Final Preliminary Assessment/Site Inspection Report

Additional and Uncharacterized Sites Operable Unit
Crab Orchard National Wildlife Refuge NPL Site
Marion, Illinois (Williamson County)

June 2003

This Final PA/SI Report is identical to the "Draft-Final" Report issued in September 2001.

VOLUME XIII

Appendices D through F

TABLE OF CONTENTS

VOLUME XIII

Appendix D
Interviews Conducted for Preliminary Assessment, AUS OU, Crab Orchard National Wildlife Refuge

Interviewee	Interview Date	Page Number
Richard Altekruse	07/14/1999	D-1 to D-4
Maynard Arnett	06/29/1999	D-5
Dupont Employees (1)	08/24/1999	D-6 to D-7
Barbara Kerley	06/30/1999	D-8 to D-9
Paul Moore	07/14/1999	D-10 to D-13
Rudy Olkoski	06/30/1999	D-14 to D-16
Harvey Pitt	07/14/1999	D-17 to D-21
Thomas Throgmorton	11/09/1999	D-22 to D-25
Sam Watson	06/30/1999	D-26 to D-27
Robert Andrew Wilkie	07/28/1999	D-28 to D-30
Frank Wilkie	07/28/1999	D-31 to D-34
Arthur Woodcock	11/01/1999	D-35 to D-37
Wayne Adams	03/23/2000	D-38 to D-41

(1) Dupont employees: Charlie Kershaw, Ralph Sloat, and Mark Vetter.

RICHARD ALTEKRUSE

Date of Interview: July 14, 1999
D.O.B. 11-15-17
SSN: 311-12-5229
Address: 725 Woodland Ave.
Herrin, IL 62948
(618) 942-4214
Education: Chemical Engineering from Rose-Hulman Institute, in Terra Haute, Indiana, in 1939
Interviewers: Mark Wallace, a paralegal with the Department of Justice, and Melissa Moore of URS Greiner Woodward-Clyde (URSGWC)

Mr. Altekruse began working for Liberty Powder at Wabash River Ordnance Plant in Newport, Indiana as a research engineer. Olin operated this ordnance plant. Liberty Powder was Olin. He worked there from approximately 1948 or 1949 (not sure exactly what year) until 1956 when he left to go to work for Olin in East Alton, Illinois as a chemical engineer. He worked there for one year, when he moved down to Marion, Illinois in 1957, to work for Olin as a process development engineer. At this time he was working in what was called the "dynamite area" or Area 11 as he confirmed on a map. He worked in building II-1-17 (Pilot Propellant Plant- later Building 85), at the development of gas generators and solid propellants. He said that this was the only thing that this building was used for at this time. D.? L. Saine was his supervisor at this time. The Pilot Propellant Plant ran tests in what was later called building 86 during Commercial Solvents operations. Mr. Altekruse said that one of his co-workers was blown up during one of these such tests that failed. The solid propellant used at the pilot propellant plant was composed of AN (approximately 70%), synthetic rubber, carbon black, and ammonium oxalate. Mr. Altekruse worked in this building until they started manufacturing jet starter cartridges there in ????. He said that Building 48 was used as storage for the jet starter cartridges. He became a project manager at this time and he moved to the D & P areas and he still reported to D.? L. Saine who he believes was plant manager at this time. His duties as project manager included preparing bids and working as a technical contact between Olin and their customers. He worked in P-1-11 (office building). He worked as a project manager until he retired in 1982. During the years, he also did some research and development work for solid propellants and gas generators in the laboratory in the P area. At this time, he reported to Jack Hagan who he believes was the manager of solid propellant operations.

Mr. Altekruse repeatedly stated that all hazardous waste was open-burned prior to 1970 with USFWS supervision and burning permits from the IEPA. However, he also later stated that Olin open-burned sometimes three times/week and that USFWS was probably not present at all burnings. He also repeatedly stated that he did not know where any open burning was done, and he had no knowledge of disposal of wastes until the incinerator was built at the Energy Burning Grounds in 1970.

In 1970, new laws prevented Olin from getting a burning permit from IEPA, so he was given the job of either getting a burn permit, or finding another way to dispose of the wastes. At this point, Olin hired Howard Heskus (sp?) who was a professor at SIU, to help Mr. Altekruse develop a way to dispose of the hazardous materials. They both developed an incinerator to dispose of the hazardous waste at Energy. The incinerator didn't meet the carbon dioxide emission standards set by IEPA, so the incinerator then sat there for two years while open burning was done in a strip pit located in a strip mine waste area nearby. The incinerator (Energy Burning Grounds) was located near the town of Energy. There was a road that went north of the test stand, across the pond and east along the strip pit where the wastes were being open-burned. The incinerator was in that area. Not sure what road this is. This property did not belong to the USFWS.

After the incinerator was developed, he was made the compliance officer for EPA and he handled environmental affairs. He said that at this time, Olin trucks picked up the wastes and transported the wastes to the Energy Burning Grounds. No other open burning was taking place. He also said that there were small waste buildings in each area, where the trucks would pick up the wastes.

Mr. Altekruse was asked about a letter from him to Wisely, which was supposed to list all of the known burning areas. Mr. Altekruse confirmed that he wrote the letter, but said that he had no knowledge of where the burning grounds were. He got the information primarily from Tom Miller.

Mr. Altekruse was also asked about a memo about potentially sampling Area D and Energy burning grounds. Mr. Altekruse did not recommend doing this because he did not want to alert the USFWS. To his knowledge, these areas were not sampled while he was working at the plant. He also said that any sampling should have been coordinated through him at the request of Tom Wisely. He received no such requests. He did not know if anyone else would have sampled anywhere in the plant.

Mr. Altekruse was asked about an Ogden Road burning incident that occurred in 1970, when a truck driver was killed. He had no direct knowledge of this event, but what he heard was that the truck driver lit the fuse probably by throwing a match out of his truck and he did not get behind the concrete barricade before doing this. Then the material exploded instead of burning as it usually did and the man was killed. According to Mr. Altekruse (who has no direct knowledge of burning areas), about one out of every thousand detonations in these areas would explode instead of burn like they usually did. This incident was one of the explosions.

Mr. Altekruse was asked about Wilkie. Wilkie ran a plating plant near Old Route 13 and Route 148. He also had a machine shop at Energy. He did some tooling for Olin. He bought obsolete equipment from Olin and refurbished it to resell it. According to Ms. McGuffy, phosphatizing of metal parts for Olin was done by Wilkie. He assumes that it would have been done at the old plating plant of Wilkie's. Olin was doing some metal fabrication in the F area and somewhere around Areas 7 or 8 (Mr. Paul Moore later confirmed that metal fabrication was being done in Area 7). Mr. Altekruse believed that medium caliber ammo was being manufactured in Area F (manufacture of projectiles and casings). Mr. Altekruse did not know much else about Olin's metal business.

According to Mr. Altekruse, there was not much cleaning of equipment with solvents anywhere except in the F area. Mr. Paul Moore had a different opinion on this point. Mr. Altekruse was asked about MOCA. He said that it was a curing agent for polyurethane (synthetic rubber). He said that the MOCA was mixed with polyurethane to get a rubbery plastic and that approximately 4% of this mixture was MOCA and the rest was polyurethane. This rubbery plastic mixture was used as a kind of an adhesive between the propellant and the case. According to Mr. Altekruse, MOCA was used in the D and P areas – he believed in buildings P-1-1 or P-1-3 and in buildings D-1-6 (primarily in this building), D-1-7 and D-1-8.

Mr. Altekruse claimed to know nothing about the sumps and how they were cleaned out. He said that the water was probably pumped onto the ground surface after it was filtered, prior to 1977 (year when SOP was written).

Mr. Altekruse was asked about the razing of building B-2-8. He said that the building was burned down (he believes it was burned) with approval from the USFWS. He said that Universal Match was in the building before Olin leased the property. He gave the impression that Olin did not use the building.

Mr. Altekruse was asked about metal working in the P area. He said that there was some minor metal working in this area – primarily tooling and some metal machining like cutting open gas generators to get the propellant out. No metal production in this area.

Mr. Altekruse was asked about HMX, mercury, n-nitrodimethlyamine, lead, magnesium and phthalates detected in various media in different areas of the P area. He saw no reason for any of these compounds being detected specifically in the P area. He said that magnesium flares were made in the I area (Area 9), and that this could be the reason for magnesium. He saw no reason for HMX to be present anywhere because he said that it was used as a raw material for RDX production and to his knowledge, RDX was not made by Olin at the Refuge.

Mr. Altekruse was asked about DU use at the site (specifically in the P area) and where the wastes would have been taken. He said that he was not familiar with DU operations at Olin. He referred us to John Koropchak who was responsible for disposal of DU and waste. He thinks that the DU was packaged up in barrels and shipped to South Carolina. Mr. Koropchak is believed to live in Royalton, Illinois. There was a lot of x-ray work done at plant.

Mr. Altekruse was asked about MK-24 mix houses. He was not familiar with the term MK-24, but he believed that buildings P-1-1 and P-1-3 contained solid propellant mixing operations.

Mr. Altekruse was asked about the circular pie-shaped object that was described to us by Mr. Rudy Olkoski. He said that it looked like an end cap for parachute flares but he was not sure. He knew nothing about lead being in it, or about any other operations which may have used lead. He said that lead objects may have been burned on the Energy burning ground??? Lead may have been used in experimental solid propellant???

Mr. Altekruse was asked about Areas 11 and 12 (Dynamite area). He was not familiar with much in these two areas. He said that the seven storage ponds just north of Area 12 were used for storage of double base propellant powder that was stored under water so that it didn't degrade. Double based propellant powder was also used to make blasting explosive when ground and mixed with AN.

Mr. Altekruse said that Olin had storage igloos in Area 13, maybe one in Area 10 and he was not sure if they had any storage in Area 6.

DUPONT EMPLOYEES:
CHARLIE KERSHAW
RALPH SLOAT
MARK VETTER
Date of Interview: August 24, 1999
Interviewer: Michael Hutcheson URS Greiner Woodward-Clyde (URSGWC)

Subject: Lead Azide and Lead Styphnate Production, Shipping, and End-use.

Shipping
Lead Azide was shipped in a wet pack and was a wet mix. The shipping container was a metal drum containing multiple inner packages. The packages contained water alcohol solutions (prevent freezing), sawdust, and the packaged lead azide. The lead azide itself therefore was wet when removed from the shipping package. Lead azide was put into the shipping container wet and was normally a fine crystalline powder material (like flour) with an off white color. Upon removal from the shipping package the water alcohol mix would very likely contain lead in solution.

The military standard for the packaging of lead azide is Mil L-3055B for lead azide.
The military specification for lead styphnate is Mil-L-757.

Production
Olin manufactured lead azide for a short time but not in Marion, IL. Their manufacturing took place in East Alton. Subsequently they were an end user of lead azide

CSC, US Powder, Trojan Powder are not known to have produced lead azide or lead styphnate. Production requires the use of precipitation facilities and holding tanks.

End Use
When the inner packages of lead azide were removed for use they would require the decanting of the remaining liquid from the product itself. This was done in a coffee filter/filter cloth like material commonly called a diaper or possibly a napkin (Note: Napkin is a term used by Sherwin Williams Defense Corp. at IOP). After removal from packaging the lead azide would require drying. This was normally done in a hot house (drying house). The lead azide would be placed into a pan and the pan placed into the drying house for 1 or 2 weeks. It was at this time that lead azide would form a crust on the surface. Removal or the breaking down of the crust was done during the screening phase. The lead azide then could be loaded and pressed in its final application.

Normally priming mixes used a dry mix with lead azide. Wet mixes which were used normally used water as a solvent.

MAYNARD ARNETT

Date of Interview: June 29, 1999
D.O.B.
SSN:
Address: 1604 East Cleveland
West Frankfort, Illinois
(618) 937-1390
Education: Graduated High School in 1955
Interviewers: Mark Wallace, a paralegal with the Department of Justice, and Mary Hagerty of URS Greiner Woodward-Clyde (URSGWC)

Mr. Arnett graduated from high school in 1955 and was employed by Olin from 1957 to about 1973 or 1974. He worked in the pilot propellant plant in Area 11 from about 1957 to 1959. He thought the buildings that were associated with the pilot propellant plant may have been Buildings 69 and 23, but he was uncertain (he indicated these on the Olin "Plant Map", Drawing D999, with revisions through 5-29-63). He said that at the time he worked as an operator on building an 8,000-lb propellant charge for the Nike Zeus, using a continuous mixing process. He remembers that the propellant contained nitroglycerin, and that he had "nitro headaches" while he worked with it.

From 1960 to about 1965 he worked as a QC foreman in the I Area (Area 9) in the production of 80 MM (Army) and 61 MM (Marine) illumination flares. He recalled that one other, much larger, illumination flare was manufactured there. His supervisor was John Atwood, QC Manager.

From about 1968 to 1970, he worked as a facility engineer, doing primarily maintenance work, and some construction off the Refuge.

He was employed in the P Area (Area 2P) [when--?] x-raying gas generator propellant in Building P-1-3. He recalled placing buckets of explosive materials on the ramp at the east end of P-1-3. This material was then picked up and taken to the burning ground. He did not know the location of any of the burning grounds.

DUPONT EMPLOYEES:
CHARLIE KERSHAW
RALPH SLOAT
MARK VETTER

Big Inch Caps were ½ inch in diameter and 1 inch long and used for the detonation of sticks of dynamite. They were used with a cord fuze and contained a combination of lead styphnate and lead azide. Manufacture of Big Inch Caps would consist of what is commonly referred to as a loading and pressing operation. The primary explosives would be shipped in, dried, screened and then loaded and pressed into the caps.

During the destruction via incineration or "the shooting off" of lead azide "lead goes everywhere". Some will turn to a metallic state in the form of beads, while some will vaporize and become airborne. Lead has been identified at incineration sites at approximately 100 ft. down-wind from the location of the burn.

BARBARA KERLEY

Date of Interview: June 30, 1999
D.O.B. 11-27-57
SSN:
Address: 14385 Greenbriar Road
Carterville, Illinois
(618) 985-6915

Education: High School
Interviewers: Mark Wallace, a paralegal with the Department of Justice, and Mary Hagerty of URS Greiner Woodward-Clyde (URSGWC)

Ms. Kerley worked as a "brusher" at the American Fiberlite Plant (Area 8) from 1977 to 1978. She reported that American Fiberlite manufactured fiberglass canoes and "whitewaters" (based on her description these appear to be similar to kayaks). The boats were made by spraying fiberglass inside a mold. The work on a single boat was done inside a stall, with three workers assigned. One worker (the "chopper") sprayed on the fiberglass using a device that Ms. Kerley said was similar to a hand sprayer used in a self-service car wash. The other two workers (the brushers) smoothed down the fiberglass with brushes as it was sprayed on. They wore no protective clothing. To remove accumulated fiberglass from their hands and arms, they occasionally dipped them in open buckets of a liquid that Ms. Kerley described as feeling very cold and smelling of alcohol. She said it "took the fiberglass right off" and it "really made your fingernails grow."

Another job brushers had was stripping rubber from inside boats. Ms. Kerley did not know how the rubber got inside the boat. The boat would be placed on the floor, and the rubber stripped out using razor blades. Ms. Kerley reported that toluene was used to soften the rubber to make it easier to strip, and that a toluene would be poured inside the boat to a depth of a few inches of during the operation. The stripped rubber would also accumulate in the bottom of the boat. She said that someone was always stripping. She said men removed the finished boats and she did not know where they were taken or what became of the waste inside the boats. She said that buckets of waste solvent were dumped outside on the ground, but she did not know where. There was another area called "patch and repair" but Ms. Kerley never worked there.

She did not know what kinds of chemicals were used, but that there were "lots and lots" of barrels of chemicals with the "yellow skulls on them."

Ms. Kerley could not remember anything about the location of the building she worked in, except that she crossed the lake to get there and that it was just past Diagraph Bradley. She not recognize buildings on a photograph.

Larry Piatsu (spelling-?) used to move barrels of chemicals on pallets using a forklift and he would get them the chemicals they needed.

PAUL MOORE

Date of Interview: July 14, 1999
D.O.B. 6-9-34
SSN: 320-30-7842
Address: 12041 Stiritz Road
West Frankfurt, IL 62896
(618) 983-6013
Education: U.S. Army, 1956 through 1958
Interviewers: Mark Wallace, a paralegal with the Department of Justice, and Melissa Moore of URS Greiner Woodward-Clyde (URSGWC)

Mr. Moore began working at Olin in Marion, Illinois in 1959, in the mechanical engineering department. He was assembling gas generators. He worked with the following: SE? or SC? 6503, F105, Polaris Missile, Minuteman, Sub Rock, Jet Starters, and Bag Inflation (for airplanes). He worked for two years on gas generators and then he went into the quality aspect doing calibration and inspection. This included making sure that the gauges met government standards. He worked in areas B, D, F, and P (all in Area 2) and in area I (Area 9). He didn't do anything with waste disposal. He also went to the test range (in Energy – near airport?), where they destroyed gas generators, solid propellant grains, and various squibs. In 1960, he worked at the old pilot plant (somewhere in the vicinity of Building 56 in Area 11), where they were casting MC1 generators. He worked there for approximately 6 months in the Group II Research and Development group, making different AN mixtures for gas generators, and solid propellant mixtures. He said that Jet Starters were also made in this area using nitroglycerin and ball powder.

Mr. Moore was the United Steel Workers Union 15009A president for 24 years – from 1974 through 1998. It was his job at the plant to enforce contracts between Olin and the union.

Mr. Moore was not familiar with the location of any of the open-burning grounds. He said that John Miller was the overseer of the burning grounds and that he had retired.

Mr. Moore was then asked to describe some of the operations that went on at the various Olin areas.

AREA 12

He referred to this area as the Old Pilot Plant. He may have had this confused with Area 11.

AREA 7

Metal fabrication was done in this area. According to Mr. Moore, the 81 Mortar and 105mm rounds were manufactured in this area. Mr. Moore did not know of any plating operations done by Olin. As far as he knew, only Wilkie did the plating for Olin. Mr. Moore mentioned that a Mr. Floyd Hogg was a machinist who worked for both Wilkie and Olin. Mr. Hogg is believed to be working in a boat place in Blairsville.

AREA 2P (P Area)

Early on this was a research and development area, they assembled gas generators, there was a laboratory that did chemical analysis on propellant to see if it met specs, there was a welding lab, a machine shop, an inspection lab, and a test range.
Building P-1-10 was the test range building (a firing range for gas generators).
Buildings P-1-8 and P-1-9 were used for chemical storage. There was a lot of stuff stored in here including the following: epalm, DTA, epoxy mixes, MOCA, and adaprene. These two buildings may have contained solvents, but this was not the primary solvent storage area for the P area.

Building P-1-3 also had a machine shop, a x-ray lab, and a welding area in the eastern portion of the building, and a quality lab in the center of the building and the western part of the building had assembly of gas generators. There were also a couple of acid baths in P-1-3 that contained diluted acid that was used to take off the impurities from stainless steel. MOCA was also used in this building.

Building P-1-1 contained the chemical lab and offices.

AREA 2B (B Area)

The B area had all mixes. Building B-2-13 was the worst area. Every Friday afternoon they would shut down operations at noon and hose out the buildings, letting all of the rinse water flow out onto the ground outside. The following chemicals were mixed in this building: carbon black, Monastral (sp?) blue, AN, sodium nitrate, bismuth, and guanidine nitrate.

Building B-2-8 was acquired by Olin from Central Technologies?? And it was burned down with the permission of the USFWS. According to Mr. Moore, the fire was very colorful, indicating the presence of numerous chemicals in the building.

Building B-2-1 had shipping and receiving and a calibration lab in this building from approximately 1970 through 1978. According to Mr. Moore, in this building from south to north there was formerly an administration area, a warehouse, chemical storage, law manufacturing, a machine shop, some metal work (in back of building), and possibly a former IOP auto shop (on far west side). Mr. Moore said that there was a lift in this building so he speculated that there was formerly an IOP auto shop here, however, a lift was not included in the original floor plans for the building. Mr. Moore also identified a solvent storage building located along the north side of the building approximately in the center of the building, which contained small quantities of solvents. There were demilitarization operations in this building later.

Building B-2-13 was used for storage for chemicals and solvents also, according to Mr. Moore. Mr. Moore was unsure of the exact location of this building.

AREA 2F (F Area)

The F area was used for metal fabrication. It was closed down in the late 1970's. Both 105 mm rounds and 81 Mortars were manufactured in this area. Buildings F-2-1 and F-2-2 were used for storage of metal fabrication materials at that time.

Currently gas generators are manufactured in this area in buildings F-2-5 and F-2-10. In the early 1990's (approximately 1991 through 1993) testing and assembly of air bags for the Japanese happened in this area. Sodium azide was used in this process.

AREA 2D (D Area)

Building D-1-6 was used to manufacture jet starters. There were ovens present in building used to heat and assemble. This building was later used for demilitarization operations in the 1990s. Demilitarization operations include taking obsolete ammo from the army and salvaging what they can from it.

Building D-1-7 had a jet starter operation in the back including assembly. MXU 4AA. This building was later used for demilitarization operations in the 1990s.

Building D-1-8 was used for lance missile work. There were two presses that pressed grains. Raw AN-type propellant was taken into this building to be machined down to size. They also did *burn-face work???* in this building. This building was later used for demilitarization operations in the 1990s.

Building D-1-10 was used to manufacture the lance missile. There was ball powder and nitroglycerin in 55 gallon drums located in this building.

Building D-1-11 was used for ignitor components for missile systems and ammo. Powders and solvents were used in this building. Air bags were also manufactured in this building sometime during the 1990s.

Building D-1-25 was used to manufacture ignitor mixes -- powder mix.

AREA 9 (I Area)

General note: There is much solvent storage in the I area currently.

Building I-1-12 was used for manufacturing ammo. They do depleted uranium (DU) work there now.

Building I-1-20 was used for the manufacture of nose cones for 20 and 25 mm ammo. During the Vietnam war, they manufactured 81mm Mortar rounds, LUU10B flares, then later they manufactured 20, 25, 30 and 40mm ammo. There was some lead involved in making the 40mm. Lead buckshot was used for this, however according to Mr. Moore, Olin bought the shot – they did not make it.

Building I-1-23 was closed because of PCB contamination. Historically, they did phalanx round work with a DU penetrator?. Military munitions are done there now. Mr. Moore reported that the DU at the test range was cleaned up, however he did not know if the DU was cleaned up at building I-1-23. He also reported that there was a lot of oil dumped at this building (I'm not sure what kind.).

GENERAL

Solvent storage was usually on the back docks at Olin. Solvents were historically dumped out doors and down sinks according to Mr. Moore. Historically most buildings were cleaned by hosing out the buildings and letting the rinse water drain out the doorways and through the floor drains.

Mr. Moore aided in cleaning out one sump in 1961 (location unknown), which contained nitroglycerin and ball powder. They dumped the liquid out the door onto the ground surface and the bulk material was packaged up and sent out (where???).

Mr. Moore was asked about lead use at Olin, and he said that he was not familiar with the lead object that Mr. Olkoski described, however, he did mention something about lead weights (10 pound weights) which were used by John Miller in the P area. He was not sure what they were used for.

RUDY LEON OKOLSKI

Date of Interview: June 30, 1999
D.O.B. December 3, 1939
SSN: 323-32-1711
Address:
Education: 3 ½ years liberal arts at Southern Illinois University – Major in Geography, Minor in Math
Interviewers: Mark Wallace, a paralegal with the Department of Justice, and Mary Hagerty of URS Greiner Woodward-Clyde (URSGWC)

Background
Recently filed an EEOC claim against Olin. Daniel Limi, EEOC Case Manager. EEOC charge was not clear but believe his claim is an age discrimination claim. Mr. Olkoski stated that he has been in the calibration department for over 30 years and was removed from the department because he did not pass a recent mandatory test.

Started at Olin 2/17/64 in Quality Control Department (Testing—firing starter cartridges) as an Operator A in P Area until 1968. Supervisor was Kirk Wolf and the division manager was Tom Snow.

1968 went to the Calibration Department where Olin made 105 and 81mm flashes. He does not remember his supervisor's name.

CONWR Area Descriptions

2P AREA
The P Area was used for R&D. Production occurred in the D area.

In the P Area Jet Starters and subrocs (guidance for missiles) were made. Jet Starters were made with single-base ammonium nitrate (AN) propellant that also contained carbon black, sodium barbiturate, and c-rubber. Also, propellants were manufactured which were used for roll control (RC) and thrust vector control (TVC) for Minute Man 2 missiles.

P-1-10 was used for testing products. In 1975, all of the testing was transferred to the Energy site, located off the Refuge. P-1-11 had a lab upstairs.

Recalls how employees scattered propellant debris on the lawn between P-1-9 and P-1-10. Early 70's recalls the maintenance crew cutting the grass in the area and the ground caught fire due to the propellant particles that were scattered on the ground. **Propellants were made in D area.**

2D AREA

Made propellants in the D Area. Propellants were used for: gas generators, sub rocs, Minuteman, smoke pot (device made for downed pilots to release red smoke when they were in duress. Smoke pot would even burn in water), sidewinder. N28 propellant was used from the early 70s till the present. N28 contained nitrocellulose, triethylcitrit, DNPE (dinitrophenolyethanol), TDA (toluene diamine) and a yellow powder that Olkolski thought was a carcinogen. Most of the solid propellant was made in B-2-13. Magnesium powder, stearates (for binders) and aluminum powder was also used in propellants.

- Caps and boosters were made in D-1-43, D-1-44, D-1-47. These blew up 2 or three times. The control room was in D-1-25.
- Starter cartridges made in D-1-6.
- Parts for gas generators made in D-1-7 and D-1-8.
- Cast for Lance propellants (double-based, NG; slurry poured into tubes) made in D-1-43.
- All waste from the D Area was burned at the test range (off refuge).

F Area

F-2-2 was used for manufacturing howitzer rounds. The press and dip operation for the howitzer rounds was in Area 7. Machining was done in F-2-2, after the rounds were "dipped" at Area 7. Machine cuttings were put in barrels, about 4 ft in diameter and 3 ft tall. For awhile they were disposed of and then Olin started recycling them. Methylene chloride or TCE was used for cleaning in this area.

Solvent Use

- TCE was the universal cleaning agent. It was dropped off everywhere in 55-gallon drums. (Time period 1964 to 1980).
- MEK was used in manufacturing. It was also used in the lab, in gallon jugs.
- Hexane was stored in a 500 gallon "sphere" behind B-2-13. It is still in use. It was used to "gel down" c-rubber for use as a binder.
- Ethyl acetate and acetone were used.
- Lots of methylene chloride was used in mixing. It was delivered in 55 gallon drums.

AREA 4 - Wilkie

Recalls seeing Mr. Wilkie all over the Refuge and indicated he was not a legitimate businessman. Also states that Mr. Jim Redden, Plant Manager, and Wilkie had some underhand deal. He recalls an incident when Redden gave Wilkie a lot of equipment out of a building in Area 2F. Wilkie cleaned the material and sold it back to Olin. Practices such as these were probably common according to the witness.

An example of Redden's character is he had two houses built using Olin employees, working from Olin's payroll.

Olin sent gas generators to Wilkie to be plated in Area 4.

Area 4 landfill (Fire Station Landfill)

Starter cartridges, rubber casings, and metal was taken (via Olin trucks) to the Area 4 landfill.

Energy received the explosive waste and Area 4 received the non-explosive waste (all other waste not identified as explosive). Spent starter cartridges (after testing) and other similar waste was put in barrels and picked up by Olin trucks. At the time Okolski was testing, they were testing and disposing of about 1,000 starter cartridges per month. The outside part of the cartridge was a metal rounded cup-shaped shell made of a material similar to "tin" cans, which could be crushed by hand. This shell was about 8 inches tall and 8 inches in diameter. Each cartridge had a screen on the open end made of similar material, and about 3/8 inch thick. There was rubber inside the outer cartridge shell. Olin shipped about 300,000 of these each month.

AREA 6 & 13 Storage Areas

Stored RDX, Scrap, and a lot of propellants in storage areas 6 & 13. RDX was stored in thick cardboard containers, about 4 feet tall and 2 ½ feet in diameter. The boxes were stored on skids. Okolski remembers sampling and testing the RDX for wax content. It was in powder form.

AREA 7

F-2-5 was actually located in Area 7 105 Howitzer was machine pressed then dipped in an acid vat then phosphatized. Then the product went back to the F Area to be machined.

AREA 9 (I AREA)

Witness knows the area was used for Metal Fabricating 105 mm.

Cutting Oil/Scrap from the I Area was dumped in barrels and held for pick-up???

Miscellaneous Information

Olin made a lot of metal "wheels" that were about 8 inches in diameter and 2 inches thick. The metal wheel-shaped part was made of aluminum, and the pie shaped spaces between the 6 or so spokes of the wheels were filled with lead that was melted and poured in. The lead was bought in 100-pound bars from Doe Run in Kentucky. Okolski was not sure of the use.

Also provided us with another current Olin employee, Paul Moore (ph # 618-986-6013), who has been employed by Olin for the past 39 years and actually worked in Areas 11 and 12. Witness indicated that Mr. Moore was the union president and has a vast knowledge of the history and production of Olin at the Refuge.

HARVEY PITT

Date of Interview: June 29, 1999
D.O.B.
SSN:
Address: 522 Orchard Lane
DuQuoin, Illinois
(618) 542-3562
Education: B.S. Biology, M.S. in ???
Interviewers: Mark Wallace, a paralegal with the Department of Justice, and Mary Hagerty of URS Greiner Woodward-Clyde (URSGWC)

Mr. Pitt answered the following questions that had been prepared by URSGWCFS.

Answers to Questions for Harvey Pitt

1. In your deposition you mentioned a burn pad, which was northwest of building D-1-11, however when you pointed it out on the map you placed the pad in the area of building D-1-1 which is at the opposite side of the D-area facility. Which building was it nearby and could you point it out on a detailed map (Using an Army facility map)? If this was a former IOP building (meaning the pad itself) then can you identify the former building number of the burn pad?

When asked to located Building D-1-11 on Exhibit 5 in his deposition, Pitt marked what was actually Building D-1-4. (This building number apparently did not change over time—it is D-1-4, Tetryl Pelleting Building in IOP drawings, and is still D-1-4 on Olin drawings used in correspondence dated 1977.) At the same time that he marked the exhibit (during the deposition), he said he synthesized copper chloral tetrazol in that building. In the interview, when handed an Olin drawing included in a 1977 memo, he identified Building D-1-4 as the building where Universal synthesized copper chloral tetrazol. Separately, in the interview, he identified a general area (with no building pad) northwest of D-1-11 as a burn pad for smoke candles. In the interview, he identified Building D-1-1 as a burn pad for wastes from Buildings D-1-6 through D-1-8, and Buildings D-1-3 and D-1-2 as burn pads for "various primary high explosives and exotics." This also conflicts with his deposition. Also, Buildings D-1-1, D-1-2, and D-1-3 were probably still buildings during Universal's time, and not pads.

2. You also identified a burn pad directly west of the tetryl house, do you remember the building number of the tetryl house(using the Army facility map)? If the answer is B-2-8 then was the burn pad you mentioned west of the tetryl house formerly B-2-9 (looking at map)? If the answer is not B-2-9 then where was the burn pad?

In his interview, he identified the burn area as directly west of the tetryl house. He did not associate it with a building pad. He said he visited the site with the Civil Investigators. He said it was used to burn wastes from Buildings B-2-1, B-2-2, and B-2-6.

3. One more burn pad you referred to in your previous deposition was east of building D-1-6, however when you marked the buildings on one of the exhibits you marked building D-1-6 on the east side of the D-1-6, D-1-7, D-1-8, three building complex. In actuality, this building is D-1-8. Was the burn pad east of D-1-8? Or is it west of D-1-6? Or is it east of D-1-6 and in between D-1-6 and D-1-7?

See answer to Question No. 1.

[Note: It was evident during the interview that Mr. Pitt was confused about building locations and burn pad locations. Suggest a second field check and close coordination with Entech on aerial interpretation.]

4. In area F you mentioned that there was either a diesel fuel or fuel oil spill. Do you remember specifically what the type of fuel was? What kind of tank was being filled when the overflow happened and where was the tank located (mark on a map)?

Mr. Pitt believed that it was fuel oil. Was not able to mark on map. Noted that tank was on the "back side of the office building."

5. What buildings were used in area P for the R&D operations for the gas generators? What were the solvents used in the development? What were the major waste streams as far as chemicals?

He gave conflicting answers for this, including P-1-1, P-1-3, D-1-6 to D-1-8. No answer for the rest.

6. In your deposition you said you remembered discarding TCE into the sewer drains during the metal fabrication operations in building F-2-2. At any time do you remember any spills, or dumping of TCE into the surrounding area?

No.

7. Can you pinpoint the areas that you witnessed the Army disposing of pancake mines and/or any other ordinance in the area by Hampton Cemetery using an aerial photo of the area? Do you remember how deep the pits were?

No. No.

8. During your tenure with Universal Match, what was the standard method of cleanup of the buildings being used for explosive manufacture. What solvents were used? Was anything allowed to leave the process buildings uncontrolled in solvent runoff or floor sweepings?

Isoproponal. It was dumped in 30 gallon drums and taken to the burn area.

9. Copper Chloral Tetrazol is not listed in the CRC Handbook of Chemistry and Physics nor is it in the Army's technical manual on military explosives, how is this chemical synthesized? How much of this chemical or its chemical predecessors were used or produced at the D area?

It was made with copper salt (particular salt not recalled). Process was done in a mineral oil bath. Maybe about 5,000 grams total was manufactured. There was a shallow ditch SW of D-1-4 where washwater was drained.

10. What kind of binding agents did UM use in the products it produced during its tenure at CONWR?

Linseed oil, isopropanol.

11. What kind of chemicals did UM use as color intensifiers in its pyrotechnic products?

Anthraquinone, cadmium yellow—in R&D only. Production did not include color.

12. In what buildings was acetone, TCE, MEK, IPA, and toluene used?

TCE was used by Olin in the F area manufacture of the 105 howitzer rounds. MEK was used by Universal in the D area in press operations (loading—D-1-7) and in slurries. Toluene was used by Universal in press operations (D-1-7), and in R&D. Toluene was also used to clean up TNT (Universal used but did not manufacture TNT). IPA was used in milling lead styphnate (D-1-36) and in slurries. Mr. Pitt thought acetone and MEK were the same thing.

13. Were propellants loaded into products in the D area by UM? Which ones?

Not that he recalled.

14. Did UM do any building at in the D area or any other area they were leasing at the Refuge?

Temporary shacks for drying candles. They did add onto existing structures.

Other information:

Universal manufactured M112 and M123 photoflash pyrotechnics in D-1-6 (blending & assembly), D-1-7 (loading & assembly), and D-1-8 (assembly) in the late 50s and early 60s. White smoke markers were made in the same area from about 1954 to about 1957.

He reported that D-1-8 was used by Universal for milling lead styphnate and lead azide (bottom floor; with R&D on top floor). In his deposition he said it was D-1-36, same description. (D-1-36 seems to fit better). He said that they generated about a pound per day of waste from the milling, which was put into flip top cans with water & diesel and then burned at a pad.

He reported that Universal used RDX in the D area as a booster in the fuze train.

He reported that RDX was stored in drums in Area 7 in an alcohol/water slurry.

He reported that Universal's pyrotechnic fuses used "red lead" and boron.

He reported that barytol (TNT + barium) was manufactured by Universal in D-1-4. High explosives were manufactured in D-1-2, D-1-3, and D-1-4. (Elsewhere he said these areas were burn pads; maybe he meant manufacturing, with a burn pad nearby.)

He reported that Olin used D-1-43, D-1-44, and D-1-47 for blending propellants for jet starters. Solvents and perchlorates were used. The berms at these locations where not there when Universal was there.

Olin's SPO manufacturing area was P-1-1. They built the big gas generators. They used a proprietary mix that was maybe 30% perchlorates. The made the Minuteman TVC and RC. Hexane was used in the process.

For Olin's 105 Howitzer operation, F-2-2 was the major operations building. F-2-1 was used for clean storage. The Howitzer operation did not include explosives at the Refuge. They were loaded elsewhere. The rounds were first phosphatized by R.A. Wilkie (Pitt said this happened in Area 4; others have said it was done in Area 7.) The phosphatizing might have included an acid pre bath. The phosphatizing solution contained phosphoric acid and probably potassium dichromate. The rounds were then brought on pallets to an area outside and south of F-2-2. Machining was done in F-2-2. The process involved using cutting oils which Pitt thought may have contained PCBs. These were stored at the south of F-2-2. Sometimes 100 drums would accumulate. TCE was used for degreasing.

THOMAS J. THROGMORTON

Date of Interview: November 9, 1999
SSN: 317-18-0714
DOB: 11-4-1923
Address: 395 S. Wolf Creek Road
Carbondale, IL 62901
(618) 964-1811
Interviewers: Mark Wallace (Dept. of Justice) and Mike Hutcheson (URS Corp)

Professional History

Dec. 1941 to April 1943: Employed by Sherwin Williams Defense Corp. (SWDC) in the transportation department as a driver.
April 1943 to 1945: Drafted and Served in the Army Air Corp. flying P40s and P47s.
1946 to 1950: Attended College at SIU, Carbondale earning Bachelor of Science degrees in Biology and Chemistry.
1950 to 1957: Owned and operated a farm equipment business.
1957 to 1963: Employed by Universal Match Corp. (UMC) as a Research Engineer.
1963 to 1965: Vice President of Central Technology Inc. (CTI). At this time Mr. Throgmorton worked at CTI operation in Herrin, IL.
1965 to 1968: Self employed in real estate sales and development.
1968 to 1970: Employed by CTI at CTI's operation in Area 8.
1970 to Present: Owner of Winnstar, Inc. a pyrotechnic component development and production company.

Interview Summary

SWDC

Mr. Throgmorton worked for SWDC in the transportation department until being drafted by the U.S. Army Air Corp. in 1943. During that time his job was to transport personnel around to different areas of the IOP. He did not have any specific knowledge of the work practices at the load lines although he did know the location of most of the ordnance plant facilities and their overall functions at the time.

Mr. Throgmorton did state that SWDC used mercury fulminate to sensitize the tetryl in the boosters produced in Area 2B. He said he had learned that by seeing the package of mercury fulminate being handled by an SWDC employee and asking what it was for. He said it was only later that he fully understood what the man was handling at the time.

In addition, Mr. Throgmorton identified the former location of a block building he claimed was used for the sawing of artillery shells and 500 lb bombs. The bombs and shells were sawed in half as a quality control operation to check the density of the TNT or Amatol poured into the ordnance pieces. He marked the location on a map of Areas 11 and 12 locating the building to the northeast of these areas. His description of the location indicates that the building was approximately 200 yards south of Ogden Rd and approximately 200 yards west of route 148. This places the building just north of the IOP rail line in this area.

Note: A visual inspection of this area revealed no evidence of a building in this area either presently or previously. Review of the aerial photo interpretation of this portion of the Refuge indicates that no buildings or suspicious activities were identified at the location identified by Mr. Throgmorton.

UMC

Mr. Throgmorton started for UMC in 1957 in the Research and Development department doing Engineering Production Studies and writing proposals for project development. He worked primarily in Area 2D. He first worked in building D-1-36 where he did R&D for delay switches. This involved developing the chemical formulas for delays in initiating devices. The delays used normal lead styphnate to initiate propellant charges (ball powder). Buildings D-1-6, D-1-7, and D-1-8 were used for the loading of photoflash shells which were comprised of anodized aluminum, magnesium powder, and an oxidizer usually potassium perchlorate. The pyrotechnic mixes for photoflash shells were mixed in building D-1-25. Building D-1-13 was used for the Uranium Fuel Tube Rod Program for Westinghouse.

UMC used a lot of PETN in Area 2D and also in Area 2B. Buildings B-2-1, B-2-2, and B-2-6 all were involved in the loading of PETN in various devices. In addition, UMC used the pad at the former building B-2-9 (identified and marked on a map) for a burning pad. On it they burned the ignitable wastes and the products which failed QA/QC inspections. At one point UMC had an explosion on the burn pad that scattered debris for approximately one hundred yards around the burn pad. This debris had to be picked up by hand.

CTI

CTI was formed when UMC transferred operations to Arizona. Mr. Throgmorton was one of four vice presidents at CTI (including Jim Redden, former vice president of Olin). From 1963 to 1965, Mr. Throgmorton worked for CTI in their plant in Herrin, IL. In 1965 the four vice presidents were fired by the Board of Directors. CTI did a little bit of contracting with Supreme Plating in Area 4. CTI used Supreme Plating to CD plate some items. Mr. Throgmorton knew Tex Wyatt who was the plant supervisor at Supreme Plating.

In 1968, the CTI Board of Directors rehired Mr. Throgmorton and he worked for CTI in Area 8 until they filed for bankruptcy in September of 1970. In Area 8 they used the former IOP change house as the CTI administration building. Building III-1-15 was used for their production operations. Prior to CTI, a man named Petrof had used Area 8 to grind smokeless powder and then sell it. He remembers an area at the south end of Area 8 which was used as a burn area. He believes it to be the same area which is currently referred to as the black powder disposal area. When CTI filed for bankruptcy the Department of Justice confiscated all of CTI's equipment and process materials. Some of this material was stored in Area 6 in igloo number HE-2-1. Mr. Throgmorton believes that this material was disposed of by Granite City Aresenal but does not know where the incineration of the process materials took place. He stated that some of the material stored in the igloo included magnesium, teflon, and potassium perchlorate.

CTI used lots of potassium perchlorate in their production operations and used MEK regularly for their cleaning operations.

Mr. Throgmorton stated that he knew that CTI had operated in Area 2B but he believed that operation ended prior to his being rehired by the company. He was aware however, that someone working for CTI was killed in an explosion in building B-2-6.

Winnstar

After CTI filed for bankruptcy Mr. Throgmorton started his own ordnance production company making igniters and other components for various manufacturers. Olin/Primex is and has been a customer of his and he produces initiators for their gas generator products.

Olin

Mr. Throgmorton believed that the buildings identified by aerial photo interpretation as appearing in approximately 1965 in Area 2F were Olin buildings. He did not know what purpose they served but did state that he believed that Jim Redden would be very familiar with the operations in those buildings. Jim Redden was formerly an employee of UMC and CTI. Upon being fired from CTI, Mr. Redden went to work for Olin where he worked his way up to VP.

General

East of Area 7 Mr. Throgmorton remembers an area used for disposal of various materials. He did not know who was using the disposal area, however, he dates its use as early to late 1970s.

In addition, Mr. Throgmorton remembers gathering smokeless powder from storage ponds in Area 11. He specifically remembers the ponds being lined with a black polyethylene (composition is an educated guess) liner. He identified the location of the ponds on a map of Area 11 from the AUS Historical Search Report.

SAM WATSON

Date of Interview: June 30, 1999
D.O.B. May 29, 1918
SSN:
Address: 312 Missouri Avenue
Carterville, Illinois
(618) 985-2711
Education: Gem City Business College, Quincy, Illinois
Interviewers: Mark Wallace, a paralegal with the Department of Justice, and Mary Hagerty of URS Greiner Woodward-Clyde (URSGWC)

Mr. Watson was employed with Sangamo Electric from 1947 to 1959. He was employed with Universal Match from 1959 to 1962 or 1963. He was employed at Southern Illinois University from 1964 through 1983.

At Sangamo, Mr. Watson worked first in the chemistry lab, then he designed capacitors. He moved to the payroll department and eventually became chief accountant.

At Universal he did estimating and kept track of parts.

At SIU, he was the director of purchasing.

Mr. Watson remembered only a few things about his time at Universal. He is legally blind, and unable to look at maps. He said most work at Universal was classified military work, and employees were given information only the information they needed to do their jobs.

Summary:

- Universal manufactured explosive switches, gas generators for charging batteries in space, and in R&D they made flare canisters to draw away heat seeking missiles.

- He remembers once ordering a large amount of RDX, maybe about a ton, and having it stored in igloos on the east side of the Refuge (probably Area 6). Universal did not get the job that would have used the RDX and they shipped it back to the supplier.

- For about 6 months during the 1960s Universal made uranium fuel rods out of uranium pellets. The rods were about 4 feet long and consisted of half-inch diameter fuel pellets inside aluminum tubes. He said the uranium was carefully accounted for.

- He remembers a zirconium operation. He thought zirconium was an explosive. It was in powder form, and had to be kept underwater. He said it was a high heat source and they made it in bulk and packaged it.

- He had no information about waste products or disposal.

Regarding Sangamo, Mr. Watson said that he had no recollection of Sangamo using lead in their operations. He described the process of impregnating paper capacitors with oil. A large number of capacitors was placed on a tray and lowered into a vat filled with oil. A vacuum was drawn to force the oil into the paper capacitors. Men pulled the trays from the oil with bare arms and hands.

ROBERT ANDREW WILKIE

Date of Interview: July 28, 1999
D.O.B. September 22, 1942
SSN: 334-36-3315
Address: P.O. Box 489
Herrin, Illinois 62948
Interviewers: Mark Wallace, a paralegal with the Department of Justice, and Melissa Moore of URS Greiner Woodward-Clyde (URSGWC)

Mr. Andy Wilkie (Robert Andrew Wilkie) is the son of Robert A. Wilkie who owned the R.A. Wilkie Machine Company in Energy, Illinois and Supreme Plating in Area 4 at the Refuge. He currently owns and operates the Wilkie Machine Shop which is located at 683 North Pershing in Energy, Illinois. This is the same location as the former R.A. Wilkie Machine Company owned by R.A. Wilkie that was started in 1957. Mr. Andy Wilkie ran the machine shop in Energy (Herrin?) for his father and occasionally worked in Areas 4 and 7, as he was needed.

Mr. Andy Wilkie had visited most of the Olin operations on the Refuge. He said that they made experimental parts (machining) for Olin in association with Olin's research and development department and if these experimental parts worked, they would go into production of these parts for Olin if they won the bid. Machining was done at either the machine shop in Energy (Herrin?) or in Area 7. Mr. Wilkie said that they made phenolic rings for starter generators for rockets (in machine shop). He said that they did all of the components for that.

AREA 7

According to Andy Wilkie, they moved into Area 7 – into building IN-5-2 (as identified on an Area 7 map) in approximately 1975. This building was leased from USFWS for approximately 10 to 15 years.

They had a machine shop where they did other machinery repair in building IN-5-2 of Area 7. They did repair of mine machinery (not for Olin) at this location. He said that they may have used water-soluble oil in this area, and that it dissolved, so there was no need to get rid of it. Mr. Floyd Hogg was a machinist who worked part time for R.A Wilkie in Area 7 and in the machine shop in Energy (Herrin?). He also worked full time for Olin as an equipment operator.

Also in building IN-5-2 according to Andy Wilkie, they were refurbishing 50mm ammo cans. R.A. Wilkie employed approximately 5-6 employees in Area 7 during this time. They would sand blast the ammo cans off with steel shot (not sand), then they would send the cans through a small phosphating machine (this was done so that the paint would stick to the cans) and then paint them in spray booths. Paint was bought in 55-gallon drums and stored on site. He said that there may have been paint thinners on site, but he thought that they used the paint straight out of the drums. He was asked where the wastes from this area would go, and according to Mr. Wilkie, it would have all been taken to the Marion or Herrin landfills. Including any debris such as paint chips from sandblasting. Any scrap metal (steel shavings, aluminum, steel, etc.) which they had as a result of machining operations, etc., would have been sent to Gary's Metals in Cartersville, Illinois. According to Mr. Andy Wilkie, there was no waste dumped on the Refuge property to his knowledge.

According to Andy Wilkie, there was an addition built onto building IN-5-2 by Olin, which contained presses. Olin used these presses to press out 105mm shells. R.A. Wilkie did not use these presses. They were very large and Olin removed them before R.A. Wilkie occupied the building. There was also a concrete pit in this addition, which was used to collect hydraulic oil from the presses. Mr. Wilkie did not remember there being oil in this pit, so he believed that Olin cleaned it out before they took over the property. He was not sure if there were any floor drains in any of the buildings.

R.A. Wilkie Machine Company left building IN-5-2 in Area 7 in approximately 1987 or 1988.

AREA 4

The R.A. Wilkie Machine Company bought Supreme Plating (a plating operation) from a speaker manufacturer called Supreme Transformer in approximately 1965 and they leased the building (S-2-4 according to Andy Wilkie, *according to Frank Wilkie, they leased S-2-5 prior to occupying S-2-4*) in Area 4 on the Refuge. *It is uncertain as to whether or not Supreme Transformer was plating at this location before Wilkie leased the space due to discrepancies between Frank and Andy Wilkie's testimonies.* Supreme Transformer did cadmium plating.

Supreme Plating had approximately 4-5 employees at any one time. It may have also been known as Herrin Plating, since there was no other major plating operations in the area. Robert Taylor was the manager under R.A. Wilkie.

They phosphatized metal clips on the phalanx for Olin. They cadmium plated 105mm shells for Olin. They annodized fins on a flare used during the Vietnam War for Olin. They also did phosphatizing on the LAW (light anti-tank weapon) for Olin. They did cadmium and zinc plating for Norge (washing machine manufacturers), until Norge started using plastic. Norge was the initial reason why they bought the plating facility, then they worked for many people up until Olin started up in the 1970s. Olin constituted 70% or more of their work. They also did zinc plating for Midwest Brush (located in Building S-2-6 – he believes that they were a part of Diagraph Bradley), up until Supreme Plating closed. They also experimented with putting Bondalube on products (metals) for Olin – in Area 4, until Olin started doing this for themselves in Building IN-5-2. Bondalube was a slick soap-like lubricant that was used to coat the metal so that the metal could be easily extruded from the presses.

Mr. Andy Wilkie believed that the following chemicals were used for plating at the plating facility: muriatic acid, caustic soda, zinc chromate, and sodium cyanide. The caustic soda was used as a cleaner and degreaser. They did not use organic solvents according to Mr. Wilkie. Mr. Wilkie was not sure what chemicals were used for phosphatizing. Any of these chemicals that were spilled on the floor were washed out with water and eventually ended up going to the sewage plant. Mr. Andy Wilkie did not believe that they ever cleaned out the chemicals in the vats. He said that they just added to the caustic soda, and the acids were recycled by the company that provided them.

Supreme Plating left building S-2-4 in Area 4 after they were shut down in ___. Envirite did an investigation of the property for R.A. Wilkie. Envirite hauled away the leftover chemicals from the plating and phosphatizing operations. Mr. Andy Wilkie was asked if mercury was used in any of the processes, and he said that it was not used to his knowledge. He said that Envirite did a soil investigation around their building and that they found high mercury in the soil, however they also drilled a boring across the street and found high mercury over there too. Envirite told him that mercury was high in the soil in this area, since it was high in their "background" sample.

OLIN

Mr. Andy Wilkie knew who Jim Redden was – he was a manager at Olin. He said that Mr. Redden and his father were just acquaintances. Mr. Wilkie said that any contracts with Olin were made with Ken Gravat or Noel Paul. Mr. Wilkie was asked who did Olin's plating for them when Supreme Plating went out of business, and he said that he believed by that time, Olin had lost most of their contracts that required this service, so he did not know who they used, if anyone. Mr. Wilkie has not done any work for Olin in at least the past five years – he currently only owns the machine shop in Energy (Herrin?).

FRANK WILKIE

Date of Interview: July 28, 1999
D.O.B. August 30, 1947
SSN: 326-42-0580
Address: 9456 Walker Road
Johnston City, IL 62951
(618) 942-6014
Interviewers: Mark Wallace, a paralegal with the Department of Justice, and Melissa Moore of URS Greiner Woodward-Clyde (URSGWC)

Mr. Frank Wilkie (Frankie Leon Wilkie) is the son of Robert A. Wilkie who owned the R.A. Wilkie Machine Company in Energy, Illinois and Supreme Plating in Area 4 at the Refuge. Mr. Frank Wilkie worked on and off in the plating shop (Supreme Plating) from 1962 through 1974. In January 1975, he went into business for himself in a coal yard in Mounds, Illinois. He said that R.A. Wilkie had a machine shop in Herrin, Illinois – R.A. Wilkie Machine Company.

AREA 4

Supreme Plating started leasing in Area 4 in building S-2-5 which was formerly leased by Midwest Brush. They were doing cadmium and zinc plating for Diagraph Bradley, Norge, and National Transformer at this time. Olin slowly came into the picture in approximately 1963. When they got a large Olin contract in about 1967, they moved into S-2-4 because it was a larger building. Mr. Frank Wilkie believed that this building was previously occupied by a wholesale lumber company called Eastside Lumber. He did not know if they would have treated wood there or not.

Supreme Plating did cadmium plating, zinc plating, chromium plating, annodizing of aluminum, phosphatizing, some black oxide coating and a little bit of gun bluing (small operation). They did cadmium plating on a ring for the 105mm shells for Olin. Cadmium plating was slowly phased out, due partly to the expense. There was only one vat for cadmium plating in the new building and it was not used very often. They mostly did zinc plating. They put a phosphate coating on 105mm shells for Olin. They annodized aluminum fins for Olin. The chromium plating or chromate dip as discussed below, was done in part to change the color of the plating. They could make it a bright, shiny color or they could turn it gold (gold dip). The gold dip was used for Norge and it was also a part of annodizing aluminum. According to Mr. Frank Wilkie, there was no mercury involved in any of these processes to his knowledge.

Cyanide baths were converted to non-cyanide baths in the late 1960s due to regulations. This was done when Supreme Plating moved into building S-2-4, so cyanide baths were not used in this building.

There were three lines at Supreme Plating when they were in building S-2-4. Two of these lines were used for plating and the third was used for either phosphatizing or for bondalube. One of the plating lines was automated using a Link Junior machine. Only loading and unloading was necessary during the automated process. This machine was used only for zinc plating.

Plating Process:
Note that the metal parts were carried through this process in baskets carried by an overhead conveyor.

1. Cleaning process: To remove any grease and oils from material, a caustic soda wash with cleaners and soaps was done.
2. Rinse: A cold flowing water rinse was done to remove the caustic soda wash.
3. Acid dip: Metals were dipped in an acid bath (hydrochloric acid was used for plating).
4. Rinse: A cold, still water rinse was done to remove the acid. A three-stage rinse or a baffled rinse was done, so that the contaminants would fall to the bottom and keep the water clean.
5. Plating Bath: The materials were dipped in either a cadmium plating bath or a zinc plating bath.
6. Rinse: A flowing rinse was done (instead of a still rinse) to better clean off the plating material.
7. Rinse: A second cold still rinse was done to make sure the material was clean.
8. Bright dip or Chromate dip: The material was dipped in chromic acid to either give the material a bright shiny color or a gold color (gold dip).
9. Rinse: A cold rinse was done to clean off the chromic acid.
10. Rinse: A hot rinse was done to further clean the material.
11. Drying: A centrifuge was used to spin the material in the baskets dry.

Each of the tanks used for each of these steps, were lipped over each other to avoid spillage, however there was still much spillage involved. There were boardwalks on the floors so that people did not step in the spilled materials. The floors were hosed out into the drain trough which was located inside of the building near the beginning of the process. The drain trough drained outside into two concrete tanks that were not covered. The second concrete tank was baffled to help make the contaminants settle out. From this baffled tank, the discharge went to the sewer. The material that accumulated in the bottom of any of the tanks (such as the rinse tank or the concrete tanks) would probably have been taken to either the Herrin landfill or the old mine site. Rinse tanks would have been cleaned out and the water in them would have been dumped into the drain trough and allowed to flow through the concrete tanks to the sewer. No dumps or burn sites on the Refuge were used to his knowledge.

Phosphatizing Process:

1. Cleaning process: To remove any grease and oils from material, a caustic soda wash with cleaners and soaps was done.
2. Rinse: A cold flowing water rinse was done to remove the caustic soda wash.
3. Acid dip: Metals were dipped in an acid bath (sulfuric acid was used for phosphatizing).
4. Rinse: A cold water rinse was done to remove the acid.
5. Phosphatizing:

Note: The phosphatizing line was also used as the bondalube line. The only difference between the two were that step number five was used to dip the material in bondalube instead of the phosphate.

AREA 7

R.A. Wilkie began leasing in Area 7 in the early 1970's (1970 or 1971). Olin had previously leased these buildings. R.A. Wilkie went into business with two other people (Red Elders and Ed ___?) at this time and they started the "Helical Bit Company". This was separate from Supreme Plating and the R.A. Wilkie Machine Company. Red Elders held the patent on the Helical Mine Bit which was used on a continuous miner for coal mining. He gave R.A. Wilkie the manufacturing rights for the bit, in this part of the country. Mr. Elders gave Ed ___?? The sales rights to the bit. R.A. Wilkie began manufacturing the bit in Area 7 in the early 1970s. They leased buildings IN-5-2, IN-5-3 and IN-6-2 (and the annex between buildings IN-5-2 and IN-5-3) in Area 7 and R.A. Wilkie used these buildings for his own purposes also. The Helical Bit Company also did mine machinery repair and they manufactured other mining products. This company evidently did not last very long and when it dissolved, R.A. Wilkie continued to lease the buildings in Area 7.

There was a small phosphating coating or plating operation in building IN-5-3 along with a painting operation. Mr. Wilkie was not familiar with what they painted there, other than helical mine bits. They also did some cleaning of machinery there. According to Mr. Frank Wilkie, the phosphatizing operation was there for approximately one and a half years. He was not sure what it was used for. There was a machine shop in building IN-5-2, that was used for manufacturing mining bits and various Olin parts.

Building IN-6-2 was used for storage for all of these operations.

The annex between buildings IN-5-2 and IN-5-3 was built by Olin to be used to press 105mm shells. Olin had large presses in this annex. A soapy product would be adhered to steel slugs through a hot dip process and then the material would be pushed through the presses to make the shells. Olin later removed these presses and R.A. Wilkie did heat treating with large ovens in this area. Mr. Frank Wilkie's ex-brother-in-law (Arthur Woodcock of Energy,

Illinois) was the manager at this facility and he would know more about what went on in these buildings according to Mr. Wilkie.

Mr. Wilkie was not sure if there were any floor drains in these buildings, however he did say that there was a sewer lift located just southwest of future building IN-6-3 on the IOP drawing, where waste water would go.

OLIN

From about 1967 on through the mid 1970's, approximately 85% of the work done by Supreme Plating was done for Olin. In the mid 1970s, the Olin contracts started running out and work slowed down at the plating facility. According to Mr. Frank Wilkie, the main Olin contact was Jim Redden. He said that Jim Redden and his father were close. He said that they were from the same home town, even though they did not know each other from there. He said that Nick Vericoli was an engineer who worked for Olin (he believes in research and development), and that he worked with R.A. Wilkie also. Olin also used other plating companies.

R.A. Wilkie would usually do pickup and delivery for Olin, however if something was needed quickly, Olin would pick up or deliver to one of Wilkie's facilities. Mr. Frank Wilkie did not know how much work was done in Area 7 for Olin.

Mr. Floyd Hogg worked as a machinist for both Olin (full time) and R.A. Wilkie (part time).

Mr. Frank Wilkie was asked if he had any old records from these facilities, and he said that any old records would probably be located at the machine shop in Herrin.

ARTHUR G. WOODCOCK

Date of Interview: November 9, 1999
SSN: 361 32 8558
DOB: 7-21-39
Address: P.O. Box 545
Energy, IL 62933
(618) 942-7648
Interviewers: Mark Wallace (Dept. of Justice) and Mike Hutcheson (URS Corp)

Professional History

1957 to 1960 – U.S. Navy stationed on Island of Saipan in the Mariana, Isles.
1960 to 1963 – International Staple and Machine Co. service representative.
1963 to 1968 – Carmet Co. Tool and Die Maker Foreman in Christopher, IL
1968 to 19 - R.A. Wilkie Machine Co. Machinist/Tool Maker

Interview Summary

Area 7

Mr. Woodcock stated that he was originally hired to work in the Herrin, IL shop for Robert Wilkie Sr. (Bob Sr.) and moved to Area 7 sometime later. He was not sure of the date of the move to Area 7. He did know that it coincided with Bob Sr.'s purchase of several pieces of equipment from Olin Corp. and the taking over of the buildings that Olin had formerly leased in Area 7. He identified the buildings as IN-5-2 and IN-5-3 and the Annex. The Annex was a large building built between the two buildings connecting them. Initially they did a lot of work for American Mine Tool Co. and Carmet. Bob Sr. and another man, Gerald Elders, then started the Helical Mine Bit Co.

Helical Mine Bit Co. produced helical bits in building IN-5-2 and the Annex for a couple of years. After Helical Mine Bit Co. ceased operation Bob Sr. began a mine equipment refurbishing operation. Most of this work consisted of the repair and painting of mine cars including the hydraulic and electrical systems.

In the mid 1970s Bob Sr. started refurbishing 20 mm ammunition cans for Olin. This process involved the following:

1. Shot blasting the cans to remove paint. This system included a dust collection system which collected the paint and discharged in to a 55 gallon drum. Mr. Woodcock did not know the final disposition of the drums containing the removed paint.
2. Rinsing/cleaning/etching the cans in water and acidic and basic solutions.
3. Phosphatizing
4. Painting of each can by hand.

The ammunition cans were transported to Area 7 by Semi-trailers most likely owned by Olin according to Mr. Woodcock. The cans were then refurbished and checked for water tightness. Then the cans were stacked on skids. The skids were then picked up by Olin. At the height of work for Olin, the ammunition can refurbishment project employed 5 people. This operation could refurbish up to 300 cans per day. The project lasted five days per week for approximately 2 years.

This operation was done in building IN-5-3 where on the west side of the building an addition was added to the original IOP building. The addition was on the building prior to Bob Sr. taking over the lease on the buildings. In the addition was a concrete sump built into the floor which had a device hanging over it which Mr. Woodcock believed to be a pH chart recorder (he remembered seeing information on the recorder indicating this purpose). It was his impression that the sumps were installed by Olin for the neutralization of solutions. When Bob Sr. started using the building discharge pumps were already installed along with piping which Mr. Woodcock was told led to a pond to the south of the buildings. He had seen the pond but the pipes were buried and assumed the information to be correct. The wash waters from the painting/phosphatizing operations were discharged to the sump and then to the pond.

Mr. Woodcock said his position with R.A. Wilkie Machine Co. was working foreman. He did not handle any paperwork. All of the paperwork was handled by a secretary in Herrin. Her name was Norma Stanly. In addition, there was a secretary in Area 7 whose name was Darla somebody (possibly Varacalli). Mr. Woodcock believed she was the wife of Nick Varacalli (Olin representative). Nick Varacallli worked in Area 7 for Olin on the 105 mm operation and was good friends with Bob Sr.

Mr. Woodcock also stated that he performed another job for Olin in Area 7. R.A. Wilkie Machine co. also machined the weld backup rings for the trident missile. The rings were mad of asbestos. The asbestos that was machined off of the rings was taken out of the building by a fan mounted on the wall of the building. This work lasted for approximately on month.

Area 4

Mr. Woodcock did not work in Area 4 except for one occasion. Bob Sr. purchased a machine to phosphate 20 mm links. The machine was originally designed as an automatic barrel plating line. Mr. Woodcock set up the line in building S-2-4 for the Supreme Plating operation. Mr. Woodcock said that the Wilkie plating operation was originally started in building S-2-5 but moved to building S-2-4 for the extra space. The barrel plating line was a very large line and the length took up approximately ¾ of building S-2-4.

Water Tower Landfill

In the early 1960s, Mr. Woodcock went with Bob Sr. to the landfill by the water tower just north of Diagraph Bradley. There they loaded a couple of truck loads of discarded terry cloth gloves. According to Mr. Woodcock, Bob Sr. sent the gloves to be laundered and then matched up pairs of gloves and sold them. Mr. Woodcock did not remember any of the other items in the landfill.

WAYNE ADAMS

Date of Interview: March 23, 2000

Interviewers: Mark Wallace, a paralegal with the Department of Justice, and Melissa Moore of URS Corporation (URS)

Mr. Wayne Adams was the Crab Orchard National Wildlife Refuge Project Manager from December 1973 through January 1986.

Areas 11 and 12

Mr. Adams was project manager during the time period when Areas 11 and 12 were "decontaminated" by IMC (a.k.a. CSC). Those buildings that were identified by CSC as containing potential explosive hazards were flashed by IMC using diesel fuel. All of the utilities to the area were cut. He said that it took approximately one year to "decontaminate" the area and he believes that the area was adequately decontaminated. Mr. Adams was not present during the demolition of Areas 11 and 12. Jerry Updike was present during that time.

Mr. Adams said that he believed that lead azide was produced in Building 86 in Area 11. (CSC identified this building as "Ingredient Storage for Big Inch Caps".) It is likely that lead azide was stored in this building, however, based on conversations with Dupont we do not believe that lead azide was actually manufactured on site in Areas 11 and 12.) He also indicated that caps were manufactured in this area and that both RDX and lead azide were used in manufacturing the caps. He said that the materials were mixed in a building in that area, called the "rubberman" since people couldn't be present in the building during mixing because it was too dangerous. Once again, he identified this mixing building as Building 86. He said that the buildings in this area were flashed (decontaminated) by IMC.

Mr. Adams said that he thought that there was a mixing operation (of ???) located between Buildings 48 and 67 in Area 11. (Note that there were no buildings identified in this area by Olin or CSC maps and there were no buildings identified in this area on aerial photographs, so there is the possibility that Mr. Adams could be mistaken about this.) He also thought that there was a sump located off the southeast corner of Building 48. (Note that he did not know of the sump that was located just southeast of the corner of Building 7, so it is possible that he may have had these two buildings confused since they are located right next to each other on the load line, and since he was confused about other building locations during the interview.) He did think that the ditches and the sump in this area (and the ditches in the High Explosives Area – AUS-A11H) were flashed by IMC to remove explosive residue. He also believed that all of the buildings along the former load line from the Melt Pour Building (former Building 7) west to the former Drilling and Boostering Building (former Building 85) were flashed. He said the diesel fuel was used to flash the buildings in Areas 11 and 12.

Mr. Adams identified a vertical tank located near Building 23 which contained paraffin wax to coat the shells. He said that this tank was located next to a building that was lined with lead and that had hard maple flooring. He said that there were overhead lines that lead from the tank to the building and that the building was possibly a packing/boxing building. He thought that the paraffin would have been recycled and that the wax would have been sent back to the tank after going through a filter to remove any explosives contamination. It is likely that Mr. Adams is mistaken about the location of this building and this tank. The pack houses with their associated wax houses were located further east of Building 23.

He believed that a concrete building somewhere in the vicinity of Building 9 (he identified Building 9-2, the Soda House), exploded sometime near the end of Olin's tenure at the site.

Mr. Adams identified a building that was lined with lead and had a hard maple floor that was necessary for USP to flash due to explosives residues. He said that there was a vertical AST located next to this building that was filled with paraffin and the tank was connected to the building via overhead piping. He located this building in the vicinity of Building 23 (which was identified as the ANOIL Manufacturing building by CSC).

Mr. Adams was involved with the decontamination of Areas 11 and 12 by IMC (formerly CSC). He speculated that the High Explosives Area (area between the original IOP Load Line II and the IOP Ammonium Nitrate Plant) was built as a joint venture between Olin and USP. However, this is not believed to be the case since lease records show Olin occupying this area from 1956 through 1964 and CSC taking over production in this area in 1964 and continuing explosives production up until mid-1971. US Powder (a division of CSC) operated this plant initially and CSC was later acquired by IMC in 1975 (according to lease records). According to Mr. Wayne Adams, when IMC came in, they no longer did any explosives manufacturing. He said that IMC's main concern was to decommission the plant and decontaminate it so that they could leave the area. IMC brought in Bob Charles (IMC employee) and John Kelly (either an IMC employee or a contractor) to decontaminate the plant. John Kelly was responsible for putting together a decontamination plan for the plant. He worked with Wayne Adams and former CSC employees to identify the areas that would require decontamination via flashing.

According to Mr. Wayne Adams there were five million pounds of cannon powder stored in the powder storage ponds in Area 12. This cannon powder was acquired from the government. He said that there were five different kinds of propellant stored in these ponds ranging in size from about one inch long and $1/8^{th}$ inch in diameter up to 2.5 inches long and 5/8ths inch in diameter. He said that someone from Picatinny Arsenal collected samples of the propellant from the ponds and it was found that all of the stabilizers from the propellants were gone. This did not pose a hazard as long as the propellant remained underwater,

however, when the propellant was exposed to open air, extra care would need to be taken when handling it.

The powder (propellant) was removed from the ponds and burned as discussed in the following paragraph. The ponds were lined with a thick heavy neoprene liner. After the powder was removed, the ponds were flashed with the neoprene in it.

Mr. Adams indicated that there were five designated burn areas in Areas 11 and 12 that were used for burning the propellant from the ponds and other leftover explosives from these areas. He located these burn areas southeast of Area 12 (south of the Southern Perimeter Road and inside the fence line. However, he did not know for certain the location of these burn areas and he said that some of them might have been located in Area 11 also. He said that the vegetation at the burn areas was scraped off with a dozer and the materials were piled on the dirt in the center of the area and allowed to dry. The explosives were then burned using diesel fuel and straw to ignite the burns.

Area 2

Mr. Adams believed that there was a remote mixing operation located to the northwest of Building F-2-11 (right in line with the building). Apparently this building blew up and the fire destroyed the building. It should be noted that there has not been any other previous building identified in the area that Mr. Adams described.

Area 4

In Area 4 West, Mr. Adams identified diesel fuel tanks located at current sample 0A4W-013 location. These tanks are the reason for this sample as these tanks were identified in aerial photographs.

In Area 4 East, Mr. Adams said that there was evidence indicating that Sangamo dumped in the Job Corps Landfill. He said that there were remnant capacitor parts found in the dump.

Area 8

Prior to American Fiberlite's presence in Area 8, Petrofsky was in this area. Petrofsky (a one-man operation) bought powder pellets and he ground and milled them by himself for resale. When he left, there was likely still much powder left in the building (possibly in cardboard containers). Also the building was not properly cleaned and decontaminated after he left the building. The remaining powder was buried in a hole by the USFWS (by Fish Darnell – a bulldozer operator) and the area was fenced off and marked.

Carl Deiter ran American Fiberlite who started manufacturing fiberglass boats in this area after Petrofsky left. When asked about the fire that destroyed American Fiberlite, Mr. Adams did not know how the fire started; however, he did believe that the building was still contaminated with explosives. USFWS instructed the firemen to allow the building to burn to the ground and simply contain the fire rather than try to put it out.

Mr. Adams did not know where they buried the building materials after the fire.

Area 10

According to Mr. Adams, Olin and others burned explosives in this area on concrete pads.

Area 14

Mr. Adams believed that there were concrete barricades located north of Area 14 for military explosives testing by the Army. He said that they used it during WWII for burning exercises. He was unable to locate the area exactly. He also did not know of anyone else using this facility. There has been no evidence of this activity identified by either former employees or by aerial photographs.

Site Summary Sheet—AUS - 001 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/18/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-001 – AREA 1 FIRE STATION (IOP Police and Fire Headquarters)	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 43' 55.25" W 89° 03' 32.30"	
Directions to Site: From Hwy 13 take Route 148 south for 1.0 miles until you come to Old Hwy 13. Take Old Hwy 13 west for 2.4 miles until you reach Wolf Creek Rd. Take Wolf Creek Rd. south for 0.4 miles. Fire station is on the west side of the road approximately 120 feet from the road.	
Site Description: Site is the former fire station headquarters for the IOP. Site consists of a large parking area, building foundations and some debris. A small concrete island is situated close to Wolf Creek Rd. on the north end of the site and may possibly be a remnant of a gas station and UST. According to the War Department Facilities Inventory for the IOP the building(s) encompassed 5,590 sq. ft. of floor space.	
Results of Previous Sampling at Site	
USEPA, 1998	In the SVOC analysis, benzo(a)pyrene (0.110 mg/kg) and benzo(b)fluoranthene (0.400 mg/kg) results for sample AUS 1-1 exceeded USEPA SSLs. The sample was taken in a pit area that was possibly a discharge for the building's boiler. Arsenic (130 mg/kg), barium (180 mg/kg), and nickel (33 mg/kg) exceeded USEPA SSLs and background values for the Refuge. Copper (43 mg/kg), lead (210 mg/kg), and zinc (310 mg/kg) exceeded DSOLs and Refuge background levels. Mercury (0.12 mg/kg) exceeded USEPA SSLs and Illinois background values. It should also be noted that unknown hydrocarbons were detected in this sample in excess of 10 mg/kg and unknown glycol ethers were detected at 46 mg/kg.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
	No known industrial tenants
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 001 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/18/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name **AUS-001** – AREA 1 FIRE STATION (IOP Police and Fire Headquarters)	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 43' 55.25" W 89° 03' 32.30"	
Operations History	
Sources: War Department Facilities Inventory of the IOP, 1944	Police and Fire headquarters for the IOP.
Sources:	
Storage/Disposal Features No storage or disposal features are built into this facility. It is an administrative building and firehouse.	
Material/Waste Characteristics and Practices	
None	
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 002 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/18/99	**Checked by Mary Hagerty** **Date September 2, 1999**

Site Name

AUS-002 – AREA 1 - FORMER WASTEWATER TREATMENT PLANT

Latitude and Longitude (Source USFWS unless otherwise indicated)

Coordinate position has not been determined.

Directions to Site: From Hwy 13 take Route 148 south 1.0 miles until you reach Old Hwy 13. Take Old Hwy 13 west 2.4 miles until you reach Wolf Creek Rd. Go South on Wolf Creek Rd. 0.1+ miles and turn off Wolf Creek Rd. to the west into the first field you come upon. Head in a westerly direction until you reach the woods. AUS Site # 002 starts just before the woodline and continues 300' into the woods.

Site Description: Site is the former location of the wastewater treatment plant for the administration area at the IOP. Although detailed drawings have not been reviewed, It appears from an IOP sewer distribution drawing that this WWTP likely supported not only Area 1 but also parts of Area 2. The WWTP consisted of a blockhouse with treatment pits and a sewer line to the west emptying into two small lagoons. The blockhouse has been razed and nothing remains. The two lagoons are now in the middle of a wooded area and although intact are hard to find due to tree cover.

Results of Previous Sampling at Site

USEPA, 1998	There were no USEPA samples collected from this site, because they were unable to locate this site in the field.
ESE, 1992	None
Other	None

Results of Other Previous Investigation at Site

None

Leasing History

	No known industrial leasors

Sources: Site Operations/Ownership History CONWR; Techlaw, 1992

Site Summary Sheet—AUS - 002 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/18/99	**Checked by Mary Hagerty** **Date** 9/2/99
Site Name **AUS-002** – AREA 1 - FORMER WASTEWATER TREATMENT PLANT	
Latitude and Longitude (Source USFWS unless otherwise indicated) Coordinate position has not been determined.	
Operations History	
Sources:	Unknown
Sources:	
Storage/Disposal Features: Two lagoons were used for the storage of WWTP process waters. The lagoons do not appear to have outlet drains. Infiltration and evaporation and possibly overflow are the most likely routes of water discharge.	
Material/Waste Characteristics and Practices	
Process sludges	Process sludge likely contains some amounts of metals and possibly explosives.
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 003 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-003 – AREA 2F – FUSE LOADING LINE (now incorporated into AUS Area 2F)	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 43' 23.18" W 89° 02' 58.74"	
Directions to Site (Attach map if needed) From Hwy 13 take Rte 148 south 1.0 miles to Old Rte 13. Take Old Rte 13 west for 2.4 miles until you reach Wolf Creek Rd. Take Wolf Creek Rd. south for 0.3 miles and turn east onto undesignated road and travel approximately 0.2 miles until you reach the main gate for the B, D, and F areas. Access to the Fuze Line must enter this security gate.	
Site Description Site is the former Fuze Loading Line for the Illinois Ordnance Plant and consists of a group of building interconnected by chipped rock roads. The buildings range in size from 15' x 20' storage buildings to very large warehouses. Most of the buildings are of a wood frame construction with corrugated steel and asbestos siding.	
Results of Previous Sampling at Site	
USEPA, 1998	Two samples were taken and designated as site AUS 03. Locations not designated, except by GPS coordinates (FWS). Benzo[a]anthracene (0.22 mg/kg), benzo[b]fluoranthene (0.58 mg/kg), and benzo[a]pyrene (0.25 mg/kg) were detected above USEPA SSLs. Total PAHs exceeded DSOLs. Both samples showed low levels of mercury (below SSL). The following metals were found above both USEPA SSLs and Refuge background levels in one or both samples: arsenic (23 mg/kg), copper (130 mg/kg), lead (180 mg/kg), nickel (48 mg/kg), and zinc (310 mg/kg). Unknown glycol ethers (46 mg/kg) were detected at elevated levels in these samples.
ESE, 1992	None
O'Brien & Gere, 1988	One composite surface water sample and one composite sediment sample were collected (Figure 12-1 Sample 9; O'Brien & Gere, 1988). The sediment was resampled for CLP organics. TOX levels in the water were 120 ug/L. Cyanide (26 mg/kg) and mercury (9 ug/kg) were detected in the sediment sample. Sediment resampled in Phase II contained less than 5 mg/kg (wet weight) cyanide. The second site in this area is within one of the various drainage channels leading from the Olin D and P Areas. One composite surface water sample and two composite sediment samples (0-1 ft) were collected at this site in Phase I (Figure 12-1 Sample 10; O'Brien & Gere, 1988). TOX (20 ug/L) was detected in the water sample. Iron (600 ug/L) and manganese (270 ug/L) exceeded Drinking Water Standards. Manganese also exceeded Illinois Public Water Standards. Cyanide (61 mg/kg), di-n-octyl phthalate (236000 ug/kg wet wt), bis [2-ethylhexyl] phthalate (540 ug/kg wet wt), and N-nitrosodimethylamine (270 ug/kg wet wt) were detected in sediment. Cyanide was reanalyzed in Phase II. No detectable cyanide was found in Phase II analyses. The third site consists of a drainage swale originating at an abandoned building within the fenced southeastern end of the Olin D complex. The swale runs east outside of the fence. One sediment composite (0-1 ft) was collected (Figure 27-1; O'Brien & Gere, 1988). The sediment was resampled for full organics analysis. Cyanide (13 mg/kg) was detected in the sediment composite; however, this data is questionable due to QA/QC deficiencies. Sediment was analyzed for full CLP organics after an FID screen of 16477 ug/kg. Di-n-octyl phthalate (30500 ug/kg wet wt), bis [2-ethylhexyl] phthalate (2320 ug/kg wet wt), and N-nitrosodimethylamine (336 ug/kg wet wt) were detected. Data are questionable. Analytes shown as not present may be present.

Site Summary Sheet—AUS - 003 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-003 – AREA 2F – FUSE LOADING LINE	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 43' 23.18" W 89° 02' 58.74"	
Results of Other Previous Investigation at Site None	
Leasing History	
1942-1945	Army-Sherwin Williams Defense Corporation
1959-1961	Universal Match
1962-present	Olin
Sources: Site Operations/Ownership History CONWR, Techlaw, 1992	
Operations History	
Sources: Site Operations/Ownership History CONWR, Techlaw, 1992.	Army operations began in 1942 with the loading and assembly of fuses for use in other loading lines. It is not clear just how long production continued but most likely ceased prior to the closing of the IOP in September of 1945.
Sources: Site Operations/Ownership History CONWR, Techlaw, 1992.	UMC's operations in area 2F are unclear. Vic Modglin (UMC employee) stated that isopropyl alcohol, toluene, and TCE were dumped on the ground in area 2F.
Sources: Site Operations/Ownership History CONWR, Techlaw, 1992 and PRI-004259	Olins operations in area 2F have included a machining operation which began in the late 60s and ended by 1973. Area 2F was first leased by Olin as a shipping, receiving and storage area. Included in its shipping and receiving duties were Depleted Uranium sabots for the phalanx ammunition line. Other operations in area 2F included R&D and production activities for the 120mm depleted uranium projectile.
Storage/Disposal Features Area 2F has 2 large warehouse type buildings (F-2-1 and F-2-2) which have large storage capacities and multiple loading docks for convenient loading and unloading. Interior floor drains are present and have been used for disposal of TCE during milling operations (Pitt Deposition, Nov. 19, 1997). The buildings were not designed for present day storage of hazardous wastes.	
Material/Waste Characteristics and Practices	
TCE	Hazardous solvent used for metal cleaning during milling operations in bldg. F-2-2. Dumped to sewer and possibly discarded on surrounding soils.
Cutting oils	Unknown characteristics, allowed to overflow onto soils south of F-2-2.
Depleted uranium	Toxic and radioactive heavy metal inserted into or shipped as a part of projectiles of the 20mm, 30mm, and 120mm lines.
	.
Information from Interviews/Depositions	
Pitt Deposition, Nov. 19, 1997	Pitt stated that TCE was dumped to the sewers in bldg. F-2-2 and cutting oils were allowed to overflow to the ground south of bldg. F-2-2.

Site Summary Sheet—AUS - 004
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 6/15/99	**Checked by Mary Hagerty** **Date:** 8/23/99

Site Name
AUS-004 – AREA 2P – ARTILLERY PRIMER LINE

Latitude and Longitude (Source USFWS unless otherwise indicated)
N 37° 47' 02.45" W 89° 02' 45.60"

Directions to Site (Attach map if needed)
From Hwy 13 take Rte 148 south 1.0 miles to Old Rte 13. Take Old Rte 13 west for 2.4 miles until you reach Wolf Creek Rd. Take Wolf Creek Rd. south for 1.4 miles to Stringtown Rd. Turn east onto Stringtown Rd. and go 0.6 miles to the guard house on the north side of the road. This is the entrance to the P-area (Artillery Primer Line).

Site Description
Site is a group of building used during the days of the IOP as a primer loading line. It is at the south end of Area 2. Buildings at the site range in size from small magazines used for chemical and explosives storage to larger process buildings. The site has two main drainage ditches, one drains to the southeast and the other drains to the north.

Results of Previous Sampling at Site

USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	None
O'Brien & Gere, 1988	This area is an active Olin operation located north of Crab Orchard Lake. The first site in this area is located within one of the various drainage channels leading from the Olin P Area. One composite surface water sample and two composite sediment samples (0-1 ft) were collected (Figure 12-1 Sample 11; O'Brien & Gere, 1988). The second sediment sample served as a resampling at the same location and depth for a full priority pollutant analysis. TOX (200 ug/L), bromodichloromethane (3 ug/L), chloroform (31 ug/L), and HMX (8 ug/L) were detected in the water sample. Chloroform exceeded AWQC levels for human health, but was below levels for protection of aquatic life. Manganese (90 ug/L) exceeded the Federal MCL, but was below Illinois water standards. Metals were estimated for screening purposes only. Acetone (252 ug/kg wet wt) and methylene chloride (47 ug/kg) were detected in sediment, but these analytes were also detected in the QA/QC blanks. Sediment also contained N-nitrosodimethylamine (63 ug/kg) and 1,1-dichloroethene (14 ug/kg wet wt). Mercury (51 ug/kg) was detected in the Phase II sediment sample. The second site in this area is located outside of the fence north of the Olin P Area. This site consists of abandoned L-shaped covered walkways, a loading dock, and a steamhouse with a concrete pit. Eight soil and sediment composite samples (0-1 ft) were collected (Figure 18-1; O'Brien & Gere, 1988). Soil sample 11A-3 was resampled and analyzed for the full CLP analyses. Magnesium (29900 mg.kg) levels were found in soils outside three doorways. Lead (130 mg/kg) levels were detected in two soil samples from the north walkway. Two sediments contained PCBs (0.6 mg/kg wet wt). Mercury (43 ug/kg) was detected in Phase II soil analysis. Data are questionable. Analytes shown as not present may be present.

Results of Other Previous Investigation at Site
See separate text discussion of results from W-C MISCA OU investigation (1996).

Leasing History

1942-1945	Army, SWDC
1957-present	Olin
1951-1971	Great Lakes Terminal and Transport Corporation (bldg. P-1-13)

Sources: Site Operations/Ownership History, Techlaw, 1992

Site Summary Sheet—AUS - 004 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 6/15/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-004 – AREA 2P – ARTILLERY PRIMER LINE	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 47' 02.45" W 89° 02' 45.60"	
Operations History	
Sources: Site Operations/Ownership History CONWR, Techlaw, 1992.	Army operations began in 1942 with the loading and assembly of primers for use in other loading lines. It is not clear just how long production continued but most likely ceased prior to the closing of the IOP in September of 1945.
Sources: Site Operations/Ownership History CONWR, Techlaw, 1992.	Olin's operations in the P area began with propellant manufacturing operations. In addition Olin started its R&D operations in the P area which began with gas generators and continued with ammunition, propellant, and pyrotechnic R&D over the years.
Storage/Disposal Features A number of small magazines on the site have been used for the storage of hazardous chemicals and explosives. Former bldg. P-1-13 was used for paint/solvent storage by SWDC and subsequently used for agricultural chemicals by Great Lakes T and T.	
Material/Waste Characteristics and Practices	
Propellant	Contains nitrocellulose, ball powder, nitroglycerin, and plasticizers
Information from Interviews/Depositions	
John Miller Deposition, April 4, 1998	Hazards testing lab in bldg. P-1-11 (change house), and chemical labs on second floor. Bldg. P-1-1 contained development labs, and P-1-3 had a machine shop and gas generator loading area.

Site Summary Sheet—AUS - 005
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 6/15/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name
AUS-005 – AREA 2D – DETONATOR LOADING LINE

Latitude and Longitude **(Source USFWS unless otherwise indicated)** N 37° 47' 02.45" W 89° 03' 06.36"

Directions to Site (Attach map if needed)
From Hwy 13 take Rte 148 south 1.0 miles to Old Rte 13. Take Old Rte 13 west for 2.4 miles until you reach Wolf Creek Rd. Take Wolf Creek Rd. south for 0.3 miles and turn east onto undesignated road and travel approximately 0.2 miles until you reach the main gate for the B, D, and F areas. Access to the Fuze Line must enter this security gate.

Site Description
Site is the former Detonator loading line for the Illinois Ordnance Plant. It is the northernmost group of buildings in area 2. Surface waters drain from the site via ditches to the northwest, southwest, and to the east. Buildings at the site range from smaller storage type buildings to larger production buildings. With the exception of the change houses which are brick and block construction, most buildings on the site are of wood frame and corrugated steel and asbestos exteriors.

Results of Previous Sampling at Site

USEPA, 1998	Two samples were taken and designated as AUS 5. Sample 5-1 showed benzo(b)fluoranthene (1.5 mg/kg), benzo(a)pyrene (0.5 mg/kg), indeno[1,2,3-cd]pyrene (1.3 mg/kg), and dibenz(a,h)anthracene (1.0 mg/kg) above USEPA SSLs. Benzo [k]fluoranthene (1.5 mg/kg) exceeded CSOQGs. Barium (170 mg/kg) was detected above USEPA SSLs and above the Refuge background value. Mercury (0.11 mg/kg) was detected above USEPA SSLs and above Illinois background (no Refuge background data). Zinc (170 mg/kg) was above DSOLs and Refuge background. Total PAHs exceeded DSOLs. Unknown glycol ethers (46 mg/kg) were found at elevated levels in the samples.
ESE, 1992	None
O'Brien & Gere, 1988	Area D is an active Olin operation north of Crab Orchard Lake. The first site is within one of the drainage channels leading from the Olin D Area. These channels discharge into Crab Orchard Lake. One composite surface water sample and one composite sediment sample were collected (Figure 12-1 Sample 7; O'Brien & Gere, 1988). Surface water sample contained TOX (43 ug/L). Manganese (1.5 mg/L) and iron (3.2 mg/L) exceeded Federal MCLs and Illinois water standards. Metals concentrations are estimated for screening purposes only. Sediment sample contained magnesium (16700 mg/kg). This concentration is estimated and included for screening purposes only. Mercury concentration in sediment was 40 ug/kg. The second site is also within one of the various drainage channels leading from the Olin D Area. One composite surface water sample (0-1 ft) and a composite sediment sample (0-1 ft) were collected (Figure 12-1 Sample 8; O'Brien & Gere, 1988). The water contained TOX (28 ug/L). Magnesium (16700 mg/kg) was the only metal detected in the sediment. Data are questionable. Analytes shown as not present may be present.

Results of Other Previous Investigation at Site
None

Leasing History

1942-1945	Army, SWDC
1952-1963	Universal Match
1963-1970	Central Technology Incorporated (Engineer Corps Industrial Facilities Inventory, 1944)
1965-present	Olin

Sources: Site Operations/Ownership History CONWR, Techlaw, 1992

Site Summary Sheet—AUS - 005 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 6/15/99	**Checked by Mary Hagerty** **Date:** 8/23/99
Site Name **AUS-005** – AREA 2D – DETONATOR LOADING LINE	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 47' 02.45" W 89° 03' 06.36"	
Operations History	
Sources: Site Operations/Ownership History CONWR, Techlaw, 1992.	Army operations began in 1942 with the loading and assembly of detonators for use in other loading lines. It is not clear just how long production continued but most likely ceased prior to the closing of the IOP in September of 1945.
Sources: Site Operations/Ownership History CONWR, Techlaw, 1992.	Universal match produced many different products including flares, bombs gas generators, reactor fuel rods (an assembly, welding and eddy current testing operation) as well as other explosives. Operations included mixing of explosives and assembly of products.
Sources: Site Operations/Ownership History CONWR, Techlaw, 1992.	Olin's operations at area 2D have mainly consisted of the production of gas generators, and pyrotechnic mixes. In addition some propellant mixing, and artillery component production have taken place in area D.
Storage/Disposal Features Waste was disposed of by burning at two burn pads identified as near bldgs. D-1-11 and D-1-5. Component storage facilities include any of the smaller magazines around the site.	
Material/Waste Characteristics and Practices	
Organic solvents	Toluene, TCE, MEK, IPA, acetone, isopropyl alcohol, are all hazardous solvents reportedly used and dumped in the D area.
4,4'-methylene(bis)-2-chloroaniline	A carcinogenic compound used in the 70s for its elastomeric properties in bldg. D-1-6.
Propellant and pyrotechnic mixes	Various oxidative and explosive chemicals.
Information from Interviews/Depositions	
Miller Deposition on 4/9/98	Identifies a metal shop in the D area and an associated degreasing operattion.
Pitt Deposition on 11/9/97	Identifies area south of D-1-6 and D-1-7 as possibly containing buried equipment from the IOP operations carried out by SWDC.

Site Summary Sheet—AUS - 006 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 6/16/99	**Checked by Mary Hagerty** **Date:** 8/23/99

Site Name

AUS-006 – AREA 2B – BOOSTER LOADING LINE

Latitude and Longitude (Source USFWS unless otherwise indicated)

N 37o 43' 18.29" W 89o 03' 20.30"

Directions to Site (Attach map if needed)

From highway 13 take Route 148 south 1.0 miles to Old Route 13. Take Old Route 13 west 2.4 miles to Wolf Creek Rd. Take Wolf Creek Rd. south 0.3 miles to an unnamed road and turn east. Go 0.2 miles to the guard shack on the south side of the road. This is the entrance to areas B, D, and F.

Site Description

Site is the former booster loading line for the IOP. It is a small group of buildings with interconnecting chip rock roads. A fence now divides the original booster loading line and the southern portion of the site has been abandoned. Some of the original IOP buildings have been razed including all buildings south of the new fenceline. Generally the site is flat with surface water drainage via two ditches one leading to the north and one leading to the south.

Results of Previous Sampling at Site

USEPA, 1998	Seven semivolatile organic samples were collected at this site (AUS 6-1 – 6-7). Benzo[a]anthracene (2.3 mg/kg) and benzo[a]pyrene (0.29 mg/kg) were detected above USEPA SSLs in samples 6-1, 6-3, and 6-4. Benzo[b]fluoranthene (1.1 mg/kg) was detected above USEPA SSL in samples 6-1 and 6-4. Benzo[k]fluoranthene (1.1 mg/kg) exceeded CSOQGs in sample 6-1. Total PAHs also exceeded DSOLs. Barium (16,000 mg/kg), cadmium (7.4 mg/kg), nickel (120 mg/kg), and silver (84 mg/kg) exceeded USEPA SSLs and Refuge background levels. Lead (2,300 mg/kg), zinc (1,500 mg/kg), copper (3,400 mg/kg), and cobalt (70 mg/kg) exceeded DSOLs and Refuge background levels. Chromium (8,000 mg/kg) exceeded CSOQGs and Refuge background levels. Mercury (0.11 mg/kg) exceeded USEPA SSLs and Illinois background levels in sample 6-5. Mercury (0.12 mg/kg) exceeded USEPA SSLs and Illinois background levels in sample 6-7. Unknown hydrocarbons were detected at elevated levels in samples 6-1 and 6-3. Unknown glycol ethers were detected at elevated levels in samples 6-1 – 6-7.
ESE, 1992	No data.
Other	See text discussion of previous investigations.

Results of Other Previous Investigation at Site

Leasing History

1942-1945	Army, SWDC
1952-1963	Universal Match
1963-1970	Central Technologies
1970-Present	Olin

Sources: Site Operations/Ownership History CONWR, Techlaw, 1992

Site Summary Sheet—AUS - 006 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 6/16/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name **AUS-006** – AREA 2B – BOOSTER LOADING LINE	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37o 43' 18.29" W 89o 03' 20.30"	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 007 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-007 – PYROTECHNIC TESTING IN AREAS 2B, 2D & 2F **Note: Areas 2B, 2D, and 2F have been identified as sites recommended for Site Inspections. This form has not been completely filled out since this site is incorporated into Areas 2B, 2D, or 2F. It is included because the USEPA 1998 data was collected by the original AUS site designations.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed).	
Site Description. .	
Results of Previous Sampling at Site	
USEPA, 1998	Samples AUS 7-1 through AUS 7-5 were analyzed for SVOCs. Sample locations are unknown. The following SVOC compounds were detected at the site above either USEPA SSLs and/or CSOQGs: benzo[b]fluoranthene (32 mg/kg), benzo[a]anthracene (14 mg/kg), benzo[a]pyrene (14 mg/kg), naphthalene (1.1 mg/kg), phenanthrene (110 mg/kg), carbazole (17 mg/kg), pyrene (26 mg/kg), chrysene (16 mg/kg), benzo[k]fluoranthrene (32 mg/kg), indeno[1,2,3-cd]pyrene (12.0 mg/kg), and dibenz[a,h]anthracene (4.7 mg/kg). Total PAHs also exceeded DSOLs. Arsenic (110 mg/kg), barium (20,000 mg/kg), beryllium (2.2 mg/kg), nickel (31 mg/kg) and cadmium (6.7 mg/kg) exceeded USEPA SSLs and Refuge background levels. Mercury (0.10 mg/kg) exceeded USEPA SSLs and Illinois background in sample 7-4. Lead (2400 mg/kg), copper (1900mg/kg), cobalt (55 mg/kg), and zinc (440 mg/kg) exceeded DSOLs and Refuge background levels. It should also be noted that there were several unknown PAHs (53 mg/kg), unknown glycol ethers (70 mg/kg), and unknown hydrocarbons (71 mg/kg) detected at elevated levels in these samples.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
1952-1963	Universal Match Corporation
1963-1970	Central Technology Incorporated
1989-present	Olin Corporation
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 008 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name: AUS-008 – ORGANICS DUMPED IN AREAS 2B, 2D & 2F **Note: This form has not been completely filled out because Site AUS-008 is being eliminated as a separate site, since it is not needed. Areas 2B, 2D, and 2F have been designated as sites recommended for Site Inspection, and AUS-008 will be incorporated into those sites.**	
Latitude and Longitude **(Source USFWS unless otherwise indicated)**	
Directions to Site (Attach map if needed).	
Site Description.	
Results of Previous Sampling at Site	
USEPA, 1998	Six samples were taken from site AUS 8. Benzo[b]fluoranthene (1.7 mg/kg) and indeno[1,2,3-cd]pyrene (1.4 mg/kg) exceeded USEPA SSLs in sample 8-3. Dibenz[a,h]anthracene (1.8 mg/kg) exceeded USEPA SSLs in samples 8-3 and 8-5. Benzo[k]fluoranthene (1.7 mg/kg) exceeded CSOQGs in sample 8-3. Nickel (34 mg/kg) exceeded USEPA SSLs and Refuge background levels. Mercury (0.11 mg/kg) exceeded USEPA SSLs and Illinois background levels in sample 8-5. Zinc (550 mg/kg), copper (120 mg/kg), and lead (120 mg/kg) exceeded DSOLs and Refuge background levels. Unknown glycol ethers (53 mg/kg) and unknown hydrocarbons (28 mg/kg) were detected at elevated levels in these samples.
ESE, 1992	
O'Brien & Gere, 1988	Area D is an active Olin operation north of Crab Orchard Lake. This site is a 3-acre lawn located northwest of the Olin D Area Complex. A drainage channel is south of the lawn. Composite soil samples were collected along three transects at depth intervals of 6-12 in., 1-2 ft., and 2-3 ft. Composite soil samples were also collected at the same depths at a low spot in the lawn (Figure 13-4). One surface soil from transect B was resampled for full priority pollutant analysis. Surface soil collected along transect B contained di-n-octyl phthalate (8292 ug/kg) and N-nitrosodimethylamine (156 ug/kg). Sample 7A-1 contained manganese (3330 mg/kg) and magnesium (6540 mg/kg). Data are questionable. Analytes shown as not present may be present.
Results of Other Previous Investigation at Site	
Leasing History	
1959-1961	Universal Match Corporation – Area 2F
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 009 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-009 – DUMP EAST OF AREA 2F **Note: Area 2F has been identified as a site recommended for a Site Inspection. This form has not been completely filled out since this site is incorporated into Area 2F. It is included because the USEPA 1998 data was collected by the original AUS site designations.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed).	
Site Description.	
Results of Previous Sampling at Site	
USEPA, 1998	One SVOC sample was collected from this site (AUS 9-1). Benzo(a)anthracene (0.36 mg/kg), benzo(b)fluoranthene (0.54 mg/kg) and benzo(a)pyrene (0.29 mg/kg) were detected above USEPA SSLs or CSOQGs. Total PAHs also exceeded DSOLs. Zinc (280 mg/kg) exceeded DSOLs and Refuge background. Zinc (280 mg/kg) exceeded DSOLs and Refuge background levels. It should be noted that unknown PAHs (6.7 mg/kg), unknown glycol ethers (45 mg/kg), and unknown hydrocarbons (38 mg/kg) were detected at elevated levels in this sample.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
1959-1961	Universal Match Corporation
1989-present	Olin Corporation
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 010 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 8/23/99**
Site Name **AUS-010** – AREA 2P – BOILER HOUSE	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) The site is just south of Area 2P.	
Site Description Site is the former location of the Area 2P boiler house. The building has been demolished and nothing remains.	
Results of Previous Sampling at Site	
USEPA, 1998	One sample (AUS 10-1) was collected for SVOC analysis. This sample location is unknown. There were no SVOC target compounds detected in this sample. It should be noted however, that reporting limits were elevated for this sample. Unknown glycol ethers (72 mg/kg) were detected at an elevated level in this sample.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site None	

Site Summary Sheet—AUS - 010 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 8/23/99**
Site Name **AUS-010** – AREA 2P – BOILER HOUSE	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Leasing History	
1957-1980	Olin Corporation
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	Boiler house for Area 2P for the IOP.
Sources: Pitt Deposition on 11/17/97	Boiler house operated by Olin for heating for Area 2P
Storage/Disposal Features Boiler house originally contained UST's for the storage of fuel oil. These USTs were removed for $700 by Short brothers Consturction under Demolition contract to FWS. Contact No. 14-16-0003-81-126	
Material/Waste Characteristics and Practices	
	None
Information from Interviews/Depositions	
	None

Site Summary Sheet—AUS - 011 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-011** – AREA 4 – SERVICE STATION **Note: This form is not completely filled out; this site is being eliminated as AUS-011 and incorporated into Area 4.**	
Latitude and Longitude **(Source USFWS unless otherwise indicated)**	
Directions to Site (Attach map if needed).	
Site Description Site is a former gas station which has been razed.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features Underground storage tanks were used for the dispensing of fuel for vehicles.	
Material/Waste Characteristics and Practices	
Vehicle Fuels	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 012 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-012 – AREA 4 - WASTE OIL TANK AT OLD REFUGE SHOP	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description This site was not found. There are no known historic data or drawings which refer to this site. The AUS site list (FWS, 1998) references the ESE Uncharacterized Site Report (1992), page 27, as the source for the AUS list. That report states the following on page 27 (in a discussion of the former Area 4 gasoline service station, AUS-011): "It is conjectured that a waste oil tank may have been associated with the Old Refuge Shop, but no specific evidence was located." .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	No known industrial leasors; unable to locate waste oil tank
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 013 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 8/28/99**
Site Name AUS-013 – AREA 4 – LAUNDRY FACILITY AT OLD REFUGE SHOP	
Latitude and Longitude (Source USFWS unless otherwise indicated) According to EPA field notes, Sample 13-1: N37°43'24.19" W89°01'21.59" +/-28' Sample 13-2: N37°43'23.31" W89°01'21.56" +/-27' Sample 13-3: N37°43'24.50" W89°01'21.56" +/-28	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	Three samples (13-1 to 13-3) were taken at site AUS-13. According to EPA field notes, "seems that a tank is buried beneath the surface" at sample 13-1. This site was tested for semivolatile organic compounds and metals. No SVOC target compounds exceeded limits. Barium (180 mg/kg), cadmium (29 mg/kg) and nickel (24 mg/kg) exceeded USEPA SSLs and Refuge background. Elevated levels of unknown hydrocarbons (2.47 mg/kg) were detected in sample 13-1. Elevated levels of unknown glycol ethers (54 mg/kg) were detected in all three samples.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
1963-1984	R.A. Wilkie Machine & Plating Company / Supreme Plating Company
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	Plating Operation.
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	Plating Wastes were pumped to a concrete vault behind the building. Wastes were contaminated with cadmium, chromium, lead and cyanide. Ditches and the sewer system were contaminated. The ditches and sewer system were remediated as part of the Metals Areas Operable Unit (Site 22)
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 014 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 8/28/99**
Site Name AUS-014 – AREA 4 – DRY CLEANERS AT OLD REFUGE SHOP **Note: This form is not completely filled out because this site is being eliminated as AUS-014 and is incorporated into Area 4. See Area 4 discussion in text.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed).	
Site Description.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	No known industrial leasors
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 015 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-015 – AREA 4 – BOILER HOUSE AT OLD REFUGE SHOP **Note: This form is not completely filled out because this site is being eliminated as AUS-014 and is incorporated into Area 4. See Area 4 discussion in text.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed)	
Site Description	
Results of Previous Sampling at Site	
USEPA, 1998	According to EPA field notes, this site was the old Refuse Shop. Site AUS 15-1 was sampled for semivolatile organic compounds, PAHs, and metals. No SVOC target compounds exceeded limits. Benzo[b]fluoranthene (1.7 mg/kg) exceeded USEPA SSLs. Benzo[k]fluoranthene (1.7 mg/kg) exceeded CSOQGs. Cadmium (21 mg/kg) exceeded USEPA SSLs and background for the Refuge. Unknown hydrocarbons were found at a level of 3.75 mg/kg. Unknown glycol ethers (17 mg/kg) were also at an elevated level.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	No known industrial leasors
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 016 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 8/28/99**
Site Name AUS-016 – AREA 4 – SUPREME PLATING CO. - CONCRETE PIT AT OLD REFUGE SHOP **Note: This form is not completely filled out because this site is being eliminated as AUS-014 and is incorporated into Area 4. See Area 4 discussion in text.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
1963-1984	R.A. Wilkie Machine & Plating Company / Supreme Plating Company
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 017 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 8/28/99**
Site Name AUS-017 – AREA 4 – DEGREASING BUILDING (former building no. S-4-1) Note: This site will be eliminated as its own site and be incorporated into the Area 4 investigation.	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) This site is located 1.2 miles south of Highway 13 on Route 148. It is on the east side of the highway.	
Site Description Site was the wash and grease house for the IOP vehicles and machinery. The building had multiple bays for the cleaning and minor maintenance activities associated with operation of a vehicle fleet.	
Results of Previous Sampling at Site	
USEPA, 1998	According to EPA field notes, this site was the Vehicle Maintenance Facility. Site AUS 17-1 was tested for semivolatile organic compounds. None of the SVOC target compounds exceeded limits. Nickel (7.8 mg/kg) exceeded USEPA SSLs. Unknown hydrocarbons were at a level of 52 mg/kg and unknown glycol ethers (12 mg/kg) were at elevated levels.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site None	
Leasing History	
1958-1969	Schilli Transportation, Incorporated
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 017 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 8/28/99**
Site Name AUS-017 – AREA 4 – DEGREASING BUILDING (former building no. S-4-1) Note: This site will be eliminated as its own site and be incorporated into the Area 4 investigation.	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Operations History	
Sources:	For operational history see Area 4 history in main text.
Sources:	
Storage/Disposal Features None	
Material/Waste Characteristics and Practices	
	See Area 4 History
Information from Interviews/Depositions	
Mr C Hoffard documented by Techlaw, Inc. 1992, Page B-24.	Stated that solvents were used during the wash process and the wash water and solvents drained from the building to a nearby field.

Site Summary Sheet—AUS - 018 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 8/28/99**
Site Name AUS-018 – AREA 5 – RAILROAD CLASSIFICATION YARD AND WCEMA BUILDING	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) Take Highway 148 south from Route 13 for 1 mile. Pass the old route 13 junction and take the next left (go east). The classification yard is approximately 1500 ft. down the road to the south.	
Site Description Site is the former IOP railroad system classification yard. It originally contained numerous sets of tracks for the ordering of train cars for fast and efficient loading and unloading activities at the various facilities in IOP. All tracks have been removed and only piles of base material remain in remote locations.	
Results of Previous Sampling at Site	
USEPA, 1998	According to EPA field notes, this site was the Railroad Classification Yard. Site AUS 18-1 was sampled for semivolatile organic compounds, PAHs, and metals. None of the SVOC target compounds exceeded limits. Benzo[b]fluoranthene (1.9 mg/kg), benzo[a]pyrene (0.6 mg/kg), indeno[1,2,3-cd]pyrene (1.5 mg/kg), and dibenz[a,h]anthracene (1.2 mg/kg) exceeded USEPA SSLs. Benzo[k]fluoranthene (1.9 mg/kg) exceeded SCOQGs. Arsenic (120 mg/kg), cadmium (4.5 mg/kg), nickel (26 mg/kg) and silver (2 mg/kg), exceeded USEPA SSLs and Refuge background. Mercury (0.32 mg/kg) exceeded USEPA SSLs and Illinois background. Copper (110 mg/kg), lead (4,500 mg/kg), and zinc (1,600 mg/kg) exceeded DSOLs and Refuge background. Unknown glycol ethers (56 mg/kg) were found at an elevated level.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site None	
Leasing History	
1962-1980	Marion Civil Defense Agency
1963-1980	Commercial Solvents Corporation / Olin Corporation (entire area)
1980-1992	Emergency Service and Disaster Agency
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 018 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date:** 5/18/99	**Checked by Mary Hagerty** **Date 8/28/99**
Site Name AUS-018 – AREA 5 – RAILROAD CLASSIFICATION YARD AND WCEMA BUILDING	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features None	
Material/Waste Characteristics and Practices	
None	
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 019 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-019 – AREA 5 – DUMP NORTH OF FIRE STATION LANDFILL**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) Unable to locate this site.	
Site Description Unable to locate this site. The AUS list (FWS, 1998) indicates the source of the site as "Aerial Photographs by Proj. Manager." No dump site was found. There was a pile of railroad ballast in the general area.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site None	
Leasing History	
	No industrial leasors
Sources:	

Site Summary Sheet—AUS - 019 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-019 – AREA 5 – DUMP NORTH OF FIRE STATION LANDFILL	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features None	
Material/Waste Characteristics and Practices	
None	
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 020 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-020 – AREA 6 – RAILROAD LOADING DOCKS	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42'17.67" W88° 59' 16.45"	
Directions to Site (Attach map if needed)	
Site Description Site consists of the former railroad loading docks in the Area 6 High Explosive Storage Igloos. The Area 6 igloos are arranged in 7 north-south rows. Every igloo in Area 6 has a truck dock for shipping and the center row of igloos originally had additional railway loading dock access. In addition Area 6 originally had one northern and one southern railroad loading dock servicing the majority of storage igloos via transport trucks. The railways have since been dismantled and the north and south loading docks abandoned. The igloos which had both truck and rail loading docks are presumably still in use.	
Results of Previous Sampling at Site	
USEPA, 1998	Two samples (20-1 and 20-2) were taken at site AUS-20. According to EPA field notes, sample 20-1 was at the south entrance to area 6 and sample 20-2 was at the northwest loading dock of area 6. This site was tested for semivolatile organic compounds, PAHs, and metals. Indeno[1,2,3-cd]pyrene (1.5 mg/kg) and dibenz[a,h]anthracene (1.2 mg/kg) exceeded USEPA SSLs in sample 20-1. Benzo[b]fluoranthene (2.0 mg/kg), benzo[k]fluoranthene (2.0 mg/kg), indeno[1,2,3-cd]pyrene (1.6 mg/kg), and dibenz[a,h]anthracene (1.1 mg/kg) exceeded USEPA SSLs in sample 20-2. Barium (170 mg/kg) exceeded USEPA SSLs and Refuge background values. Lead (110 mg/kg) and zinc (140 mg/kg) exceeded DSOLs and Refuge background levels in sample 20-2. Elevated levels of glycol ethers (62 mg/kg) were detected in both samples.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	Various Industrial users have leased igloos in this area. It is known that FWS operated the railroad up until it was dismantled.
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 020 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-020** – AREA 6 – RAILROAD LOADING DOCKS	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Operations History	
Sources:	SWDC operated railroad system and storage igloos during WWII. U.S. FWS operated the railroad system up until its closing.
Sources:	
Storage/Disposal Features Igloos were designed for the storage of high explosives.	
Material/Waste Characteristics and Practices	
High Explosives	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 021 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 8/28/99**
Site Name **AUS-021** – AREA 7 – FIRE STATION	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 40' 46.55" W88° 59' 20.08"	
Directions to Site (Attach map if needed) From Highway 148 take Ogden road to the east until it intersects Chamness Rd. at a FWS gate. Take Chamness Rd. to the North for 0.2 miles. The site is on the north side of the entrance to the PCB OU landfill.	
Site Description Site is the former location of an IOP fire station. The building has been razed and only remnants of the building foundation are still visible at the site. Just to the north of the remaining foundation several pieces of ordnance were identified by an OEW expert as possibly gas canisters of some type.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site None	
Leasing History	
	No industrial leasors
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 021 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 8/28/99**
Site Name AUS-021 – AREA 7 – FIRE STATION	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 40' 46.55" W88° 59' 20.08"	
Operations History	
Sources:	Site is identified as an IOP fire station. No information has been identified which dates the last use of this fire station.
Sources:	
Storage/Disposal Features None	
Material/Waste Characteristics and Practices	
Ordnance	Pieces of small rockets and smoke grenades were identified at the site (by OEW contractor, Human Factors Applications).
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 022 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-022 – AREA 7 – REFUGE BORDER BY PRISON LANDFILL	
Latitude and Longitude (Source USFWS unless otherwise indicated) None identified	
Directions to Site (Attach map if needed) None--The site location was never identified. The landfill is on Marion Federal Penitentiary Property and not visible from FWS property. The AUS list (FWS, 1998) indicates the source for Site AUS-022 as a "Current CONWR employee"	
Site Description Unable to identify the site. It is not on accessible grounds.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	No industrial leasors
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 022 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-022 – AREA 7 – REFUGE BORDER BY PRISON LANDFILL	
Latitude and Longitude (Source USFWS unless otherwise indicated) None identified	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features None--Site was never identified.	
Material/Waste Characteristics and Practices	
	None
Information from Interviews/Depositions	
	None

Site Summary Sheet—AUS - 023 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-023 – AREA 8 – LOAD LINE III BOILER HOUSE **Note: This form has not been completely filled out. Site AUS-023 has been eliminated. The Load Line III Boiler House will be investigated as part of Area 8 South.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Area 8 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 024 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-024 – AREA 8 – LOAD LINE III UNDERGROUND STORAGE TANKS **Note: This form has not been completely filled out. Site AUS-024 has been eliminated. The underground storage tanks will be investigated as part of Area 8 South.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed)	
Site Description	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Area 8 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 025 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-025 - AREA 8 – LOAD LINE III CLEANING AND PAINTING BUILDING **Note: This form has not been completely filled out. Site AUS-025 has been eliminated. The cleaning and painting building is part of the MISCA OU (Site 14), now in the RI/FS stage.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed)	
Site Description	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Section 8 for discussion.
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 026 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-026 – AREA 8 – LOAD LINE III EVAPORATION BASIN **Note: This form is not completely filled out. Site AUS-026 has been eliminated. The evaporation basin will be investigated as part of Area 8 South. See Section 8 for discussion.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	According to EPA field notes, this site is a swampy area. Site AUS-26 was tested for SVOCs and metals. All metals detected were below Refuge background. Unknown glycol ethers (41 mg/kg) were detected at elevated levels in this sample.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Area 8 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 027 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-027 – AREA 8 – LOAD LINE III CHANGE HOUSE SEWERS **Note: This form has not been completely filled out. Site AUS-027 has been eliminated. The change house sewers will be investigated as a part of Site Area 8 South. See Section 8 for Area 8 history.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed)	
Site Description	
Results of Previous Sampling at Site	
USEPA, 1998	Two samples were collected and analyzed for PAHs. All results were nondetect.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Area 8 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 028 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-028 – AREA 8 – LOAD LINE III DRAINAGE DITCH SEDIMENTS **Note: This form is not completely filled out. Site AUS-028 has been eliminated. This area is incorporated into Site Area 8 South.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Area 8 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 029 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/1/99**

Site Name

AUS-029 – AREA 8 – LOAD LINE III AREAS AROUND BUILDINGS

Note: This form has not been completely filled out. Site designation AUS-029 is being eliminated, and the Load Line III Areas around Buildings have been incorporated into the AUS Site designated as Area 8 South.

Latitude and Longitude (Source USFWS unless otherwise indicated)

Directions to Site (Attach map if needed)

.

Site Description

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Results of Previous Sampling at Site

USEPA, 1998	Two samples (29-1 and 29-2) were taken at site AUS-29. This site was tested for PAHs and metals. Indeno[1,2,3-cd]pyrene (1.8 mg/kg) exceeded USEPA SSLs in sample 29-1. Barium (200 mg/kg) exceeded USEPA SSLs and Refuge background values in both samples. Elevated levels of unknown glycol ethers (73 mg/kg) were detected in sample 29-2.
ESE, 1992	
Other	

Results of Other Previous Investigation at Site

Leasing History

	See Area 8 leasing discussion

Sources: Site Operations/Ownership History CONWR; Techlaw, 1992

Site Summary Sheet---AUS - 029 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/1/99**
Site Name AUS-029 – AREA 8 – LOAD LINE III AREAS AROUND BUILDINGS	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 030 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-030 – AREA 8 – LOAD LINE III CHANGE HOUSE **Note: This form has not been completely filled out. Site designation AUS-030 is being eliminated, and the Load Line III Changes Houses have been incorporated into the AUS Site designated as Area 8 South.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed)	
Site Description	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
O'Brien & Gere, 1988	Six composite soil samples (0-1 ft) were collected along north-south transect lines (Figure 20-1; O'Brien & Gere, 1988). Samples were screened for priority pollutants, metals, cyanide, indicators, and explosives. Delta-BHC (69 ug/kg) was the only organic detected slightly above its detection level. Data are questionable. Analytes shown as not present may be present.
Results of Other Previous Investigation at Site	
Leasing History	
	See Area 8 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 031 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-031 – AREA 8 – BURIED BLACK POWDER **Note: This form has not been completely filled out. Site designation AUS-031 is being eliminated, and the Buried Black Powder Area has been incorporated into the AUS Site designated as Area 8 South.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed)	
Site Description	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Area 8 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 032

AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/18/99	**Checked by Mary Hagerty** **Date 9/2/99**

Site Name

AUS-032 – FORMER FIBERLITE BUILDINGS LOCATIONS

Note: This form has not been completely filled out. Site designation AUS-032 is being eliminated, and the Former Fiberlite Building Locations have been incorporated into the AUS Site designated as Area 8 South.

Latitude and Longitude (Source USFWS unless otherwise indicated)

N 38° 40' 12.57" W 89° 00' 34.11"

Directions to Site: From Route 148 take Ogden Rd. for 1.1 miles east. Turn south onto road and travel through FWS gate. Go south on this road 0.7 miles until you come to a road on right (west). Take road on the right west util it ends at an intersection. 200 ft. to the south west of this intersection is the former location of the TNT melt building. See maps for locations of other points.

Site Description: Site is the southern portion of the IOP Load Line III. The southern portion begins at the former packing and shipping building (bldg. No. III--) and continues northeast up to the former melt pour building (bldg. III--). After the Army ceased IOP operations the southern portion of the facility was used by other entities for various purposes as explosive/ordinance manufacture, storage, and fiberglass boat manufacturing. All the buildings were destroyed and only debris remains at the site. The site is characterized by the mounded areas of soil and grass which covers (to varying degrees) the building debris and is roughly in the original locations of the IOP buildings.

Results of Previous Sampling at Site

USEPA, 1998	The U.S. EPA took one sample at the site described in the field logbook as "by rusty pipe of some kind." No PAH's or VOC's or metals were detected above the U.S. EPA SSLs. Note that unknown hydrocarbons and unknown PAH's were detected in the sample at levels of approx. 44 and 10.4 ppm respectively.
ESE, 1992	None
Other	None

Results of Other Previous Investigation at Site

None

Leasing History

	See Area 8 leasing discussion

Sources: Site Operations/Ownership History CONWR; Techlaw, 1992

Site Summary Sheet—AUS - 032 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/18/99	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-032 – FORMER FIBERLITE BUILDINGS LOCATIONS	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 38° 40' 12.57" W 89° 00' 34.11"	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 033 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/18/99	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-033 – AREA 8 – SOIL PILE WEST OF INDUSTRIAL BUILDINGS	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 40' 20.17" W 89° 00' 50.91"	
Directions to Site: From Route 148 take Ogden Rd. to the east for 1.0 miles until you come to the Diagraph entrance road. Take this road to the south until you come to the first intersection. Take a right turn at this intersection and follow this road around the west side of the building complex. At the next intersection take a right turn and continue on this road in a westerly direction until the road turns. At the turn in the road is a large pile of soil to the south. This pile is AUS site # 033.	
Site Description: Site is a large pile of soil located to the west of the IOP load line III. The pile was not part of the original build-up and it is unknown when it appeared.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
	See Area 8 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 033 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/18/99	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-033** – AREA 8 – SOIL PILE WEST OF INDUSTRIAL BUILDINGS	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 40' 20.17" W 89° 00' 50.91"	
Operations History	
Sources:	This site is a soil pile and had no operating history.
Sources:	
Storage/Disposal Features: Soil was stored in a large pile. No evidence of the development of storage / disposal features in the area of the pile was observed.	
Material/Waste Characteristics and Practices	
Soil	Unknown
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 034 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-034 – AREA 9 – LOAD LINE I BOILER HOUSE **Note: This site has been eliminated because the site was part of the PCB OU and the soil in the area was excavated.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed)	
Site Description	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	No known industrial leasors; See Area 9 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 035 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-035 – AREA 9 – LOAD LINE I UNDERGROUND STORAGE TANKS **Note: This site has been eliminated because the site was part of the PCB OU and the soil in the area was excavated.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	No known industrial leasors; see Area 9 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 036 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-036 – AREA 9 – LOAD LINE I CLEANING AND PAINTING BUILDING **Note: This site has been eliminated because the site was part of the PCB OU and the soil in the area was excavated.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Area 9 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 037 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by** Mary Hagerty **Date** 9/2/99
Site Name AUS-037 – AREA 9 – LOAD LINE I EVAPORATION BASIN **Note: This form has not been completely filled out. Site designation AUS-037 has been eliminated. The evaporation basin has been incorporated into site designation Area 9 West. See Section 9 for discussion of Area 9 history.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed)	
Site Description	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Area 9 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 038 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-038** – AREA 9 – LOAD LINE I CHANGE HOUSE SEWERS **Note: this form has not been completely filled out because this site has been deleted as AUS-038, and the Change House Sewers are being included in AUS Site designated as Area 9 West. See Report Section 9 for discussion of Area 9.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
May 1956-1956	Pyramid Industrial Finishes (Change House I-1-26)
1964-?	Explosives Engineers, Inc. (Change House I-1-27)
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 039 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by** Mary Hagerty **Date** 9/2/99
Site Name AUS-039 – AREA 9 – LOAD LINE I DRAINAGE DITCH SEDIMENTS **Note: This form has not been completely filled out. The site designation AUS-039 is being eliminated and the Load Line I Drainage Ditch Sediments are being incorporated into the AUS Site designated as Area 9 West. See Section 9 for History of Area 9 (Load Line I).**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed)	
Site Description	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Area 9 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 040 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by** Mary Hagerty **Date** 9/2/99
Site Name AUS-040 – AREA 9 –LOAD LINE I AREAS AROUND BUILDINGS **Note: This form has not been completely filled out. The site designation AUS-040 is being eliminated and the Areas Around Buildings are being incorporated into the AUS Site designated as Area 9 West. See Section 9 for History of Area 9 (Load Line I).**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Area 9 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 041 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J. Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-041 – AREA 10 – FIRING RANGE (FORMERLY COP-10) **Note: The site designation "Area 10 – Firing Range" has been eliminated. This site is incorporated into the new site designated as "Area 10."**	
Latitude and Longitude: (Source USFWS unless otherwise indicated) **N 37 40' 50.82" W 89 03' 01.77"**	
Directions to Site: Take Route 148 south over Crab Orchard Lake to Ogden Road. Turn right (west) on Ogden Road. Take Ogden Road for 0.1 mile to a locked gate. Continue west on Ogden Road for approximately 1.47 miles (look for a sign to the left that says firing range or range in use). Make a right turn (north). Use site map of Area 10.	
Site Description: The site is currently being used by FWS as a firing range for small gauge ammunition. The site is relatively flat. There is an A 8-10' high backstop the north side of the firing range. Some spent ammunition litters the ground. Ammunition consists of shotgun shells, rifle and pistol rounds. A 20' by 12'burn area is located in the southwest corner of Site 41. The surface is covered with gravel, burnt wood, and other burnt debris.	
Results of Previous Sampling at Site	
USEPA, 1998	Site AUS-41 was tested for metals. Arsenic (43 mg/kg) exceeded USEPA SSLs and Refuge background. Copper (470 mg/kg), lead (65,000 mg/kg), and zinc (140 mg/kg) exceeded DSOLs and Refuge background.
ESE, 1992	
Parsons Investigation	Parsons completed a visual walk-through of Area 10 using Schonstedts to aid in the visual investigation. One smoke grenade (M-18) was discovered slightly north of the firing range and detonated during the third detonation event.
Results of Other Previous Investigation at Site	
Leasing History	
	No known industrial leases
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 041 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J. Adams **Date: 8/30/1999**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-041 – AREA 10 – FIRING RANGE (FORMERLY COP-10)	
Latitude and Longitude (Source USFWS unless otherwise indicated) **N 37 40' 50.82" W 89 03' 01.77"**	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features:	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	
John Mahan (firearm safety officer of the refugee)	*John Mahan has been with the FWS the last 14 years. He said over the years the firing range has been used by the Marion Federal Penitentiary, local police forces, FBI, DEA, and the FWS. During his tenure the range has been used by these agency's for small firearm practice, with the occasional use for smoke or tear gas training canisters, no live rounds. To his knowledge no practice activity has taken place of the firing range grounds. For the last two years the FWS has been the only user. According to Mr. Mahan the small burning area in the southwest corner is used for burning of scrap paper targets and cardboard.*

Site Summary Sheet—AUS - 042 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams Date:8/30/99	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-042** – AREA 10 – BURN AREAS **Note: This site designation Area 10 Burn Areas has been eliminated. The site has been incorporated into Area 10.**	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37 40' 51.21" W 89 02' 59.41"	
Directions to Site: Take Route 148 south over Crab Orchard Lake to Ogden Road. Turn right (west) on Ogden Road. Take Ogden Road for 0.1 mile to a locked gate. Continue west on Ogden Road for approximately 1.47 miles (look for a sign to the left that says firing range or range in use). Turn right (north). Use site map of Area 10.	
Site Description: Site is the location of the former Olin Burning Grounds. Currently the area is a field of grass that has three large barren areas that run east and west, and two smaller burn areas in the southeast corner. Visible in the barren areas is abundant gravel, spent smoke grenades or tear gas canisters, abundant canister cans and canister bottoms and tops.	
Results of Previous Sampling at Site	
USEPA, 1998	Two samples (AUS 42-1 and AUS 42-2) were collected from this site for SVOC and metals analyses. These sample locations are unknown. Benzo[b]fluoranthene (0.8 mg/kg) exceeded USEPA SSLs in sample 42-2. Barium (3,900 mg/kg), cadmium (2 mg/kg) and silver (8.6 mg/kg) exceeded USEPA SSLs and Refuge background in one or both of the samples. Copper (280 mg/kg), lead (55 mg/kg), and zinc (230 mg/kg) exceeded DSOLs and Refuge background in one or both of the samples. It should be noted however, that unknown hydrocarbons were detected in the samples at 96 and 84 mg/kg. Unknown glycol ethers (61 mg/kg) were also detected in the samples at elevated levels.
ESE, 1992	
Parsons Investigation	Parsons completed a visual walk-thru of Area 10 using Schonstedts to aid in the visual investigation. One smoke grenade (M-18) was discovered in the general area of the burning ground and detonated during the third detonation event.
Results of Other Previous Investigation at Site	
Leasing History	
	No known leases.
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 042 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-042** – AREA 10 – BURN AREAS	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37 40' 51.21" W 89 02' 59.41"	
Operations History	
Sources: Olin Documents SOP #90157 (PRI-005218)	The area was the former burning grounds of Olin. The area consisted of burn pits for the scraps and explosive waste generated at Area 2 and 9. During this time period Olin's waste would consist of waste propellant, illumination scrap mix, ignitor scrap, laboratory waste pyrotechnic materials, explosive contaminated materials, and other explosives.
Sources:	
Storage/Disposal Features Former Burn Pits	
Material/Waste Characteristics and Practices	
	See Report Section 3
Information from Interviews/Depositions	
	See Report Section 3

Site Summary Sheet—AUS - 043 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/25/99	**Checked by Mary Hagerty** **Date:** 8/23/99
Site Name AUS-043 – AREA 10 – FIRE STATION	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42' 42.13 W 89° 02' 34.12"	
Directions to Site: From Route 148 take Ogden Rd. to the west for 1.2 miles. The fire station is on the north (right) side of the road across from the western entrance to areas 11/12.	
Site Description: Site is a former fire station. The building is gone but the foundation remains along with a cabinet at the rear of the foundation and two sumps. Some debris remains at the site along with a piece of farm equipment and a metallic skid of unknown origin.	
Results of Previous Sampling at Site	
USEPA, 1998	Lead (150 mg/kg) and zinc (220 mg/kg) exceeded DSOLs and Refuge background. Elevated levels of unknown hydrocarbons (64 mg/kg) and unknown glycol ethers (19 mg/kg) were detected.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
	No industrial leasors
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 043 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/25/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-043 – AREA 10 – FIRE STATION	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42' 42.13 W 89° 02' 34.12"	
Operations History	
Sources:	Unknown
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
None	
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 044 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-044 – AREA 11 – LOAD LINE II BOILER HOUSE **Note: This form is not completely filled out. Site designation AUS-044, Load Line II Boiler House, has been eliminated. This area is being incorporated into one of the sites designated in Area 11 See Section 11 for Area 11 history. It is included because the USEPA 1998 data was collected by the original AUS site designations.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed).	
Site Description.	
Results of Previous Sampling at Site	
USEPA, 1998	Three samples (44-1 – 44-3) were taken for site AUS-44. This site was tested for semivolatile organic compounds and metals. Naphthalene (4.5 mg/kg) exceeded CSOQGs in sample 44-1. Benzo[a]anthracene (0.83 mg/kg), benzo[b]fluoranthene (0.62 mg/kg), and benzo[a]pyrene (0.37 mg/kg) exceeded USEPA SSLs in sample 44-1. Benzo[b]fluoranthene (0.32 mg/kg) exceeded USEPA SSLs in sample 44-3. Mercury (0.36 mg/kg) exceeded USEPA SSLs and Illinois background in each of the three samples. Elevated levels of unknown PAHs (126 mg/kg) and unknown hydrocarbons (240 mg/kg) were detected in sample 44-1. Elevated levels of unknown PAHs (3.27 mg/kg) and unknown hydrocarbons (40 mg/kg) were also detected in sample 44-2. Elevated levels of unknown PAHs (2.59 mg/kg) and unknown hydrocarbons (29 mg/kg) were also detected in sample 44-3.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 045 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-045 – AREA 11 – LOAD LINE II UNDERGROUND STORAGE TANKS **Note: This form is not completely filled out. Site designation AUS-045, Load Line II Underground Storage Tanks, has been eliminated. This area is being incorporated into one of the sites designated in Area 11 See Section 11 for Area 11 history**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 046 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-046 – AREA 11 – LOAD LINE II CLEANING AND PAINTING BUILDING **Note: This form is not completely filled out. Site designation AUS-046, Load Line II Cleaning and Painting Building, has been eliminated. This area is being incorporated into one of the sites designated in Area 11 See Section 11 for Area 11 history. It is included because the USEPA 1998 data was collected by the original AUS site designations.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	Four samples (46-1 – 46-4) were taken at site AUS-46. This site was tested for PAHs and metals. Dibenz[a,h]anthracene (3.0 mg/kg) exceeded USEPA SSLs in sample 46-3. Barium (170 mg/kg) and nickel (72 mg/kg) exceeded USEPA SSLs and Refuge background in each of the samples. Mercury (0.12 mg/kg) exceeded USEPA SSLs and Illinois background in samples 46-2 and 46-3. Zinc (530 mg/kg) exceeded DSOLs and Refuge background in samples 46-2, 46-3, and 46-4. Lead (290 mg/kg) exceeded DSOLs and Refuge background in sample 46-4. Elevated levels of unknown glycol ethers (21 mg/kg) and unknown hydrocarbons (44 mg/kg) were detected in samples 46-1, 46-2, 46-3, and 46-4. Elevated levels of unknown phthalates (3.8 mg/kg) were also detected in sample 46-4.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 047 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-047 – AREA 11 – LOAD LINE II EVAPORATION BASIN **Note: This form is not completely filled out. Site designation AUS-047, Load Line II Evaporation Basin, has been eliminated. This area is being incorporated into one of the sites designated in Area 11 See Section 11 for Area 11 history. It is included because the USEPA 1998 data was collected by the original AUS site designations.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	Two samples (47-1 and 47-2) were taken at site AUS-47. This site was tested for semivolatile organic compounds and metals. No SVOC target compounds exceeded limits. Barium (170 mg/kg) and nickel (26 mg/kg) exceeded USEPA SSLs and Refuge background values in both of the samples. Zinc (140 mg/kg) exceeded DSOLs and Refuge background in sample 47-2. Elevated levels of unknown glycol ethers (95 mg/kg) were detected in both samples.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 048 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-048 – AREA II – LOAD LINE II CHANGE HOUSE SEWERS **Note: This form is not completely filled out. Site designation AUS-048, Load Line II Change House Sewers, has been eliminated. This area is being incorporated into one of the sites designated in Area 11 See Section 11 for Area 11 history.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 049 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-049 – AREA II – LOAD LINE II DRAINAGE DITCH SEDIMENTS **Note: This form is not completely filled out. Site designation AUS-049, Load Line II Areas around Buildings, has been eliminated. This area is being incorporated into one of the sites designated in Area 11 See Section 11 for Area 11 history. It is included because the USEPA 1998 data was collected by the original AUS site designations.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description.	
Results of Previous Sampling at Site	
USEPA, 1998	Three samples (49-1 – 49-3) were taken at site AUS-49 in addition to a duplicate sample (49-2 DUP). This site was tested for semivolatile organic compounds and metals. Benzo[a]anthracene (0.13 mg/kg), benzo[b]fluoranthene (0.22 mg/kg), and benzo[a]pyrene (0.13 mg/kg) exceeded USEPA SSLs in sample 49-2 DUP. Nickel (26 mg/kg) exceeded USEPA SSLs and Refuge background values. Mercury (0.17 mg/kg) exceeded USEPA SSLs and Illinois background in sample 49-2 DUP. Zinc (180 mg/kg) exceeded DSOLs and Refuge background in samples 49-2 and the duplicate. Chromium (66 mg/kg) exceeded CSOQGs and Refuge background in the duplicate sample. Elevated levels of unknown glycol ethers (14 mg/kg) were detected in sample 49-1. Elevated levels of hydrocarbons (27.2 mg/kg) were detected in samples 49-2 and 49-2 DUP. Elevated levels of cinnamyl cinnamate (28 mg/kg) were detected in sample 49-3.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 050 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by** Mary Hagerty **Date** 9/2/99
Site Name AUS-050 – AREA 11 – LOAD LINE II AREAS AROUND BUILDINGS **Note: This form is not completely filled out. Site designation AUS-050, Load Line II Areas around Buildings, has been eliminated. This area is being incorporated into one of the sites designated in Area 11 See Section 11 for Area 11 history.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	Two samples (50-1 and 50-1 DUP) were taken at site AUS-50. According to EPA field notes, this site was the TNT Screening Building. This site was tested for semivolatile organic compounds and metals. No SVOC target compounds were detected above limits. Elevated levels of unknown glycol ethers (58 mg/kg) were detected in both samples. Elevated levels of unknown phthalates (6.6 mg/kg) were detected in sample 50-1.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 051 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-051 – AREA 12 – CONCRETE SLAB WITH BOOSTERS **Note: This form is not completely filled out. Site designation AUS-051, Concrete Slab with Boosters is being eliminated. This area is being incorporated into the site designated as Area 12 (Former Ammonium Nitrate Plant). See Section 12 for Area 12 history.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	Two samples (51-1 and 51-2) were taken at site AUS-51. According to EPA field notes, sample 51-1 was collected "near tipped over drum near concrete rubble at west side" and sample 51-2 was collected "near buried metal". This site was tested for semivolatile organic compounds and metals. No SVOC target compounds exceeded limits. None of the metals exceeded Refuge background values. Elevated levels of unknown glycol ethers (69 mg/kg) were detected in both samples.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet---AUS - 052 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by** Mary Hagerty **Date** 9/2/99
Site Name AUS-052 – AREA 12 – DUMP WEST OF ROAD **Note: Area 12 has been identified as an area recommended for Site Inspections. Area 12 has also been renamed the Former Ammonium Nitrate Plant. This form has not been completely filled out since this site is incorporated into the Former Ammonium Nitrate Plant. It is included because the USEPA 1998 data was collected by the original AUS site designations.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	Two samples (52-1 and 52-2) were taken at site AUS-52. This site was tested for semivolatile organic compounds and metals. No SVOC target compounds were detected above limits. Zinc (230 mg/kg) exceeded DSOLs and Refuge background in both samples. Copper (49 mg/kg) and lead (110 mg/kg) exceeded DSOLs and Refuge background in sample 52-1. Elevated levels of unknown hydrocarbons (2.63 mg/kg) were detected in sample 52-1 and elevated levels of unknown glycol ethers (20 mg/kg) were detected in sample 52-2.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 053 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-053 – AREA 12 – AREA 300 YDS NORTH AND WEST OF BURN AREAS (FORMERLY COP-6) **Note: Area 12 has been identified as an area recommended for Site Inspections. Area 12 has also been renamed the Former Ammonium Nitrate Plant. This form has not been completely filled out since this site is incorporated into the Former Ammonium Nitrate Plant.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed)	
Site Description	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 054 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-054 – AREA 12 – U.S. POWDER DUMP (WEST PORTION OF COC-4) **Note: Area 12 has been identified as an area recommended for Site Inspections. Area 12 has also been renamed the Former Ammonium Nitrate Plant. This form has not been completely filled out since this site is incorporated into the Former Ammonium Nitrate Plant.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 055 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date: 9/2/99**
Site Name **AUS-055** – AREA 12 – BURNED SOLID PROPELLANT AREA **Note: Area 12 has been identified as an area recommended for Site Inspections. Area 12 has also been renamed the Former Ammonium Nitrate Plant. This form has not been completely filled out since this site is incorporated into the Former Ammonium Nitrate Plant.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 056 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-056 – AREAS 11/12 – DUMP WITH TANKS NEAR SURFACE **Note: Area 11 has been identified as an area recommended for Site Inspections. Area 11 has been subdivided into the: Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, Pilot Propellant/ Cap Area, and the Nitroglycerin Area. This form has not been completely filled out since this site is incorporated into the Nitroglycerin Area.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) :	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 057 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-057 – AREAS 11/12 – DUMP EAST OF ROAD FROM AREA 11 TO 12 **Note: Site designation AUS-057 has been eliminated. This site has been incorporated into AUS-106A.**	
Latitude and Longitude (Source USFWS unless otherwise indicated) Coordinate position has not been identified	
Directions to Site: Take Route 148 south over Crab Orchard Lake to Ogden Road. Turn right (west) on Ogden Road. Take Ogden Road for 0.1 mile to a locked gate. Continue west on Ogden Road for approximately 1.08 miles. Turn left (south) on unnamed gravel road. Continue south on gravel road for approximately 0.8 miles to a fork in the road. At the fork make a left turn (east) onto another gravel road. Continue east on gravel road for 0.125 miles and veer right continue going east on gravel or asphalt road for approximately 0.4 of a mile for a total of 0.525 miles (since the fork in the road). Should be at a intersection of an asphalt road running east and west, and a concrete road running north and south. From the intersection go east for 0.1 miles and make a right. Head south to southwest for 0.2 miles (stop car before deep north-south running ditch) Head south down hill onto old roadway (you should be heading due east for about 150'). At old roadway go due east for approximately 500 feet on old roadway to a fenceline. At fenceline go 30' to the left to cross old fence and creek. Arrive back on road and continue due east for approximately 500'.	
Site Description: Site is a small dump area of a 8' wide by 5' long by 2' thick hood type object. Adjacent to the hood are 2-25' sections of a smokestack or vent-pipe. A small creek with a little water runs alomg the south side of the dump. The site is on the north side of an old Road that use to access Area 11 from Route 148.	
Results of Previous Sampling at Site	
USEPA, 1998	This site was tested for semivolatile organic compounds and metals. No SVOC target compounds exceeded limits at this site. None of the metals exceeded Refuge background values. Elevated levels of unknown glycol ethers (69 mg/kg) were detected in this sample. ** **Note:** The location of these samples is not the same as given to URSGWC by Mark Saddelberg who identified the site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	No known industrial tenants
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Storage/Disposal Features: The site is a dump.	

Site Summary Sheet—AUS - 058 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by : Thomas J Adams **Date:** 8/30/99	**Checked by** Mary Hagerty **Date** 9/2/99
Site Name AUS-058 -- AREA 12 -- DRUM ON EAST SIDE OF AREA 12 ROAD **Note: Area 12 has been identified as an area recommended for Site Inspections. Area 12 has also been renamed the Former Ammonium Nitrate Plant. This form has not been completely filled out since this site is incorporated into the Former Ammonium Nitrate Plant. It is included because the USEPA 1998 data was collected by the original AUS site designations.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed)	
Site Description	
Results of Previous Sampling at Site	
USEPA, 1998	Site AUS 58-1 was tested for semivolatile organic compounds, PAHs, and metals. None of the SVOC target compounds exceeded limits. Benzo[b]fluoranthene (2.5 mg/kg), benzo[a]pyrene (2.5 mg/kg), indeno[1,2,3-cd]pyrene (3.0 mg/kg), and dibenz[a,h]anthracene (1.2 mg/kg) exceeded USEPA SSLs. Benzo[k]fluoranthene (2.5 mg/kg) exceeded CSOQGs. Beryllium (3.6 mg/kg), and nickel (41 mg/kg) exceeded USEPA SSLs and Refuge background. Cobalt (48 mg/kg) and copper (150 mg/kg) exceeded DSOLs and Refuge background. Chromium (100 mg/kg) exceeded CSOQGs and Refuge background. Unknown hydrocarbons were found at a level of 33 mg/kg and unknown glycol ethers (19 mg/kg) were at an elevated level.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	See Areas 11 and 12 leasing discussion
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 059
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99	**Checked by Mary Hagerty** **Date 9/2/99**

Site Name AUS-059 – AREA 13 – RAILROAD LOADING DOCKS

Note: The site designation Area 13—Railroad Loading Docks has been eliminated. These docks have been incorporated into a new site designated as Area 13.

Latitude and Longitude (Source USFWS unless otherwise indicated)
North Dock 37 41' 08.48 W 89 04' 00.77"

Directions to Site (Attach map if needed)
.Take route 148 south over Crab orchard to Ogden Road. Make a Right turn (West) onto Ogden Rd. Take Ogden Rd. for 0.1 of a mile to locked gate. Continue West on Ogden Rd. for 1.82 miles where you pass through a fenced area; continue for another 0.1 miles . Total is a little less than 2.38 miles from gate at Ogden.
North Dock : Make the 1st Right (North) after the fence for 0.6 of a mile and veer left (West). Go West for 0.1 of a mile, make a Right (North). R & R Dock is 246' North to your left (West). 15' off road to Northwest.
South Dock : Make the 1st Left (South). At 0.4 of a mile veer right (South/Southeast). At a total of 0.85 miles from the entrance into area 11 make a Left turn (Southeast/East) onto a dirt road. A little less than 0.1 of a mile, the R & R dock is on your Left. Dock is 15' of road.

Site Description
The site consists of a loading docks on the north and south sides of area 13 used during the IOP to load 500 pound bombs..

Results of Previous Sampling at Site

USEPA, 1998	There was one sample (AUS 59-1) collected from this site for SVOC and metals analyses. According to EPA field notes, this site was the old Loading Dock. There were no SVOC target compounds detected in this sample. It should be noted however, that reporting limits were slightly elevated for this sample. None of the metals exceeded Refuge background values. Unknown glycol ethers (74 mg/kg) were detected at an elevated level in this sample.
ESE, 1992	
O'Brien & Gere, 1988	Four composite soil samples (0-1 ft) were collected around the perimeter of the dock (Figure 25-1; O'Brien & Gere, 1988). Sample 18-4 was resampled for full priority pollutant analysis. Traces of the explosive tetryl (1.90 mg/kg) were detected in two soil samples. Magnesium (91100 mg/kg) in sample 18-4 and sodium (2330 mg/kg) in sample 18-1 were detected. These are only estimates. Di-n-octyl phthalate (4050 ug/kg wet wt) was detected in sample 18-4. Data are questionable. Analytes shown as not present may be present.

Results of Other Previous Investigation at Site

Leasing History

	See Area 13 history.

Operations History

Sources:	
Sources:	

Storage/Disposal Features

Material/Waste Characteristics and Practices

Information from Interviews/Depositions

Site Summary Sheet—AUS - 060 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/25/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-060 – AREA 14 – LEAD AZIDE FULMINATE IGLOOS	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 43' 14.45" W 89° 03' 43.95"	
Directions to Site: From Route 13 take Route 148 south 1.0 miles until you reach Old Hwy 13. Take Old Hwy 13 west 2.4 miles until you reach Wolf Creek Rd. Take Wolf Creek Rd. south 1.4 miles until you reach a road on the west with a FWS gate. Go west through the gate 0.1 miles until you come to an 8 foot fence gate. This gate is the boundary of AUS Site # 060.	
Site Description: Site consists of 4 concrete structures surrounded by an 8 foot chain link fence. The area was used for the storage of mercury fulminate during WWII and for other explosives subsequent to the war. The area is generally flat with ditches directing drainage to a low-lying area just west of the internal road structure at the site.	
Results of Previous Sampling at Site	
USEPA, 1998	One sample (AUS 60-1) was collected at this site for SVOC and metals analyses. This sample location is unknown. There were no SVOC target analytes detected above screening levels in this sample. Arsenic (180 mg/kg) exceeded USEPA SSLs and Refuge background. Lead (470 mg/kg) exceeded DSOLs and Refuge background. It should be noted that unknown hydrocarbons were detected in this sample at 31 mg/kg and unknown glycol ethers were detected at 41 mg/kg.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
1952-1963	Universal Match Corporation
1970-?	Wildlife Materials, Inc. (Igloo FS-2-2)
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 060 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/25/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name **AUS-060** – AREA 14 – LEAD AZIDE FULMINATE IGLOOS	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 43' 14.45" W 89° 03' 43.95"	
Operations History	
Sources: War Department Document 1943.	Storage of mercury fulminate (building designations are FS X-X for fulminate storage)
Sources: Harvey Pitt Deposition 1998	Storage of lead azides and some high explosives/propellants.
Storage/Disposal Features No storage or disposal features are part of this site.	
Material/Waste Characteristics and Practices	
Mercury fulminate	Sensitive explosive
Lead Azide	Explosive material
Propellants	Explosive materials
Information from Interviews/Depositions	
Harvey Pitt Deposition	Mr. Pitt states that this area was used for the storage of explosives by the army and Universal match. He stated that a common practice for the removal of the lead azides from the shipping containers was to remove the sacks from the barrels that contained a methyl alcohol solution in a field to the north. They would allow the sacks to drain/dry and then place the sacks in the storage igloos.

Site Summary Sheet—AUS - 061 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/25/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name **AUS-061** – NORTH OF AREA 14 – DETONATION PITS	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 43' 14.45" W 89° 03' 43.95"	
Directions to Site: From Route 13 take Route 148 south 1.0 miles to old Hwy 13. Turn west on Old Hwy 13 and go 2.4 miles until you get to Wolf Creek Rd. Take Wolf Creek Rd. south for 1.0 miles until you reach a road in a thin row of trees to the west.. Follow this road 0.1 miles until you reach the concrete structures which are AUS Site # 061.	
Site Description: This site consists of 3 concrete structures used for the detonation of pyrotechnic, and gas generator devices for testing purposes. One of the structures (the smallest one furthest east) was a firing pit that was used as personnel protection during the testing. The two larger structures (northwest and southwest) were the detonation pits where the gas generators and pyrotechnic devices were placed and fired off during the testing. One depressed area was observed at the site just west of the southwestern detonation pit.	
Results of Previous Sampling at Site	
USEPA, 1998	There were seven sample locations at this site: AUS 61-1 through AUS 61-7. These sample locations are identified in USEPA field notes. SVOC compounds exceeded screening levels in two of the seven samples (AUS 61-1 and AUS 61-4). The following SVOC compounds were detected at the site above either USEPA SSLs and/or CSOQGs: carbazole (0.71 mg/kg), benzo(a)anthracene (18 mg/kg), benzo(b)fluoranthene (3.5 mg/kg), benzo(k)fluoranthene (3.5 mg/kg), benzo(a)pyrene (5.0 mg/kg), indeno(1,2,3-cd)pyrene (5.0 mg/kg), dibenz(a,h)anthracene (2.3 mg/kg), and phenathrene (5.7 mg/kg). Total PAHs also exceeded DSOLs in these two samples. Barium (430 mg/kg), nickel (23 mg/kg) and cadmium (55 mg/kg) exceeded USEPA SSLs and Refuge background in samples 61-1, 61-2, 61-3, 61-4, and 61-5. Silver (2 mg/kg) exceeded USEPA SSLs and Refuge background in sample 61-3. Mercury (0.16 mg/kg) exceeded USEPA SSLs and Illinois background in samples 61-1 and 61-4. Lead (420 mg/kg) exceeded DSOLs and Refuge background in samples 61-1 and 61-3. Cobalt (21 mg/kg) exceeded DSOLs and Refuge background in sample 61-3. Zinc (440 mg/kg) exceeded DSOLs and Refuge background in sample 61-1. It should be noted that unknown PAHs (24.6 mg/kg), unknown glycol ethers (77 mg/kg), and unknown hydrocarbons (81 mg/kg) were also detected in both of these samples at elevated levels.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
	No known leases for this property.
Sources:	

Site Summary Sheet—AUS - 061 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/25/99	**Checked by Mary Hagerty** **Date 8/23/99**
Site Name AUS-061 – NORTH OF AREA 14 – DETONATION PITS	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 43' 14.45" W 89° 03' 43.95"	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features: The site was a testing site and no storage or disposal features were built.	
Material/Waste Characteristics and Practices	
Gas generator/pyrotechnic	Devices were tested inside the detonation pits and subsequently removed.
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 062 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 05/21/1999	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-062** – COC AREA – FORMER LANDFILL (FORMERLY COC-11)	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42' 01.44" W 89° 04' 45.31"	
Directions to Site: From Route 13 take Route 148 south 1.0 miles until you come to old Route 13. Turn west onto old Route 13 and proceed for 2.4 miles until you come to Wolf Creek Rd. Turn south on Wolf Creek Rd. and travel for 1.8 miles until you come to a gate. Pass through the gate and continue south another 0.7 miles. Turn west on this road and travel for 1.0 miles until you get to an intersection. Site # 062 is 570 feet west of this intersection on the abandoned road.	
Site Description: Site is in a valley and is dissected from east to west with a creek. Site is in a grassy area with many pits potentially from an army remedial action resulting from IOP Tank Mine Surplus Disposal activities. Site is potentially contaminated with metals and possibly with explosive residues.	
Results of Previous Sampling at Site	
USEPA, 1998	EPA took 2 samples at AUS site # 062. No PAHs, mercury, or VOCs were found. Nickel (210 mg/kg) exceeded USEPA SSLs and Refuge background in both samples. Elevated levels of unknown glycol ethers (62 mg/kg) were detected in both samples.
ESE, 1992	None
Other Parsons, 1997	UXO Investigation, 133 magnetometer anomalies, 42 anomalies investigated, Found 41 pieces of non-ordnance Scrap, 1 piece ordnance scrap, no UXO
Results of Other Previous Investigation at Site: Parsons determined that the material found at the site was reflective of a former dump area. It did not ascertain the origin of the material. Parson's recommendation for the entire COC area consisted of selected UXO removal (in other areas), reforestation of 70 acres (unknown as to which areas recommended for reforestation), and implementation of institutional controls (restricted access).	
Leasing History	
	No known industrial tenants.

Site Summary Sheet—AUS - 062 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 05/21/1999	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-062 – COC AREA – FORMER LANDFILL (FORMERLY COC-11)	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42' 01.44" W 89° 04' 45.31"	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features: None	
Material/Waste Characteristics and Practices	
Parsons, 1997	Non ordnance scrap metal and one piece ordnance scrap metal
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 063 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/21/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name **AUS-063** – COC AREA – FENCED AREAS (FORMERLY COC-12)	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 41' 56.25" W 89° 04' 57.75"	
Directions to Site: : From Route 13 take Route 148 south 1.0 miles until you come to old Route 13. Turn west onto old Route 13 and proceed for 2.4 miles until you come to Wolf Creek Rd. Turn south on Wolf Creek Rd. and travel for 1.8 miles until you come to a gate. Pass through the gate and continue south another 0.7 miles. Turn west on this road and travel for 1.0 miles until you get to an intersection. Site # 63 is 1200 feet west of this intersection on the abandoned road.	
Site Description: Site is a fenced area approximately 30 feet by 30 feet. The fence is falling and the area in and around the fence is well vegetated.	
Results of Previous Sampling at Site	
USEPA, 1998	Soil sample taken "in small creek west of fenced in area" (EPA field logbook 4/18/98 entry) [Note: Site walkover survey did not reveal a small creek west of fenced area. A small creek was noted north of fenced area.] No PAH's, mercury, or VOCs were detected. Cadmium (3.4 mg/kg) and nickel (32 mg/kg) exceeded USEPA SSLs and Refuge background values. Zinc (140 mg/kg) exceeded DSOLs and Refuge background. Elevated levels of unknown glycol ethers (18 mg/kg) were detected in this sample.
ESE, 1992	Magnetometer results from site # 063 were positive. (P. 26, ESE, 1992).
Other Parsons, 1997	11 magnetometer anomalies, 7 pieces ordnance scrap, 4 pieces non-ordnance scrap.
Results of Other Previous Investigation at Site	
Leasing History	
	No known leasing history.
Sources:	

Site Summary Sheet—AUS - 063 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/21/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name **AUS-063** – COC AREA – FENCED AREAS (FORMERLY COC-12)	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 41' 56.25" W 89° 04' 57.75"	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features: This site is undeveloped woodlands and has no storage or disposal features.	
Material/Waste Characteristics and Practices	
Parsons, 1997	7 pieces of ordnance scrap and 4 pieces of non-ordnance scrap were found at
	COC-12 during a magnetometer survey. No other magnetic anomalies were
	observed.
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 064 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/21/99	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-064** – MOUNDS AND BRICK PIT (FORMERLY COC-13)	
Latitude and Longitude (Source USFWS) N 37° 43' 23.34" W 89° 01' 21.52" Note: These coordinates are believed to be incorrect	
Directions to Site: I was unable to locate this site. ESE's description of the location is vague and an extensive search of the approximate location revealed no signs of mounds and a brick pit. The U.S. EPA field personnel listed a sample taken as site 64 however their description of the sample location corresponds more closely with site 63.	
Site Description: Unknown, site 64 was not located during the site walkover survey.	
Results of Previous Sampling at Site	
USEPA, 1998	According to USEPA field notes, this sample was collected "near intersection in road downstream of tipped barrel". This site was tested for metals. Barium (180 mg/kg) and beryllium (1.1 mg/kg) exceeded USEPA SSLs and Refuge background levels. Elevated levels of unknown glycol ethers (76 mg/kg) were detected at this site.
ESE, 1992	None
Other Parsons, 1997	35 magnetometer anomalies were observed and eleven anomalies were investigated. Two pieces were ordnance scrap and 9 pieces were non-ordnance scrap. No UXO were identified.
Results of Other Previous Investigation at Site	
Leasing History	
	Site is not known to have been leased.
Sources:	

Site Summary Sheet—AUS - 064 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/21/99	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-064** – MOUNDS AND BRICK PIT (FORMERLY COC-13)	
Latitude and Longitude (Source USFWS) N 37° 43' 23.34" W 89° 01' 21.52" Note: These coordinates are believed to be incorrect	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features None	
Material/Waste Characteristics and Practices	
Parsons, 1997	2 pieces of ordnance scrap and 9 pieces of non-ordnance scrap were identified at
	the site. No UXO was identified.
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 065 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/21/99	**Checked by Mary Hagerty** **Date 8/23/99**
Site Name AUS-065 – COC AREA – FOUNDATIONS NORTHEAST OF COC-1	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42' 03.92" W 89° 04' 36.05"	
Directions to Site: From Route 13 take Route 148 south for 1.0 miles until you come to old Route 13. Take old Route 13 west 2.4 miles until you come to Wolf Creek Road. Take Wolf Creek Road south for 1.8 miles until you come to an FWS gate at the north side of Crab Orchard Lake. Go through the gate and continue south for 0.7 miles until you come to a road to the west. Take this road west for 1.0 miles until you come to an intersection. Go north at the intersection and the site is 80 feet north of the intersection.	
Site Description: This site is at the intersection of two roads and appears to be a former homestead. It has two visible concrete foundations which are falling into depressions in and around the foundations themselves. Soil piles surround the foundations and a brick structure resembling a well is at the eastern side of the site. The site is well vegetated with trees and grasses for ground cover. The site borders on the east and north with a grassy field recently planted with seedlings. There is a fence to the south separating the main road from the site.	
Results of Previous Sampling at Site	
USEPA, 1998	The EPA took two samples and one duplicate sample at AUS 065 and found low levels of PAH's and mercury (duplicate sample was positive for mercury (0.23 mg/kg) but the original sample was non-detect). Carbazole (0.23 mg/kg), benzo[a]anthracene (0.75 mg/kg), benzo[b]fluoranthene (1.1 mg/kg), benzo[a]pyrene (0.62 mg/kg), and dibenz[a,h]anthracene (0.11 mg/kg) exceeded USEPA SSLs in sample 65-2. Benzo[a]anthracene (0.24 mg/kg) and benzo[b]fluoranthene (0.25 mg/kg) also exceeded USEPA SSLs in sample 65-2 DUP. Zinc (150 mg/kg) exceeded DSOLs and Refuge background in samples 65-2 and 65-2 DUP. Elevated levels of unknown hydrocarbons (6.5 mg/kg) were detected in samples 65-1 and 65-2 DUP. Elevated levels of unknown PAHs (3.54 mg/kg) were detected in sample 65-2. Elevated levels of unknown glycol ethers (72 mg/kg) were detected in all three samples.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
	Site is not known to have been leased.
Sources:	

Site Summary Sheet—AUS - 065 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/21/99	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-065** – COC AREA – FOUNDATIONS NORTHEAST OF COC-1	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42' 03.92" W 89° 04' 36.05"	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features The site is undeveloped and contains no storage or disposal features.	
Material/Waste Characteristics and Practices	
Building debris	Steel culverts, concrete, barb wire fencing
Soil piles	The soil piles appear to be railroad bed materials (rock, slag, soil)
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 066 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name **AUS-066** – COC AREA – BERM WITH RED-BRICK RUBBLE	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37o 42' 22.06" W 89o 05' 06.22"	
Directions to Site From Route 13 take Route 148 south 1.0 miles until you come to old Route 13. Turn west onto old Route 13 and proceed for 2.4 miles until you come to Wolf Creek Rd. Turn south on Wolf Creek Rd. and travel for 1.8 miles until you come to a gate. Pass through the gate and continue south another 0.7 miles. Turn west on this road and travel for 1.0 miles until you get to an intersection. Site # 066 is 2,000 feet west of this intersection along the abandoned road.	
Site Description: Site is a wooded area along an abandoned road. Site is adjacent to CO Lake and a creek runs through the site and discharges to the lake. A small bermed area created from clay block rubble demarcates the site. To the west approximately 100 feet from the bermed area is a Danger Contaminated Area sign.	
Results of Previous Sampling at Site	
USEPA, 1998	According to EPA field notes, this site was a 0.5 miles west of the intersection with red brick rubble. This site was tested for metals. Barium (100 mg/kg), beryllium (0.6 mg/kg), and nickel (14 mg/kg) exceeded USEPA SSLs, but all these concentrations are within Refuge background values.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
	Site is not known to have been leased.
Sources:	

Site Summary Sheet—AUS - 066 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name **AUS-066** – COC AREA – BERM WITH RED-BRICK RUBBLE	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37o 42' 22.06" W 89o 05' 06.22"	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features: Site is an undeveloped area with no storage or disposal features.	
Material/Waste Characteristics and Practices	
Clay block rubble	Material is similar to the clay block used to build the walls on the second floor of the IOP change houses.
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 067 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutchseon **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-067 – COC AREA – "CONTAMINATED AREA" NORTHWEST OF COC-6	
Latitude and Longitude (Source USFWS unless otherwise indicated) 37° 42' 22.06" W 89° 04' 36.56"	
Directions to Site: From Route 13 take Route 148 south 1.0 miles until you come to old Route 13. Turn west onto old Route 13 and proceed for 2.4 miles until you come to Wolf Creek Rd. Turn south on Wolf Creek Rd. and travel for 1.8 miles until you come to a gate. Pass through the gate and continue south another 0.7 miles. Turn west on this road and travel for 1.0 miles until you get to an intersection. Turn north at the intersection and go 0.3 + miles until you see the contaminated area sign on the right. This is site # 067.	
Site Description: The site is bounded on the west by an abandoned road and on the east by a pasture. It is generally flat but slopes to the west and to the north. It appears as if the site is a former homestead or at least contained a building at one time or another. The area is lightly wooded and contains some ground vegetation.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
	Site is not known to have been leased.
Sources:	

Site Summary Sheet—AUS - 067 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutchseon **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-067 – COC AREA – "CONTAMINATED AREA" NORTHWEST OF COC-6	
Latitude and Longitude (Source USFWS unless otherwise indicated) 37° 42' 22.06" W 89° 04' 36.56"	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Construction debris	Broken concrete
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 068 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-068 – COC AREA – PASTURE NORTH OF HAMPTON CEMETERY	
Latitude and Longitude (Source USFWS unless otherwise indicated) Unable to locate a specific area relevant to the site.	
Directions to Site Site is in the field north of Hampton Cemetery in the COC area.	
Site Description Site is a pasture. It was reportedly used for ordnance detonation/demolition activities.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other Parsons, 1997	Magnetometer sweeps were performed just to the west of the pasture and numerous anomalies were identified. These anomalies were reportedly due to ordnance demolition at site COC-6. No UXO was found adjacent to this pasture.
Results of Other Previous Investigation at Site	
Leasing History	
	No leasing information found.
Sources:	

Site Summary Sheet—AUS - 068 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-068 – COC AREA – PASTURE NORTH OF HAMPTON CEMETERY	
Latitude and Longitude (Source USFWS unless otherwise indicated) Unable to locate a specific area relevant to the site.	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	None
Information from Interviews/Depositions	
	None

Site Summary Sheet—AUS - 069 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-069 – DUMP NEAR SOUTH SHORE OF CRAB ORCHARD LAKE

Latitude and Longitude (Source USFWS unless otherwise indicated)

N 37° 42' 10.59" W 89° 03' 15.88"

Directions to Site: Take Wolf Creek Road south across Crab Orchard Lake. At 0.1 miles past the southern lakeshore turn to the east. Follow this road 0.1 miles until a gate on the North appears. Go through the gate and head in an east north east direction toward the grove of trees on the lakeshore 0.2 miles ahead. This stand of trees marks site 69.

Site Description: Site appears to be an industrial dump on the southern shore of Crab Orchard Lake. The site is in a stand of trees on the lakeshore and some of the debris sits in the lake.

Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	Asbestos sample positive for chrysotile.
Other	None

Results of Other Previous Investigation at Site

ESE reported finding 2 land mine casings at this site although none were observed during my site visit.

Leasing History	
	No known industrial tenants

Sources: Site Operations/Ownership History CONWR; Techlaw, 1992

Site Summary Sheet—AUS - 069 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by**_____ **Date** _____
Site Name AUS-069 – DUMP NEAR SOUTH SHORE OF CRAB ORCHARD LAKE	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42' 10.59" W 89° 03' 15.88"	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features: Site is undeveloped and therefore contains no storage or disposal features. Debris was apparently just dumped on the ground at the site. It is also possible some of the material dumped at the site was covered with soil or more debris which could make the site much larger than appears.	
Material/Waste Characteristics and Practices	
55 gal. Drums	Empty drums litter the site. No labels were found but one drum was stamped on the bottom with "B&W 18-55-41 Made in USA":
Construction debris	Culverts, corrugated asbestos sheeting, concrete rubble, clay blocks, bricks, steel scrap.
Iron/steel piping	Some piping debris is present and one pipe can be seen entering CO lake at the eastern side of the site near the creek.
Information from Interviews/Depositions	
None	

Site Summary Sheet---AUS - 070 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-070 – DUMP NORTHEAST OF BASS PONDS	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site: This site is reported to be south of AUS site # 70 and northeast of the bass ponds. An extensive search of this area did not reveal any signs of a dump. Neither FWS employees nor myself were able to locate this site..	
Site Description	

Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	

Results of Other Previous Investigation at Site	

Leasing History	
	No known industrial leasors

Sources: Site Operations/Ownership History CONWR; Techlaw, 1992

Site Summary Sheet—AUS - 070 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-070 – DUMP NORTHEAST OF BASS PONDS	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	
B. Gulden and Matt Vick (FWS employees)	Mr. Gulden and Mr. Vick said that no one has been able to locate this site.

Site Summary Sheet—AUS - 071 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-071 – ROUTE 148 CAUSEWAY – FORMER MOUNDS OF UNKNOWN MATERIAL	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42' 28.26" W 89° 01' 16.18"	
Directions to Site: From Hwy 13 take Route 148 south until you cross Crab Orchard Lake. 0.1 miles south of the southern lakeshore is a western FWS gated road. Follow this road 0.1-0.2 miles until it ends. Concrete debris identified as the site is on the south side of the abandoned road.	
Site Description: The site consists of a couple of mounds of concrete debris at the western edge of a road just south of the route 148 causeway. The mounds are no larger than a 5-10 cubic yards combined.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
	No known industrial tenants
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 071 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-071 – ROUTE 148 CAUSEWAY – FORMER MOUNDS OF UNKNOWN MATERIAL	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42' 28.26" W 89° 01' 16.18"	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
Concrete/rock	Material is piled in 2 piles in close proximity. Material appears to be inert.
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 072 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-072 – ROUTE 148 CAUSEWAY – MARION PUMP STATION	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42' 03.53" W89° 01' 03.49"	
Directions to Site: From Hwy 13 take Route 148 south across Crab Orchard Lake. Take first left after lake and turn north toward FWS gate. Go through gate and follow road to lakeshore.	
Site Description: Unable to locate pump station or any suspicious materials. Area is well vegetated and no signs of industrial work or hazardous materials were observed in the area.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
	No known industrial leasors
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 072 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name **AUS-072** – ROUTE 148 CAUSEWAY – MARION PUMP STATION	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 42' 03.53" W89° 01' 03.49"	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features: None	
Material/Waste Characteristics and Practices	
None	
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 073 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-073 – RECREATIONAL WASTE DUMP (WEST END OF CRAB ORCHARD LAKE DAM)	
Latitude and Longitude (Source USFWS unless otherwise indicated) Coordinate position not determined.	
Directions to Site: From Hwy 13 take Spillway Road south until you reach the bridge that crosses the spillway channel. On the east side of Spillway Road and north of the bridge is a spillway service entrance road. Site AUS 073 is on the corner of Spillway road and the service road.	
Site Description: The site is a recreational dump along side of the intersection of Spillway Road and a dam service road. The roads are elevated compared to the natural landscape and debris litters the roadside all the way down to the natural land features.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
	No known industrial tenants
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 073 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-073 – RECREATIONAL WASTE DUMP (WEST END OF CRAB ORCHARD LAKE DAM)	
Latitude and Longitude (Source USFWS unless otherwise indicated) Coordinate position not determined.	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features: This is an unauthorized dump site and as such is undeveloped. Therefore it has no storage or disposal features.	
Material/Waste Characteristics and Practices	
Construction debris	Inert materials like wood, brick, and concrete
Household trash	Bottles, cans, plastic
Recreational trash	Beer and soda cans, plastic cups, etc.
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 074 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date:** 5/19/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-074 – HOMESTEAD DUMP	
Latitude and Longitude (Source USFWS unless otherwise indicated) Coordinate position has not been determined.	
Directions to Site: From Hwy 13 take Spillway Road south for 5.3 miles to Hayton Road. Take Hayton Road west for 0.7 miles to Falcon Road Take Falcon Road to the west for approximately 0.65 miles when you reach a strand of trees on the north side of the road. Head North through the strand of trees following the dirt road 0.2 miles until you reach the tree line. Turn to the west at the tree line and travel 110 feet. The site is adjacent to the creek directly ahead.	
Site Description: Site is a homestead dump located in and around a creek.	

Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	None
Other	None

Results of Other Previous Investigation at Site
None

Leasing History	
	No known industrial tenants

Sources: Site Operations/Ownership History CONWR; Techlaw, 1992

Site Summary Sheet—AUS - 074 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date:** 5/19/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-074 – HOMESTEAD DUMP	
Latitude and Longitude (Source USFWS unless otherwise indicated) Coordinate position has not been determined.	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features: Site is an undeveloped and contains no storage or disposal features.	
Material/Waste Characteristics and Practices	
Household waste	Waste is partially buried and consists of bed springs, shoes, hoses, etc.
55 gal. Drum	Drum is decayed, empty, and shows no signs of previous contents.
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 075 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date: 08/26/1999**	**Checked by Mary Hagerty** **Date August 23, 1999**
Site Name AUS-075 – HOMESTEAD DUMP ON WEST REFUGE BORDER	
Latitude and Longitude (Source USFWS unless otherwise indicated) Not identified	
Directions to Site (Attach map if needed) Unable to access site due to disrepair of existing roads.	
Site Description Site is reported to be a homestead dump. Site is located in a remote area of the refuge where existing roads are in disrepair.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site None	
Leasing History	
	No known industrial tenants
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features None observed - Unable to access site due to road disrepair.	
Material/Waste Characteristics and Practices	
	None
Information from Interviews/Depositions	
	None

Site Summary Sheet—AUS - 076 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/19/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-076 – OPEN BURN SITE AT ROUTE 13 MARINA (IMAGES MARINA)

Latitude and Longitude (Source USFWS unless otherwise indicated)

N 37° 44' 37.87" W 89° 07' 14.36"

Directions to Site: From Marion, IL take Route 13 west until you reach the northern portion of Crab Orchard Lake. Turn south into the Images Marina just before the lake. Take the first right turn past the Marina Bldg. Follow this road along the marina shore until it ends at a circle drive. The site is 40 feet Northwest of the circle drive near the lakeshore.

Site Description: Site is a peninsula at the marina on Crab Orchard Lake on which a burn area was located. The site is inundated with water when flooding conditions exist at the lake.

Results of Previous Sampling at Site

USEPA, 1998	No detectable levels of PAHs, Mercury @ 0.03 ppm, and the following metals were found above USEPA SSLs: Barium @ 130 ppm, Beryllium @ 0.6 ppm, Nickel @ 14 ppm, but all are below Refuge background. No detectable levels of semivolatile organic compounds were found. Elevated levels of unknown glycol ethers (74 mg/kg) were detected in this sample.
ESE, 1992	None
Other	None

Results of Other Previous Investigation at Site

None

Leasing History

19 - Present	Images Marina

Sources:

Site Summary Sheet—AUS - 076 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/19/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-076 – OPEN BURN SITE AT ROUTE 13 MARINA (IMAGES MARINA)	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 44' 37.87" W 89° 07' 14.36"	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features: The site is reportedly the site of a burn area. It is undeveloped and has no features allowing for storage or disposal of wastes.	
Material/Waste Characteristics and Practices	
	Material reportedly burned at the site is unknown.
	.
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 077 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/19/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-077 – HOMESTEAD DUMP NORTHWEST OF DEVILS KITCHEN LAKE	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37o 38' 35.22" W 89o 06' 48.61"	
Directions to Site : From Hwy 148 take Grassy Road 4.2 miles west to Spillway Road. Take Spillway Road south 1.1 miles and turn right off of Spillway Road onto electric utility right of way. Follow electric utility right of way to the left for 0.2 miles. Dump area is on the right in a depressed area.	
Site Description The site is a homestead dump in a low-lying area just off of Spillway Road. Drainage from the area flows through the site in a northwesterly direction. A small cemetery is located southwest of the site approximately 1000 feet.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site None	
Leasing History	
	No known industrial tenants
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 077 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/19/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-077 – HOMESTEAD DUMP NORTHWEST OF DEVILS KITCHEN LAKE	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37o 38' 35.22" W 89o 06' 48.61"	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features The site is undeveloped and has no storage or disposal features.	
Material/Waste Characteristics and Practices	
55 gal. Drums	Empty, no markings, decayed
Household trash	Bottles, cans, children's toys
Metal	Car parts, steel fencing, barb wire, corrugated sheeting
Appliances	White household type appliances (stoves, washtubs, refrigerators, etc.)
Information from Interviews/Depositions	
None	

Site Summary Sheet—AUS - 078 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/18/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-078 – TREATED WOOD POSTS EAST OF DEVILS KITCHEN LAKE	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 37' 37.64" W 89° 08' 11.82'	
Directions to Site: From Route 148 take Grassy Road west for 4.2 miles until you get to Spillway Road. Take Spillway Road south for 0.8 miles until you get to the Devil's Kitchen Lake turnoff. Go East (actually southeast) for 2.2 miles. Fence posts are being used in a field to the north and make up site # 078.	
Site Description: The site is a field in which fence posts treated with fuel oil and transformer oils were used. The fence posts are a possible source of contamination due to the method and chemicals used to treat them. It is not known how these particular posts were identified as being from the post treating operation.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site: None	
Leasing History	
	No known industrial tenants
Sources: Site Operations/Ownership History CONWR; Techlaw, 1992	

Site Summary Sheet—AUS - 078 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/18/99	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name **AUS-078** – TREATED WOOD POSTS EAST OF DEVILS KITCHEN LAKE	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37° 37' 37.64" W 89° 08' 11.82'	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features: None	
Material/Waste Characteristics and Practices	
Fence posts	Preserved using a mixture of diesel fuel and transformer oils using a dipping method. Posts were originally treated sometime between 1951-1963 (p. 81, Stiles deposition, 11/18/97).
Information from Interviews/Depositions	
Stiles deposition on 11/18/97	Posts were treated and used by FWS to create fence lines. Miller does not mention the location of site 78 but does affix the location where more fence posts were used on pages 152-153 of the deposition as just south of the Hampton cemetery

Site Summary Sheet—AUS - 079 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date: 08/26/1999**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-079 – BOY SCOUT CAMP DUMP	
Latitude and Longitude (Source USFWS unless otherwise indicated) Unable to identifiy	
Directions to Site (Attach map if needed) Unable to locate the site of the Boy Scout Camp Dump.	
Site Description Unable to locate the site.	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	No known industrial tenants
Sources:	

Site Summary Sheet—AUS - 079 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date: 08/26/1999**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-079** – BOY SCOUT CAMP DUMP	
Latitude and Longitude (Source USFWS unless otherwise indicated) Unable to identifiy	
Operations History	
Sources:	None
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	None
Information from Interviews/Depositions	
Larry Quigley (Boy Scout Camp Caretaker)	Mr. Quigley was unaware of any dump site in the area of the boy scout camp.

Site Summary Sheet—AUS - 080 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-080 – GIRL SCOUT CAMP DUMP BY BEACH	
Latitude and Longitude (Source USFWS unless otherwise indicated) No coordinate position determined.	
Directions to Site: From Route 148 take Grassy Road west for 4.2 miles until you come to Spillway Road. Take Spill way Road south for 1.5 miles until you come to Rocky Comfort Road. Turn Left on Rocky Comfort Road (south) and go 1.0 miles to Camp Cedar Point Road. Go west on Camp Cedar Point Road for 0.3 miles and turn south into the Girl Scout Camp – Camp Cedar Point. Follow the camp road for 0.7 miles to a "vee" in the road. Take the road to the right for 0.3 miles until you come to another "vee" in the road follow the road to the right for 0.1 miles until you arrive at an asphalt walking path. Follow the path for 165 feet until you see a drainage ditch on the right. Site number 80 consists of the length of the ditch leading to Little Grassy Lake.	
Site Description: Site is a drainage ditch 165 feet in length and 15 feet at its widest point. The site was previously used as a dump. Some building debris such as wood, brick and roofing debris still litters the site along with broken glass.	
Results of Previous Sampling at Site:	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	None
Other	None
Results of Other Previous Investigation at Site: No previous investigations have been identified.	
Leasing History	
19 -Present	Girl Scouts of America – used as dump by beach
Sources:	

Site Summary Sheet—AUS - 080 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-080 – GIRL SCOUT CAMP DUMP BY BEACH	
Latitude and Longitude (Source USFWS unless otherwise indicated) No coordinate position determined.	
Operations History	
Sources:	No industrial activity has been identified at the site.
Sources:	
Storage/Disposal Features: This site was an unauthorized dump and was undeveloped for storage or disposal.	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	
B. Gulden	Mr. Gulden stated that previously more debris was present at the site than was found during the site visit. However, sometime in the prior year FWS personnel used earth moving equipment to remove the debris and haul it to a licensed refuse facility. Mr. Gulden was unable to describe the wastes which were previously at the site other than to say it was household trash.

Site Summary Sheet—AUS - 081

AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	**Checked by Mary Hagerty** Date: 8/23/99

Site Name

AUS-081 – GIRL SCOUT CAMP DUMP BY CAMP SITE

Latitude and Longitude (Source USFWS unless otherwise indicated) No coordinate position determined.

Directions to Site: From Route 148 take Grassy Road west for 4.2 miles until you come to Spillway Road. Take Spill way Road south for 1.5 miles until you come to Rocky Comfort Road. Turn Left on Rocky Comfort Road (south) and go 1.0 miles to Camp Cedar Point Road. Go west on Camp Cedar Point Road for 0.3 miles and turn south into the Girl Scout Camp – Camp Cedar Point. Follow the camp road for 0.7 miles to a "vee" in the road. Take the road to the right for 0.2 miles until you come to a sign that reads "Nonami →" "Cascades →" follow this road to the right for 830 feet. Site number 81 is 45 feet to the north of this road at that point.

Site Description This site was an area inside a scout camp which contained debris from unknown sources. The site debris was previously removed reportedly by U.S. FWS personnel (conversation with B. Gulden) and only scattered pieces of small litter remains in the area.

.

Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	*None*
Other	*None*

Results of Other Previous Investigation at Site No previous investigations have been identified.

Leasing History	
19 to Present	Girl Scouts of America – used as dump by campsite

Sources:

Site Summary Sheet—AUS - 081 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Michael Hutcheson **Date: 5/18/99**	**Checked by Mary Hagerty** **Date: 8/23/99**
Site Name AUS-081 – GIRL SCOUT CAMP DUMP BY CAMP SITE	
Latitude and Longitude (Source USFWS unless otherwise indicated) No coordinate position determined.	
Operations History This is not nor has it ever been an industrial site.	
Sources:	*Not applicable*
Sources:	*Not applicable*
Storage/Disposal Features This was an unauthorized household / recreational waste dump site. Debris was dumped onto the bare ground in a wooded area.	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	
B. Gulden (FWS)	Mr. Gulden stated that previously more debris was present at the site than was found during the site visit. However, sometime in the prior year FWS personnel used earth moving equipment to remove the debris and haul it to a licensed refuse facility. Mr. Gulden was unable to describe the wastes which were previously at the site other than to say it was household trash.

Site Summary Sheet—AUS - 082 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by Mary Hagerty **Date: 8/23/99**	
Site Name **AUS-082 –** AREA BETWEEN WATER TOWER 3 AND PCB OU REMEDIAL ACTION **Note: This site was eliminated from the AUS OU by FWS and is included in the Water Towers OU.**	
Latitude and Longitude (Source USFWS unless otherwise indicated)	
Directions to Site (Attach map if needed) .	
Site Description .	
Results of Previous Sampling at Site	
USEPA, 1998	There were no USEPA samples collected from this site.
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
Sources:	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features	
Material/Waste Characteristics and Practices	
	.
Information from Interviews/Depositions	

Site Summary Sheet—AUS - 083 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date:** 8/30/99	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name AUS-083 – AREA 2 – RAILROAD SPUR **The site designation AUS-083 has been eliminated. The site is incorporated into Area 2.**	
Latitude and Longitude (Source USFWS unless otherwise indicated) N 37 40'17.50" W 89 01' 50"	
Directions to Site (Attach map if needed) Take Highway 13 to highway 148 south to Pigeon Creek Road. Make a right (west) at Pigeon Creek road. Take Pigeon Creek Road for 1.2 miles to Stringtown Road, at Stringtown make a right or go north. Continue in Stringtown for 0.65 miles to a gate. Once past the gate take gravel road on right side of the fenced area. Site 83 is 0.2 miles past gate or behind the fenced area to your left.	
Site Description: The site is the location of a 110' railroad loading dock currently being solely used by Primex. To the east and south is a large gravel parking lot	
Results of Previous Sampling at Site	
USEPA, 1998	According to EPA field notes, this site was near the "railroad spur". Two samples (83-1 and 83-2) were taken at site AUS-83. This site was tested for semivolatile organic compounds and metals. Benzo[a]anthracene (2.9 mg/kg) and benzo[b]fluoranthene (6.5 mg/kg) exceeded USEPA SSLs in both samples. Benzo[a]pyrene (3.4 mg/kg), dibenz[a,h]anthracene (1.5 mg/kg), and indeno[1,2,3-cd]pyrene (2.5 mg/kg) exceeded USEPA SSLs in sample 83-2. Naphthalene (2.0 mg/kg) exceeded CSOQGs in both samples. Benzo[k]fluoranthene (6.5 mg/kg) also exceeded CSOQG in sample 83-2. Mercury (0.11 mg/kg) exceeded USEPA SSLs and Illinois background in sample 83-2. Zinc (170 mg/kg) exceeded DSOLs and Refuge background in sample 83-2. Elevated levels of unknown PAHs (39 mg/kg) and unknown hydrocarbons (240 mg/kg) were detected in both samples.
ESE, 1992	
Other	
Information from Interviews/Depositions	
Glen Heil (Senior Environmental Engineer of Primex)	*According to Glen Heil the railroad area is currently being used by Primex as a unloading area for raw materials.*

Site Summary Sheet—AUS – 106-A AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Thomas J Adams **Date: 8/30/1999**	**Checked by Mary Hagerty** **Date 9/2/99**
Site Name **AUS-106-A Drum Disposal**	
Latitude and Longitude: Coordinate position has not been determined.	
Directions to Site: Take Route 148 south over Crab Orchard Lake to Ogden Road. Make a right turn (west) on Ogden Road. Take Ogden Road for 0.1 mile to a locked gate. Continue west on Ogden Road for approximately 1.08 miles. Make a left turn (south) on unnamed gravel road. Continue south on gravel road for approximately 0.8 miles to a fork in the road. At the fork make a left turn or go east onto another gravel road. Continue east on gravel road for 0.125 miles and veer right continue going east on gravel or asphalt road for approximately 0.4 of a mile for a total of 0.525 miles (since the fork in the road). Should be at a intersection of an asphalt road running east and west, and a concrete road running north and south. From the intersection go east for 0.1 miles and make a right. Head south to southwest for 0.2 miles (stop car before deep north-south running ditch). Head south down hill onto old roadway (you should be heading due east for about 150'). At old roadway go due east for approximately 500 feet on old roadway to a fenceline. At fenceline go 30' to the left to cross old fence and creek. Arrive back on road and continue due east for approximately 500'. Site 106-A is located north of the road (use attached site sketch)	
Site Description: The site is a L-shaped dumping ground of about 50 to 100 drums. The drums are dumped roughly 3-4' high and partially covered with soil. Most drums are empty and rusted. At least one-quarter of the drums have a whitish, grayish or bluish questionable material. The dump also contains asbestos like tiling, other metal containers, and broken-up glass. The drum disposal area is located 100' of an old roadway that accessed Area 11 from Route 148.	
Results of Previous Sampling at Site	
USEPA, 1998	
ESE, 1992	
Other	
Results of Other Previous Investigation at Site	
Leasing History	
	No known industrial tenants.
Sources:	
Operations History	
Sources:	
Sources:	
Storage/Disposal Features: See description above.	
Material/Waste Characteristics and Practices	
Information from Interviews/Depositions	

Site Evaluation—AUS -001
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/26/99	**Checked by Mary Hagerty** **Date: 8/22/1999**

Site Name **AUS-001** – AREA 1 – FIRE STATION

Contaminants Detected in Prior Studies Above Screening Levels
Benzo(a)pyrene, benzo(b)fluoranthene and Fluoranthene results for sample AUS 1-1 exceeded USEPA SSLs.
Reference: U.S.EPA Preliminary Screening Analysis, 1998

Other Contaminants Detected/not Detected, Relevant to Site Evaluation
Arsenic (130 mg/kg), beryllium (0.8 mg/kg), and mercury (0.12 mg/kg) exceeded USEPA SSLs and background values for the Refuge. *Copper (43 mg/kg),* lead (210 mg/kg), and zinc (310 mg/kg) exceeded DSOLs and Refuge background levels.

Reference: U.S.EPA Preliminary Screening Analysis, 1998

Documented/Reported Releases of Hazardous Substances
None
Reference:

Industrial Activities with Potential for Release of Hazardous Substances
Possible petroleum product USTs. See below.

Reference:

Other Activities with Potential for Release of Hazardous Substances
Building demolition debris on site. See below..

Reference: Site visit.

On-Site Evidence of Potential Hazardous Materials
No evidence of the existence of hazardous materials on site was observed.

Other Features Observed During Site Visits Related to Potential or Actual Releases
The concrete island near Wolf Creek Rd. resembles a gas station and may have USTs associated with it. To the west of the main foundation area is a 2-inch pipe extending out of the ground (see roll # 3 Picture # 20 in Appendix A, Site AUS-1). This could be a vent/fill pipe for a UST used to supply fuel oil to a boiler. Building debris from a building to the west is piled on the site. This debris may have some asbestos containing materials.

Water Bodies/Wetlands/Streams that May Have Been Impacted
None

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale: This site has two areas with the potential to contain WWII era USTs. In addition, a sample taken at the site exceeded U.S. EPA SSLs and Refuge background levels for metals..

Site Evaluation—AUS -002
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/26/99	**Checked by Mary Hagerty** **Date: 8/22/99**

Site Name

AUS-002 – AREA 1 – FORMER WASTEWATER TREATMENT PLANT

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

This site is a wastewater treatment plant servicing portions of a WWII era ordinance plant. It is likely that process chemicals and explosives residues were introduced into the sewer system and were released into the WWTP lagoons.

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

Crab Orchard Lake is ¼ mile to the southwest and drainage from the lagoons follows a shallow creek and empties directly into the lake.

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

The existence of the two lagoons and the known connection between WWTP discharge and metals as well as the likelihood that explosives were discharged to the sewer indicate the need for sampling in and around the lagoons.

Site Evaluation—AUS -003
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson Date: 6/15/99	Checked by Mary Hagerty Date: 8/23/99

Site Name

AUS-003 – AREA 2F – FUSE LOADING LINE
Note: Site AUS-003 has been eliminated. The Fuse Loading Line will be investigated as part of Area 2F.

Contaminants Detected in Prior Studies Above Screening Levels
Two samples were taken and designated as site AUS 03. Locations designated only by GPS coordinates (FWS). The following metals were found above both EPA SSLs and Refuge background levels in one or both samples: *arsenic (23 ppm), beryllium (0.4 ppm), copper (130 ppm)*, lead (180 ppm), nickel (48 ppm), zinc (310 ppm).

Reference: U.S. EPA Preliminary Screening Analysis, 1998.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation
Two sample results were negative for PAH's and semi volatiles in both samples. Both samples showed low levels of mercury (below SSL).

Reference: U.S. EPA Preliminary Screening Analysis, 1998.

Documented/Reported Releases of Hazardous Substances
Cutting oils allowed to overflow to ground south of F-2-2 and TCE being dumped to sewers. Isopropyl Alcohol, toluene, and TCE dumped to the ground in area 2F.

Reference: Pitt Deposition Nov. 19, 1997 and Vic Modglin interview with Techlaw on April 17, 1991

Industrial Activities with Potential for Release of Hazardous Substances
Loading of fuses by SWDC. Use of solvents for metal cleaning operations as part of projectile milling operations in F-2-2. Shipping and receiving of hazardous substances from building F-2-2 and F-2-1. R&D and production operations of depleted uranium projectiles (120 mm).

References: Pitt Deposition Nov. 19, 1997, Site Operations/Ownership History CONWR, Techlaw, 1992 and PRI-004259

Other Activities with Potential for Release of Hazardous Substances
Solvent storage in bldg. F-2-12 and the dressing and washing of workers during IOP times in change houses may have contaminated sewer lines.

Reference: ESE, 1992

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases
Several patches of grass in the F area appeared stressed during the site visit. These areas also appear stressed in historical photos of the area.

Water Bodies/Wetlands/Streams that May Have Been Impacted
None

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken (investigate as part of Site 2F)
- ☐ A Removal Action should be undertaken

Statement of Rationale
Several factors indicate the need for further investigation of the F area. These include analytical results for metals above the background values for the Refuge, statements by former employees describing the release of hazardous substances in the area and stressed vegetation observed during the site inspection. In addition, this was an industrial area used since 1942.

Site Evaluation—AUS -004
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson Date: 6/15/99	Checked by Mary Hagerty Date: 8/23/99

Site Name

AUS-004 – AREA 2P – ARTILLERY PRIMER LINE
Note: Site AUS-004 has been eliminated. The Artillery Primer Line will be investigated as part of the site designated as Area 2P.

Contaminants Detected in Prior Studies Above Screening Levels
None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Mercury and HMX were detected by O'Brien & Gere in their 1988 RI.

Reference: O'Brien & Gere, 1988.

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances
Artillery Primer production, gas generator development and production, propellant development and production, paint and solvent storage, agricultural chemical storage, metal working/machining (Miller deposition 4/9/98) For more information see Area 2P history.

Reference: Site Operations/Ownership History Report, Techlaw, 1992.

Other Activities with Potential for Release of Hazardous Substances
Employee washing and changing in the change house P-1-11 may have contaminated local sewers.

Reference: ESE, 1992

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken (incorporate into Area 2P)
- ☐ A Removal Action should be undertaken

Statement of Rationale

The positive sample results obtained for mercury and HMX indicate the need for further investigation of the site. Also, the industrial site usage warrants further investigation.

Site Evaluation—AUS -005
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson	**Checked by Mary Hagerty**
Date: 6/15/99	**Date:** 8/23/99

Site Name

AUS-005 – AREA 2D – DETONATOR LOADING LINE

Note: Site AUS-005 has been eliminated. The detonator loading line will be investigated as part of Site Area 2D.

Contaminants Detected in Prior Studies Above Screening Levels

Two samples were taken and designated as from AUS 5. Sample 5-1 showed analytes benzo(b,k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, zinc, and mercury were above screening levels. Mercury and zinc were above Refuge background levels.

Reference: U.S. EPA Preliminary Screening Analysis, 1998.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

A 2500 gallon fuel oil spill was documented in the D area on 7/12/79. (PRI-002738). Vic Modglin reported that isoproyl alcohol, toluene, and TCE were dumped on the ground in area D (Techlaw interview, 4/17/91). Contamination of building D-1-13 with uranium from a fuel rod assembly operation was documented and remediated in Dec. 1994. (Dec. 19, 1994 Olin report to IDNS). Additional information in Area 2D history.

Reference: Various – see endnotes

Industrial Activities with Potential for Release of Hazardous Substances

Propellant mixing, pelletizing, and grinding, metal working/machining operations (Miller depositon, 4/9/98)

Reference:

Other Activities with Potential for Release of Hazardous Substances

Burning of R&D waste, hazardous solvents, and explosive waste residues, possible burial of process equipment by Army or SWDC in the area south of D-1-6 (Pitt deposition, 11/19/97). Washing of personnel in the change house during IOP operations (ESE report 1992).

Reference:

On-Site Evidence of Potential Hazardous Materials

None observed.

Other Features Observed During Site Visits Related to Potential or Actual Releases

None observed

Water Bodies/Wetlands/Streams that May Have Been Impacted

None observed

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken (incorporate into Area 2D)
- ☐ A Removal Action should be undertaken

Statement of Rationale

Sample results above U.S. EPA SSL's along with deposition statements and documentation of contamination events indicates the need for further investigation of the site.

Site Evaluation—AUS -006
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	Checked by Mary Hagerty Date 9/2/99

Site Name

AUS-006 – AREA 2B – BOOSTER LOADING LINE
Note: Site AUS-006 has been eliminated. The booster loading line will be investigated as part of Site Area 2B.

Contaminants Detected in Prior Studies Above Screening Levels
Benzo[a]anthracene (2.3 mg/kg) and benzo[a]pyrene (0.29 mg/kg) were detected above USEPA SSLs in samples 6-1, 6-3, and 6-4. Benzo[b]fluoranthene (1.1 mg/kg) was detected above USEPA SSL in samples 6-1 and 6-4. Benzo[k]fluoranthene (1.1 mg/kg) exceeded CSOQGs in sample 6-1. Total PAHs also exceeded DSOLs. Barium (16,000 mg/kg), *beryllium (0.7 mg/kg)*, cadmium (7.4 mg/kg), nickel (120 mg/kg), and *silver (84 mg/kg)* exceeded USEPA SSLs and Refuge background levels. Lead (2300 mg/kg), zinc (1500 mg/kg), copper (3400 mg/kg), and *cobalt (70 mg/kg)* exceeded DSOLs and Refuge background levels. *Chromium (8000 mg/kg)* exceeded CSOQGs. Mercury (0.11 mg/kg) exceeded USEPA SSLs and Illinois background levels in sample 6-5. Mercury (0.12 mg/kg) exceeded USEPA SSLs and Illinois background levels in sample 6-7.

Reference: USEPA, 1998.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation
None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances
See Area 2B historical information.

Reference:

Other Activities with Potential for Release of Hazardous Substances
None

Reference:

On-Site Evidence of Potential Hazardous Materials

Numerous Ordnance related devices were observed at the former building location B-2-9. These appeared to have been burned.

Other Features Observed During Site Visits Related to Potential or Actual Releases
None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken (incorporate into Area 2B)
- ☐ A Removal Action should be undertaken

Statement of Rationale The identification of the burn pad with abandoned waste and the sample results above SSLs as well as the history of the industrial use of this manufacturing line warrants continued investigation.

Site Evaluation—AUS -007
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty Date: 8/23/99

Site Name AUS-007 – PYROTECHNIC TESTING IN AREAS 2B, 2D & 2F

Note: Areas 2B, 2D, and 2F have been identified as sites recommended for Site Inspections. This form has not been completely filled out since this site is incorporated into Areas 2B, 2D, or 2F. It is included because the USEPA 1998 data was collected by the original AUS site designations.

Contaminants Detected in Prior Studies Above Screening Levels

The following SVOC compounds were detected at the site above either USEPA SSLs and/or CSOQGs: benzo[b]fluoranthene (32 mg/kg), benzo[a]anthracene (14 mg/kg), benzo[a]pyrene (14 mg/kg), naphthalene (1.1 mg/kg), phenanthrene (110 mg/kg), carbazole (17 mg/kg), pyrene (26 mg/kg), chrysene (16 mg/kg), benzo[k]fluoranthrene (32 mg/kg), indeno[1,2,3-cd]pyrene (12.0 mg/kg), and dibenz[a,h]anthracene (4.7 mg/kg). Total PAHs also exceeded DSOLs. Arsenic (110 mg/kg), barium (20,000 mg/kg), beryllium (2.2 mg/kg), and cadmium (6.7 mg/kg) exceeded USEPA SSLs and Refuge background levels. Mercury (0.10 mg/kg) exceeded USEPA SSLs and Illinois background in sample 7-4. Lead (2400 mg/kg), copper (1900mg/kg), cobalt (55 mg/kg), and zinc (440 mg/kg) exceeded DSOLs and Refuge background levels.

Reference: USEPA, 1998

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of AUS Areas 2B, 2D, and 2F
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site is being eliminated as AUS-7, and has been incorporated into the following sites: Area 2B, Area 2D, or Area 2F. These are industrial manufacturing areas.

Site Evaluation—AUS -008
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson	Checked by Mary Hagerty
Date: 5/18/99	Date 9/2/99

Site Name AUS-008 – ORGANICS DUMPED IN AREAS 2B, 2D &2F

Note: This form has not been completely filled out because Site AUS-008 is being eliminated, since it is not needed. Areas 2B, 2D, and 2F have been designated as sites recommended for Site Inspection, and AUS-008 will be incorporated into those sites.

Contaminants Detected in Prior Studies Above Screening Levels

Benzo[b]fluoranthene (1.7 mg/kg) and indeno[1,2,3-cd]pyrene (1.4 mg/kg) exceeded USEPA SSLs in sample 8-3. Dibenz[a,h]anthracene (1.8 mg/kg) exceeded USEPA SSLs in samples 8-3 and 8-5. Benzo[k]fluoranthene (1.7 mg/kg) exceeded CSOQGs in sample 8-3. Mercury (0.11 mg/kg) exceeded USEPA SSLs and Illinois background levels in sample 8-5. Zinc (550 mg/kg), *copper (120 mg/kg)*, and lead (120 mg/kg) exceeded DSOLs and Refuge background levels.

Reference: USEPA, 1998.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Areas 2B, 2D, and 2F.
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site has been eliminated and incorporated into Area 2B, 2D, or 2F, which are sites recommended for site inspections.

Site Evaluation—AUS -009
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	Checked by: Mary Hagerty Date 8/23/99

Site Name AUS-009 – DUMP EAST OF AREA 2F

Note: Area 2F has been identified as a site recommended for a Site Inspection. This form has not been completely filled out since this site is incorporated into Area 2F. It is included because the USEPA 1998 data was collected by the original AUS site designations.

Contaminants Detected in Prior Studies Above Screening Levels

Benzo(a)anthracene (0.36 mg/kg), benzo(b)fluoranthene (0.54 mg/kg) and benzo(a)pyrene (0.29 mg/kg) were detected above USEPA SSLs or CSOQGs. Total PAHs also exceeded DSOLs. Zinc (280 mg/kg) exceeded DSOLs and Refuge background.

Reference: USEPA, 1998

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 2F.
- ☐ A Removal Action should be undertaken

Statement of Rationale

Site AUS-009 has been eliminated. The location represented by the site has been included as part of Area 2F, which has been recommended as a site requiring a site inspection.

Site Evaluation—AUS -010
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	Checked by Mary Hagerty Date 8/28/99

Site Name

AUS-010 – AREA 2P – BOILER HOUSE

Contaminants Detected in Prior Studies Above Screening Levels

None detected.

Reference: USEPA, 1998.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

Demolition of building included the removal of underground fuel oil storage tanks. It is possible a spill occurred during this removal. No mention of a fuel oil spill was made in the Daily Inspection Log from the contract documentation. In addition building debris was disposed of on site and covered with top soil as called for in the contract.

Reference: Contract No. 14-16-0003-81-126

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

Crab Orchard Lake is a short distance to the south.

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale No indication that the site was used as dumping ground for hazardous substances.

Site Evaluation—AUS -011
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 08/26/1999	Checked by Mary Hagerty Date 8/28/99

Site Name AUS-011 – AREA 4 – SERVICE STATION

Note: This site is being incorporated into the investigation of all of Area 4.

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Loading and unloading of vehicle fuels into USTs.

Reference: Facilities Inventory shows the existence of the service station. Loading and unloading activities are assumed.

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the inspection of other Area 4 facilities.
- ☐ A Removal Action should be undertaken

Statement of Rationale Because of the possible existence of USTs at this site it will be included in the SI of Area 4.

Site Evaluation—AUS -012
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mike Hutcheson Date 8/99 **Checked by Mary Hagerty Date 8/28/99**

Site Name

AUS-012 – AREA 4 – WASTE OIL TANK AT OLD REFUGE SHOP

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

No evidence of waste oil tanks on drawings, or site, or in any information reviewed.

Site Evaluation—AUS -013
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by M. Moore Date 6/99 **Checked by Mary Hagerty Date 8/28/99**

Site Name

AUS-013 – AREA 4 – LAUNDRY FACILITY AT OLD REFUGE SHOP

Contaminants Detected in Prior Studies Above Screening Levels

Three samples (13-1 to 13-3) were taken at site AUS-13. According to EPA field notes, "seems that a tank is buried beneath the surface" at sample 13-1. This site was tested for semivolatile organic compounds and metals. No SVOC target compounds exceeded limits. Barium (180 mg/kg), cadmium (29 mg/kg) and nickel (24 mg/kg) exceeded USEPA SSLs and Refuge background. Elevated levels of unknown hydrocarbons (2.47 mg/kg) were detected in sample 13-1. Elevated levels of unknown glycol ethers (54 mg/kg) were detected in all three samples.

Reference: 1998 USEPA Preliminary Screening Analysis

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

This area was investigated and remediated in 1995 as an addition to Site 22 of the Metals Areas Operable Unit.

Reference: Woodward Cyde, 1996, West Shop Area Investigation.

Documented/Reported Releases of Hazardous Substances

Wastes from the plating operation in this building were pumped to a concrete vault behind the building, which overflowed into the Refuge sewer system.

Reference: Site Operations/Ownership History CONWR; Techlaw, 1992

Industrial Activities with Potential for Release of Hazardous Substances

Plating operation—wastes contaminated ditches and sewers with cadmium, chromium, lead and cyanide.

Reference: Woodward Cyde, 1996, West Shop Area Investigation

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

none

Other Features Observed During Site Visits Related to Potential or Actual Releases

none

Water Bodies/Wetlands/Streams that May Have Been Impacted

none

Recommendation

- ☐ No further action is warranted
- ☒ Site Inspection should be undertaken (Site should be deleted as AUS-13 and incorporated into Area 4)
- ☐ A Removal Action should be undertaken

Statement of Rationale Although the ditches and sewers in this area were remediated as part of the MAOU remediation, since the USEPA investigation detected cadmium at 29 mg/kg and the cleanup level for MAOU was 10 mg/kg (compared to the site screening level of 1.4 mg/kg), the site should be retained.

Site Evaluation—AUS -014
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty Date 8/28/99

Site Name

AUS-014 – AREA 4 – DRY CLEANERS AT OLD REFUGE SHOP

Note: This form is not completely filled out because this site is being eliminated as AUS-014 and is incorporated into Area 4. See Area 4 discussion in text.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (eliminate as Site 14 and incorporate into Area 4)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

Area of industrial activity with analytical results exceeding screening levels.

Site Evaluation—AUS -015
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty Date 8/28/99

Site Name

AUS-015 – AREA 4 – BOILER HOUSE AT OLD REFUGE SHOP

Note: This form is not completely filled out because this site is being eliminated as AUS-014 and is incorporated into Area 4. See Area 4 discussion in text.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (eliminate as Site AUS-015 and incorporate into Area 4)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

History of industrial usage and analytical results above screening levels.

Site Evaluation—AUS -016
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty Date 8/28/99

Site Name

AUS-016 – AREA 4 – SUPREME PLATING CO. CONCRETE PIT AT OLD REFUGE SHOP

Note: This form is not completely filled out because this site is being eliminated as AUS-014 and is incorporated into Area 4. See Area 4 discussion in text.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (eliminate as Site AUS-016 and incorporate into Area 4)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

Area with history of industrial use and analytical results exceeding screening levels.

Site Evaluation—AUS -017
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	**Checked by Mary Hagerty** Date 8/28/99

Site Name AUS-017 – AREA 4 – DEGREASING BUILDING
Note: This site will be eliminated as its own site and incorporated into the investigation of all of Area 4.

Contaminants Detected in Prior Studies Above Screening Levels
None
Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation
None
Reference:

Documented/Reported Releases of Hazardous Substances
None
Reference:

Industrial Activities with Potential for Release of Hazardous Substances
Washing and greasing of vehicle fleets were performed in this building. Fluids reportedly drained to a nearby field.
Reference: Techlaw, 1992, Site Operations/Ownership History, page B-24.

Other Activities with Potential for Release of Hazardous Substances
None
Reference:

On-Site Evidence of Potential Hazardous Materials
Several pieces of debris were noted in the area of the building and in the nearby woodlands. A large portion of the debris would normally be associated with vehicle maintenance acitivities.

Other Features Observed During Site Visits Related to Potential or Actual Releases
Several grassy areas around the original buildings foundation were observed to be stressed. This may be due to chemical contamination of the underlying soils.

Water Bodies/Wetlands/Streams that May Have Been Impacted
None

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of the rest of Area 4.
- ☐ A Removal Action should be undertaken

Statement of Rationale The statement by C. Hoffard regarding the disposal of waste fluids from this building alone warrants further investigation. Because several other portions of Area 4 also require investigation it will be incorporated into the investigation of the entire shop facility.

Site Evaluation—AUS -018
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	Checked by Mary Hagerty Date 8/28/99

Site Name

AUS-018 – AREA 5 – RAILROAD CLASSIFICATION YARD AND WCEMA BUILDING

Contaminants Detected in Prior Studies Above Screening Levels

According to EPA field notes, this site was the Railroad Classification Yard. Site AUS 18-1 was sampled for semivolatile organic compounds, PAHs, and metals. None of the SVOC target compounds exceeded limits. Benzo[b]fluoranthene (1.9 mg/kg), benzo[a]pyrene (0.6 mg/kg), indeno[1,2,3-cd]pyrene (1.5 mg/kg), and dibenz[a,h]anthracene (1.2 mg/kg) exceeded USEPA SSLs. Benzo[k]fluoranthene (1.9 mg/kg) exceeded SCOQGs. Arsenic (120 mg/kg), cadmium (4.5 mg/kg), nickel (26 mg/kg) and silver (2 mg/kg), exceeded USEPA SSLs and Refuge background. Mercury (0.32 mg/kg) exceeded USEPA SSLs and Illinois background. Copper (110 mg/kg), lead (4,500 mg/kg), and zinc (1,600 mg/kg) exceeded DSOLs and Refuge background. Unknown glycol ethers (56 mg/kg) were found at an elevated level.

Reference: 1998 USEPA Preliminary Screening Analysis

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

UXO investigation revealed no ordnance scrap or UXO.

Reference: Parsons, 1997

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Short term storage of traincars transporting explosives may have led to the release of some of the materials.

Reference: ESE, 1992; Parsons, 1997

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale Sample analysis results above SSLs indicate the need for further investigation of the site.

Site Evaluation—AUS -019
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	Checked by Mary Hagerty Date 8/28/99

Site Name

AUS-019 – AREA 5 - DUMP NORTH OF FIRE STATION LANDFILL

Contaminants Detected in Prior Studies Above Screening Levels

Nonr

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None...Unable to locate this site despite a meticulous search of the area.

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

No information has been found which warrants further investigation of this site.

Site Evaluation—AUS -020
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	Checked by Mary Hagerty Date 8/28/99

Site Name

AUS-020 – AREA 6 – RAILROAD LOADING DOCKS
Note: Site AUS-020 has been eliminated. The RR loading docks will be incorporated into Area 6.

Contaminants Detected in Prior Studies Above Screening Levels
Two samples (20-1 and 20-2) were taken at site AUS-20. According to EPA field notes, sample 20-1 was at the south entrance to area 6 and sample 20-2 was at the northwest loading dock of area 6. This site was tested for semivolatile organic compounds, PAHs, and metals. Indeno[1,2,3-cd]pyrene (1.5 mg/kg) and dibenz[a,h]anthracene (1.2 mg/kg) exceeded USEPA SSLs in sample 20-1. Benzo[b]fluoranthene (2.0 mg/kg), benzo[k]fluoranthene (2.0 mg/kg), indeno[1,2,3-cd]pyrene (1.6 mg/kg), and dibenz[a,h]anthracene (1.1 mg/kg) exceeded USEPA SSLs in sample 20-2. Barium (170 mg/kg) exceeded USEPA SSLs and Refuge background values. Lead (110 mg/kg) and zinc (140 mg/kg) exceeded DSOLs and Refuge background levels in sample 20-2. Elevated levels of glycol ethers (62 mg/kg) were detected in both samples.

Reference: 1998 USEPA Preliminary Screening Analysis

Other Contaminants Detected/not Detected, Relevant to Site Evaluation
None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances
Loading and unloading of high explosives at loading docks.

Reference:

Other Activities with Potential for Release of Hazardous Substances
None

Reference:

On-Site Evidence of Potential Hazardous Materials

Slight bit of staining of concrete noticed on most railroad loading docks.

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale Sample analyses above SSLs indicates the need for further investigation of the site.

Site Evaluation—AUS -021
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	Checked by Mary Hagerty Date 8/28/99

Site Name

AUS-021 – AREA 7 – FIRE STATION

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

OEW waste was identified at the site. Specifically several pieces of what appeared to be smoke grenades and possibly a tear gas rocket.

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale The identification of OEW waste at the site indicates that further investigation of the site is warranted.

Site Evaluation—AUS -022
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	Checked by Mary Hagerty Date 9/2/99

Site Name

AUS-022 – AREA 7 – REFUGE BORDER BY PRISON LANDFILL

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale No credible information was identified which indicates that a landfill exists on the Marion Federal Prison Property or that it is impacting CONWR lands.

Site Evaluation—AUS -023
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty Date 9/2/99

Site Name

AUS-023 – AREA 8 – LOAD LINE III BOILER HOUSE

This form has not been completed. Site designation AUS-023 Load Line III Boiler House, has been eliminated; this site has been incorporated into the new site designation Area 8 South.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (incorporate into Area 8 South)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

Area 8 exclusive of MISCA Site 14 will be investigated as an industrial facility. The boiler house is part of the facility.

Site Evaluation—AUS -024
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty Date 9/1/99

Site Name

AUS-024 – LOAD LINE III – UNDERGROUND STORAGE TANKS

Note: this form has not been completed because this site has been deleted as AUS-024, and the Load Line III USTs are being included in AUS Site designated as Area 8 South. See Report Section 8 for discussion of Area 8.

Contaminants Detected in Prior Studies Above Screening Levels

No USEPA 98 samples were taken at this location.

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (eliminate as AUS—024 and incorporate into Area 8 South)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

Area 8 South merits investigation as a whole. The potential USTs are part of it.

Site Evaluation—AUS -025
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty Date 9/1/99

Site Name

AUS-025 – AREA 8 – LOAD LINE III – CLEANING AND PAINTING BUILDING

Note: This site has been eliminated from the AUS OU—it is Site 14 of the MISCA OU, currently in RI/FS stage.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site is currently in the RI/FS process as Site 14 of MISCA OU.

Site Evaluation—AUS -026
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty **Date** 9/1/99

Site Name

AUS-026 – AREA 8 – LOAD LINE III EVAPORATION BASIN

Note: This form has not been completely filled out. Site designation AUS-026 is being eliminated, and the Load Line III evaporation basins have been incorporated into the AUS Site designated as Area 8 South.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (eliminate as AUS-026 and incorporate into Area 8 South)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

The evaporation basins have potential for explosive contamination and should be included in the Site Inspection for Area 8 South.

Site Evaluation—AUS -027
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty **Date** 9/1/99

Site Name

AUS-027 – AREA 8 – LOAD LINE III CHANGE HOUSE SEWERS

Note: This form has not been completely filled out. Site designation AUS-027 is being eliminated, and the Load Line III Change House Sewers have been incorporated into the AUS Site designated as Area 8 South.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (incorporate into Area 8 South)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

Potential for explosive contamination in change house sewers. Include in Site Inspection for Area 8 South.

Site Evaluation—AUS -028
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty **Date** 9/1/99

Site Name

AUS-028 – AREA 8 – LOAD LINE III DRAINAGE DITCH SEDIMENTS

Note: This form has not been completely filled out. Site designation AUS-028 is being eliminated, and the Load Line III Drainage Ditch Sediments have been incorporated into the AUS Site designated as Area 8 South.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

☒ A Site Inspection should be undertaken (eliminate as Site AUS-028 and incorporate ditches into Area 8 South.

☐ No further action is warranted

☐ A Removal Action should be undertaken

Statement of Rationale

Load Line III drainage ditch sediments are potentially contaminated with explosives and other contaminants.

Site Evaluation—AUS -029
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty Date 9/2/99

Site Name AUS-029 – AREA 8 – LOAD LINE III AREAS AROUND BUILDINGS

Note: This form has not been completely filled out. Site designation AUS-029 is being eliminated, and the Load Line III Areas around Buildings have been incorporated into the AUS Site designated as Area 8 South.

Contaminants Detected in Prior Studies Above Screening Levels

Two samples (29-1 and 29-2) were taken at site AUS-29. This site was tested for PAHs and metals. Indeno[1,2,3-cd]pyrene (1.8 mg/kg) exceeded USEPA SSLs in sample 29-1. Barium (200 mg/kg) exceeded USEPA SSLs and Refuge background values in both samples. Elevated levels of unknown glycol ethers (73 mg/kg) were detected in sample 29-2.

Reference: 1998 USEPA Preliminary Screening Analysis

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (incorporate into Area 8 South)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

Areas around buildings may be contaminated from melt/pour operations and other industrial activities. Soil screening levels exceeded.

Site Evaluation—AUS -030
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty Date 9/2/99

Site Name

AUS-030 – AREA 8 – LOAD LINE III CHANGE HOUSE

Note: This form has not been completely filled out. Site designation AUS-030 is being eliminated, and the Load Line III Changes Houses have been incorporated into the AUS Site designated as Area 8 South.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (include as part of Area 8 South)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

Change houses have potential for explosive contamination. Address as part of Area 8 South.

Site Evaluation—AUS -031
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty Date 9/2/99

Site Name

AUS-031 – AREA 8 – BURIED BLACK POWDER

Note: This form has not been completely filled out. Site designation AUS-031 is being eliminated, and the Buried Black Powder Area has been incorporated into the AUS Site designated as Area 8 South.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Fenced area with sign "Keep Out. Contaminated Area"

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (incorporate into Area 8 South)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

This area had been used for explosive/ordnance manufacturing; and the fenced area and sign are justification for inclusion. Because of the potential for explosive and other wastes, this site will be investigated as part of Area 8 South.

Site Evaluation—AUS -032 AUS OU PA/SI, Crab Orchard National Wildlife Refuge	
Completed by: Michael Hutcheson **Date:** 5/25/99	**Checked by Mary Hagerty** **Date 9/2/99**

Site Name

AUS-032 – AREA 8 – FORMER FIBERLITE BUILDINGS LOCATIONS

Note: This form has not been completely filled out. Site designation AUS-032 is being eliminated, and the Former Fiberlite Building Locations have been incorporated into the AUS Site designated as Area 8 South.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (incorporate into Area 8 South)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

Because of industrial activities Site Inspection is warranted. See Area 8 discussion.

Site Evaluation—AUS -033
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/25/99	**Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-033 – AREA 8 – SOIL PILE WEST OF INDUSTRIAL BUILDINGS

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

No evidence of suggestion of contamination. Soil pile was probably placed by FWS as construction borrow (see Area 8 History)

Site Evaluation—AUS -034
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams Date 8/3099 **Checked by Mary Hagerty Date 9/2/99**

Site Name

AUS-034 – AREA 9 – LOAD LINE I BOILER HOUSE

Note: This site has been eliminated because it was remediated as part of the PCB OU.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ No further action is warranted.
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site was remediated as part of the PCB OU cleanup—the surrounding soil was excavated.

Site Evaluation—AUS -035
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-035 – AREA 9 – LOAD LINE I UNDERGROUND STORAGE TANKS

Note: This site has been eliminated because it was remediated as part of the PCB OU.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ No further action is warranted.
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site has been eliminated because the site was part of the PCB OU and the soil in the area was excavated.

Site Evaluation—AUS -036
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-036 – AREA 9 – LOAD LINE I CLEANING AND PAINTING BUILDING

Note: This site has been eliminated because it was remediated as part of the PCB OU.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ No further action is warranted.
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale:

Note: This site has been eliminated because the site was part of the PCB OU and the soil in the area was excavated.

Site Evaluation—AUS -037
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-037 – AREA 9 – LOAD LINE I EVAPORATION BASIN

Note: This form has not been completely filled out. Site AUS-037 has been eliminated. The evaporation basin will be investigated as part of Area 9 West.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ A Site Inspection should be undertaken (incorporate into Area 9 West)
- ☐ No further action is warranted.
- ☐ A Removal Action should be undertaken

Statement of Rationale

Potential for explosive contamination in evaporation basins. Investigate as part of Area 9 West.

Site Evaluation—AUS -038
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-038 – AREA 9 – LOAD LINE I CHANGE HOUSE SEWERS

Note: this form has not been completed because this site has been deleted as AUS-038, and the Load Line I Change House Sewers are being included in AUS Site designated as Area 9 West. See Report Section 9 for discussion of Area 9.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken. (incorporate into Area 9 West)
- ☐ A Removal Action should be undertaken

Statement of Rationale

Sewers have potential for explosive waste contamination..

Site Evaluation—AUS -039
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-039 – AREA 9 – LOAD LINE I DRAINAGE DITCH SEDIMENTS

Note: This form has not been completely filled out. The site designation AUS-039 is being eliminated and the Load Line I Drainage Ditch Sediments are being incorporated into the AUS Site designated as Area 9 West. See Section 9 for History of Area 9 (Load Line I).

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken (incorporate into Load Line I).
- ☐ A Removal Action should be undertaken

Statement of Rationale

Drainage ditches have potential for explosive and other industrial contamination.

Site Evaluation—AUS -040
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-040 – AREA 9 – LOAD LINE I – AREAS AROUND BUILDINGS

Note: This form has not been completely filled out. The site designation AUS-040 is being eliminated and the Areas Around Buildings are being incorporated into the AUS Site designated as Load Line I. See Section 9 for History of Area 9 (Load Line I).

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken. (incorporate into Area 9 West).
- ☐ A Removal Action should be undertaken

Statement of Rationale

Areas around buildings have potential for explosive and other industrial waste contamination.

Site Evaluation—AUS -041
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-041 – AREA 10 – FIRING RANGE (FORMERLY COP-10)
Note: Site AUS-041 has been eliminated. The firing range has been incorporated into Site Area 10.

Contaminants Detected in Prior Studies Above Screening Levels

Site AUS-41 was tested for metals. Arsenic (43 mg/kg) exceeded USEPA SSLs and Refuge background. Copper (470 mg/kg), lead (65,000 mg/kg), and zinc (140 mg/kg) exceeded DSOLs and Refuge background

Reference: USEPA, 1998

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances
Reported use as firing range by Marion Penitentiary, DEA, FBI, and FWS.

Reference:

On-Site Evidence of Potential Hazardous Materials

Spent ammunition.

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken (incorporate into Area 10).
- ☐ A Removal Action should be undertaken

Statement of Rationale

Prior use, exceedances of screening values.

Site Evaluation—AUS -042
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/25/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-042 – AREA 10 – BURN AREAS

Note: This site designation Area 10 Burn Areas has been eliminated. The site has been incorporated into Area 10.

Contaminants Detected in Prior Studies Above Screening Levels

Benzo[b]fluoranthene (0.8 mg/kg) exceeded USEPA SSLs in sample 42-2. Barium (3,900 mg/kg), cadmium (2 mg/kg) and silver (8.6 mg/kg) exceeded USEPA SSLs and Refuge background in one or both of the samples. Copper (280 mg/kg), lead (55 mg/kg), and zinc (230 mg/kg) exceeded DSOLs and Refuge background in one or both of the samples.

Reference: USEPA 1998.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

Not known.

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None noted.

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken (incorporate into Area 10)
- ☐ A Removal Action should be undertaken

Statement of Rationale

Known industrial burn area. Exceedances of screening criteria.

Site Evaluation—AUS -043
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/25/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-043 – AREA 10 – FIRE STATION

Contaminants Detected in Prior Studies Above Screening Levels

Lead (150 mg/kg) and zinc (220 mg/kg) exceeded DSOLs and Refuge background.

Reference: USEPA 1998.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

Not known.

Reference:

On-Site Evidence of Potential Hazardous Materials

A metallic structure to the west of the building foundation appears to have been used for the burning of unknown materials. A cabinet structure on the north side of the foundation has a troweled on interior surface which is suspect asbestos containing material (ACM). Two sumps in the building may contain residues of hazardous substances.

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None noted.

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

The existence of suspect ACM and the steel burner are evidence of the need for soil and material samples on site. In addition, the nature of the material in the sumps should be investigated as these are not common to all the fire stations at the IOP operations. Also, some metals exceeded soil screening criteria.

Site Evaluation—AUS -044
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-044 – AREA 11 – LOAD LINE II BOILER HOUSE

Note: Area 11 has been identified as an area recommended for Site Inspections. Area 11 has been subdivided into the: Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, Pilot Propellant/ Cap Area, and the Nitroglycerin Area. This form has not been completely filled out since this site is incorporated into the Support Area. It is included because the USEPA 1998 data was collected by the original AUS site designations.

Contaminants Detected in Prior Studies Above Screening Levels

This site was tested for semivolatile organic compounds and metals. Naphthalene (4.5 mg/kg) exceeded CSOQGs in sample 44-1. Benzo[a]anthracene (0.83 mg/kg), benzo[b]fluoranthene (0.62 mg/kg), and benzo[a]pyrene (0.37 mg/kg) exceeded USEPA SSLs in sample 44-1. Benzo[b]fluoranthene (0.32 mg/kg) exceeded USEPA SSLs in sample 44-3. Mercury (0.36 mg/kg) exceeded USEPA SSLs and Illinois background in each of the three samples.

Reference: USEPA 1998.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 11, Support Area.
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site is being eliminated as AUS-44, and has been incorporated into the Support Area of Area 11.

Site Evaluation—AUS -045
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-045 – AREA 11 – LOAD LINE II UNDERGROUND STORAGE TANKS

Note: Area 11 has been identified as an area recommended for Site Inspections. Area 11 has been subdivided into the: Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, Pilot Propellant/ Cap Area, and the Nitroglycerin Area. This form has not been completely filled out since this site is incorporated into the Support Area

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 11, Support Area.
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site is being eliminated as AUS-45, and has been incorporated into the Support Area of Area 11.

Site Evaluation—AUS -046
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-046 – AREA 11 – LOAD LINE II CLEANING AND PAINTING BUILDING

Note: Area 11 has been identified as an area recommended for Site Inspections. Area 11 has been subdivided into the: Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, Pilot Propellant/ Cap Area, and the Nitroglycerin Area. This form has not been completely filled out since this site is incorporated into the Support Area. It is included because the USEPA 1998 data was collected by the original AUS site designations.

Contaminants Detected in Prior Studies Above Screening Levels

Four samples (46-1 – 46-4) were taken at site AUS-46. This site was tested for PAHs and metals. Dibenz[a,h]anthracene (3.0 mg/kg) exceeded USEPA SSLs in sample 46-3. Barium (170 mg/kg) and nickel (72 mg/kg) exceeded USEPA SSLs and Refuge background in each of the samples. Mercury (0.12 mg/kg) exceeded USEPA SSLs and Illinois background in samples 46-2 and 46-3. Zinc (530 mg/kg) exceeded DSOLs and Refuge background in samples 46-2, 46-3, and 46-4. Lead (290 mg/kg) exceeded DSOLs and Refuge background in sample 46-4. Elevated levels of unknown glycol ethers (21 mg/kg) and unknown hydrocarbons (44 mg/kg) were detected in samples 46-1, 46-2, 46-3, and 46-4. Elevated levels of unknown phthalates (3.8 mg/kg) were also detected in sample 46-4.

Reference: 1998 USEPA Preliminary Screening Analysis

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 11, Support Area.
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site is being eliminated as AUS-46, and has been incorporated into the Support Area of Area 11.

Site Evaluation—AUS -047
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:**8/30/99 **Checked by** Mary Hagertry **Date** 9/2/99

Site Name

AUS-047 – AREA 11 – LOAD LINE II EVAPORATION BASIN

Note: Area 11 has been identified as an area recommended for Site Inspections. Area 11 has been subdivided into the: Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, Pilot Propellant/ Cap Area, and the Nitroglycerin Area. This form has not been completely filled out since this site is incorporated into the High Explosives Area. It is included because the USEPA 1998 data was collected by the original AUS site designations.

Contaminants Detected in Prior Studies Above Screening Levels

Two samples (47-1 and 47-2) were taken at site AUS-47. This site was tested for semivolatile organic compounds and metals. No SVOC target compounds exceeded limits. Barium (170 mg/kg) and nickel (26 mg/kg) exceeded USEPA SSLs and Refuge background values in both of the samples. Zinc (140 mg/kg) exceeded DSOLs and Refuge background in sample 47-2. Elevated levels of unknown glycol ethers (95 mg/kg) were detected in both samples.

Reference: 1998 USEPA Preliminary Screening Analysis

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 11, High Explosives Area
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site is being eliminated as AUS-47, and has been incorporated into the High Explosives Area of Area 11.

Site Evaluation—AUS -048
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/1999 **Checked by Mary Hagerty Date 9/2/99**

Site Name

AUS-048 – AREA 11 – LOAD LINE II CHANGE HOUSE SEWERS
Note: Area 11 has been identified as an area recommended for Site Inspections. Area 11 has been subdivided into the: Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, Pilot Propellant/ Cap Area, and the Nitroglycerin Area. This form has not been completely filled out since this site is incorporated into the Support Area, and High Explosives Area.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 11 Support Area, and High Explosives Area.
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site is being eliminated as AUS-48, and has been incorporated into the Support Area, and High Explosives Area of Area 11.

Site Evaluation—AUS -049
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-049 – AREA 11 – LOAD LINE II DRAINAGE DITCH SEDIMENTS

Note: Area 11 has been identified as an area recommended for Site Inspections. Area 11 has been subdivided into the: Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, Pilot Propellant/ Cap Area, and the Nitroglycerin Area. This form has not been completely filled out since this site is incorporated into the Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, and the Pilot Propellant/ Cap Area.

Contaminants Detected in Prior Studies Above Screening Levels

Three samples (49-1 – 49-3) were taken at site AUS-49 in addition to a duplicate sample (49-2 DUP). This site was tested for semivolatile organic compounds and metals. Benzo[a]anthracene (0.13 mg/kg), benzo[b]fluoranthene (0.22 mg/kg), and benzo[a]pyrene (0.13 mg/kg) exceeded USEPA SSLs in sample 49-2 DUP. Nickel (26 mg/kg) exceeded USEPA SSLs and Refuge background values. Mercury (0.17 mg/kg) exceeded USEPA SSLs and Illinois background in sample 49-2 DUP. Zinc (180 mg/kg) exceeded DSOLs and Refuge background in samples 49-2 and the duplicate. Chromium (66 mg/kg) exceeded CSOQGs and Refuge background in the duplicate sample. Elevated levels of unknown glycol ethers (14 mg/kg) were detected in sample 49-1. Elevated levels of hydrocarbons (27.2 mg/kg) were detected in samples 49-2 and 49-2 DUP. Elevated levels of CINNAMYL CINNAMATE (28 mg/kg) were detected in sample 49-3.

Reference: 1998 USEPA Preliminary Screening Analysis.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 11: Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, Pilot Propellant/ Cap Area, and the Nitroglycerin Area.
- ☐ A Removal Action should be undertaken

Statement of Rationale Drainage ditch sediments may be contaminated with waste from past industrial and IOP activities.

Site Evaluation—AUS -050
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-050 – AREA 11 – LOAD LINE II AREAS AROUND BUILDINGS

Note: Area 11 has been identified as an area recommended for Site Inspections. Area 11 has been subdivided into the: Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, Pilot Propellant/ Cap Area, and the Nitroglycerin Area. This form has not been completely filled out since this site is incorporated into the Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, and the Pilot Propellant/ Cap Area.

Contaminants Detected in Prior Studies Above Screening Levels

None detected (SVOCs and metals analyzed).

Reference: USEPA 1998.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 11: Support Area, High Explosives Area, Acid and Ammonium Nitrate Production Area, Pilot Propellant/ Cap Area, and the Nitroglycerin Area.
- ☐ A Removal Action should be undertaken

Statement of Rationale Areas around buildings may be contaminated from melt pour operations and subsequent industrial operations.

Site Evaluation—AUS -051
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-051 — AREA 12 – CONCRETE SLAB WITH BOOSTERS
Note: Site AUS-051 has been eliminated. The concrete slab is incorporated into Site Area 12. It is included because the USEPA 1998 data was collected by the original AUS site designations. **The coordinates provided with the USEPA data due not agree with what URSGWC interprets as the location that TechLaw describes.

Contaminants Detected in Prior Studies Above Screening Levels
None (SVOCs and metals analyzed).

Reference: USEPA 1998

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 12, Former Ammonium Nitrate Plant
- ☐ A Removal Action should be undertaken

Statement of Rationale
Evidence of industrial/ordnance waste in industrial area.

Site Evaluation—AUS -052
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/8/99

Site Name

AUS-052 – AREA 12 – DUMP WEST OF ROAD
Note: This form is not completely filled out. Site AUS-052 has been eliminated. The dump west of the road has been incorporated into Site Area 12. See Area 12 History, Section 12.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 12.
- ☐ A Removal Action should be undertaken

Statement of Rationale

Site has been used for dumping, in industrial area. Incorporate into Site Area 12.

Site Evaluation—AUS -053
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by Mary Hagerty Date 9/2/99**

Site Name

AUS-053 – AREA 12 – AREA 300 YDS WEST & NORTH OF BURN AREAS (FORMERLY COP-6)
Note: Area 12 has been identified as an area recommended for Site Inspections. Area 12 has also been renamed the Former Ammonium Nitrate Plant. This form has not been completely filled out since this site is incorporated into Area 12, the Former Ammonium Nitrate Plant.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 12, Former Ammonium Nitrate Plant
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site is being eliminated as AUS-53 and has been incorporated into Area 12.

Site Evaluation—AUS -054
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by Mary Hagerty Date 9/2/99**

Site Name

AUS-054 – AREA 12 – U.S. POWDER DUMP (WEST PORTION OF COC-4)
Note: Area 12 has been identified as an area recommended for Site Inspections. Area 12 has also been renamed the Former Ammonium Nitrate Plant. This form has not been completely filled out since this site is incorporated into the Former Ammonium Nitrate Plant.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 12, Former Ammonium Nitrate Plant
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site is being eliminated as AUS-54 and has been incorporated into the Former Ammonium Nitrate Plant of Area 12.

Site Evaluation—AUS -055
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-055 – AREA 12 – BURNED SOLID PROPELLANT AREA
Note: This form is not completely filled out. Site AUS-055 has been eliminated. The burned solid propellant area will be investigated as part of Area 12.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken (include as part of Area 12)
- ☐ A Removal Action should be undertaken

Statement of Rationale

The burned solid propellant warrants investigation. Include as part of Area 12 (former AN plant).

Site Evaluation—AUS -056
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-056 – AREAS 11/12 – DUMP WITH TANKS NEAR SURFACE
Note: This form has not been completely filled out. Site AUS-056 has been eliminated. The dump with tanks has been incorporated into the site designated as Area 11 – NG.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken (include with Area 11 – NG)
- ☐ A Removal Action should be undertaken

Statement of Rationale

The dump site warrants investigation. Include with larger site, Area 11 – NG.

Site Evaluation—AUS -057
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-057 – AREAS 11/12 – DUMP EAST OF ROAD FROM AREA 11 TO 12

Note: This site has been eliminated as AUS-057 and incorporated into Site 106A, Drum Disposal.

Contaminants Detected in Prior Studies Above Screening Levels
None detected (SVOCs and metals analyzed).

Reference: USEPA 1998

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted:

Recommendation

- ☒ A Site Inspection should be undertaken (incorporate into AUS-106A)
- ☐ No further action is warranted
- ☐ A Removal Action should be undertaken

Statement of Rationale

Site 57 is small disposal area that can be included with 106-A, which is a large drum disposal area (of 50 to 100 drums). See 106-A evaluation.

Site Evaluation—AUS -058
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-058 – AREA 12 – DRUM ON EAST SIDE OF AREA 12 ROAD
Note: Area 12 has been identified as an area recommended for Site Inspections. Area 12 has also been renamed the Former Ammonium Nitrate Plant. This form has not been completely filled out since this site is incorporated into the Former Ammonium Nitrate Plant. It is included because the USEPA 1998 data was collected by the original AUS site designations.

Contaminants Detected in Prior Studies Above Screening Levels

Benzo[b]fluoranthene (2.5 mg/kg), benzo[a]pyrene (2.5 mg/kg), indeno[1,2,3-cd]pyrene (3.0 mg/kg), and dibenz[a,h]anthracene (1.2 mg/kg) exceeded USEPA SSLs. Benzo[k]fluoranthene (2.5 mg/kg) exceeded CSOQGs. Beryllium (3.6 mg/kg), and nickel (41 mg/kg) exceeded USEPA SSLs and Refuge background. Cobalt (48 mg/kg) and copper (150 mg/kg) exceeded DSOLs and Refuge background. Chromium (100 mg/kg) exceeded CSOQGs and Refuge background.

Reference: 1998 USEPA Preliminary Screening Analysis

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken in conjunction with the investigation of Area 12, Former Ammonium Nitrate Plant
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site is being eliminated as AUS-58 and has been incorporated into the Former Ammonium Nitrate Plant of Area 11.

Site Evaluation—AUS -059
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-059 – AREA 13 – RAILROAD LOADING DOCKS

Note: The site designation Area 13—Railroad Loading Docks has been eliminated. These docks have been incorporated into a new site designated as Area 13.

U.S. EPA,1998 There was one sample (AUS 59-1) collected from this site for SVOC and metals analyses. According to EPA field notes, this site was the old Loading Dock. There were no SVOC target compounds detected in this sample. It should be noted however, that reporting limits were slightly elevated for this sample. None of the metals exceeded Refuge background values. Unknown glycol ethers (74 mg/kg) were detected at an elevated level in this sample.

O'Brien & Gere, 1988 Four composite soil samples (0-1 ft) were collected around the perimeter of the dock (Figure 25-1; O'Brien & Gere, 1988). Sample 18-4 was resampled for full priority pollutant analysis. Traces of the explosive tetryl (1.90 mg/kg) were detected in two soil samples. Magnesium (91100 mg/kg) in sample 18-4 and sodium (2330 mg/kg) in sample 18-1 were detected. These are only estimates. Di-n-octyl phthalate (4050 ug/kg wet wt) was detected in sample 18-4. Data are questionable.

Reference:

Documented/Reported Releases of Hazardous Substances

O'Brien and Gere references a Refuge Manager that reported that chemicals used in munitions manufacturing were dumped on the platform.

Reference: O'Brien and Gere Remedial Investigation,1988, page 25-1

Industrial Activities with Potential for Release of Hazardous Substances

The loading of 500 pound bombs.

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken (incorporate into Area 13)
- ☐ A Removal Action should be undertaken

Statement of Rationale

Site incorporated in Area 13. See Area 13 discussion.

Site Evaluation—AUS -060
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/25/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-060 – AREA 14 – LEAD AZIDE FULMINATE IGLOOS

Contaminants Detected in Prior Studies Above Screening Levels

Lead exceed screening levels and Refuge background.

Reference: USEPA 1998

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Loading and unloading of explosive materials at the site has the potential to release hazardous substances.

Reference: Harvey Pitt Deposition

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

Abandoned drums were observed at the site west of igloo FS 2-2.

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

A low-lying area to the west of the main roads collects runoff and may be a small wetlands area.

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

The existence of abandoned drums and Mr. Pitts declaration that unpacking activities were undertaken in a field to the north indicates the need for further investigation of the site. Also, lead concentrations were well above Refuge background and site screening levels.

Site Evaluation—AUS -061
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson Date: 5/25/99	Checked by Mary Hagerty Date 8/28/99

Site Name
AUS-061 – NORTH OF AREA 14 – DETONATION PITS

Contaminants Detected in Prior Studies Above Screening Levels
There were seven sample locations at this site: AUS 61-1 through AUS 61-7. These sample locations are identified in USEPA field notes. SVOC compounds exceeded screening levels in two of the seven samples (AUS 61-1 and AUS 61-4). The following SVOC compounds were detected at the site above either USEPA SSLs and/or CSOQGs: carbazole (0.71 mg/kg), benzo(a)anthracene (18 mg/kg), benzo(b)fluoranthene (3.5 mg/kg), benzo(k)fluoranthene (3.5 mg/kg), benzo(a)pyrene (5.0 mg/kg), indeno(1,2,3-cd)pyrene (5.0 mg/kg), dibenz(a,h)anthracene (2.3 mg/kg), and phenathrene (5.7 mg/kg). Total PAHs also exceeded DSOLs in these two samples. Barium (430 mg/kg), nickel (23 mg/kg) and cadmium (55 mg/kg) exceeded USEPA SSLs and Refuge background in samples 61-1, 61-2, 61-3, 61-4, and 61-5. Silver (2 mg/kg) exceeded USEPA SSLs and Refuge background in sample 61-3. Mercury (0.16 mg/kg) exceeded USEPA SSLs and Illinois background in samples 61-1 and 61-4. Lead (420 mg/kg) exceeded DSOLs and Refuge background in samples 61-1 and 61-3. Cobalt (21 mg/kg) exceeded DSOLs and Refuge background in sample 61-3. Zinc (440 mg/kg) exceeded DSOLs and Refuge background in sample 61-1. It should be noted that unknown PAHs (24.6 mg/kg), unknown glycol ethers (77 mg/kg), and unknown hydrocarbons (81 mg/kg) were also detected in both of these samples at elevated levels.
Reference: 1998 USEPA Preliminary Screening Analysis.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation
None
Reference:

Documented/Reported Releases of Hazardous Substances
None
Reference:

Industrial Activities with Potential for Release of Hazardous Substances
The testing of gas generators and pyrotechnic devices at this site has the potential to leave residual substances.
Reference:

Other Activities with Potential for Release of Hazardous Substances
None
Reference:

On-Site Evidence of Potential Hazardous Materials
None

Other Features Observed During Site Visits Related to Potential or Actual Releases
None

Water Bodies/Wetlands/Streams that May Have Been Impacted
None

Recommendation
- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale
Sample results above U.S. EPA soil screening levels warrant further investigation at the site.

Site Evaluation—AUS -062
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 05/21/1999	**Checked by Mary Hagerty** **Date 8/28/99**

Site Name

AUS-062 – COC AREA – FORMER LANDFILL (FORMERLY COC-11)

Contaminants Detected in Prior Studies Above Screening Levels

Nickel @ 210 ppm.

Reference: U.S. EPA Preliminary Screening Analysis, 1998

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

No PAH's, VOCs, or mercury was found.

Reference: U.S. EPA Preliminary Screening Analysis, 1998

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

A creek runs through the site from east to west.

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale: Detection of metals above the soil screening levels indicates the need for continued investigation.

Site Evaluation—AUS -063
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/21/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-063 – COC AREA – FENCED AREAS (FORMERLY COC-12)

Contaminants Detected in Prior Studies Above Screening Levels

Soil sample taken "in small creek west of fenced in area" (EPA field logbook 4/18/98 entry) [Note: Site walkover survey did not reveal a small creek west of fenced area. A small creek was noted north of fenced area.] No PAH's, mercury, or VOCs were detected. Cadmium (3.4 mg/kg) and nickel (32 mg/kg) exceeded USEPA SSLs and Refuge background values. Zinc (140 mg/kg) exceeded DSOLs and Refuge background. Elevated levels of unknown glycol ethers (18 mg/kg) were detected in this sample.

Reference: 1998 USEPA Preliminary Screening Analysis.

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

No VOCs, PAHs, or Mercury found in soil sample from creek.
EMMA OU 1996- 7 pieces of ordnance scrap located and investigated to a depth of 2'.

Reference: U.S. EPA Preliminary Screening Analysis, 1998.
Parsons, 1997; Engineering Evaluation and Cost Analysis

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Ordnance disposal/detonation at nearby detonation pits

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

Creek is located to the north of Site # 063

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale: Metals results above the soil screening level and the identification of ordnance scrap at the site indicate the need for further investigation of AUS Site # 063 and surrounding area.

Site Evaluation---AUS -064
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/21/99	**Checked by Mary Hagerty** **Date 8/28/99**

Site Name
AUS-064 – COC AREA – MOUNDS AND BRICK PIT (FORMERLY COC-13)

Contaminants Detected in Prior Studies Above Screening Levels
None
Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation
PARSONS INVESTIGATION: 35 magnetometer anomalies were identified at the site. Eleven of those anomalies were investigated. Investigation revealed 2 pieces of ordnance scrap and 9 pieces of non-ordnance scrap.

USEPA INVESTIGATION: According to USEPA field notes, this sample was collected "near intersection in road downstream of tipped barrel". This site was tested for metals. Barium (180 mg/kg) and beryllium (1.1 mg/kg) exceeded USEPA SSLs and Refuge background levels. Elevated levels of unknown glycol ethers (76 mg/kg) were detected at this site.
References: Parsons, 1997; Engineering Evaluation and Cost Analysis. 1998 USEPA Preliminary Screening Analysis.

Documented/Reported Releases of Hazardous Substances
None
Reference:

Industrial Activities with Potential for Release of Hazardous Substances
This site is west of COC-9. COC-9 was identified as a ordnance demolition/detonation site. It is possible the scrap identified at the site is a result of the demolition activities at COC-9.

Reference: Parsons, 1997; Engineering Evaluation and Cost Analysis.

Other Activities with Potential for Release of Hazardous Substances
None

Reference:

On-Site Evidence of Potential Hazardous Materials
No phase-1 site survey was performed at this site. The exact location of the site was never identified (due in part to incorrect GIC coordnates).

Other Features Observed During Site Visits Related to Potential or Actual Releases
No phase-1 site survey was performed at this site. The exact location of the site was never identified (due in part to incorrect GIC coordnates).

Water Bodies/Wetlands/Streams that May Have Been Impacted
Unknown

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale
This site was never found during the site walkover survey due to inaccurate coordinates and a vague description of the location in materials supplied by FWS and previous reports. Until the exact location can be determined no further action can be taken.

Site Evaluation—AUS -065
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/21/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-065 – COC AREA – FOUNDATIONS NORTHEAST OF COC-1

Contaminants Detected in Prior Studies Above Screening Levels

Mercury @ 0.23 ppm (This result was in a duplicate sample but the sample itself showed non-detect). Carbazole (0.23 mg/kg), benzo[a]anthracene (0.75 mg/kg), benzo[b]fluoranthene (1.1 mg/kg), benzo[a]pyrene (0.62 mg/kg), and dibenz[a,h]anthracene (0.11 mg/kg) exceeded USEPA SSLs in sample 65-2. Benzo[a]anthracene (0.24 mg/kg) and benzo[b]fluoranthene (0.25 mg/kg) also exceeded USEPA SSLs in sample 65-2 DUP. Zinc (150 mg/kg) exceeded DSOLs and Refuge background in samples 65-2 and 65-2 DUP.

Reference: U.S. EPA Preliminary Screening Analysis, 1998

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Other PAH's had positive results in the samples but were either below SSL and/or below the quantitation limit

Reference: U.S. EPA Preliminary Screening Analysis, 1998

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

No evidence of hazardous materials at the site was observed.

Other Features Observed During Site Visits Related to Potential or Actual Releases

The site contains depressions which may have been used for burn pits. They are currently filled with construction debris.

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale: The positive sample results above U.S. EPA generic soil screening levels warrants a continued site inspection to further delineate the possible presence of contaminants at the site above guideline levels.

Site Evaluation—AUS -066
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date:** 8/23/99

Site Name

AUS-066 – COC AREA – BERM WITH RED BRICK RUBBLE

Contaminants Detected in Prior Studies Above Screening Levels

None detected (explosives not analyzed).

Reference: USEPA Preliminary Screening Analysis 1998

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None detected

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

Obvious dumping of building materials has occurred by unknown parties.

Reference: Phase I site survey

On-Site Evidence of Potential Hazardous Materials

The creek which runs through the site has a reddish tint to it (see pictures) indicating the possible presence of TNT.

Other Features Observed During Site Visits Related to Potential or Actual Releases

Just south of the creek, a Danger Contaminated Area sign is hanging on a fence (see pictures)

Water Bodies/Wetlands/Streams that May Have Been Impacted

Crab Orchard Lake and an unidentified creek.

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

The contaminated area sign and the reddish tint in the sediment in the creek are both strong indicators of the presence of explosives contamination. This combined with the fact that this area of the Refuge was used extensively by the army to dispose of surplus materials after the WWII.

Site Evaluation—AUS -067
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-067 – COC AREA – "CONTAMINATED AREA" NORTHWEST OF COC-6

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

A sign at the entrance to the site reads "Danger Contaminated Area – Keep Out – U.S. Government"

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

Water ponds to the north in a man made pond.

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale: Existence of a Danger Contaminated Area sign at this site warrants further inspection and a minimum number of samples to assure that if the sign is real that the contamination will be found.

Site Evaluation—AUS -068
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-068 – COC AREA – PASTURE NORTH OF HAMPTON CEMETERY.

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Area adjacent to this pasture was part of the UXO investigation of COC-6. This pasture was identified as a possible fragmentation area from COC-6.

Reference: Parsons, 1997, Engineering Evaluation and Cost Analysis

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Ordnance disposal/demolition at sites COC-3 and COC-4, and COC-6.

Reference: Parsons, 1997, Engineering Evaluation and Cost Analysis

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

Site drains to the north into Crab Orchard Lake.

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale No information on this site being used as a demolition ground or dump site has been identified. No previous investigations have indicated a problem in this area. This includes a man-made pond in the middle of the pasture. Phase I site survey did not reveal any indication of previous activity at the site with the exception of farming.

Site Evaluation—AUS -069
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-069 – DUMP NEAR SOUTH SHORE OF CRAB ORCHARD LAKE

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Asbestos

Reference: ESE report 1992

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

55 gallon drums litter the site. A 2 " pipe of unknown origin enters CO lake in the area of the site. Construction debris tested positive for asbestos. Clay block material is similar to the clay block material used in the construction of IOP change houses (2^{nd} floors).

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

Crab Orchard Lake and stream entering the lake

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale: The debris found on the site during site visits and the proximity to CO Lake suggest that more than just construction debris may have been dumped at the site.

Site Evaluation—AUS -070
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date:** 8/23/99

Site Name

AUS-070 – DUMP NORTHEAST OF BASS PONDS

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

No evidence of a site in the approximate location described. It is unknown if this site exists or how the information on this site came about.

Site Evaluation—AUS -071
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by** Mary Hagerty **Date:** 8/23/99

Site Name

AUS-071 – ROUTE 148 CAUSEWAY – FORMER MOUNDS OF UNKNOWN MATERIAL

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale No historical evidence of releases of hazardous materials has been found. The site visit revealed two mounds of concrete rubble, however, vegetation around the mounds was thick and unstressed. No signs of contamination were observed in the area and the rubble appears to be inert.

Site Evaluation—AUS -072
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by** Mary Hagerty **Date:** 8/23/99

Site Name

AUS-072 – ROUTE 148 CAUSEWAY – MARION PUMP STATION

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

Crab Orchard Lake

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale: No evidence of industrial activity was observed during the site visit. The area is well vegetated and shows no signs of stress. No historical evidence of contamination or releases of hazardous materials was located.

Site Evaluation—AUS -073
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/20/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-073 – RECREATIONAL WASTE DUMP (WEST END OF CRAB ORCHARD LAKE DAM)

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

Crab Orchard Lake Spillway Channel

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

This site is a recreational dump containing debris of an inert nature. No evidence of hazardous contaminants was observed at the site nor was any data gathered that suggests the possibility of this site being used for hazardous waste dumping.

Site Evaluation—AUS -074
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	Checked by Mary Hagerty Date 8/28/99

Site Name

AUS-074 – HOMESTEAD DUMP

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

Site was used as a dump site. One 55 gal. Drum was found at the site in a state of total decay. No indication of the previous contents of the drum (if there were any) was evident.

Other Features Observed During Site Visits Related to Potential or Actual Releases

Some of the waste is partially buried. This indicates the possible presence of more debris than is visible at the surface.

Water Bodies/Wetlands/Streams that May Have Been Impacted

A creek runs through the center of the site and flows to the north.

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale No indication of the presence of hazardous materials was noted during the site inspection. Material at the site should be removed and disposed of in a licensed landfill. Removal should be performed under observation from trained personnel who can identify the possible presence of hazardous materials.

Site Evaluation—AUS -075
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	Checked by Mary Hagerty Date 8/28/99

Site Name

AUS-075 – HOMESTEAD DUMP ON WEST REFUGE BORDER

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

Unable to access site due to road disrepair.

Other Features Observed During Site Visits Related to Potential or Actual Releases

Unable to access site due to road disrepair.

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale No information was gathered indicating the presence at the site of anything other than household waste. Debris at the site should be removed and taken to a licensed landfill. Removal of debris should be performed under the observation of a person trained in the identification of hazardous materials.

Site Evaluation—AUS -076
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/19/99	**Checked by** Mary Hagerty **Date:** 8/23/99

Site Name

AUS-076 – OPEN BURN SITE AT ROUTE 13 MARINA (IMAGES MARINA)

Contaminants Detected in Prior Studies Above Screening Levels

None above Refuge background.

Reference: US EPA Preliminary Screening Analysis in April 1998

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

No PAH's and no SVOCs were detected above screening levels. No metals were detected above Refuge background.

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

Site was used as a burn area by unknown persons. It is not known what materials were burned at the site.

Reference: CONWR employee

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

Crab Orchard Lake is adjacent to the site.

Recommendation

- x No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

No detections above screening levels. No evidence of hazardous materials.

Site Evaluation—AUS -077
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/19/99	**Checked by Mary Hagerty** **Date: 8/23/99**

Site Name

AUS-077 – HOMESTEAD DUMP NORTHWEST OF DEVILS KITCHEN LAKE

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

Drums dumped at the site could potentially have contained and possibly released hazardous materials to the environment.

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

Drainage from the site is to the northwest and has a surface flow through a shallow ditch which potentially may be impacted.

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale Except for the presence of drums at the site no other indication of the release of hazardous materials was identified. Debris at the site should be removed and disposed of at a licensed landfill. Removal of debris should be performed under the careful observation of a person trained in the identification of presence of hazardous materials.

Site Evaluation—AUS -078
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson **Date:** 5/19/99	**Checked by Mary Hagerty** **Date 8/28/99**

Site Name

AUS-078 – TREATED WOOD POSTS EAST OF DEVILS KITCHEN LAKE

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

Wooden posts treated using a chemical dip process with diesel fuel and transformer oil (by FWS at the Refuge) were placed in fields for fence lines. It is not known whether these posts are from the the Refuge treatment facility or not.

Reference: Stiles deposition on 11/18/97

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

Fence posts were observed during the site visit in varying states of decay. The posts have a characteristically green color but no soil staining under or around posts was observed. Posts are approximately 8 foot apart and many are missing or fallen.

Water Bodies/Wetlands/Streams that May Have Been Impacted

None observed.

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale No credible information was found directly linking the posts found to the post treating operation. A majority of the posts are no longer identifiable (only a few are still standing)and no indication of any impacts to the surrounding soils was evident.

Site Evaluation—AUS -079
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/18/99	Checked by Mary Hagerty Date 8/28/99

Site Name

AUS-079 – BOY SCOUT CAMP DUMP

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

None

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale Site was never located. Discussions with the caretaker of the boy scout camp indicate that no dump area exists at the camp.

Site Evaluation—AUS -080
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Michael Hutcheson Date: 5/18/99	Checked by Mary Hagerty Date: 8/23/99

Site Name

AUS-080 – GIRL SCOUT CAMP DUMP BY BEACH

Contaminants Detected in Prior Studies Above Screening Levels

None

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None

Reference:

Documented/Reported Releases of Hazardous Substances

None

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None

Reference:

Other Activities with Potential for Release of Hazardous Substances

None

Reference:

On-Site Evidence of Potential Hazardous Materials

No evidence of hazardous materials were observed at the site.

Other Features Observed During Site Visits Related to Potential or Actual Releases

This site was previously used as a dump site for building materials, bottles, and other litter. Prior to the site visit FWS personnel removed the bulk of the material at the site. No evidence of hazardous substance releases was observed during the site visit.

Water Bodies/Wetlands/Streams that May Have Been Impacted

Little Grassy lake is adjacent to the site and the site drains directly into the lake.

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale: None of the material observed on site was of a hazardous nature. No evidence of hazardous materials was observed on site nor was any residual evidence of a hazardous material release observed (stained soil, odors, etc.). No evidence of any hazardous materials existing at the site has been identified.

Site Evaluation—AUS –081
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Michael Hutcheson Date: 5/99 Checked by Mary Hagerty Date: 8/23/99

Site Name

AUS-081 – GIRL SCOUT CAMP DUMP BY CAMP SITE

Contaminants Detected in Prior Studies Above Screening Levels

None identified

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

None identified

Reference:

Documented/Reported Releases of Hazardous Substances

None identified

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

None identified

Reference:

Other Activities with Potential for Release of Hazardous Substances

Site was used for a dump by unknown persons, however, no evidence of the presence of hazardous substances in the debris has been identified.

Reference:

On-Site Evidence of Potential Hazardous Materials

No potentially hazardous materials have been identified at the site. The debris previously identified on the site was removed prior to the site visit.

Other Features Observed During Site Visits Related to Potential or Actual Releases

None

Water Bodies/Wetlands/Streams that May Have Been Impacted

None

Recommendation

- ☒ No further action is warranted
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale No evidence of contamination was observed during the site visit. The debris previously dumped on the site has been removed leaving no signs of a release of any hazardous substance. No evidence of the existence of hazardous substance at the site prior to the removal has been identified.

Site Evaluation—AUS –082
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by Mary Hagerty Date: 8/23/99

Site Name

AUS-082 – AREA BETWEEN WATER TOWER 3 AND PCB OU REMEDIAL ACTION

Note: This site was eliminated from the AUS OU by FWS and is included in the Water Towers OU.

Contaminants Detected in Prior Studies Above Screening Levels

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted

Recommendation

- ☒ No further action is warranted (site eliminated from AUS OU and included in Water Towers OU)
- ☐ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

Site eliminated from AUS OU and included in Water Towers OU.

Site Evaluation—AUS –083
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name AUS-083 – AREA 2 – RAILROAD SPUR

The site designation AUS-083 has been eliminated. The site is incorporated into Area 2

Contaminants Detected in Prior Studies Above Screening Levels
Benzo[a]anthracene (2.9 mg/kg) and benzo[b]fluoranthene (6.5 mg/kg) exceeded USEPA SSLs in both samples. Benzo[a]pyrene (3.4 mg/kg), dibenz[a,h]anthracene (1.5 mg/kg), and indeno[1,2,3-cd]pyrene (2.5 mg/kg) exceeded USEPA SSLs in sample 83-2. Naphthalene (2.0 mg/kg) exceeded CSOQGs in both samples. Benzo[k]fluoranthene (6.5 mg/kg) also exceeded CSOQG in sample 83-2. Mercury (0.11 mg/kg) exceeded USEPA SSLs and Illinois background in sample 83-2. Zinc (170 mg/kg) exceeded DSOLs and Refuge background in sample 83-2.

Reference: USEPA,1998

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances
Unloading and loading:

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted
Some small ponding to the west.

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken (incorporate into Area 2).
- ☐ A Removal Action should be undertaken

Statement of Rationale
Sample results above screening levels and past industrial activity.

Site Evaluation—AUS –106-A
AUS OU PA/SI, Crab Orchard National Wildlife Refuge

Completed by: Thomas J Adams **Date:** 8/30/99 **Checked by** Mary Hagerty **Date** 9/2/99

Site Name

AUS-106-A – Drum Dump

Contaminants Detected in Prior Studies Above Screening Levels
No previous samples taken.

Reference:

Other Contaminants Detected/not Detected, Relevant to Site Evaluation

Reference:

Documented/Reported Releases of Hazardous Substances

Reference:

Industrial Activities with Potential for Release of Hazardous Substances

Reference:

Other Activities with Potential for Release of Hazardous Substances

Reference:

On-Site Evidence of Potential Hazardous Materials
At least one-quarter of the fifty to one hundred drums have a whitish, grayish or bluish solid questionable material. The drums either do not have a lid or are rusted out. The dump also contains asbestos like tiling and other metal containers.

Other Features Observed During Site Visits Related to Potential or Actual Releases

Water Bodies/Wetlands/Streams that May Have Been Impacted
A small ditch line or creek flows east on the south side of the drum dump and a creek flows southeast on the east side of the drums. The two merge on the south side of the dump and flow 150' south to an east flowing creek.

Recommendation

- ☐ No further action is warranted
- ☒ A Site Inspection should be undertaken
- ☐ A Removal Action should be undertaken

Statement of Rationale

Due to the questionable nature of the material in the drums and the large size of the disposal area, it should be included in the AUS OU investigation.