FINAL

PERFLUORINATED COMPOUNDS PRELIMINARY ASSESSMENT SITE VISIT REPORT

KINGSLEY FIELD
KLAMATH FALLS, OREGON

Prepared For:

Headquarters Air National Guard
Joint Base Andrews, Maryland

December 2015

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BB&E, Inc.
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LIST OF ACRONYMS

AFFF	Aqueous Film Forming Foam
ANG	Air National Guard
AOC	Area of Concern
BB&E	BB&E, Inc.
bgs	below ground surface
Bldg	Building
DoD	Department of Defense
ERP	Environmental Restoration Program
FD	Fire Department
FETA	Fire Equipment Training Area
FTA	Fire Training Area
FW	Fighter Wing
FUDS	Formerly Used Defense Site
GIS	Geographic Information System
GPS	Global Positioning System
HEF	high expansion foam
NFA	No Further Action
OANG	Oregon Air National Guard
PA	Preliminary Assessment
PFCs	Perfluorinated Compounds
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PHAL	Provisional Health Advisory Levels
POL	Petroleum, Oil and Lubricants
SI	Site Investigation
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WWTP	Waste Water Treatment Plant

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1.0 INTRODUCTION

A preliminary assessment (PA) site visit was conducted by BB&E, Inc. (BB&E) from August 12-13, 2015 at the Oregon Air National Guard (OANG) Kingsley Field (the Base) in Klamath Falls, Oregon home of the 173d Fighter Wing (FW). The site location is shown on Figure 1. The purpose of the visit was to identify potential sites of historic environmental releases of perfluorinated compounds, specifically from Aqueous Film Forming Foam (AFFF) usage and storage, as shown on Figure 2. Prior to the site visit, BB&E conducted research of any documented Fire Training Areas (FTAs) in operation since 1970, or any other use or release of AFFF in accordance with the Final Perfluorinated Compound (PFC) Preliminary Assessment Work Plan (BB&E, 2015). During the site visit, BB&E conducted personnel interviews, reviewed on-site documentation and toured each potential site.

Individuals contributing to this PA effort included the following:

- Howard Owens – Deputy Fire Chief, Kingsley Field Fire and Emergency Services, 173d FW
- Matt Chavarria – Assistant Fire Chief, Kingsley Field Fire and Emergency Services, 173d FW
- Ed Saunders – Fireman, Kingsley Field Fire and Emergency Services, 173d FW
- Chief Master Sergeant Dominic Ingle – Facility Manager, 173d FW
- Lieutenant Colonel Tim Bruner – Base Civil Engineer, 173d FW
- Dave Mauch –Base Facilities Engineer, 173d FW
- Lt Joe Young – Base Environmental Manager, 173d FW
- Erin Forney – Environmental Specialist, 173d FW

Representative photos of the subject sites taken during the site visit are attached as Appendix A.

The Base is located in the city of Klamath Falls, Klamath County, in southern Oregon. Kingsley Field is shared by the OANG and the City of Klamath Falls. The Base is situated on the western

side of the Klamath Falls Municipal Airport. The OANG occupies approximately 256 acres of Kingsley Field while the remainder, approximately 645 acres, is occupied by the City of Klamath Falls for airport operations.

Sections 2.0 and 3.0 of this report outline the potential PFC sources identified on the OANG Kingsley Field property during the records review and site visit, while Section 4.0 provides conclusions and recommendations for potential follow-on actions. References are included in Section 5.0 and supporting documentation in the Appendices.

1.1 Hydrogeologic Setting

Hydrogeologic information was obtained from the Final Site Investigation (SI) Report for Western Region 1 prepared in 2014 (ANG, 2014) and the Community Involvement Plan (URS, 2010). The Base is located approximately three miles west-northwest of Lost River and approximately three miles east-southeast of the Klamath River. The Lost River Diversion Canal, which is an irrigation canal, connects the two basins. A series of drainage ditches and culverts control surface runoff throughout Kingsley Field. The surface runoff is eventually diverted to the Lost River Diversion Canal (URS, 2010)

Based on previous site investigations, groundwater levels at the site range from 3 to 7.5 feet below ground surface (bgs). Shallow groundwater is unconfined beneath the facility. Because of the shallow occurrence of silt and clay layers with low hydraulic conductivity, local semi-confining conditions may exist. Higher groundwater levels are sometimes observed in the spring/summer months, depending on the year and local precipitation events. Groundwater flow at the site is radial to the southeast, east, northeast, and west. Based on the distribution of chemicals of concern detected in monitoring wells, the dominant groundwater flow direction is likely to the east-southeast and may be controlled locally by the numerous utilities that intersect groundwater at the site (e.g., storm sewers, etc.). The United States Geological Survey reports that the regional groundwater flow gradient in the Kingsley Field area is toward the southeast (ANG, 2014). Appendix C-1 shows the potentiometric maps displaying the groundwater flow.

The widespread occurrence of clay and silt layers with low hydraulic conductivity restricts the vertical movement of potentially contaminated shallow groundwater to deeper aquifers. Where these shallow clay and silt strata are not present, there is a greater potential for downward

movement of contaminants. Groundwater in the vicinity of Kingsley Field is reported to be of moderate quality with high concentrations of methane or iron (ANG, 2014).

There are no drinking water wells on the Kingsley Field ANG Base, and water used at the Base is supplied by the City of Klamath Falls. Water for the City of Klamath Falls is obtained from water production wells located along the Lost River Diversion Canal. These water production wells are located to the northwest of Kingsley Field and are drilled to depths within the deep basalt bedrock that underlies the Klamath Basin (URS, 2010).

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2.0 FIRE TRAINING AREAS

Based on this PA investigation, there were two FTA areas at Kingsley Field but outside the current Base installation boundary. These two FTAs are identified as Environmental Restoration Program (ERP) Sites 7 and 8 (URS, 2010) and are being addressed by the United States Army Corps of Engineers (USACE) under the Formerly Used Defense Sites (FUDS) program (URS, 2010). Both FTAs are no longer in use. Supporting information regarding these former FTAs is summarized below and additional information is included in Appendix C-2.

ERP Site 7 FTA was used from approximately 1956 to 1965, before the use of AFFF at ANG bases. Approximately 5,000 to 8,000 gallons per year of waste oils, contaminated fuels, and petroleum, oil, and lubricant (POL) materials were burned at this location. ERP Site 8 was used from approximately 1965 to 1972 for the burning of similar constituents and volumes as ERP Site 7 (CH2M Hill, 1981). Discussions with Kingsley Field Fire Department personnel indicate that ERP Site 8 might have been used until the early 1980s for continued fire training and foam training exercises likely using AFFF.

Even though these sites are not included in the Base installation footprint, they are worth mentioning since they were the only known FTAs in the vicinity of the Base that has potential documented use of AFFF (ERP Site 8). In addition, both sites are situated potentially up-gradient or side gradient of the Base which is a potential concern for the groundwater at the site.

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3.0 NON-FIRE TRAINING AREAS

Non-FTA Areas of Concern (AOCs) are sites where AFFF has been stored or released and may include crash sites, hangars, fuel spill areas, hazardous waste storage facilities, firefighting equipment testing areas, etc. The following section includes a description of any Non-Fire Training AOCs identified during this PA effort including operational history, waste characteristics, and pathway evaluations, as applicable.

3.1 AOC Description, Operational History, and Waste Characteristics

The following are the non-FTA AOCs that were identified during this PA. It is estimated that AFFF use at the Base began circa 1972. Appendix A includes photos of these areas from the August 2015 site visit. Interviews with fire department personnel indicated known fire equipment testing including foam testing was conducted from approximately 1995-2005 in three separate areas as discussed below. From approximately 2005-2015 there was no fire equipment foam testing completed. Starting in 2015, monthly testing of one truck per month is conducted on the lot of the former fire station located immediately north of the current fire station using small quantities of AFFF. There was no information or knowledge readily available regarding fire equipment foam testing completed prior to 2005.

3.1.1 Hangar 333 – Fuel Cell Maintenance Dock

Hangar 333's fire suppression system with AFFF was installed in 1987. In 2007, approximately 200 gallons of AFFF plus associated water was released at Hangar 333 (total volume unknown). Most of the mixture was contained inside the building where there are floor drains connected to the sanitary sewer. The floor drains were reportedly plugged at the time of the release. This mixture of AFFF and water was removed by hand (temporary trash pumps, etc.) and discharged east of the hangar, across the taxiway, and into a grassy area adjacent to the taxiway. The fire suppression system was converted from AFFF to high expansion foam (HEF) in 2012- 2013.

3.1.2 Fire Equipment Testing Area – North

From approximately 1995-2005, AFFF testing from three fire trucks would occur every Monday at one of three locations: the North Fire Equipment Testing Area (FETA), the South FETA, or the

Compass Rose FETA. Typically 3 % - AFFF was utilized by the fire department. The estimated amount of AFFF released weekly was 3 to 4 gallons per testing event; exact discharge quantities are unknown. The North FETA is a flat grass and dirt covered area (estimate 1-2 acre area) located southeast of the alert apron adjacent to the Pelican Aviation (Building 8) ramp. Fire trucks would typically pull up near the edge of the paved road area east of Pelican Aviation and conduct foam testing in a northerly direction, to the north of Pelican Aviation, south of Taxiway A, and west of the north-south access road located immediately east of Pelican Aviation (Building 8). AFFF released during testing would likely have infiltrated permeable surface soils in this area.

It is important to note that according to the most recent boundary, this AOC is off-site; however, it has been within the boundary according to figures from previous reports.

3.1.3 Fire Equipment Testing Area – South

From approximately 1995-2005, AFFF testing from three fire trucks would occur every Monday at one of three locations: the North Fire Equipment Testing Area (FETA), the South FETA, or the Compass Rose FETA. Typically 3 % - AFFF was utilized by the fire department. The estimated amount of AFFF released weekly was 3 to 4 gallons per testing event; exact discharge quantities are unknown. The South FETA is a flat grass and dirt covered area (estimate approximately 1-2 acres) located along the north side of the far western end of Runway 725, west of Taxiway D. Fire trucks would typically pull up along the north edge of Runway 725 at the far western end and conduct foam testing in a northerly direction. AFFF released during testing would likely have infiltrated permeable surface soils in this area.

3.1.4 Fire Equipment Testing Area – Compass Rose

From approximately 1995-2005, AFFF testing from three fire trucks would occur every Monday at one of three locations: the North Fire Equipment Testing Area (FETA), the South FETA, or the Compass Rose FETA. Typically 3 % - AFFF was utilized by the fire department. The estimated amount of AFFF released weekly was 3 to 4 gallons per testing event; exact discharge quantities are unknown. The Compass Rose FETA is a flat grass and dirt covered area located off the eastern edge of the Base's Compass Rose used for the calibration of aircraft directional control systems. Fire trucks would typically pull up near the eastern edge of the paved area surrounding the Compass Rose and discharge into the grassy area northeast, east, and southeast from the Compass

Rose. Relative to the other fire equipment testing areas, the Compass Rose FETA site was used much more frequently than the other two testing areas, and would likely have the greatest amount of AFFF released to the ground surface. AFFF released during testing would likely have infiltrated permeable surface soils in this area.

3.1.5 Building 573 – Vehicle Maintenance Building

Small discharges of AFFF mixture have occurred at this building after repairs were completed on fire trucks and they were tested on an as-needed basis approximately one-two times per year. These small amounts of AFFF would have been discharged into the grassy area on the north side of Building 573, north of the vehicle bays, and also possibly to the west and south over the fence depending on wind or weather conditions at the time.

3.1.6 Building 216 – Current and Former Fire Station

This new fire station was built in 1995 after the old fire station was demolished.

The fire station has the following:

- 1,014 gallons (Chemguard) AFFF currently in inventory including trucks and storage; maximum capacity of trucks and storage is approximately 1,300 gallons.
- Up to 500 gallons of AFFF is stored on the 2nd floor in two-250 gallon poly storage tanks
- Five 5-gallon totes are utilized to fill the 2nd floor AFFF poly storage tanks
- Six firefighting trucks with foam holding tanks (approximately 800 gallons AFFF)
- One support vehicle with a 25-gallon AFFF capacity (five 5-gallon totes, typical)

Firefighting trucks currently pull up alongside the southern end of the fire station building where AFFF from the 2nd floor storage totes is gravity-fed into their holding tanks. This method of filling the trucks has been on-going for approximately one year. Prior to that, the trucks were manually filled with AFFF from 5-gallon totes inside the fire station.

Interviews with Fire Department personnel indicate one release of AFFF at Building 216 in 2000. Approximately five gallons of AFFF entered the sanitary sewer system via the building's floor

drains and then into the city's wastewater treatment plant (WWTP) where foaming was observed and reported.

Monthly AFFF foam testing of one fire truck is performed in the grassy area north of Building 216, in the location of the former Building 216 (see section 3.1.7).

The former fire station (Former Building 216) was in operation from approximately the mid-1940s to 1995, when it was demolished. The site is now a vacant grassy area located immediately north of the current fire station building. Per Fire Department personnel, since the beginning of 2015, monthly foam testing is conducted with one truck within the grassy area; discharge quantities are unknown but reported to be small amounts. No additional releases were reported in this area of the former fire station.

3.1.7 North and South Outfalls

These outfalls may have received any potential releases of AFFF that would have entered the drainage ditches and canals located to the east and west sides of the Base.

3.2 Pathway and Environmental Hazard Assessment

The following is a preliminary evaluation of the threats and targets associated with each potential exposure pathway.

3.2.1 Groundwater

No documentation was available showing that groundwater at the Base has been tested for PFCs; therefore it is unknown whether PFCs are present in the groundwater. However, based on historical practices, they may be present in the groundwater in the following:

- Grassy area east of Hangar 333 where a documented release of approximately 200 gallons of AFFF occurred in 2007;
- FETA – North, where unknown quantities of AFFF have been released during the routine testing of fire equipment between 1995 and 2005;
- FETA – South, where unknown quantities of AFFF have been released during the routine testing of fire equipment between 1995 and 2005; and

- FETA – Compass Rose, where unknown quantities of AFFF have been released during the routine testing of fire equipment between 1995 and 2005.

Additional areas where AFFF might have been released to soils and groundwater but to a lesser extent than those sites above include the following areas:

- Grassy area north/west/south of Building 573 where periodic fire truck testing currently occurs;

- Grassy area to the north of the current Building 216 where the former fire station was located.

In general, groundwater contamination associated with historic contaminated sites at the Base does not migrate significantly either vertically or horizontally. The widespread occurrence of clay and silt layers with low hydraulic conductivity restricts the vertical movement of potentially contaminated shallow groundwater to deeper aquifers (ANG, 2014). Based on this, potential releases of AFFF to groundwater would not be expected to migrate significantly.

3.2.1.1 Water Wells

There are no potable water wells on the Base. A 2006 search of the Oregon Water Resources Database shows 43 groundwater wells within a ½ mile of the site, most of them domestic wells (CH2M Hill, 2007). A 2015 search of the same database shows 157 water wells surrounding the Base, most of them also domestic wells. Appendix C-3 includes a table summarizing the wells and a map showing the well locations from the 2006 search, while Appendix C-4 includes a well summary table and a map showing the search area from 2015.

A review of the EDR Radius Map™ Report with Geocheck® dated July 20, 2015 shows two water wells within a one-mile radius of the Base listed on the state of Oregon's database (Appendix C-5) (EDR, 2015). Based on the information provided for these two wells located southwest of the Base, they are either observational or test wells.

3.2.2 Soil

No documentation was available showing that soils at the Base have been tested for PFCs; therefore it is unknown whether PFCs are present in the soil. However, based on historical practices, they are most likely to be present in the soil in the following areas:

- Grassy area east of Hangar 333 where a documented release of approximately 200 gallons of AFFF occurred in 2007;
- FETA – North, where unknown quantities of AFFF have been released during the routine testing of fire equipment between 1995 and 2005;
- FETA – South, where unknown quantities of AFFF have been released during the routine testing of fire equipment between 1995 and 2005; and
- FETA – Compass Rose, where unknown quantities of AFFF have been released during the routine testing of fire equipment between 1995 and 2005.

Additional areas where AFFF might have been released to soils but to a lesser extent include the following areas:

- Grassy area north/west/south of Building 573 where periodic fire truck testing occurs;
- Grassy area to the north of the current Building 216 where the former fire station was located.

In their anionic forms, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) are water soluble and can migrate readily from soil to groundwater. The United States Environmental Protection Agency (USEPA) has not established provisional health advisory levels (PHALs) for PFOS and PFOA in soil (USEPA, 2014). The primary exposure pathway for PFOS and PFOA would be the ingestion of contaminated drinking water.

3.2.3 Sediment

In general, surface releases at the Base will predominately infiltrate into the sandy and permeable surface soils. Releases to paved surfaces could enter the storm drains which ultimately discharge to the drainage ditches and canals located to the east and west sides of the Base. No documentation

was available showing that sediments at the Base have been tested for PFCs; therefore it is unknown whether PFCs are present in sediments. Based on historical practices, PFCs could be present in sediment in locations that have received drainage from the site stormwater system, namely outfalls in the north and south of the Base as shown on Figure 2.

3.2.4 Surface Water

Surface water at the Base is dictated by the Base's man-made surface drainage and stormwater system. There are no open bodies of water on the Base. Precipitation will predominately infiltrate the sandy and permeable shallow surface soils. Precipitation on paved surfaces will generally be collected by the Base's storm drain system and discharge to the drainage ditches and canals located to the east and west of the base.

No documentation was available showing that surface water at the Base has been tested for PFCs; therefore it is unknown whether PFCs are present in surface water. Based on historical practices, PFCs could be present in surface water (if present) connected to the drainage ditches in the locations shown on Figure 2, namely outfalls in the north and south of the Base. A stormwater drainage map is included in Appendix C-6.

Several potential environmentally sensitive areas surrounding the base are identified to be on the National Wetland Inventory according to the EDR report, as shown in Appendix C-7. Department of Defense (DoD) sites are also shown on this map.

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4.0 FINDINGS AND CONCLUSIONS

Eight potential areas of concern have been identified at the Base during this PA as summarized in Table 1 below. Of these eight sites, all eight are recommended for further investigation.

Further investigation is recommended at the Base to characterize potential soil, groundwater, surface water, and sediment PFC contamination. In addition, verification of the structural integrity of the existing OWSs and connected sanitary sewer is also advised.

Table 1 summarizes the recommendation and rationale for each potential AOC identified at the Base.

Table 1: Preliminary Assessment Report Summary and Recommendations

No.	Potential AFFF PFC AOC	GPS Coordinates		Rationale	Recommendation
		Latitude	Longitude		
1	Hangar 333	42.158710°	-121.743556°	One documented significant AFFF discharge to grassy area east of the hangar in 2007.	Proceed to SI; focus on soil and groundwater immediately east of taxiway located east of Hangar 333.
2	Fire Equipment Testing Area – North*	42.168380°	-121.743524°	Historic testing of fire department equipment.	Proceed to SI, focus on soil and groundwater.
3	Fire Equipment Testing Area – South	42.156841°	-121.743245°	Historic testing of fire department equipment.	Proceed to SI, focus on soil and groundwater.
4	Fire Equipment Testing Area – Compass Rose	42.160372°	-121.741496°	Historic testing of fire department equipment. The most heavily used area on the Base.	Proceed to SI, focus on soil and groundwater.
5	Building 573	42.152661°	-121.739007°	Minor amounts of AFFF potentially discharged to grassy areas outside fence to the north, west, and south of Building 573. Likely small amounts of AFFF utilized during post-repair mini tests.	Proceed to SI, focus on soil and groundwater.
6	Current and Former Fire Station – Building 216	42.163068°	-121.744307°	Minor amounts of AFFF likely discharged to grassy surface during more recent foam testing in 2015.	Proceed to SI, focus on soil and groundwater.
7	North Outfall	42.172755°	-121.743148°	Potential releases of AFFF may enter drainage ditches through this outfall.	Proceed to SI, focus on sediment and surface water.
8	South Outfall	42.155137°	-121.740145°	Potential releases of AFFF may enter drainage ditches through this outfall.	Proceed to SI, focus on sediment and surface water.

* ANG should proceed to SI if the area is indeed within the current property boundary

AFFF – Aqueous Film Forming Foam
PFC – Perfluorinated Compound
AOC – Area of Concern
GPS – Global Positioning Satellite
SI – Site Investigation
NFA – No Further Action

5.0 REFERENCES

ANG, 2014. Compliance Restoration Program – Western Region 1 Final Site Investigation Report. February.

BB&E, 2015. Final Perfluorinated Compound (PFC) Preliminary Assessment Work Plan, Prepared for Headquarters Air National Guard Andrews AFB, Maryland. July.

CH2M Hill, 1981. Installation Restoration Program Records Search. February.

CH2M Hill, 2007. Environmental Restoration Program, Final Interim Remedial Action Operation/Long-Term Monitoring Report. January.

EDR, 2015. EDR Radius Map™ Report with Geocheck®. July.

URS Group, Inc., 2010. Final Community Involvement Plan. May.

USEPA, 2014. Peer Review of Health Effects Documents for PFOA and PFOS. February.

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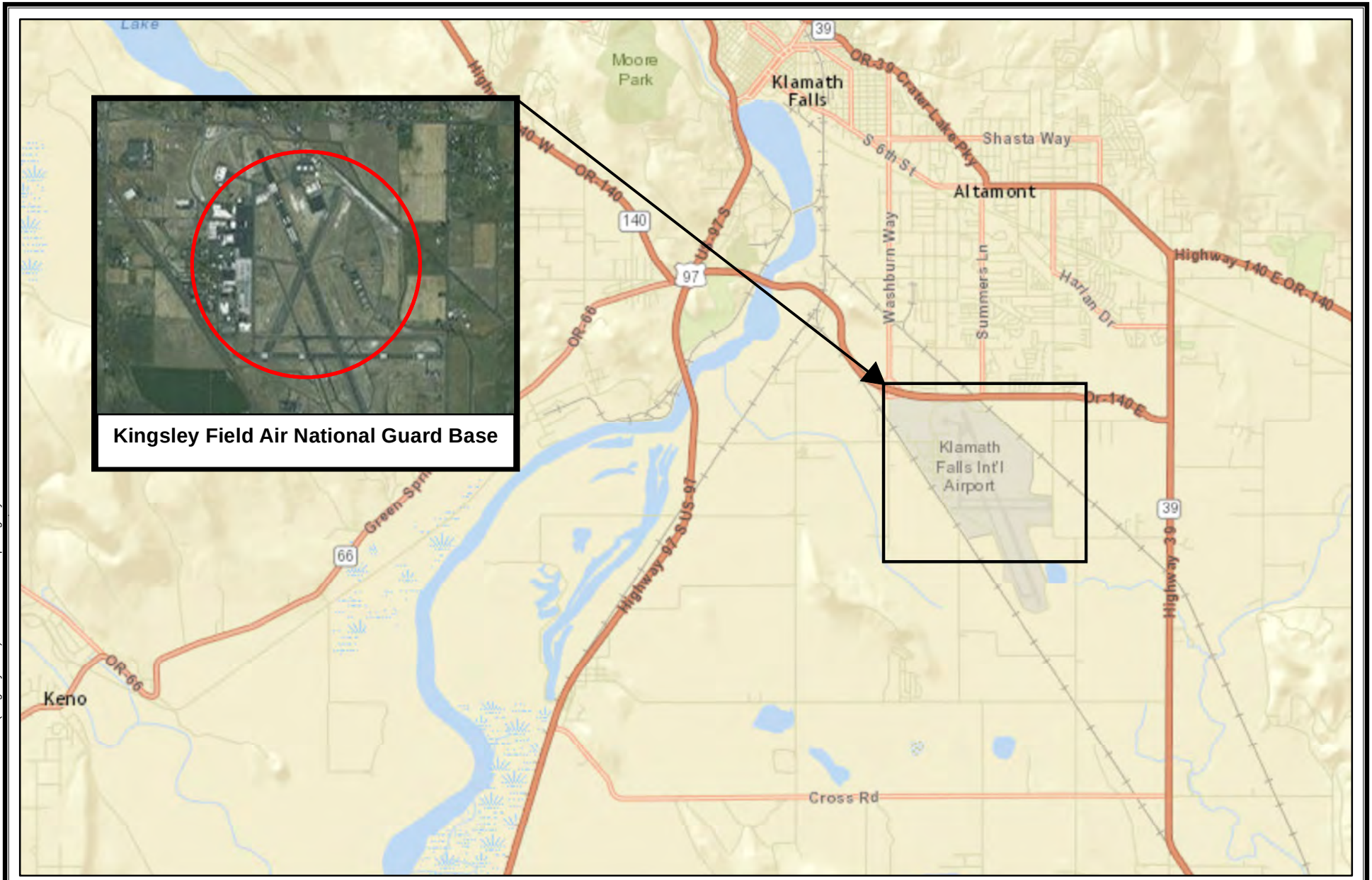
FIGURES



NORTH

0 2 4

Miles

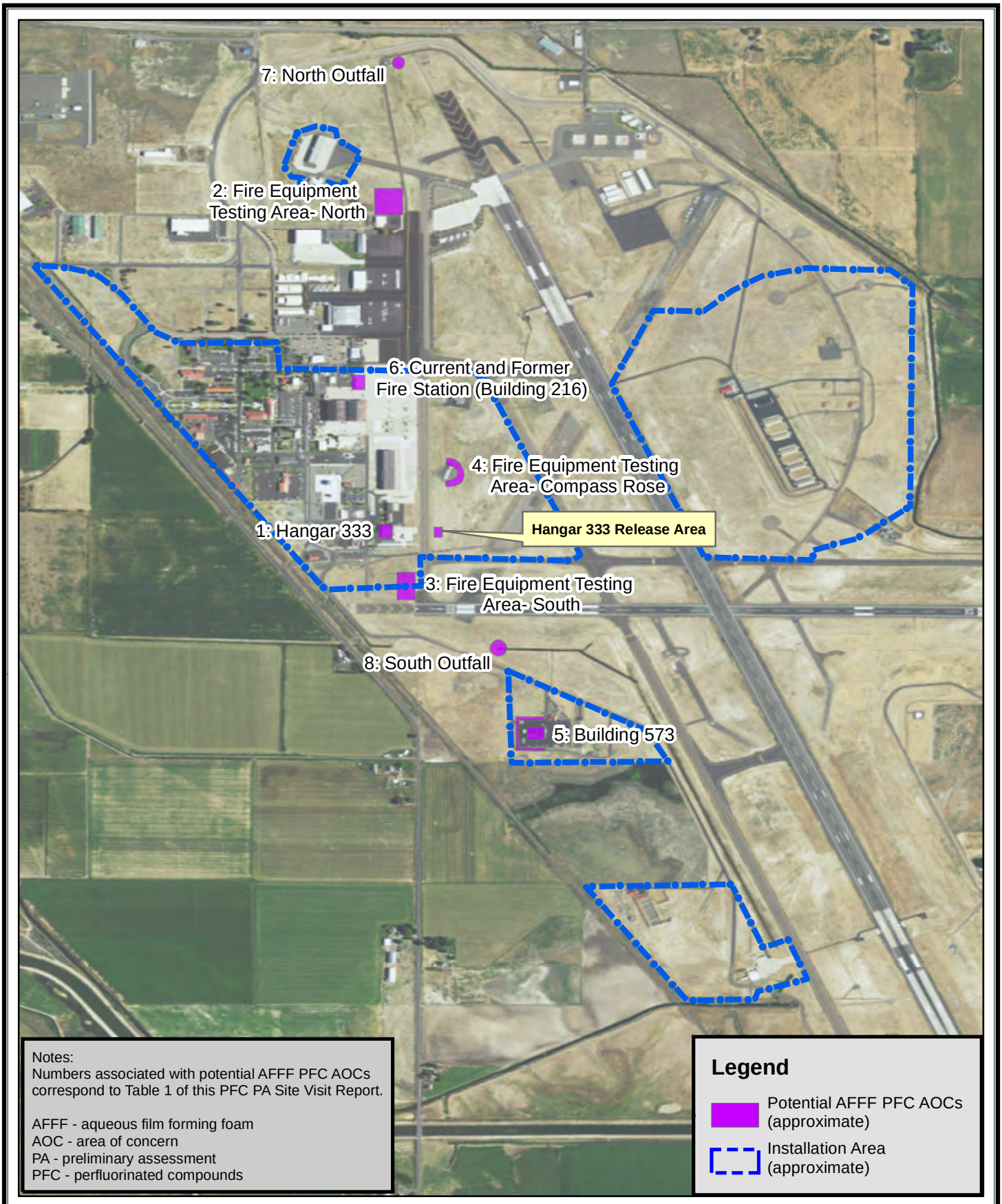
Figure 1
Site Location Map

Kingsley Field Air National Guard Base
Klamath Falls, Oregon

BB&E

Document Path: H:\IT\GIS\ANG\AFFF PFC\Klamath Falls (Kingsley Field)\Site Location Map Kingsley Field-Klamath Falls.mxd

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
KMG 8/27/2015



NORTH

0 625 1,250 2,500

Feet

Figure 2
Site Features and Potential AOCs

Kingsley Field Air National Guard Base
Klamath Falls, Oregon

BB&E

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
KMG 8/27/2015

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APPENDIX A

PHOTO DOCUMENTATION

Appendix A
Kingsley Field ANG Base, PFC PA Site Visit, Klamath Falls, OR - August 12-13, 2015

Photo 1: Grassy Area East of Hangar 333

Photo 2: Hangar 333 from Apron Side

Photo 3: Fire Equipment Testing Area – North (Looking North)

Photo 4: Fire Equipment Testing Area – North (Looking Northwesterly)

Photo 5: Fire Equipment Testing Area – South (Looking North)

Photo 6: Fire Equipment Testing Area – South (Looking Northwesterly)

Photo 7: Fire Equipment Testing Area – Compass Rose (Looking East)

Photo 8: Fire Equipment Testing Area – Compass Rose (Looking Northeasterly)

Photo 9: Grassy Area North of Building 573 (Looking East Along North Fence Line)

Photo 10: Current Fire Station (Front/West Entrance)

Photo 11: Gravity Pipe for AFFF Supply at Current Fire Station

Photo 12: Area of Former Fire Station (grassy area) North of Current Fire Station

APPENDIX B

INTERVIEW QUESTIONS AND RECORDS OF COMMUNICATION

8/12/15	Time: 1 30 pm	**COMMUNICATION RECORD**

Name of Base, State: ~~Tom BARZYK~~, Klamath Falls (Kingsley Field), Oregon	
Interviewer: Tom BARZYK	
Organization: BBTE	**Phone:** 248-489-9636 x302
Position/role on this project:	**Email:** tbarzyk@bbarde.com
Interviewee: Howard Owens	
Organization: Kingsley Field Fire Dept.	**Phone:** 541-252-7137
Position/Job Title: Deputy Fire chief	**Email:** howard.d.owens2.nfg@mail.mil
How Long in this Postion? 3 years	
How long at this Base in current and previous positions? 3 years	
Have you held similar positions at other bases?	
Which bases?	
How long?	

Discussion: Estimates AFFF start approx. 1972.
Don't use 3M-AFFF, not in inventory. Current inventory of AFFF (Class B) is 1014 gallons (see attached email). Provided ANG Base wide summary of AFFF inventory (see attached). Provide ANG-AFCEC AFFF usage + phaseout email (see attached). Fire Station using 5 gallon totes of AFFF, manually pour into 2-Totes located on 2nd floor (500 gallon MAX storage). Trucks pull up alongside Bldg, gravity feed to trucks, as needed. Demo this process over last year, previously just pour 5-gallon AFFF totes into trucks, mentions others to speak with who have longer service times at Klamath including: (all in FD)
- Matt Chavarria
- Mike Corman
- Ed Saunders
- Richard Fuller

Also former Fire Chiefs including: Cliff Otto (2013-2014) approx.
Less Tyree (2007-2013) "

Note: using CHEMGUARD AFFF Currently, not 3M

Signature of Interviewer: _____ Date: 8/12/15

Owens, Howard D NFG USAF 173 FW (US)

From: Owens, Howard D NFG USAF 173 FW (US)
Sent: Thursday, June 18, 2015 12:17 PM
To: 'Horton, Timothy SMSgt USAF ANG 165 CES/CEF'
Subject: RE: AFFF Inventory
Signed By: howard.owens@us.af.mil

Class A
" B
" C
" D

Chief,

We have on hand 1014 gallons of class B/AFFF. None of it is 3M.

- Respectfully

Note: Class A Foam also Non-AFFF

Howard Owens
Deputy Fire Chief
Kingsley Fire & Emergency Services
Office # 541-885-6381
Cell # 541-252-7137

-----Original Message-----
From: Horton, Timothy SMSgt USAF ANG 165 CES/CEF
[mailto:timothy.horton@ang.af.mil]
Sent: Wednesday, June 17, 2015 9:08 AM
To: Owens, Howard D NFG USAF 173 FW (US)
Subject: FW: AFFF Inventory

Chiefs
Please send your amounts to me and I'll forward the final results to AFCEC.
Please reply by COB on 19 Jun.
Thanks

Timothy H. Horton Sr
Fire Chief
165th Fire Emergency Services
DSN 860-8552
COMM:912-966-8552 ADMIN EXT 8225
CELL: 912 210-0755
timothy.horton@ang.af.mil

-----Original Message-----

8/12/15	Time: PM	**COMMUNICATION RECORD**

Name of Base, State: Klamath Falls (Kingsley Field), Oregon	
Interviewer: Tom BARZYK	
Organization: BS+E	**Phone:** 248-489-2636 x302
Position/role on this project:	**Email:** tbarzyk@bbande.com
Interviewee: Matt Chavarria	cell
Organization: Klamath FD	**Phone:** 541-331-8196 / 541-885-6456
Position/Job Title: Assistant Chief	**Email:** matt.chavarria@ang.af.mil
How Long in this Postion? 20 years at Klamath FD	
How long at this Base in current and previous positions?	
Have you held similar positions at other bases? —	
Which bases? —	
How long? —	

Discussion: Matt is the current Assistant Chief of FD operations, has been w/ Klamath FD ≥ 20 years. Currently have 6-Trucks that use Foam (AFFF), 1014 gallons AFFF in inventory. Also use 1-support vehicle that hauls 25 gallons extra AFFF, 5-5 gallon pails. Store up to approx. 500 gallons AFFF upstairs. Use 3% - AFFF, pre-mixed, some process > 20 years. Remembers one release of AFFF in current Bldg, approx 5-gallon pail spilled to trench drains, lead to sanitary sewer, notice of todays at City WWTP (happened approx. 2000). One crash response plane crash off-base in 1996, small amount of foam AFFF used, located west south of base. Mentions AFFF foam testing weekly from 1995-2005 (approx.), would typically test 3-Trucks every monday in 1 of 3 areas on base as follows
(1) Compass Rose area (by far greatest use)
(2) Pelican Aviation Ramp
(3) End of Runway 725 (off Spring LK)
Estimate 3-4 gallons of foam used per weekly test. Testing stopped from approx. 2005-2015; recently restarted monthly testing of 1-Trucks, discharge to grassy area north of current Station (former FD location). Current Station built in 1995; old station used from mid-40s to 1995 (approx.); Former Fire station demolished after new one started (approx. 1995). Order new AFFF as needed through ANG, old fire chiefs may have done differently. Indicates Rich Miller, former fire chief, would be good contact. Note, New FD Bldg had same numbers as old FD (Bldg. 216). No known releases of AFFF occurred in old Bldg.

Signature of Interviewer: _____ Date: 8/12/15

Tom Barzyk

From: Chavarria, Matthew D NFG USAF 173 FW (US) <matthew.d.chavarria.nfg@mail.mil>
Sent: Thursday, August 13, 2015 9:51 AM
To: Tom Barzyk
Subject: RE: Klamath Falls Fire Station

Tom

Old building was 216 same as our current station.
No spills or releases that I can recall from the original building.

I haven't heard from Rich Miller as of yet, I tried this morning and his cell seems to not be getting service.

We are more than happy to give you any information we have, call or email anytime.

Matt Chavarria

Assistant Chief of Operations

Kingsley Fire & Emergency Services

Cell (541) 331-8196

Office (541) 885-6560

-----Original Message-----
From: Tom Barzyk [mailto:tbarzyk@bbande.com]
Sent: Thursday, August 13, 2015 3:18 AM
To: matt.chavarria@ang.af.mil
Subject: Klamath Falls Fire Station

Hi Matt, thanks for meeting with me yesterday. A couple of follow-up questions:

1. Do you happen to know the bldg. no. for the old fire station?

2. Do you recall any spills or releases of AFFF from the old station worth noting?

Let me know if you glean any information from Rich Miller (or others).

Thanks again.

Tom

Thomas E. Barzyk, PE, CSP | Principal

BB&E, Inc | Consulting Engineers & Professionals

235 East Main Street, Suite 107 | Northville, MI 48167

Office 248.489.9636 ext 302 | Cell 248.766.4143

8/12/15	Time: pm	**COMMUNICATION RECORD**
Name of Base, State: Klamath Falls (Kingsley Field) Oregon		
Interviewer: Tom BARZYK		
Organization: BB+B	**Phone:** 248-484-9636	
Position/role on this project:	**Email:** tbarzyk@bbande.com	
Interviewee: Ed Saunders	541-891-7870 (Ed cell)	
Organization: Klamath Fire Dept, -173rd	**Phone:** 541-331-8196 (Matt cell)	
Position/Job Title:	**Email:**	
How Long in this Postion? since 2003 at ANG (11 years)		
How long at this Base in current and previous positions? 1986-2003 w/City at Airport		
Have you held similar positions at other bases?		
Which bases?		
How long?		
Discussion: Note: Talked w/ Ed Saunders concurrently w/ Matt Chavarria (see also Matt's summary); Ed worked w/ City of Klamath Falls maint dept at airport from 1986-2003, started w/ ANG FD in 2003. Ed remembers burn activities at old Site 8 (IRP) Fire Training Area, remembers testing foam operations by FD at the time, early to mid 80s. Indicates no live-fire training at base since he started in 2003. Remembers use of AFFF to cover some smaller fuel spills near north end of Apron, directly east of FD. This area was previously paved, now all covered in concrete. spills he recalls were in 86-89 time frame.		
Remembers take in 1-2 drums of old AFFF to Haz mat storage area located in old Quonset Hut which is now gone. ANG handled disposal/disposition. Matt had similar recollection. Also, of AFFF testing areas, the Compass Rose location was most the most (by far). Also mentions currently monthly foam testing, 1-Truck per month.		
Ed (& Matt) both indicated that the Compass Rose test location would likely have had the most AFFF released, if you are going to find it anywhere on base, it would likely be there, primarily to eastern half.		

Signature of Interviewer: _____ Date: 8/12/15

8/13/15	Time: ~10am	**COMMUNICATION RECORD**
Name of Base, State: Klamath Falls (Kingsley Field), OREGON		
Interviewer: Tom BARZYK		
Organization: BBBE	Phone: 248-489-9636 x302	
Position/role on this project:	Email: tbarzyk@bbbinc.com	
Interviewee: CMSGT Dominic Ingle		
Organization: 173rd CEF	Phone: 541-885-6604	
Position/Job Title: Facility Manager	Email: dominic.a.ingle.mil@mail.mil	
How Long in this Postion? Since 2011 (4 years)		
How long at this Base in current and previous positions? started at Kingsley in 2000		
Have you held similar positions at other bases? —		
Which bases? —		
How long? —		

Discussion: Dominic is the current Facility manager at the 173rd, last 4 years. started at Kingsley in 2000, heavy equipment maint group. Recalls 2008 AFFF release at hanger 333. Worked on cleanup of release. Used temporary transfer pumps to discharge all water + AFFF mixture across maint ramp to grass/dirt area east of hanger 333. All drains in Bldg were plugged at time of release, nothing went to sanitary or storm drain, all discharged to ground surface. Note, not entire volume of AFFF was discharged, manually shutoff before all used up. System capacity was 300 gallons AFFF (3% mix), 2008 was only known release. AFFF system installed in 1987, converted to AFFF in 2012-2013. System calibrated to use 3.25% AFFF, rest water, max flow at 765gpm. No other Bldgs at Klamath w/ AFFF.

Mentions periodic small discharges of AFFF mixture from Fire trucks after Repairs at vehicle maintence bldg. 573. These would happen approx 1-2 times per year, only as needed if repairs completed at Bldg 573. Testing was done in to grassy area north side of 573 (at lower fence), north of vehicle Bays, also to west + possibly south over fence.

Note:
- Subsequently found AFFF release report for Hanger 333 Release actually occurred on July 6, 2007. (Not 2008)

Signature of Interviewer: _____ Date: 8/13/15

8/12/15	Time: 1pm	**COMMUNICATION RECORD**

Name of Base, State: Klamath Falls IAP (Kingsley Field), Oregon	
Interviewer: Tom BARZYK	
Organization: BBL	**Phone:** 248-489-9636 x302
Position/role on this project:	**Email:** tbarzyk@bbandc.com
Interviewee: Lt Col Jim Brunner	
Organization: Base CE - 173rd CEF	**Phone:** 541-885-6310
Position/Job Title: Base CE	**Email:** timothy.c.brunner.mil@mail.mil
How Long in this Postion? 3.5 years (since 2011)	
How long at this Base in current and previous positions? was Deputy Base CE previously for 12 yrs (since 1999)	
Have you held similar positions at other bases?	
Which bases?	
How long?	

Discussion: Lt Col is current Base CE, indicates AFFF no longer used in hangers; Bldg 333 previously had an AFFF system, converted to HEF in 2012-2013. Not sure when AFFF first used in 333. Bldg 333 is the Fuel Cell Maint Dock. Bldg had an AFFF release in 2008. All AFFF in system was discharged (1-charge). Unclear on quantity, estimate 200 gallons AFFF at 3%. During release, much of foam contained inside hanger, drains to sanitary. Some foam went out front + back of hanger, ~10ft onto grass. NO other Bldgs used AFFF systems. Not aware of any AFFF release incidents on base, no known accidents or crashes. No other FTAs on base, no activities. Mentions Fire Training area behind current SAR, no fires, just smoke/water training, no live fires. Mentions other individuals to talk to regarding history of facilities including:

- Dave Manch - current facilities engineer
- Rod Jones (retired) - former Constr. Superintendent
- Mike Jones - State Superintendent
- Kenneth Anbut - senior MSGT (Fuel Shop superintendent during Bldg 333 AFFF release

• Mentions main hangar 219 had HEF system installed in 2008, no system before this. Bldgs 325 + 400 have fire suppression systems but not AFFF, (CARDOX) - CO_2 based instead.

Signature of Interviewer: _____ Date: 8/12/15

8/12/15	Time: ~2pm	**COMMUNICATION RECORD**

Name of Base, State: Klamath Falls (Kingsley Field), Klamath Falls, Oregon	
Interviewer: Tom BARZYK	
Organization: BB&E	**Phone:** 248-489-9636 x302
Position/role on this project:	**Email:** tbarzyk@bbande.com
Interviewee: Dave Mauch	
Organization: 173rd	**Phone:**
Position/Job Title: Facilities Engineer	**Email:**
How Long in this Postion? 8 years (since 2007)	
How long at this Base in current and previous positions? 1996 – 2007 Facilities Maint.	
Have you held similar positions at other bases? At Kingsley since 1996	
Which bases?	
How long?	

Discussion: Dave is the current Facilities Engineer, since 2007. Worked in facilities maint. from ~~2006~~ 1996 – 2007. Dave worked on HEF conversion project for Hangar 333 in 2012 – 2013, was AFFF previously. Also worked on Hangar 219 HEF project at about same time. Remembers 2008 AFFF release in Bldg 333. Also remembers some type of foam release at Haz Pharmacy, Bldg 226 in 90s. Might have been Fire Depart response or CO_2 release, not sure.

Signature of Interviewer: _____ Date: 8/12/15

8/12/15	Time: 11am	**COMMUNICATION RECORD**

Name of Base, State: Klamath Falls IAP (Kinsley Field), Oregon	
Interviewer: Tom BARZYK	
Organization: BBHE	**Phone:** 248-784-9636 x302
Position/role on this project:	**Email:** tbarzyk@bbande.com
Interviewee: Erin Forney	
Organization: ANG 173rd CES/CEV	**Phone:** 541-885-6183
Position/Job Title: State Env Officer	**Email:**
How Long in this Postion? Permanent - last 6 mos., started part-time 2012	
How long at this Base in current and previous positions? ~3 yrs	
Have you held similar positions at other bases? NA	
Which bases? —	
How long? —	

Discussion: Not familiar w/ AFFF until initial requests by ANG & BBHE. No AFFF disposed since on Base. Works in waste disposal for Base. No known releases of AFFF on-base. No involvement with new AFFF purchase. Erin is the State Environmental Specialist supports Lt. Young, Base EM.

Signature of Interviewer: _____ Date: 8/12/15

APPENDIX C

SUPPORTING DOCUMENTATION

APPENDIX C-1

GROUNDWATER ELEVATION CONTOURS

ENVIRONMENTAL RESTORATION PROGRAM
FINAL
INTERIM REMEDIAL ACTION OPERATION/LONG-TERM MONITORING REPORT
VOLUME 1, TEXT

173RD FIGHTER WING
OREGON AIR NATIONAL GUARD
KLAMATH FALLS, OREGON

CONTRACT NO. DAHA92-01-D-009
TASK ORDER NO. 0063
CH2M HILL PROJECT NO. 335259

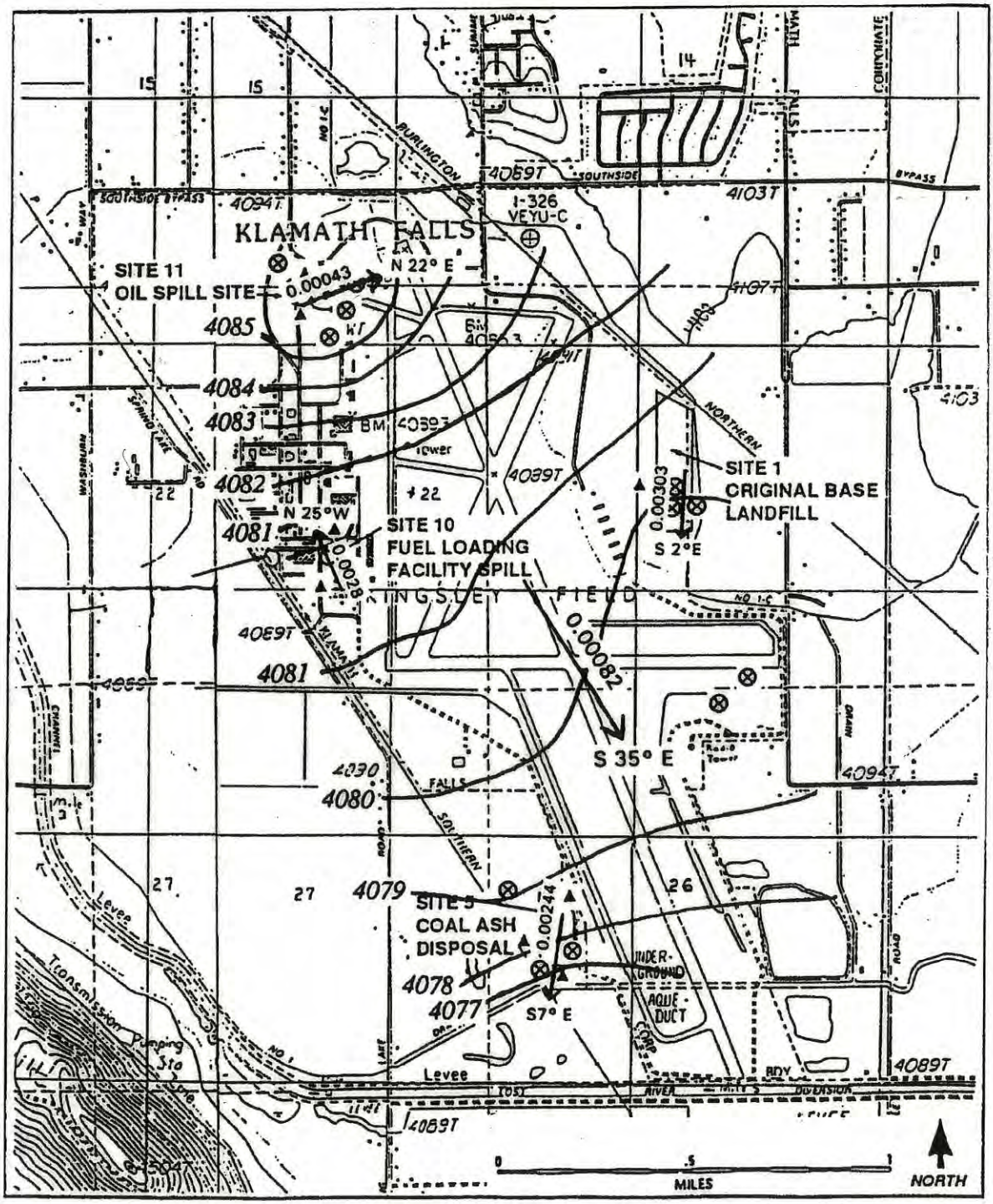
PREPARED FOR:
AIR NATIONAL GUARD

3500 FETCHET AVE
ANDREWS AIR FORCE BASE, MD 20762-5157

PREPARED BY:
CH2M HILL, INC.

JANUARY 2007

CVO\062070004



SOURCE OF BASE MAP: USGS, Altamont, OR Provisional 1985 and Klamath Falls, OR Provisional 1985, 1:24,000 Quadrangle.

Source: *Final Kingsley Field Site Investigation Report, 1994.*

Note: *Potentiometric contours & gradients based on average groundwater elvations for November 1992, March 1993, and May 1993.*

Figure 2-5

Facility-Scale Groundwater Flow Patterns

Kingsley Field, Klamath Falls, Oregon

CH2MHILL

ES022006001CVO-KFSI_103_v02

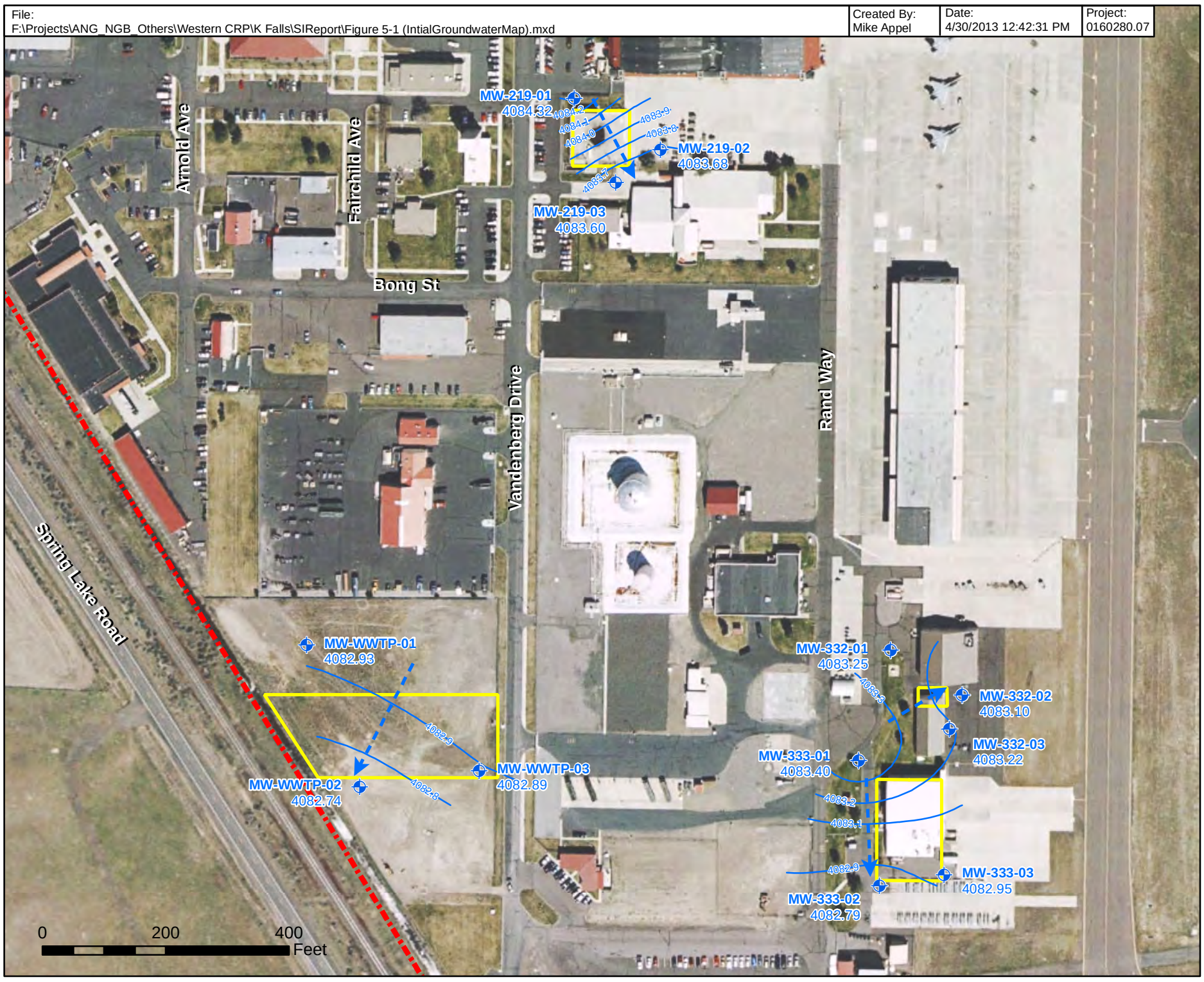
Compliance Restoration Program – Western Region 1
Final Site Investigation Report

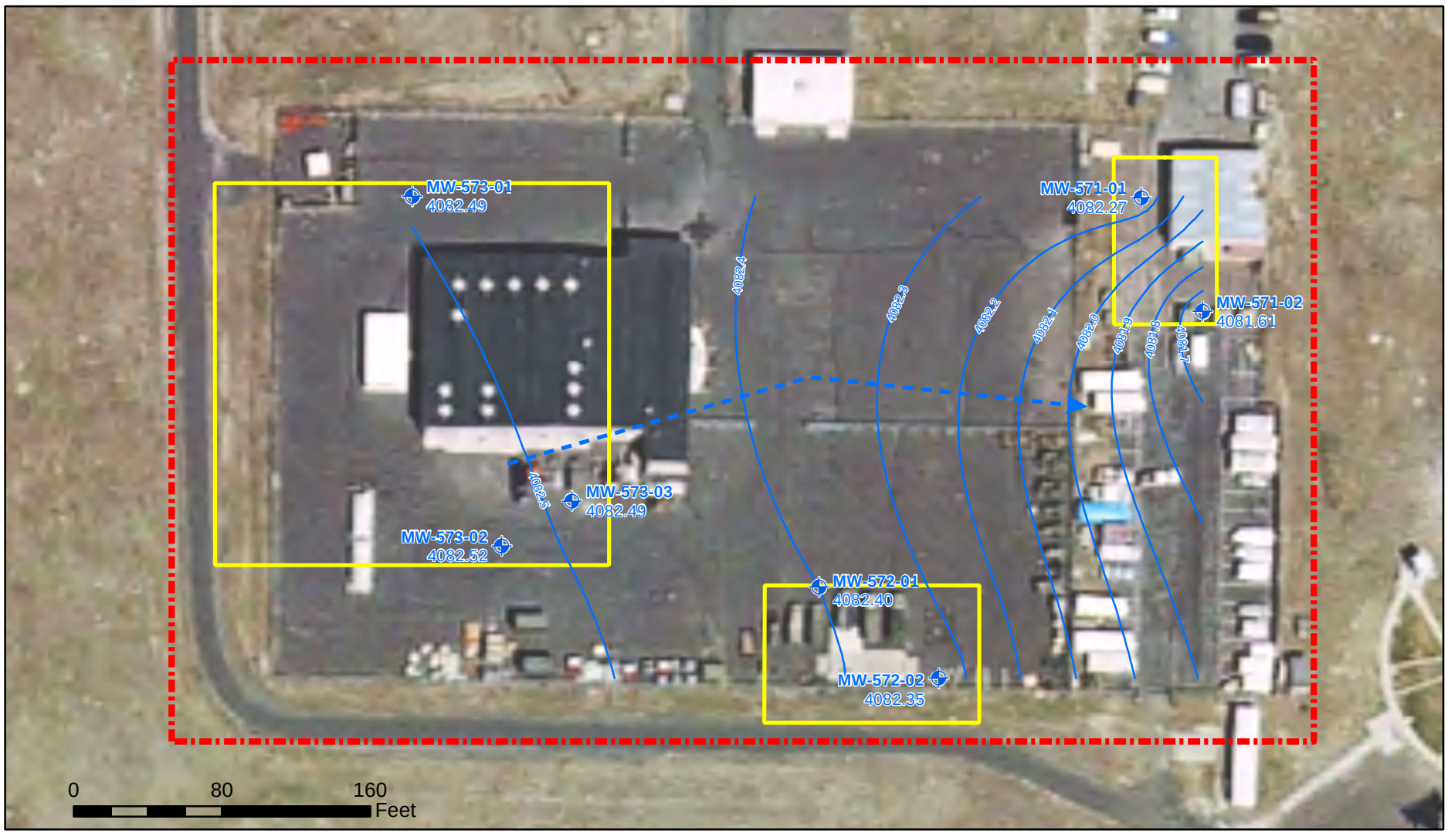
173d Fighter Wing
Oregon Air National Guard
Kingsley Field
Klamath Falls, Oregon

February 2014

NGB/A7OR
Joint Base Andrews, Maryland

File: F:\Projects\ANG_NGB_Others\Western CRP\K Falls\SIReport\Figure 5-1 (IntialGroundwaterMap).mxd | Created By: Mike Appel | Date: 4/30/2013 12:42:31 PM | Project: 0160280.07





Legend

- Monitoring Well with Groundwater Elevation
- Groundwater Contour (0.1 ft)
- Area of Concern
- 173d Fighter Wing Property Boundary
- Approximate Groundwater Flow Direction

N

Figure 5-1
Groundwater Potentiometric Surface Map
Initial Sampling Event - October 2012
173d Fighter Wing
Kingsley Field
Klamath Falls, Oregon

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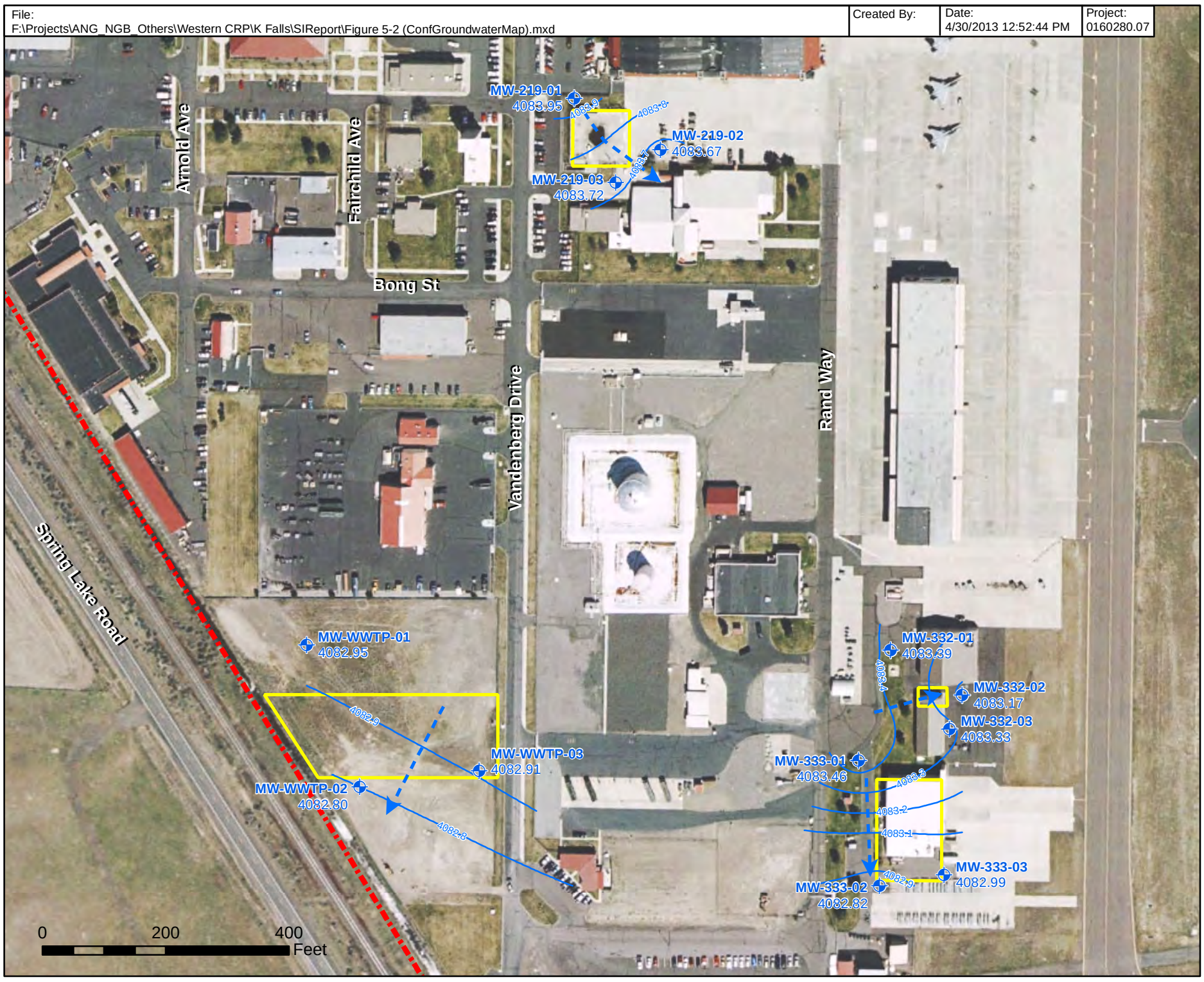
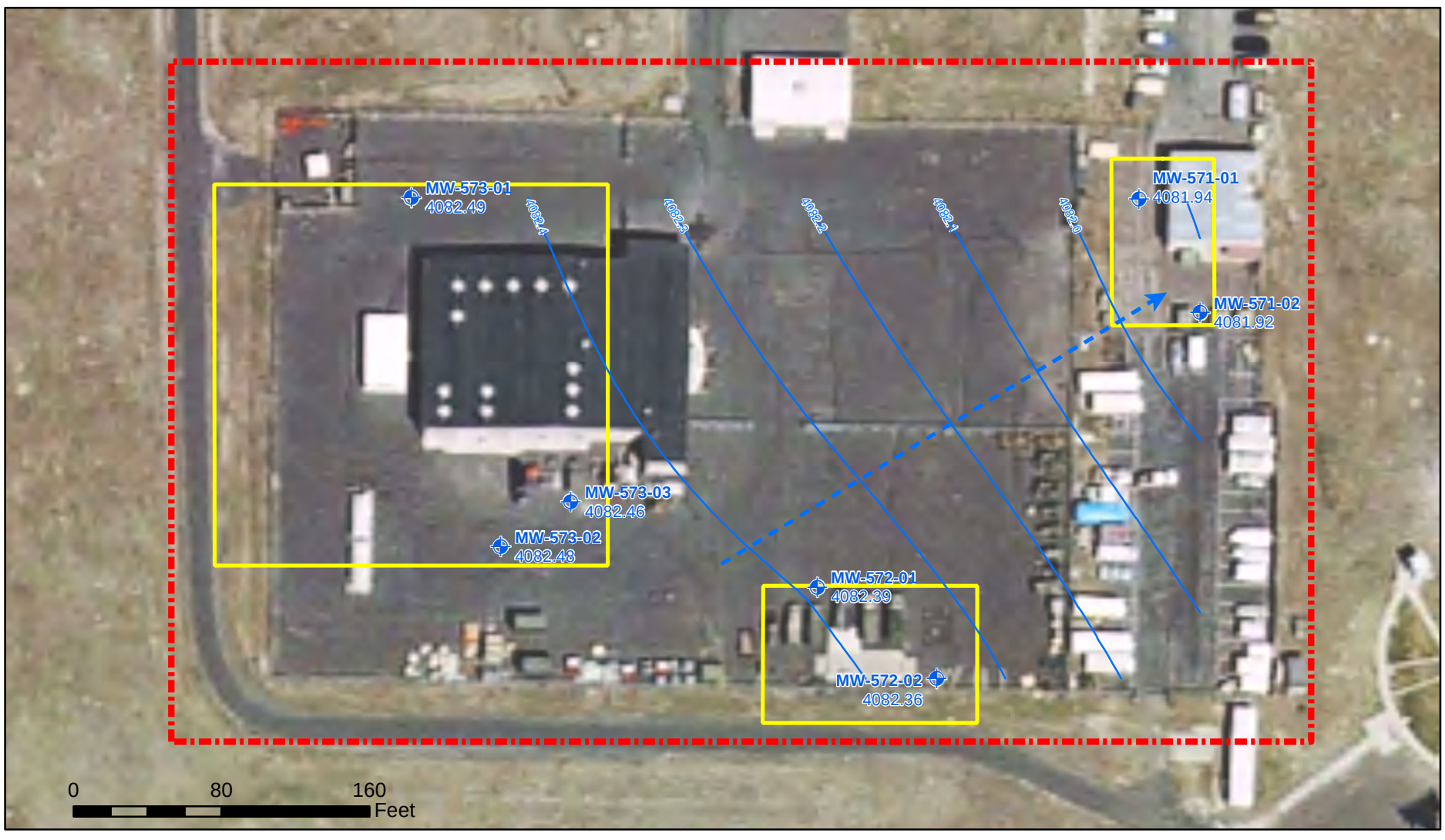




Legend

- Monitoring Well with Groundwater Elevation
- Groundwater Contour (0.1 ft)
- Area of Concern
- 173d Fighter Wing Property Boundary
- Approximate Groundwater Flow Direction

N

Figure 5-2
Groundwater Potentiometric Surface Map
Confirmation Sampling Event - November 2012
173d Fighter Wing
Kingsley Field
Klamath Falls, Oregon

APPENDIX C-2

FIRE TRAINING AREAS – ERP INFORMATION

Air National Guard
Environmental Restoration Program

FINAL
COMMUNITY INVOLVEMENT PLAN

for the

173d Fighter Wing

Oregon Air National Guard, Kingsley Field
Klamath Falls, Oregon

May 2010

Prepared for the Air National Guard
3500 Fetchet Ave
Andrews AFB, MD 20762-5157

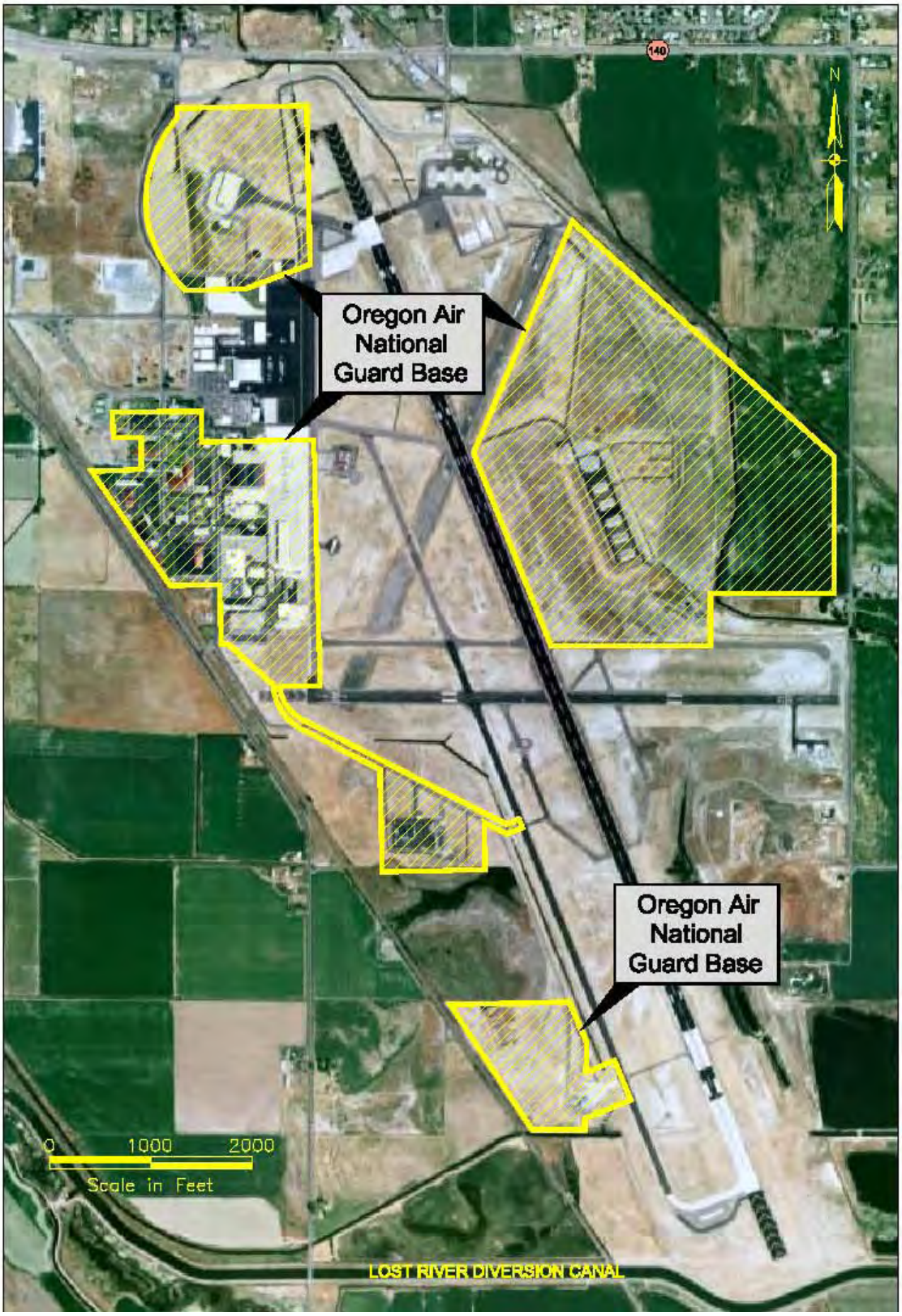


Figure 1. Location of the 173d Fighter Wing Klamath Falls, Oregon
(Source: Google Earth)

3.2 Site History and Cleanup Activities

In support of its primary missions, the Base has stored and used various types of hazardous materials during its history, including fuels, oils, paints and solvents. Although some of the Base's historical operations have resulted in the storage and use of hazardous materials, not all of these operations relate to ERP sites. Table 1 below summarizes the site identified at the Base.

ERP activities began at the Base in 1981 when a Records Search (equivalent to a PA) was initiated. Of the 12 sites identified on Base, Sites 2, 3, 4, 7, 8, and 12 were transferred to the USCOE to be addressed as Formally Used Defense Sites (FUDS) because they are not located on ANG-owned property. Two additional sites located on the Base (Sites 13 and 14) were identified in 1990. Sites 6, 9, and 13 were determined to pose little or no potential threat to human health; therefore, No Further Action (NFA) was recommended for these sites. A SI was performed beginning in October 1990 for Sites 1, 5, 10, and 11. An SI was also conducted at Site 14. A NFA letter for Site 14 was received by the OR Department of Environmental Quality (DEQ) on March 25, 1996, resulting in the closure of that site.

A Human Health and Ecological Risk Assessment for Sites 1, 5, 10, and 11 was completed in May 2007. The document recommended NFA for Sites 1, 5 and 11, and the OR DEQ signed NFA letters for Sites 1, 5 and 11 on August 8, 2007.

There 3 sites with ongoing remediation at the base (Site 3, 10, and 13); however, Site 10 is the only active ERP site on Base. Sites 3 and 13 are managed under different programs; Site 3 is an active FUDS, which is managed by USCOE, and Site 13 is currently being investigated under the Compliance Program. A Treatability Study (TS) is currently underway for Site 10.

Table 1 – Summary of Sites Identified at the 173^{d} Fighter Wing Klamath Falls, Oregon

Site Number	Site Name	Owner	Program	Status
1	Base Landfill Number 1	USAF	ERP	No Further Action based on concurrence with the state
2	Base Landfill Number 2	USCOE	FUDS	Responsibility of the USCOE
3	Base Landfill Number 3	USCOE	FUDS	Responsibility of the USCOE
4	Coal Ash Disposal Site	USCOE	FUDS	Responsibility of the USCOE
5	Coal Ash Disposal Site	USAF	ERP	No Further Action based on concurrence with the state
6	Wood Ash Disposal Site	USAF	ERP	No Further Action based on concurrence with the state
7	Abandoned Fire Training Area	USCOE	FUDS	Responsibility of the USCOE
8	Existing Fire Training Area	USCOE	FUDS	Responsibility of the USCOE
9	Engine Test Cell Facility	USAF	ERP	No Further Action based on concurrence with the state
10	Fuel Loading Facility	USAF	ERP	Treatability Study underway
11	Diesel Oil Spill Site	USAF	ERP	Recently reopened at the request of the state
12	Crop Duster Wash Down and Pesticide Storage Area	USCOE	FUDS	Responsibility of the USCOE
13	Petroleum Release Site	USAF	Compliance	Currently under investigation
14	Underground Fuel Leak at Heating Plant	USAF	ERP	No Further Action based on concurrence with the state

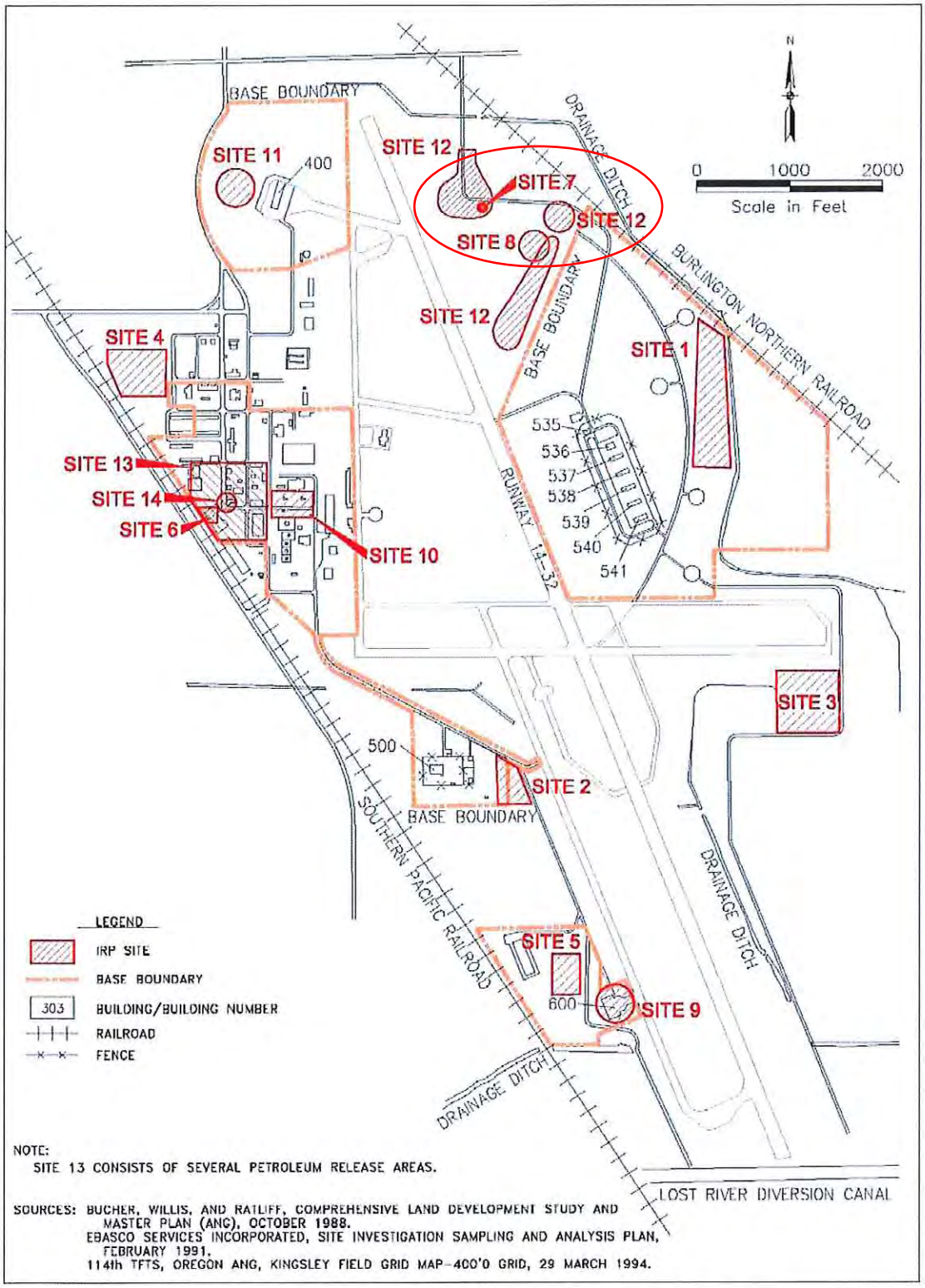


Figure 3. Location of the Identified ERP Sites at the 173[d] Fighter Wing Klamath Falls, Oregon

INSTALLATION RESTORATION PROGRAM RECORDS SEARCH

For

Kingsley Field, Oregon

Prepared for

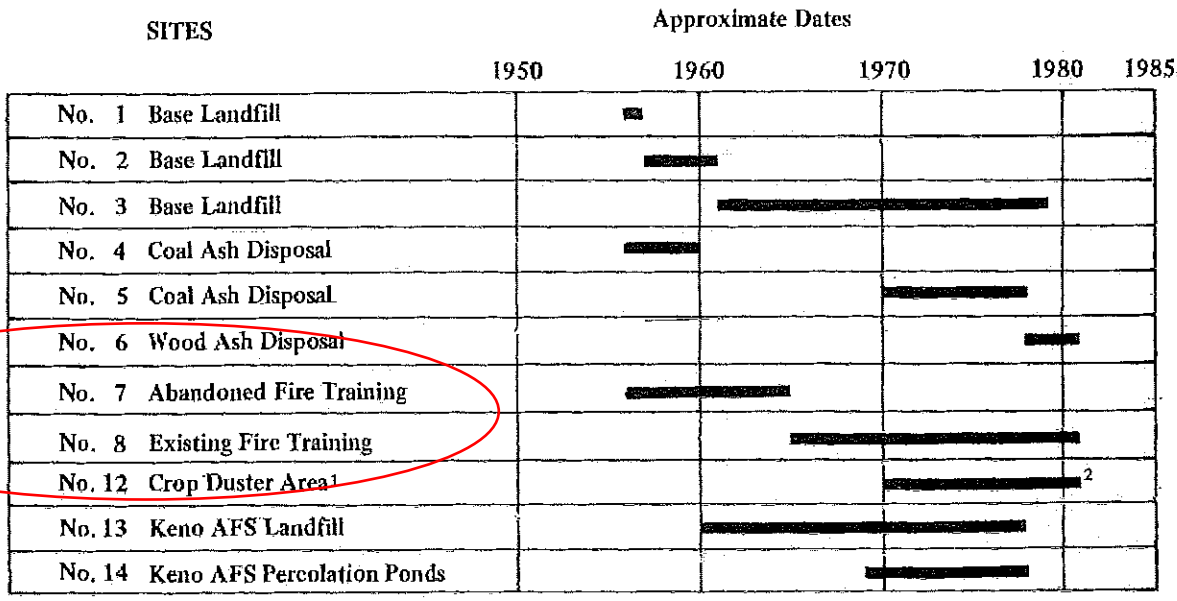
AIR FORCE ENGINEERING AND SERVICES CENTER
DIRECTORATE OF ENVIRONMENTAL PLANNING
TYNDALL AIR FORCE BASE, FLORIDA 32403

By

CH2M HILL
Gainesville, Florida

February 1981

Contract No. F08637 80 G0010 0010



[1]Not considered Air Force responsibility - included for informational purposes only

[2]In present location - crop duster activities noted since 1949

Figure 8
HISTORICAL SUMMARY OF
ACTIVITIES AT MAJOR DISPOSAL SITES
KINGSLEY FIELD, KENO AFS

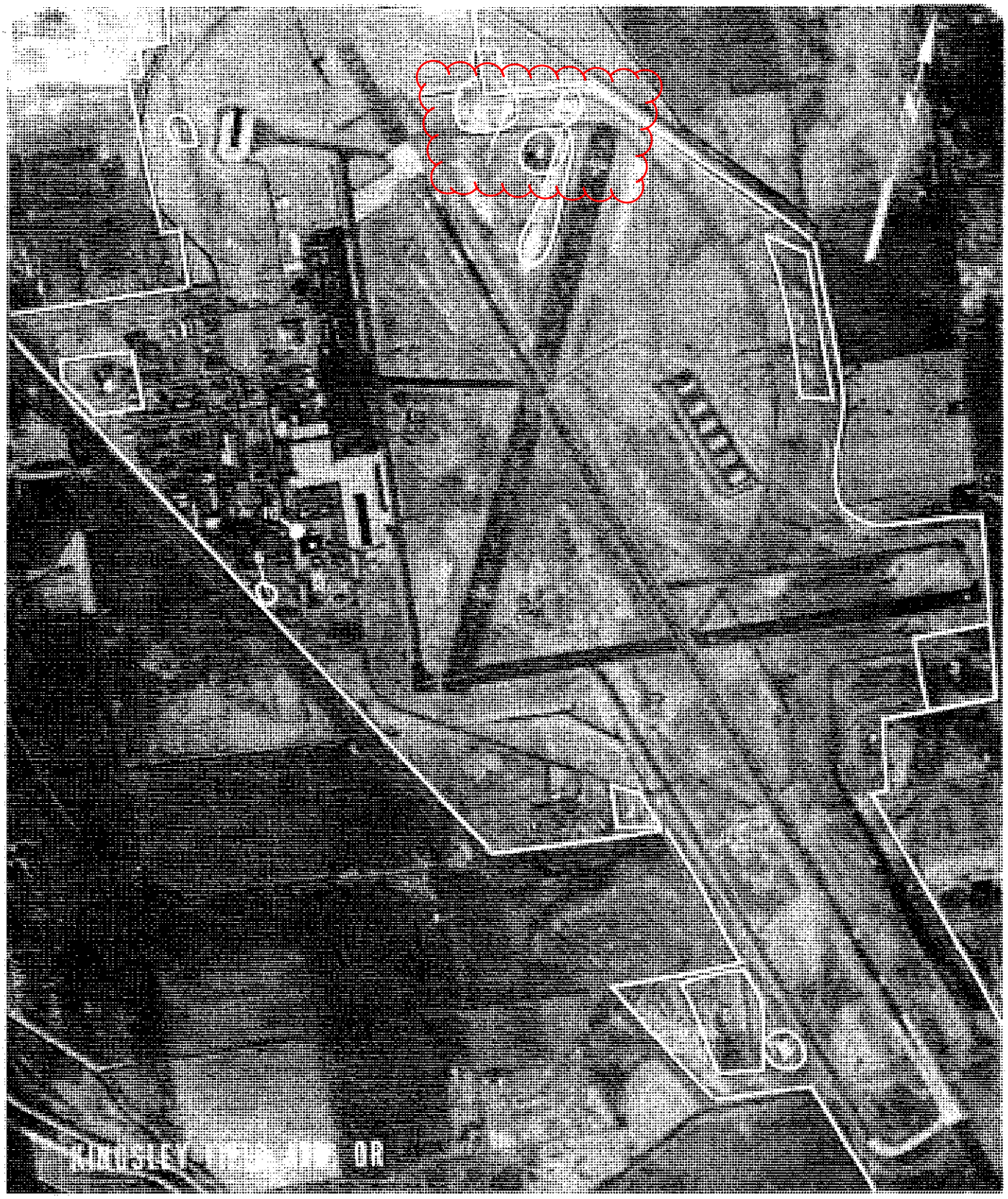


Figure 7
WASTE DISPOSAL SITES
KINGSLEY FIELD

- Site No. 4 - Coal fly ash disposal site located at the base recreation area ball field on USAF property. The site was used for ash and demolition debris disposal from 1956 to 1960. The ash layer reportedly runs from 1 to 4 feet thick over the 3/4-acre site. The characteristics of this waste are not considered hazardous, and groundwater contamination is not anticipated. No further rating is warranted for this site.

- Site No. 5 - Coal fly ash disposal site located northwest of the engine test cell facility on joint-use property. This site was used for ash and demolition debris disposal from 1970 until 1978 when the heating plant was converted for wood fuel. The characteristics of this waste are not considered hazardous, and groundwater contamination is not anticipated. No further rating is warranted for this site.

- Site No. 6 - Wood fly ash disposal site located near the heating plant on USAF property. This site was used for wood fly ash disposal since 1978 and is currently active. The characteristics of this waste are not considered hazardous, and no groundwater contamination is anticipated. No further rating is warranted for this site.

FTA →

- Site No. 7 - Abandoned fire training area located in area currently occupied by Klamath County Vector Control building northeast of Runway 14 on joint-use property. Approximately 5,000 to 8,000 gallons per year of waste oils, contaminated fuels, and POL were burned at this site from 1956 until 1965. The majority of the potentially hazardous substances

were destroyed by burning, and a relatively impermeable paving covers the site. The probability of current groundwater contamination or contaminant migration resulting from past fire training excercises is considered low because of the time span since the site was used. No further rating is required.

FTA → o Site No. 8 - Existing fire training area located east of the county vector control facility on joint-use property. From 1965 until 1972, approximately 5,000 to 8,000 gallons per year of waste or contaminated fuels and POL were burned at this site. Since 1972, the quantity has decreased to less than 100 gallons per month. The area is currently used and exposed to precipitation and runoff. Groundwater contamination by potentially hazardous substances and contaminant migration are possible, and the area warrants further rating.

o Site No. 9 - Engine test cell facility located west of the taxiway for Runway 32 USAF exclusive-use property. The test cell was used from approximately 1956 until 1972 for jet engine test firings. Minor fuel and POL spills have resulted from these firings; but because of the relatively small quantities of potentially hazardous substances, no ground or surface water contamination is expected. No signs of environmental stress were observed and further rating of this site is not warranted.

o Site No. 10 - Fuel spill in POL storage area on USAF property. In 1975 approximately 3,000 gallons of jet fuel were spilled while loading a refueling truck. The spill was contained and allowed to

INSTALLATION RESTORATION PROGRAM PHASE II — CONFIRMATION/QUANTIFICATION *STAGE 1* FINAL REPORT FOR KINGSLEY FIELD, OREGON

TACTICAL AIR COMMAND LANGLEY AFB, VIRGINIA

PREPARED FOR:
United States Air Force
Occupational and Environmental Health Laboratory (OEHL)
Brooks Air Force Base, Texas 78235

June 15, 1985

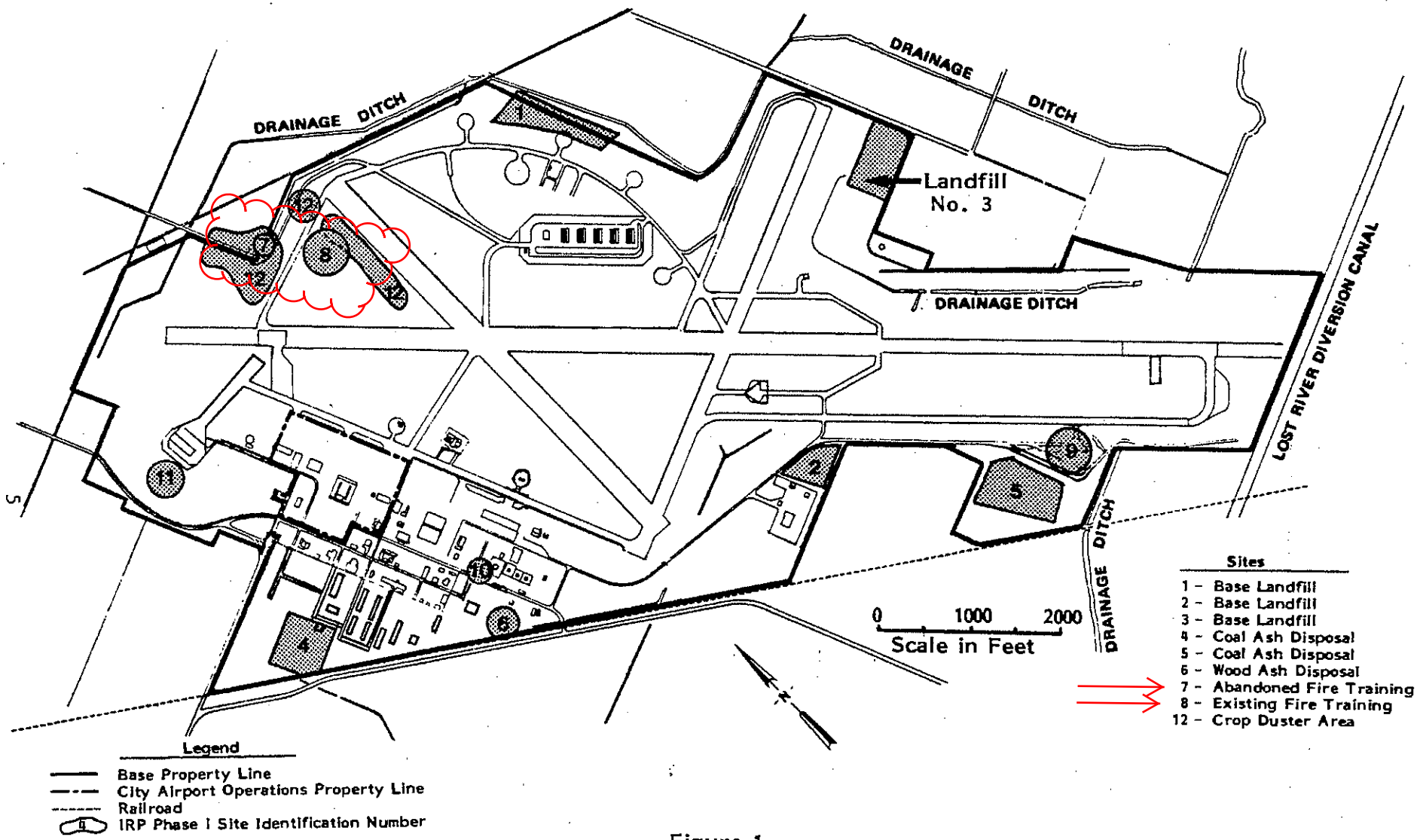


Figure 1

LOCATION MAP OF LANDFILL NO. 3 AND
OTHER IRP PHASE I SITES AT KINGSLEY FIELD

APPENDIX C-3

2006 WATER WELLS INFORMATION FROM CH2M HILL

ENVIRONMENTAL RESTORATION PROGRAM
FINAL
INTERIM REMEDIAL ACTION OPERATION/LONG-TERM MONITORING REPORT
VOLUME 1, TEXT

173RD FIGHTER WING
OREGON AIR NATIONAL GUARD
KLAMATH FALLS, OREGON

CONTRACT NO. DAHA92-01-D-009
TASK ORDER NO. 0063
CH2M HILL PROJECT NO. 335259

PREPARED FOR:
AIR NATIONAL GUARD

3500 FETCHET AVE
ANDREWS AIR FORCE BASE, MD 20762-5157

PREPARED BY:
CH2M HILL, INC.

JANUARY 2007

CVO\062070004

TABLE 2-1

Summary of Groundwater Wells within 0.5-Mile of Kingsley Field Site Boundary

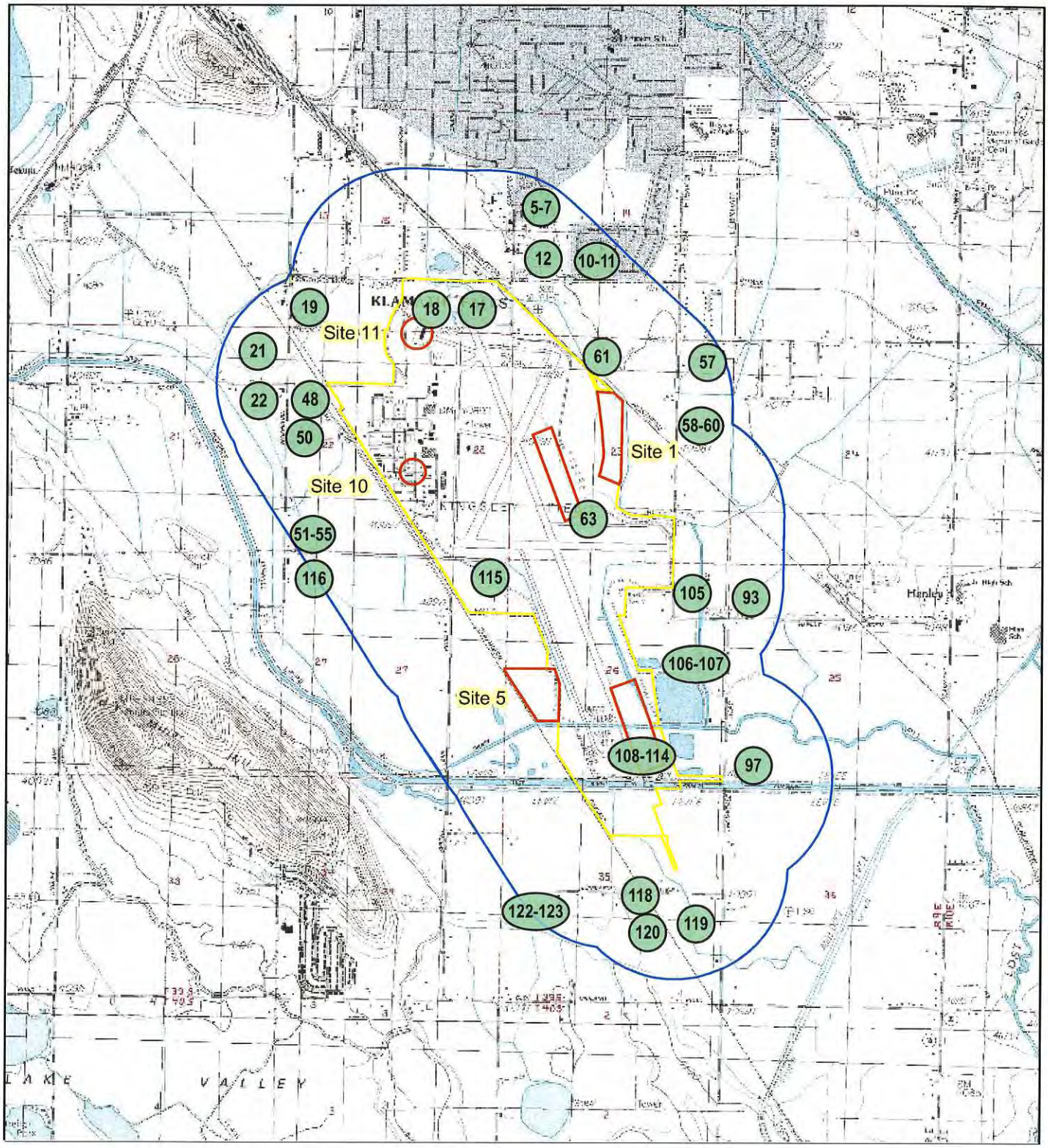
Oregon Air National Guard, Kingsley Field

Map Well Identification	Well Log ID	Owner Well Name on Record	Location within Township 39S, Range 9E		Location Relative to Site	Date Installed	Use	Static depth to Water (ft)	Total Depth (ft)	Yield (gpm)
			Section	1/4 1/4						
5	52206	STEPANIE COMFORT	14	NW SW	Upgradient	3/13/2000	Domestic	58	161	20
6	12620	W A LEWIS	14	NW SW	Upgradient	8/17/1966	Domestic	11	78	30
7	12608	TROY MCGREW	14	NW SW	Upgradient	7/7/1981	Domestic	55	158	20
10	12619	BILL TAYLOR	14	SW NE	Upgradient	7/19/1957	Domestic	0	8	50
11	12615	KENNETH DEGREE	14	SW NE	Upgradient	6/16/1971	Domestic	14	180	12
12	12611	RICHARD E DAVIS	14	SW NW	Upgradient	12/24/1975	Domestic	22	90	9
17	12625	MR EVERETT DENNIS	15	SE SE	Upgradient	1/31/1968	Domestic	12	35	30
18	52037	CITY OF KLAMATH FALLS	15	SE SW	Upgradient	10/12/1999	unknown	6	30	
19	12623	HUGH ALLEN	15	SW SW	Upgradient	5/18/1979	Domestic	46	162	50
21	12682	JOE WRIGHT SR	21	NE NE	Cross-gradient	12/31/1935	Domestic	12		
22	12693	CRATER LAKE POTATO DISTRIBUTUTORS	21	NE SE	Cross-gradient	10/30/1966	Industrial	5	155	30
48	12704	A E GROSS	22	NW SW		12/3/1954	unknown	6.2		
50	12703	KLAMATH FALLS EXPERIMENTSSTA	22	SW NW	Down-gradient	3/29/1968	unknown	6	19	15
51	12699	BILL O CLARK	22	SW SW	Down-gradient	2/27/1979	Domestic	9	500	40
52	12701	JERRY ANDERSON	22	SW SW	Down-gradient	1/20/1977	Domestic	9	539	20
53	12694	CHARLES SULLIVAN	22	SW SW	Down-gradient	6/26/1987	Domestic	6	385	15
54	12702	AL MARTIN	22	SW SW	Down-gradient	8/6/1976	Domestic	8	378	30
55	12700	LLOYD MCCLURE	22	SW SW	Down-gradient	11/9/1976	Domestic	10	466	75
57	12712	J E WILLIAMS	23	NE NE	Cross-gradient	NULL	unknown	0	550	
58	11463	JERRY NELSON	23	NE SE	Cross-gradient	8/7/1995	Domestic	10	472	0.5
59	12709	CUMMINGS ROOFING	23	NE SE	Cross-gradient	11/16/1979	Domestic	17	200	6
60	15134	JERRY NELSON	23	NE SE	Cross-gradient	9/11/1995	Domestic	28	186	2
61	12711	J E WILLIAMS	23	NW NE	Cross-gradient	11/30/1954	Domestic	60		
63	12710	MR LOUIS NESBERG	23	SW SE	Cross-gradient	8/15/1977	Domestic	9	500	3
93	12744	EVERETT LEACH	25	NW NW	Down-gradient	6/9/1972	Domestic	11	223	15
97	12738	MR RAYMOND MACY	25	SW SW	Down-gradient	4/9/1977	Domestic	18	145	45
105	13956	DAVID G DUFF II	26	NE NE		6/15/1978	Domestic	291	442	30
106	50269	KLAMATH PACIFIC CORP. ; BOGATAY CONST	26	NE SE		5/17/1996	Domestic	5	98	15
107	51176	LANCE CAMBELL	26	NE SE		3/9/1998	Domestic	8	125	5
108	50180	CITY OF KLAMATH FALLS	26	SE SW		2/23/1996	unknown	2	9	
109	50181	CITY OF KLAMATH FALLS	26	SE SW		2/23/1996	unknown	2		
110	50183	CITY OF KLAMATH FALLS	26	SE SW		2/22/1996	unknown	2		
111	50179	CITY OF KLAMATH FALLS	26	SE SW		2/23/1996	unknown	2	9	
112	50182	CITY OF KLAMATH FALLS	26	SE SW		2/22/1996	unknown	2	8	
113	50177	CITY OF KLAMATH FALLS	26	SE SW		2/22/1996	unknown	2		
114	50178	CITY OF KLAMATH FALLS	26	SE SW		2/22/1996	unknown	2	9	
115	11039	HOMER L WELCH	27	NE NE		6/28/1994	Domestic	6	91	15
116	12740	EVERETT LEACH	27	NW NW		7/31/1963	Domestic	3	75	6
118	12816	JIM TITUS	35	NE SW	Down-gradient	10/15/1981	Domestic	7	156	20
119	12822	ED BAIR	35	SE NE	Down-gradient	6/14/1979	Domestic	5	115	100
120	12819	JOE BAIR	35	SE NW	Down-gradient	4/19/1960	Domestic	17	247	15
122	50867	CARL HARRIS	35	SW NW	Down-gradient	7/30/1997	Domestic	4.4	30	15
123	10274	CARL HARRIS	35	SW NW	Down-gradient	9/4/1991	Domestic	4	59	12

Notes:

Information for wells obtained by querying the Oregon Water Resources Department database, 2006.

Blank fields indicate that data were not available.



Legend

- Kingsley Field
- Site Investigation Areas
- 0.5 Mile Buffer
- Registered Well IDs (see Table 2-2)

N

0 2,000 4,000 Feet

Source: OWRD

Figure 2-7

Water Well Location Map

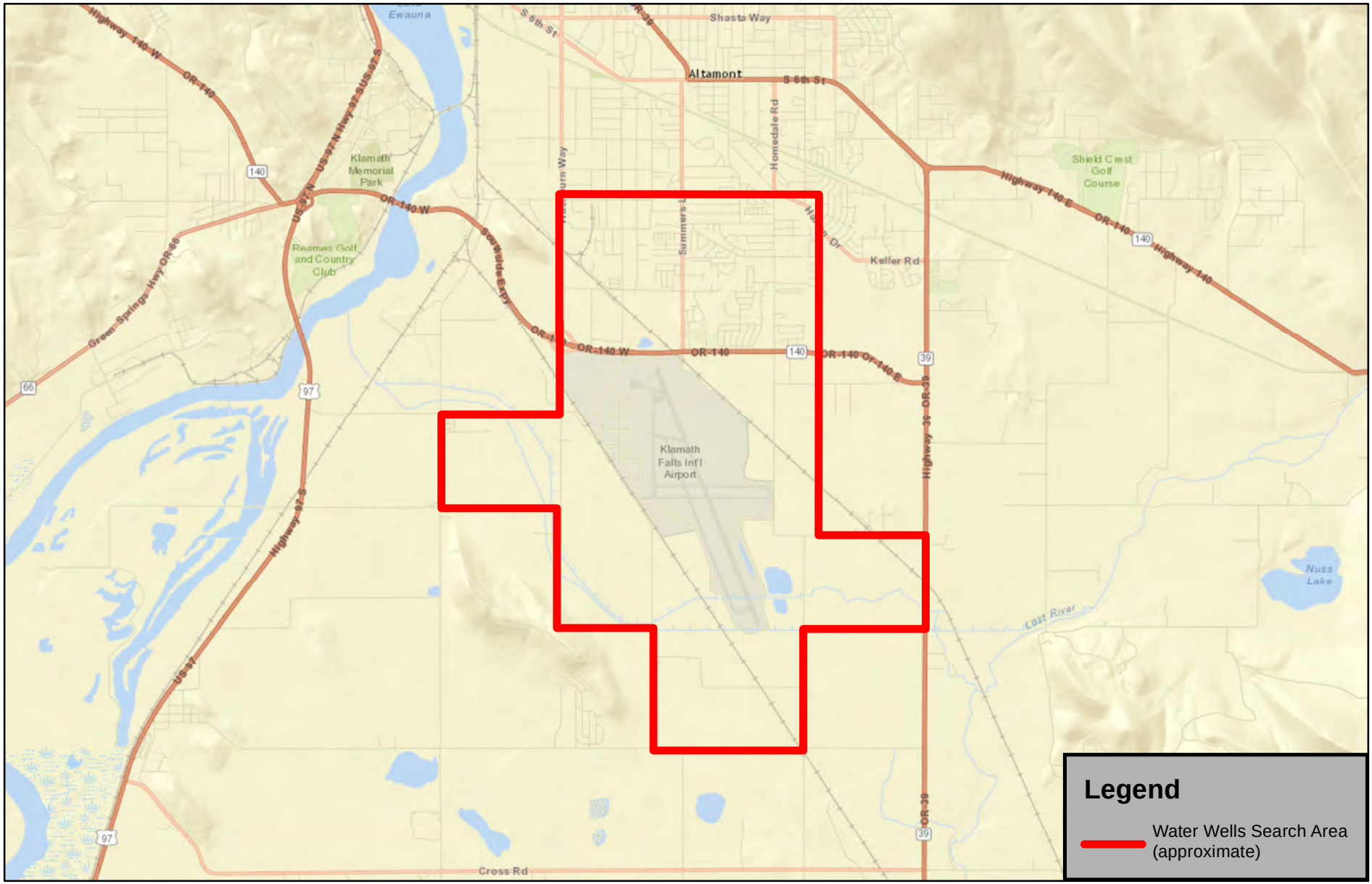
Kingsley Field, Klamath Falls, Oregon

CH2MHILL

ES022006001CVO-KFSI_117_v04

APPENDIX C-4

2015 WATER WELLS INFORMATION



NORTH

0 1.5 3

Miles

Water Wells Search Area

Kingsley Field Air National Guard Base
Klamath Falls, Oregon

BB&E

Document Path: H:\IT\GIS\ANG\AFFF PFC\Klamath Falls (Kingsley Field)\Water Wells Search Area Kingsley Field-Klamath Falls.mxd

KMG 10/13/15

Summary of Groundwater Wells Around Kingsley Field ANG Base
Township 39S, Range 9E

	Owner			Well Location	Well Information			Type of Work				Use										
Well No.	Last Name	First Name	Company Name	Street	Depth Drilled	Static Water L	Completion Date	New	Abandon	Deepening	Alteration	Domestic	Irrigation	Community	Livestock	Industrial	Thermal	Dewatering	Other	Section	qtr160	qtr40
10151	VALENCIA	MODESTO		8149 PACIFIC LN	360	24	3/21/1991	X				X								25	NE	NW
10192	BAIRD	BEN	BAIRD, ALTHEA	1500 JOE WRIGHT RD	381	9	5/24/1991	X				X								21	NW	SE
10274	HARRIS	CARL		4790 LOMBARDY LN	59	4	9/4/1991	X				X								35	NW	SW
10419			FIRST INTERSTATE BANK OF	6757 HENLEY RD, K FALI	832	28	2/20/1992	X				X								25	NE	NW
10639	KENDALL	MEL		1600 JOE WRIGHT RD	250	10.5	11/20/1992	X				X								21	NW	SE
10744			STANISLAUS MANAGEMENT	6767 TINGLEY LN, K FAL	0		6/10/1993		X											21	NW	SW
11039	WELCH	HOMER L		7730 SPRING LAKE RD, K	91	6	6/28/1994	X				X								27	NE	NE
11167	HAMILTON	WILLIAM F		4243 OLD MIDLAND RD	237	18	9/30/1994	X				X								35	SW	SW
11303	SULLIVAN	PAT		1469 MORNINGSIDE LN	280	8	5/6/1995	X				X								21	NW	NW
11463	NELSON	JERRY		7315 HOMEDALE RD	472	10	8/7/1995	X				X								23	SE	NE
12608	MCGREW	TROY		LOT 27, ELMWOOD ADD	158	55	7/7/1981	X				X								14	SW	NW
12609	BOWERS	ROY			155	42	6/5/1979	X				X								14	SW	NE
12610	SAVAGE	W B		5616 HOMEDALE RD	250	73	8/29/1960	X				X								14		
12611	DAVIS	RICHARD E			90	22	12/24/1975	X				X								14	NW	SW
12612	WISDOM	J L		HOMEDALE & JOHNS AV	135	21	9/2/1959	X				X								14		
12613	ENGLISH	ORVILLE			145	5	7/31/1958	X				X								14		
12614	TUCKER	NILE V		4900 SUMMER LN	400	5	6/9/1956	X				X								14		
12615	DEGREE	KENNETH			180	14	6/16/1971	X				X								14	NE	SW
12616	MELICK	RICHARD J		HOMEDALE ROAD	122	4	11/27/1957	X				X								14	NE	NW
12617	DENNIS	EVERETT		ELMWOOD PARK	150	24	10/31/1961	X				X								14	NW	NE
12618	SCHMIDT	MR JOHN	SCHMIDT, MRS		300	5	1/31/1968	X				X								14	NW	NW
12619	TAYLOR	BILL		5122 HOMEDALE RD	640		7/19/1957	X				X								14	NE	SW
12620	LEWIS	W A		ELWOOD PARK, LOT 8	78	11	8/17/1966	X				X								14	SW	NW
12621	FREEMAN	ERNEST			38		6/8/1965	X				X								14	SE	SE
12622	WILLIAMS	J E			215	5	5/4/1960	X				X								14	SE	SE
12623	ALLEN	HUGH			162	46	5/18/1979	X				X								15	SW	SW
12624	HARRIS	EARL			55	3	12/15/1962	X				X								15		
12625	DENNIS	EVERETT		SUMMERS LANE (W); S C	35	12	1/31/1968	X				X								15	SE	SE
12670			CHESTER WILSON TRUST	7441 TINGLEY LN	329	12	9/14/1984	X				X								21	SW	SW
12671	WRIGHT	JOE H			200	41	7/29/1975	X				X								21	SE	SE
12672	PAYNE	CHARLES W			100	8	6/1/1973	X				X								21		
12673	HODGES	GERALD			165	9.5	1/3/1973	X				X								21		
12674	RISLEY	NORMAN			161	8	11/15/1969	X				X								21		
12675	HECKENLIVE	RONALD L			288	9	4/4/1968	X				X								21		
12676	LAMBERT	B F			131	14	9/12/1964	X				X								21		
12678	UHLIG	CHARLES			200	7	10/1/1958			X		X								21		
12679	YATES	MARVIN			342	8.5	4/11/1969	X				X								21	NW	NW
12680			CROSS ROADS MOBILE HOME PARK		215	12	3/19/1970	X				X								21	NW	SW
12681	VERTNER	L D			230	9	8/7/1969	X				X								21	NW	SE
12682	WRIGHT SR	JOE			648	12	12/31/1935	X				X								21	NE	NE
12683	WRIGHT SR	JOE			300	12	12/31/1932	X				X			X					21	NW	NW
12684	WARREN	V E			300	12	12/31/1954	X				X								21	SE	SE
12685	STOLL	E M			195	6	5/19/1965	X				X								21	NW	SW
12686	WRIGHT	JOE H			200	47	7/29/1975	X				X								21	SE	SE
12687	STORK	LOUIS			60	8	3/21/1963	X				X								21	NW	SW
12688	STORK	L C		OLD MIDLAND RD & MC	63	6.3	8/13/1958	X				X								21	NW	SW
12689			SARGE TRAILER ESTATE		95	11	4/28/1960	X				X								21	NW	SW
12690	STRUNK	CECIL			554	16	8/1/1957	X				X								21	NW	SW
12691	GREY	BILL			422	20	12/31/1953	X				X								21	NW	SE
12692	STEAPHNSON	J S			157	13	11/21/1963	X				X								21	NW	SE
12693			CRATER LAKE POTATO DISTRIBUTORS		155	5	10/30/1966			X						X				21	SE	NE
12694	SULLIVAN	CHARLES		7901 WASHBURN WAY	385	6	6/26/1987	X				X								22	SW	SW
12695			CITY OF KLAMATH FALLS	K FALLS AIRPORT	1495	7	7/20/1981	X												22	SE	
12697			CITY OF KLAMATH FALLS	K FALLS AIRPORT	1495	7	7/20/1981	X												22		SE
12699	CLARK	BILL O		LOT 2 BLK 2, RIVER RAN	500	9	2/27/1979	X				X								22	SW	SW
12700	MCCLURE	LLOYD		LOT 1 BLK 2	466	10	11/9/1976	X				X								22	SW	SW
12701	ANDERSON	JERRY			539	9	1/20/1977	X				X								22	SW	SW
12702	MARTIN	AL		RIVER RANCH EST	378	8	8/6/1976	X				X								22	SW	SW
12703			KLAMATH FALLS EXPERIMENT STA		20	6	3/29/1968	X										X		22	NW	SW
12704	GROSS	A E			400	6.2	12/3/1954	X												22	SW	NW
12705			CITY OF KLAMATH FALLS	K FALLS AIRPORT	1388	6	8/10/1981	X												23	NW	
12707			CITY OF KLAMATH FALLS	K FALLS AIRPORT	1388	6	8/10/1981	X												23	NW	
12709			CUMMINGS ROOFING		200	17	11/16/1979	X				X								23	SE	NE
12710	NESBERG	MR LOUIS	NESBERG, MRS LOUIS		500	9	8/15/1977	X				X								23	SE	SW
12711	WILLIAMS	J E			172	60	11/30/1954	X				X								23	NE	NW
12712	WILLIAMS	J E			550			X												23	NE	NE
12724			HENLEY CONGREGATION OF	HWY 39 & HENLEY RD ((	45	4	3/30/1988	X				X								25	NE	SE
12725	KINSMAN	KEN		HENLEY RD	83	6	6/5/1984	X				X								25	NW	
12726	WYMORE	JOHN			275	48	7/31/1978	X				X								25	NE	NE
12727			CELL TECH INC.	HWY 39	102	11	3/8/1983	X				X								25	SE	SE
12728	ACKLIN	FRED			80	6.5	6/3/1982	X				X								25		
12729	SUMNER	RICHARD P		6829 HENLEY RD, K FAL	870	13	10/1/1981	X				X								25	NE	NE
12730	ACKLIN	ALBERT			52	6	3/12/1980	X				X								25	NW	NE
12731	PULLEY	KENT			55	20	4/18/1979	X				X								25	NE	NE
12732	MACY	MR RAY	MACY, MRS RAY		145	19	3/26/1976	X				X								25	SE	SE
12733	DANIEL	E D		RT 2 BOX 548, HENLEY F	200	4	4/9/1956	X				X								25		
12734	LONG	E F		SE CORNER OF NE NE Q1	37		3/11/1959	X				X								25	NE	NE
12735	MANNING	DONALD		RT 2 BOX 562 H	75		2/17/1959	X											UNKNOW	25		
12736	COLES	W A		LOT 4 OF HENLEY	565	5	9/23/1956	X				X								25		
12737	VIEIRA	GERALD			135	18	3/10/1977	X				X								25		
12738	MACY	MR RAYMOND	MACY, MRS RAYMOND		145	18	4/9/1977	X				X								25	SW	SW
12739			DAVID A RICHARDSON CO.		127	10	10/20/1958	X				X								27	NW	
12740	LEACH	EVERETT		WASHBURN WAY (E OF)	75	3	7/31/1963	X				X								27	NW	NW
12744	LEACH	EVERETT		TINGLEY LN, N ENTRAN	223	11	6/9/1972	X				X								25	NW	NW

Summary of Groundwater Wells Around Kingsley Field ANG Base
Township 39S, Range 9E

	Owner			Well Location	Well Information			Type of Work				Use										
Well No.	Last Name	First Name	Company Name	Street	Depth Drilled	Static Water L	Completion Date	New	Abandon	Deepening	Alteration	Domestic	Irrigation	Community	Livestock	Industrial	Thermal	Dewatering	Other	Section	qtr160	qtr40
12816	TITUS	JIM		5479 OLD MIDLAND RD	161	7	10/15/1981	X				X								35	SW	NE
12817	FLEMING	DALE			57	4	7/13/1977	X											UNKNOW	35		
12819	BAIR	JOE			247	17	4/19/1960	X				X								35	NW	SE
12822	BAIR	ED			140	5	6/14/1979	X				X								35	NE	SE
12823	WELLS	BRUCE		TRACT 17, 400 S.D.	80	31	4/8/1979	X				X								35	SE	SE
12824	NIELSON	CARL		HOMEDALE RD (OFF OF)	35	2.5	7/17/1974	X				X								35	SW	SW
15134	NELSON	JERRY		7315 HOMEDALE RD	186	28	9/11/1995	X				X								23	SE	NE
50266	STURGEON	ART		7083 HENLEY RD	306	6	5/3/1996	X				X								25	NE	NE
50267	KENDALL	MEL		1600 JOE WRIGHT RD	405	13	4/22/1996			X		X								21	NW	SE
50269			KLAMATH PACIFIC CORP; BC	8928 HOMEDALE RD	98	5	5/17/1996	X				X								26	SE	NE
50867	HARRIS	CARL		4730 LOMBARDY LN	32	4.4	7/30/1997	X				X								35	NW	SW
51176	CAMBELL	LANCE		8880 HOMEDALE RD	125	8	3/9/1998	X				X								26	SE	NE
51615	MARTIN	LES		7005 HENLEY RD	381	4	10/22/1998	X				X								25	NE	NE
52206	COMFORT	STEPANIE		S END OF SUMMERS LAI	161	58	3/13/2000	X				X								14	SW	NW
52533	TOOKER	DIANE		7280 HENLEY RD	43	5	10/30/2000	X				X								25	NE	SE
52591			CROSSROADS MOBILE HOME	6767 TINGLY LANE	218	16	12/14/2000				X			X						21	NW	SW
52636	BOWERS	JOHN		5404 AIRWAY DR	309	9	2/28/2001	X				X								23	NE	NW
52640			NATT MCDOUGALL CO.	5800 ALTAMONT AVE	60	6	3/13/2001	X												15	SW	SE
52641			NATT MCDOUGALL CO.	58000 ALTAMONT AVE	60	6	3/14/2001	X												15	SW	SE
52642			NATT MCDOUGALL CO.	5800 ALTAMONT AVE	60	6	3/10/2001	X												15	SW	SE
52717	WEST	RAY		5911 HENLEY RD	80	13	5/16/2001	X				X								25	NW	NW
52724	BAIR	TONY		9743 SPRING LAKE RD	205	28	6/1/2001	X					X							27	SW	NW
52827	DUNAWAY	THOMAS		4661 OLD MIDLAND RD	200	18	7/25/2001	X				X								35	SW	SW
52829	FRICKS	CLIFF		10210 HOMEDALE RD	120	6.5	7/26/2001	X				X								25	NE	NE
52831	MICHAELS	STEVE	MICHAELS, IRENE; ANDERSO	4243 OLD MIDLAND RD	630	22	7/28/2001	X					X							35	SW	SW
52930	WALKER	VINA		6951 HENLEY RD	328	15	9/13/2001	X				X								25	NE	NW
53083	YOUNG	MONTE O		5145 LOMBARDY LANE	75	10.5	11/16/2001	X				X								35	NE	SW
53115	BARNEY	MISTY		HOMEDALE; S OF AIRW/	745	13	11/16/2001	X				X								23	NE	NE
53121	DAY	WAYNE	DAY, DENISE	7418 HOMEDALE RD	100	10	11/20/2001	X				X								23	SE	SW
53161	DAY	WAYNE	DAY, DENISE	7418 HOMEDALE RD		10	2/5/2002				X	X								23	SE	SW
53206	LEWIS	FRANCIS		APPROX 1 MILE S OF S S	926	24	3/1/2002	X					X							23	NE	SW
53710	MOSER	MICHAEL	MOSER, TRACIE	1250 MORNINGSIDE																21		
53937	BIGBY	NATHAN		HENLEY RD; 2ND DR OF	75	3.5	6/22/2003	X				X								25	NE	SE
54088	FREEMAN	RYON		6535 HOMEDALE RD	1353	15	8/29/2003	X				X								23	NE	NE
54124	STRAUCH	KRAIG		5741 HOMEDALE RD	200	83	9/20/2003	X				X								14	SE	NE
54501			R M R LLC	5437 ALTAMONT	227	12	7/14/2004	X				X								15	SE	NW
54565	CLEMENTS	DWAYNE	CLEMENTS, KIM	HWY 39 S	60	8	8/30/2004	X				X								25	SE	SE
54566	CLEMENTS	DWAYNE	CLEMENTS, KIM	HWY 39 S	121	15	8/31/2004	X				X								25	SE	SE
54586	MCDANIEL	CARLTON		9151 SPRING LAKE RD	60	8	9/17/2004	X				X								27	SE	SE
54779	BAIR	TONY		9743 SPRING LAKE RD	302	41	3/4/2005			X	X		X							27	SW	NW
10962	MERKLEY	CARSON		6950 HENLEY RD, K FAL	924	38	4/21/1994	X				X								25	NE	NW
55034	KRUEGER	DENNIS		2650 SELMA ST	161	58	8/9/2005	X				X								14	NW	SW
55158			COUNTY OF KLAMATH	2303 JOE WRIGHT RD			11/28/2005		X											21	NE	NE
55388	MASTERS	AARON		6757 HENLEY RD	1041	28	4/10/2006			X		X								25	NE	NW
55485	HOWLAND	MERL		JOE WRIGHT RD OFF WA	800	29	7/3/2006	X				X								21	SE	NW
56020			CROSSROADS MOBILE HOME	6767 TINGLEY LANE		34	6/28/2007				X			X						21	NW	SW
56123	STRUNK	CECIL		1470 MORNINGSIDE LAN	508	44	9/7/2007	X				X								21	NW	SE
56898			KLAMATH IRRIGATION DIST	8928 HOMEDALE RD																26		
57582	MURPHY	MANDIE		7123 HENLEY RD KLAM/	361	9	11/3/2010	X				X								25	NE	NE
57583	MURPHY	MANDIE		7123 HENLEY RD KLAM/	24		11/2/2010		X			X								25	NE	NE
57718	ELLIOTT	JOHN & EDITH		5209 LAWANDA DR. KL/	221	151	4/20/2011			X		X								14	SW	NE
57973	ANDERSON	RICHARD	CROSS ROAD MOBILE HOME	6767 TINGLEY LANE	327	30	10/13/2011	X						X						21	NW	SW
58008	SWINDLER	RALPH		7810 HWY 39 KLAMATH	122	46	12/5/2011	X				X								25	NE	NE
58264	MCDONALD	WILLIAM		SOUTH OF THE CORNER	101	34	9/27/2012	X				X								14	SE	NE
58455	BAILEY	MICHEAL		1660 JOE WRIGHT RD	399	53	7/31/2013				X	X								21	NE	NE
58476	ACKLIN	FRED			80	8	3/30/1974	X												25		
58560	BAIR	ED		8728 SPRING LAKE RD	240	40	1/21/2014	X							X					27	SW	NW
58876	JACOBSON	C R			84	15	1/1/1947					X								14	SW	NW
58877	BROMWELL	ROBERT		1250 MORNINGSIDE LN	435	13	8/15/1988	X				X								21	NW	SW
58878	MIKSCH	DAVID	MIKSCH, MRS		355		2/4/1959	X				X								21	NW	
* 58894	ZBINDEN	JON	ZBINDEN PROPERTIES, LLC.	4606 SOUTH SIDE EXPRE	1148	19	9/1/2014	X									X			14	SW	SE
58903	LAHODA	JOE			98	7	4/28/1977	X				X								25	NE	
58904	THOMAS	ISAAC			32	8	7/21/1959	X				X								25	NE	NW
58905	THOMAS	ISAAC			750	9	7/18/1959	X				X								25	NE	NW
58906	FLEMING	DALE		5351 LOMBARDY LN	53	9	9/3/1987	X				X								25	SW	SE
58907	KENDELL	STEVE		HOMEDALE RD (OFF OF)	84	4	6/12/1987	X				X								26	NE	NE
58908	WALSH	RUSSELL			60	7	2/6/1972	X				X								26	NE	SE
58909	KNUDSON	MORRISON			90	12	5/2/1956	X								X				26	SE	NE
58910			HALL, ATWATER & WHITE BROS.		215	8	5/17/1958	X				X								26	SE	
58920	REGINATO	J J	REGINATO, M H	8234 SPRING LAKE RD	154	5	10/26/1985	X				X								27		
58921	PROBST	BONNIE			173	10	7/21/1977	X				X								27		
59006	BREAZEALE	BOB AND SHIRLEY		1540 MORNINGSIDE LAN	401	-92.4	1/30/2015	X				X								21	NW	SE
59240	COLEMAN	JAMES M. & DOROTHEA		1255 MORNINGSIDE LN.	402	55	7/27/2015	X				X								21	NW	SW

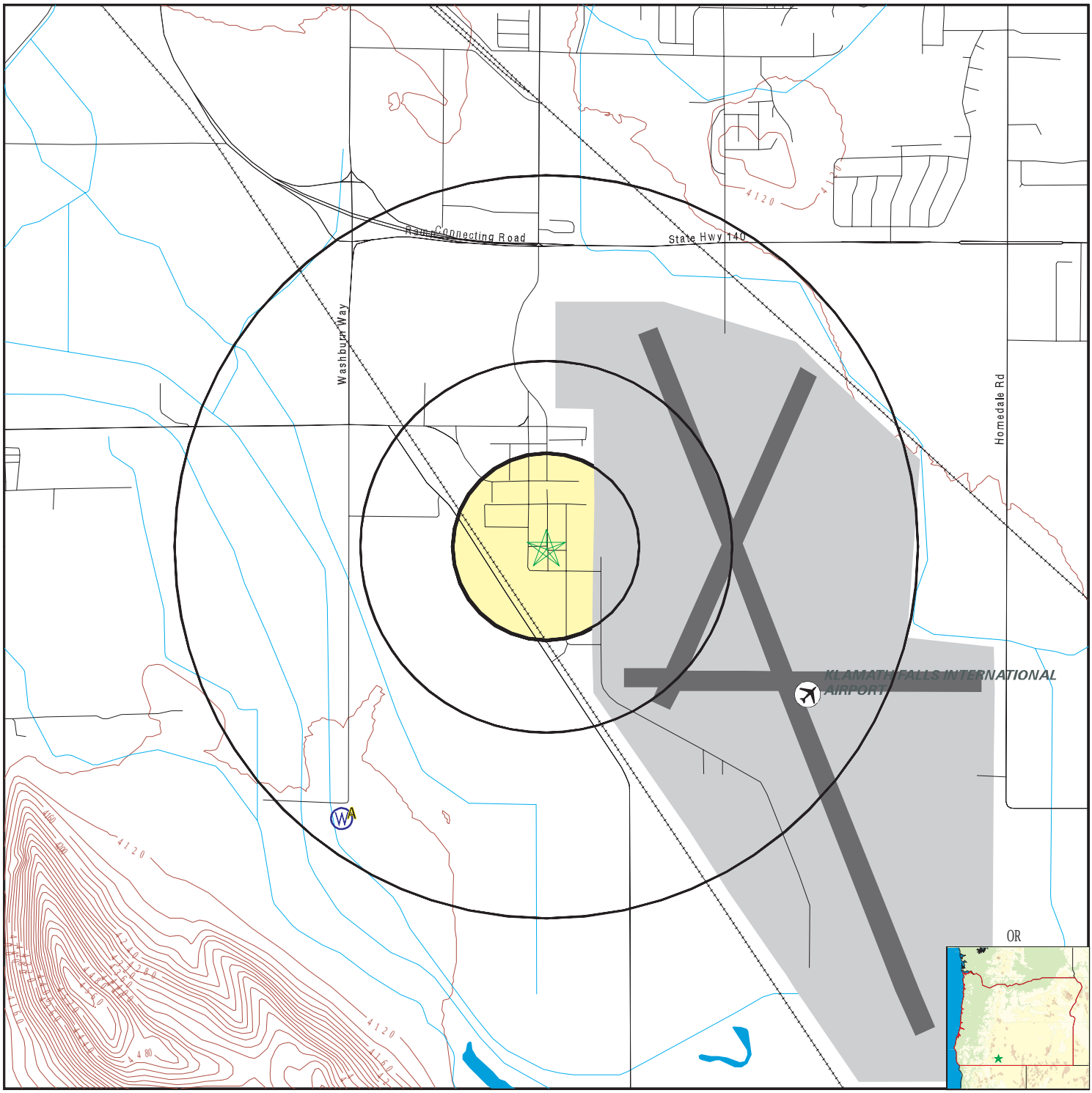
Information obtained from Oregon Water Resources Department's online well query at: http://apps.wrd.state.or.us/apps/gw/well_log/Default.aspx
Database searched on August 20, 2015

*4606 South Side Expressway also contains an additional potable water well not listed in this database that provides water to homes located at 4606 and 4808 South Side Expressway.

APPENDIX C-5

EDR ONE-MILE RADIUS WATER WELLS MAP

PHYSICAL SETTING SOURCE MAP - 4359505.1s



- County Boundary
- Major Roads
- Contour Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location

SITE NAME:	Klamath Falls ANG	CLIENT:	B.B. & E
ADDRESS:	3398-3301 WAGNER ST Klamath Falls OR 97603	CONTACT:	Veronica Allen
		INQUIRY #:	4359505.1s
LAT/LONG:	42.1619 / 121.7469	DATE:	July 20, 2015 7:57 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
OR WELLS	**ORW500000015741**

A1
SW
1/2 - 1 Mile
Higher

Fid:	15740	Objectid:	16126
Logid:	KLAM 12750	Lstupdate:	07/03/2013
Establby:	KYLE GORMAN	Xysource:	GOOGLE E & TAX LOT MAP
Horizerr:	25	Sourceorg:	OWRD
Sourceowrd:	BEND	Waypoint:	Not Reported
Welltag:	0		
Sownum:	0	Obswell:	9
Recwell:	9	Obsflagall:	Not Reported
Lsdelev:	4090		
Latitude:	42.1514449431		
Longitude:	-121.757505698		
Site id:	ORW500000015741		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database | EDR ID Number

A2
SW
1/2 - 1 Mile
Higher

OR WELLS | **ORI500000053497**

Fid:	53496	Well inspe:	0
Physical l:	Not Reported	Inspection:	2013-07-23 00:00:00.000
Startcard :	1020400	Wl county :	KLAM
Wl nbr:	58434	Startcar00:	Not Reported
Well tag n:	11082	No log:	0
Property o:	Not Reported	Inspecti00:	CMP
Special st:	0	Title:	WIN
Inspecti01:	INC	Witnesses:	Not Reported
Name owner:	DAVID, LUNDEEN		
Street:	8202	City:	KLAMA
State:	OR	Zip:	97603
Phone home:	Not Reported	Phone comp:	Not Reported
Gps on wel:	1	Distance t:	Not Reported
Bearing to:	Not Reported	Drilling m:	Not Reported
Use of wel:	Not Reported	Drilling00:	0
Rough log :	0	Well tag r:	Not Reported
Monitoring:	Not Reported	Monitori00:	0
Protective:	0	Well locke:	0
Consultant:	0	Water in v:	0
Seal test :	Not Reported	Samples ta:	0
Casing dia:	6.00	Csg above :	2.00
Csg gauge:	Not Reported	Borehole d:	Not Reported
Dedicated :	0	Access por:	0
Access p00:	Not Reported	Measuring :	2.00
Measurin00:	1	Depth belo:	Not Reported
Depth be00:	Not Reported	Tape hold:	90.00
Tape missi:	40.00	Tape cut:	1.48
Water leve:	STC	Water le00:	ETP
Cascading :	0	Pump type:	Not Reported
Pump make:	Not Reported	Pump hp:	Not Reported
Flowmeter :	Not Reported	Flowmete00:	Not Reported
Flowmete01:	Not Reported	Flowmete02:	Not Reported
Associated:	Not Reported	Nbr of hou:	Not Reported
Deficiency:	Not Reported		
Inspecti02:	Not Reported		
Work new:	1	Work deepe:	0
Work conve:	0	Work alter:	0
Work aband:	0	Work exist:	0
Work other:	Not Reported	Drill rota:	1
Drill ro00:	0	Drill cabl:	0
Drill ca00:	0	Drill reve:	0
Drill re00:	0	Drill auge:	0
Drill push:	0	Drill hand:	0
Drill holl:	0	Drill soni:	0
Drill othe:	Not Reported	Use domest:	1
Use irriga:	0	Use commun:	0
Use indust:	0	Use livest:	0
Use dewate:	0	Use monito:	0
Use therma:	0	Use inject:	0
Use piezom:	0	Use observ:	0
Use recove:	0	Use other:	Not Reported
Bentonite :	0	Conductivi:	Not Reported

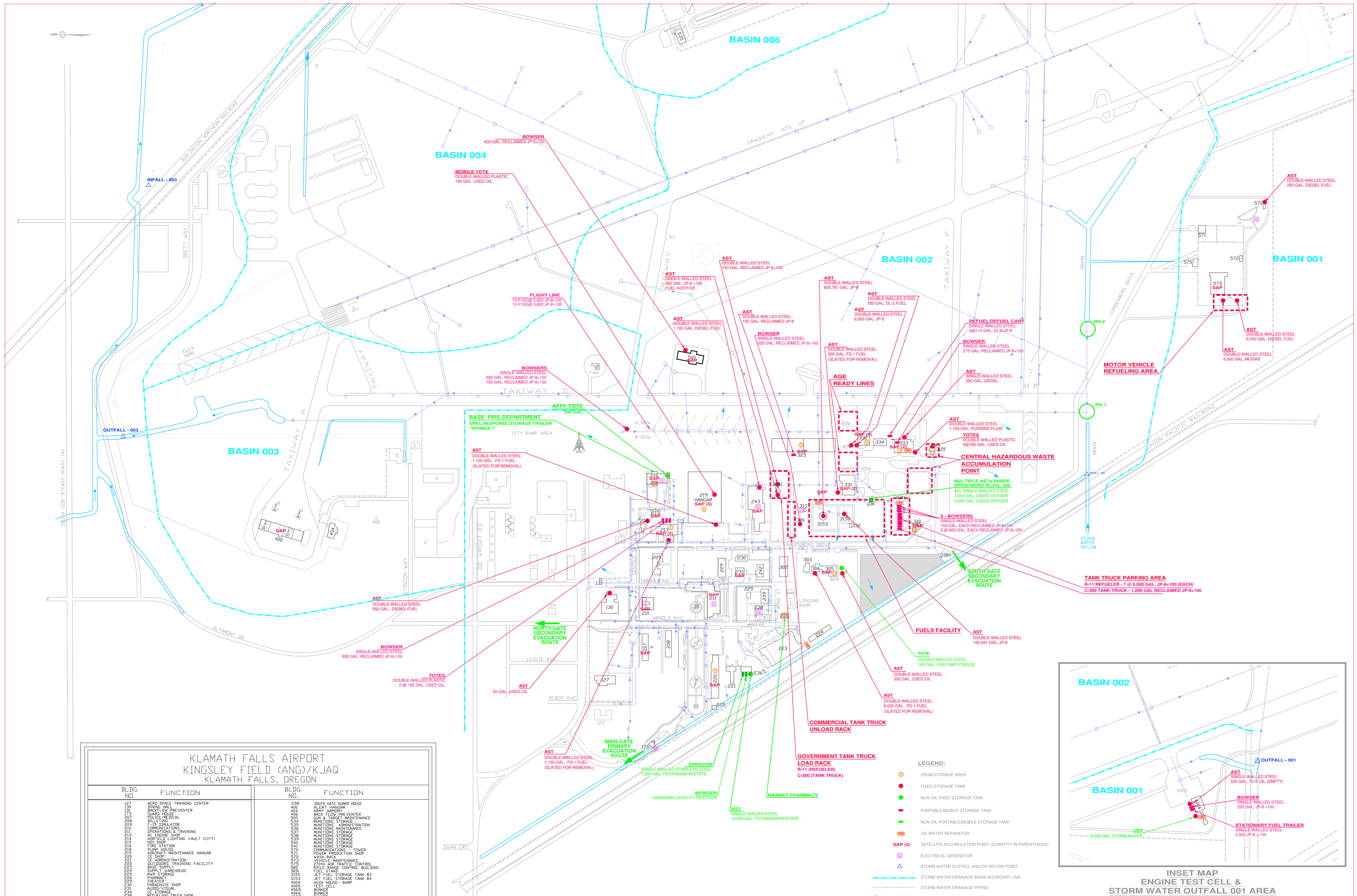
GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

Conducti00:	Not Reported	Measuremen:	Not Reported
Well tag00:	110824	Bonded lic:	1355
Unbonded l:	Not Reported	Bonded dri:	ARTHU
Unbonded d:	Not Reported	County cod:	KLAM
Tax lot:	Not Reported	Township:	39
Township c:	S	Range:	9
Range char:	E	Sctn:	28
Qtr40:	SE	Qtr160:	NE
Latitude d:	42.15115000	Longitude :	-121.75773000
Gps horizo:	4.00000000	Year const:	Not Reported
Date const:	2013-	Date con00:	2013-
Deficienci:	N	Previous i:	0
Inspected :	Not Reported	Inspecte00:	107942
Wm region:	SC		
Well tag a:	Hose Clamps		
Well tag01:	DRL	Depth:	Not Reported
Static wat:	Not Reported	Status of :	CMP
Location r:	Not Reported	Site visit:	Not Reported
Type of lo:	W	Casing cap:	PTL
Pictures t:	0	Street of :	8202 WASHBURN WA
Street o00:	8202 Washburn Way		
Last updt :	2013-07-30 11:07:31.470		
Last upd00:	gateseb	Rec creati:	2013-07-30 11:05:06.970
Rec crea00:	gateseb		
Latitude:	42.15115		
Loongitude:	-121.75773		
Site id:	ORI500000053497		

APPENDIX C-6

STORMWATER DRAINAGE BOUNDARY MAP



KLAMATH FALLS AIRPORT
KINGSLEY FIELD (ANG)/KJAQ
KLAMATH FALLS, OREGON

BLDG. NO.	FUNCTION
127	AERO SPACE TRAINING CENTER
130	DINING HALL
131	BACKFLOW PREVENTER
173	GUARD HOUSE
207	POLICE/MEDICAL
208	BILLETING
209	F-15 SIMULATOR
210	COMMUNICATIONS
211	OPERATIONS & TRAINING
213	AC ENGINE SHOP
214	AIRFIELD LIGHTING VAULT (CITY)
215	NDI SHOP
216	FIRE STATION
218	PUMP HOUSE
219	AIRCRAFT MAINTENANCE HANGAR
220	CE SHOP
221	CE ADMINISTRATION
222	OUTDOORS TRAINING FACILITY
223	BASE SUPPLY
224	SUPPLY WAREHOUSE
225	MWR STORAGE
226	PHARMACY
229	THEATER
230	PARACHUTE SHOP
231	AUDIO/VISUAL
234	CE STORAGE
238	REFUELING TRUCK,SHOP
239	MWR SUPPLY, PAINT BOOTH & STAR BASE
242	GCI/SHADOW
243	RTU SQUAD OPERATIONS/BOEING
302	BX & BARBER SHOP
303	WASH RACK
304	REFUELER MAINTENANCE
305	MOTOR POOL NOT CONSTRUCTED
306	FUELS PUMP HOUSE
310	POL ADMINISTRATION
311	POL MAINTENANCE
313	FUELS UTILITY VAULT
325	AIRCRAFT SHELTER
330	FUELS PUMP ROOM
331	AVIONICS SHOP
332	AREOSPACE GROUND EQUIPMENT
333	FUEL CELL DOCK
334	AGE STORAGE
335	HAZARDOUS WASTE STORAGE
336	LOX SERVICE
338	SOUTH GATE GUARD HOUSE
400	ALERT HANGAR
404	ARMY ARMORY
406	BACK FLOW PREVENTER
500	GUN & TARGET MAINTENANCE
534	MUNITIONS STORAGE
535	MUNITIONS ADMINISTRATION
536	MUNITIONS MAINTENANCE
537	MUNITIONS STORAGE
538	MUNITIONS STORAGE
539	MUNITIONS STORAGE
540	MUNITIONS STORAGE
541	MUNITIONS STORAGE
570	COMMUNICATIONS - TOWER
571	POWER PRODUCTION SHOP
572	WASH RACK
573	VEHICLE MAINTENANCE
575	270th AIR TRAFFIC CONTROL
585	RIFLE RANGE CONTROL BUILDING
3031	FUEL STAND
3150	JET FUEL STORAGE TANK #3
3153	JET FUEL STORAGE TANK #4
4004	HUSH HOUSE- RAMP
4005	TEST CELL
4065	BUNKER
4066	BUNKER
4067	BUNKER
4068	BUNKER
4069	BUNKER
4086	RIFLE RANGE

OFF BASE FACILITIES

BLDG. NO.	FUNCTION
1	CIVILIAN AIR TERMINAL
2	JELD WIN AIRCRAFT
3	PRIVATE HANGARS
4	CONVENTIONAL/FBO HANGARS
5	FBO MAINTENANCE SHOP
6	US FOREST SERVICE
7	AGRICULTURAL SPRAY AREA
8	PELICAN AVIATION
9	NEW CITY FUEL FARM
10	NEW CITY SEWER LIFT STATION
11	FAA TOWER - NEW
12	FOREST SERVICE TRAINING FACILITY
13	CITY SHOP

LEGEND:

- DRUM STORAGE AREA
- FIXED STORAGE TANK
- NON-OIL FIXED STORAGE TANK
- PORTABLE/MOBILE STORAGE TANK
- NON-OIL PORTABLE/MOBILE STORAGE TANK
- OIL WATER SEPARATOR
- SAP (2) SATELLITE ACCUMULATION POINT (QUANTITY IN PARENTHESIS)
- ELECTRICAL GENERATOR
- STORM WATER OUTFALL AND/OR INFLOW POINT
- STORM WATER DRAINAGE BASIN BOUNDARY LINE
- STORM WATER DRAINAGE PIPING
- STORM WATER SURFACE RUNOFF FLOW
- STORM WATER DRAINAGE DITCH/CHANNEL
- FACILITY BOUNDARY FENCE
- RS-3 SPILL RESPONSE EQUIPMENT DEPLOYMENT SITE
- NON-OIL SYSTEM OR RESPONSE ELEMENT
- GOVERNMENT R-11 REFUELER AND COMMERCIAL TANK TRUCK LOADING/UNLOADING RACK WITH ANCILLARY PIPING AND PUMP HOUSES TO BE RELOCATED TO THIS AREA

0 100 200 400 600
SCALE IN FEET

NOTE:
THIS MAP IS BASED ON A SWPPP SITE PLAN DATED JULY 30, 2000 PROVIDED BY OREGON AIR NATIONAL GUARD 173rd FW KINGSLEY FIELD.

Source: 173d Fighter Wing - Oregon Air National Guard, Kingsley Field - Klamath Falls, Oregon

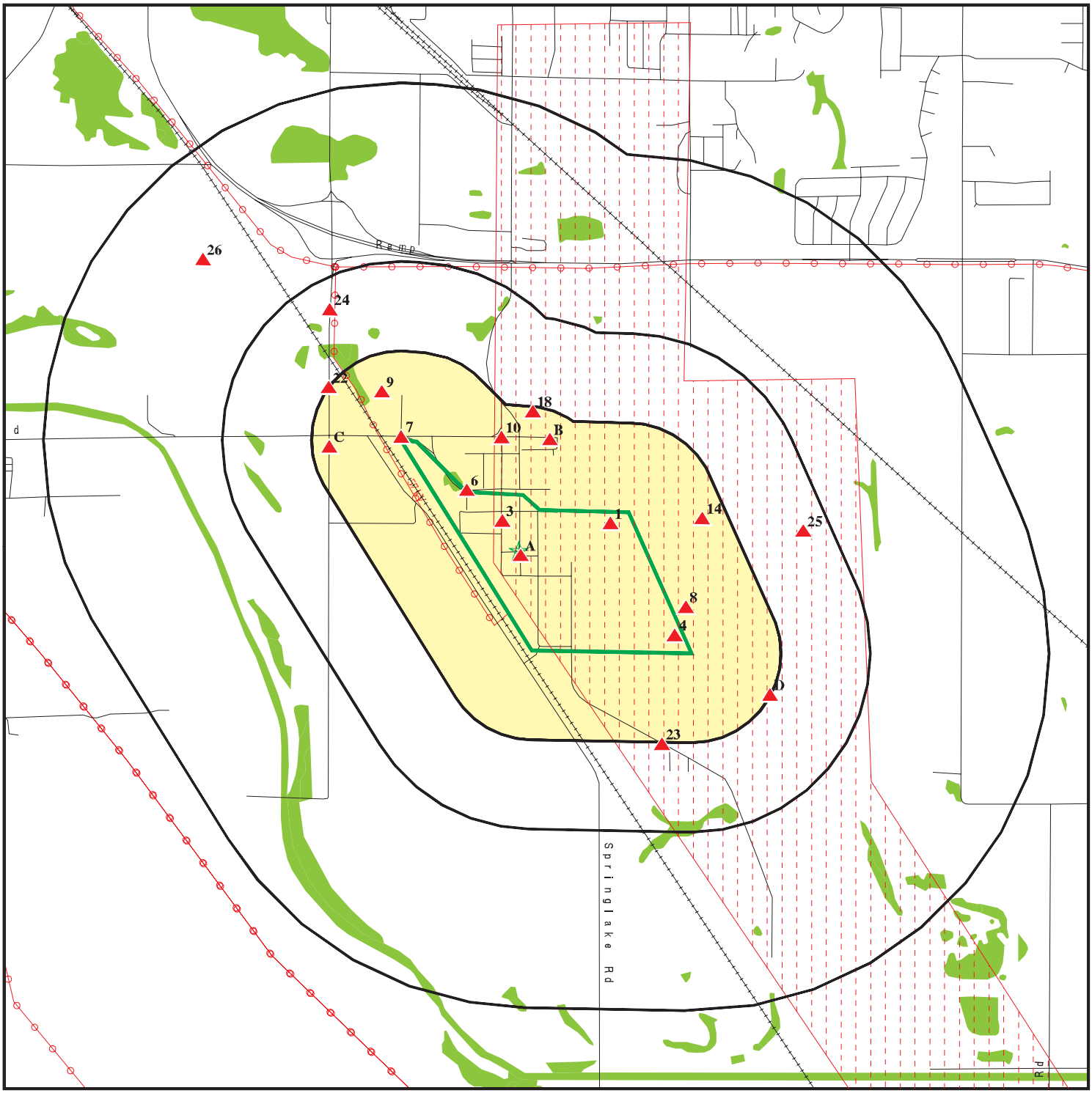
FIGURE 1
FACILITY DIAGRAM
OIL AND HAZARDOUS SUBSTANCE
SPILL PREVENTION AND RESPONSE PLAN
173d FIGHTER WING – OREGON AIR NATIONAL GUARD
KINGSLEY FIELD
KLAMATH FALLS, OREGON

Drawn by: E.Rogers, EnSafe, Nashville, TN
Checked by: H.Wilkinson, EnSafe, Nashville, TN
File Name: 10305R001.dwg | Date: 05AUG11 | Sheet: 1 of 1

APPENDIX C-7

EDR POTENTIAL ENVIRONMENTALLY SENSITIVE AREAS MAP

OVERVIEW MAP - 4359505.1S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

Power transmission lines

National Wetland Inventory

State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Klamath Falls ANG	CLIENT:	B.B. & E
ADDRESS:	3398-3301 WAGNER ST Klamath Falls OR 97603	CONTACT:	Veronica Allen
		INQUIRY #:	4359505.1s
LAT/LONG:	42.1619 / 121.7469	DATE:	July 20, 2015 7:55 pm