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By Alameda County Environmental Health 3:36 pm, Apr 14, 2017

April 14, 2017

Ms. Kit Soo
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: **Submittal Acknowledgement Statement**
HVAC Evaluation Results at Rainbow Apparel Suite and Storeroom
10700 MacArthur Blvd.
Oakland, California
AEI Project # 365948
Toxics Case No. RO0002580

Dear Ms. Soo:

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the State Water Resources Control Board's Geotracker website.

If you have any questions or need additional information, please do not hesitate to call the undersigned at (310) 270-8339, or Mr. Peter McIntyre at AEI Consultants, (925) 746-6004.

Sincerely,

WAC Enterprises FHS, LLC
8245 W. 4th Street,
Los Angeles, CA 90048

cc: Mr. Peter McIntyre, AEI Consultants, 2500 Camino Diablo, Walnut Creek, CA 94597

AEI Consultants
Environmental & Engineering Services
2500 Camino Diablo, Walnut Creek, CA 94597
Tel: 925.746.6000 Fax: 925.746.6099

April 14, 2017

Ms. Kit Soo
Alameda County Department of Environmental Health
1131 Harbor Parkway
Alameda, California 94502

Re: HVAC Evaluation Results at Rainbow Apparel Suite and Storeroom
Former Young's Cleaners
10700 MacArthur Boulevard, Oakland, California
AEI Project No. 365948
Toxics Case No RO0002580

Dear Kit Soo:

On behalf of WAC Enterprises FHS, AEI Consultants (AEI) is please to present this letter documenting the evaluation of the heating, ventilation, and air conditioning (HVAC) system for the Rainbow Apparel suite and storeroom 10700 MacArthur Boulevard in Oakland, California ("the Site"). This letter has been prepared to satisfy the request for a technical report documenting the HVAC evaluation results in the directive letter from the Alameda County Department of Environmental Health (ACDEH) dated April 4, 2017, and our April 7, 2017 *Addendum, Vapor Intrusion Mitigation Plan* (VIMP).

Heating, Ventilation, and Air Conditioning Evaluation

On April 10, 2017, Climatech Mechanical Services Inc., working under the direction of AEI, collected measurements on the balance of the HVAC system for the Rainbow Apparel tenant space and the storeroom as summarized in Table 1. The Rainbow Apparel tenant space is serviced by four independent roof-mounted air handling units (RTU-1 through RTU-4) and the Storeroom is serviced by one air handling unit (RTU-5). This HVAC evaluation was intended to supplement the evaluation conducted on the Shoe Palace tenant space on March 11, 2017.

The assessment of the HVAC system included measuring total external static pressure, return air flow in actual cubic feet per minute (acfm), and total air flow in acfm for each air handling unit using a thermal anemometer. Additionally, differential pressure measurements between the indoor air and sub-slab were measured at sub-slab vapor probes SS-4, SS-5, SS-8, and SS-9 and differential pressure measurements between indoor air and ambient air were measured at external doorways to the Rainbow Apparel

tenant space, the Shoe Palace tenant space, and the Storeroom using a digital manometer. Pressure and air flow measurements were collected during normal business hours with the sub-slab depressurization system operating, and with each of the HVAC units servicing the Shoe Palace tenant space (4 units), the Rainbow Apparel tenant space (4 units), and the storeroom (1 unit) operating in vent mode fan operation. Based upon the unit manufacturers specifications, vent mode is the mode of operation with the lowest air and ambient air flows. This operation mode was selected as conservative, because there will be higher flow rates during heating or cooling modes. External doors were closed except when in use during differential pressure measurements.

Table 1 presents a summary of the HVAC system operational parameters. Table 2 presents a summary of the differential pressures measured. The results of the HVAC assessment are provided in Appendix A. The evaluation is summarized as follows:

- Each of the roof top unit external air flow rates were initially measured at below 150 acfm for the Rainbow Apparel tenant space and storeroom. The external air flow rates were increased in each of the four Rainbow Apparel units and the storeroom unit. Total air flow in the Rainbow Apparel tenant space and the storeroom ranged from 1,300 to 4,080 ACFM with ambient air contributing between 15% and 30% of total air flow. The results of the HVAC evaluation are summarized in Table 1.
- The pressure differential between indoor air and sub-slab ranged from 0.096-inches of water column (in-WC) to 0.142 in-WC as measured following the above-described HVAC system adjustments. The positive differential indicates that there is a positive pressure within the building when compared to the depressurized sub-surface. Field differential pressure measurements from the April 10th, 2017 and March 10, 2017 site visits are summarized in Table 2.
- The pressure differential between ambient air and indoor air ranged from 0.009 in-WC to 0.037 in-WC in the Rainbow Apparel tenant space, the Shoe Palace tenant space, and the storeroom. The positive differential indicates that there is a greater pressure within the building than ambient, outdoor air.

The results of the HVAC assessment indicate that under fan mode operation, the current HVAC configuration creates a positive pressure environment in the Shoe Palace tenant space, the Rainbow Apparel tenant space, and the storeroom, that will further limit the potential for vapor intrusion.

AEI recommends that the operation of HVAC units be programed to ensure that each of the units is operating in at least fan mode during operational hours and that the controls be locked out to prevent tenant tampering. AEI further recommends monthly inspections to ensure that tenants have not obstructed or tampered with air registers within each of the tenant spaces.

Closing

AEI is pleased to have the opportunity to continue to work with the ACDEH to ensure that engineering controls at the Site are protective of worker health and safety. AEI plans to submit an *Interim Mitigation Measures Results* report no later than April 21, 2017. This technical report will include an assessment of performance monitoring data to determine if the engineering controls implemented in the Shoe Palace tenant space, the Rainbow Apparel tenant space, and the storeroom are adequate to mitigate worker exposure to vapor intrusion and are protective of worker health. This *Interim Mitigation Measures Results* report will also include any recommendations for additional work.

AEI appreciates working with the DEH to actively address the environmental concerns at the Site. Please contact the undersigned at (925) 746-6000 if you have any questions regarding the contents of this letter.

Sincerely,
AEI Consultants

Jeremy Smith
Senior Project Manager

Trent A. Weise, P.E.
Vice President

REGISTERED PROFESSIONAL ENGINEER
TRENT A. WEISE
No. C84480
Exp. 6/17
CIVIL
STATE OF CALIFORNIA

Jonathan Sanders
Project Engineer

Enclosures:
Table 1 – Summary of HVAC Evaluation Results
Table 2 – Field Differential Pressure Measurements
Figure 1 – Site Plan
Appendix A – HVAC Air Balance Measurements

TABLES

TABLE 1: SUMMARY OF HVAC EVALUATION
Foothill Square
10700 MacArthur Blvd, Oakland, CA

Date	Tenant Space Space	Outside Air Flow (ACFM)	Return Air Flow (ACFM)	Total Air Flow (ACFM)	% Ambient Air (%)	External Static Pressure (in-WC)
04/10/17	Rainbow Apparel	450	1,050	1,500	30%	0.62
04/10/17	Rainbow Apparel	592	2,008	2,600	23%	0.34
04/10/17	Rainbow Apparel	376	1,064	1,440	26%	0.74
04/10/17	Rainbow Apparel	1,114	2,966	4,080	27%	0.76
04/10/17	Storeroom	201	1,099	1,300	15%	0.34
03/10/17	Shoe Palace	137	1,263	1,400	10%	0.21
03/10/17	Shoe Palace	210	990	1,200	18%	0.33
03/10/17	Shoe Palace	532	2,118	2,650	20%	0.26
03/10/17	Shoe Palace	212	1,726	1,938	11%	0.31

Notes:

ACFM	actual cubic feet per meter
in-WC	inches of water column

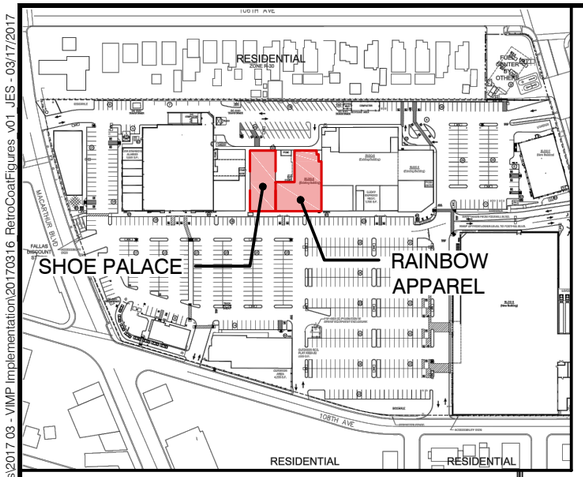
TABLE 2: FIELD DIFFERENTIAL PRESSURE MEASUREMENTS
Foothill Square
10700 MacArthur Blvd, Oakland, CA

Date	Tenant Space	Location	Gauge Differential	Gauge Pressure (in-WC)
04/10/17	Rainbow Apparel	Front Door	IA-A	0.031
04/10/17	Rainbow Apparel	Back Door	IA-A	0.009
04/10/17	Rainbow Apparel	SS-4	IA-SS	0.096
04/10/17	Rainbow Apparel	SS-5	IA-SS	0.142
04/10/17	Rainbow Apparel	SS-8	IA-SS	0.016
04/10/17	Rainbow Apparel	SS-9	IA-SS	0.015
04/10/17	Storeroom	Back Door	IA-A	0.009
03/10/17	Shoe Palace	Front Door	IA-A	0.037
03/10/17	Shoe Palace	Back Door	IA-A	0.028
03/10/17	Shoe Palace	SS-2	IA-SS	0.009
03/10/17	Shoe Palace	SS-3	IA-SS	0.099
03/10/17	Shoe Palace	SS-6	IA-SS	0.015
03/10/17	Shoe Palace	SS-7	IA-SS	0.010
03/10/17	Shoe Palace	SS-10	IA-SS	0.012

Notes:

in-WC	inches of water column
IA-A	Indoor air to ambient air
IA-SS	Indoor air to sub-slab vapor

FIGURES



AMW-1

SS/VM-2

IA-7

SS/VM-1

IA-6

IA-2

IA-3

SS/VM-10

IA-5

SS/VM-5

SS/VM-9

AMW-6R

SS/VM-3

SS/VM-6

IA-1

SS/VM-8

IA-4

SS/VM-7

SS/VM-4

LEGEND

- Interior Fixture
- SVET & SDS Equipment Location
- Groundwater Monitoring Well
- Soil Vapor/Sub-slab Vapor Monitoring Point
- Indoor Air Sample Location

N

0 16 32 APPROXIMATE SCALE IN FEET

AEI Consultants
San Jose, California

SITE PLAN

10700 MacArthur Blvd
Oakland, California

FIGURE 1
Project No. 365948

\\aeidata\projects\Companywide Projects\365000 Series\365948 Oakland, CA\SM\Deliverables\2017 03 - VIMP Implementation\20170316 RetroCoatFigures v01 JES - 03/17/2017

APPENDIX A

HVAC AIR BALANCE MEASUREMENTS

Work Order

4/10/2017

Reference #:	1008-444
Tech:	STEVE F

Climatech Mechanical Services Inc.
1200 Krona Lane
Concord, CA 94521
925-693-0583
CA License: 1002516

Bill To:
MacArthur Boulevard Associates
C/O Jay-Phares Corporation
10700 MacArthur Blvd
Oakland, CA 94605

Job Name:
Rainbow Apparel
10700 Mac Arthur Blvd.
Oakland, CA 94605

Cust. PO:	Authorized By:	Make:	Model:	Serial:
None	John Jay	Various	Various	Various

510-562-9500

Description of Work

Service requested - Confirm space pressure in reference test plugs cored in to floor, space pressure in reference to atmosphere, unit airflows and outside air intake. Scope to be performed on 5 package A/C units and test ports as per drawing.

Obtained equipment data and specifications as required. Measured unit airflows via external static method and compared reading to Manufacturer's data. Outside air was measured with a thermal anemometer and space/test plug pressures were measured with a digital manometer. All duct and hood test ports were plugged with duct plugs upon completion. Findings as follows:

Sub Slab Ports in reference to space pressure:
SS 4- .096" w.c. (water column)
SS 5- .142" w.c.
SS 8- .016" w.c.
SS 9- .015" w.c.
SS 1- No Reading taken. Port was not located.
Note - Readings were taken with all units serving Shoe Palace, Rainbow Apparel and the storage room thermostats in the fan on position.

Space Pressure in reference to atmosphere:
Rainbow Apparel:
Rear door- .009" w.c.
Front door- .031" w.c.
Shoe Palace:
Rear door- .028" w.c.
Front door- .037" w.c.
Storage - .009" w.c.
Note - Readings were taken with all units serving Shoe Palace, Rainbow Apparel and the storage room thermostats in the fan on position. We cannot guarantee all of the doors were completely closed during testing as we could not secure them.

Rooftop unit Readings: (RTU)

	Outside Air Quantity (CFM)	Total External Static Pressure	Unit airflow Quantity (CFM)
RTU 1-	450	.62"w.c.	1500
RTU 2-	592	.34"w.c.	2600
RTU 3-	376	.74"w.c.	1440
RTU 4-	1114	.76"w.c.	4080
RTU 5	201	.34" w.c.	1300 (Storage Room)

Work Order

4/10/2017

Reference #:	1008-444
Tech:	STEVE F

1200 Krona Lane
Concord, CA 94521
925-693-0583
CA License: 1002516

Bill To:
MacArthur Boulevard Associates
C/O Jay-Phares Corporation
10700 MacArthur Blvd
Oakland, CA 94605

Job Name:
Rainbow Apparel
10700 Mac Arthur Blvd.
Oakland, CA 94605

Cust. PO:	Authorized By:	Make:	Model:	Serial:
None	John Jay	Various	Various	Various

510-562-9500

Description of Work

Notes:
1. Equipment design specifications were not provided. All readings were taken in the "as found " condition.
2. Outside air adjustments were made to all Rainbow units as the preliminary readings were less than 150 cfm on all units.
3. All Rainbow units were found with very loose and slipping belts. We adjusted for testing however the belts are worn and in need of replacement.
4. All units have improper condensate traps.
5. RTU 3 was found with the disconnect off.
6. All thermostats in Shoe Palace indicate alarms of "not communicating with sensor". It appears the sensors may be missing. Further evaluation is needed.
7. System performance testing of the heating, cooling and economizers as well as thermostat functions were not performed as part of this scope

4/10/2017	Labor	8.0
4/11/2017	Labor	2.5
4/10/2017	Truck Charge	1.0
4/10/2017	manometer & anemometer	1.0

* THANK YOU FOR YOUR BUSINESS *
* *

Labor and materials on work order may not be inclusive.
In the event of commencement of suit to enforce payment of this order, I promise to pay such additional sum for attorney's fees and costs as the court may adjudge reasonable.

Signature  Date 4/10/2017

Work Order

Climatech Mechanical Services Inc.

1200 Krona Lane
Concord, CA 94521
925-693-0583
CA License: 1002516

3/10/2017

Reference #:	1008-436
Tech:	STEVE F

Bill To:	**Job Name:**
MacArthur Boulevard Associates	Shoe Palace
C/O Jay-Phares Corporation	10700 Mac Arthur Blvd.
10700 MacArthur Blvd	Suite 4A
Oakland, CA 94605	Oakland, CA 94605

Cust. PO:	Authorized By:	Make:	Model:	Serial:
None	John Jay	Various	Various	Various

510-562-9500

Description of Work

Service requested - Confirm space pressure in reference test plugs cored in to floor, space pressure in reference to atmosphere, unit airflows and outside air intake.

Obtained equipment data and specifications as required. Measured unit airflows via external static method and compared reading to Manufacturer's data. Outside air was measured with a thermal anemometer and space/test plug pressures were measured with a digital manometer. All duct and hood test ports were plugged with duct plugs upon completion. Findings as follows:

Sub Slab Ports in reference to space pressure:
SS-2 - .009" w.c. (water column)
SS-3 - .099" w.c.
SS-6 - .015" w.c.
SS-7 - .010" w.c.
SS-10- 012" w.c.
Note - Readings were taken with two of the unis in vent mode fan operation. When the units are in cooling or heating mode the supply/outside air flow will increase which will also increase the space pressure.

Space Pressure in reference to atmosphere:
Rear door- .0135" w.c.
Front door- .0196" w.c.
Note - Readings were taken with two of the unis in vent mode fan operation. When the units are in cooling or heating mode the supply/outside air flow will increase which will also increase the space pressure.

Rooftop unit Readings: (RTU)

	Outside Air Quantity	Total External Static Pressure	Unit airflow Quantity
RTU 1-	137	.21"w.c.	1400
RTU 2-	210	.33"w.c.	1200
RTU 3-	532	.26"w.c.	2650
RTU 4-	212	.31"w.c.	1938

Notes:
1. Equipment design specifications were not provided. All readings were taken in the "AS Found" condition with the exception of RTU 3.
2. RTU 3- The OSA damper was closed resulting in preliminary osa readings of less than 100 cfm. We made adjustments as necessary.
3. RTU 1- The filter are plugged with construction debris and were removed for testing. The blower wheel is also dirty.

Work Order

3/10/2017

Reference #:	1008-436
Tech:	STEVE F

1200 Krona Lane
Concord, CA 94521
925-693-0583
CA License: 1002516

Bill To:
MacArthur Boulevard Associates
C/O Jay-Phares Corporation
10700 MacArthur Blvd
Oakland, CA 94605

Job Name:
Shoe Palace
10700 Mac Arthur Blvd.
Suite 4A
Oakland, CA 94605

Cust. PO:	Authorized By:	Make:	Model:	Serial:
None	John Jay	Various	Various	Various

510-562-9500

Description of Work

4. The condensate drain traps are improperly piped. This could lead to water leaks into the space due to poor drainage.
5. RTU's 1, 2 & 4 Control cabinets are very dirty.
6. all units were noted to have "stacked" 1" filters installed, some of which are improperly installed. It is recommended that the proper size 2" filters be installed.
7.RTU 1 - The outside air screen mesh is deteriorated.
Customer to advise if further assistance is needed.

3/9/2017	Labor	2.0
3/10/2017	Labor	8.0
3/10/2017	Truck Charge	1.0
3/10/2017	manometer & anemometer	1.0

* THANK YOU FOR YOUR BUSINESS *
* *

Labor and materials on work order may not be inclusive.
In the event of commencement of suit to enforce payment of this order, I promise to pay such additional sum for attorney's fees and costs as the court may adjudge reasonable.

Signature _____ Date _____