 |
| -2nd Carb Tank Vent | 1.30E-01 | 1.04E-03 |
| -Evaporator Vent | 2.17E-03 | 3.98E-05 |
| Screening Levels (IDAPA 58.01.01.586) | 3.00E-03 | 5.10E-04 |

¹ Engineering estimates and stack testing data.

² Assume 190 d/y beet campaign.

Attachment B-2

Air Quality Impact Analysis

Annual Beet Slice Limitation

Acetaldehyde & Formaldehyde
Air Quality Impact Analysis

for the

The Amalgamated Sugar Company LLC
Paul, Idaho

February 9, 2012

1.0 INTRODUCTION

The Amalgamated Sugar Company LLC (TASCO) has conducted an ambient air quality impact analysis in support of the request to increase the annual beet slice limitation in the No. 6 Evaporator Permit to Construct (PTC No. 067-00001) for the Mini Cassia facility in Paul, ID. The analysis was performed to conservatively estimate air quality impacts associated with increasing the beet slice limitation from 3,200,000 tons per year to 3,600,000 tons per year. Trace levels of acetaldehyde and formaldehyde emissions were modeled to ensure compliance with IDAPA 58.01.01.586 toxic air pollutant acceptable ambient concentrations.

The modeling analysis was performed using the air dispersion model “Breeze” developed by Trinity Consultants. The Breeze suite of programs combines into one program EPA’s AERMOD and Building Profile Input Program (BPIP). The Breeze suite is also capable of importing digital elevation model (DEM) terrain files and graphically presenting contours as well as buildings, emission points and receptors. The majority of the modeling methods and assumptions utilized in TASCO’s February 2006 No. 6 Evaporator PTC Application were used to develop the Air Quality Impact Analysis. Updates to previous modeling analysis are discussed below.

2.0 INPUT PARAMETERS

Table 1 presents the emission rate increases projected for 400,000 tons of additional beets. Table 2 details the stack parameters including stack height and diameter, exhaust temperature and the exhaust flow rate. Figure 1 illustrates the source and building locations.

3.0 MODEL

The Breeze Suite of programs operates using EPA’s AERMOD model version 11353, and BPIP Prime model version 04274.

4.0 METEOROLOGY

This analysis used meteorological data (met data) developed by Geomatrix of Lynwood, Washington using EPA’s AERMET model (Version 06431). Upper air data was collected from the Boise, Idaho meteorology station #24131 while the surface air was collected at the Burley, Idaho met station #25867. Land use characteristics were processed in 12 sectors encompassing the Minidoka INEEL meteorological site using the AERMET user guide lookup tables. These files reflect meteorology of the area from January 1, 2000 to December 31, 2004.

5.0 **RECEPTOR GRID**

The dispersion model included boundary receptors and two receptor grids. Figure 2 illustrates the fence line receptors and grid receptors. Figure 3 illustrates the location of the Highest Annual concentration identified in this model.

The full receptor grid consists of several receptor grids. Originally, receptors were placed every 200 meters on a 10 km by 15 km area grid, (3750 grid points) with the facility placed in the middle. Receptors were excluded within the facility boundaries, which includes the beet handling area, waste ponds, coal storage area, irrigation fields and the physical plant due to restricted public access. Fence (boundary) receptors were placed at the perimeter of the facility on a 50-meter spacing starting with the northwest corner of the property owned and controlled by TASC0 (as suggested in IDEQ's Air Quality Modeling Guideline). Based upon the results of initial simulations, a refined 2.5 km by 2 km receptor grid with 50 meter spacing between receptors was placed around the facility with an eastern most boundary at the public road 400 West. The smaller grid is represented by grid patterns of 51 by 41 (2091) receptors. The placement of the smaller 50-meter grid pattern was determined by evaluating previous model output and prevailing wind patterns.

Boundary receptors were placed around the property boundaries at 50 meter spacing. This includes the South Farm, Lime Pile south of the facility as well as the Lagoon system east of the facility. Because roads and a rail line transect the property, discrete receptors were placed at 50 meter intervals along the center line of the road or rail line where it crosses TASC0 property, to reflect ambient air.

Terrain elevations for the receptors were obtained from USGS digital elevation model (DEM) 7.5-minute Rupert, Rupert_NW, Burley and Burley_NE quadrangles. These data have a horizontal spatial resolution of 30 meters. The receptor locations are expressed in units of UTM (NAD27) coordinates.

6.0 **BACKGROUND CONCENTRATION**

Background concentrations are not necessary for this impact analysis.

7.0 **RESULTS**

Table 3 presents the results of the analysis. The highest annual, model-predicted acetaldehyde concentration is $3.447E-02$ ug/m³ and is located at UTM Coordinates 273,365 meters Easting by 4,721,471 meters Northing. The highest annual, model-predicted formaldehyde concentration is

3.10E-04 ug/m³ at the same receptor location. As shown in Figure 3, the highest modeled concentrations are predicted to occur at the western fence line of the property.

8.0 CONCLUSIONS

An air quality impact analysis was conducted based on net annual emissions increases associated with a net annual slice increase of 400,000 tons per year.

As shown in Table 3, the analysis demonstrated that the model-predicted annual acetaldehyde and formaldehyde concentrations for the meteorological period between January 1, 2000 and December 31, 2004 are less than the Acceptable Annual Ambient Concentrations (AAAC) in Idaho's in IDAPA 58.01.01.586.

Table 1. Point Source Net Emissions Changes (lbs / hr)

| Emission Source | Source ID | Annualized Emissions (Lb/hr) | |
|----------------------------------|-------------|------------------------------|--------------|
| | | Acetaldehyde | Formaldehyde |
| Total | | 2.17E-01 | 1.99E-03 |
| 1 st Carbonation Tank | P-K (1/2 A) | 8.45E-02 | 9.16E-04 |
| 2 nd Carbonation Tank | P-K (1/2 B) | 1.30E-01 | 1.04E-03 |
| Evaporator Vent | EVAP | 2.17E-03 | 3.98E-05 |

a. Emission rate based on a requested beet slice rate increase from 3,200,000 to 3,600,000 tons per year.

Table 2. Stack Data for Stationary Point Sources

| Emission Source (Point) | Source ID | UTM X (m) | UTM Y (m) | Stack Height (ft) | Temperature (°F) | Exit Velocity (ft / min) | Stack Diameter (ft) |
|----------------------------------|-------------|-----------|-----------|-------------------|------------------|--------------------------|---------------------|
| 1 st Carbonation Tank | P-K (1/2 A) | 273,812 | 4,721,330 | 79 | 180 | 2186 | 3.5 |
| 2 nd Carbonation Tank | P-K (1/2 B) | 273,800 | 4,721,295 | 66 | 179 | 416 | 3.5 |
| Evaporator Vent | EVAP | 273,791 | 4,721,280 | 41 | 203 | 3414 | 1.333 |

Table 3. Maximum Predicted Annual Concentration

| Constituent | Annual (ug / m ³) | UTM X (m) | UTM Y (m) | AAAC's (ug / m ³) |
|--------------|-------------------------------|-----------|-----------|-------------------------------|
| Acetaldehyde | 0.03447 | 273,365 | 4,721,471 | 0.45 |
| Formaldehyde | 0.00031 | 273,365 | 4,721,471 | 0.077 |

Figure 1. Facility Layout Showing Buildings, Tanks, and Stacks

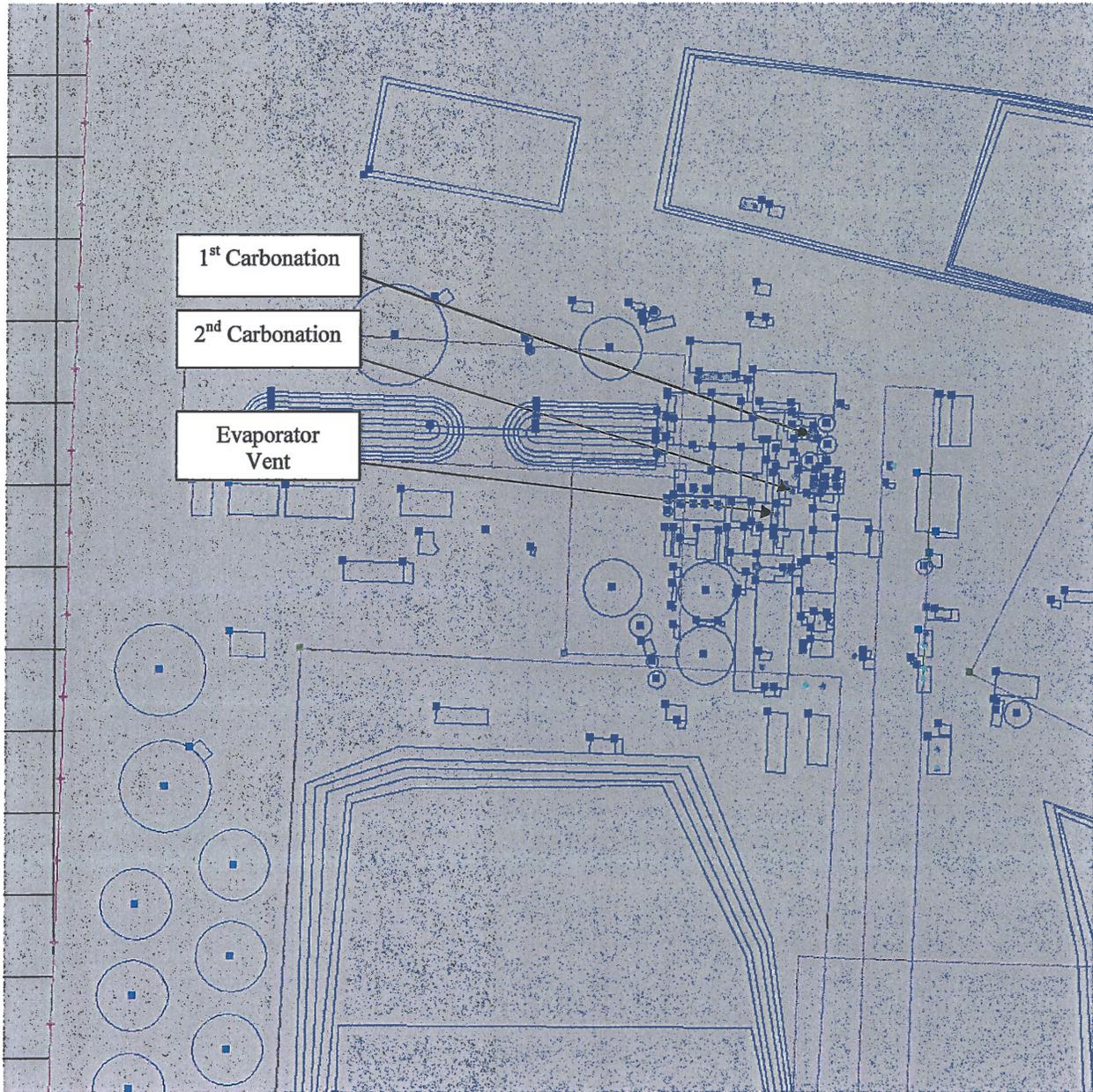
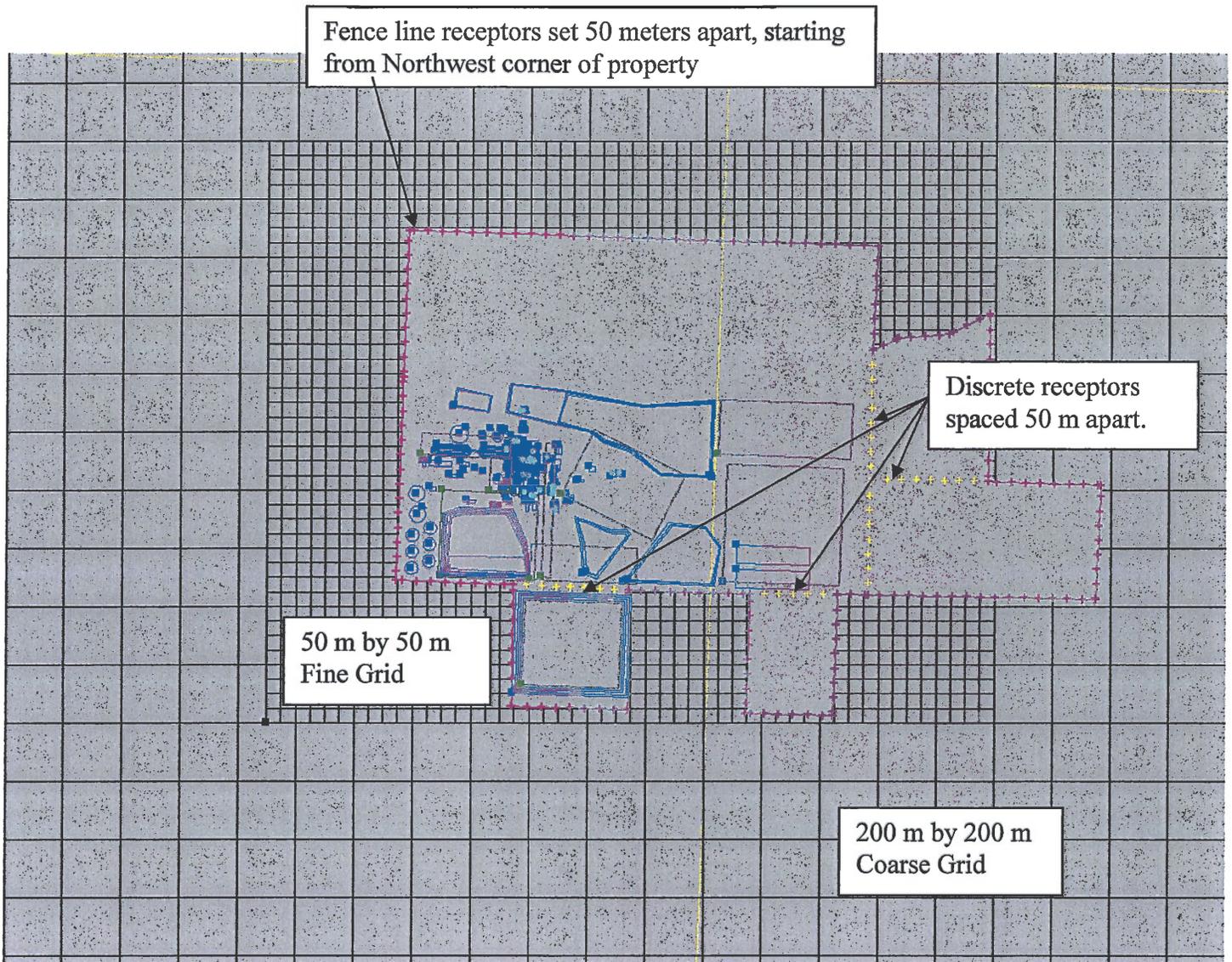
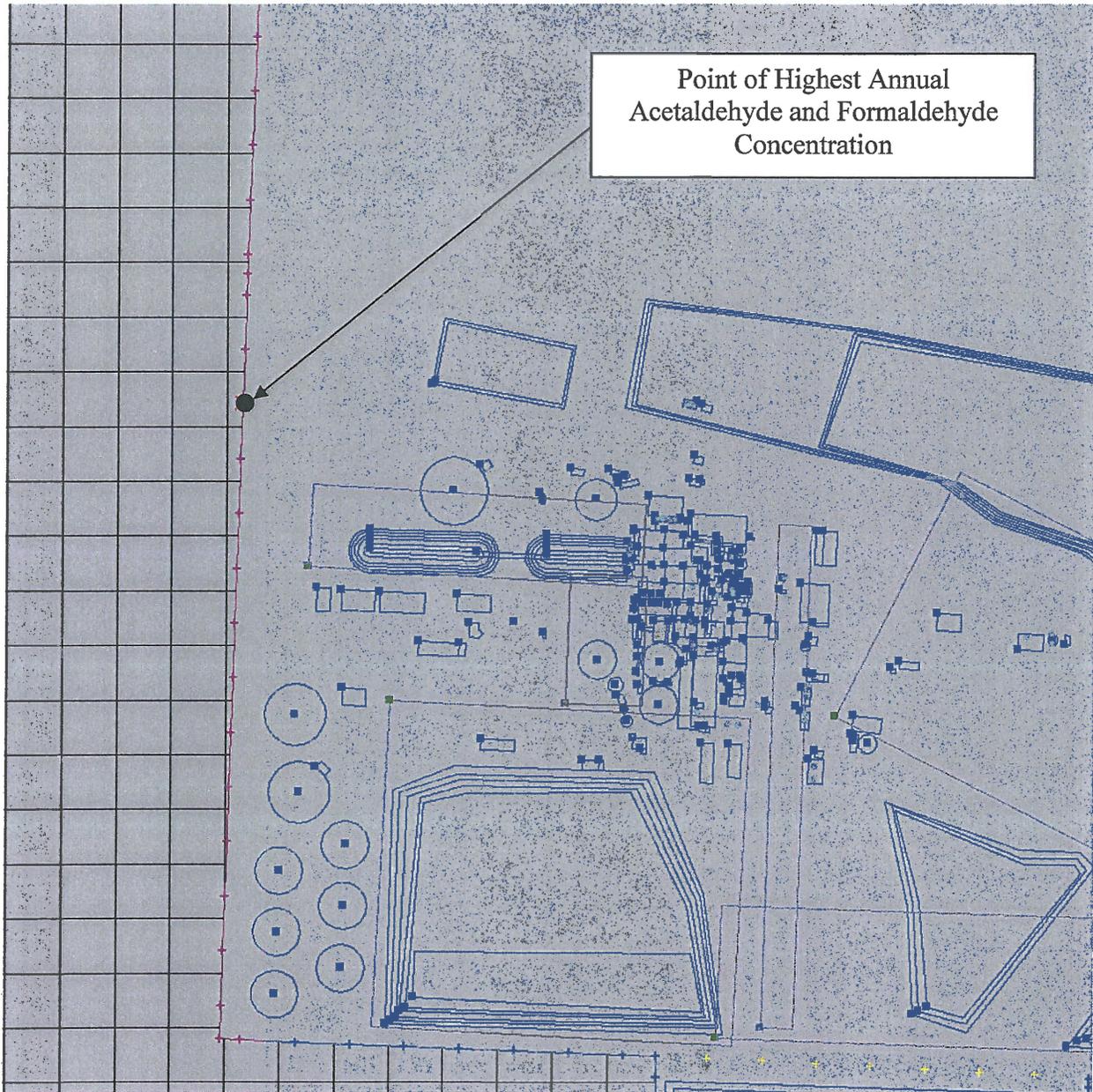


Figure 2. Fence Line and Receptor Grid



**Figure 3. Location of Maximum Acetaldehyde and Formaldehyde
Model Predicted Concentrations**



Attachment C

PTC Modification Analysis

Boiler Steam Loading Limitation

ATTACHMENT C

Proposed Permit Modification Annual Boiler Steam Loading Limitation Permit to Construct (No. 067-00001) January 2012

Overview

The Amalgamated Sugar Company LLC (TASCO) proposes to modify the steam production limitation in Permit Condition 2.4 of the No. 6 Evaporator Permit to Construct (PTC No. 067-00001) to account for the potential use of natural gas by the Erie City and/or Nebraska boilers.

Steam Loading Limit

In 2005, the No. 6 Evaporator PTC was modified to include an annual steam loading limit in place of the previous annual sugar production limit. TASCO requested this permit change because of equipment upgrades which significantly improved the overall energy efficiency of the facility. The energy improvements decreased the amount of steam per unit of sugar produced.

Condition 2.4 of the PTC states that, "Steam production from the facility boilers shall not exceed 1,830,000 thousand pounds of steam per campaign year (Klb/yr)". As specified in the facility Tier I Operating Permit, the facility is permitted to operate and generate steam from the B&W stoker coal fired boiler and the Erie City pulverized coal and/or natural gas-fired boiler. In addition, the facility may also operate the Nebraska boiler as a back-up to either of these boilers.

During the beet processing campaign, the facility operates both the B&W and Erie City boilers. During the juice run only one these boilers operates. Historically, coal is the primary fuel utilized by both boilers for steam generation and comparison to the steam loading limit.

TASCO requests from IDEQ, to modify the steam loading limit to account for both coal only or a combination of coal and natural gas. As discussed below, overall emissions from the facility will either remain the same and more likely decrease with this permit modification.

Emissions

A comparison of criteria pollutant emissions factors for the Erie City boiler firing coal and natural gas are provided in Attachment C-1. For natural gas firing only trace quantities of PM, SO₂, CO and VOC's are emitted. As a result, in order to appropriately adjust the boiler steam loading limit to account for natural gas usage, this analysis focuses on projected NO_x emissions. TASC0 proposes the following modification to Condition 2.4:

$$x + (f)y = 1,830,000 \text{ Klbs steam}$$

where x = Annual Klbs steam from coal

y = Annual Klbs steam from gas

f = ratio of NO_x from gas/NO_x from coal

$$f = 0.37 \text{ (lbs NO}_x\text{/Klb steam)} / 1.29 \text{ (lbs NO}_x\text{/Klb steam)}$$
$$= 0.287$$

Therefore:

$$x + (0.287)y = 1,830,000 \text{ Klbs steam (Proposed Condition 2.4)}$$

Based on the proposed equation above, the revised allowable steam limit would be the total of the steam generated from coal usage and the steam generated utilizing natural gas. Utilizing cleaner burning fuel for larger beet crops is beneficial to both the company and the environment.

Attachment C-1 also shows that estimated CO and VOC emissions factors are slightly higher for natural gas firing versus coal firing. However, based on conservative assumptions potential net emission increases are below regulatory concern.

Regulatory Analysis – Criteria Pollutants

Since projected emissions (both criteria & toxic air pollutions) associated with this permit modification request will either remain the same, decrease or are below regulatory concern TASC0 requests from IDEQ to incorporate this steam loading limit revision into the No. 6 Evaporator PTC in accordance with IDAPA 58.01.01.200.

Attachment C-1

Emission Estimates

Boiler Steam Loading Limitation

ERIE CITY BOILER EMISSION FACTOR COMPARISON
Coal vs Gas

| POLLUTANT | Coal | | Natural Gas | | EF Ratio Gas vs Coal (%) |
|-----------|-------------------------------------|---|-------------------------------------|--|--------------------------------|
| | Emission Factor (lbs/klbs steam) | REFERENCE | Emission Factor (lbs/klbs steam) | REFERENCE | |
| PM | 0.287 | Compliance Test February 2008 | 0.0294 | IDAPA 58.01.01.677 Grain loading limit 0.015 at 3% O ₂ | 10.2 |
| PM10 | 0.287 | Compliance Test February 2008 | 0.0294 | AP-42, 7/98, Table 1.4-2 | 10.2 |
| SO2 | 0.144 | AP-42, 9/98, Table 1.1-3, 0.8 % sulfur & 90 % scrubber control | 8.10E-04 | AP-42, 7/98, Table 1.4-2 | 0.6 |
| CO | 2.33E-03 | Nampa Facility Riley Boiler Eng. Test - Oct 2009 | 6.59E-03 | Nampa Facility Riley Boiler Compliance Test - Jan. 2004 | 283 |
| NOx | 1.29 | Oct. 2005 Engineering Stack Test | 0.37 | AP-42, 7/98, Table 1.4-1 | 28.7 |
| VOC | 5.00E-03 | AP-42 9/98, Table 1.1-19, PC, methane & TNMOC | 7.30E-03 | AP-42, 7/98, Table 1.4-2 | 146 |

**Net CO & VOC Emission Increases
Coal vs. Gas Firing
Erie City Boiler – Mini Cassia Facility**

- Assumptions
 - Conservatively assume Erie City operates at 200 klbs/h for 8760 h/y
 - Net CO EF = 6.59×10^{-3} lbs/lkbs (gas) – 2.33×10^{-3} lbs/klbs (coal)
 = 4.26×10^{-3} lbs/klbs steam
 - Net VOC EF = 7.3×10^{-3} lbs/klbs steam
 = 2.3×10^{-3} lbs/klbs steam
- Net Annual Emissions Calculations (tons/y)
 - CO (tons/y) = $(4.26 \times 10^{-3}) \times 200 \times 8760 \times 1/2000$
 = 3.7 tons/y
 - VOC (tons/y) = $(2.3 \times 10^{-3}) \times 200 \times 8760 \times 1/2000$
 = 2.0 tons/y

Attachment D

No. 6 Evaporator Permit to Construct

Proposed Revisions to Condition 2.3 and 2.4

AIR QUALITY PERMIT TO CONSTRUCT NUMBER: P-050401

Permittee: TASCO – MiniCassia Facility

Facility ID No. 067-00001 **Date Issued:**

Location: Paul, Idaho

2. FACILITY LIMITS

2.1 Process Description

The No. 6 Evaporator is used to evaporate water from sugar juices to produce dry granulated sugar.

Emissions Limits

2.2 Opacity Limit

Emissions from any stack, vent, or functionally equivalent opening associated with the processing of beets or the production of sugar, shall not exceed 20% opacity for a period or periods aggregating more than three minutes in any 60-minute period as required by IDAPA 58.01.01.625 (Rules for the Control of Air Pollution in Idaho). Opacity shall be determined by the procedures contained in IDAPA 58.01.01.625.

Operating Requirements

2.3 Beet Throughput Limits

- Throughput of beets to the facility shall not exceed 19,550 T/day.
- Throughput of beets to the facility shall not exceed 3,600,000 tons per campaign year.

2.4 Steam Production Limit

Steam production from the facility's boilers shall not exceed 1,830,000 thousand pounds of steam equivalent per campaign year (Klb/yr) based on the following equation:

$$x + (0.287)y = 1,830,000 \text{ Klbs steam(equivalent)}$$

where,

$x =$ total annual Klbs(thousand pounds) boiler steam from coal firing

$y =$ total annual Klbs(thousand pounds) boiler steam from gas firing

2.5 Reasonable Control of Fugitive Emissions

All reasonable precautions shall be taken to prevent PM from becoming airborne as required in IDAPA 58.01.01.651. In determining what is a reasonable, consideration will be given to factors such as the proximity of dust-emitting operations to human habitations and/or activities and atmospheric conditions that might affect the movement of PM. Some of the reasonable precautions include, but are not limited to, the following:

- Use, where practical, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of lands;

AIR QUALITY PERMIT TO CONSTRUCT NUMBER: P-050401

Permittee: TASC0 – MiniCassia Facility

Facility ID No. 067-00001

Date Issued:

Location: Paul, Idaho

- Application, where practical, of asphalt, oil, water or suitable chemicals to, or covering of dirt roads, material stockpiles, and other surfaces which can create dust;
- Installation and use, where practical, of hoods, fans and fabric filters or equivalent systems to enclose and vent the handling of dusty materials. Adequate containment methods should be employed during sandblasting or other operations;
- Covering, where practical, of open-bodied trucks transporting materials likely to give rise to airborne dusts;