YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

1947 Galileo Court, Suite 103; Davis, CA 95618

EMISSION EVALUAITON

		ATC #	C-11-76	
ENGINEER:	René Toledo	PTO#	P-54-93(a5)	(Reserved)
		SIC Code #	5171	
FACILITY NAME:	Buckeye Terminals, LLC	UTM E	628.678	km
		UTM N	4269.854	km

LOCATION: The equipment is located at 1601 South River Road in West Sacramento, CA. The equipment is not located within 1,000 feet of a K-12 school and is not subject to the requirements of H&S 42301.6 (see discussion below).

PURPOSE: Buckeye is proposing to modify Permit to Operate (PTO) P-54-93(t1) by requesting an increase in the maximum Reid Vapor Pressure (RVP) allowed to be stored in Tank #15 in the months of October to March. The following tanks are also being modified as part of this project:
> Tank #16 (under PTO P-66-93(t1) being modified by Authority to Construct (ATC) C-11-78); and
> Tank #18 (under PTO P-45-94(t1) being modified by ATC C-11-76)

The source has not proposed an increase in the permitted process limits or any physical modifications to the existing bulk storage tanks.

This evaluation also serves to document the significant modification of the facility's Title V Operating Permit F-00012-8 being performed under the Enhanced New Source Review provisions of District Rule 3.4, Section 404.

EQUIPMENT: 1,690,000 gallon welded storage tank (#15) and one (1) 75 HP gasoline product pump

CONTROL EQUIPMENT: Internal steel floating roof (bolted) with a mechanical shoe primary seal and rim mounted secondary seal

APPLICATION DATA:

Operating Schedule		Units	Formula Symbol	Reference
Max. Daily Operating Hours =	24	hours/day	OD	Applicant
Max. 1st Qtr. Operating Days =	90	days/quarter	Q1	Applicant
Max. 2nd Qtr. Operating Days =	91	days/quarter	Q2	Applicant
Max. 3rd Qtr. Operating Days =	92	days/quarter	Q3	Applicant
Max. 4th Qtr. Operating Days =	92	days/quarter	Q4	Applicant
Max. Yearly Operating Days =	365	days/year	OY	Applicant

Gasoline Throughput		Units	Formula Symbol	Reference
Max. Daily Throughput =	N/A	gallons/day [a]	TD	-
Max. 1st Qtr. Throughput =	29.93	million gallons/quarter	T1	Applicant
Max. 2nd Qtr. Throughput =	30.27	million gallons/quarter	T2	Applicant
Max. 3rd Qtr. Throughput =	30.60	million gallons/quarter	T3	Applicant
Max. 4th Qtr. Throughput =	30.60	million gallons/quarter	T4	Applicant
Max. Yearly Throughput =	121.40	million gallons/year	TY	Applicant

[a] EPA TANKS 4.0.9d emissions modeling software program calculates VOC emissions on a monthly basis. Therefore, daily throughput and emission limits are not included on the current permit and will not be included in this emission evaluation or the ATC.

Storage Tank Data

Tank Type =	Internal Floating Roof
Deck Material =	Steel
Deck Construction =	Welded
Tank Diameter (feet) =	80
Tank Volume (gallons) =	1,690,000
Primary Seal =	Mechanical shoe
Secondary Seal =	Rim-mounted
Proposed Liquid(s) Stored =	Gasoline

EMISSION CALCULATIONS:

1. Determine VOC Emissions:
VOC emissions from the process were quantified using EPA TANKS 4.0.9d emissions modeling software program (TANKS). Currently, TANKS is the most reliable tool available for quantifying VOC emissions from bulk storage tanks because the software relies on meteorological data for the Sacramento region. In additions, TANKS takes into account the actual properties (e.g. dimensions, fittings, etc.) of a specific tank and the maximum Reid Vapor Pressure (RVP) of the gasoline stored when performing VOC calculations. The TANKS run for this proposal is attached to this emission evaluation.

	Rim Seal [b]	Withdrawal [c]	Deck Fitting [b]	Deck Seam [b]	Total	
Maximum Daily VOC =	N/A	N/A	N/A	N/A	N/A	lb/day
1st Quarter VOC =	125	76	625	0	826	lb/quarter
2nd Quarter VOC =	63	77	315	0	454	lb/quarter
3rd Quarter VOC =	69	78	344	0	490	lb/quarter
4th Quarter VOC =	131	78	654	0	863	lb/quarter
Maximum Yearly VOC =	388	308	1,938	0	2,633	lb/year
Maximum Yearly VOC =	0.19	0.15	0.97	0	1.31	tons/year

[b.] VOC emissions from rim seals, deck fittings, and deck seams are called standing (or breathing) losses. Tank standing losses occur just from the tank being in service (having some amount of gasoline in it), independent of whether the tank is being filled or emptied. The quantity of standing loss VOC emissions is significantly affected by the ambient temperature (the hotter the temperature, the higher the VOC emissions), the number and types of deck fittings on the tank, and the tank floating roof deck construction. Typically, the majority (approximately 90-99%) of the VOC emissions from a bulk gasoline storage tank are from standing losses.

[c.] VOC emissions from gasoline withdrawal are called working losses. Tank working losses occur specifically when the tank is being filled or emptied and, therefore, is directly related to the throughput of the tank.

RULE & REGULATION COMPLIANCE EVALUATION:

District Rule 2.3 - Ringelmann Chart
The source is subject to the provisions of this rule. The rule compliance evaluation is attached and contains a discussion of all applicable requirements that will be listed as conditions in the permit.

District Rule 2.5 - Nuisance
The source is subject to the provisions of this rule. The rule compliance evaluation is attached and contains a discussion of all applicable requirements that will be listed as conditions in the permit.

District Rule 2.17 - Circumvention
The source is subject to the provisions of this rule. The rule compliance evaluation is attached and contains a discussion of all applicable requirements that will be listed as conditions in the permit.

District Rule 2.21 - Organic Liquid Storage and Transfer
The source is subject to the provisions of this rule. The rule compliance evaluation is attached and contains a discussion of all applicable requirements and any streamlining or subsuming demonstrations performed on these requirements.

District Rule 2.23 - Fugitive Hydrocarbon Emissions
The source is subject to the provisions of this rule. The rule compliance evaluation is attached and contains a discussion of all applicable requirements and any streamlining or subsuming demonstrations performed on these requirements.

District Rule 3.1 - General Permit Requirements
The source is subject to the provisions of this rule. The rule compliance evaluation is attached and contains a discussion of all applicable requirements that will be listed as conditions in the permit.

District Rule 3.4 - New Source Review
The source is subject to the provisions of this rule. The rule compliance evaluation is attached and contains a discussion of all applicable requirements and any streamlining or subsuming demonstrations performed on these requirements.

The following calculations are required in order to determine the Best Available Control Technology (BACT), offset, major source modification, and public notice requirements specific to this rule (see attached discussion).

PROPOSED EMISSION SUMMARY FOR NEW OR MODIFIED PERMIT *

	Daily	Yearly	
VOC	10.0 lb *	1.31 tons	Use for annual billing
CO	0.0 lb	0.00 tons	Use for annual billing
NOx	0.0 lb	0.00 tons	Use for annual billing
SOx	0.0 lb	0.00 tons	Use for annual billing
PM10	0.0 lb	0.00 tons	Use for annual billing

* As calculated for Tank #15 using U.S. EPA's Tanks4.0d emission modeling software (see attached emission reports). The highest monthly VOC emissions were calculated as 300.9 pounds during the month of November (30 days), which averages to the above daily value. Sample Calculation: [VOC lb/day] = (300.9 lb/month) * (1 month/30 days) = 10.0 lb/day

	Quarterly			
	1st	2nd	3rd	4th
VOC (lb)	826	454	490	863
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

Previous quarterly potential to emit for modified permit*

	1st	2nd	3rd	4th
VOC (lb)	686	458	494	716
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

* From PTO P-54-93(t1).

Historic potential emissions for modified permit*

	1st	2nd	3rd	4th
VOC (lb)	686	458	494	716
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

* Historic potential emissions were calculated using EPA TANKS 4.0.9d emissions modeling software. See attached TANKS run for calendar year 2010. Because the historic emissions are over 80% in at least one year out of the last five, the historic potential equals the previous potential to emit (PTE).

Pollutant	Trigger (lb/day)	BACT Proposed (lb/day)	Quarterly Increase	BACT *
VOC	10	10	Yes	Yes
CO	250	0	No	No
NOx	10	0	No	No
SOx	80	0	No	No
PM10	80	0	No	No

* BACT for VOC is triggered for this emissions unit as part of this proposed modification (see attached BACT Determination 623-1).

OFFSETS

Quarterly permitted emissions for other permits at the stationary source*

	1st	2nd	3rd	4th
VOC (lb)	17,550	17,765	17,852	17,828
CO (lb)	44,832	44,832	44,832	44,832
NOx (lb)	8,241	8,241	8,241	8,241
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

* Post Project Policy 25 PTE, excluding ATC C-11-76 and emergency equipment (see Quarterly PTE worksheet dated 11/07/2011).

Quarterly permitted emissions for the stationary source including proposed emissions

	1st	2nd	3rd	4th
VOC (lb)	18,376	18,219	18,342	18,691
CO (lb)	44,832	44,832	44,832	44,832
NOx (lb)	8,241	8,241	8,241	8,241
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

Offset triggers

	1st	2nd	3rd	4th
VOC (lb)	7,500	7,500	7,500	7,500
CO (lb)	49,500	49,500	49,500	49,500
NOx (lb)	7,500	7,500	7,500	7,500
SOx (lb)	13,650	13,650	13,650	13,650
PM10 (lb)	13,650	13,650	13,650	13,650

Quantity of offsets required

	1st	2nd	3rd	4th
VOC (lb)	140	0	0	147
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

Quantity of offsets to be surrendered prior to commencing construction*

Origin: On-Site Reductions

	Ratio	1st	2nd	3rd	4th	Total
VOC (lb)	1.0	140	0	0	147	287

Origin: Within 15 Mile Radius

	Ratio	1st	2nd	3rd	4th	Total
VOC (lb)	1.2	168	0	0	176	344

Origin: Greater Than 15 Miles, But Within 50 Miles

	Ratio	1st	2nd	3rd	4th	Total
VOC (lb)	1.5	210	0	0	221	431

* Since the modifications proposed by ATC C-11-76 do not result in a major modification of the facility, the District will apply the offset ratios for Non-Major Modifications contained in Section 303, of Rule 3.4.

MAJOR MODIFICATION

Facility Total Potential to Emit *	***Major Source Thresholds***
32.29 TPY VOC	25 TPY VOC
71.92 TPY CO	100 TPY CO
13.22 TPY NOx	25 TPY NOx
0.00 TPY SOx	100 TPY SOx
0.00 TPY PM10	100 TPY PM10

* See attached Quarterly PTE worksheet (dated 11/07/2011).

Last five year emission aggregate *	***Major Modification Thresholds***
0.38 TPY VOC	25 TPY VOC
0.00 TPY CO	100 TPY CO
0.00 TPY NOx	25 TPY NOx
0.00 TPY SOx	40 TPY SOx
0.00 TPY PM10	25 TPY PM10

* See attached 5-Year Emission Aggregate worksheet (dated 11/07/2011).

Result: The proposed modification is not a major modification

PUBLIC NOTICE

"Increase in historic potential to emit"	*Exemption level for notification*
147 lb VOC/quarter	7,500 lb VOC/quarter
0 lb CO/quarter	49,500 lb CO/quarter
0 lb NOx/quarter	7,500 lb NOx/quarter
0 lb SOx/quarter	13,650 lb SOx/quarter
0 lb PM10/quarter	13,650 lb PM10/quarter

Result: Public notice is not required

District Rule 3.8 - Federal Operating Permits

The facility is a federal major source due to potential to emit over 25 tons VOC per year. The version of the rule used in this evaluation was adopted on April 11, 2001 and is part of the current California SIP. Currently, the facility is operating under Federal Title V Operating Permit F-00012-8, effective August 15, 2011. The source has requested that ATC applications C-11-76, C-11-77, and C-11-78 be processed under the Enhanced New Source Review provisions of District Rule 3.4, Section 404.

The proposed Title V permit is considered a significant permit modification, since the proposed permit modifications contained in the ATCs result in a greater than de minimis increase in hazardous air pollutants at the facility. Per the requirements of Section 409.1(b), the District's shall provide written notice to the U.S. EPA and CARB of the project that shall include this evaluation (Statement of Basis), the proposed Title V permit ("proposed decision"), and proposed ATCs C-11-76, C-11-77, and C-11-78. The District will also publish the public notice for this project in at least one general circulation newspaper. The notice shall inform the public of the 30 day public comment period commencing on the day that the notice is published.

The further rule compliance evaluation is attached and contains a discussion of all applicable requirements and any streamlining or subsuming demonstrations performed on these requirements.

District Rule 3.20-Ozone Transport Mitigation

The source is subject to the provisions of this rule, since the facility total potential to emit is above 10 tons per year for VOC or NOx. The rule compliance evaluation is attached and contains a discussion of all applicable requirements and any streamlining or subsuming demonstrations performed on these requirements.

The following calculations are required in order to determine the post-project Stationary Source Potential to Emit (SSPE) for the facility.

Annual permitted emissions for the stationary source including proposed emissions

VOC (lb)	64,580	lbs
NOx (lb)	26,440	lbs

Annual permitted emissions for equipment which is exempt from Rule 3.4 *

VOC (lb)	0	lbs
NOx (lb)	0	lbs

* There are no Rule 3.4 exempt units operating at the site.

Post -project Stationary Source Potential to Emit (SSPE)

VOC (lb)	64,580	lbs
NOx (lb)	26,440	lbs

Because the post-project SSPE is greater than 10 tons (20,000) lbs per year for VOC or NOx, per section 301.1, calculations shall be performed to determine the quantity of mitigation required, if any.

Pre -project Stationary Source Potential to Emit (SSPE)

VOC (lb)	63,823	lbs

NOx (lb)	26,440	lbs

Quantity of offsets required by Rule 3.4

VOC (lb)	766	lbs
NOx (lb)	0	lbs

Quantity of Mitigation required by Rule 3.20

VOC (lb)	0	lbs
NOx (lb)	0	lbs

40 CFR Part 60 - Subpart A - General Provisions
The three affected bulk storage tanks are not subject to the provisions of this rule. No permit condition is required.

40 CFR Part 60 - Subpart K - Standards of Performance for Storage Vessels for Petroleum Liquids
The three affected bulk storage tanks are not subject to the provisions of this rule, since none meet the applicability requirements of the rule (see attached discussion). No permit condition is required.

40 CFR Part 60 - Subpart Ka - Standards of Performance for Storage Vessels for Petroleum Liquids
The three affected bulk storage tanks are not subject to the provisions of this rule, since none meet the applicability requirements of the rule (see attached discussion). No permit condition is required.

40 CFR Part 60 - Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels)
The three affected bulk storage tanks are not subject to the provisions of this rule, since none meet the applicability requirements of the rule (see attached discussion). No permit condition is required.

40 CFR Part 60 - Subpart XX - Standards of Performance for Bulk Gasoline Terminals
The three affected bulk storage tanks are not subject to the provisions of this rule, since none meet the applicability requirements of the rule (see attached discussion). No permit condition is required.

40 CFR Part 63 - Subpart A - National Emission Standards for Hazardous Air Pollutants (NESHAP) General Provisions
The source is subject to the provisions of this rule. The rule compliance evaluation is attached and contains a discussion of all applicable requirements and any streamlining or subsuming demonstrations performed on these requirements.

40 CFR PART 63 - Subpart R - National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations)
The three affected bulk storage tanks are not subject to the provisions of this rule, since the facility does not meet the applicability requirements of the rule (see attached discussion). No permit condition is required.

40 CFR PART 63 - Subpart CC - NESHAP from Petroleum Refineries
The three affected bulk storage tanks are not subject to the provisions of this rule, since the emission units are not located at a petroleum refining operation (see attached discussion). No permit condition is required.

40 CFR PART 63 - Subpart WW - National Emission Standards for Storage Vessels (Tanks) - Control Level 2
The source is subject to the provisions of this rule. The rule compliance evaluation is attached and contains a discussion of all applicable requirements and any streamlining or subsuming demonstrations performed on these requirements.

40 CFR PART 63 - Subpart BBBBBB - NESHAP for Source Category (Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipelines)
The source is subject to the provisions of this rule. The rule compliance evaluation is attached and contains a discussion of all applicable requirements and any streamlining or subsuming demonstrations performed on these requirements.

40 CFR Part 64 - Compliance Assurance Monitoring
The three affected bulk storage tanks are not subject to the provisions of this rule, since none of the emission units have a pre-control device potential to emit greater than or equal to any of the major source thresholds for VOC (see attached discussion). No permit condition is required.

District Risk Management Plan and Risk Assessment Guidelines

Because the application results in an increase of hazardous air pollutant (HAP) emissions, a screening risk assessment (prioritization) will be performed. The RMPRAG requires that any new or modified emission unit satisfy Toxic-Best Available Control Technology (T-BACT), if its individual cancer risk is calculated to be between 1 and 10 in a million, or if its calculated hazardous index (acute or chronic) is greater than 1. The RMPRAG also considers any application or project having a total cancer risk above 10 in a million, unapproveable.

The modifications proposed by ATCs C-11-76, C-11-77, and C-11-78 are be considered part of the same project, and therefore the cumulative risk resulting from all of the modifications will also be evaluated.

1. HAP Prioritization for ATC C-11-76 [Tank #15] Only:

Hazardous Air Pollutant	CAS No.	% Weight in Liquid [a] (%)	Uncontrolled Tank Emissions [b]		Screening Level (lb/year)	Less than Screening Level (Yes/No)
			$(lb/hr)_{avg}$	(lb/year)		
2,2,4-Trimethylpentane (Isooctane)	00540-84-1	0.95315	7.40E-04	6.48	-	Yes
Benzene	00071-43-2	0.62539	7.36E-04	6.45	6.70	Yes
Cresol	00095-48-7	0.00065	0.00E+00	0.00	34,700	Yes
Ethylbenzene	00100-41-4	0.06313	2.74E-05	0.24	193,000	Yes
Hexane (-n)	00110-54-3	4.42761	7.53E-03	65.96	83,000	Yes
Methyl-tert-butyl ether (MTBE)	01634-04-4	0.3	7.88E-04	6.90	-	Yes
Naphthalene	00091-20-3	0.00055	0.00E+00	0.00	270	Yes
Styrene	00100-42-5	0.08817	3.54E-05	0.31	135,000	Yes
Toluene	00108-88-3	0.84213	4.95E-04	4.34	38,600	Yes
Xylenes	00095-47-6	0.23501	9.47E-05	0.83	57,900	Yes

[a] The formula based HAP content (percent weight in liquid) estimates provided by Buckeye's Corporate HSSE as reported by Compliance Manager Greg Clark (see email dated 10/07/2011).

[b] The hourly emission rate has been calculated using by dividing the yearly HAP total by 8760 hours.

None of the emissions from any HAPs are above the prioritization level for Tank #15.

2. Cumulative Prioritization for ATCs C-11-77 [Tank #15], C-11-78 [Tank #16], and C-11-78 [Tank #18]:

Hazardous Air Pollutant	CAS No.	Uncontrolled Tank Emissions				Screening Level (lb/year)	Less than Screening Level (Yes/No)
		C-11-76 (lb/year)	C-11-77 (lb/year)	C-11-78 (lb/year)	All Tanks (lb/year)		
2,2,4-Trimethylpentane (Isooctane)	00540-84-1	6.48	4.22	6.08	16.78	-	Yes
Benzene	00071-43-2	6.45	4.73	6.65	17.83	6.70	No
Cresol	00095-48-7	0.00	0.00	0.00	0.00	34,700	Yes
Ethylbenzene	00100-41-4	0.24	0.11	0.18	0.53	193,000	Yes
Hexane (-n)	00110-54-3	65.96	51.59	71.33	188.88	83,000	Yes
Methyl-tert-butyl ether (MTBE)	01634-04-4	6.90	5.66	7.74	20.30	-	Yes
Naphthalene	00091-20-3	0.00	0.00	0.00	0.00	270	Yes
Styrene	00100-42-5	0.31	0.13	0.22	0.66	135,000	Yes
Toluene	00108-88-3	4.34	2.48	3.71	10.53	38,600	Yes
Xylenes	00095-47-6	0.83	0.35	0.59	1.77	57,900	Yes

Because the cumulative benzene emissions from the project are above the pollutants respective prioritization level, a health risk assessment was performed for this project. The dispersion modeling and health risks were evaluated using CARB's Hotspots Analysis Reporting Program (HARP) which accounts for site's specific parameters (e.g. stack height, stack location, meteorological data, etc.). The health risks for the entire project are summarized below.

3. Summary of Health Risk Analysis:

The District modeled the health risks using the site specific data and is using the highest risk values of each receptor type to demonstrate compliance with the RMPRAG requirements. The residential receptor's cancer risk has been modeled over a 70 year

period, while the worksite receptor's risk has been modeled over 46 years. The HARP results are summarized below.

Receptor Type	Receptor No.	Acute Hazard Index (unitless)	Chronic Hazard Index (unitless)	Individual Cancer Risk (in a million)
Worksite (Property Boundary)	1381	0.0001	0.0006	0.0229
Residential	649	0.0001	0.0006	0.137

The acute and chronic hazard index were each calculated to be less than 1.0 and the individual cancer risk was calculated to be less than 1 in a million. Therefore, T-BACT is not triggered.

California Health and Safety Code 42301.6 - Public Notice for Possible Source of Air Hazardous Emissions near School Prior to Approving Permit

The three affected bulk storage tanks are not subject to the provisions of this rule, since the facility is not located within 1,000 feet of a K-12 school. No permit condition or additional noticing is required.

COMMENTS: The application triggers BACT, offsets, and public noticing requirements. The application does not trigger T-BACT requirements.

As documented in BACT Determination 623-1, the source satisfies BACT for VOC for this category of source.

All applicable permit conditions have been discussed in their appropriate rule sections (see attached).

The permit will contain a condition specifying the amount of ERCs that are required by the project.

Per the requirements of Section 409.1 of District Rule 3.8, the District's proposed amended Title V permit will be noticed to the public over a 30-day period (with the notice being published in at least one general circulation newspaper) and to EPA over a 45-day period.

RECOMMENDATIONS: Perform the required public and regulatory notice.

Engineer: Rene Tolmo **Date:** 11/07/2011

Reviewed by: [signature] **Date:** 11/7/2011

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

Identification

User Identification:	C-11-76, Buckeye - Tank #15
City:	West Sacramento
State:	California
Company:	BP West Coast Products LLC
Type of Tank:	Internal Floating Roof Tank
Description:	Modification of P-54-93(t1) to increase maximum gasoline RVP in winter months.

Tank Dimensions

Diameter (ft):	80.00
Volume (gallons):	1,690,000.00
Turnovers:	71.83
Self Supp. Roof? (y/n):	N
No. of Columns:	6.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	2
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	6
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	9
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	11
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Slotted Guide-Pole/Sample Well/Gask Sliding Covr, w. Float,Sleeve,Wiper	1

Meterological Data used in Emissions Calculations: Sacramento, California (Avg Atmospheric Pressure = 14.72 psia)

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

C-11-76, Buckeye - Tank #15 - Internal Floating Roof Tank
West Sacramento, California

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
Gasoline (RVP 15.0)	Jan	54.77	51.34	58.20	60.81	7.3981	N/A	N/A	60.0000			92.00	Option 4: RVP=15, ASTM Slope=3
2,2,4-Trimethylpentane (isooctane)						0.5114	N/A	N/A	114.2300	0.0095	0.0010	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.0084	N/A	N/A	78.1100	0.0063	0.0013	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0013	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.0903	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						1.8672	N/A	N/A	86.1700	0.0443	0.0153	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						2.8434	N/A	N/A	88.1500	0.0030	0.0018	88.15	Option 1: VP50 = 2.5 VP60 = 3.22
Naphthalene						0.0020	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.0596	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09
Toluene						0.2799	N/A	N/A	92.1300	0.0084	0.0005	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						7.9071	N/A	N/A	59.6237	0.9246	0.9801	92.19	
Xylene (-o)						0.0509	N/A	N/A	106.1700	0.0024	0.0000	106.17	Option 2: A=6.998, B=1474.679, C=213.69
Gasoline (RVP 15.0)	Feb	57.83	53.16	62.09	60.81	7.8007	N/A	N/A	60.0000			92.00	Option 4: RVP=15, ASTM Slope=3
2,2,4-Trimethylpentane (isooctane)						0.5561	N/A	N/A	114.2300	0.0095	0.0010	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.0930	N/A	N/A	78.1100	0.0063	0.0013	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0016	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.0999	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						1.7982	N/A	N/A	86.1700	0.0443	0.0156	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						3.0490	N/A	N/A	88.1500	0.0030	0.0018	88.15	Option 1: VP50 = 2.5 VP60 = 3.22
Naphthalene						0.0022	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.0660	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09
Toluene						0.3065	N/A	N/A	92.1300	0.0084	0.0005	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						8.3346	N/A	N/A	59.6146	0.9246	0.9796	92.19	
Xylene (-o)						0.0652	N/A	N/A	106.1700	0.0024	0.0000	106.17	Option 2: A=6.998, B=1474.679, C=213.69
Gasoline (RVP 13)	Mar	59.49	54.11	64.87	60.81	6.8808	N/A	N/A	62.0000			92.00	Option 4: RVP=13, ASTM Slope=3
2,2,4-Trimethylpentane (isooctane)						0.5969	N/A	N/A	114.2300	0.0095	0.0012	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.1513	N/A	N/A	78.1100	0.0063	0.0016	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0017	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.1066	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						1.8880	N/A	N/A	86.1700	0.0443	0.0180	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						3.1830	N/A	N/A	88.1500	0.0030	0.0021	88.15	Option 1: VP50 = 2.5 VP60 = 3.22
Naphthalene						0.0024	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.0705	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09
Toluene						0.3249	N/A	N/A	92.1300	0.0084	0.0006	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						7.3318	N/A	N/A	61.5738	0.9246	0.9765	92.19	
Xylene (-o)						0.0692	N/A	N/A	106.1700	0.0024	0.0000	106.17	Option 2: A=6.998, B=1474.679, C=213.69
Gasoline (RVP 7)	Apr	62.23	55.39	69.07	60.81	3.6457	N/A	N/A	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
2,2,4-Trimethylpentane (isooctane)						0.7330	N/A	N/A	114.2300	0.0095	0.0022	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.2419	N/A	N/A	78.1100	0.0063	0.0029	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0020	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.1172	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						2.0270	N/A	N/A	86.1700	0.0443	0.0333	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						3.4183	N/A	N/A	88.1500	0.0030	0.0026	88.15	Option 1: VP50 = 2.5 VP60 = 3.22 VP70 = 4.11
Naphthalene						0.0027	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.0776	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09
Toluene						0.3537	N/A	N/A	92.1300	0.0084	0.0011	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						3.8167	N/A	N/A	67.3208	0.9246	0.9565	92.19	
Xylene (-o)						0.0769	N/A	N/A	106.1700	0.0024	0.0001	106.17	Option 2: A=6.998, B=1474.679, C=213.69
Gasoline (RVP 7)	May	65.86	57.74	73.97	60.81	3.9208	N/A	N/A	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
2,2,4-Trimethylpentane (isooctane)						0.7036	N/A	N/A	114.2300	0.0095	0.0023	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.3708	N/A	N/A	78.1100	0.0063	0.0030	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0025	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.1327	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						2.2237	N/A	N/A	86.1700	0.0443	0.0340	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						3.7411	N/A	N/A	88.1500	0.0030	0.0039	88.15	Option 1: VP60 = 3.22 VP70 = 4.11
Naphthalene						0.0032	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.0879	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09
Toluene						0.3952	N/A	N/A	92.1300	0.0084	0.0011	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						4.1016	N/A	N/A	67.3157	0.9246	0.9556	92.19	
Xylene (-o)						0.0874	N/A	N/A	106.1700	0.0024	0.0001	106.17	Option 2: A=6.998, B=1474.679, C=213.69
Gasoline (RVP 7)	Jun	68.89	60.07	77.70	60.81	4.1634	N/A	N/A	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
2,2,4-Trimethylpentane (isooctane)						0.7655	N/A	N/A	114.2300	0.0095	0.0024	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4867	N/A	N/A	78.1100	0.0063	0.0030	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0029	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.1469	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						2.3999	N/A	N/A	86.1700	0.0443	0.0345	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						4.0109	N/A	N/A	88.1500	0.0030	0.0039	88.15	Option 1: VP60 = 3.22 VP70 = 4.11
Naphthalene						0.0037	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.0975	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09
Toluene						0.4329	N/A	N/A	92.1300	0.0084	0.0012	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						4.3527	N/A	N/A	67.3034	0.9246	0.9549	92.19	
Xylene (-o)						0.0971	N/A	N/A	106.1700	0.0024	0.0001	106.17	Option 2: A=6.998, B=1474.679, C=213.69
Gasoline (RVP 7)	Jul	70.72	61.41	80.04	60.81	4.3163	N/A	N/A	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
2,2,4-Trimethylpentane (isooctane)						0.8053	N/A	N/A	114.2300	0.0095	0.0024	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.5610	N/A	N/A	78.1100	0.0063	0.0031	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0032	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.1562	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						2.5122	N/A	N/A	86.1700	0.0443	0.0349	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						4.1876	N/A	N/A	88.1500	0.0030	0.0039	88.15	Option 1: VP70 = 4.11 VP80 = 5.18
Naphthalene						0.0039	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.1037	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09
Toluene						0.4573	N/A	N/A	92.1300	0.0024	0.0012	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						4.5109	N/A	N/A	67.2259	0.9246	0.9544	92.19	
Xylene (-o)						0.1034	N/A	N/A	106.1700	0.0024	0.0001	106.17	Option 2: A=6.998, B=1474.679, C=213.69
Gasoline (RVP 7)	Aug	70.07	61.28	78.87	60.81	4.2816	N/A	N/A	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
2,2,4-Trimethylpentane (isooctane)						0.7910	N/A	N/A	114.2300	0.0095	0.0024	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.5343	N/A	N/A	78.1100	0.0063	0.0030	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0031	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.1528	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						2.4720	N/A	N/A	86.1700	0.0443	0.0347	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						4.1179	N/A	N/A	88.1500	0.0030	0.0039	88.15	Option 1: VP70 = 4.11 VP80 = 5.18
Naphthalene						0.0038	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.1014	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09

Toluene						0.4485	N/A	N/A	92.1300	0.0084	0.0012	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						4.4544	N/A	N/A	67.2986	0.9246	0.9548	92.19	
Xylene (-o)						0.1011	N/A	N/A	106.1700	0.0024	0.0001	106.17	Option 2: A=6.998, B=1474.679, C=213.69
Gasoline (RVP 7)	Sep	67.95	60.10	75.80	60.81	4.0872	N/A	N/A	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
2,2,4-Trimethylpentane (Isooctane)						0.7459	N/A	N/A	114.2300	0.0095	0.0024	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4501	N/A	N/A	78.1100	0.0063	0.0030	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0028	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.1424	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						2.3443	N/A	N/A	86.1700	0.0443	0.0344	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						3.9275	N/A	N/A	88.1500	0.0030	0.0039	88.15	Option 1: VP60 = 3.22 VP70 = 4.11
Naphthalene						0.0035	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.0944	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09
Toluene						0.4209	N/A	N/A	92.1300	0.0084	0.0012	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						4.2738	N/A	N/A	67.3072	0.9246	0.9551	92.19	
Xylene (-o)						0.0940	N/A	N/A	106.1700	0.0024	0.0001	106.17	Option 2: A=6.998, B=1474.679, C=213.69
Gasoline (RVP 13)	Oct	64.00	57.53	70.47	60.81	7.4811	N/A	N/A	62.0000			92.00	Option 4: RVP=13, ASTM Slope=3
2,2,4-Trimethylpentane (isooctane)						0.8677	N/A	N/A	114.2300	0.0095	0.0013	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.3034	N/A	N/A	78.1100	0.0063	0.0016	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0022	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.1246	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						2.1210	N/A	N/A	86.1700	0.0443	0.0188	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						3.5756	N/A	N/A	88.1500	0.0030	0.0021	88.15	Option 1: VP60 = 3.22 VP70 = 4.11
Naphthalene						0.0030	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.0825	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09
Toluene						0.3734	N/A	N/A	92.1300	0.0084	0.0008	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						7.9868	N/A	N/A	61.5584	0.9246	0.9757	92.19	
Xylene (-o)						0.0819	N/A	N/A	106.1700	0.0024	0.0000	106.17	Option 2: A=6.998, B=1474.679, C=213.69
Gasoline (RVP 15.0)	Nov	58.51	54.06	62.96	60.81	7.9286	N/A	N/A	60.0000			92.00	Option 4: RVP=15, ASTM Slope=3
2,2,4-Trimethylpentane (isooctane)						0.5705	N/A	N/A	114.2300	0.0095	0.0011	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.1204	N/A	N/A	78.1100	0.0063	0.0014	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0016	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.1030	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						1.8403	N/A	N/A	86.1700	0.0443	0.0158	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						3.1126	N/A	N/A	88.1500	0.0030	0.0018	88.15	Option 1: VP50 = 2.5 VP60 = 3.22
Naphthalene						0.0023	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.0681	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09
Toluene						0.3151	N/A	N/A	92.1300	0.0084	0.0005	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						8.4705	N/A	N/A	59.6118	0.9246	0.9795	92.19	
Xylene (-o)						0.0673	N/A	N/A	106.1700	0.0024	0.0000	106.17	Option 2: A=6.998, B=1474.679, C=213.69
Gasoline (RVP 15.0)	Dec	54.71	51.37	58.04	60.81	7.3893	N/A	N/A	60.0000			92.00	Option 4: RVP=15, ASTM Slope=3
2,2,4-Trimethylpentane (isooctane)						0.5104	N/A	N/A	114.2300	0.0095	0.0010	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.0065	N/A	N/A	78.1100	0.0063	0.0013	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Cresol (-o)						0.0013	N/A	N/A	108.1400	0.0000	0.0000	108.14	Option 2: A=6.911, B=1435.5, C=165.16
Ethylbenzene						0.0900	N/A	N/A	106.1700	0.0006	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Hexane (-n)						1.6844	N/A	N/A	86.1700	0.0443	0.0153	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Methyl-tert-butyl ether (MTBE)						2.8388	N/A	N/A	88.1500	0.0030	0.0018	88.15	Option 1: VP50 = 2.5 VP60 = 3.22
Naphthalene						0.0020	N/A	N/A	128.2000	0.0000	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Styrene						0.0595	N/A	N/A	104.1500	0.0009	0.0000	104.15	Option 2: A=7.14, B=1574.51, C=224.09
Toluene						0.2794	N/A	N/A	92.1300	0.0084	0.0005	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						7.8977	N/A	N/A	59.6239	0.9243	0.9801	92.19	
Xylene (-o)						0.0586	N/A	N/A	106.1700	0.0024	0.0000	106.17	Option 2: A=6.998, B=1474.679, C=213.69

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

C-11-76, Buckeye - Tank #15 - Internal Floating Roof Tank
West Sacramento, California

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	41.4898	44.7743	38.7534	19.3228	21.0244	22.5596	23.5450	23.1911	22.0736	43.5585	45.8544	41.4198
Seal Factor A (lb-mole/ft-yr):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Value of Vapor Pressure Function:	0.1729	0.1886	0.1563	0.0710	0.0773	0.0829	0.0868	0.0853	0.0812	0.1758	0.1911	0.1726
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.3981	7.8007	6.8808	3.6457	3.9208	4.1634	4.3163	4.2616	4.0872	7.4811	7.9286	7.3893
Tank Diameter (ft):	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000
Vapor Molecular Weight (lb/lb-mole):	60.0000	60.0000	62.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	62.0000	60.0000	60.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	25.2876	25.2876	25.2876	25.5686	25.5686	25.5686	25.8495	25.8495	25.8495	25.8495	25.8495	25.8495
Number of Columns:	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo.):	9,978,082.1900	9,978,082.1900	9,978,082.1900	10,088,949.7700	10,088,949.7700	10,088,849.7700	10,199,817.3500	10,199,817.3500	10,199,817.3500	10,199,817.3600	10,199,817.3600	10,199,817.3600
Shell Clingage Factor (bbl/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000
Tank Diameter (ft):	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000
Deck Fitting Losses (lb):	207.4577	223.8806	193.7748	96.6179	105.1234	112.8028	117.7300	115.9601	110.3724	217.8016	229.2814	207.1084
Value of Vapor Pressure Function:	0.1729	0.1886	0.1563	0.0710	0.0773	0.0829	0.0868	0.0853	0.0812	0.1758	0.1911	0.1726
Vapor Molecular Weight (lb/lb-mole):	60.0000	60.0000	62.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	62.0000	60.0000	60.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	240.0100	240.0100	240.0100	240.0100	240.0100	240.0100	240.0100	240.0100	240.0100	240.0100	240.0100	240.0100
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000
Vapor Molecular Weight (lb/lb-mole):	60.0000	60.0000	62.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	62.0000	60.0000	60.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	274.2351	293.9425	257.8158	141.5032	151.7194	160.9310	167.1246	165.0007	158.2955	287.2096	300.9853	274.3755

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	12.8991
Automatic Gauge Float Well/Bolted Cover, Gasketed	2	2.80	0.00	0.00	45.1468
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	6	33.00	0.00	0.00	1,596.2627
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	9	0.49	0.16	0.14	35.5531
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	11	1.20	0.14	0.65	106.4175
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	49.5840
Slotted Guide-Pole/Sample Well/Gask Sliding Cover, w. Float,Sleeve,Wiper	1	11.00	9.90	0.89	88.6913

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

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

C-11-76, Buckeye - Tank #15 - Internal Floating Roof Tank
West Sacramento, California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Gasoline (RVP 15.0)	173.54	102.27	867.73	0.00	1,143.54
2,2,4-Trimethylpentane (isooctane)	0.18	0.97	0.89	0.00	2.05
Benzene	0.23	0.64	1.15	0.00	2.02
Cresol (-o)	0.00	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.06	0.01	0.00	0.08
Hexane (-n)	2.69	4.53	13.46	0.00	20.68
Methyl-tert-butyl ether (MTBE)	0.31	0.31	1.55	0.00	2.17
Naphthalene	0.00	0.00	0.00	0.00	0.00
Styrene	0.00	0.09	0.01	0.00	0.10
Toluene	0.09	0.86	0.43	0.00	1.38
Unidentified Components	170.03	94.57	850.19	0.00	1,114.79
Xylene (-o)	0.01	0.24	0.03	0.00	0.27
Gasoline (RVP 13)	82.31	51.14	411.58	0.00	545.03
2,2,4-Trimethylpentane (isooctane)	0.10	0.49	0.51	0.00	1.10
Benzene	0.13	0.32	0.65	0.00	1.10
Cresol (-o)	0.00	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.03	0.01	0.00	0.04
Hexane (-n)	1.51	2.26	7.55	0.00	11.32
Methyl-tert-butyl ether (MTBE)	0.17	0.15	0.86	0.00	1.19
Naphthalene	0.00	0.00	0.00	0.00	0.00
Styrene	0.00	0.05	0.01	0.00	0.05
Toluene	0.05	0.43	0.25	0.00	0.73
Unidentified Components	80.34	47.28	401.72	0.00	529.35
Xylene (-o)	0.00	0.12	0.02	0.00	0.14
Gasoline (RVP 7)	131.72	154.25	658.61	0.00	944.58
2,2,4-Trimethylpentane (isooctane)	0.31	1.47	1.55	0.00	3.33
Benzene	0.40	0.96	1.98	0.00	3.33
Cresol (-o)	0.00	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.10	0.02	0.00	0.12
Hexane (-n)	4.52	6.83	22.61	0.00	33.96
Methyl-tert-butyl ether (MTBE)	0.51	0.46	2.56	0.00	3.54
Naphthalene	0.00	0.00	0.00	0.00	0.00
Styrene	0.00	0.14	0.02	0.00	0.16
Toluene	0.15	1.30	0.77	0.00	2.23
Unidentified Components	125.81	142.63	629.05	0.00	897.49
Xylene (-o)	0.01	0.36	0.05	0.00	0.42

BACT DETERMINATION 623-1

Emission Unit: Bulk Gasoline Storage Tank – Internal Floating Steel Roof Tank
Rating: 1,690,000 gallons

Facility Name: Buckeye Terminals, LLC
Mailing Address: P.O. Box 230
Acampo, CA 95220

Contact Name: Robert Russell, Vice President, Field Operations
Telephone: (209) 386-9277

Engineer: René Toledo
Date: November 7, 2011

Application #'s: C-11-76 [Tank #15]

I. Proposal: The applicant is proposing to modify PTO P-55-94(t1) [Tank #15] to increase the maximum Reid Vapor Pressure (RVP) allowed to be stored in the bulk storage tank.

II. Applicability: The proposed emissions for the bulk storage tank are shown below.

	VOC	CO	NO_x (as NO_2)	SO_x (as SO_2)	PM_{10}
Proposed Emissions	10.0 lb/day	- lb/day	- lb/day	- lb/day	- lb/day
Rule 3.4, Section 301.1 Triggers	10.0 lb/day	250.0 lb/day	10.0 lb/day	80.0 lb/day	80.0 lb/day

The bulk gasoline storage operation is being treated as a modified operation and results in an increase in quarterly potential to emit for VOC. As shown above, BACT is not triggered for CO, NO_x, SO_x and PM_{10} because the process does not emit these pollutants. BACT is triggered for VOC emissions because the proposed emissions exceed the trigger level specified by Rule 3.4, Section 301.1 and the application results in a quarterly increase in potential to emit.

III. BACT for VOC:

A. Identify all control technologies:
1. Converted to fixed roof with emissions vented to vapor control system
2. Pressure/vacuum (PV) vent upgrade and bolted aluminum internal floating roof (sheet)
3. Continued operation of a bolted steel internal floating steel roof

B. Eliminate Technologically Infeasible Options
Options 1, 2, and 3 are all technologically feasible.

C. Rank remaining control technologies by control effectiveness

Control Technology	Efficiency [a]	Achieved in Practice (Yes/No)
Option 1	90%	No
Option 2	0.01% [b]	No
Option 3	N/A	Yes

a. Control efficiency as compare to the existing steel internal floating roof.
b. The District expects a very small increase in the VOC control efficiency of the storage tank if the existing P/V vents are upgraded and the existing bolted steel internal floating roof is replaced with a bolted aluminum internal floating roof.

D. Cost effective analysis

The cost effectiveness of Options 1 and 2 have been calculated to determine the total annual cost for the control option as well as the corresponding amount of emission reduced (see the attached worksheet). Each option's annualized capital cost has been calculated using the following formula:
Where: $A = P * ((i * (1 + i)^n)/(1 + i)^n - 1))$, where:

A = annualized capital cost of the control equipment
P = present capital cost of the control equipment
i = interest rate (use 10% unless alternate can be documented to representative)
n = Equipment life (use 10 years unless alternate can be documented)

Option 1 annualized capital cost calculation (see attached calculation sheet):
a. Annualized Capital Cost = $280,085
b. Annual Operating Cost = $121,250
c. Total Annual Cost = $401,335
d. Annual Pollutant Reduction = 1.18 tons
e. VOC Cost Effectiveness = $340,403/ton

Option 2 annualized capital cost calculation:
a. Annualized Capital Cost = $7,324
b. Annual Operating Cost = $1,150
c. Total Annual Cost = $8,474
d. Annual Pollutant Reduction = 0.001 tons
e. VOC Cost Effectiveness = $64,683,533/ton

E. Select BACT

Options 1 and 2 are not cost effective. Therefore, the District has determined that the continued use of the bolted steel internal floating roof in compliance with the provisions of District Rule 2.21 (Organic Liquid Storage and Transfer) is BACT for this application.

BEST AVAILABLE CONTROL TECHNOLOGY
COST EFFECTIVE CALCULATIONS

ENGINEER: René Toledo **ATC #** C-11-76
Determination # 623-1

FACILITY NAME: Buckeye Terminals, LLC

LOCATION: 1601 South River Road; West Sacramento, CA

EQUIPMENT: 1,690,000 gallon welded storage tank (#15) and one (1) 75 HP gasoline product pump

CONTROL EQUIPMENT: Internal steel floating roof (bolted) with a mechanical shoe primary seal and rim mounted secondary seal

EVALUATED POLLUTANT: VOC

	Control Efficiency
Option 1 - Converted to fixed roof with emissions vented to new vapor recovery unit	90%
Option 2 - Pressure/vacuum (PV) vent upgrade and bolted aluminum roof (sheet)	0.01%

BACT POLICY DATA:

Interest Rate, i = 10%
Equipment Life, n = 10

OPTION	1	2
Capital Cost - Material		
Bolted Manway	-	$500
Leg Actuated Vent	-	$3,500
New Distributor	-	$5,000
Drain Repairs	-	$0
PM Gasket Replacement	-	$1,000
Side Vent Patch	$50,000	-
Blower	$50,000	-
Vapor Recovery Unit (John Zink 825)	$385,000	-
Install Costs (15% of Material Costs)	-	$11,500
Tank Cleaning with Degassing	-	$15,000
Inspections	-	$4,000
Misc. Disposal	-	$1,000
Seam Test	-	$3,500
Install Costs (Lang Factor = 2.5)	$1,212,500	-
Tank Cleaning/Degas	$15,000	-
Inspections	$4,000	-
Misc. Disposal	$1,000	-
Seam Test	$3,500	-
Total Capital Costs	$1,721,000	$45,000
Annualized Capital Costs	**$280,085**	**$7,324**
Operational Cost (10% Install Costs)	**$121,250**	**$1,150**
Total Annual Costs	**$401,335**	**$8,474**
Tank Emissions		
Project Potential to Emit (tons per year)	1.31	1.31
Emission Reductions		
VOC (tons per year)	**1.18**	**0.0001**
Cost Effectiveness (C/E)		
Cost per Ton Reduced	$340,403	$64,683,533
BACT VOC Cost Effectiveness Limit	$17,500	$17,500
Is the Option Cost Effective?	**No**	**No**