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PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT FOR PORTION OF OUTLYING
LANDING FIELD BRONSON WITH TRANSMITTAL LETTER NAS PENSACOLA FL
10/20/1997
LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.



LAW

ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

**REPORT OF
PHASE I ENVIRONMENTAL SITE ASSESSMENT**

**A Portion of Outlying Landing Field (OLF) Bronson
Approximately 430-Acre Site
Naval Air Station Pensacola, Florida**

Prepared For:

**The School District of Escambia County Florida
Facilities Planning Department
30 East Texar Drive
Pensacola, Florida**

Prepared By:

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**October 20, 1997
LAW Project 50227-7-0052.01**



LAW

ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

October 20, 1997

Mr. Larry Law
The School District of Escambia County
Facilities Planning Department
J.E. Hall Center - Room 158
30 East Texar Drive
Pensacola, Florida

Subject: **Draft Report of Phase I Environmental Site Assessment
A Portion of Outlying Landing Field (OLF) Bronson
Approximately 430-Acre Site
Naval Air Station Pensacola, Florida
LAW Project 50227-7-0052.01**

Dear Mr. Law:

Law Engineering and Environmental Services, Inc. (LAW) is pleased to submit this report of our Phase I Environmental Site Assessment for the subject site. The purpose of our Phase I Environmental Site Assessment was to identify obvious actual and potential recognized environmental conditions in relation to the subject site.

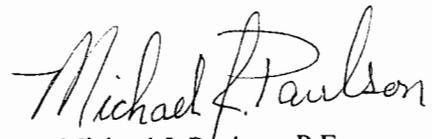
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The conclusions and recommendations contained herein are based upon data which were reviewed and documented in this report along with our experience on similar projects. The discovery of any additional information concerning environmental conditions at the subject site should be reported to us for our review so that we can reassess potential environmental impacts and modify our recommendations, if necessary.

We appreciate the opportunity to be of service to you. Please call us if you have any questions or if we may be of further service.

Sincerely,
LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.


Richard J. Brown, E.I.
Project Engineer


Michael J. Paulson, P.E.
Principal

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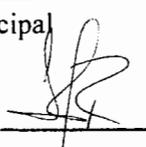
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TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	iv
1.0 INTRODUCTION	1-1
2.0 PURPOSE, SCOPE AND REPORT FORMAT	2-1
2.1 PURPOSE	2-1
2.2 SCOPE OF SERVICES	2-1
2.3 REPORT FORMAT	2-2
3.0 HYDROGEOLOGY	3-1
3.1 GEOLOGY	3-1
3.2 SOIL CONDITIONS	3-2
3.3 SURFACE DRAINAGE	3-2
3.4 GROUND WATER	3-3
4.0 SITE HISTORY	4-1
4.1 PAST SITE USES	4-2
4.2 PAST IMMEDIATELY SURROUNDING LAND USES	4-4
4.3 SUMMARY OF PREVIOUS REPORTS	4-8
4.3.1 PRELIMINARY ASSESSMENT REPORT, OLF BRONSON	4-9
4.3.2 CONTAMINATION ASSESSMENT REPORTS	4-11
5.0 REGULATORY REVIEW	5-1
5.1 LOCAL	5-1
5.2 STATE AND FEDERAL	5-1
5.2.1 U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA) LISTS	5-1
5.2.2 FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) LISTS	5-4
6.0 SITE RECONNAISSANCE AND ENVIRONMENTAL REVIEW	6-1
6.1 GENERAL SITE EVALUATION	6-1
6.2 INTERVIEWS	6-1
6.3 ENVIRONMENTAL PERMITS	6-2
6.4 CHEMICALS AND RAW MATERIALS	6-2
6.5 PCB ELECTRICAL TRANSFORMERS	6-2
6.6 WATER WELLS	6-2
6.7 HAZARDOUS AND SOLID WASTES	6-2
6.8 ON-SITE LANDFILLS	6-3
6.9 PITS AND SUMPS	6-3
6.10 STORAGE TANKS	6-3
6.11 SURFACE STAINING AND STRESSED VEGETATION	6-3
6.12 MUNITIONS	6-4
6.13 OIL AND GAS ACTIVITY	6-5
6.12 WASTEWATER STREAMS AND UTILITIES	6-5

TABLE OF CONTENTS – CONTINUED

7.0 NEIGHBORING SITE RECONNAISSANCE 7-1
 7.1 NORTH 7-1
 7.2 EAST 7-1
 7.3 SOUTH 7-2
 7.4 WEST 7-2
8.0 CONCLUSIONS AND RECOMMENDATIONS 8-1
9.0 LIMITATIONS 9-1

FIGURES

- Figure 1 - Area Topographic Map
- Figure 2 - Generalized Site Map with Surrounding Properties Noted
- Figure 3 - 1951 Aerial Photograph, OLF Bronson

EXECUTIVE SUMMARY

A Portion of Outlying Landing Field (OLF) Bronson Approximately 430-Acre Site Naval Air Station Pensacola, Florida

Law Engineering and Environmental Services, Inc. (LAW) has performed a Phase I Environmental Site Assessment (ESA) of the subject site located at approximately 5.0 miles west of Pensacola City limits in Escambia County, Florida. The subject site consists of approximately 430 acres generally consisting of approximately 220 acres of wetlands, approximately 140 acres of asphalt-paved former aircraft landing strips, and approximately 70 acres of upland wooded areas. The subject site consists of the eastern portion of the former Outlying Landing Field (OLF) Bronson which was utilized as a training air base by Naval Air Station, Pensacola from 1942 to approximately 1958.

The following sections summarize the recognized environmental conditions identified by LAW during the Phase I ESA activities as well as present general recommendations for the noted environmental issues.

ON-SITE CONCERNS

- LAW obtained information that evidenced a former small arms firing range located on the southwestern portion of the subject site. Our experience with firing ranges indicates that soil and ground water in firing range areas are susceptible to contamination from lead and other heavy metals. The former small arms firing range is considered a recognized environmental condition.
- A "Machine Gun Butt" exists on the south-central portion of the subject site. Bullets from aircraft guns were aimed at the Machine Gun Butt to test and align aircraft gun sites during the active period of OLF Bronson. LAW's experience with firing ranges indicates that potential for soil and ground-water contamination due to the presence of lead and other heavy metals exists at firing ranges. The Machine Gun Butt is considered a recognized environmental condition.
- The 1992 Preliminary Assessment Report indicated that a fire-fighting training area was located on the south-central portion of the subject site. Typically, material burned during training exercises in this area would consist of readily available flammable products such as waste aviation gasoline. Other flammable liquids such as kerosene, chlorinated solvents, diesel fuel, hydraulic fluid, and automobile gas may have been burned. We identified the former fire-fighting training area during our site reconnaissance and

observed obvious petroleum surface staining and petroleum odors. The former fire-fighting training area is considered a recognized environmental condition.

To evaluate whether the soil and ground water in the vicinity of the three on-site concerns has been impacted, we recommend that soil and ground-water samples be collected in the area of each of the three on-site concerns and appropriate laboratory analyses be conducted on the samples.

OFF- SITE CONCERNS

- An aircraft parts storage area was observed adjacent to the eastern portion of the northern border of the subject site. The current owner of this adjacent parcel reported that the property and the buildings on the property were utilized as storage for airplane parts and accessories, and some airplane dismantling activities. Due to the nature of the activities which have been conducted at the adjacent parcel, there is potential for waste petroleum products from aircraft as well as solvents utilized for parts cleaning to have been utilized/generated at the adjacent parcel since the 1950's. The adjacent property to the north is considered upgradient to the subject site. If a release of potential contaminants were to occur from this adjacent parcel, the subject site could be impacted. The adjacent storage area to the north is considered a recognized environmental condition to the subject site.
- The Preliminary Assessment Report indicated that during its time of active operation between 1942 and 1952, OLF Bronson used two large aircraft fuel distribution systems consisting of underground storage tanks (USTs) and aviation fuel product lines. The USTs were reportedly removed in 1992. No assessment activities were conducted at the time of the tank closures and all product lines were capped and left in the ground. One of these aircraft fuel distribution systems was located just west of the subject site and serviced a former aircraft flight line. LAW's experience with petroleum product UST systems similar to that associated with the aircraft flight line indicates that releases of petroleum products, particularly from product lines, is common. The former aircraft flight line is considered to be upgradient to the southwestern portion of the subject site and is in relatively close proximity (approximately 800 feet) to the western border of the subject site. If a release of a potential contaminant has occurred along the former aircraft flight line, the subject site could be impacted. The former aircraft flight line is considered a recognized environmental condition to the subject site.
- Between 1942 and 1957, numerous types of solvents, oils, and fuels were used and stored in hangars at OLF Bronson to support the air operations. The hangars nearest the subject site were located approximately 1,300 feet west of the western border of the subject site and approximately 1,900 feet north of the southwestern portion of the subject site. This former hanger area is potentially upgradient from the southwestern portion of the subject site. If a significant release of hazardous materials had been released at the hanger area closest to the subject site, the southwestern portion of the subject site could be impacted by the release. Due to the former handling of hazardous materials and wastes at the former hanger area and its gradient position relative to the subject site, the former aircraft hanger area closest to the subject site is considered a recognized environmental condition to the subject site.

To evaluate whether the soil and ground water at the subject site has been impacted by the off-site activities of concern, we recommend that soil and ground-water samples be collected in areas that are in closest proximity to the areas of concern and appropriate laboratory analyses be conducted on the samples.

1.0 INTRODUCTION

Law Engineering and Environmental Services, Inc. (LAW) has performed a Phase I Environmental Site Assessment (ESA) of the subject site located approximately 5.0 miles west of Pensacola City limits in Escambia County, Florida. The subject site consists of approximately 430 acres generally consisting of approximately 220 acres of wetlands, approximately 140 acres of asphalt-paved former aircraft landing strips, and approximately 70 acres of upland wooded areas. The subject site consists of the eastern portion of the former Outlying Landing Field (OLF) Bronson which was utilized as a training air base by Naval Air Station, Pensacola from 1942 to approximately 1958.

This report is intended for the use of the School District of Escambia County. Reliance on this document by any other party without the expressed written consent of LAW constitutes that party's acceptance of LAW's Agreement for Secondary Client. Use of this report for purposes beyond those reasonably intended by the School District of Escambia County and LAW will be at the sole risk of the user.

This assessment was performed substantially as outlined in LAW's Proposal PNS-97109A dated July 23, 1997, and authorized by Mr. Larry Law, Director of Facilities Planning for the School District of Escambia County.

2.0 PURPOSE, SCOPE AND REPORT FORMAT

The following sections describe the purpose and scope of the Phase I ESA, and outline the report format.

2.1 PURPOSE

The purpose of our Phase I ESA is to generally characterize the subject site and adjacent properties to identify obvious actual and potential recognized environmental conditions. A recognized environmental condition is defined by ASTM E 1527-97 as "the presence or likely presence of any hazardous substance or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property, or into the ground, ground water, or surface water of the property." It was not the purpose of this assessment to determine the actual presence, degree, or extent of contamination, if any, on the subject site. Additional exploratory work including sampling and laboratory analyses was not a part of this assessment.

2.2 SCOPE OF SERVICES

The Phase I ESA is a general characterization of recognized environmental conditions based on readily available information and site observations. The assessment was performed using procedures as specified in the American Society for Testing and Materials (ASTM) specification ASTM E 1527-97. The following services were provided for the assessment:

1. A review of the subject site's location, present use and improvements, topography, soils, geology, and hydrogeology information.
2. A review of the subject site's historical information, including aerial photographs, maps, interviews, and other readily available site development data.
3. A review of select available regulatory information published by state and federal agencies, health, and/or other environmental agencies.
4. A review of readily available U.S. Navy Files associated with environmental-related studies and activities that have been conducted at OLF Bronson.

5. A site reconnaissance and environmental review, including a site survey, interviews with knowledgeable on-site personnel, and observation for chemicals and raw materials, polychlorinated biphenyls (PCBs), wells, hazardous and solid wastes, on-site landfills, pits and sumps, storage tanks, surface staining and stressed vegetation, munitions, oil and gas activity, waste-water discharge procedures, and utilities.
6. A neighboring site reconnaissance, including a review of adjacent property uses as well as significant surrounding property uses.
7. The preparation of this report containing our observations, findings, conclusions and recommendations.

Collection and testing of soil and/or ground-water samples were beyond the scope of the Phase I Environmental Site Assessment. Similarly, the evaluation of air quality, noise impacts, and the identification or delineation of geological or geotechnical hazards, wetland areas, storm-water features as they relate to National Pollution Discharge Elimination System (NPDES) regulations, and regulatory aspects related to the American Disabilities Act of 1990, endangered or protected plant and animal species, or historical and archaeological sites were beyond the scope of this assessment. The scope of this assessment also did not include detection of the presence of radon gas, lead-based paint, urea formaldehyde, asbestos-containing materials, or other potentially hazardous substances in construction materials on site, if any, except as otherwise provided herein.

2.3 REPORT FORMAT

Our report format has five major assessment sections:

- Hydrogeology
- Site History
- Regulatory Review
- Site Reconnaissance and Environmental Review
- Neighboring Site Reconnaissance

Recommendations based on the five sections are included in an evaluation section:

- Conclusions and Recommendations

A statement of interpretive limitations follows the recommendations.

3.0 HYDROGEOLOGY

A consideration of surface and subsurface drainage and geology is of interest since it provides an indication of the direction that contaminants, if present, could be transported.

LAW reviewed the following information in regards to the hydrogeology of the subject site and surrounding area:

- Special Publication No. 32, Florida's Groundwater Quality Monitoring Program, Hydrogeological Framework, Florida Geological Survey (FGS), 1991.
- Soil Survey of Escambia County, U.S. Department of Agriculture publication, dated 1960.
- Lillian Alabama-Florida Quadrangle, 7.5-Minute Series Topographic Map, U.S. Department of the Interior Geologic Survey (USGS), 1970, photorevised 1987.
- Water Resources of Escambia and Santa Rosa Counties, Florida, Report of Investigations No. 40, In Cooperation with the FGS, Escambia County, Santa Rosa County, and the City of Pensacola, USGS Publication, 1965.
- Multiple School Masterplan, OLF Bronson N.A.S., William F. Parks III, Architect, October 1996.

3.1 GEOLOGY

The subject site is located in the Coastal Plain Province which is a major physiographic division of the United States primarily consisting of unconsolidated sands, silts, and clays. The region in the vicinity of the subject site lies within the topographic subdivision of the Coastal Lowlands which consists of nearly level plains lying less than 100 feet above sea level. The geologic formation underlying the subject site can be as much as 1,000 feet thick and consists of alternating layers of sand, gravel, and clay.

3.2 SOIL CONDITIONS

The United States Department of Agriculture (USDA) publication that was issued in 1960 which reflects soil conditions in 1955, did not show the mapped soils on the subject site. The publication showed soils in the vicinity of the subject site to be poorly drained due to a high water table and containing organics with rapid permeability of the subsoil. A Preliminary Assessment for OLF Bronson dated 1992 described the surface soils as sand and muck.

3.3 SURFACE DRAINAGE

Surface drainage on the majority of the subject site is to the south and southwest, toward Perdido Bay. A northeasterly component of surface drainage exists near the northeast corner of the subject site. A westerly component of surface drainage exists on the extreme southern portion of the subject site. The topographic map (Figure 1) indicates that the surface elevation of the subject site ranges from approximately 25 feet above mean sea level (msl) on the northwest portion of the site to approximately 10 feet above msl on the southwest portion of the site.

The subject site is generally flat lying with surface drainage flowing by way of sheet flow towards several on-site drainage features. The predominant drainage feature on the site is a large wetland area located on the southern and eastern portions of the subject site (see Figure 2). Our aerial photograph reviews indicate that until approximately 1980, a designed drainage ditch located along the eastern portion of the subject site and extending along the southern border of the subject site was the predominant drainage feature on the property. This drainage ditch drained the majority of the site by directing surface drainage to Perdido Bay west of the subject site. Reports from individuals associated with OLF Bronson indicate that beavers dammed this drainage ditch in the mid 1980s resulting in the permanent flooding of the southern portion of the property. The wetland area on the southern portion of the subject site drains through the original drainage ditch on the extreme southwestern corner of the site. This drainage is eventually intercepted by Perdido Bay approximately 0.6 mile west of the subject site. Another obvious wetland area exists on the northeastern corner of the site. This wetland area drains off site to the northeast and is eventually intercepted by Perdido Bay approximately 0.6 mile north of the subject site.

The referenced Multiple School Masterplan prepared for the School District of Escambia County included the preliminary identification of on-site wetlands. This preliminary identification process identified approximately 200 acres of wetlands on the subject site. Figure 2 shows the general location of these potential on-site wetlands. Delineation of on-site wetlands was not included in the scope of this report, although based on our observations the referenced areas did appear to bear wetlands-type characteristics.

Based on the topography of the area surrounding the subject site, the area within approximately 1,000 feet north of the subject site is considered to be upgradient relative to the subject site. The area located greater than 1,000 feet north of the subject site is located in a separate drainage basin. The areas east, west, and south of the subject site are considered to be downgradient to crossgradient relative to the subject site.

3.4 GROUND WATER

According to a USGS publication pertaining to water resources in Escambia County, ground water is the principal source of water for domestic, agricultural, and industrial use. The Sand and Gravel Aquifer is the primary aquifer in Escambia County and the majority of the wells in the county draw water from this aquifer.

The Sand and Gravel Aquifer is generally comprised of quartz sand and contains numerous lenses and layers of clay and gravel. This aquifer extends from the water table down to various depths ranging from approximately 200 to 1000 feet. The depth to the top of the water table in the vicinity of the subject site is estimated to be approximately 5 to 30 feet below land surface. This estimation is based on recently published ground-water measurements obtained from ground-water monitoring wells on the central and western portion of OLF Bronson. No direct observation or measurements of ground-water conditions were made as part of this assessment.

The dip of geologic strata in the near surface water-table aquifer is anticipated to be so slight that ground-water flow is likely controlled principally by differences in topographic features. Therefore, it is anticipated that shallow ground water on and in the vicinity of the subject site will exhibit a gradient generally resembling the land surface topography which slopes to the south and

southwest over the majority of the subject site. A westerly surface gradient exists on the extreme southern portion of the subject site and a north-easterly gradient exists on the northeastern corner of the subject site. On this basis, the area within approximately 1,000 feet north of the subject site is considered to be upgradient relative to the subject site. The area greater than 1,000 feet north of the subject site is located in a separate drainage basin from the subject site and is considered to be downgradient to the subject site. The areas west of the subject site is considered to be crossgradient to downgradient relative to the subject site. This estimate of ground-water gradient west of the subject site is further evidenced by published ground-water flow direction measurements on the central and western portions of OLF Bronson. The areas south and east of the subject site are also considered to be crossgradient to downgradient relative to the subject site.

4.0 SITE HISTORY

LAW reviewed the following information in order to ascertain the historical uses of the subject site and immediately adjacent properties to evaluate the presence of activity of potential environmental concern:

- Aerial photographs for the years 1994, 1980, 1976, 1968, 1958, 1951, and 1940.
- Lillian Alabama-Florida Quadrangle, 7.5-Minute Series Topographic Map, U.S. Department of the Interior Geologic Survey (USGS), 1970, photorevised 1987.
- Preliminary Assessment Report, OLF, Bronson, U.S. Navy, February, 1992.
- Compressed Air, Butane, Gasoline, and Oils Service Drawing, OLF Bronson, N.A.S. Drawing Number 23032, dated June 24, 1944.
- Tarklin Field Elevations and Boundings, N.A.S. Drawing No. 9128, dated January 10, 1942.
- Interview with Mr. Dean Spencer and Mr. Ron Joiner, N.A.S. Environmental Department.
- Interview with Mr. Frank Fritz, former N.A.S. Director of Engineering 1985-1995.
- Interview with Mr. Woodrow Lynn, Former N.A.S. Director of Facilities, 1950-1975.
- Interview with Mr. Greg Cambell and Ms. Debbie Vincent of the N.A.S. Public Works Center (PWC) Engineering Department.
- Interview with Mr. Richard Hon, Blue Angel Recreation Area.
- Interview with Mr. Samuel Goldman, property owner of adjacent aircraft parts storage yard.

Sanborn Fire Insurance Map coverage and historical city directories were not available for the subject site and vicinity. Chain-of-title information for the subject site was not provided to LAW for review.

4.1 PAST SITE USES

Based on our aerial photograph review, interviews, and historical information provided in the referenced previously prepared report, a history of the subject site was compiled.

Mr. Woodrow Lynn reported that in the 1930's the area containing the subject site was developed as a landing area for aircraft and was called Tarklin Field. Tarklin Field was utilized for touch-and-go landings of military training aircraft on sod airstrips.

The 1940 aerial photograph showed the majority of subject site to be undeveloped and apparently not vegetated or covered with light vegetation. An approximately 500-foot-diameter circular, apparently paved, area was shown on the west-central portion of the subject site. There were several unpaved roads or possibly unpaved airstrips shown transversing the subject site leading to the paved circular area. The Tarklin Field Elevation and Boundings Map showed the circular area. The map had the circular area labeled as "Sand Asphalt (Oil Treated) Landing Mat". Mr. Lynn reported that typically in the early stages of development of an airfield, the runway construction started with a central "core" and as construction funds became available, runways were constructed out from the central core. Mr. Lynn reported that the circular paved area on the 1940 aerial photograph was most likely a central core for the runway planned at the airfield.

In 1942, the entire 950-acre OLF Bronson was reportedly constructed. The original name of the airfield, Tarklin Field, was changed to OLF Bronson at this time. The base was used as a training base for Naval aviators during World War II and the Korean War. The western portion of OLF Bronson was also used to maintain sea planes and train sea plane pilots. OLF Bronson was closed as an active airfield in late 1950, but the runways were still used for touch-and-go landing for helicopter training. After 1950, base dismantling activities were conducted. By 1968, all buildings located at OLF Bronson were raised.

Based on available information, it appears that only one structure has ever existed on the subject site. Located on the southwest portion of the subject site, this building was identified by N.A.S. Drawing No. 23032 as the "Range House". It is assumed that this building was constructed at the time of the original site development. Based on our aerial photograph review, the "Range House" was razed between 1958 and 1968. LAW was unable to determine the specific use of the "Range

House". The 1944 drawing of OLF Bronson indicates that the "Range House" was located in the vicinity of a large earthen berm identified on the map as a "butt". This earthen berm was visible in the 1951 (see Figure 3) and 1958 aerial photographs reviewed. This earthen berm could not be identified in the 1968, 1976, 1980, or 1994 aerial photographs reviewed. LAW personnel could not locate the earthen berm during our site reconnaissance. Mr. Frank Fritz, the former N.A.S. Director of Engineering, indicated that it was very common for former training bases in the World War II era to have small arms firing ranges. These firing ranges typically consisted of an earthen mound that acted as a backstop for fired ammunition and a small arms and ammunition storage building. Mr. Fritz could not confirm that the "Range House" and earthen mound on the southwestern portion of the subject site was utilized as a small arms firing range. Based on the evidence presented in the aerial photographs and N.A.S. Drawing No. 23032, it appears that the area on the southwest portion of the subject site was utilized as a small arms firing range during the time OLF Bronson was active. LAW's experience with firing ranges indicates that soil and ground water in firing range areas are susceptible to contamination from lead and other heavy metals. Based on our position that this area on the southwestern portion of the subject site was utilized as a firing range and our experience with environmental concerns associated with firing ranges, the former small arms firing range is considered a recognized environmental condition.

The 1944 N.A.S. Drawing No. 23032 showed a "Machine Gun Butt" on the south-central portion of the subject site (see Figure 2). The presence of the Machine Gun Butt was observed in all the aerial photographs reviewed, and during our site reconnaissance. The Machine Gun Butt measures approximately 100 feet by 40 feet by 30 feet high. The 1992 Preliminary Assessment Report indicated that aircraft mechanics used the southeast section of OLF Bronson (south-central portion of the subject site) to calibrate 30-and-50 caliber aircraft machine guns. Bullets from aircraft guns were aimed at the Machine Gun Butt to test and align aircraft gun sites. We observed remnants of bullets embedded in the Machine Gun Butt during our reconnaissance. LAW's experience with firing ranges indicates that potential for soil and ground-water contamination due to the presence of lead and other heavy metals exists at firing ranges. Based on the presence of the former aircraft machine gun firing range, and the potential for contamination related to the former activities at the firing range, the former Machine Gun Butt is considered a recognized environmental condition.

The 1992 Preliminary Assessment Report indicated that a fire-fighting training area was located on the south-central portion of the subject site (see Figure 2). The fire-fighting training area was believed to be utilized during the time that OLF Bronson was active (1942-1958). The OLF Bronson Fire Department reportedly conducted practice burns at the training area. Details of the fire-fighting drills were not indicated in the report. The report did indicate that a typical fire-fighting drill consisted of filling a shallow pit with water then pouring flammable material on top of the water and igniting it. Typically, material burned during the training exercises would consist of readily available flammable products such as waste aviation gasoline. Other flammable liquids such as kerosene, chlorinated solvents, diesel fuel, hydraulic fluid, and automobile gas may have been burned. Due to the reported use of potential contaminants at the fire-fighting training area and their potential to come into direct contact with the ground surface, the former fire-fighting training area is considered a recognized environmental condition.

Based on our document reviews and interviews with individuals associated with the subject site, no aircraft fueling or maintenance activities were conducted on the subject site during the time OLF Bronson was active. No evidence of landfilling activities was obtained by our historical review.

After OLF Bronson was closed in approximately 1952, the former landing fields located on the subject site were reportedly utilized during helicopter training activities by Combat Support Squadron 16. In recent years, the former air strips on the subject site have been used by model airplane enthusiasts.

4.2 PAST IMMEDIATELY SURROUNDING LAND USES

Our review of the 1940 aerial photograph indicated that the subject site was surrounded by generally undeveloped wooded properties. The 1951 aerial photograph showed the areas south, east, and north of the subject site to remain undeveloped with the exception of some residential properties along U.S. Highway 98 and Perdido Bay approximately 0.5 miles north of the subject site. The 1951 aerial photograph (see Figure 3) showed the development of the hangars, barracks, and other support facilities of OLF Bronson west of the subject site.

The 1958 through 1994 aerial photographs showed some development on a parcel adjacent to the northeastern corner of the subject site along Bronson Road (see Figure 2). The development included several buildings. There also appeared to be a lot of debris on the adjacent parcel in each photograph reviewed. Mr. Samuel Goldman, the current owner of the adjacent parcel located just north of the subject site, was contacted by LAW personnel. Mr. Goldman indicated that he purchased the adjacent parcel in the 1950s from the U.S. Navy. At that time, Mr. Goldman operated Transamerican Aviation, purchasing airplanes from the U.S. Navy to scrap and utilize the spare parts for resale. Mr. Goldman indicated that the buildings located on the parcel were moved to his property from OLF Bronson during OLF Bronson dismantling activities in the 1950s. Mr. Goldman reported that the property and the buildings were utilized as storage for airplane parts and accessories, with some airplane dismantling activities. Mr. Goldman reported that no manufacturing or aircraft maintenance had been conducted on his property. Mr. Goldman currently owns and operates Chesapeake Airways located in Maryland which continues to utilize the adjacent parcel for aircraft part storage. Due to the nature of the activities which have been conducted at the adjacent parcel, there is potential for waste petroleum products from aircraft as well as solvents utilized for parts cleaning to have been utilized/generated at the adjacent parcel since the 1950's. The adjacent property to the north is considered upgradient to the subject site. If a release of potential contaminants were to occur from this adjacent parcel, the subject site could be impacted. Based on the type of activities conducted at the adjacent parcel and its gradient position relative to the subject site the adjacent storage area to the north is considered a recognized environmental condition.

The Preliminary Assessment Report indicated that during its time of active operation between 1942 and 1952, OLF Bronson used two large aircraft fuel distribution systems. One of these systems consisted of four 25,000-gallon underground storage tanks (USTs) and one 15,000-gallon UST. These USTs were located approximately 1,400 feet west of the northwest corner of the subject site (see Figure 2). The tanks were constructed of steel and contained aviation fuel. The tanks were used to supply fuel for approximately 7,200 feet of aviation fuel product line. These product lines transported aviation fuel to 56 aircraft service pits. The concrete in-ground service pits were located in three rows along the aircraft flight line located adjacent to the airfield (see Figure 2). Each aircraft service pit contained compressed air hoses, aviation fuel control valves, and lubricating oil service equipment. At least twenty four of the aircraft service pits utilized an

adjacent 500-gallon steel lubrication oil tank. The flight line containing the aircraft service pits, lube oil USTs, and aviation fuel product lines consisted of three 2,400-foot rows located approximately 800 feet from and parallel to the western border of the subject site (see Figure 2). Mr. Dean Spencer and Mr. Ron Joiner of the N.A.S. Environmental Department indicated that the four 25,000-gallon USTs and one 15,000-gallon UST associated with the aircraft flight line were removed in 1992. The 500-gallon lube oil USTs associated with the aircraft service pits were also reportedly removed in 1992. The N.A.S. Environmental Department and Public Works Center (PWC) Engineering Department could not provide documentation of the tank closures or assessment activities associated with the closures. Mr. Joiner reported that no assessment activities were conducted at the time of the tank closures and all product lines associated with the aviation fuel and lube oil USTs were capped and left in the ground. LAW's experience with petroleum product UST systems similar to that associated with the aircraft flight line indicates that releases of petroleum products, particularly from product lines, is common. LAW obtained no evidence indicating that a release has occurred along the former aircraft flight line; however, no assessment activities have reportedly been conducted along the former aircraft flight line. The former aircraft flight line is considered to be upgradient to the southwestern portion of the subject site and is in relatively close proximity (approximately 800 feet) to the western border of the subject site. If a release of a potential contaminant has occurred along the former aircraft flight line, the subject site could be impacted. Based on the potential of a past release, the gradient direction, and relative close proximity of the former aircraft flight line to the subject site, the former aircraft flight line is considered a recognized environmental condition.

The other aviation fuel system formerly located at OLF Bronson, as reported in the Preliminary Assessment Report, consisted of six 25,000-gallon USTs. These USTs were located approximately 0.70 miles west of the subject site. These six USTs supplied aviation fuel through approximately 5,500 feet of underground steel product lines to twenty aircraft service pits. These aircraft service pits were located along an aircraft flight line along the shore of Perdido Bay on the extreme western end of OLF Bronson. This extreme western end of OLF Bronson was utilized for sea plane flight training. Mr. Spencer and Mr. Joiner of the N.A.S. Environmental Department reported that the six 25,000-gallon USTs associated with the seaplane flight line on the western portion of OLF Bronson had been removed in approximately 1992. The N.A.S. Environmental Department and Public Works Center (PWC) Engineering Department could not provide

documentation of the tank closures or assessment activities associated with the closures. Product lines associated with the aviation fuel and lube oil USTs associated with the seaplane flight line were reportedly left in the ground at the time of the UST closures. LAW has reviewed ground-water flow data from the western portion of OLF Bronson. The data indicates that ground-water flow in the area of the seaplane flight line and related USTs is in a west/southwest direction. Based on the ground-water flow direction, if a release of potential contaminants were to occur from the UST system associated with the former seaplane flight line, the subject site should not be impacted. Therefore, the UST system associated with the former sea plane flight line is not considered a recognized environmental condition to the subject site.

Documentation provided by the N.A.S. Environmental Department indicated that ninety-eight individual USTs had been located at OLF Bronson. None of these USTs were reportedly located on the subject site. These USTs ranged in capacity from 50 gallons to 25,000 gallons. The tanks were used to store the following materials: kerosene, new oil, waste oil, leaded gasoline, unleaded gasoline, and heating oil. The contents of approximately 20 of the USTs were not identified. Forty-seven of the USTs at OLF Bronson were removed in 1992. LAW was unable to obtain documentation of the 1992 UST closures or related assessments from the N.A.S. Environmental Department or from the PWC Engineering Department. The remaining 51 USTs were scheduled for removal in 1994. Documentation from the PWC Engineering Department indicates that 15 of the remaining 51 USTs scheduled for removal in 1994 were not located. The 36 USTs which were located in 1994 were removed. To date, the N.A.S. Environmental Department and PWC Engineering Department has indicated that no USTs (not including product piping) remain in place at OLF Bronson. More details of these UST closures are presented in Section 4.3 of this report. Based on the reports of knowledge personnel and our review of limited UST closure and assessment documentation as well as the documented ground-water flow direction (southwest, away from the subject site), the former UST systems located at OLF Bronson, other than the UST system which supplied the flight line adjacent to the subject site, should not impact the subject site and are not considered recognized environmental conditions to the subject site.

The 1992 Preliminary Assessment Report indicated that between 1942 and 1952 numerous types of solvents, oils and fuels were used at OLF Bronson to support the air operations. By volume, more high-octane aviation fuel was utilized at the facility than any other hazardous material.

Toluene, carbon tetrachloride, and trichloroethane were reportedly used by maintenance personnel at the hanger areas on the former base. The usage rate of the solvents, oils, and fuels was not reported. It was reported that all maintenance of aircraft based at OLF Bronson was conducted in the base hangers. Waste oil and waste solvents generated at the hangers were reportedly stored in USTs at the hangers. When the waste tanks were full, the waste liquids were reportedly pumped out of the USTs and transported off of the base for disposal or burned by the base fire department during fire-fighting training drills. The hangers nearest the subject site (see Figure 2) were located approximately 1,300 feet west of the western border of the subject site and approximately 1,900 feet north of the southwestern portion of the subject site. This former hanger area is potentially upgradient to the southwestern portion of the subject site. If a significant release of hazardous materials had been released at the hanger area closest to the subject site, the southwestern portion of the subject site could be impacted by the release. LAW personnel did not review documentation of a release having occurred at the former hanger areas; however, UST closure information for the USTs formerly located at the hanger area was not presented to LAW for review. Due to the former handling of hazardous materials and wastes at the former hanger area and its gradient position relative to the subject site, the former aircraft hanger area closest to the subject site is considered a recognized environmental condition to the subject site. The former hangers which serviced the seaplane landing area on the extreme western portion of OLF Bronson is considered to be downgradient to the subject site. If a significant release of potential contaminants had occurred at the former hangers on the extreme western portion of OLF Bronson, the subject site should not be impacted by the release. The former hangers located on the extreme western portion of OLF Bronson are not considered recognized environmental conditions to the subject site.

4.3 SUMMARY OF PREVIOUS REPORTS

The following reports pertaining to the subject site and nearby properties were reviewed by LAW personnel:

- Preliminary Assessment Report OLF Bronson; prepared by the Navy Energy and Environmental Support Authority (NEESA); dated February 1992.

- Contamination Assessment Report, OLF Bronson, Site 1162; prepared by Navy Public Works Center; dated December 1996.
- Contamination Assessment Report, OLF Bronson, Site 1101; prepared by Navy Public Works Center; dated January 1997.
- Contamination Assessment Report, OLF Bronson, Site 1116; prepared by Navy Public Works Center; dated March 1997.
- Contamination Assessment Report, OLF Bronson, Site 1140-NW; prepared by Navy Public Works Center; dated June 1997.
- Contamination Assessment Report, OLF Bronson, Site 1170; prepared by Navy Public Works Center; dated June 1997.
- Contamination Assessment Report, OLF Bronson, Site 1140-NE; prepared by Navy Public Works Center; dated August 1997.

The following sections generally summarize the reports which were reviewed:

4.3.1 PRELIMINARY ASSESSMENT REPORT, OLF BRONSON

OLF Bronson is (was) apparently listed on the Federal Facilities Hazardous Waste Compliance Docket. As a result, the Naval Facilities Engineering Command tasked the Naval Energy and Environmental Support Activity (NEESA) to conduct a preliminary assessment on OLF Bronson as required by Superfund Amendments and Reauthorization Act (SARA) Part 120. The preliminary assessment included the investigation and review of available records at NEESA and the Naval Facilities Engineering Command. After the records search, the NEESA team visited the subject site to complete documentation of past and present operations and disposal practices. With the assistance of Pensacola N.A.S. representatives, the NEESA team toured the subject site and interviewed long term employees at the site. If a potential threat to human health or the environment was identified, further action was recommended.

The NEESA/NAVY preliminary assessment identified three areas of potential environmental concern to the subject site. A summary of these three areas is presented in the following subsections.

4.3.1.1 Maintenance Areas Around The Hangars

OLF Bronson had four aircraft hangars. Hangars 1140 and 1121 were located near the sea plane ramps and hangars 1140 and 1121 located just west of the aircraft flight line near the main landing pad. Numerous solvents, fuels, oils, and aircraft cleaners were used at and around the four hangars. Maintenance shops and waste oil tanks were located at the hangars. It was reported that aircraft parts were degreased with solvents inside and outside the hangars. The report concluded that liquid materials spilled or placed on the concrete near the hangars may have been washed into the grassy areas adjacent to the aircraft hangars during periods of precipitation or when the concrete was washed down. It was concluded that the maintenance areas around the former hangars should not be a threat to nearby surface waters or local air quality; however, soil and ground water could be impacted by the potential contaminants. The assessment report recommended that soil samples be collected in the areas adjacent to the aircraft hangars for lead and semi-volatile organic compounds. LAW is not aware that this recommended soil sampling activity adjacent to the former hangers has been conducted.

4.3.1.2 Fire Fighting Training Area

The preliminary assessment identified a fire-fighting training area as a potential environmental concern. The fire-fighting training area was used during the active period of OLF Bronson. The area is located on the south-central portion of the subject site (see Figure 2). Flammable liquids burned in the pit most likely consisted of waste aviation fuel as well as kerosene, chlorinated solvents, diesel fuel, hydraulic fluid, and automobile gasoline. The report also indicated that polychlorinated biphenyls (PCBs) originating from hydraulic fluids may also have been burned in the area. It was concluded that the fire-fighting training area should not pose a threat to local air quality; however, nearby surface waters and ground water could potentially be impacted by the potential contaminants. The assessment report recommended that soil samples be collected in the vicinity of the former fire-fighting training area to evaluate if soils have been impacted by potential contaminants. LAW is not aware that this recommended soil sampling activity at the fire-fighting training area has been conducted.

4.3.1.3 Machine Gun Butt

The assessment report identified the "Machine Gun Butt" on the south-central portion of the subject site as a potential environmental concern (see Figure 2). The Machine Gun Butt had been utilized during the active period of OLF Bronson as a backstop for aircraft machine gun targets. The report concluded that the metals which were fired into the Machine Gun Butt could have potential to impact local surface waters and a minimal impact on ground water. The assessment report recommended that soil sampling be conducted in the area of the Machine Gun Butt to evaluate whether potential metal contaminants are migrating from the earthen mound. LAW is not aware that this recommended soil sampling activity at the former Machine Gun Butt has been conducted.

4.3.2 CONTAMINATION ASSESSMENT REPORTS

The six Contamination Assessment Reports (CARs) reviewed were conducted in response to petroleum contamination discovered during UST closures at various sites on OLF Bronson in 1994. UST closures conducted in 1994 that did not identify contaminated releases did not require CARs. The purpose of the CARs was to determine the vertical and horizontal extents of soil and ground-water contamination at the various sites where releases were detected and to develop remediation plans to be presented to the Florida Department of Environmental Protection (FDEP).

All of the CARs reviewed indicated the presence of petroleum impacted soil and ground water to varying degrees. The following are maximum concentrations of ground-water contaminants as indicated in the six CARs reviewed: Napthalene-1,060 parts per billion (ppb), Volatile Organic Analytes (VOAs)-12.0 ppb, Ethylene Dibromide (EDB)-0.12 ppb, Total Petroleum Hydrocarbons (TPH)-110,000 parts per million (ppm), and Total Benzene, Toluene, Ethyl-benzene, and Xylenes (BTEX)-62.0 ppb. No free phase petroleum hydrocarbons were detected in monitoring wells at the six CAR sites reviewed.

Of the six CARs reviewed, five recommended no further remedial action on the soils of the study sites and one recommended additional soil excavation and disposal of contaminated soils (Site 1107). Of the six CARs, five recommended monitoring only for ground water and one recommended no further action for ground water.

All of the CARs reviewed had ground-water depth and flow direction information for the specific sites. The ground-water depths at the six study sites ranged from 6.0 feet to 21 feet below the ground surface. The ground-water flow direction at the six study sites was consistently in a west/southwest direction.

5.0 REGULATORY REVIEW

5.1 LOCAL

Since the subject site is currently owned by the U.S. Navy, the Navy's emergency response and environmental compliance teams are the primary local contacts for regulatory issues at the subject site. Representatives of the N.A.S. Pensacola environmental department as well as the engineering department were contacted regarding potential environmental conditions on the subject site and in the near vicinity. Information provided by these representatives has been thoroughly discussed in other sections of this report.

5.2 STATE AND FEDERAL

LAW reviewed excerpts of federal and state environmental regulatory agency lists to assess whether the subject site or nearby properties within specified search criteria radii were listed as having a past or present record of actual or potential environmental impact or are under investigation for an environmental impact. The excerpts were prepared by Environmental Data Resources, Inc. (EDR) issued on August 11, 1997.

Please note that regulatory listings are limited and include only those sites that are known to the regulatory agencies at the time of publication to be contaminated or in the process of evaluation or subject to monitoring for potential contamination.

5.2.1 U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA) LISTS

5.2.1.1 National Priorities List

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) established the NPL (Nation Priority List) of federal "Superfund" sites. These are contaminated sites that have been assigned a high ranking, in terms of their potential public health effects, by the EPA.

- The subject site does not appear on the NPL.

- No NPL sites are located within one mile of the subject site.

5.2.1.2 Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) List

The CERCLIS List identifies suspected contamination sites throughout the nation; however, a facility or site on this list does not necessarily have environmental problems.

- The subject site does not appear on the CERCLIS List.
- No CERCLIS listed facilities are listed within a one-half-mile radius of the subject site.

5.2.1.3 Emergency Response Notification System (ERNS) List

The USEPA Emergency Response Notification System is a national database used to collect information on reported releases of oil and hazardous substances. The database contains information from spill reports made to federal authorities including the EPA, the US Coast Guard, the National Response Center, and the Department of Transportation.

- The subject site does not appear on the ERNS List.

5.2.1.4 RCRA Administrative Action Tracking System (RAATS) List

The USEPA RAATS list identifies facilities that are currently or at one time were subject to USEPA enforcement for activities related to their handling of hazardous wastes and summarizes the results of any action taken by the USEPA.

- The subject site does not appear on the RAATS List.

5.2.1.5 Facilities Index Report (FINDS) List

The USEPA FINDS Report is a computerized inventory of all facilities and/or locations that are regulated or monitored by the USEPA. This report indicates the responsible USEPA Program Office, such as Air, Water, or Hazardous Waste that is responsible for the facility. Presence of a facility on the FINDS Report does not necessarily mean that the site poses a threat to the environment or public health.

- The subject site does not appear on the FINDS report.

5.2.1.6 Toxic Release Inventory System (TRIS) List

The USEPA TRIS list identifies facilities subject to reporting inventories of specified chemicals per requirements of the Superfund Amendments and Re-authorization Act (SARA) of 1986. These facilities may not have an environmental problem but may have the potential to impact the environment due to activities related to the handling of hazardous substances.

- The subject site does not appear on the TRIS List.

5.2.1.7 USEPA Resource Conservation & Recovery Information System (RCRIS)

RCRIS, or RCRA Notices list, is the EPA database of facilities that generate, transport, treat, store, or dispose of hazardous waste.

- The subject site does not appear on any of the RCRIS lists.
- There is one facility listed on the RCRIS-SQG (small quantity generator) list within one-quarter mile of the subject site. There are no RCRIS-LQG (large quantity generator) facilities located within one-quarter mile of the subject site. There are no RCRIS-TSD (treatment, storage, disposal) facilities located within one mile of the subject site.

The Blue Angel Recreation Area located approximately one-half mile west of the subject site is listed as a small quantity generator of hazardous waste. This facility is considered to be down gradient to the subject site. Based on its gradient direction, if a release of potential contaminants

were to occur from this facility the subject site should not be impacted by the release. The Blue Angel Recreation Area is not considered a recognized environmental condition to the subject site.

5.2.2 FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) LISTS

5.2.2.1 SITES List (SITES)

The FDEP SITES list identifies facilities that have been identified by the FDEP as having known or suspected environmental contamination.

- The subject site does not appear on the SITES List.
- There are no facilities on the SITES list within a one-mile radius of the subject site.

5.2.2.2 Solid Waste Facilities (SLDWST) List

The FDEP SLDWST list identifies locations that have been permitted to conduct solid waste landfilling activities or other related waste handling activities, such as management of biohazardous wastes. The appearance of a site on this list does not necessarily indicate that an environmental concern exists at the site.

- The subject site does not appear on the SLDWST List.
- There are no facilities identified on the SLDWST List within a one-half-mile radius of the subject site.

5.2.2.3 Petroleum Contamination Tracking System (PCTS) Report

The FDEP PCTS identifies facilities and/or locations that have notified the FDEP of a possible release of contaminants from petroleum storage systems.

- The subject site does not appear on the PCTS report.
- There are no facilities identified within a one-half-mile radius of the subject site listed on the PCTS report.

5.2.2.4 Stationary Tank Inventory (TANKS) List

The FDEP TANKS List identifies facilities that have registered aboveground and underground petroleum fuel tanks. The appearance of a site on this list does not necessarily indicate environmental problems at the site.

- The subject site does not appear on the TANKS List.
- There are no facilities identified within a one-quarter-mile radius of the subject site listed on the TANKS list.

6.0 SITE RECONNAISSANCE AND ENVIRONMENTAL REVIEW

Mr. Richard J. Brown, a LAW professional experienced in environmental site assessments, along with other LAW personnel, visited the subject site on several occasions between August 22 and September 17, 1997 to view accessible areas of the subject site. The site reconnaissance was conducted on foot.

6.1 GENERAL SITE EVALUATION

The subject site consists of approximately 430 acres generally consisting of approximately 220 acres of wetlands, approximately 140 acres of asphalt-paved former landing strips, and approximately 70 acres of upland wooded areas. The subject site consists of the eastern portion of the former OLF Bronson which was utilized as a training air base by Naval Air Station, Pensacola from 1942 to approximately 1958. The site location is shown on a topographic map presented as Figure 1 and a generalized site plan is presented as Figure 2.

6.2 INTERVIEWS

Interviews were conducted with the following individuals concerning conditions at the subject site:

- Mr. Woodrow Lynn Former N.A.S. Director of Facilities
- Mr. Frank Fritz Former N.A.S. Director of Engineering
- Mr. Ron Joiner N.A.S. Environmental Department
- Mr. Dean Spencer N.A.S. Environmental Department
- Mr. Greg Cambell PWC Engineering Department
- Ms. Debbie Vincent PWC Engineering Department
- Mr. Richard Hon Blue Angel Recreation Area
- Dr. Joe A Edmisten Joe Edmisten and Associates, Ecological Consultants

The results of the interviews conducted are included in this site evaluation.

6.3 ENVIRONMENTAL PERMITS

No environmental permits regarding current on-site activities appear to be warranted at the subject site.

6.4 CHEMICALS AND RAW MATERIALS

No current on-site activities were identified which utilize chemicals or raw materials.

6.5 PCB ELECTRICAL TRANSFORMERS

Electrical transformers are a potential source of environmental concern due to the possible presence of PCB-containing cooling oils used in some units. There were no electrical transformers observed on the subject site.

6.6 WATER WELLS

No active drinking-water wells were observed on the subject site. It was reported that no drinking water wells had been located on the site in the past. No ground-water monitoring wells were observed or reported to be located on the subject site.

6.7 HAZARDOUS AND SOLID WASTES

Three potential areas of soil contamination located on the subject site may contain impacted soils considered to be hazardous wastes. These three areas include the former small arms firing range on the southwestern portion of the subject site, the Machine Gun Butt on the south-central portion of the subject site and the former fire-fighting training area on the south-central portion of the subject site (see Figure 2). No other potentially hazardous wastes were observed to be generated or stored on the subject site. No potential hazardous wastes were reportedly generated or stored at the subject site in the past. These three areas of potential soil contamination are considered recognized environmental conditions.

No solid waste was observed, generated or stored on the subject site. No solid waste was reportedly stored on the subject site in the past.

6.8 ON-SITE LANDFILLS

From our review of aerial photographs, historical maps, interviews, and observations during our site reconnaissance, evidence of on-site landfills was not observed. There was miscellaneous debris observed in limited areas throughout the site. This miscellaneous debris included concrete and metal. The presence of this miscellaneous debris is not considered a recognized environmental condition.

6.9 PITS AND SUMPS

No pits or sumps were observed on the subject site.

6.10 STORAGE TANKS

Based upon our site reconnaissance and reports from individuals associated with the subject site, there are no underground storage tanks (USTs) or aboveground storage tanks (ASTs) located on the subject site. It was reported that no USTs or ASTs had been located on the subject site in the past.

6.11 SURFACE STAINING AND STRESSED VEGETATION

The former fire-fighting training area which was identified in our historical review was observed during our site reconnaissance. This area located on the south-central portion of the subject site contained limited vegetation and obvious petroleum surface staining and petroleum odors. The area of stressed vegetation and surface staining was approximately 75 feet in diameter. Based on our historical reviews and our site observations of the former fire-fighting training area, the former fire-fighting training area is considered a recognized environmental condition.

An approximately 4.0 acre area adjacent to the southwestern landing strip was observed to lack vegetation. There was no evidence of soil staining in this area. No grasses, shrubs, or trees were observed in this area. Only bare dry sandy soil was visible. The Multiple School Masterplan report reviewed showed this area to be a potential wetland that contained standing water at the time of the wetland study (August 1996). LAW contacted Dr. Joe A Edmisten, the author of the original wetland study, regarding the barren soil area. Dr. Edmisten reported that it is not uncommon for an area that undergoes repeated saturation and drying cycles to be barren of vegetation. Dr. Edmisten also reported that when he visited the subject site in August 1996, the barren soil area had obviously been disturbed by numerous off-road vehicles that had apparently utilized the area for recreational purposes. These type of vehicular activities would not be conducive to vegetation growth. Based on the information provided by Dr. Edmisten and our site observations, the barren soil area adjacent to the southwestern landing strip appears to be a natural occurrence aggravated by vehicular traffic. This area is not considered a recognized environmental condition.

6.12 MUNITIONS

The former Machine Gun Butt which was identified in our historical review was observed during our site reconnaissance. The Machine Gun Butt consisted of a large earthen mound approximately 30 feet high, 40 feet wide, and 100 feet in length. We observed remnants of bullets embedded in the Machine Gun Butt. The mound was vegetated with grasses, shrubs and small pine trees. Based on the historical usage of the Machine Gun Butt as a backstop for aircraft bullets, it is our opinion that there is potential for soil and ground-water contamination on and around the Machine Gun Butt related to lead and other heavy metals. Based on the historical uses of the Machine Gun Butt and the potential for soil and ground-water contamination, the Machine Gun Butt is considered a recognized environmental condition.

LAW reviewed historical evidence of a small arms firing range on the southwestern portion of the subject site. The presence of the small arms firing range was not confirmed through our interviews and document review process. Based on the evidence of the firing range presented in the aerial photographs and N.A.S. Drawing No. 23032, LAW assumes that the area on the southwestern portion of the subject site was utilized as a small arms firing range during the time OLF Bronson was active. During our site reconnaissance, we did not observe the earthen mound

that was viewed on the 1951 and 1958 aerial photographs. Our observations in the area of the former earthen mound were hampered by thick vegetation and swampy conditions. Based on our assumption that this area was utilized as a firing range and our experience with environmental concerns associated with firing ranges, the former small arms firing range on the southwestern portion of the subject site is considered a recognized environmental condition.

Based on our historical reviews and site observations there are no areas at the subject site other than the former Machine Gun Butt and former small arms firing range which utilized, stored, or maintained munitions activities.

6.13 OIL AND GAS ACTIVITY

No oil and gas exploration or pipeline activities were identified on the subject site or in the vicinity of the subject site.

6.14 WASTEWATER STREAMS AND UTILITIES

Water, sewer, electric and gas utilities are not currently supplied to the subject site.

7.0 NEIGHBORING SITE RECONNAISSANCE

The neighboring site reconnaissance was performed on several occasions between August 22 and September 17, 1997 by LAW professional Mr. Richard J. Brown to assist in evaluating whether adjacent land uses have or could have potential to contaminate the subject site. The neighboring site reconnaissance was conducted by touring the area by foot and by automobile, viewing particular businesses from public rights-of-way, and by making actual observations at selected businesses or properties.

The properties surrounding the subject site are generally undeveloped with some residential development. The findings of our neighboring site reconnaissance are discussed below according to the geographic relation to the subject site: north, east, south, and west.

7.1 NORTH

The western portion of the northern border of the subject site is bordered by Bronson Road with undeveloped wooded properties farther north. The eastern portion of the northern border of the subject site is bordered by a parcel utilized for aircraft parts storage and by an undeveloped wooded parcel. As discussed in Section 4.2, the adjacent parcel to the north utilized for aircraft parts storage has been used for similar activities since the 1950s. Due to the nature of the activities which have been conducted at this adjacent parcel, there is potential for hazardous materials to have been located on and impacted the parcel. Based on surface topography, it appears that the adjacent parcel to the north is upgradient to the subject site. Based on the type of activities conducted at the adjacent parcel and based on its upgradient position relative to the subject site, the adjacent storage area to the north is considered a recognized environmental condition to the subject site. There were no other facilities observed north of the subject site which are considered recognized environmental conditions to the subject site.

7.2 EAST

The subject site is bounded to the east by Bauer Road and undeveloped properties. Farther east of the subject site are undeveloped properties and residential areas which have been developed in the past 10 years. The area east of the subject site is considered to be crossgradient to downgradient

relative to the subject site. No facilities considered to be recognized environmental conditions relative to the subject site were identified east of the subject site.

7.3 SOUTH

The subject site is bordered to the south by undeveloped wooded properties. Farther south are additional undeveloped wooded properties. The area south of the subject site is considered to be crossgradient to downgradient to the subject site. No facilities considered recognized environmental conditions relative to the subject site were identified south of the subject site.

7.4 WEST

The northern and central portions of the western border of the subject site are bounded by the landing mat and associated runways of OLF Bronson. The southern portion of the western border of the subject site is bordered by undeveloped woodlands which are also part of OLF Bronson. Approximately 800 feet west of the northern and central portion of the western border of the subject site is the former aircraft flight line for OLF Bronson. Approximately 500 feet beyond the former aircraft flight line is an area which formerly contained aircraft hangers. As further explained in Section 4.2 of this report, large quantities of potential contaminants were utilized along the former aircraft flight line and the former aircraft hangers west of the subject site during the active period of OLF Bronson. No environmental assessments have reportedly been conducted in these two areas. Both of these areas are considered to be upgradient to the southwestern portion of the subject site. Based on this gradient direction, if significant releases of potential contaminants have occurred from the former aircraft flight line and the former aircraft hangers in the past, the subject site could be impacted by the releases. The former aircraft flight line and the former aircraft hanger areas located 1,300 feet west of the subject site are considered recognized environmental conditions to the subject site.

Farther west of the subject site are wooded areas located where support facilities for OLF Bronson had formerly been located. Blue Angel Recreation Area which consists of a general store, boat ramp, and campsites is located farther west of the subject site along Perdido Bay.

Two public water supply wells were identified west of the subject site during the area reconnaissance. The public water supply wells are maintained by the Escambia County Utilities Authority (ECUA). The two wells are located on OLF Bronson, approximately 1,800 feet and 2,800 feet west of the northern portion of the western border of the subject site. The wells were reportedly constructed in the early 1940s and extend to depths of approximately 250 feet below the ground surface. The east well is not currently in service and the west well is active. No contaminant concentrations above FDEP Groundwater Guidance Concentrations have been reported in either of the two wells as of December 1996.

Other than the former hanger area and the former aircraft flight line, no other facilities considered recognized environmental conditions to the subject site were identified west of the subject site.

8.0 CONCLUSIONS AND RECOMMENDATIONS

LAW has reviewed environmental regulatory lists, related historical and geological information, as well as information obtained during our site and surrounding area reconnaissance. The following sections summarize the recognized environmental conditions identified by LAW during the Phase I ESA activities as well as present general recommendations for the noted environmental issues.

ON-SITE CONCERNS

- LAW obtained information that evidenced a former small arms firing range located on the southwestern portion of the subject site. Physical evidence of the small arms firing range was not observed during our site reconnaissance. Our observations in the suspected location of the small arms firing range was hampered by thick vegetation and swampy conditions. Our experience with firing ranges indicates that soil and ground water in firing range areas are susceptible to contamination from lead and other heavy metals. Based on our position that the area on the southwestern portion of the subject site was utilized as a firing range and our experience with environmental concerns associated with firing ranges, the former small arms firing range is considered a recognized environmental condition.

To evaluate whether the soil and ground water in the vicinity of the small arms firing range have been impacted by heavy metals, we recommend that soil and ground-water samples be collected in the area of the former small arms firing range and appropriate laboratory analyses be conducted on the samples. Further assessment and/or remediation of the impacted soil and ground water, if any, may be required based on the results of the initial assessment.

- The 1944 N.A.S. Drawing No. 23032 showed a "Machine Gun Butt" on the south-central portion of the subject site. The 1992 Preliminary Assessment Report indicated that aircraft mechanics used the southeast section of OLF Bronson (south-central portion of the subject site) to calibrate 30-and-50 caliber aircraft machine guns. Bullets from aircraft guns were aimed at the Machine Gun Butt to test and align aircraft gun sites during the active period of OLF Bronson. LAW's experience with firing ranges indicates that potential for soil and ground-water contamination due to the presence of lead and other heavy metals exists at firing ranges. Based on the presence of the former aircraft machine gun firing range, and the potential for contamination related to the former activities at the firing range, the Machine Gun Butt is considered a recognized environmental condition.

To evaluate whether the soil and ground water in the vicinity of the former Machine Gun Butt have been impacted by heavy metals, we recommend that soil and ground-water samples be collected in the area of the former Machine Gun Butt and appropriate laboratory analyses be conducted on the samples. Further assessment and/or remediation

of the impacted soil and ground water, if any, may be required based on the results of the initial assessment.

- The 1992 Preliminary Assessment Report indicated that a fire-fighting training area was located on the south-central portion of the subject site. The fire-fighting training area was utilized during the time that OLF Bronson was active. The OLF Bronson Fire Department reportedly conducted practice burns at the training area. Typically, material burned during the training exercises would consist of readily available flammable products such as waste aviation gasoline. Other flammable liquids such as kerosene, chlorinated solvents, diesel fuel, hydraulic fluid, and automobile gas may have been burned. We identified the former fire-fighting training area during our site reconnaissance and observed obvious petroleum surface staining and petroleum odors. Based on our historical reviews and site observations, the former fire-fighting training area is considered a recognized environmental condition.

To evaluate whether the soil and ground water in the vicinity of the former fire-fighting training area has been impacted by petroleum products, chlorinated solvents, volatile organic compounds, or PCBs, we recommend that soil and ground-water samples be collected in the area of the former fire-fighting training area and appropriate laboratory analyses be conducted on the samples. Further assessment and/or remediation of the impacted soil and ground water, if any, may be required based on the results of the initial assessment.

OFF-SITE CONCERNS

- An aircraft parts storage area was observed adjacent to the eastern portion of the northern border of the subject site. The current owner of this adjacent parcel reported that the property and the buildings on the property were utilized as storage for airplane parts and accessories, and some airplane dismantling activities. It was reported that no manufacturing or aircraft maintenance had been conducted on this property. Due to the nature of the activities which have been conducted at the adjacent parcel, there is potential for waste petroleum products from aircraft as well as solvents utilized for parts cleaning to have been utilized/generated at the adjacent parcel since the 1950s. The adjacent property to the north is considered upgradient to the subject site. If a release of potential contaminants were to occur from this adjacent parcel, the subject site could be impacted. Based on the nature of activities conducted at the adjacent parcel and its gradient position relative to the subject site, the adjacent storage area to the north is considered a recognized environmental condition to the subject site.

To evaluate whether the soil and ground water on the northeastern portion of the subject site have been impacted by petroleum products, chlorinated solvents, or volatile organic compounds related to the off-site activities conducted north of the subject site, we recommend that soil and ground-water samples be collected along the northern border of the subject site in the vicinity of the adjacent storage area and appropriate laboratory analyses be conducted on the samples.

- The Preliminary Assessment Report indicated that during its time of active operation between 1942 and 1952, OLF Bronson used two large aircraft fuel distribution systems. One of these systems consisted of four 25,000-gallon underground storage tanks (USTs) and one 15,000-gallon UST. These USTs were located approximately 1,400 feet west of the northwest corner of the subject site. The tanks were used to supply fuel for approximately 7,200 feet of aviation fuel product line, which transported aviation fuel to 56 aircraft service pits. The four 25,000-gallon USTs and one 15,000-gallon UST associated with the aircraft flight line were reportedly removed in 1992. Approximately twenty-six 500-gallon lube oil USTs associated with the aircraft service pits were also reportedly removed in 1992. No assessment activities were conducted at the time of the tank closures and all product lines associated with the aviation fuel and lube oil USTs were capped and left in the ground. LAW's experience with petroleum product UST systems similar to that associated with the aircraft flight line indicates that releases of petroleum products, particularly from product lines, is common. We obtained no evidence indicating that a release has occurred along the former aircraft flight line; however, no assessment activities have reportedly been conducted along the former aircraft flight line. The former aircraft flight line is considered to be upgradient to the southwestern portion of the subject site and is in relatively close proximity (approximately 800 feet) to the eastern border of the subject site. If a release of a potential contaminant has occurred along the former aircraft flight line, the subject site could be impacted. Based on the potential of a past release, the gradient direction, and relative close proximity of the former aircraft flight line to the subject site, the former aircraft flight line is considered a recognized environmental condition to the subject site.

To evaluate whether the soil and ground water on the southwestern and western portions of the subject site have been impacted by petroleum products related to the off-site activities conducted at the former aircraft flight line, we recommend that soil and ground-water samples be collected along the western border and the southwestern portion of the subject site in areas that are in closest proximity to the former aircraft flight line and appropriate laboratory analyses be conducted on the samples.

- The 1992 Preliminary Assessment Report indicated that between 1942 and 1957 numerous types of solvents, oils, and fuels were used at OLF Bronson to support the air operations. It was reported that all maintenance of aircraft based at OLF Bronson was conducted in the base hangers. Waste oil and waste solvents generated at the hangers were reportedly stored in USTs at the hangers. The hangers nearest the subject site were located approximately 1,300 feet west of the western border of the subject site and approximately 1,900 feet north of the southwestern portion of the subject site. This former hanger area is potentially upgradient to the southwestern portion of the subject site. If a significant release of hazardous materials had been released at the hanger area closest to the subject site, the southwestern portion of the subject site could be impacted by the release. LAW personnel did not review documentation of a release having occurred at the former hanger areas; however, UST closure information for the USTs formerly located at the hanger area was not presented to LAW for review. Due to the former handling of hazardous materials and wastes at the former hanger area and its gradient position relative to the subject site, the former aircraft hanger area closest to the subject site is considered a recognized environmental condition to the subject site.

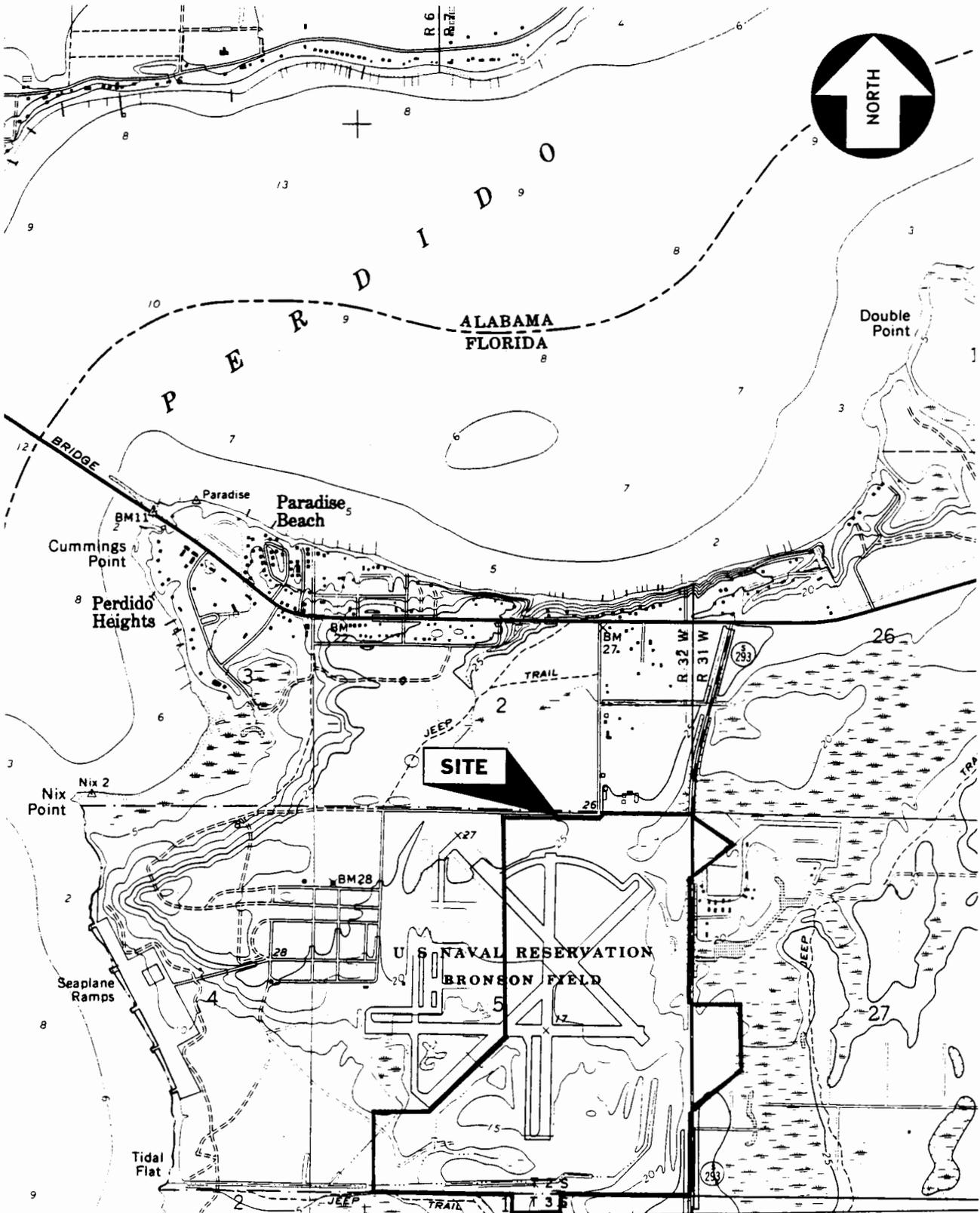
To evaluate whether the soil and ground water on the southwestern portion of the subject site has been impacted by petroleum products, chlorinated solvents, or volatile organic compounds related to the off-site activities conducted at the former aircraft hangar area closest to the subject site, we recommend that soil and ground-water samples be collected on the southwestern portion of the subject site in areas that are in closest proximity to the former aircraft hangar areas and appropriate laboratory analyses be conducted on the samples.

9.0 LIMITATIONS

The findings and opinions are relevant to the dates of our site visit and should not be relied on to represent conditions at substantially later dates. The opinions included herein are based on information obtained during the study and our experience under similar circumstances. If additional information becomes available which might impact our environmental conclusions, we request the opportunity to review the information, reassess the potential concerns, and modify our opinion, if warranted. If this assessment included a review of reports prepared by others, it must be recognized that LAW has no responsibility for the accuracy of information contained therein.

Although this assessment has attempted to identify the potential for contamination of the subject property, potential sources of contamination may have escaped detection due to : (1) the limited scope of this assessment, (2) the inaccuracy of public records, and (3) the presence of undetected and unreported environmental accidents.

FIGURES



SOURCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLE LILIAN, FLORIDA-ALABAMA DATED 1970, PHOTOREVISED 1976.

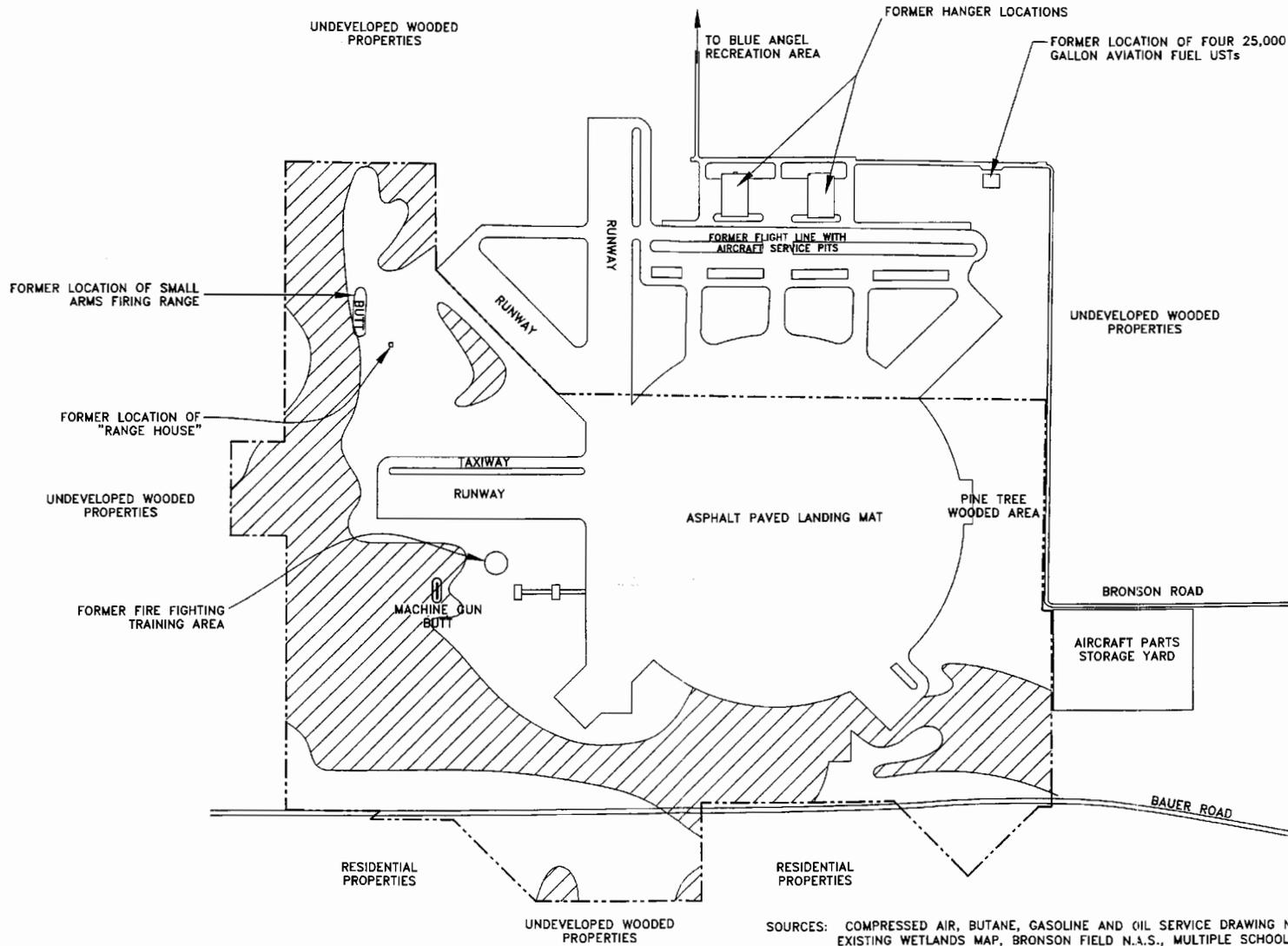
AREA TOPOGRAPHIC MAP
 PHASE I ENVIRONMENTAL ASSESSMENT
 OLS BRONSON N.A.S.
 PENSACOLA, FLORIDA



LAW
 ENGINEERING AND ENVIRONMENTAL
 SERVICES
 3355 McLEMORE DRIVE
 PENSACOLA, FLORIDA 32514

Project No. 50227-7-0052
 Drawing No. FIGURE 1
 Drawn: BAW
 Checked: *MLP*
 Approved: *MLP*
 Date: 10-1-97

SCALE:
 V:
 H:
 1"=2000'



LEGEND:



POTENTIAL WETLANDS



APPROXIMATE SITE BOUNDARY

SOURCES: COMPRESSED AIR, BUTANE, GASOLINE AND OIL SERVICE DRAWING N.A.S. NO. 23032, DATED JUNE, 1944.
 EXISTING WETLANDS MAP, BRONSON FIELD N.A.S., MULTIPLE SCHOOL MASTER PLAN
 WILLIAM F. PARKS III, ARCHITECT, DATED SEPTEMBER 1996.

GENERALIZED SITE PLAN WITH
 SURROUNDED PROPERTIES NOTED
 PHASE I ENVIRONMENTAL SITE ASSESSMENT
 OLS BRONSON N.A.S.
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Project No. 50227-7-0052
 Drawing No. FIGURE 2
 Drawn: BAW
 Checked:
 Approved:
 Date:

SCALE:
 V:
 H:

1"=700'



LEGEND

 Approximate Subject Site Boundary



<p>1951 Aerial Photograph</p> <p>PHASE I ENVIRONMENTAL SITE ASSESSMENT OLS BRONSON N.A.S. PENSACOLA, FLORIDA</p>	 <p>LAW ENGINEERING AND ENVIRONMENTAL SERVICES 3355 McLEMORE DRIVE PENSACOLA, FLORIDA 32514</p>	<p>Project No. 50227-7-0052 Drawing No. FIGURE 3 Drawn: BAW Checked: <i>[Signature]</i> Approved: <i>[Signature]</i> Date: 10-1-97</p>	<p>SCALE: V: H: 1" = 700'</p>
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