GCS
Golder Construction Services, Inc.
Quality Assurance and Construction Management

AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
QUARTERLY INSPECTION REPORT
JULY-SEPTEMBER 1994

Submitted to:

U. S. Environmental Protection Agency
and
Illinois Environmental Protection Agency

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November 1994 947-7036.03

GCS
Golder Construction Services, Inc.
Quality Assurance and Construction Management

November 18, 1994 947-7036.03

Mr. Richard Boice, P.E.
U.S. Environmental Protection Agency
Mail Code: HSRL-6J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Greg Ratliff
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

RE: QUARTERLY INSPECTION REPORT
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, ILLINOIS

Dear Messrs. Boice and Ratliff:

This report, which presents the results of the quarterly inspection activities performed from July through September 1994 for the Air-Exchange and Ventilation System (AEVS), is submitted on behalf of the Yeoman Creek/Edwards Field PRP Committee in order to comply with the reporting requirements established in the Operation and Maintenance (O&M) Plan. The inspection work was conducted by Golder Construction Services, Inc. (GCS) and a subcontractor, Air Con Refrigeration and Heating, Inc. (Air Con), and included the items specified in the O&M Plan. A summary of the inspection tasks for the AEVS, organized according to the section designation format in the O&M Plan, is provided below.

Section 4.2 Routine Maintenance

Routine maintenance activities for the AEVS were conducted for the thermal conditioner, positive pressure booster fan, negative pressure exhaust fans, and condensate traps.

Copies of completed inspection forms are included in Section 1.0 of Attachment I.

Section 4.2.1 Thermal Conditioner

The thermal conditioner filters were inspected monthly for cleanliness. The filters were replaced each month due to excessive accumulation of dirt. The furnace, fan wheel, and fan belt were inspected during the September 1994 Quarterly Inspection as specified in the O&M Plan. No deficiencies were observed at the time of the inspection.

Section 4.2.2 Positive Pressure Booster Fan

The positive pressure booster fan was lubricated monthly as specified in the O&M Plan. During the September 1994 Quarterly Inspection, the fan was inspected for the items specified in the O&M Plan. No deficiencies were observed at the time of the inspection.

Section 4.2.3 Negative Pressure Exhaust Fans

The negative pressure exhaust fan filters were cleaned monthly as specified in the O&M Plan. During the September 1994 Quarterly Inspection, the fans were inspected for the items specified in the O&M Plan. No deficiencies were observed at the time of the inspection.

Section 4.2.4 Condensate Traps

The condensate traps located in the basement of Unit 1431 were checked during each of the monthly inspections and filled as necessary.

Section 4.3 Routine O&M Inspections and Corrective Action

The AEVS was inspected monthly during the first three months of the Maintenance Period. Each inspection included the following items: security, access, positive pressure booster fan, negative pressure exhaust fans, alarms and switches, piping, and condensate collection system. Results of the inspection of each of these items are presented in the following sections.

Copies of completed inspection forms are included in Section 2.0 of Attachment I.

Section 4.3.1 Security

The fan/thermal conditioner building was inspected for evidence of vandalism and damage. No damage to the building was evident, but vandals had spray painted graffiti on the outside of the building. This vandalism has not compromised the security of the building. The City of Waukegan subcontracted a local company to clean the graffiti from the building, but it soon reappeared.

Section 4.3.2 Access

Access to the fan/thermal conditioner building, including the positive pressure booster fan and thermal conditioner; the six basements, including the negative pressure exhaust fans, the interior negative pressure pipe, and the designated air monitoring zones; the exterior piping; and the condensate collection system, including the collection sump and the condensate traps, was evaluated. No obstructions were identified. The three posted signs at the fan/thermal conditioner building were in satisfactory condition.

Section 4.3.3 Positive Pressure Booster Fan/Thermal Conditioner

The positive pressure booster fan, thermal conditioner, and accessory equipment in the fan/thermal conditioner building were inspected for normal operation and for evidence of damage.

Additionally, the condition of the fan/thermal conditioner building was evaluated. All of these systems were operating normally with no evidence of damage.

Section 4.3.4 Negative Pressure Exhaust Fans

The negative pressure exhaust fans were inspected for normal operation and for evidence of damage. At the time of the inspections, no evidence of damage was apparent. However, the fans have required repair work reportedly due to defective bearings. On two separate occasions, the exhaust fan for Unit 1451 has been removed for repair. The exhaust fan in Unit 1415/1419 has experienced similar problems and, at this time, is under repair. We are currently working with Air Con and the exhaust fan manufacturer (Paxton Products Inc.) to minimize the need for exhaust fan repairs.

Section 4.3.5 Alarms and Switches

The alarms and switches were inspected for normal operation and for evidence of damage. At the time of the inspections, all the alarms and switches were operating normally with no evidence of damage. Since completion of construction, a battery backup has been added to the automatic dialer. In the event of a loss of power to the control panel, the battery backup will allow the dialer to notify GCS of the system failure.

Section 4.3.6 Piping

The positive and negative pressure piping, pipe supports and fixtures, thermal insulation, and aluminum jacketing were inspected for signs of damage or wear. At the time of the inspections, all of these items were observed to be free from damage or wear with the exception of the aluminum jacketing. Since completion of construction, the aluminum jacketing has been repeatedly vandalized. This vandalism has not affected system performance and, therefore, no corrective action has been taken.

Additionally, all positive pressure plenums and negative pressure perforated pipe were inspected for obstructions which could restrict the delivery or extraction of air. No obstructions were observed.

The annular seals between the PVC pipe and the basement walls were inspected for signs of deterioration or leakage; none was observed.

Section 4.3.7 Condensate Collection System

The condensate collection system was inspected for normal operation and evidence of damage. No damage was apparent. However, during each inspection, the condensate traps were refilled with water.

Section 4.4 Routine Monitoring and Testing

Routine monitoring and testing of the AEVS took place during the first quarter of the Maintenance Period. This included tuning of the system and monitoring of the ambient air in the basements.

Section 4.4.1 AEVS Performance Tuning

The system was tuned during the first quarter of the Maintenance Period to achieve the desired inflow and outflow rates in the basements. The tuning process included measuring the flow velocities and computing the volumetric flows at the designated monitoring points on both the positive and negative flow lines for each of the basements. Due to the numerous exhaust fan failures, the system tuning has not been rechecked since June 30, 1994. However, once all the exhaust fans are operational, the system will be retuned.

Copies of completed inspection forms are included in Section 4.0 of Attachment I.

Section 4.4.2 Routine Basement Monitoring

Air monitoring was performed in the basements of each of the units at the 1401 through 1451 West Golf Road building. The monitoring was performed in accordance with the schedule and procedures provided in the O&M Plan. The results of the monitoring are included in Table 1.

Results of the monitoring indicate that the action level of 100 ppm for volatile organic compounds in ambient air was exceeded during the previous quarter in the basement of Unit 1451. Several building or system modifications/adjustments were made to reduce the gas levels in the Unit 1451 basement to below the action level. These modifications/adjustments have included the following:

- Rebalancing the AEVS to provide additional air to the basement.
- Sealing openings in the basement to control the loss of air.
- Increasing the air extraction rate in the area of the sump.
- Adjusting the water level in the sump to restrict gas from entering the basement through the floor drain system.
- Sealing cracks in the basement floor and basement walls.

Rebalancing was performed by the construction contractor near the end of construction at the site. The other actions were performed by GCS and are summarized on the completed corrective action forms included in Section 4.0 of Attachment I.

These attempts to improve system performance, however, have not resulted in readings below the 100 ppm action level.

Section 4.5 Potential Problems

During the first quarter of the Maintenance Period, GCS received alarms from the AEVS on the following four dates.

- August 30, 1994
- September 3, 1994
- September 13, 1994
- September 29, 1994

Field staff responded to each of these alarms by the next business day. The diagnosis of each problem and the corrective actions taken are summarized on the completed alarms response forms included in Section 5.0 of Attachment I.

If you have questions, please contact me.

Sincerely,
GOLDER CONSTRUCTION SERVICES, INC.

Ali Hashimi, P.E.
Project Engineer

cc: Yeoman Creek/Edwards Field PRP Committee

AAH:emp

(3603g179.doc/aah)

Attachment I - Field Forms

Table of Contents

1.0 Routine Maintenance Forms

ROUTINE MAINTENANCE FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

Date: July 25, 1994

Performed by: Jim Daly / Al Hashimi - Golder

List Maintenance Activities Performed:

1. replaced air filters in thermal conditioner
2. cleaned air filters in NP units
3. equipment in fan/thermal conditioner building lubricated
4. condensate traps at unit 1431 filled with water
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Comments*: _____

*Please note any additional maintenance that is required.

Golder Associates Chicago, Illinois	TITLE: ROUTINE MAINTENANCE FORM		
CLIENT/PROJECT: PRP/YEOMAN-EDWARDS RI-FS/IL	DRAWN: TPK	DATE: 6-20-94	JOB NO.: 933-8136
	CHECKED:	SCALE: NTS	DWG NO.:
	REVIEWED: BJW	FILE NAME: 8136262	FIGURE NO.: 3

ROUTINE MAINTENANCE FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

Date: August 19 1994

Performed by: Keith Bodger

List Maintenance Activities Performed:

1. Replaced dirty filters in thermal conditioner
2. Cleaned air filters in NP units
3. Filled condensate traps
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Comments*: _____

The mechanical equipment was lubricated by Air Con. AAH

*Please note any additional maintenance that is required.

Golder Associates Chicago, Illinois	TITLE: ROUTINE MAINTENANCE FORM		
CLIENT/PROJECT: PRP/YEOMAN-EDWARDS RI-FS/IL	DRAWN: TPK	DATE: 6-20-94	JOB NO.: 933-8136
	CHECKED:	SCALE: NTS	DWG NO.:
	REVIEWED:	FILE NAME: 8136262	FIGURE NO.: 3

ROUTINE MAINTENANCE FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

Date: 9-10-94

Performed by: Rick Spurgeon

List Maintenance Activities Performed:

(Thermal Conditioner)

1. Changed air Handler filters
2. Checked belts & blowers.
3. Checked operation of dampers
4. lubricated all bearings & Motors
5. Checked furnace operation
6. Checked all electrical connections
7. Checked operation of Complete System
8. Checked Condensate traps
9. Checked Sump
10. Cleaned air filters in up units

Comments*: _____

*Please note any additional maintenance that is required.

Golder Associates Chicago, Illinois	TITLE: ROUTINE MAINTENANCE FORM		
CLIENT/PROJECT: PRP/YEOMAN-EDWARDS RI-FS/IL	DRAWN: TPK	DATE: 6-20-94	JOB NO.: 933-8136
	CHECKED: -"-	SCALE: NTS	DWG NO.:
	REVIEWED: RLW	FILE NAME: 8136262	FIGURE NO.: 3

2.0 Inspection Forms

INSPECTION FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

DATE July 25, 1994
INSPECTOR Jim Daly / Al Hachim

TYPE OF INSPECTION (PERIODIC OR OTHER) Periodic - Monthly

ITEM	ADEQUATE OR YES	NEEDS ATTENTION OR NO	COMMENTS (NOTE IF IMMEDIATE ATTENTION REQUIRED)
A. SECURITY			
1. Fan/Thermal Conditioner Building Locks	✓		
2. Individual Basement Locks	✓		
B. ACCESS			
1. Positive Pressure Booster Fan/Thermal Conditioner			
a. Building	✓		
b. Positive pressure booster fan	✓		
c. Thermal conditioner	✓		
d. Control panel	✓		
2. Individual Basements			
a. Negative pressure blowers	✓		NP unit in 1451 will be replaced today, ~~not~~ repaired motor arrived
b. Negative pressure piping	✓		
3. Exterior Piping			noted several dents in aluminum jacketing, but none effect system operation or performance
4. Condensate Collection System			
a. Condensate collection sump	✓		
b. Gooseneck condensate traps	✓		Added water until overflow into sump => Full
C. POSITIVE PRESSURE BOOSTER FAN/THERMAL CONDITIONER			
1. Positive Pressure Booster Fan			
a. Operation	✓		
b. Evidence of damage or wear	✓		

PLEASE CLEARLY IDENTIFY AREAS NEEDING ATTENTION (REFERENCE ITEM NO.) ON THE ATTACHED FIGURE

CLIENT/PROJECT						TITLE		
PRP/YEOMAN-EDWARDS RI-FS/IL			Golder Associates Chicago, Illinois			INSPECTION FORM		
DRAWN	CHECKED	REVIEWED	DATE	SCALE	FILE NAME	JOB NO.	DWG NO.	FIGURE
TPK	JJD	RW	6-20-94	NTS	8136265	933-8136		4A

INSPECTION FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

DATE July 25, 1994
INSPECTOR Jim Daly / Al Hashimi

TYPE OF INSPECTION (PERIODIC OR OTHER) Periodic

ITEM	ADEQUATE OR YES	NEEDS ATTENTION OR NO	COMMENTS (NOTE IF IMMEDIATE ATTENTION REQUIRED)
2. Thermal Conditioner			
a. Operation	✓		
b. Evidence of damage or wear	✓		
3. Fan/thermal Conditioner Building	✓		
D. NEGATIVE PRESSURE BLOWERS			
1. Operation	✓		(see comment on 4A for 1451)
2. Evidence of Damage or Wear	✓		
E. ALARMS AND SWITCHES	✓		
F. PIPING			
1. Pipes-Evidence of Damage or Wear	✓		
2. Pipe Supports and Fixtures	✓		
3. Thermal Insulation	✓		(see comment on 4A regarding aluminum jacketing)
G. CONDENSATE COLLECTION SYSTEM			
1. Condensate Traps			
a. Full of water	✓		
b. Clogged	✓		
2. Sump			
a. Evidence of damage or wear	✓		
b. Evidence of overflow	✓		

PLEASE CLEARLY IDENTIFY AREAS NEEDING ATTENTION (REFERENCE ITEM NO.) ON THE ATTACHED FIGURE

CLIENT/PROJECT						TITLE		
PRP/YEOMAN-EDWARDS RI-FS/IL			Golder Associates Chicago, Illinois			INSPECTION FORM		
DRAWN	CHECKED	REVIEWED	DATE	SCALE	FILE NAME	JOB NO.	DWG NO.	FIGURE
TPK	JJD	2W	20-94	NTS	8136[illegible]5	933-8136		4B

INSPECTION FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

DATE 8-19-94

INSPECTOR K. Bodge

TYPE OF INSPECTION (PERIODIC OR OTHER) Monthly

ITEM	ADEQUATE OR YES	NEEDS ATTENTION OR NO	COMMENTS (NOTE IF IMMEDIATE ATTENTION REQUIRED)
A. SECURITY			
1. Fan/Thermal Conditioner Building Locks	✓		
2. Individual Basement Locks	✓		
B. ACCESS			
1. Positive Pressure Booster Fan/Thermal Conditioner			
a. Building	✓		
b. Positive pressure booster fan	✓		
c. Thermal conditioner	✓		
d. Control panel	✓		
2. Individual Basements			
a. Negative pressure blowers		✓	HS- ~~1425~~ Unit in ~~1425~~ 1415/1419 AAH is making a high pitch squeal at night
b. Negative pressure piping	✓		
3. Exterior Piping	✓		Dents on metal covering
4. Condensate Collection System			
a. Condensate collection sump	✓		
b. Gooseneck condensate traps	✓		Filled with water
C. POSITIVE PRESSURE BOOSTER FAN/THERMAL CONDITIONER			
1. Positive Pressure Booster Fan			
a. Operation	✓		
b. Evidence of damage or wear	✓		

PLEASE CLEARLY IDENTIFY AREAS NEEDING ATTENTION (REFERENCE ITEM NO.) ON THE ATTACHED FIGURE

CLIENT/PROJECT		TITLE
PRP/YEOMAN-EDWARDS RI-FS/IL	Golder Associates, Chicago, Illinois	INSPECTION FORM

DRAWN | CHECKED | REVIEWED | DATE | SCALE | FILE NAME | JOB NO. | DWG NO | FIGURE

INSPECTION FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

DATE 6-19-94
INSPECTOR K. Badger
TYPE OF INSPECTION (PERIODIC OR OTHER) Monthly

ITEM	ADEQUATE OR YES	NEEDS ATTENTION OR NO	COMMENTS (NOTE IF IMMEDIATE ATTENTION REQUIRED)
2. Thermal Conditioner			
a. Operation	✓		
b. Evidence of damage or wear	✓		
3. Fan/thermal Conditioner Building	✓		
D. NEGATIVE PRESSURE BLOWERS			
1. Operation	✓		1415/1419 AAH
2. Evidence of Damage or Wear		✓	~~1425~~ unit has squealing noise
E. ALARMS AND SWITCHES	✓		
F. PIPING			
1. Pipes-Evidence of Damage or Wear	✓		
2. Pipe Supports and Fixtures	✓		
3. Thermal Insulation	✓		
G. CONDENSATE COLLECTION SYSTEM			
1. Condensate Traps			
a. Full of water	✓		Filled with water
b. Clogged	✓		
2. Sump			
a. Evidence of damage or wear	✓		
b. Evidence of overflow	✓		

PLEASE CLEARLY IDENTIFY AREAS NEEDING ATTENTION (REFERENCE ITEM NO.) ON THE ATTACHED FIGURE

CLIENT/PROJECT			TITLE
PRP/YEOMAN-EDWARDS RI-FS/IL	Golder Associates Chicago, Illinois		INSPECTION FORM
DRAWN: TPK	CHECKED:	REVIEWED:	
6-20-94	SCALE: NTS	FILE NAME: [illegible]265	JOB NO.: 933-8136
DWG NO.:	FIGURE: 48		

INSPECTION FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

DATE 9-10-94

INSPECTOR Rick Spurgeon

TYPE OF INSPECTION (PERIODIC OR OTHER) Periodic

ITEM	ADEQUATE OR YES	NEEDS ATTENTION OR NO	COMMENTS (NOTE IF IMMEDIATE ATTENTION REQUIRED)
A. SECURITY			
1. Fan/Thermal Conditioner Building Locks	X		
2. Individual Basement Locks	X		
B. ACCESS			
1. Positive Pressure Booster Fan/Thermal Conditioner			
a. Building	X		
b. Positive pressure booster fan	X		
c. Thermal conditioner	X		
d. Control panel	X		
2. Individual Basements			
a. Negative pressure blowers	X		
b. Negative pressure piping	X		
3. Exterior Piping	X		Aluminum Jackets Dented but no puncture to piping or Jackets
4. Condensate Collection System			
a. Condensate collection sump	X		
b. Gooseneck condensate traps	X		
C. POSITIVE PRESSURE BOOSTER FAN/THERMAL CONDITIONER			
1. Positive Pressure Booster Fan			
a. Operation	X		
b. Evidence of damage or wear	X		

PLEASE CLEARLY IDENTIFY AREAS NEEDING ATTENTION (REFERENCE ITEM NO.) ON THE ATTACHED FIGURE

CLIENT/PROJECT		TITLE
PRP/YEOMAN-EDWARDS RI-FS/IL	Golder Associates Chicago, Illinois	INSPECTION FORM

DATE	SCALE	FILE NAME	JOB NO.	DWG NO.	FIGURE
	NTS	8136265	933-8136		4A

INSPECTION FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

DATE 9-10-94

INSPECTOR Rick Spurgeon

TYPE OF INSPECTION (PERIODIC OR OTHER) Periodic

ITEM	ADEQUATE OR YES	NEEDS ATTENTION OR NO	COMMENTS (NOTE IF IMMEDIATE ATTENTION REQUIRED)
2. Thermal Conditioner			
a. Operation	X		
b. Evidence of damage or wear	X		
3. Fan/thermal Conditioner Building	X		
D. NEGATIVE PRESSURE BLOWERS			
1. Operation	X		
2. Evidence of Damage or Wear	X		
E. ALARMS AND SWITCHES	X		
F. PIPING			
1. Pipes-Evidence of Damage or Wear	X		
2. Pipe Supports and Fixtures	X		
3. Thermal Insulation	X		See Page 1 #3 exterior piping
G. CONDENSATE COLLECTION SYSTEM			
1. Condensate Traps			
a. Full of water	X		
b. Clogged	X		
2. Sump			
a. Evidence of damage or wear	X		
b. Evidence of overflow	X		

PLEASE CLEARLY IDENTIFY AREAS NEEDING ATTENTION (REFERENCE ITEM NO.) ON THE ATTACHED FIGURE

CLIENT/PROJECT			TITLE		
PRP/YEOMAN-EDWARDS RI-FS/IL	Golder Associates Chicago, Illinois		INSPECTION FORM		
DRAWN TPK	CHECKED JJD	REVIEWED 2PW	DATE 9-20-94	SCALE NTS	FILE NAME [illegible]265
JOB NO. 933-8136	DWG NO.	FIGURE 4B			

3.0 Corrective Action Forms

CORRECTIVE ACTION FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

Description of Problem: Level of VOCs in ambient air exceeded the 100 ppm action level in Unit 1451.

Date Problem Identified: July 21, 1994

Corrective Action Taken to Resolve Problem:

(1) Placed insulation in the gap between the basement ceiling and southeast wall.
(2) Sealed around pipes which extend through the basement ceiling with silicone sealant.
(3) Placed water traps on pipes which extend through the basement ceiling.

Date Resolved: August 5, 1994

Inspector: James Daly / Ali Hashimi

Company: GAI / GCS

CLIENT/PROJECT						TITLE		
PRP/YEOMAN-EDWARDS RI-FS/IL			Golder Associates Chicago, Illinois			CORRECTIVE ACTION FORM		
DRAWN TPK	CHECKED AHH	REVIEWED PJM	DATE -27-94	SCALE NTS	FILE NAME 81 67	JOB NO. 933-8136	DWG NO.	FIGURE 5

CORRECTIVE ACTION FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

Description of Problem: Level of VOCs in ambient air exceeded the 100 ppm action level in unit 1451.

Date Problem Identified: August 18, 1994

Corrective Action Taken to Resolve Problem: Placed a plywood cover over the sump and extended a 1½" diameter PVC pipe from the suction pipe along the southwest wall. The PVC pipe was extended through the sump cover to draw air directly from the sump.

Date Resolved: August 19, 1994

Inspector: Keith Bodger / Ali Hashimi

Company: GAI / GLS

CLIENT/PROJECT							
PRP/YEOMAN-EDWARDS RI-FS/IL			Golder Associates Chicago, Illinois			TITLE: CORRECTIVE ACTION FORM	
DRAWN: TPK	CHECKED: AHH	REVIEWED: DW	DATE: 5-27-94	SCALE: NTS	FILE NAME: 8136267	JOB NO.: 933-8136	DWG NO.	FIGURE: 5

CORRECTIVE ACTION FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

Description of Problem: Levels of VOCs in ambient air exceed 100 ppm action level with system fully operational (e.g., the 1451 exhaust fan has been replaced).

Date Problem Identified: Sept. 19, 1994

Corrective Action Taken to Resolve Problem: Adjusted the level of the float switch in the 1451 sump to submerge all pipes which drain into the sump. Water traps were added to two 1½" PVC pipes which drain into the sump. These two pipes had high levels of VOCs in them. Will return on Sept. 26, 1994 to perform next weekly monitoring and assess effectiveness of corrective actions.

Date Resolved: Sept. 22, 1994

Inspector: Ali Hashimi / Dave Callahan

Company: GCS / GAI

CLIENT/PROJECT			TITLE		
PRP/YEOMAN-EDWARDS RI-FS/IL	Golder Associates Chicago, Illinois		CORRECTIVE ACTION FORM		
DRAWN: TPK	CHECKED: AHH	REVIEWED: DW	DATE: 5-27-94	SCALE: NTS	FILE NAME: 8[illegible]267
JOB NO.: 933-8136	DWG NO.:	FIGURE: 5			

CORRECTIVE ACTION FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

Description of Problem: Level of VOCs in ambient air exceeded the 100 ppm action level in Unit 1451.

Date Problem Identified: September 27, 1994

Corrective Action Taken to Resolve Problem: Sealed all visible cracks in the basement floor, basement walls, and joints between the floor slab and footing. We used a commercially available silicone sealant. Sealant does not contain VOCs. This was confirmed with the FID. Will return next week for the weekly monitoring to assess the effectiveness of the corrective action.

Date Resolved: September 29, 1994

Inspector: Ali Hashimi / Dave Callahan

Company: GCS/GAI

CLIENT/PROJECT							
PRP/YEOMAN-EDWARDS RI-FS/IL			Golder Associates Chicago, Illinois			TITLE: CORRECTIVE ACTION FORM	
DRAWN: TPK	CHECKED: AHH	REVIEWED: PW	DATE: 5-27-94	SCALE: NTS	FILE NAME: 8136267	JOB NO.: 933-8136	DWG NO.:	FIGURE: 5

4.0 Performance Tuning Forms

PERFORMANCE TUNING FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

Date: June 30, 1994 Tuned by: Dave Gersch Affiliation: Air Con

Date of identification of emergency:

Location	Flow Rate Before Tuning (CFM)	Flow Rate After Tuning (CFM)	Adjustment
1401 P.P.		913	None
1401 N.P.		400	
1407/1413 P.P.		310	
1407/1413 N.P.		191	
1415/1419 P.P.		310	
1415/1419 N.P.		191	
1423/1425 P.P.		310	
1423/1425 N.P.		191	
1431 P.P.		310	
1431 N.P.		191	
1451 P.P.		913	
1451 N.P.		400	

Remarks: No adjustments to the AEVS were necessary. Flow rates had been adjusted from that specified in the design to mitigate the exceedances found in the Unit 1451 basement.

Golder Associates Chicago, Illinois

TITLE: PERFORMANCE TUNING FORM

CLIENT/PROJECT: PRP/YEOMAN-EDWARDS RI-FS/IL

DRAWN	TPK	DATE	6-20-94	JOB NO.	933-8136
CHECKED	JJD	SCALE	NTS	DWG NO.	
REVIEWED	DLW	FILE NAME	8136268	FIGURE NO.	6

5.0 Alarm Response Forms

ALARM RESPONSE FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

	Date	Time	Name (print)	Signature
Alarm (time of system shutdown)	8-30-94	1500	David Callahan	David Callahan
Arrival at Pump House for Inspection	8-31-94	0930	David Callahan	David Callahan
System Restarted	8-31-94	0940		

Diagnosis of Problem: Supply 1425 triggered shutdown/alarm. Nothing unusual about intake system in 1425. Butterfly valve set as indicated on pipe. AirCon onsite and investigating. System running well @ 1100.

Corrective Action Taken (include details of repairs or adjustments): Removed a roll of carpetting which loosely covered inlet in 1425. Carpetting was there last week without incident. System shut down within 5 minutes twice.

Golder Associates Chicago, Illinois

TITLE: ALARM RESPONSE FORM

CLIENT/PROJECT: PRP/YEOMAN-EDWARDS RI-FS/IL

DRAWN: TPK	DATE: 5-27-94	JOB NO.: 933-8136
CHECKED: JJD	SCALE: NTS	DRG NO.:
REVIEWED: ZW	FILE NAME: 8136269	FIGURE NO.: 8

ALARM RESPONSE FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

	Date	Time	Name (print)	Signature
Alarm (time of system shutdown)	9/3/94	1430	Ali Hashimi	Ali Hashimi
Arrival at Pump House for Inspection	9/6/94	Afternoon	Keith Larson	
System Restarted	9/6/94	Afternoon	Keith Larson	

Diagnosis of Problem: After the additional louvers were added to the 1401 and 1451 it appears that the flow to the interior basements was reduced. This caused the supply switch for 1415/1417 to trip.

Corrective Action Taken (include details of repairs or adjustments): The butterfly value in the 1415/1417 basement was adjusted to allow more flow into the basement.

Golder Associates Chicago, Illinois

TITLE: ALARM RESPONSE FORM

CLIENT/PROJECT	DRAWN	DATE	JOB NO.
PRP/YEOMAN-EDWARDS RI-FS/IL	TPK	5-27-94	933-8136
	CHECKED JJD	SCALE NTS	DWG NO.
	REVIEWED ZAW	FILE NAME 8136269	FIGURE NO. 8

ALARM RESPONSE FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

	Date	Time	Name (print)	Signature
Alarm (time of system shutdown)	9/13/94	0800	Dave Salmon	
Arrival at Pump House for Inspection	9/14/94	1000	Keith Larsen	
System Restarted	9/14/94	Afternoon	Keith Larsen	

Diagnosis of Problem: Clogged air filter on 1431 exhaust fan.

Corrective Action Taken (include details of repairs or adjustments): Cleaned filter.

Golder Associates Chicago, Illinois	TITLE: ALARM RESPONSE FORM		
CLIENT/PROJECT: PRP/YEOMAN-EDWARDS RI-FS/IL	DRAWN: TPK	DATE: 5-27-94	JOB NO.: 933-8136
	CHECKED: JJD	SCALE: NTS	DWG NO.:
	REVIEWED: RHW	FILE NAME: 8136269	FIGURE NO.: 8

ALARM RESPONSE FORM
AIR-EXCHANGE AND VENTILATION SYSTEM
1401 THROUGH 1451 WEST GOLF ROAD BUILDING
WAUKEGAN, IL

	Date	Time	Name (print)	Signature
Alarm (time of system shutdown)	9/29/94	2000 hrs	Ali Hashimi	Ali Hash
Arrival at Pump House for Inspection	9/30/94	Morning	Keith Larsen	
System Restarted	9/30/94		Keith Larsen	

Diagnosis of Problem: Worn-out bearings on the exhaust fan in Unit 1415/1419 caused the fan to fail and sound an alarm. The system was restarted with the fan shut off.

Corrective Action Taken (include details of repairs or adjustments): On 10/4/94, the exhaust fan from Unit 1415/1419 was removed and sent to the manufacturer for repairs.

Golder Associates Chicago, Illinois

TITLE: ALARM RESPONSE FORM

CLIENT/PROJECT: PRP/YEOMAN-EDWARDS RI-FS/IL

DRAWN	TPK	DATE	5-27-94	JOB NO.	933-8136
CHECKED	JJS	SCALE	NTS	DWG NO.	
REVIEWED	ZHW	FILE NAME	8136269	FIGURE NO.	8