EXHIBIT B

February 7, 2005

Keith M. Casto, Attorney at Law
Sedgwick Detert, Moran & Arnold LLP
One Embarcadero Center, 16th Floor
San Francisco, CA 94111 – 3628

Re: Jane Palmisano and Richard Palmisano, Plaintiffs, v. Olin Corporation and Standard Fusee Corporation, Defendants.

Dear Mr. Casto:

This letter and its attachments constitute my expert report on the process operations and waste management procedures used by Standard Fusee in the production of highway flares/fusees at the Morgan Hill, California facility during the period 1988-1995.

Qualifications and Experience for James B. Cowart, P.E.

My name is James B. Cowart. I am a principal engineer at Walsh Environmental Scientists and Engineers, LLC (Walsh), 4888 Pearl East Circle, Boulder, Colorado 80301. Walsh is a subsidiary of Ecology and Environment (E&E), Buffalo, New York.

Qualifications

I have a Bachelors of Science degree from the U. S. Military Academy at West Point, New York, and a Masters of Science degree in Civil and Environmental Engineering from the University of Miami, Florida. I am a registered Professional Engineer.

Experience

I have been an environmental consultant for more than 30 years. I began evaluating process operations and waste management procedures at industrial facilities in 1974, and I have since visited approximately 1,000 sites. About half of these visits were conducted under contract to the U.S. Environmental Protection Agency focusing on wastewater and hazardous waste issues. The other half of these visits were conducted for private clients, and focused on investigation and cleanup of contaminated air, soils, and groundwater. These visits have included a large variety of industries, including: mining, propulsion, organic chemicals, pesticides, timber products, printing and publishing, foods, beverages, fish processing, oil and gas, transportation, metals finishing, pharmaceuticals, pyrotechnics and airports. I have visited two flare/fusee plants. For a majority of these sites, I have prepared reports which evaluate how products are made, what wastes are generated, how the wastes can be eliminated, minimized or controlled, and if wastes have escaped into the environment how to investigate, design, and implement cleanup solutions. My current parent company, E&E, has conducted thousands of similar site

visits on behalf of the U.S. Environmental Protection Agency, including a site inspection of the Morgan Hill facility.

Publications in the last ten years

I have published nine articles in the last ten years. A complete listing of these publications is attached.

Expert testimony and deposition in the last four years

I have been deposed four times, and have testified at trial one time in the last four years. A complete listing of these cases is attached.

Curriculum Vitae

My complete Curriculum Vitae is attached.

Fees

My professional fees are $150 per hour for services prior to deposition, and $300 per hour for deposition and trial. My company fees for this project have been approximately $45,000 since February 2003.

Opinions

Background:

In preparing my opinions, I conducted the following activities to understand the background of the site: reviewed documents; interviewed former employees of the Morgan Hill facility; interviewed current and former employees at the Peru, Indiana and Easton, Maryland facilities, and visited both those facilities; interviewed industry specialist Dr. John Conkling of the American Pyrotechnics Association; and reviewed reports prepared by David Bauer, Eric Nichols, and Neil Shifron.

Introduction

By way of introduction to the process operations and waste management procedures used by Standard Fusee in the production of flares and highway fusees ("fusees"), I refer the reader to attached Figure 1, Process and Waste Management/Disposal Flow Diagram, and Figure 2, Facility Map.

The fusee process, illustrated in Figure 1, consists essentially of three raw materials mixes, which are inserted into a rolled, crimped paper tube which is capped, and placed in boxes by the gross for product shipment. The length (and volume) of the fusee varies depending on whether it is designed for a burn time of 5, 10, or 20 minutes, etc. A prime mix is first prepared from nine raw materials, including approximately 24% potassium perchlorate, to later be inserted in a boring in the top 1.5 inches of the fusee tip. A fusee contains approximately 5 grams of prime mix, depending on type. A flare composition

mix is secondly prepared from nine ingredients, including approximately 5.3-5.8 % potassium perchlorate. The flare composition comprises the majority of the filled fusee. A fusee contains approximately 300 grams of flare composition, depending on type. A scratch mix is prepared from four raw materials, and does not include potassium perchlorate, which is lastly placed in a cap for use as an igniter. The quantity of Scratch Mix is de minimus. The finished product is placed in boxes of 144 fusees, and stored until shipped. The process is relatively labor-intensive, and has remained essentially the same for more than 50 years.

The Morgan Hill site is illustrated in Figure 2. This diagram, prepared by Woodward Clyde in 1997 as part of a site investigation, attempts to locate all former processing and waste disposal areas and buildings. The numbers of selected areas/buildings are referred to in my opinions below.

Opinion # 1: Standard Fusee flare manufacturing operations and waste management practices controlled raw materials and product releases and minimized or eliminated product loss.

A. Raw material storage prevented perchlorate release to the environment.

Raw material potassium perchlorate was delivered in 300-pound steel, banded drums with plastic liners. These drums were stored in Area 14, either inside large seatrans sheds or on a concrete pad on pallets raised off the ground and covered with tarps until used. Closed raw material drums were taken on pallets, by forklift, to the Building 5 door on the south side of the mixing room, where they were brought inside and opened for use in the prime mix and flare composition mix process. Plant personnel report that there were no spills of potassium perchlorate from raw materials drums outside of buildings.

B. Cleaning liquids and residues from the prime mix process, which contained potassium perchlorate, were either reused in the process or disposed off-site as hazardous waste, and were not discharged on-site.

Prime mix residues from the kettle wash, which contained potassium perchlorate in solution, was either reused in the process, or if spent was containerized and transported off-site as hazardous waste. Mixing kettles and paddles were squeegeed clean in the mix room, and were taken to the west side exterior of Building 5 where they were cleaned by hand in a tank with an alcohol-based compound. Sludge residues would build up in the bottom of this tank, and would periodically be removed and drummed for disposal as a hazardous waste off-site. The supernatant liquid would be reused in the product or subsequent cleaning process, or when necessary disposed as

hazardous waste off-site. Plant personnel report that there was no direct discharge of mix kettle wash liquids to the ground, except for de minimus splashes and drippage. Within Building 5, any spills of prime mix were cleaned from the linoleum-covered floor and returned to the process. Additionally there were no wash liquids generated from the prime mix operation within the building, and there were no floor drains for spillage to enter.

C. Flare composition residues, which contain potassium perchlorate, were either reused in the process, properly disposed of, or were captured in a ventilation and baghouse control system.

The raw materials used to prepare the flare composition were mixed inside Building 5 in the mix room area in a process comprised of hoppers, conveyor belts, and a cement mixer which protruded through the west wall. The portion of the cement mixer which protruded to the exterior of Building 5 did not generate residue. Residues from the flare composition process were generated within Building 5. Residues falling to the linoleum-covered floor in the mix room would be swept up numerous times each shift and returned to the process. Residues which adhered to the interior surfaces of the mixing area were removed once per year by hand and reused in the process, or disposed as hazardous waste, according to plant personnel. Residues which were suspended in the air were captured by a ventilation system, which moved air to a contained baghouse filter control system located immediately to the west of Building 5. This filter system was designed and permitted to remove 99+ percent (%) of the suspended particulate, which may have contained potassium perchlorate. This particulate would drop into a barrel at the bottom of the baghouse, and was periodically collected and reused in the process. Approximately once per year, plant personnel would clean and maintain the bag filters, and would return particulate residues to the process. The flare composition mixing process did not use any water, and no floor drains were installed within Building 5.

D. Flare composition mix, which contains potassium perchlorate, that spilled onto the cement floor during the flare filling operation, was captured by sweeping it up with a broom, and was reused in the process; it was not released at the site.

Flare composition mix was conveyed to a separate enclosure inside Building 5 where filling and ream and pointing processes were conducted. Plant personnel report that any spillage of this dry mix was swept up and returned to the process. There were no floor drains in the filling room portion of Building 5.

E. Subsequent unit processes had little or no potential to generate perchlorate-containing waste.

Subsequent unit processes in Building 5, including scratch mix preparation, hand priming, drying, dip and packing, and capping, had little or no potential to generate perchlorate-containing waste. Plant personnel report that any waste from these processes was minimal if any, and was swept up from the cement floor and reused or recycled without release on-site.

F. Off-specification or returned product was reused in the process, or was disposed off-site as a solid or hazardous waste.

A small portion of the finished flare/fusee production would be considered off-specification or would be returned by the consumer. In these cases the part of the flare/fusee containing flare composition mix would be cut off and salvaged by reusing the flare composition mix, and by recycling the paper tube portion. The remaining portion of the flare/fusee, which in part contained the prime mix, would be considered potentially energetic and would be barreled and disposed off-site as a hazardous waste, according to plant personnel.

G. Finished product was stored inside a warehouse, such as Building 1 or 2, and was not a source of perchlorate-containing waste.

H. No fires or spills created discharges of perchlorate-containing waste to the environment.

According to plant personnel there were no fires, deluge water, spills or other sudden occurrences of discharges of perchlorate-containing waste at the site.

I. Closure of the facility by Standard Fusee was accomplished without discharge of perchlorate-containing liquid or solid waste to the on-site environment.

Standard Fusee was responsible for certain portions of the facility closure, which was conducted in accordance with a plan and implementation approved by the Santa Clara County Central Fire Protection District, and was overseen by Olin Corporation. In particular, plant personnel report that the interior of Building 5 processing was dry cleaned, and that residues were contained and shipped off-site as hazardous waste. Other portions of the closure were performed independently by Olin.

Opinion # 2: Standard Fusee managed any waste generated in accordance with applicable rules, regulations, permits, and contractual requirements.

A. Contractual requirements pertaining to processing and waste management were audited by Olin and implemented by Standard Fusee. During the Standard Fusee operation of the Morgan Hill facility, Olin conducted numerous audits and inspections of the facility, including written follow up, to ensure that processing and waste management was conducted in accordance with approved regulatory procedures, and in-house standard practices. The Standard.Fusee portion of the closure was overseen by Olin, and other portions were performed independently by Olin.

B. Regulatory requirements for processing and waste management of flare/fusee production were followed by Standard Fusee, without any notice of deficiencies or corrective actions required.

    1. The USEPA, Region IX, conducted a CERCLA Screening Site Inspection in 1990 and concluded that No Further Remedial Action was required at the site.
    2. The State of California Regional Bay Area Air Quality Management District approved and permitted air emissions controls at the site.
    3. The County of Santa Clara conducted inspections, and reviewed and approved plans related to operations and closure of the facility pertaining to hazardous materials and hazardous wastes.
    4. The City of Morgan Hill conducted inspections, and reviewed and approved plans related to operations of the facility pertaining to hazardous materials.
    5. None of the applicable regulatory agencies provided any comments to or required any actions of Standard Fusee related to perchlorate-containing waste, aside from its ignitable and reactive characteristics.

C. Waste from Standard Fusee operations was managed in accordance with applicable rules, regulations and permits.

    1. Air emissions were permitted through the Bay Area Air Quality Management District.
    2. Solid waste (non-hazardous) was disposed off-site by approved commercial haulers.
    3. Hazardous waste was disposed off-site through Chemical Waste Management, in accordance with RCRA regulations.
    4. Sanitary wastewater (non-industrial) was disposed to on-site septic tank and leach fields, approved by the City of Morgan Hill.

5. Stormwater runoff was permitted during the time period of Standard Fusee operations.
6. None of the applicable rules, regulations or permits cited above required testing or corrective action of perchlorate-containing waste, aside from its ignitable or reactive characteristics.

Opinion # 3: Standard Fusee did not dispose of hazardous, toxic or industrial wastes in solid or liquid form to the ground or groundwaters at the Morgan Hill site

A. By the time Olin transferred manufacturing operations of the Morgan Hill flare/fusee facility to Standard Fusee in 1988, and during operations through 1995, comprehensive waste management and facility safety plans were in place and were implemented. These plans prohibited and prevented the disposal of industrial solid wastes to the air, or liquid wastes to the ground or groundwaters at the Morgan Hill site.

Opinion # 4: Standard Fusee releases, if any, containing potassium perchlorate were fugitive and de minimus.

A. Review of available data and information, and interviews with plant personnel, indicate that any releases of perchlorate-containing waste during Standard Fusee operations of the Morgan Hill facility, if any, were fugitive and de minimus.

B. Potential fugitive and de minimus releases include: residues on forklift tires or worker shoes or uniforms coming in and out of Building 5 prime and flare mix areas; residues which might be blown out the doors or windows of the Building 5 mixing areas if not captured by the ventilation system; residues which may have passed through the permitted baghouse filter system, and drippage or splashes of mix kettle alcohol wash water conducted on the west side of Building 5. Quantification of such releases, if any, would be difficult to reconstruct, but in my opinion would have been in such small quantities as to be unmeasurable, and therefore should be classified fugitive and de minimus.

Signature: ***Date:***

James B. Cowart, P.E.
Principal Engineer
Walsh Environmental Scientists & Engineers, LLC.

February 7, 2005

Attachments

Data and Information References

No.	Date	Author	Description
1.	Unknown	Unknown	Fire Mix Formula F-9-C for Railway Flares, Morgan Hill Fusee Plant
2.	Unknown	Unknown	Formulation Chart. Undated
3.	11/23/65	Denny, G. M.	Prime Mixture Formula, Effective Date March 21, 1955
4.	04/12/73	Olin Corporation	Standard Operating Procedure for Scratch Mix Formula
5.	11/08/85	Olin	Interoffice Memo from B.F.Davidoff to M.E. Campbell regarding Environmental Disclosure Statement 195. Chiolero Deposition Exhibit Number Nineteen
6.	01/__/87	Olin	Regulatory Compliance Audit Report 228. Chiolero Deposition Exhibit Number Twenty-seven
7.	03/02/87	Olin	Memo Re: Hazardous Chemical Reporting Emergency Planning and Community Right-to-know
8.	03/11/87	Olin	Regulatory Compliance Audit Report
9.	05/11/87	Olin	Memo Re: Cessation of Steam/Soda Ash Wash of Prime Mix Kettles.
10.	12/04/87	City of Morgan Hill	List of Hazardous Materials
11.	01/27/88	Olin	Manufacturing Standards for Prime Mix and Flare Composition
12.	02/05/88	Olin	Memo Re: Environmental Permits/Licenses
13.	04/20/88	Standard Fusee	Letter to City of Morgan Hill Re: Hazardous Materials Management Plan
14.	06/03/88	Olin	Morgan Hill Environmental Baseline Report.
15.	07/14/88	Olin	Chiolero Deposition Exhibit Number Twenty-one, Olin Interoffice Memo from David Booth to J.L. Chiolero regarding Morgan Hill Inspection 216
16.	08/03/88	Standard Fusee	Chiolero Deposition Exhibit Number Twenty-two, Letter from John Brady at Standard Fusee Corporation to J.L. Chiolero at Olin Corporation 219
17.	08/09/88	Olin	Memo Re: Air Emission Permits
18.	8/15/88	Olin	Chiolero Deposition Exhibit Number Twenty-three, Olin Interoffice Memo from J.L. Chiolero to D.R. Booth regarding Morgan Hill Inspection 220

No.	Date	Author	Description
19.	09/21/88	Olin	Memo Re: Reporting Releases Under Section 103(b) of CERCLA/SARA
20.	11/04/88	Olin	Regulatory Compliance Audit Report
21.	07/13/89	Standard Fusee	Memo Re: Disposal of Olin-owned Potassium Perchlorate.
22.	11/22/88	Olin	Letter Re: Operational Standards for Products
23.	01/04/89	Olin	Memo Re: Regulatory Compliance Audit Report
24.	06/15/89	City of Morgan Hill	Provisional Hazardous Materials Storage Permit
25.	03/08/90	Ecology & Environment	CERCLA Screening Site Inspection
26.	06/07/90	City of Morgan Hill	Provisional Hazardous Materials Storage Permit
27.	08/09/90	Olin	Regulatory Compliance Audit Report
28.	07/01/91	City of Morgan Hill	Provisional Hazardous Materials Storage Permit
29.	08/30/91	City of Morgan Hill	Provisional Hazardous Materials Storage Permit
30.	09/26/91	County of Santa Clara	Letter Re: Inspection by Health Department Office of Toxics Enforcement
31.	03/30/92	County of Santa Clara	Letter Re: List of Acutely Hazardous Materials Users
32.	12/28/92	City of Morgan Hill	Provisional Hazardous Materials Storage Permit
33.	01/20/93	Standard Fusee	Hazardous Materials Management Plan. Submitted to City of Morgan Hill
34.	07/30/93	City of Morgan Hill	Provisional Hazardous Materials Storage Permit
35.	09/20/93	Olin	Regulatory Compliance Audit Report
36.	10/22/93	Olin	Memo Re: Regulatory Compliance Audit Report of September 20, 1993
37.	11/__/93	Chemical Waste Management	Contract with Olin to Transport and Dispose of Hazardous Materials and Wastes.
38.	07/01/94	City of Morgan Hill	Provisional Hazardous Materials Storage Permit
39.	07/01/95	City of Morgan Hill	Provisional Hazardous Materials Storage Permit
40.	12/05/95	Rust	Letter Re: Environmental Issues at Morgan Hill
41.	12/28/95	Standard Fusee	Bill of Lading Re: Transfer of 41,283 Lbs of Potassium Perchlorate from Morgan Hill to Easton Maryland

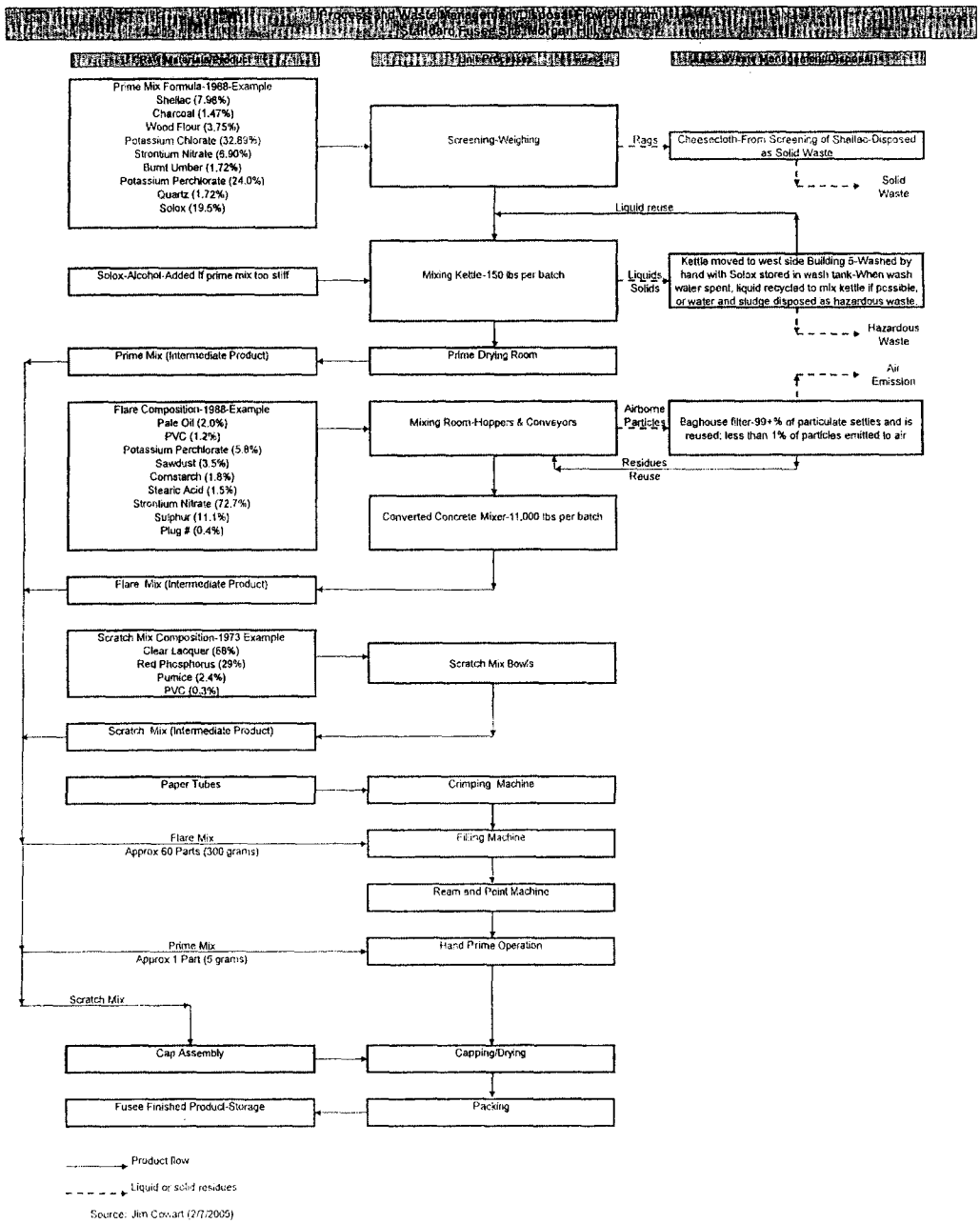
No.	Date	Author	Description
42.	01/04/96	CJM	Memo Re: Morgan Hill Closure/Environmental Considerations
43.	03/07/96	Olin	Regulatory Compliance Audit Report
44.	04/08/96	Standard Fusee	Memo Re: Response to Olin. Regulatory Compliance Audit Report
45.	10/22/96	Santa Clara County Central Fire Protection District	Inspection Notice Re: Closure Requirements
46.	11/07/96	Standard Fusee	Hazardous Materials Facility Closure Plan
47.	11/07/96	Santa Clara County Central Fire Protection District	Approved Hazardous Materials Facility Closure Plan
48.	11/22/96	Santa Clara County Central Fire Protection District	Inspection Notice
49.	Unknown	Pacific Aerials	Aerial photographs of Morgan Hill, California. 1986, 1988, 1992, 1996
50.	03/18/97	Woodward-Clyde Consultants	Facility Map
51.	06/06/97	Woodward-Clyde Consultants	Environmental Site Assessment Final Report
52.	05/30/97	Olin	Letter Re: Waste Removal from the East Septic Tank
53.	12/09/04	Jerry Chiolero	Deposition of Jerry Chiolero
54.	01/25/05	Jim Cowart	Personal communication with George Denny (former Olin employee) and Allen Engel of Standard Fusee, Peru, Indiana
55.	01/27/05	Jim Cowart	Personal communication with Yoshio Suekawa
56.	01/31/05	Jim Cowart	Personal communication with Jeff Johnson, Standard Fusee, Easton, Maryland
57.	02/05/05	Jim Cowart	Personal communication with Paul Ghirardelli

Exhibits

Figures

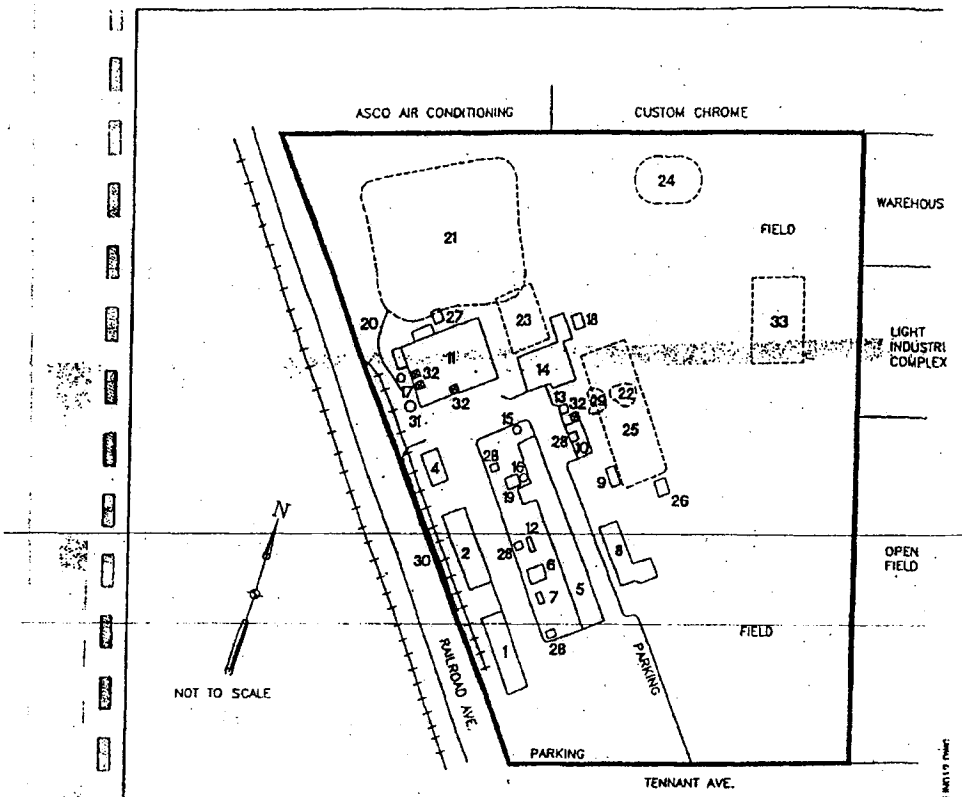
1. Process and Waste Management/Disposal Flow Diagram
2. Facility Map

Figure 1-Cowart Report-2/7/2005



Source: Jim Cowart (2/7/2005)

Figure 2-Cowart Report-2/7/2004



1. WAREHOUSE
2. WAREHOUSE
4. WAREHOUSE
5. PRODUCTION
6. PRODUCTION
7. STORAGE
8. OFFICE
9. TRANSFORMER
10. SHOP
11. PRODUCTION/STORAGE
12. COMPRESSOR
13. LABORATORY
14. STORAGE PAD/INCINERATOR
15. UNDERGROUND GASOLINE TANK (REMOVED 1985)
16. UNDERGROUND DIESEL TANK (REMOVED 1985)
17. UNDERGROUND DIESEL TANK (REMOVED 1985)
18. STORAGE
19. UNDERGROUND PALE OIL STORAGE TANK (REMOVED 1996)
20. EVAPORATION TRENCH (UNTIL 1981)
21. APPROXIMATE AREA OF SKEET DEPOSITION
22. EVAPORATION POND (UNTIL 1987)
23. INCINERATION PIT #1 (UNTIL 1973)
24. COAL TAR PITCH AREA (1960'S)
25. LEACH FIELD (1955)
26. SEPTIC TANK
27. SEPTIC TANK
28. STORMWATER SUMPS
29. INCINERATION AREA (UNTIL 1973)
30. STORMWATER TRENCH
31. COAL TAR PITCH ABOVEGROUND STORAGE TANK (REMOVED)
32. PROCESS SUMPS/DRAINS
33. INCINERATION PIT #2 (UNTIL 1973)

Project No. 963088NA 3/18/97	OLIN CORPORATION SITE 425 TENNANT AVE. Morgan Hill, California	FACILITY MAP	Figure 1-2
WOODWARD-CLYDE CONSULTANTS		Olin/Daniels 000029	

Appendices:

1. Publications in the last ten years

Cowart, J. & Breyer, L. 2004. Attenuation Factors for Hydrocarbons Associated with a Diesel Spill. Vapor Intrusion Attenuation Workshop. 14th Annual West Coast Conference on Soils, Sediments, and Water. March 15-18, 2004, San Diego, California.

Cowart, J. & Kurtz, J. 2004. Measured Versus Model-Predicted Vapor Intrusion Attenuation at a Site in Littleton, Colorado. Vapor Intrusion Attenuation Workshop. 14th Annual West Coast Conference on Soils, Sediments, and Water. March 15-18, 2004, San Diego, California.

Cowart, James B. et. al. 2004. Burlington Mine Site Voluntary Cleanup: Innovative Design for Mine Site Reclamation. American Society of Civil Engineers-Colorado Section, 2004 Biennial Geotechnical Seminar.

Cowart, J.B. & Levin, M. 2004. 3-D Mine Mapping Drives Cleanup Design and Closure, Burlington Fluorspar Mine Site, Jamestown, Colorado. Tailings and Mine Waste '04. Balkema Publishers, London.

Cowart, J.B. & Milne, J. 2004. Remediation of 25 Million Gallons of Acidic Groundwater, Nacimiento Copper Mine Site, Cuba, New Mexico. Tailings and Mine Waste '04. Balkema Publishers, London.

Cowart, James B. et. al. 2004. Burlington Mine Site Voluntary Cleanup: An Ecologically-Based Approach to Mine Site Remediation. Newsletter of the Colorado Riparian Association, Volume 15, Number 2, Summer 2004.

J Cowart, PE, A Barnard, CIH, CSP, L Breyer, CIH. "Risks to Indoor Air Quality from Volatile Organic Compounds in Groundwater." Proceedings of the 9th International Conference on Indoor Air Quality and Climate, Monterey, California, June 30 - July 5, 2002.

Cowart, James B., et. al. 2000. Volatile Organic Compounds in Indoor Air from Ground Water Sources. 16th International Conference on Contaminated Soils and Water. Amherst, Massachusetts.

Cowart, James B., et. al. 2000. Design and Performance of Indoor Air VOC Mitigation Systems. 16th International Conference on Contaminated Soils and Water. Amherst, Massachusetts.

2. Expert testimony and deposition in the last four years

EXPERT DEPOSITION AND TESTIMONY FOR VAPOR INTRUSION AT A DIESEL SPILL IN MANDAN, NORTH DAKOTA

Mr. Cowart directed sampling of groundwater, soil vapor, soil, indoor air, and outdoor air in order to assess the potential human health impacts in indoor air located over this 3 million gallon diesel spill in the City of Mandan. On behalf of selected residents, Mr. Cowart has been deposed twice and testified in court as an expert concerning the potential for diesel-related contaminants in groundwater to have migrated through soil vapor into indoor air. Mr. Cowart was deposed January 22, 2004 in North Dakota Department of Health, et. al., Plaintiffs, and Schleicher Land Co., et. al., Deb Knudsen, et. al., and City of Mandan, Intervenors, vs. The Burlington Northern and Santa Fe Railway Company, Defendant, in District Court, County of Morgan, State of North Dakota South Central Judicial District, Civil Action No. 02-C-1174. Mr. Cowart was deposed September 14, 2004 in Schleicher Land Co., et. al., Deb Knudsen, et. al., and City of Mandan, Plaintiffs, vs. The Burlington Northern and Santa Fe Railway Company, Defendant, in District Court, County of Grand Forks, State of North Dakota Northeast Central Judicial District, Civil Action No. 04-C-157. Mr. Cowart testified September 23-24, 2004 in Schleicher Land Co., et. al., Deb Knudsen, et. al., and City of Mandan, Plaintiffs, vs. The Burlington Northern and Santa Fe Railway Company, Defendant, in District Court, County of Grand Forks, State of North Dakota Northeast Central Judicial District.

EXPERT DEPOSITION FOR VAPOR INTRUSION AT A PCE-CONTAMINATED GROUNDWATER PLUME, SECURITY, COLORADO.

On behalf of the plaintiffs, a group of residents living over a perchloroethylene (PCE) groundwater plume, Mr. Cowart has been deposed twice concerning the potential of PCE in groundwater to migrate through soil vapor and into indoor air. Mr. Cowart was deposed on February 26, 2003 in The United States District Court for the District of Colorado, Civil Action No. 02-RB-1188(OES), Susan Stalcup, Craig Lewis And Sharon Lewis, Plaintiffs, V. Schlage Lock Company, Ingersoll-Rand Company And Eagle-Picher Industries, Inc. Defendant. Mr. Cowart was deposed January 7, 2004 in The United States District Court for the District of Colorado, Jim Stulb, Trustee, Fountain Valley Environmental Remediation Trust, Plaintiff, Vs. Schlage Lock Company, Ingersoll-Rand Company, Eagle Picher Incorporated And Eagle Picher Technologies LLC, Defendants, Civil Action No. 03-RB-0002.

3. Curriculum Vitae

JAMES B. COWART, P.E.

Principal Engineer

KEY EXPERTISE

- ✓ Indoor Air/Vapor Intrusion Assessment & Remediation
- ✓ Abandoned Mine Investigation & Reclamation
- ✓ CERCLA/RCRA Hazardous Waste Investigation, Feasibility, Design, Remedial Action
- ✓ Industrial Process Operations and Wastewater Control and Treatment
- ✓ Expert Testimony and Litigation Support

EDUCATION, CERTIFICATIONS

M.S., Civil/Environmental Engineering, University of Miami, Florida, 1995
M.F.A., Photography, University of Florida, Florida, 1974
B.S., Engineering, U.S. Military Academy, West Point, New York, 1967
Registered Professional Engineer, #23988, Florida, 1977; #28938, Colorado, 1993

EXPERIENCE SUMMARY

Mr. Cowart has 30 years of experience as an environmental engineer, project manager, and expert witness. He has experience in water, wastewater, water resources, solid waste, indoor air pollution, hazardous waste, environmental assessments and impact statements, and assessment and remediation of soils and ground water. He has worked closely with clients in numerous industries including mining, propulsion, organic chemicals, pesticides, timber products, printing and publishing, foods, beverages, fish processing, oil and gas, transportation, metals finishing, pharmaceuticals, pyrotechnics and airports. He worked for over 10 years assisting the US EPA in developing regulations for the Clean Water Act. In addition, Mr. Cowart has four years of engineering management experience with the U.S. Army Signal Corps and three years of graduate schooling and teaching positions.

RCRA/HAZARDOUS WASTE PROJECTS

GROUND WATER REMEDIAL ACTION, PRATT AND WHITNEY RCRA SITE, PALM BEACH COUNTY, FLORIDA

Mr. Cowart served as project manager for this RCRA Corrective Action (CA) consisting of the design and installation of a 26 well product recovery system for several feet of PCB/jet-fuel contaminated ground water. The product recovery system, which was designed in 1985, was one of the early low-flow pneumatic systems installed.

RCRA Indoor Air Quality, Alliant Techsystems RCRA Site, Littleton, Colorado

Mr. Cowart was Project Manager from 1999-2004 for an indoor air quality assessment of chlorinated solvents at this former Honeywell electronics assembly facility. This site was regulated under a Consent Order from the U.S. Environmental Protection Agency, Region VIII. Plans were developed and implemented for soil gas and indoor air sampling at on-site commercial and at 49 off-site residential locations. Community relations meetings were held to explain the purpose and findings of studies. Based on evaluations of groundwater, soil gas and indoor air data, the USEPA concluded that the human health impacts at the site were "under control" and indoor air monitoring was discontinued.

RCRA Indoor Air Quality, Colorado Department of Transportation, Denver, Colorado

Mr. Cowart was Program Manager from 1997-2001 for an indoor air-quality related hazardous waste investigation and remediation at the CDOT Headquarters in Denver, Colorado. Leaking underground storage tanks on-site contaminated groundwater with solvents, which in turn led to air quality impacts inside roughly 100 apartment buildings and single family residences above the groundwater plume. For this project, Mr. Cowart directed a RCRA Facilities Investigation, an Immediate Response Action consisting of soil vapor extraction at 30 structures, a Baseline Risk Assessment which established Preliminary Remediation Goals, and a Corrective Measures Plan which provides for more than $20 million for treatment of indoor air over the next 20 years. This site was regulated by the Colorado Department of Public Health and Environment.

RCRA Soil and Ground Water Treatment, Colorado Department of Transportation, Denver

At the Colorado Department of Transportation headquarters site, Denver, Colorado, Mr. Cowart was senior engineer for a RCRA Corrective Measures Plan and Corrective action which involved remediation of soils, soil vapor, and ground water contaminated by waste solvents. Ground water extraction, air stripping and vapor incineration systems were installed and operated to remove dissolved solvents.

RCRA Quality Control Engineer, Rocky Mountain Arsenal Basin F, RCRA Closure, Denver

For the Army Corps of Engineers, Mr. Cowart acted as the independent registered engineer to certify the RCRA closure of $70 million of facilities including Basin F waste ponds, tank farm, and submerged quench incinerator, which contained pesticides, munitions, and chemical warfare wastes.

Indoor Air Quality, City of Mandan, North Dakota

Mr. Cowart was Project Manager in 2002-2004 for a vapor intrusion and indoor air quality assessment of approximately 12 square blocks of commercial and residential buildings in Mandan which are located over an estimated 3 million gallons of diesel fuel floating on the groundwater table. Multi-media samples have been taken of floating product, soil gas, soil, indoor air, and outdoor air. Results are being evaluated to

determine if there are short- or long-term human health risks for occupants of the buildings.

EXPERT CONSULTANT FOR RCRA WASTE CODE DEVELOPMENT, US EPA

For the U.S. Environmental Protection Agency's Office of Solid and Hazardous Waste, Mr. Cowart served as an expert for the development of listed RCRA hazardous wastes from non-specific sources, which appeared in Code 40 of Federal Regulations (CFR) 261.31 May 19, 1980, for waste numbers K031 through K099 in the pesticides industry.

RCRA WASTE GENERATION EVALUATION, FLORIDA DER

For the Florida Department of Environmental Regulation and South Florida Regional Planning Council, Mr. Cowart directed the inventory of more than 33,000 businesses to determine RCRA hazardous waste generator characteristics and requirements under 40 CFR 262 and Chapter 17 of the Florida Administrative Code.

STATEWIDE RCRA CHARACTERIZATION AND SITING STUDY, FLORIDA DER

For the Florida Department of Environmental Regulation, Mr. Cowart served as senior engineer for a statewide RCRA hazardous waste characterization and siting study conducted pursuant to the siting and permitting process in Chapter 17 of the Florida Administrative Code and 40 CFR 264 for owner/operators of hazardous waste treatment, storage, and disposal facilities.

RCRA CLOSURE, ELECTROPLATING FACILITY IMPOUNDMENT, TAMPA, FLORIDA

For Sanitary Dash, Mr. Cowart served as senior engineer for a RCRA clean closure of a surface impoundment receiving wastewaters from an electroplating facility in Tampa.

RCRA PART B PERMITTING, CORRECTIVE MEASURES STUDIES, AND CORRECTIVE ACTION, FLORIDA

For Safety Kleen mineral spirits distribution and recycling centers in South Florida, he served as senior project engineer for RCRA Corrective Measures Studies and Corrective Actions related to contamination of soil and ground water, and for RCRA Part B permitting for new facilities.

RCRA PERMITTING, PESTICIDE FACILITY, NAPLES, FLORIDA

The Collier Mosquito Control District has an RCRA-hazardous material pesticide storage, formulation application, and maintenance facility for both vehicles and aircraft. Mr. Cowart served as project manager for environmental design, RCRA-generator permitting; spill prevention and countermeasure control plan development; and ground water and stormwater permitting for this facility.

RCRA ASSESSMENT AND REMEDIAL ACTION PLANS, U.S. ZINC GALVANIZING, FLORIDA

For this industrial facility, Mr. Cowart directed the removal of RCRA liquids and sludges, conducted an assessment of metals in soils using electromagnetic and resistivity geophysical techniques, performed an assessment of ground water, and prepared remedial action plans in accordance with Metro Dade County Florida hazardous waste regulations.

COMPREHENSIVE RCRA AND ENVIRONMENTAL SERVICES, UNITED STATES SUGAR CORPORATION, CLEWISTON, FLORIDA.

Over a 3-year period, Mr. Cowart served as project manager for comprehensive environmental services including assessment and remediation of 12,000 tons of Bunker C-impacted soils, design of solids separation and oil/water separators for 2,400 gallon per minute wastewater discharges, decontamination of a 2, 4-D pesticide formulation warehouse, assessment and remediation of MSMA-pesticide impacted soils at a chemical storage facility. In addition, he prepared waste management protocols and performed RCRA facility inspections.

CERCLA/SUPERFUND PROJECTS

REMEDIAL INVESTIGATION/FEASIBILITY STUDY, CAPTAIN JACK CERCLA MINE SITE, WARD, COLORADO.

Mr. Cowart serves as Project Manager for an RI/FS at a collection of abandoned mine sites in California Gulch, Lefthand Canyon Watershed, near Ward, Colorado. Oversight is by the Colorado Department of Public Health & Environment and the USEPA, Region 8 in Denver, Colorado.

REMEDIAL INVESTIGATION, WILSON'S CONCEPT'S CERCLA SITE, FLORIDA

Mr. Cowart served as senior project engineer for a Remedial Investigation (RI) of an electronics and metal finishing facility CERCLA site in Broward County, Florida.

REMEDIAL INVESTIGATION, CALIFORNIA GULCH CERCLA SITE, LEADVILLE, COLORADO

At a mining and smelting Superfund site in Colorado, Mr. Cowart served as senior engineer for the portions of the Remedial Investigation (RI) related to defining background metals in soils and for the chemical evaluation of metals sources.

FEASIBILITY STUDY, 58TH STREET MUNICIPAL LANDFILL CERCLA SITE, DADE COUNTY, FLORIDA

Mr. Cowart served as project manager for the portion of the Feasibility Study (FS) at this Superfund landfill site that involved geophysical studies, ground water modeling, and capping alternatives.

FEASIBILITY STUDY AND REMEDIAL DESIGN, NACIMIENTO COPPER MINE CERCLA SITE, CUBA, NEW MEXICO

Mr. Cowart is project manager for this CERCLA Feasibility Study (FS) and Remedial Design (RD) at an abandoned copper mine site on USDA Forest Service property near Cuba, New Mexico. Approximately 25 million gallons of groundwater are contaminated with acidic solutions from historic in-situ leaching mining processes. A variety of remedial alternatives were evaluated including natural attenuation, groundwater pumping, ex-situ metals precipitation and ligand polishing treatment, with discharge of treated effluent to recharge galleries, surface water or an on-site pit lake. A remedial design is being prepared to include groundwater extraction, neutralization and metals precipitation, polishing treatment by immobilized ligand, and discharge to the surface.

REMEDIAL DESIGN, PIONEER SAND CERCLA SITE, PENSACOLA, FLORIDA

Mr. Cowart served as senior project engineer for a Remedial Design (RD) incorporating air injection, leachate treatment, and an engineered cap at an abandoned borrow pit/industrial fill area in Pensacola, Florida.

SITE INVESTIGATION, ANACONDA ALUMINUM CERCLA SITE, DADE COUNTY, FLORIDA

Mr. Cowart served as project manager for a Site Investigation at this aluminum anodizing facility. A percolation pit had received wastewater containing metals which were precipitated with caustic soda.

EXPERT DEPOSITION, THOMPSON HAYWARD CERCLA SITE, FRESNO, CALIFORNIA

At the Thompson Hayward Agriculture and Nutrition CERCLA Facility in Fresno County, California for litigation filed in Wilmington, Delaware in North American Phillips Corp. vs. Aetna, Mr. Cowart was deposed for eight days as an expert in pesticide formulation and packaging industry operations and waste management practices. The case was settled out of court.

PERMITTING, SITE ASSESSMENTS, AND REMEDIATION, NON-HAZARDOUS

BURLINGTON MINE VOLUNTARY CLEANUP, JAMESTOWN, COLORADO

At the former Burlington Fluorspar Mine Site near Jamestown, Colorado, Mr. Cowart was project manager for the reclamation design and construction oversight. This 13 acre facility contained over 10,000 feet of underground tunnels, adits and shafts. Acid rock drainage was generated from approximately 35,000 cubic yards of waste rock, and acid mine drainage from underground workings was discharging to a nearby creek. The reclamation included: diversion of a 220 cfs surface water stream, consolidation of waste rock in a neutralized and capped repository, closure of subsidence pits, shafts and adits, and grading/drainage and revegetation of the site.

ENVIRONMENTAL AUDIT OF THIOKOL OPERATIONS, UTAH, MARYLAND, AND NEW JERSEY

For a company recently acquiring the operations of Thiokol Corporation, Mr. Cowart led a team that evaluated environmental contamination issues at operational facilities in 3 states. All were propellant manufacturing plants, including the site where the Space Shuttle Boosters are fabricated. The plants in Utah and Maryland were large, totaling 500 and 150 buildings, respectively. The environmental assessment noted where existing or potential contamination of ground and surface water would lead to environmental liabilities. In addition, a Screening Level Ecological Assessment was conducted at the Thiokol Promontory, Utah facility to address potential on- and off-site impacts.

ASSESSMENTS, PERMITTING, AND WASTE REMOVAL, SCHERING PHARMACEUTICAL LABORATORIES, MIAMI, FLORIDA

Mr. Cowart performed services in the following areas: a wastewater treatability study which ensured that batch wastes from the Nitro-Dur heart pacing product met pre-treatment standards for the Dade County Water and Sewer Authority; volatile organic contaminant air permits for the use of solvents in the Nitro-Dur process; the

characterization and removal of RCRA wastes; and soil and ground water impact assessment for the preparation of a property transfer.

PERMITTING FOR MUNICIPAL COMPOSTING FACILITY, FLORIDA.

For Agripost, Mr. Cowart served as project manager for permitting of Florida's largest municipal solid waste composting facility, including odor control, stormwater, ground water, and product leachate.

ASSESSMENTS OF CHROMIUM CONTAMINATION, ROYAL PALM ICE COMPANY, PENNSYLVANIA

At this ice manufacturer, Cowart directed assessments of chromium contamination in soils and ground water, using surface geophysical tools (electromagnetics) to correlate metals concentration and conductivity.

UNDERGROUND STORAGE TANK ASSESSMENTS, REMEDIATIONS, INSTALLATIONS, FLORIDA

Mr. Cowart served as project director or manager for more than 40 petroleum contamination assessments, remediations, and UST installations at service stations and maintenance facilities in South Florida. Systems that were designed included: groundwater pump-and-treat, soil vapor extraction, product removal and dig and haul.

METHANE GAS ASSESSMENTS AND VENTING DESIGNS, MUNICIPAL AND INDUSTRIAL LANDFILLS, FLORIDA AND COLORADO.

Mr. Cowart conducted assessments of subsurface methane gas and prepared designs for both active and passive venting at the following municipal and industrial landfills in Florida: West Dade - 580 acres; North Dade - 125 acres; North Miami Beach - 80 acres; Key Biscayne - 40 acres; Broward County - 600 acres; and Crudele Industries - 5 acres, and in Colorado: Ralston Industrial Park-3 acres; Voyager Trucking-3 acres.

REMEDIATION OF FREE PRODUCT & GROUNDWATER, FT. LUPTON, COLORADO

Mr. Cowart served as senior design reviewer for a remedial design to remove approximately 2 feet of free product and dissolved hydrocarbons in groundwater which had been released from a natural gas gathering and compression station. The design included product recovery trenches, horizontal air sparging and vapor extraction wells. The system was installed and is in operation.

NOISE PROJECTS

NOISE SURVEY AND ABATEMENT, SEWAGE TREATMENT PLANT, JACKSONVILLE, FLORIDA

For the USEPA, Region 4, Mr. Cowart managed an Environmental Impact Statement which focused on potential noise impacts from expansion of a sewage treatment plant. Both on-and off-site noise monitoring was conducted over a 72 hour period. It was determined that the major high decibel noise source was compressors powering the high pressure sludge treatment unit. A conceptual design was prepared which provided for a separate insulated enclosure for the compressors, in order to reduce noise levels to acceptable levels at the property boundary.

NOISE SURVEY, IMPACT OF NEARBY ROADWAY ON PLANETARIUM, WEST PALM BEACH, FLORIDA

For the West Palm Beach planetarium, Mr. Cowart was project manager for a survey to determine if noise from a nearby highway was sufficient to create vibration in the planetarium telescopes. Noise, light and vibration measurements were taken during nighttime hours. It was concluded that light pollution was the major impact on celestial viewing, and that noise and vibration were not an issue.

INDUSTRIAL WASTEWATER PROJECTS

PRECIPITATION OF HEAVY METALS, COPPER MINE SITE, CUBA, NEW MEXICO

For the USDA Forest Service, Mr. Cowart conducted a treatability study and prepared a conceptual design for the removal of heavy metals, such as copper, from acidic groundwater at the former Nacimiento Mine site in Cuba, New Mexico. The acidic groundwater was titrated with various bases in order to determine optimum precipitation conditions. Polishing treatment was evaluated using an immobilized ligand to preferentially adsorb metals of concern. A conceptual design and capital and annual cost estimate was prepared for a 105 gpm groundwater extraction and treatment system, with discharge to either groundwater or surface water.

DEVELOPMENT OF NPDES GUIDELINES, FOR THE U.S. EPA, 1975-1985

For the U.S. Environmental Protection Agency, Mr. Cowart directed over 75 man-years of work during a 10-year period in order to establish wastewater treatment effluent guidelines and standards for industries discharging into surface waters or publicly-owned treatment works. The industries addressed were those of pesticide chemicals, fruits and vegetables, edible oils, malt beverages, wines, soft drinks, distilled spirits, sugar cane processing, fish processing, hydrolyzed vegetable protein, and pectin. For each industry, the scope of work included surveys of the industry, evaluation of process operations and waste management, plant visits, wastewater sampling and analysis, literature reviews, evaluation of wastewater treatment alternatives, conceptual design of wastewater treatment systems, and cost estimates for treatment. Wastewater treatment units which were evaluated and incorporated into designs included activated carbon and resin absorption; steam stripping; chemical oxidation by hydrolysis; ion exchange; ultrafiltration; metals precipitation; oil/water separation including dissolved air flotation; activated sludge, aerated lagoons, and rotating biological contractors; sand filtration; anaerobic digestion; wet air oxidation of sludge; and thermal treatment and land application of sludges.

OIL PRODUCTION WASTEWATER CONSULTING, COLOMBIA, OCCIDENTAL PETROLEUM

Mr. Cowart provided consulting services to an American oil company at their 200,000-barrel per day oil and gas extraction facility in northeast Colombia. Alternatives were evaluated for the control and treatment of 250 pounds of phenols contained in approximately 50 million gallons per day of produced water, which is discharged into a nearby surface water. Mr. Cowart evaluated chemical oxidation, microbial-assisted biological oxidation, and physical treatment technologies for the removal of phenols, hydrocarbons, and oil and grease in wastewater so that stringent toxicity-based receiving

water standards can be met. He also reviewed plant design and suggested operational modifications that would reduce the amount of contaminants that need treatment.

PESTICIDE WASTEWATER TREATMENT STUDY, NORTH CAROLINA, FOR THE US EPA, 1980-1982

For the US EPA Industrial Environmental Research Laboratory (IERL) at Research Triangle Park, North Carolina, Mr. Cowart served as project manager for a wastewater treatability study of pesticide wastewater using hydrolysis, chemical oxidation, and ultra-violet photolysis studies. As project manager for the IERL at Cincinnati, Ohio, he managed a study for the development of analytical methods of pesticides in wastewater.

WASTEWATER TREATMENT DESIGN, PESTICIDE FACILITY, NAPLES, FLORIDA

For the Collier Mosquito Control District, Mr. Cowart served as project manager for the design of oil/water separation and hydrolysis treatment facilities for spills and stormwater from a vehicular, fixed-, and rotary-winged aircraft RCRA-hazardous material pesticide storage, formulation, application, and maintenance facility.

EXPERT TESTIMONY, DEPOSITION AND LITIGATION SUPPORT

EXPERT DEPOSITION AND TESTIMONY FOR VAPOR INTRUSION AT A DIESEL SPILL IN MANDAN, NORTH DAKOTA

Mr. Cowart directed sampling of groundwater, soil vapor, soil, indoor air, and outdoor air in order to assess the potential human health impacts in indoor air located over this 3 million gallon diesel spill in the City of Mandan. On behalf of selected residents, Mr. Cowart has been deposed twice and testified in court as an expert concerning the potential for diesel-related contaminants in groundwater to have migrated through soil vapor into indoor air. Mr. Cowart was deposed January 22, 2004 in North Dakota Department of Health, et. al., Plaintiffs, and Schleicher Land Co., et. al., Deb Knudsen, et. al., and City of Mandan, Intervenors, vs. The Burlington Northern and Santa Fe Railway Company, Defendant, in District Court, County of Morgan, State of North Dakota South Central Judicial District, Civil Action No. 02-C-1174. Mr. Cowart was deposed September 14, 2004 in Schleicher Land Co., et. al., Deb Knudsen, et. al., and City of Mandan, Plaintiffs, vs. The Burlington Northern and Santa Fe Railway Company, Defendant, in District Court, County of Grand Forks, State of North Dakota Northeast Central Judicial District, Civil Action No. 04-C-157. Mr. Cowart testified September 23-24, 2004 in Schleicher Land Co., et. al., Deb Knudsen, et. al., and City of Mandan, Plaintiffs, vs. The Burlington Northern and Santa Fe Railway Company, Defendant, in District Court, County of Grand Forks, State of North Dakota Northeast Central Judicial District.

EXPERT DEPOSITION FOR VAPOR INTRUSION AT A PCE-CONTAMINATED GROUNDWATER PLUME, SECURITY, COLORADO.

On behalf of the plaintiffs, a group of residents living over a perchloroethylene (PCE) groundwater plume, Mr. Cowart has been deposed twice concerning the potential of PCE in groundwater to migrate through soil vapor and into indoor air. Mr. Cowart was deposed on February 26, 2003 in The United States District Court for the District of Colorado, Civil Action No. 02-RB-1188(OES), Susan Stalcup, Craig Lewis And Sharon Lewis, Plaintiffs, V. Schlage Lock Company, Ingersoll-Rand Company And Eagle-Picher Industries, Inc. Defendant. Mr. Cowart was deposed January 7, 2004 in The United States District Court for the District of Colorado, Jim Stulb, Trustee, Fountain Valley Environmental Remediation Trust, Plaintiff, Vs. Schlage Lock Company, Ingersoll-Rand Company, Eagle Picher Incorporated And Eagle Picher Technologies LLC, Defendants, Civil Action No. 03-RB-0002.

EXPERT TESTIMONY, MINING RECLAMATION

In Bettale v. Hartley, Mr. Cowart testified for the plaintiff in District Court, Clear Creek County, Colorado, concerning the time and cost for clean up of acid mine drainage at the Lincoln Lode and Donna Julia Gold Mining Claims.

EXPERT DEPOSITION AND TESTIMONY REGARDING PETROLEUM CONTAMINATION AND WASTEWATER TREATMENT.

In Environmental Recycling Systems vs. Nesbitt, Mr. Cowart was deposed and provided expert testimony for the plaintiff concerning petroleum contamination of soils and ground water, and wastewater treatment via ozonation/ultraviolet/photolysis systems, in El Paso County Court, Colorado.

EXPERT DEPOSITION, PESTICIDE FORMULATION, PACKAGING, AND WASTE MANAGEMENT PRACTICES

At the Thompson Hayward Agriculture and Nutrition CERCLA Facility in Fresno County, California for litigation filed in Wilmington, Delaware in North American Phillips Corp. vs. Aetna, Mr. Cowart was deposed for eight days as an expert for the plaintiff in pesticide formulation and packaging industry operations and waste management practices. The case was settled out of court.

EXPERT DEPOSITION AND TESTIMONY, ENVIRONMENTAL PRACTICES FOR ELECTROPLATING OPERATIONS

In City Bumper vs. Goettinger, Mr. Cowart was deposed and provided expert testimony for the defense in the area of assessment, treatment, and remediation of RCRA hazardous chromium wastes at an electroplating facility in Broward County, Florida.

EXPERT DEPOSITION AND TESTIMONY REGARDING ASSESSMENT AND REMEDIATION OF PETROLEUM CONTAMINATION FROM USTS

In Florida National Properties vs. Mobil Oil Corporation, Mr. Cowart was deposed and provided expert testimony in Broward County Court for the plaintiff in the area of petroleum contamination assessment and remediation from an UST facility in Coral Springs, Florida, which has been settled out of court.

EXPERT DEPOSITION AND TESTIMONY FOR ENVIRONMENTAL MANAGEMENT PRACTICES AT AUTO SALVAGE FACILITY

In State of Florida Department of Environmental Regulation vs. Alex Rodriquez and Safe Harbor Enterprises, he was deposed and provided expert testimony for the defense in the areas of solid waste, petroleum contamination of soil and ground water, asbestos contamination, and assessment and remediation, resulting in allowance of continued operation at an auto salvage facility in Key West, Florida.

EXPERT DEPOSITION AND TESTIMONY REGARDING ASSESSMENT AND REMEDIATION COSTS

In Safe Harbor Enterprises vs. U.S. Fidelity and Guarantee, Mr. Cowart was deposed and testified as an expert for the plaintiff, related to assessment and remediation costs, in Monroe County, Florida.

EXPERT DEPOSITION, MUNICIPAL SOLID WASTE

In Adler vs. L.A. Davis Stock Farms, Mr. Cowart was deposed as an expert witness for the defense in the area of municipal solid waste, which was settled out of court, in Miami, Florida.

LITIGATION SUPPORT FOR MUNICIPAL WASTE COMPOSTING

In City of Miami Beach and Fisher Island vs. Florida Department of Environmental Regulation, Mr. Cowart provided litigation support for the plaintiff in the area of composting of municipal solid waste at Virginia Key, Florida.

LITIGATION SUPPORT FOR AIRLINE OPERATIONS ENVIRONMENTAL PRACTICES

In Metropolitan Dade County vs. Eastern Air Lines and Pan American Airlines, Mr. Cowart provided litigation support for the plaintiffs in the areas of hazardous waste, industrial wastewater, petroleum contamination, soil/ground-water contamination, and assessment and remediation at Miami International Airport, resulting in an award of more than $50 million in damages to Dade County. An expedited investigation of 150 buildings was conducted, and conceptual designs were prepared for dig and haul, pump-and-treat, product recovery, and vapor extraction systems.

LITIGATION SUPPORT TO US EPA FOR POTW AND NPDES EFFLUENT LIMITATION GUIDELINES

In BASF Wyandotte, et. al. vs. Costle, Mr. Cowart provided litigation support to the U.S. Environmental Protection Agency (EPA) in the area of industrial wastewater treatment for the pesticide manufacturing and formulation industry, resulting in approval of POTW and NPDES Effluent Limitation Guidelines by the First Circuit Court of Appeals, Boston, Massachusetts.

LITIGATION SUPPORT FOR ALLEGED DAMAGES FROM PESTICIDE CONTAMINATION

In Kawamata Farms, Inc. and Stanley T. Tomono, et. al., vs. E.I. Du Pont De Nemours and Company, Inc., Mr. Cowart provided litigation support for the plaintiffs concerning remediation of the impacts in Hawaii on ornamental flowers and other crops due to alleged contamination from manufacturing and formulation of the pesticide Benlate. The case was settled out of court.

LITIGATION SUPPORT, RCRA LEAD SUBACETATE GENERATION AND DISPOSAL

In The Department of Justice vs. United States Sugar Corporation, Mr. Cowart provided litigation support to U.S. Sugar in the area of generation and disposal of lead subacetate hazardous wastes in defense of a $3.75 million penalty for violations of RCRA.

LITIGATION SUPPORT, FORMER PESTICIDE STORAGE FACILITY

Mr. Cowart provided litigation support to the lessee of a former pesticide storage facility in Greeley, Colorado. He provided affidavits in support of a lawsuit against a previous owner of the property, concerning pesticide residuals in the building and surrounding land.

LITIGATION SUPPORT, HENDRICKS MINING CO

Mr. Cowart provides wastewater treatment support to Hendricks Mining Co. (now Calais Resources) in Caribou, Colorado. For this gold and silver exploration company, the NPDES permit was

renegotiated with the Colorado Department of Public Health & Environment, including resolution of a Consent Order with fines and penalties.

LITIGATION SUPPORT FOR OPERATIONAL AND WASTE MANAGEMENT PRACTICES, FLARE MANUFACTURER

Mr. Cowart is providing litigation support for a complaint against Olin Chemicals and Standard Fusee, in Morgan Hill, California. Mr. Cowart is evaluating operational and waste management practices for the defense, in order to determine how perchlorate may have migrated into the groundwater and downgradient private and public drinking water supplies.

EMPLOYMENT HISTORY

Principal Engineer, WALSH Environmental Scientists and Engineers, Inc., Boulder, Colorado, 1993 to Present.

Principal Engineer, Environmental Resources Management - South, Inc., Miami, Florida, 1985 to 1993.

Senior Engineer, Environmental Science and Engineering, Gainesville and Miami, Florida, 1974 to 1985.

Graduate Student, Rochester Institute of Technology, New York and University of Florida, Florida, 1971 to 1974.

Captain, U.S. Army Signal Corps, Engineering and Management, 1967 to 1971.

PUBLICATIONS, PRESENTATIONS

Cowart, J. & Breyer, L. 2004. Attenuation Factors for Hydrocarbons Associated with a Diesel Spill. Vapor Intrusion Attenuation Workshop. 14th Annual West Coast Conference on Soils, Sediments, and Water. March 15-18, 2004, San Diego, California.

Cowart, J. & Kurtz, J. 2004. Measured Versus Model-Predicted Vapor Intrusion Attenuation at a Site in Littleton, Colorado. Vapor Intrusion Attenuation Workshop. 14th Annual West Coast Conference on Soils, Sediments, and Water. March 15-18, 2004, San Diego, California.

Cowart, James B. et. al. 2004. Burlington Mine Site Voluntary Cleanup: Innovative Design for Mine Site Reclamation. American Society of Civil Engineers-Colorado Section, 2004 Biennial Geotechnical Seminar.

Cowart, J.B. & Levin, M. 2004. 3-D Mine Mapping Drives Cleanup Design and Closure, Burlington Fluorspar Mine Site, Jamestown, Colorado. Tailings and Mine Waste '04. Balkema Publishers, London.

Cowart, J.B. & Milne, J. 2004. Remediation of 25 Million Gallons of Acidic Groundwater, Nacimiento Copper Mine Site, Cuba, New Mexico. Tailings and Mine Waste '04. Balkema Publishers, London.

Cowart, James B. et. al. 2004. Burlington Mine Site Voluntary Cleanup: An Ecologically-Based Approach to Mine Site Remediation. Newsletter of the Colorado Riparian Association, Volume 15, Number 2, Summer 2004.

Cowart, J. PE, A Barnard, CIH, CSP, L Breyer, CIH. "Risks to Indoor Air Quality from Volatile Organic Compounds in Groundwater." Proceedings of the 9th International

Conference on Indoor Air Quality and Climate, Monterey, California, June 30 - July 5, 2002.

Cowart, James B., et. al. 2000. Volatile Organic Compounds in Indoor Air from Ground Water Sources. 16th International Conference on Contaminated Soils and Water. Amherst, Massachusetts.

Cowart, James B., et. al. 2000. Design and Performance of Indoor Air VOC Mitigation Systems. 16th International Conference on Contaminated Soils and Water. Amherst, Massachusetts.

U.S. Environmental Protection Agency. 1983. Methods for Non-conventional Pesticide Analysis of Industrial and Municipal Wastewater. Washington, D.C. EPA 440/1-83/079c.

U.S. Environmental Protection Agency. 1982. Development Document for Effluent Limitations Guidelines for Expanded Best Practicable Control Technology, Best Conventional Pollutant Control Technology, Best Available Technology, New Source Performance Technology, and Pretreatment Technology in the Pesticide Chemicals Industry. Washington, D.C. EPA 440/1-82/079-b.

Cowart, J. & Jett, G. 1980. State of the Art: Wastewater Treatment in the Pesticide Industry. Water and Wastewater Equipment Manufacturers. Eighth Annual Industrial Pollution Conference. Houston, Texas.

U.S. Environmental Protection Agency. 1976. Development Document for Interim Final Effluent Limitations Guidelines for the Pesticides Chemicals Industry. Washington, D.C. EPA 440/1-75-060d.

PROFESSIONAL ASSOCIATIONS

National Society of Professional Engineers
Water Environment Federation
National Groundwater Association