ArdaghGroup

www.ardaghgroup.com

Ardagh Glass Inc.
24441 Ave. 12 & Rd. 24 1/2
Madera, CA USA 93637

T: 001 559-675-4700
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Via Certified Mail: No. 7014 1200 0000 7399 1240
Return Receipt Requested

Ms. Denise Soria, EIT, MSCE
Water Resource Control Engineer
California Regional Water Quality Control Board
Central Valley Region
1685 E Street
Fresno, CA 93706-2020

4 March 2016

Re: Ardagh Glass Inc. (formerly Saint-Gobain Containers, Inc.)
Madera, CA
Report of Waste Discharge – Revision 1

Dear Ms. Soria:

Ardagh Glass Inc (formerly Saint-Gobain Containers, Inc.) has reviewed the tentative Waste Discharge Requirements (WDR) Order dated 3 February 2016 to replace the current WDR Order #85-314. Ardagh Glass Inc. no longer proposes to discharge non-contact blowdown water from cooling towers to approximately 30 acres of land.

The facility manufactures glass and currently discharges treated domestic wastewater and non-contact cooling tower blowdown to on-site evaporation/percolation ponds. The revised proposed project description is as follows:

The facility proposes to continue to discharge treated domestic wastewater to the on-site evaporation/percolation ponds and to redirect cooling tower blowdown (1) as a supplement to fire water pond; (2) as a supplement to cooling water for an oil/water separator recirculation system; and (3) as discharge to the on-site evaporation/percolation ponds.

Ardagh Glass Inc. submits the Pond Capacity Study – Revision 1 as Attachment A. It has been updated to reflect the aforementioned proposed project description. The revised process flow diagram is included as Figure 3 of the Pond Capacity Study. The estimated daily volumes of process water are included as Table 1 of the Pond Capacity Study.

Questions and comments related to the tentative WDR dated 3 February 2016 are included as Attachment B.

If you have any questions concerning this matter, please contact Sangeetha Arunagiri, at (559) 675 4723.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of the those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

ArdaghGroup

If you have any questions or require additional information, please contact Sangeetha Arunagiri, at (559) 675 4723.

Yours sincerely,

Darryl Shaffer
Plant Manager

Enclosures

cc: Jayne Browning

Attachment A: Pond Capacity Study – Revision 1
Attachment B: Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements

ArdaghGroup

Attachment A: Pond Capacity Study – Revision 1

Environmental Resources Management

2525 Natomas Park Drive
Suite 350
Sacramento, CA 95833
(916) 924-9378
(916) 920-9378 (fax)

3 March 2016

Ms. Sangeetha Arunagiri
Ardagh Glass, Inc.
24441 Avenue 12
Madera, CA

Subject: Pond Capacity Study – Revision 1
Waste Discharge Requirements Order 85-314
Ardagh Glass Inc.
(Formerly Named Saint Gobain Containers, Inc.)
24441 Avenue 12, Madera, California

Dear Ms. Arunagiri:

ERM-West, Inc. (ERM) submits this *Pond Capacity Study- Revision 1* for submittal as part of the Update to Waste Discharge Requirements (WDR) Order 85-314 for the Ardagh Glass Inc. (Ardagh) Madera facility located in Madera, California (Figure 1). This *Pond Capacity Study- Revision 1* responds to verbal comments received by Ardagh from the Regional Water Quality Control Board (RWQCB). Further, it has been revised to reflect removal of the previously proposed discharge to irrigate 30 acres of land.

This *Pond Capacity Study- Revision 1* has been prepared in accordance with the RWQCB *Information Needs for Liquid Waste Disposal to Land*, Item 7:

> 7. Treatment and Holding Ponds. Ponds must be designed to contain total annual precipitation using a rainfall return period of 100 years without exceeding two feet of freeboard unless you can provide certification by a California registered civil engineer, or geotechnical engineer, or engineering geologist that the integrity of the levees will be assured at lesser freeboard. Provide a description of the pond(s) including dimension, separation between groundwater and the pond invert, the presence or absence of a liner, and holding capacity. If a liner will be present, describe proposed materials and construction specifications. Provide calculations demonstrating that two feet of freeboard will be maintained under the conditions described above or lesser freeboard if certified as adequate to prevent

overtopping, overflows, and levee failures. Describe how the ponds will be managed and maintained (e.g., sludge removal).

The RWQCB agreed that the holding pond capacity evaluation would be based on Ardagh's proposed process water discharge. The facility proposes to continue to discharge treated domestic wastewater to the on-site evaporation/percolation ponds and to redirect cooling tower blowdown (1) as a supplement to fire water pond; (2) as a supplement to cooling water for an oil/water separator recirculation system; and (3) as discharge to the on-site evaporation/percolation ponds. The proposed process flow includes the following discharges to the Southwest Holding Pond (SWHP) and the three evaporation/percolation ponds:

- Non-contact cooling water;
- Treated domestic wastewater; and
- Storm water.

The SWHP and three evaporation/percolation ponds are existing and permitted. These will be used on a rotational basis. Site features are presented on Figure 2. The proposed process flow is shown on Figure 3.

ERM compiled data provided by Ardagh to evaluate the design capacity of the pond system as compared to a 100-year storm event, based on a 60-minute, 3-hour, and 24-hour duration. Ardagh provided information characterizing the proposed process water discharge, the existing ponds, and native soil.

Proposed Process Water Discharge and Flow Estimates

ERM utilized the process flow diagram included as Figure 3 and the daily flow rates provided in Table 1 to complete this *Pond Capacity Study- Revision 1*. Ardagh provided the daily flow rates primarily based on staff knowledge, as metered data is not readily available. The values provided in Table 1 are daily averages. Seasonal high flow rates were estimated for sanitary sewer treatment and storm drain collection volumes. The professional knowledge and experience of Sangeetha Arunagiri, the facility environmental engineer since 2007, and Glenn Abraham, the facility operations engineer since 2011, established the average estimates of the daily water volume.

Table 1 lists the estimated input and output flow rates. The Fire Pond uses an evapotranspiration rate based on nearby Eastman Lake of 0.102 gallon per square foot of surface area, as noted in the *Revised Technical Report* letter (*Revised Technical Report, Waste Discharge Requirements Order 85-314* letter to RWQCB dated 17 November 2014).

Evaporation/Percolation Ponds

The three evaporation/percolation ponds were constructed in 1983. Each unlined pond is 400 feet long, 100 feet wide, and 6 feet deep with 2:1 side slopes. The combined capacity of the three evaporation/ percolation ponds is 4.6 million gallons. The ponds are used on a rotational basis. The surface soil is periodically turned over.

The SWHP is unlined, 125 feet long, 75 feet wide, and 6 feet deep. The capacity of the SWHP is approximately 324,000 gallons. It has been in service since 1970 and historically has been used for the collection and evaporation/percolation of storm water.

Soils

Percolation testing was performed in 1982 as part of the soils study prior to the construction of the ponds. Percolation rates from six test holes around the pond sites averaged 2.03 minutes/inch (0.80 minute/centimeter). The Soil Conservation Service shows Grangeville fine sandy loam (0 to 1 percent slope) as the major soil series for the pond area.

Analysis

This *Pond Capacity Study- Revision 1* assessed the 100-year storm event based on a 60-minute, 3-hour, and 24-hour duration. The 60-minute and 3-hour scenario evaluated water balance on a 1-minute time interval. The 24-hour duration evaluated water balance on a 15-minute time interval. In each scenario, water balance calculated the accumulation of water in the ponds, based on the combination of peak process flow and surface water runoff volumes, less the volume of water percolating into the soil, as the ponds are unlined. The volume of water at the end of each interval was compared to the total capacity.

The assumptions made for this *Pond Capacity Study- Revision 1* are conservative; For example we have assumed the entire site is paved,

though it is not entirely paved. As well, we have assumed that all blowdown will be directed to the fire water pond. The assumptions and key calculation inputs used in this *Pond Capacity Study- Revision 1* are listed below:

- The four ponds are interconnected and controlled in a manner to allow surface water runoff and discharge collection to distribute to the four ponds, evenly. The ponds are interconnected with distribution piping that is manually adjusted with hand valves.
- The facility's peak process flow occurs during the 100-year storm event.
- The entire property is paved/impermeable with soil infiltration only occurring at the four ponds.
- The National Oceanic and Atmospheric Administration (NOAA) precipitation frequency data server was used to determine the precipitation for the 100-year storm event. The NOAA Atlas 14-point precipitation frequency (PF) estimates provide PF estimates based on frequency analysis of partial duration series. The PF estimate for Madera, provided as Attachment A, was applied to the total area of the property, to estimate total volume of rainfall.
- The total area of the property was estimated as 62 acres based on the County of Madera Assessor's office online records.
- The percolation rate of approximately 0.5 inch per minute, established from a 1982 study, was applied to each of three duration scenarios.
- Time of concentration is instantaneous.

During the 3-hour and 24-hour scenarios, storm water runoff, combined with process water, did not accumulate in the ponds. During the 60-minute scenario, the accumulated volume of storm water runoff and process water did not exceed evaporation/percolation pond capacity. The calculations are provided as Attachment A. Maximum cumulative volume of water collected is observed after approximately 42-minutes duration of the 60-minutes at a volume of 260,728 gallons.

Conclusions

The interconnected pond capacity is sufficient to maintain the rainfall conditions of a 100-year storm event during facility operations that would generate peak seasonal discharge flow. Further, a single

percolation pond, capacity of 1.5 million gallons, would be sufficient to maintain the rainfall conditions of a 100-year storm event during facility operations that would generate peak seasonal discharge flowrates. The SWHP does not have capacity to maintain rainfall conditions of a 60-minute duration a 100-year storm event.

Based on the information provided, ERM finds that the proposed future configuration of three evaporation/percolation ponds and SWHP can provide sufficient capacity to endure a 60-minute, 3-hour, and 24-hour 100-year storm event.

If you have any questions or need additional information, please do not hesitate to contact me at (916) 999-8919.

Sincerely,

Karyn Wong
Senior Engineer

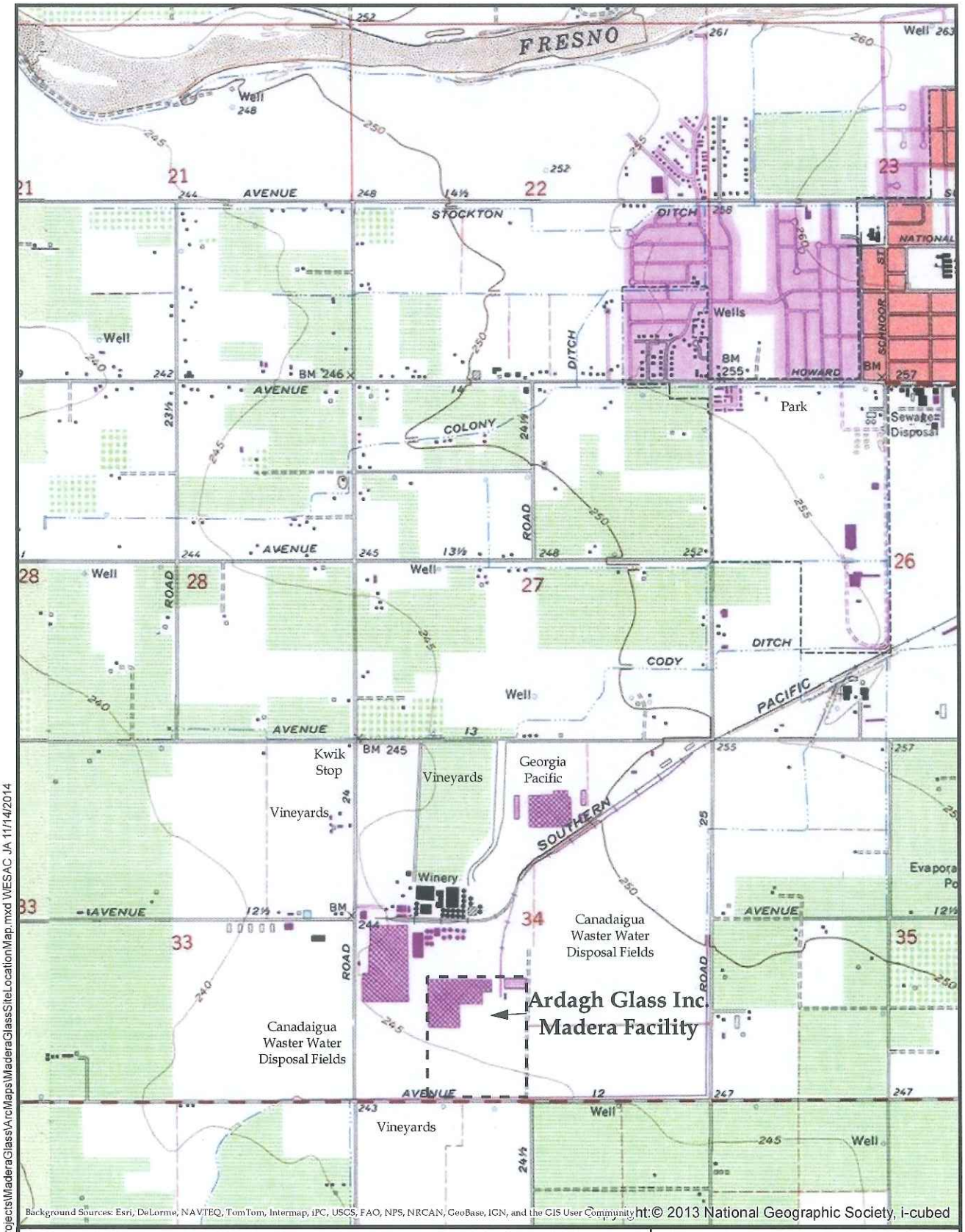
Heather Balfour
Partner

REGISTERED PROFESSIONAL ENGINEER
HEATHER DAWN BALFOUR
NO. C64854
EXP. 6/30/17
CIVIL
STATE OF CALIFORNIA

HB/KTW/dao/0301517.01

Figure 1 - Site Location Map
Figure 2 - Facility Site Map
Figure 3 - Proposed Facility Process Water Flow Schematic
Table 1 -Process Flow Volumes
Attachment A - Pond Capacity Evaluation

Figures



N

1:24,000

0 0.5 1 Mile

0 2000 4000 Feet

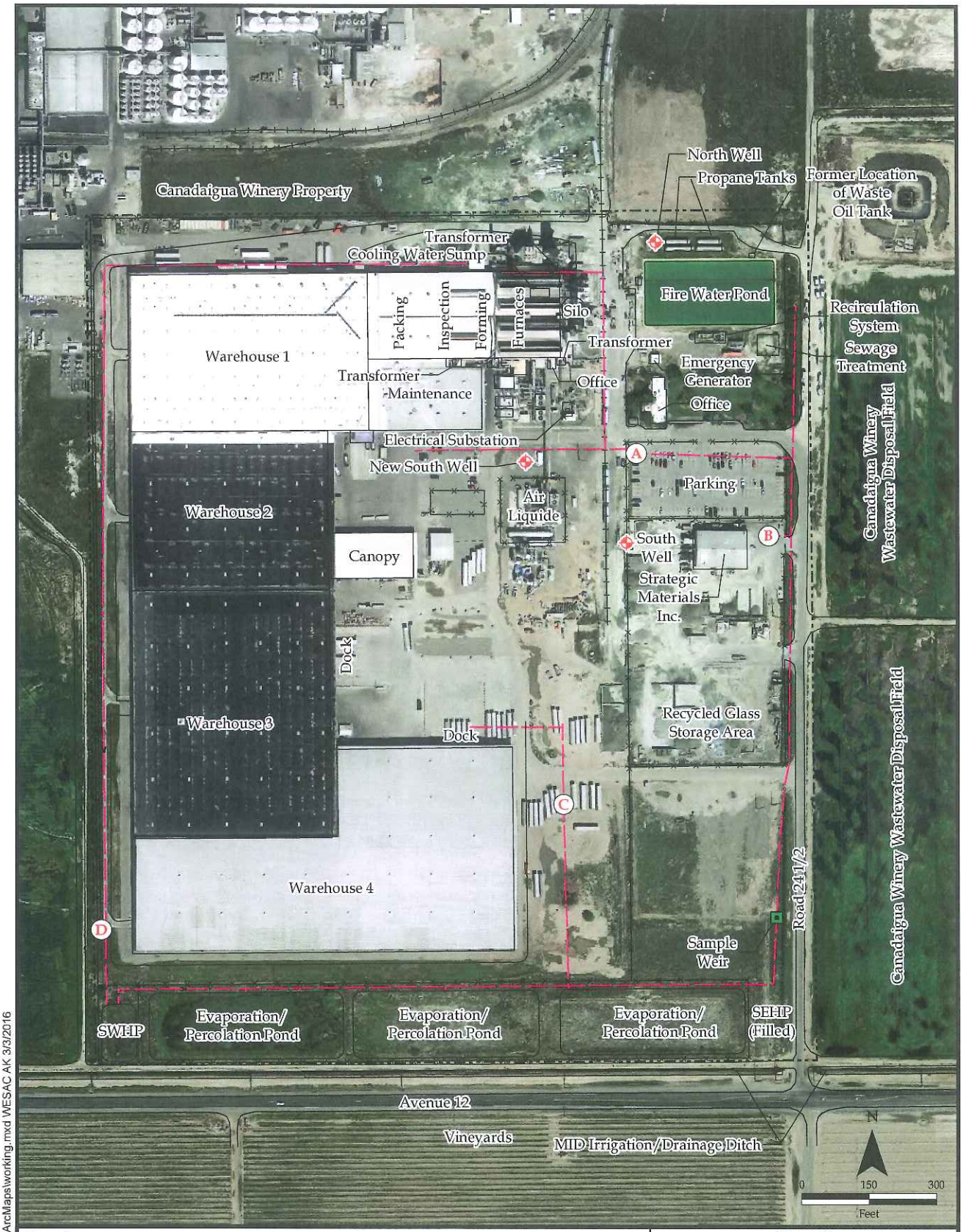
0 0.5 1 Kilometer

ERM

Figure 1
Site Location Map
Ardagh Glass Inc.
Madera Facility
Madera, California

PREPARED BY: JA (ERM)	Job No.: 0227501.01 File: MaderaGlassSiteLocationMap.mxd

\\wdsacdc03\DATA\GIS\Projects\MaderaGlass\ArcMaps\MaderaGlassSiteLocationMap.mxd WESAC JA 11/14/2014



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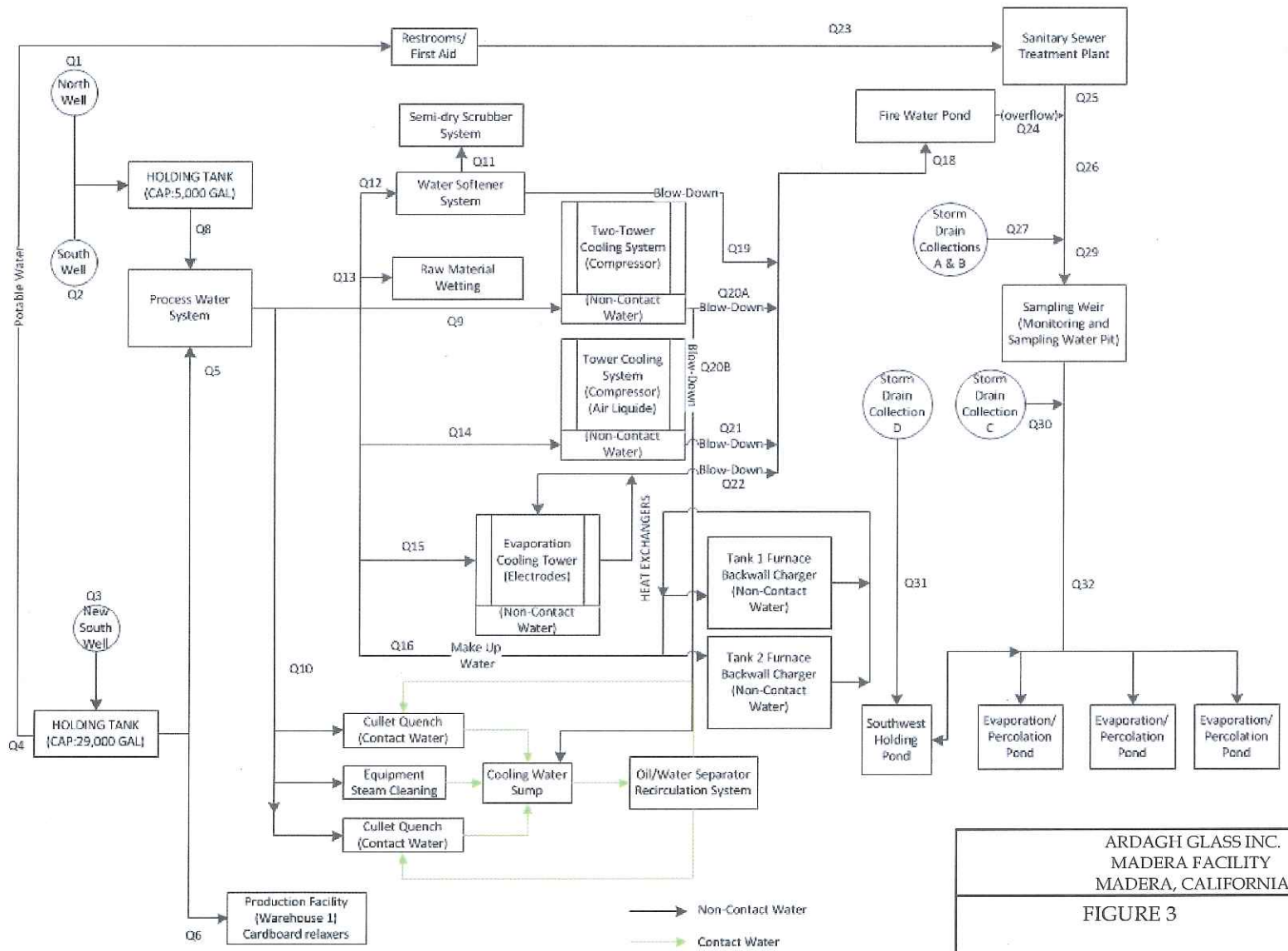
Legend

- Monitoring Well
- Suggested Stormdrain Collection Sample Location
- Sample Weir
- Fenceline
- Property Line
- Railroad
- Storm Drain
- SEHP Former Southeast Holding Pond
- SWHP Southwest Holding Pond

ERM

Figure 2
Site Map
Ardagh Glass Inc.
Madera Facility
Madera, California

PREPARED BY: AK (ERM)	Job No.: 0301517.01 File: working.mxd



ARDAGH GLASS INC.
MADERA FACILITY
MADERA, CALIFORNIA

FIGURE 3

PROPOSED FACILITY PROCESS WATER FLOW SCHEMATIC

ERM

PREPARED BY: (KTW)	Job No. 0301517.01 File: 0301517-FIG 3.mxd

Tables

Table 1
Process Flow Volumes
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Ardagh Madera Flows	Description	Flow Type	Average			Seasonal Maximum		
			Metered Daily Average Flow (gpd)	Estimated Daily Flow (gpd)	Basis of Estimation	Metered Daily Average Flow (gpd)	Estimated Daily Flow (gpd)	Basis of Estimation
Q1	North Well (Extraction Rate)	Input		120,000	Knowledge (Average)	Same as the average	120,000	
Q2	South Well (Extraction Rate)	Input		120,000	Knowledge (Average)	Same as the average	120,000	
Q3	New South Well (Extraction Rate)	Input	152,000		Assumed reduction due to Q20B	Metered Daily Average	160,000	
Q4	To Restrooms (Influent from Q3)	Consumed		20,000	Knowledge (Average)		30,000	Knowledge (peak)
Q5	To Process Water (Influent from Q3)	Process		131,700	Knowledge (Average)	Same as the average	131,700	
Q6	To Production Facility (Influent From Q3) - no waste stream	Consumed		300	Knowledge (Average)		600	Knowledge (peak)
Q7	NOT USED							
Q8	To Process Water (Influent from holding tank)	Process		240,000	Knowledge (Average)	Same as the average	240,000	
Q9	To Two-Tower Cooling System (Compressor) (non-contact)	Process		90,000	Knowledge (Average)	Same as the average	90,000	
Q10	To Cullet Quenches and Steam Cleaning - no waste stream, closed system	Consumed		84,000	Knowledge (Average)	Same as the average	84,000	
Q11	To Semi-Dry Scrubber	Consumed		25,000	Knowledge (Average)	Same as the average	25,000	
Q12	To Water Softener System	Process		40,000	Knowledge (Average)	Same as the average	40,000	
Q13	To Raw Material Wetting	Consumed		6,000	Knowledge (Average)	Same as the average	6,000	
Q14	To Tower Cooling (Compressor - Air Liquide) (non-contact)	Process		29,000	Knowledge (Average)	Same as the average	29,000	
Q15	To Electrode Cooling Tower (non-contact)	Process		90,000	Knowledge (Average)	Same as the average	90,000	
Q16	Make Up Water to Furnace Backwall Chargers 1 & 2 - no waste stream	Consumed		33,000	Knowledge (Average)	Same as the average	33,000	
Q17	NOT USED							
Q18	To Fire Water Pond (Sum of Q19, Q20A, Q21, Q22)	Process		59,250	Knowledge (Average)		67,250	Knowledge (peak)
Q19	From Water Softener (blow down)	Output		15,000	Knowledge (Average)	Same as the average	15,000	
Q20A	From AGI Cooling System (blow down) to Fire Water Pond	Output		19,500	Knowledge (Average)		27,500	Knowledge (peak)
Q20B	From AGI Cooling System (blow down) to Cullet Quenches Cooling Water Sump	Consumed		8,000	Knowledge (Average)		15,000	Knowledge (peak)
Q21	From Tower Cooling System (Air Liquide) (blow down)	Output		7,250	Knowledge (Average)	Same as the average	7,250	
Q22	From Electrode Cooling Tower (non-contact water)	Output		17,500	Knowledge (Average)	Same as the average	17,500	
Q23	To Sanitary Sewage Treatment (from Q4)	Process		20,000	Knowledge (Average)		30,000	Knowledge (peak)
Q24	From Fire Water Pond (over flow)	Output		43,950	Knowledge (Average)		51,950	Knowledge (peak)
Q25	From Sanitary Sewer Treatment System	Output		20,000	Knowledge (Average)	Same as the average	30,000	Knowledge (peak)
Q26	Sum of Q 24 and Q25	--		63,950	NA		81,950	
Q27	From Storm Drain Collections A&B	Output		500	Knowledge (Average)		1,000	Knowledge (peak)
Q28	NOT USED							
Q29	Total flow (Q24, Q25, Q27) to sample weir	--		64,450	NA	Same as the average	82,950	
Q30	From Storm Drain Collection C	Output		500	Knowledge (Average)		1,000	Knowledge (peak)
Q31	From Storm Drain Collection D	Output		500	Knowledge (Average)		1,000	Knowledge (peak)
Q32	Total Flow to evaporation/percolation ponds	--		65,450	NA	Same as the average	84,950	

green font — This value can be omitted from the input volume estimate for the holding pond capacity evaluation. Assume that all surface runoff is accounted for as rainfall and will drain to evaporation/percolation ponds.
red font — Peak values
gpd — Gallons per day

Attachment A
Pond Capacity Evaluation

Table A1
Evaporation/Percolation Pond Infiltration Capacity
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Pond Dimensions

Evaporation/Percolation Ponds		Southwest Holding Pond (SWHP)		Infiltration	
Length:	400 ft	*Length:*	75 ft	*Infiltration Rate:*	0.493 in/min
Width:	100 ft	*Width:*	125 ft		
Length (bottom):	376 ft	*Length (bottom):*	51 ft	*Volume @2ft FB:*	3,105,741 gallons
Width (bottom):	76 ft	*Width (bottom):*	101 ft	*Max Volume:*	4,949,105 gallons
Depth:	6 ft	*Depth:*	6 ft		
or		*or*			
Slope:	2 :1	*Slope:*	2 :1		

Volume (cf)	Depth (in)	Volume (gal)	Infil. Area (sq ft)	Infiltration Capacity (gal/min)
7,595	1	56,811	91,377	28,080
15,274	2	114,250	91,891	28,238
22,993	3	171,988	92,391	28,392
30,755	4	230,047	92,892	28,546
38,561	5	288,436	93,409	28,705
46,407	6	347,124	93,911	28,859
54,296	7	406,134	94,414	29,014
62,229	8	465,473	94,934	29,174
70,202	9	525,111	95,439	29,329
78,219	10	585,078	95,945	29,484
86,279	11	645,367	96,467	29,645
94,382	12	705,977	96,975	29,801
102,529	13	766,917	97,484	29,957
110,716	14	828,156	98,009	30,118
118,947	15	889,724	98,519	30,275
127,221	16	951,613	99,030	30,432
135,539	17	1,013,832	99,558	30,595
143,901	18	1,076,379	100,071	30,752
152,306	19	1,139,249	100,585	30,910
160,755	20	1,202,447	101,115	31,073
169,247	21	1,265,968	101,631	31,232
177,783	22	1,329,817	102,148	31,390
186,363	23	1,393,995	102,681	31,554
194,986	24	1,458,495	103,199	31,713
203,653	25	1,523,324	103,718	31,873
212,364	26	1,588,483	104,254	32,038
221,118	27	1,653,963	104,775	32,198
229,916	28	1,719,772	105,297	32,358
238,758	29	1,785,910	105,835	32,523
247,644	30	1,852,377	106,359	32,684
256,573	31	1,919,166	106,883	32,846
265,546	32	1,986,284	107,425	33,012
274,563	33	2,053,731	107,951	33,174
283,627	34	2,121,530	108,478	33,336
292,735	35	2,189,658	109,022	33,503
301,887	36	2,258,115	109,551	33,665
311,083	37	2,326,901	110,081	33,828
320,323	38	2,396,016	110,627	33,996
329,609	39	2,465,475	111,159	34,160
338,939	40	2,535,264	111,691	34,323
348,313	41	2,605,381	112,241	34,492

Table A1
Evaporation/Percolation Pond Infiltration Capacity
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Volume (cf)	Depth (in)	Volume (gal)	Infil. Area (sq ft)	Infiltration Capacity (gal/min)
357,734	42	2,675,850	112,775	34,656
367,199	43	2,746,649	113,310	34,821
376,708	44	2,817,776	113,862	34,990
386,265	45	2,889,262	114,399	35,155
395,866	46	2,961,078	114,937	35,321
405,514	47	3,033,245	115,492	35,491
415,206	48	3,105,741	116,031	35,657
424,945	49	3,178,589	116,571	35,823
434,728	50	3,251,765	117,129	35,994
444,558	51	3,325,294	117,671	36,161
454,432	52	3,399,151	118,214	36,328
464,354	53	3,473,368	118,774	36,500
474,320	54	3,547,914	119,319	36,667
484,333	55	3,622,811	119,865	36,835
494,390	56	3,698,037	120,428	37,008
504,495	57	3,773,623	120,975	37,176
514,647	58	3,849,560	121,523	37,344
524,843	59	3,925,826	122,089	37,518
535,087	60	4,002,451	122,639	37,687
545,378	61	4,079,427	123,190	37,857
555,713	62	4,156,733	123,758	38,031
566,096	63	4,234,398	124,311	38,201
576,526	64	4,312,414	124,865	38,371
587,001	65	4,390,767	125,436	38,547
597,523	66	4,469,472	125,991	38,717
608,092	67	4,548,528	126,547	38,888
618,709	68	4,627,943	127,121	39,065
629,373	69	4,707,710	127,679	39,236
640,085	70	4,787,836	128,238	39,408
650,841	71	4,868,291	128,814	39,585
661,645	72	4,949,105	129,375	39,757

Key:
cf = Cubic foot
ft = Feet
gal = Gallon
in = Inches
min = Minute
sq ft = Square feet

Table A2
Point Precipitation Frequency Estimates
NOAA Atlas 14 Volume 6 Version 2
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

PRECIPITATION FREQUENCY ESTIMATES by duration (inches)

Frequency (years)	1	2	5	10	25	50	100	200	500	1,000 years
By duration for ARI:										
5-min:	0.07	0.09	0.12	0.14	0.18	0.22	0.27	0.32	0.4	0.48
10-min:	0.11	0.13	0.17	0.21	0.26	0.32	0.38	0.45	0.57	0.68
15-min:	0.13	0.16	0.2	0.25	0.32	0.38	0.46	0.55	0.69	0.83
30-min:	0.18	0.22	0.28	0.34	0.44	0.53	0.64	0.76	0.96	1.15
60-min:	0.25	0.3	0.39	0.47	0.61	0.73	0.87	1.04	1.32	1.57
2-hr:	0.35	0.43	0.55	0.67	0.85	1.01	1.2	1.42	1.76	2.08
3-hr:	0.43	0.53	0.67	0.81	1.02	1.21	1.43	1.68	2.08	2.44
6-hr:	0.59	0.72	0.91	1.09	1.37	1.61	1.89	2.22	2.72	3.16
12-hr:	0.81	0.97	1.22	1.46	1.82	2.14	2.51	2.93	3.59	4.17
24-hr:	1.08	1.3	1.63	1.94	2.41	2.82	3.28	3.81	4.64	5.36
2-day:	1.3	1.59	2	2.36	2.9	3.35	3.85	4.4	5.22	5.92
3-day:	1.46	1.79	2.26	2.67	3.25	3.74	4.26	4.82	5.64	6.32
4-day:	1.6	1.98	2.5	2.94	3.58	4.1	4.65	5.24	6.09	6.78
7-day:	1.92	2.39	3.02	3.56	4.32	4.92	5.56	6.24	7.19	7.96
10-day:	2.13	2.66	3.37	3.96	4.8	5.46	6.15	6.89	7.91	8.74
20-day:	2.77	3.47	4.41	5.18	6.25	7.08	7.94	8.83	10.06	11.04
30-day:	3.37	4.24	5.39	6.34	7.63	8.62	9.64	10.69	12.12	13.23
45-day:	4.15	5.25	6.7	7.87	9.44	10.65	11.87	13.11	14.79	16.08
60-day:	4.93	6.27	8.01	9.4	11.27	12.68	14.1	15.55	17.47	18.95

Notes and Key:

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series.
Please refer to NOAA Atlas 14 document for more information.
http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ca

Data type: Precipitation depth
Time series type: Partial duration
Project area: Southwest
Location name: Madera, California, US*
Station Name: MADERA
Latitude: 36.9539°
Longitude: -120.0378°
Elevation: 270 feet*
* source: Google Maps

ARI = Average recurrence i average recurrence interval
hr = Hour
min = Minute

Table A3
100-Year Storm Capacity Evaluation: 60-Minute Storm
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Parcel APN (Madera County) 046-010-014-000

Lot Size: 2,699,413 sq ft **Result:** Sufficient Capacity **Storm Event (1 hr):** 0.87 inches

t (min)	% of storm	Cumulative % of storm	Q-precip (gal)	Q-process - Seasonal Max (gal)	Q-percol (gal)	Volume (gal)	Exceeded Capacity?
0	0.00%	0.00%				0	No
1	0.06%	0.06%	813	57	28,080	0	No
2	0.17%	0.22%	2,440	57	28,080	0	No
3	0.28%	0.50%	4,066	57	28,080	0	No
4	0.39%	0.89%	5,693	57	28,080	0	No
5	0.50%	1.39%	7,319	57	28,080	0	No
6	0.61%	2.00%	8,946	57	28,080	0	No
7	0.72%	2.72%	10,573	57	28,080	0	No
8	0.83%	3.56%	12,199	57	28,080	0	No
9	0.94%	4.50%	13,826	57	28,080	0	No
10	1.06%	5.56%	15,452	57	28,080	0	No
11	1.17%	6.72%	17,079	57	28,080	0	No
12	1.28%	8.00%	18,705	57	28,080	0	No
13	1.39%	9.39%	20,332	57	28,080	0	No
14	1.50%	10.89%	21,958	57	28,080	0	No
15	1.61%	12.50%	23,585	57	28,080	0	No
16	1.72%	14.22%	25,211	57	28,080	0	No
17	1.83%	16.06%	26,838	57	28,080	0	No
18	1.94%	18.00%	28,465	57	28,080	442	No
19	2.06%	20.06%	30,091	57	28,080	2,510	No
20	2.17%	22.22%	31,718	57	28,080	6,205	No
21	2.28%	24.50%	33,344	57	28,080	11,526	No
22	2.39%	26.89%	34,971	57	28,080	18,474	No
23	2.50%	29.39%	36,597	57	28,080	27,048	No
24	2.61%	32.00%	38,224	57	28,080	37,249	No
25	2.72%	34.72%	39,850	57	28,080	49,076	No
26	2.83%	37.56%	41,477	57	28,080	62,530	No
27	2.94%	40.50%	43,103	57	28,080	77,610	No
28	3.06%	43.56%	44,730	57	28,080	94,317	No
29	3.17%	46.72%	46,357	57	28,080	112,651	No
30	3.28%	50.00%	47,983	57	28,080	132,611	No
31	3.28%	53.28%	47,983	57	28,238	152,413	No
32	3.17%	56.44%	46,357	57	28,238	170,589	No
33	3.06%	59.50%	44,730	57	28,238	187,138	No
34	2.94%	62.44%	43,103	57	28,392	201,906	No
35	2.83%	65.28%	41,477	57	28,392	215,048	No
36	2.72%	68.00%	39,850	57	28,392	226,563	No
37	2.61%	70.61%	38,224	57	28,392	236,452	No
38	2.50%	73.11%	36,597	57	28,546	244,560	No
39	2.39%	75.50%	34,971	57	28,546	251,042	No
40	2.28%	77.78%	33,344	57	28,546	255,897	No
41	2.17%	79.94%	31,718	57	28,546	259,126	No
42	2.06%	82.00%	30,091	57	28,546	260,728	No
43	1.94%	83.94%	28,465	57	28,546	260,704	No
44	1.83%	85.78%	26,838	57	28,546	259,053	No
45	1.72%	87.50%	25,211	57	28,546	255,775	No
46	1.61%	89.11%	23,585	57	28,546	250,871	No
47	1.50%	90.61%	21,958	57	28,546	244,340	No
48	1.39%	92.00%	20,332	57	28,546	236,183	No
49	1.28%	93.28%	18,705	57	28,546	226,399	No
50	1.17%	94.44%	17,079	57	28,392	215,143	No
51	1.06%	95.50%	15,452	57	28,392	202,260	No
52	0.94%	96.44%	13,826	57	28,392	187,751	No

Table A3
100-Year Storm Capacity Evaluation: 60-Minute Storm
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Parcel APN (Madera County) 046-010-014-000

Lot Size: 2,699,413 sq ft **Result:** Sufficient Capacity **Storm Event (1 hr):** 0.87 inches

t (min)	% of storm	Cumulative % of storm	Q-precip (gal)	Q-process - Seasonal Max (gal)	Q-percol (gal)	Volume (gal)	Exceeded Capacity?
53	0.83%	97.28%	12,199	57	28,392	171,615	No
54	0.72%	98.00%	10,573	57	28,238	154,007	No
55	0.61%	98.61%	8,946	57	28,238	134,772	No
56	0.50%	99.11%	7,319	57	28,238	113,910	No
57	0.39%	99.50%	5,693	57	28,080	91,580	No
58	0.28%	99.78%	4,066	57	28,080	67,623	No
59	0.17%	99.94%	2,440	57	28,080	42,040	No
60	0.06%	100.00%	813	57	28,080	14,830	No

Notes and Key:
Uses Rational Method for calculating runoff
Assume pond begins at volume 0 gallons
Assumes storm water collected at all drains end in percolation ponds
Assume surface 100% impervious
Assume instant time of concentration
Assume no saturation of soil
gal = Gallons square feet
min = Minute: gallons
sq ft = Square feet

Table A4
100-Year Storm Capacity Evaluation: 3-Hour Storm
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Parcel APN (Madera County) 046-010-014-000

Lot Size: 2,699,413 sq ft **Result:** Sufficient Capacity **Storm Event (3 hr):** 1.43 inches

t (min)	% of storm	Cumulative % of storm	Q-precip (gal)	Q-process - Seasonal Max (gal)	Q-percol (gal)	Volume (gal)	Exceeded Capacity?
0	0.00%	0.00%				0	No
1	0.01%	0.01%	149	57	28,080	0	No
2	0.02%	0.02%	446	57	28,080	0	No
3	0.03%	0.06%	743	57	28,080	0	No
4	0.04%	0.10%	1,040	57	28,080	0	No
5	0.06%	0.15%	1,337	57	28,080	0	No
6	0.07%	0.22%	1,634	57	28,080	0	No
7	0.08%	0.30%	1,931	57	28,080	0	No
8	0.09%	0.40%	2,228	57	28,080	0	No
9	0.10%	0.50%	2,525	57	28,080	0	No
10	0.12%	0.62%	2,822	57	28,080	0	No
11	0.13%	0.75%	3,119	57	28,080	0	No
12	0.14%	0.89%	3,416	57	28,080	0	No
13	0.15%	1.04%	3,713	57	28,080	0	No
14	0.17%	1.21%	4,010	57	28,080	0	No
15	0.18%	1.39%	4,307	57	28,080	0	No
16	0.19%	1.58%	4,604	57	28,080	0	No
17	0.20%	1.78%	4,901	57	28,080	0	No
18	0.22%	2.00%	5,199	57	28,080	0	No
19	0.23%	2.23%	5,496	57	28,080	0	No
20	0.24%	2.47%	5,793	57	28,080	0	No
21	0.25%	2.72%	6,090	57	28,080	0	No
22	0.27%	2.99%	6,387	57	28,080	0	No
23	0.28%	3.27%	6,684	57	28,080	0	No
24	0.29%	3.56%	6,981	57	28,080	0	No
25	0.30%	3.86%	7,278	57	28,080	0	No
26	0.31%	4.17%	7,575	57	28,080	0	No
27	0.33%	4.50%	7,872	57	28,080	0	No
28	0.34%	4.84%	8,169	57	28,080	0	No
29	0.35%	5.19%	8,466	57	28,080	0	No
30	0.36%	5.56%	8,763	57	28,080	0	No
31	0.38%	5.93%	9,060	57	28,080	0	No
32	0.39%	6.32%	9,357	57	28,080	0	No
33	0.40%	6.72%	9,654	57	28,080	0	No
34	0.41%	7.14%	9,951	57	28,080	0	No
35	0.43%	7.56%	10,248	57	28,080	0	No
36	0.44%	8.00%	10,546	57	28,080	0	No
37	0.45%	8.45%	10,843	57	28,080	0	No
38	0.46%	8.91%	11,140	57	28,080	0	No
39	0.48%	9.39%	11,437	57	28,080	0	No
40	0.49%	9.88%	11,734	57	28,080	0	No
41	0.50%	10.38%	12,031	57	28,080	0	No
42	0.51%	10.89%	12,328	57	28,080	0	No
43	0.52%	11.41%	12,625	57	28,080	0	No
44	0.54%	11.95%	12,922	57	28,080	0	No
45	0.55%	12.50%	13,219	57	28,080	0	No
46	0.56%	13.06%	13,516	57	28,080	0	No
47	0.57%	13.64%	13,813	57	28,080	0	No
48	0.59%	14.22%	14,110	57	28,080	0	No
49	0.60%	14.82%	14,407	57	28,080	0	No
50	0.61%	15.43%	14,704	57	28,080	0	No
51	0.62%	16.06%	15,001	57	28,080	0	No

Table A4
100-Year Storm Capacity Evaluation: 3-Hour Storm
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Parcel APN (Madera County) 046-010-014-000

Lot Size: 2,699,413 sq ft **Result:** Sufficient Capacity **Storm Event (3 hr):** 1.43 inches

t (min)	% of storm	Cumulative % of storm	Q-precip (gal)	Q-process - Seasonal Max (gal)	Q-percol (gal)	Volume (gal)	Exceeded Capacity?
52	0.64%	16.69%	15,298	57	28,080	0	No
53	0.65%	17.34%	15,596	57	28,080	0	No
54	0.66%	18.00%	15,893	57	28,080	0	No
55	0.67%	18.67%	16,190	57	28,080	0	No
56	0.69%	19.36%	16,487	57	28,080	0	No
57	0.70%	20.06%	16,784	57	28,080	0	No
58	0.71%	20.77%	17,081	57	28,080	0	No
59	0.72%	21.49%	17,378	57	28,080	0	No
60	0.73%	22.22%	17,675	57	28,080	0	No
61	0.75%	22.97%	17,972	57	28,080	0	No
62	0.76%	23.73%	18,269	57	28,080	0	No
63	0.77%	24.50%	18,566	57	28,080	0	No
64	0.78%	25.28%	18,863	57	28,080	0	No
65	0.80%	26.08%	19,160	57	28,080	0	No
66	0.81%	26.89%	19,457	57	28,080	0	No
67	0.82%	27.71%	19,754	57	28,080	0	No
68	0.83%	28.54%	20,051	57	28,080	0	No
69	0.85%	29.39%	20,348	57	28,080	0	No
70	0.86%	30.25%	20,646	57	28,080	0	No
71	0.87%	31.12%	20,943	57	28,080	0	No
72	0.88%	32.00%	21,240	57	28,080	0	No
73	0.90%	32.90%	21,537	57	28,080	0	No
74	0.91%	33.80%	21,834	57	28,080	0	No
75	0.92%	34.72%	22,131	57	28,080	0	No
76	0.93%	35.65%	22,428	57	28,080	0	No
77	0.94%	36.60%	22,725	57	28,080	0	No
78	0.96%	37.56%	23,022	57	28,080	0	No
79	0.97%	38.52%	23,319	57	28,080	0	No
80	0.98%	39.51%	23,616	57	28,080	0	No
81	0.99%	40.50%	23,913	57	28,080	0	No
82	1.01%	41.51%	24,210	57	28,080	0	No
83	1.02%	42.52%	24,507	57	28,080	0	No
84	1.03%	43.56%	24,804	57	28,080	0	No
85	1.04%	44.60%	25,101	57	28,080	0	No
86	1.06%	45.65%	25,398	57	28,080	0	No
87	1.07%	46.72%	25,695	57	28,080	0	No
88	1.08%	47.80%	25,993	57	28,080	0	No
89	1.09%	48.90%	26,290	57	28,080	0	No
90	1.10%	50.00%	26,587	57	28,080	0	No
91	1.10%	51.10%	26,587	57	28,080	0	No
92	1.09%	52.20%	26,290	57	28,080	0	No
93	1.08%	53.28%	25,993	57	28,080	0	No
94	1.07%	54.35%	25,695	57	28,080	0	No
95	1.06%	55.40%	25,398	57	28,080	0	No
96	1.04%	56.44%	25,101	57	28,080	0	No
97	1.03%	57.48%	24,804	57	28,080	0	No
98	1.02%	58.49%	24,507	57	28,080	0	No
99	1.01%	59.50%	24,210	57	28,080	0	No
100	0.99%	60.49%	23,913	57	28,080	0	No
101	0.98%	61.48%	23,616	57	28,080	0	No
102	0.97%	62.44%	23,319	57	28,080	0	No
103	0.96%	63.40%	23,022	57	28,080	0	No
104	0.94%	64.35%	22,725	57	28,080	0	No

Table A4
100-Year Storm Capacity Evaluation: 3-Hour Storm
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Parcel APN (Madera County) 046-010-014-000

Lot Size: 2,699,413 sq ft **Result:** Sufficient Capacity **Storm Event (3 hr):** 1.43 inches

t (min)	% of storm	Cumulative % of storm	Q-precip (gal)	Q-process - Seasonal Max (gal)	Q-percol (gal)	Volume (gal)	Exceeded Capacity?
105	0.93%	65.28%	22,428	57	28,080	0	No
106	0.92%	66.20%	22,131	57	28,080	0	No
107	0.91%	67.10%	21,834	57	28,080	0	No
108	0.90%	68.00%	21,537	57	28,080	0	No
109	0.88%	68.88%	21,240	57	28,080	0	No
110	0.87%	69.75%	20,943	57	28,080	0	No
111	0.86%	70.61%	20,646	57	28,080	0	No
112	0.85%	71.46%	20,348	57	28,080	0	No
113	0.83%	72.29%	20,051	57	28,080	0	No
114	0.82%	73.11%	19,754	57	28,080	0	No
115	0.81%	73.92%	19,457	57	28,080	0	No
116	0.80%	74.72%	19,160	57	28,080	0	No
117	0.78%	75.50%	18,863	57	28,080	0	No
118	0.77%	76.27%	18,566	57	28,080	0	No
119	0.76%	77.03%	18,269	57	28,080	0	No
120	0.75%	77.78%	17,972	57	28,080	0	No
121	0.73%	78.51%	17,675	57	28,080	0	No
122	0.72%	79.23%	17,378	57	28,080	0	No
123	0.71%	79.94%	17,081	57	28,080	0	No
124	0.70%	80.64%	16,784	57	28,080	0	No
125	0.69%	81.33%	16,487	57	28,080	0	No
126	0.67%	82.00%	16,190	57	28,080	0	No
127	0.66%	82.66%	15,893	57	28,080	0	No
128	0.65%	83.31%	15,596	57	28,080	0	No
129	0.64%	83.94%	15,298	57	28,080	0	No
130	0.62%	84.57%	15,001	57	28,080	0	No
131	0.61%	85.18%	14,704	57	28,080	0	No
132	0.60%	85.78%	14,407	57	28,080	0	No
133	0.59%	86.36%	14,110	57	28,080	0	No
134	0.57%	86.94%	13,813	57	28,080	0	No
135	0.56%	87.50%	13,516	57	28,080	0	No
136	0.55%	88.05%	13,219	57	28,080	0	No
137	0.54%	88.59%	12,922	57	28,080	0	No
138	0.52%	89.11%	12,625	57	28,080	0	No
139	0.51%	89.62%	12,328	57	28,080	0	No
140	0.50%	90.12%	12,031	57	28,080	0	No
141	0.49%	90.61%	11,734	57	28,080	0	No
142	0.48%	91.09%	11,437	57	28,080	0	No
143	0.46%	91.55%	11,140	57	28,080	0	No
144	0.45%	92.00%	10,843	57	28,080	0	No
145	0.44%	92.44%	10,546	57	28,080	0	No
146	0.43%	92.86%	10,248	57	28,080	0	No
147	0.41%	93.28%	9,951	57	28,080	0	No
148	0.40%	93.68%	9,654	57	28,080	0	No
149	0.39%	94.07%	9,357	57	28,080	0	No
150	0.38%	94.44%	9,060	57	28,080	0	No
151	0.36%	94.81%	8,763	57	28,080	0	No
152	0.35%	95.16%	8,466	57	28,080	0	No
153	0.34%	95.50%	8,169	57	28,080	0	No
154	0.33%	95.83%	7,872	57	28,080	0	No
155	0.31%	96.14%	7,575	57	28,080	0	No
156	0.30%	96.44%	7,278	57	28,080	0	No
157	0.29%	96.73%	6,981	57	28,080	0	No

Table A4
100-Year Storm Capacity Evaluation: 3-Hour Storm
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Parcel APN (Madera County) 046-010-014-000

Lot Size: 2,699,413 sq ft **Result:** Sufficient Capacity **Storm Event (3 hr):** 1.43 inches

t (min)	% of storm	Cumulative % of storm	Q-precip (gal)	Q-process - Seasonal Max (gal)	Q-percol (gal)	Volume (gal)	Exceeded Capacity?
158	0.28%	97.01%	6,684	57	28,080	0	No
159	0.27%	97.28%	6,387	57	28,080	0	No
160	0.25%	97.53%	6,090	57	28,080	0	No
161	0.24%	97.77%	5,793	57	28,080	0	No
162	0.23%	98.00%	5,496	57	28,080	0	No
163	0.22%	98.22%	5,199	57	28,080	0	No
164	0.20%	98.42%	4,901	57	28,080	0	No
165	0.19%	98.61%	4,604	57	28,080	0	No
166	0.18%	98.79%	4,307	57	28,080	0	No
167	0.17%	98.96%	4,010	57	28,080	0	No
168	0.15%	99.11%	3,713	57	28,080	0	No
169	0.14%	99.25%	3,416	57	28,080	0	No
170	0.13%	99.38%	3,119	57	28,080	0	No
171	0.12%	99.50%	2,822	57	28,080	0	No
172	0.10%	99.60%	2,525	57	28,080	0	No
173	0.09%	99.70%	2,228	57	28,080	0	No
174	0.08%	99.78%	1,931	57	28,080	0	No
175	0.07%	99.85%	1,634	57	28,080	0	No
176	0.06%	99.90%	1,337	57	28,080	0	No
177	0.04%	99.94%	1,040	57	28,080	0	No
178	0.03%	99.98%	743	57	28,080	0	No
179	0.02%	99.99%	446	57	28,080	0	No
180	0.01%	100.00%	149	57	28,080	0	No

Notes and Key:
Uses Rational Method for calculating runoff
Assume pond begins at volume 0 gallons
Assumes storm water collected at all drains end in percolation ponds
Assume surface 100% impervious
Assume instant time of concentration
Assume no saturation of soil
gal = Gallons
min = Minutes
sq ft = Square feet

Table A5
100-Year Storm Capacity Evaluation: 24-Hour Storm
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Parcel APN (Madera County) 046-010-014-000

Lot Size: 2,699,413 sq ft **Result:** Sufficient Capacity **Storm Event (24 hr):** 3.28 inches

t (min)	% of storm	Cumulative % of storm	Q-precip (gal)	Q-process - Seasonal Max (gal)	Q-percol (gal)	Volume (gal)	Exceeded Capacity?
0	0.00%	0.00%				0	No
15	0.02%	0.02%	1,198	854	421,200	0	No
30	0.07%	0.09%	3,593	854	421,200	0	No
45	0.11%	0.20%	5,989	854	421,200	0	No
60	0.15%	0.35%	8,384	854	421,200	0	No
75	0.20%	0.54%	10,779	854	421,200	0	No
90	0.24%	0.78%	13,175	854	421,200	0	No
105	0.28%	1.06%	15,570	854	421,200	0	No
120	0.33%	1.39%	17,966	854	421,200	0	No
135	0.37%	1.76%	20,361	854	421,200	0	No
150	0.41%	2.17%	22,756	854	421,200	0	No
165	0.46%	2.63%	25,152	854	421,200	0	No
180	0.50%	3.13%	27,547	854	421,200	0	No
195	0.54%	3.67%	29,943	854	421,200	0	No
210	0.59%	4.25%	32,338	854	421,200	0	No
225	0.63%	4.88%	34,734	854	421,200	0	No
240	0.67%	5.56%	37,129	854	421,200	0	No
255	0.72%	6.27%	39,524	854	421,200	0	No
270	0.76%	7.03%	41,920	854	421,200	0	No
285	0.80%	7.83%	44,315	854	421,200	0	No
300	0.85%	8.68%	46,711	854	421,200	0	No
315	0.89%	9.57%	49,106	854	421,200	0	No
330	0.93%	10.50%	51,501	854	421,200	0	No
345	0.98%	11.48%	53,897	854	421,200	0	No
360	1.02%	12.50%	56,292	854	421,200	0	No
375	1.06%	13.56%	58,688	854	421,200	0	No
390	1.11%	14.67%	61,083	854	421,200	0	No
405	1.15%	15.82%	63,479	854	421,200	0	No
420	1.19%	17.01%	65,874	854	421,200	0	No
435	1.24%	18.25%	68,269	854	421,200	0	No
450	1.28%	19.53%	70,665	854	421,200	0	No
465	1.32%	20.86%	73,060	854	421,200	0	No
480	1.37%	22.22%	75,456	854	421,200	0	No
495	1.41%	23.63%	77,851	854	421,200	0	No
510	1.45%	25.09%	80,246	854	421,200	0	No
525	1.50%	26.58%	82,642	854	421,200	0	No
540	1.54%	28.13%	85,037	854	421,200	0	No
555	1.58%	29.71%	87,433	854	421,200	0	No
570	1.63%	31.34%	89,828	854	421,200	0	No
585	1.67%	33.01%	92,224	854	421,200	0	No
600	1.71%	34.72%	94,619	854	421,200	0	No
615	1.76%	36.48%	97,014	854	421,200	0	No
630	1.80%	38.28%	99,410	854	421,200	0	No
645	1.84%	40.13%	101,805	854	421,200	0	No
660	1.89%	42.01%	104,201	854	421,200	0	No
675	1.93%	43.95%	106,596	854	421,200	0	No
690	1.97%	45.92%	108,991	854	421,200	0	No
705	2.02%	47.94%	111,387	854	421,200	0	No
720	2.06%	50.00%	113,782	854	421,200	0	No
735	2.06%	52.06%	113,782	854	421,200	0	No
750	2.02%	54.08%	111,387	854	421,200	0	No
765	1.97%	56.05%	108,991	854	421,200	0	No

Table A5
100-Year Storm Capacity Evaluation: 24-Hour Storm
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Parcel APN (Madera County) 046-010-014-000

Lot Size: 2,699,413 sq ft **Result:** Sufficient Capacity **Storm Event (24 hr):** 3.28 inches

t (min)	% of storm	Cumulative % of storm	Q-precip (gal)	Q-process - Seasonal Max (gal)	Q-percol (gal)	Volume (gal)	Exceeded Capacity?
780	1.93%	57.99%	106,596	854	421,200	0	No
795	1.89%	59.87%	104,201	854	421,200	0	No
810	1.84%	61.72%	101,805	854	421,200	0	No
825	1.80%	63.52%	99,410	854	421,200	0	No
840	1.76%	65.28%	97,014	854	421,200	0	No
855	1.71%	66.99%	94,619	854	421,200	0	No
870	1.67%	68.66%	92,224	854	421,200	0	No
885	1.63%	70.29%	89,828	854	421,200	0	No
900	1.58%	71.88%	87,433	854	421,200	0	No
915	1.54%	73.42%	85,037	854	421,200	0	No
930	1.50%	74.91%	82,642	854	421,200	0	No
945	1.45%	76.37%	80,246	854	421,200	0	No
960	1.41%	77.78%	77,851	854	421,200	0	No
975	1.37%	79.14%	75,456	854	421,200	0	No
990	1.32%	80.47%	73,060	854	421,200	0	No
1005	1.28%	81.75%	70,665	854	421,200	0	No
1020	1.24%	82.99%	68,269	854	421,200	0	No
1035	1.19%	84.18%	65,874	854	421,200	0	No
1050	1.15%	85.33%	63,479	854	421,200	0	No
1065	1.11%	86.44%	61,083	854	421,200	0	No
1080	1.06%	87.50%	58,688	854	421,200	0	No
1095	1.02%	88.52%	56,292	854	421,200	0	No
1110	0.98%	89.50%	53,897	854	421,200	0	No
1125	0.93%	90.43%	51,501	854	421,200	0	No
1140	0.89%	91.32%	49,106	854	421,200	0	No
1155	0.85%	92.17%	46,711	854	421,200	0	No
1170	0.80%	92.97%	44,315	854	421,200	0	No
1185	0.76%	93.73%	41,920	854	421,200	0	No
1200	0.72%	94.44%	39,524	854	421,200	0	No
1215	0.67%	95.12%	37,129	854	421,200	0	No
1230	0.63%	95.75%	34,734	854	421,200	0	No
1245	0.59%	96.33%	32,338	854	421,200	0	No
1260	0.54%	96.88%	29,943	854	421,200	0	No
1275	0.50%	97.37%	27,547	854	421,200	0	No
1290	0.46%	97.83%	25,152	854	421,200	0	No
1305	0.41%	98.24%	22,756	854	421,200	0	No
1320	0.37%	98.61%	20,361	854	421,200	0	No
1335	0.33%	98.94%	17,966	854	421,200	0	No
1350	0.28%	99.22%	15,570	854	421,200	0	No
1365	0.24%	99.46%	13,175	854	421,200	0	No
1380	0.20%	99.65%	10,779	854	421,200	0	No
1395	0.15%	99.80%	8,384	854	421,200	0	No
1410	0.11%	99.91%	5,989	854	421,200	0	No

Table A5
100-Year Storm Capacity Evaluation: 24-Hour Storm
Pond Capacity Study
Ardagh Glass - Madera Facility
Madera, California

Parcel APN (Madera County) 046-010-014-000

Lot Size: 2,699,413 sq ft **Result:** Sufficient Capacity **Storm Event (24 hr):** 3.28 inches

t (min)	% of storm	Cumulative % of storm	Q-precip (gal)	Q-process - Seasonal Max (gal)	Q-percol (gal)	Volume (gal)	Exceeded Capacity?
1425	0.07%	99.98%	3,593	854	421,200	0	No
1440	0.02%	100.00%	1,198	854	421,200	0	No

Notes and Key:
Uses Rational Method for calculating runoff
Assume pond begins at volume 0 gallons
Assumes storm water collected at all drains end in percolation ponds
Assume surface 100% impervious
Assume instant time of concentration
Assume no saturation of soil
gal = Gallons
min = Minutes
sq ft = Square feet

ArdaghGroup

Attachment B: Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements

Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements for Ardagh Glass Inc. and Air Liquide Industrial US Limited Partnership Glass Facility, Madera County, dated 3 February 2016, 24441 Avenue 12, Madera, California

Comment	Page	REFERENCE	COMMENT
1	Cover Page-addressees	Sangeetha Arunagiri Ardagh Glass Inc. 24441 Avenue 12 Madera, CA 93637 Scott Shepard Air Liquide Industrial U.S. Limited Partnership 24441 Avenue 12 Madera, CA 93637	Ardagh would like to know if Strategic Materials Inc. should be named as a responsible party in the Waste Discharge Requirements (WDR). Ardagh leases a portion of its property to Strategic Materials Inc., a cullet processing company. Storm water catch basins on the lease property of Strategic Materials Inc. are connected to the Ardagh storm drain and collection pond system.
2	Cover Page; Paragraph 1, Sentence 2	Madera. The facility manufactures glass and proposes to continue discharging domestic wastewater to on-site evaporation/percolation ponds and cooling tower blowdown to an on-site fire water pond and land application area. The Central Valley Water Board will be considering	For accuracy, recommend that the sentence be restructured as follows: The facility manufactures glass and currently discharges treated domestic wastewater and non-contact cooling tower blowdown to on-site evaporation/percolation ponds. The facility proposes to continue to discharge treated domestic wastewater to the on-site evaporation/percolation ponds and to redirect cooling tower blowdown (1) as a supplement fire water pond; (2) as a supplement to cooling water for an oil/water separator recirculation system and (3) discharge to the on-site evaporation/percolation ponds.

Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements for Ardagh Glass Inc. and Air Liquide Industrial US Limited Partnership Glass Facility, Madera County, dated 3 February 2016, 24441 Avenue 12, Madera, California

Comment	Page	REFERENCE	COMMENT
3	WDR, Background #1, #2, #3	**Background** 1. Saint-Gobain Containers, LLC owns and operates a glass manufacturing facility (Glass Facility) at 24441 Avenue 12 in Madera, California. The Discharge is regulated under Waste Discharge Requirements (WDRs) Order 85-314 that authorize the discharge of domestic and industrial wastewater to evaporation/percolation ponds. Domestic wastewater is generated from an onsite package treatment facility. Industrial wastewater is generated from the quenching operation in the glass manufacturing process along with contact and non-contact cooling water. Order 85-314 allows a monthly average flow of 0.39 million gallons per day (mgd). 2. On 4 February 2014, Environmental Resources Management (Consultant) submitted a Report of Waste Discharge (RWD) and supplemental information received on 17 November 2014, 18 September 2015, 7 January 2016, and 8 January 2016 for updated WDRs to reflect changes Ardagh Glass has made to its operation since WDRs Order 85-314 were adopted. 3. On 6 June 2014, the Central Valley Water Board adopted Order R5-2014-0092 for a name change from Saint-Gobain Containers, LLC to Ardagh Glass Inc. (Ardagh Glass).	The owner name reference between Saint-Gobain Containers, LLC and Ardagh Glass Inc. is inconsistent. Recommend combining #1 and #3 to refer to Ardagh Glass Inc. (formerly Saint-Gobain Containers LLC).
4	WDR, Background #4	4. Ardagh Glass leases a portion of its property to Air Liquide Industrial U.S. Limited Partnership (Air Liquide), a gas manufacturing company. Air Liquide operates a compressor cooling system that generates cooling tower blowdown that comingles with cooling tower blowdown generated by Ardagh Glass prior to being discharged to the evaporation/percolation ponds. Ardagh Glass Inc. and Air Liquide Industrial U.S. (hereafter Dischargers) are responsible for compliance with these Waste Discharge Requirements (WDRs).	Should there be another line item that describes Strategic Materials Inc.'s discharge of surface water?
5	WDR, Background #5	5. The Glass Facility occupies the south west corner of section 34 in Township 11 South, Range 17 East, MDB&M. The Glass Facility is shown on Attachment A, which is incorporated by reference and considered a part of this Order.	Recommend defining "Glass Facility." The Ardagh Glass facility (Glass Facility) occupies the southwest corner of Section 34 Township…
6	WDR, Existing Facility and Discharge, #7	**Existing Facility and Discharge** 7. Ardagh manufactures glass bottles primarily for wine costumers. Operations include: batch handling, melting, forming, annealing, inspecting, packaging, warehousing, and shipping. The Glass Facility operates 24 hours per day, year round.	Typographical error- customers.
7	WDR, Existing Facility and Discharge, #8	8. In 1990, an oil skimmer/recirculating water system was installed. Contact wastewater from the cullet quench process passes through the oil skimmer and is then recirculated for reuse. This system is completely a close-lope system with no discharge to the evaporation/percolation ponds. Currently, well water from an onsite well is used to supplement the oil skimmer/recirculating water system as water evaporates.	Typographical error- closed-loop.

Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements for Ardagh Glass Inc. and Air Liquide Industrial US Limited Partnership Glass Facility, Madera County, dated 3 February 2016, 24441 Avenue 12, Madera, California

Comment	Page	REFERENCE	COMMENT
8	WDR, Existing Facility and Discharge, #9	9. Waste streams generated at the Glass Facility include: domestic wastewater from an onsite package plant, water softener regenerate, non-contact cooling water blowdown, and storm water. Non-contact cooling water blowdown is generated from Ardagh Glass two-tower compressor cooling system, Air Liquide compressor cooling system, and the electrode evaporation cooling water system. Currently, all of the blowdowns comingle in floor drains and are pumped through a pipe to comingle with domestic wastewater and storm water before being discharged to the evaporation/percolation ponds.	Ardagh recommends that the storm water catch basins by Strategic Materials Inc. be included in this description.
9	WDR, Existing Facility and Discharge, #11	11. Solids generated from the Glass Facility includes scrubber solid from the semi-dry scubber system. Approximately, one ton of scrubber solid is generated per month. According to Ardagh Glass, scrubber solid is hauled off-site to Clean Harbors - Grassy Mountain Landfill in Grantsville, Utah. This Order requires the Discharger to report the amount of solids produced, disposal method used, and ultimate disposal site.	Ardagh requests that the WDR reference solids related to the wastewater streams (such as oily sludge, or fire water pond sediment removal). The semi-dry scrubber system is an air pollution control device related to glass manufacturing. The equipment and process is managed and permitted with San Joaquin Valley Air Pollution Control District. The semi-dry scrubber system is contained in a closed building with no floor drains and no connection to storm water. Therefore, the scrubber solids of the semi-dry scrubber are not part of the wastewater stream.
10	WDR, Existing Facility and Discharge, #12	12. Currently, storm water at the Glass Facility is collected in floor drains and comingles with domestic and comingled blowdown wastewater before being discharged to the evaporation/percolation ponds.	Ardagh requests to differentiate between drainage inlets related to storm water versus drainage inlets related to blowdown. Drainage inlets related to storm water can be referred to as catch basins. Drainage inlets related to blowdown can be referred to as floor drains.

Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements for Ardagh Glass Inc. and Air Liquide Industrial US Limited Partnership Glass Facility, Madera County, dated 3 February 2016, 24441 Avenue 12, Madera, California

Comment	Page	REFERENCE	COMMENT
11	WDR, Proposed Facility and Discharge, #13	13. Ardagh Glass is proposing to use its comingled blowdown wastewater to: 1) supplement its concrete-lined "Fire Water Pond", 2) supplement the oil skimmer/recirculation system, and 3) landscape irrigate 30 acres of land application area (LAA). Currently, Ardagh Glass has a concrete-lined "Fire Water Pond" that is filled with supply water from onsite wells and is for emergency purposes in case a fire breaks out at the Glass Facility. Ardagh Glass is proposing to use a portion of the comingled blowdown wastewater to supplement the "Fire Water Pond" instead of using well water. The "Fire Water Pond" has an overflow weir. When water in the "Fire Water Pond" overflows, it will comingle with treated domestic wastewater and eventually be discharged to the evaporation/percolation ponds. Ardagh Glass is also proposing to eliminate the use of well water that supplements the oil skimmer/recirculation water system and instead use comingled blowdown wastewater. Another portion of the comingled blowdown wastewater will be used to irrigate 30 acres of LAA to grow grass. A process flow schematic is shown in Attachment B, which is incorporated by reference and is part of this Order.	Exclude all references to landscape irrigation of land application area (LAA). Ardagh will submit a revised Report of Waste Discharge to eliminate LAA by 4 March 2016.
12	WDR, Proposed Facility and Discharge, #19	19. The Discharger proposes to apply 3,000 gpd of comingled blowdown wastewater on 30 acres of LAA for landscape irrigation within the Glass Facility. Based on available data the approximate organic, nutrient, and salt loadings to the 30 acre LAA are 0.01 lb/acre-day, 1 lb/acre-year, and 125 lbs/acre-year, respectively. This Order requires the Discharger to install an effluent flow meter to monitor the amount of comingled blowdown wastewater discharged to the 30 acres of LAA.	Remove this item as it references the LAA.
13	WDR, Groundwater Considerations, #30 and #32	**Groundwater Considerations** 30. Ardagh Glass does not have a groundwater monitoring well network. Groundwater in the area is approximately 130 feet below ground surface and flows in the northeast direction, according to the *Lines of Equal Depth to Water in Wells* map published by the DWR in 2010. 32. Constellation Mission Bell Winery and its land application areas are immediately adjacent to the Glass Facility. Constellation has a groundwater monitoring well network of nineteen wells. Over the years fifteen wells have gone dry. Currently, MW-4R, MW-15R, MW-18, and MW-19 are operational. According to Constellation's groundwater monitoring well network, groundwater in the area flows in the west/northwest direction. Monitoring wells MW-4R and MW-18 are upgradient of Constellation and Ardagh Glass. The quality of groundwater based on Constellation's groundwater monitoring well network is tabulated in Table 8 below.	Ardagh notes a discrepancy in the direction of groundwater flow and asks if there is a typographical error. The direction of groundwater flow is referenced as northeast direction (#30) based on a Department of Water Resources reference. The direction of groundwater flow is reference as west/northwest direction (#32) based on the Mission Bell Winery monitoring well network.
14	WDR, Groundwater Considerations, #32 and Table 8	32. Constellation Mission Bell Winery and its land application areas are immediately adjacent to the Glass Facility. Constellation has a groundwater monitoring well network of nineteen wells. Over the years fifteen wells have gone dry. Currently, MW-4R, MW-15R, MW-18, and MW-19 are operational. According to Constellation's groundwater monitoring well network, groundwater in the area flows in the west/northwest direction. Monitoring wells MW-4R and MW-18 are upgradient of Constellation and Ardagh Glass. The quality of groundwater based on Constellation's groundwater monitoring well network is tabulated in Table 8 below.	Please clarify why Mission Bell Winery information is being presented within the WDRs for Ardagh. Ardagh prefers to omit this from the WDR.

Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements for Ardagh Glass Inc. and Air Liquide Industrial US Limited Partnership Glass Facility, Madera County, dated 3 February 2016, 24441 Avenue 12, Madera, California

Comment	Page	REFERENCE	COMMENT
15	WDR, Antidegradation Analysis, #34 a and c	c. For nitrogen, this Order limits the application of wastewater to agronomic rates for bo nutrient and hydraulic loading. Total nitrogen loading estimates to the 30 acres of L/ indicate the discharge will add about 1 lbs/acre-year to the 30 acres of LAA in any gi year if the discharge is evenly distributed. According to the Western Fertilizer Handl Eight Edition, nitrogen uptake rates for different types of grasses ranges between 150 lbs/acre-year to 325 lbs/acre-year. The nitrogen uptake rates at the Glass Facil be greater than the nitrogen loading. The "Fire Water Pond" at the Glass Facility is concrete lined and is not expected to cause significant groundwater degradation with respect to nitrogen. Further, nitrogen in the wastewater from the two effluent locatio 1) comingled blowdowns and 2) comingled blowdown wastewater with domestic wastewater (Sample Weir) is minimal, averaging 3 mg/L and 6 mg/L, respectively. B on this, discharge of wastewater to the LAA and evaporation/percolation ponds will r cause exceedances of water quality objectives nor impair beneficial uses.	Remove this item as it references the LAA.
16	WDR, Antidegradation Analysis, #35	35. The Discharger provides or will provide control of the discharge as required by thi control of the discharge that incorporates: a. Application of wastewater at agronomic requirements for crop growth; b. A cycle average BOD loading rate of 100 lbs/acre/day; c. Even distribution of wastewater to the LAA's; These control practices are reflective of BPTC of the discharge.	Remove this item as it references the LAA.
17	WDR, Antidegradation Analysis, #42	42. The discharge of domestic wastewater, cooling tower blowdown, and storm water are authorized herein and exempt from the requirements of Title 27 in accordance with Title 27, section 20090(b) because: a. The Central Valley Water Board is issuing WDRs, b. The discharge authorized herein will comply with the Basin Plan, and; c. The wastewater discharged to the evaporation/percolation ponds and land application area does not need to be managed as hazardous waste.	Remove reference to LAA.
18	WDR, Section A. Discharge Prohibitions, #6	6. Discharge of domestic wastewater to the land application area or any surface water is prohibited.	Remove this item as it references the LAA.

Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements for Ardagh Glass Inc. and Air Liquide Industrial US Limited Partnership Glass Facility, Madera County, dated 3 February 2016, 24441 Avenue 12, Madera, California

Comment	Page	REFERENCE	COMMENT
19	WDR, C. Discharge Specifications, #3	3. The discharge shall remain within the permitted waste treatment/containment structures and LAA's at all times.	Remove reference to LAA.
20	WDR, Section D. Groundwater Limitations	**D. Groundwater Limitations** Release of waste constituents from any treatment, reuse, or storage component associated with the Glass Facility or LAA's shall not cause or contribute to groundwater containing constituent concentrations in excess of the concentrations specified below or natural background quality, whichever is greater: 1. Nitrate as Nitrogen of 10 mg/L 2. For constituents identified in Title 22, the MCLs quantified therein.	Remove reference to LAA.

Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements for Ardagh Glass Inc. and Air Liquide Industrial US Limited Partnership Glass Facility, Madera County, dated 3 February 2016, 24441 Avenue 12, Madera, California

Comment	Page	REFERENCE	COMMENT
21	WDR, Page 20, Section E (LAA Specification);	**E. Land Application Area Specifications** 1. The BOD loading to the LAA calculated as a cycle average as determined by the method described in the attached Monitoring and Reporting Program, shall not exceed 100 pounds per day per acre. 2. Land application of wastewater shall be managed to minimize erosion. 3. The LAA shall be inspected periodically to determine compliance with the requirements of this Order. If an inspection reveals noncompliance or threat of noncompliance with this Order, the Discharger shall temporarily stop wastewater application immediately and implement corrective actions to ensure compliance with this Order. 4. Any runoff of wastewater (tailwater) shall be confined to the LAA and shall not enter any surface water drainage course or storm water drainage system. 5. The Discharger may not discharge process wastewater to the LAA when soils are saturated. 6. The Discharger shall grow crops within the LAA. Crops shall be selected based on nutrient uptake, consumptive use of water, and irrigation requirements to maximize crop uptake of water and nutrients. 7. Application of waste constituents to the LAA's shall be at reasonable agronomic rates to preclude creation of a nuisance and degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive loading of the LAA's, including the nutritive value of organic and chemical fertilizers and of the wastewater shall not exceed the annual crop demand. 8. Hydraulic loading of wastewater and supplemental irrigation water shall be at reasonable agronomic rates. 9. The Discharger shall ensure that water, BOD, and nitrogen are applied and distributed uniformly across each LAA field. The Discharger shall implement change to the irrigation system and/or operational practices as needed to ensure compliance with this specification. 10. All applied water to the LAA must infiltrate within 48 hours after irrigation ceases.	Ardagh will submit a revised Report of Waste Discharge to eliminate LAA by 4 March 2016. Therefore, Ardagh requests that the LAA reporting requirement be removed from the WDR.

Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements for Ardagh Glass Inc. and Air Liquide Industrial US Limited Partnership Glass Facility, Madera County, dated 3 February 2016, 24441 Avenue 12, Madera, California

Comment	Page	REFERENCE	COMMENT
22	WDR, Section F, #13	13. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain work plans for investigations and studies, that describe the conduct of investigations and studies or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.	Please clarify - Are quarterly monitoring reports considered technical reports? Do all quarterly monitoring reports require the professional signature and stamp of either a Professional Engineer or Professional Geologist? If there are exceptions, please explain.
23	MRP, Page 3, Solids Monitoring	**SOLIDS MONITORING** The Discharger shall record solids generated (dry metric tons/year) and describe disposal methods of the solids.	Per comment #7, Ardagh requests that the WDR reference solids related to the wastewater streams (such as oily sludge, or fire water pond sediment removal).
24	MRP, Page 4, Land Application Area Monitoring	**Land Application Area Reporting** 1. The results of the routine monitoring and loading calculations specified on page 4. 2. Provide a Site Map of the LAA's showing predominant features, and include field numbers (if applicable) and acreage where wastewater was applied. 3. For each month that wastewater is applied to the LAA's, calculation of the monthly hydraulic load for wastewater and supplemental irrigation water (in million gallons) to each discrete irrigation area. 4. A summary of the notations made in the LAA's monitoring log during each quarter. The entire contents of the log do not need to be submitted.	Ardagh will submit a revised Report of Waste Discharge to eliminate LAA by 4 March 2016. Therefore, Ardagh requests that the LAA monitoring requirement be removed from the WDR.
25	MRP, Page 5, Reporting	All monitoring reports that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.	See comment #15 regarding Ardagh's questions about quarterly reports.

Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements for Ardagh Glass Inc. and Air Liquide Industrial US Limited Partnership Glass Facility, Madera County, dated 3 February 2016, 24441 Avenue 12, Madera, California

Comment	Page	REFERENCE	COMMENT
26	MRP, Page 6, Land Application Area Reporting	**Land Application Area Reporting** 1. The results of the routine monitoring and loading calculations specified on page 4. 2. Provide a Site Map of the LAA's showing predominant features, and include field numbers (if applicable) and acreage where wastewater was applied. 3. For each month that wastewater is applied to the LAA's, calculation of the monthly hydraulic load for wastewater and supplemental irrigation water (in million gallons) to each discrete irrigation area. 4. A summary of the notations made in the LAA's monitoring log during each quarter. The entire contents of the log do not need to be submitted.	Remove this item as it references the LAA.
27	MRP, Page 7-8, LAA Reporting	**Land Application Area Reporting** 1. The type of crop(s) grown in the LAA, planting and harvest dates, and the quantified nitrogen and fixed dissolved solids uptakes (as estimated by technical references or, preferably, determined by representative plant tissue analysis). 2. The monthly and annual discharge volume during the reporting year expressed in million gallons and inches. 3. A monthly balance for the reporting year that includes: a. Monthly crop uptake i. Crop water utilization rates are available from a variety of publications available from the local University of California Davis extension office. ii. Irrigation efficiency – Frequently, engineers include a factor for irrigation efficiency such that the application rate is slightly greater than the crop utilization rate. A conservative design does not include this value. (a) Monthly average precipitation – this data is available at	Ardagh will submit a revised Report of Waste Discharge to eliminate LAA by 4 March 2016. Therefore, Ardagh requests that the LAA reporting requirement be removed from the WDR.

Ardagh Glass Inc. Questions related to Central Valley Regional Water Quality Control Board Tentative Waste Discharge Requirements for Ardagh Glass Inc. and Air Liquide Industrial US Limited Partnership Glass Facility, Madera County, dated 3 February 2016, 24441 Avenue 12, Madera, California

Comment	Page	REFERENCE	COMMENT
		http://www.cimis.water.ca.gov/ or at http://www.ncdc.noaa.gov (b) Monthly average and annual average discharge flow rates. (c) Monthly estimates of the amount of wastewater percolating below the root zone (i.e., amount of wastewater applied in excess of crop requirements) 4. A summary of average and cycle BOD_5 loading rates. The cycle average BOD_5 loading rates shall be calculated using applied volume of wastewater, applied acreage, and average of the four most recent concentrations for BOD_5 and divided by the number of days between applications. 5. The total pounds of nitrogen applied to the LAA, as calculated from the sum of the monthly loadings, and the total annual nitrogen loading to the LAA in lbs/acre-year. Nitrogen loading shall be calculated using the applied volume of wastewater, applied acreage, and average of the four most recent concentrations for total nitrogen. 6. The total pounds of total dissolved solids that have been applied to the LAA in lbs/acre-year, as calculated from the sum of the monthly loadings. Total dissolved solids loading shall be calculated using the applied volume of wastewater, applied acreage, and average of the four most recent concentrations for total nitrogen and total dissolved solids.	
28	Information Sheet, Page 3	According to the RWD, approximately 3,000 gpd of the comingled blowdown wastewater will be use to landscape irrigate 30 acres of LAA. The RWD does not describe an irrigation cycle or method of application of the wastewater that will be protective of groundwater. Based on data provided, loading rates to the 30 acres with blowdown wastewater having average BOD, TN, and TDS concentrations of 12 mg/L, 3 mg/L, 409 mg/L, respectively, on the day of application are tabulated in Table 3 below.	Typographical error: used
29	Attachment A		The revised Report of Waste Discharge will include an updated map to remove LAA and identify the Strategic Materials, Inc.

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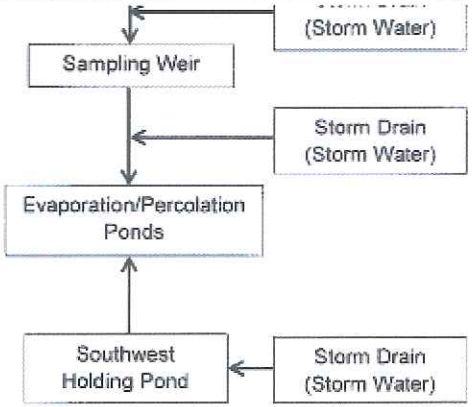
30	Attachment B		The revised Report of Waste Discharge will include an updated map to remove LAA and update the flow schematic to reflect two-way flow and connectivity between the southwest holding pond and the evaporation/percolation ponds. The holding pond capacity study was developed with the understanding that the proposed operation of the ponds would allow surface water and discharge collection to distribute evenly to the four ponds.