

**WETLAND AND FLOODPLAIN ANALYSIS
FOR THE FEDERAL LAND EXCHANGE PARCEL
(OAK FLAT AND SURROUNDING LANDS) IN PINAL COUNTY, ARIZONA**

Prepared for: Resolution Copper Mining
Prepared by: WestLand Resources, Inc.
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1. INTRODUCTION

WestLand Resources, Inc. (WestLand) was retained by Resolution Copper Mining (RCM) to provide a wetland and floodplain analysis of a 2,422-acre area of federal land (the Exchange Parcel) being proposed for exchange for more than 5,000 acres of RCM privately owned conservation parcels. The Exchange Parcel is located near the Town of Superior, Pinal County, Arizona within portions of sections 28, 29, 31-33, Township 1 South, Range 13 East; a portion of section 1, Township 2 South, Range 12 East; and portions of sections 6 and 7, Township 2 South, Range 13 East (*Figure 1*). The federal land exchange, proposed by RCM, was introduced as a bill before Congress on May 13, 2011 and is known as the *Southeast Arizona Land Exchange and Conservation Act of 2011*. The Exchange Parcel is currently

managed by the U.S. Forest Service (USFS) as part of the Tonto National Forest (TNF) and includes a 760-acre area known as Oak Flat that was previously withdrawn from mineral entry (the Oak Flat Withdrawal Area).

Section 33.43c of the U.S. Forest Service *Land Acquisition Handbook*, in reference to land exchange parcels, states “both federal and non-federal lands shall be inspected and evaluated for wetlands in accordance with Executive Order 11990 issued May 24, 1977 (E.O. 11990) and for floodplains in accordance with Executive Order 11988 issued May 24, 1977 (E.O. 11988) (Forest Service Manual 2527)” (USFS 2004). The analysis performed by WestLand has determined that the Exchange Parcel contains approximately 3.98 acres of wetlands and is located within an area where no analysis of flood hazards has been conducted. This technical memorandum provides a brief summary of WestLand’s analysis and supporting documentation for this determination.

2. WETLAND AND FLOODPLAIN ANALYSIS

WestLand’s review for wetland and floodplain occurrence on the Exchange Parcel was based on field investigations, a review of the U.S. Fish and Wildlife Service National Wetland Inventory (NWI) map, and a review of Federal Emergency Management Agency (FEMA) flood zone maps for Pinal County.

2.1. WETLAND ANALYSIS

Field reconnaissance for the presence of wetlands was conducted by WestLand as part of a jurisdictional determination of potential Waters of the U.S. in support of RCM’s compliance with Section 404 of the Clean Water Act (WestLand 2011). As a result of the field survey, WestLand identified eleven (11) wetland areas (Wetlands 1 through 11) encompassing approximately 3.98 acres within the TNF federal land exchange boundary. Wetlands 1 through 11 are identified with their respective acreages in **Table 1** below and are delineated on the attached figure with blue hatching (**Figure 2**). All of the identified features which exhibited wetland characteristics are man-made impoundments, such as stock tanks or water diversions. These features are ephemeral and generally of relatively poor habitat quality, supporting a low species and vegetative strata diversity. Most of the vegetative communities are herbaceous with Wetlands 3, 6, and 8 having dominant species in the tree strata. Due to a lack of perennial hydrology, these wetland areas provide minimal habitat for aquatic species. However, these areas do have potential to provide watering and bedding opportunities for terrestrial wildlife. Herbaceous browse may be of higher quality within and adjacent to the wetland areas as compared to the surrounding uplands (WestLand 2011). It should be noted that Wetlands 10 and 11 were not included in the project area of the 2011 jurisdictional delineation, but are included in the Exchange Parcel area considered for this analysis. The location of the wetland areas delineated by WestLand during field survey is generally consistent with available NWI mapping data of the area (USFWS 2012).

Table 1. Wetland Areas Identified within the Federal Exchange Parcel

Wetland ID	Wetland Area (Acres)
Wetland 1	0.186
Wetland 2	0.171
Wetland 3	0.056
Wetland 4	0.859
Wetland 5	0.113
Wetland 6	2.070
Wetland 7	0.034
Wetland 8	0.055
Wetland 9	0.194
Wetland 10	0.126
Wetland 11	0.117
TOTAL	3.981

2.2. FLOODPLAIN ANALYSIS

There were no perennial streams or other perennial surface water features identified during WestLand’s field investigations in 2011. The surface drainage features observed within the Exchange Parcel are ephemeral in nature and only flow briefly in response to storm events. The reach of Queen Creek immediately downstream of these drainages has been identified as an intermittent stream by the Arizona Department of Water Resources and by the U.S. Geological Survey (USGS) (WestLand 2011). An intermittent water is defined in Arizona’s water quality standards regulations as “a stream or reach that flows continuously only at certain times of the year, as when it receives water from a spring or from another surface source such as melting snow” (A.A.C. Title 18, Chapter 11, Article 1). WestLand conducted a review of FEMA floodplain maps in vicinity of the Exchange Parcel. The FEMA map panels show the entirety of the Exchange Parcel is designated by FEMA as Zone D (*Figure 2*). The Zone D designation is used in areas where FEMA has not conducted a flood hazard analysis and the potential flood hazard has not been determined. However, FEMA has mapped surrounding areas, including a downstream reach of Queen Creek, as being within Zone X, or above the 500-year flood level (0.2-annual-percent-chance of inundation).

3. CONCLUSION

Wetland and floodplain analysis of the Exchange Parcel performed by WestLand identified approximately 3.98 acres of wetlands and is located within an area where no analysis of flood hazards has been conducted. This determination fulfills a portion of the directive in Section 33.43c of the U.S. Forest Service *Land Acquisition Handbook* that land exchange parcels be inspected and evaluated for wetlands in accordance with E.O. 11990 and for floodplains in accordance with E.O. 11988 (USFS 2004). In order

to completely comply with this directive, it appears that a wetland and floodplain analysis of the non-federal exchange parcels would also need to be conducted to determine whether or not the exchange will satisfy the conditions of the Forest Service directive as well as the conditions of E.O. 11990 and E.O. 11998.

4. REFERENCES

Federal Emergency Management Agency (FEMA). 2011. FEMA Map Service Center. National Flood Insurance Program. Flood Insurance Rate Map. Panel 0290E. Map Number 04021C0290E. Effective December 4, 2007. Pinal County, Arizona.

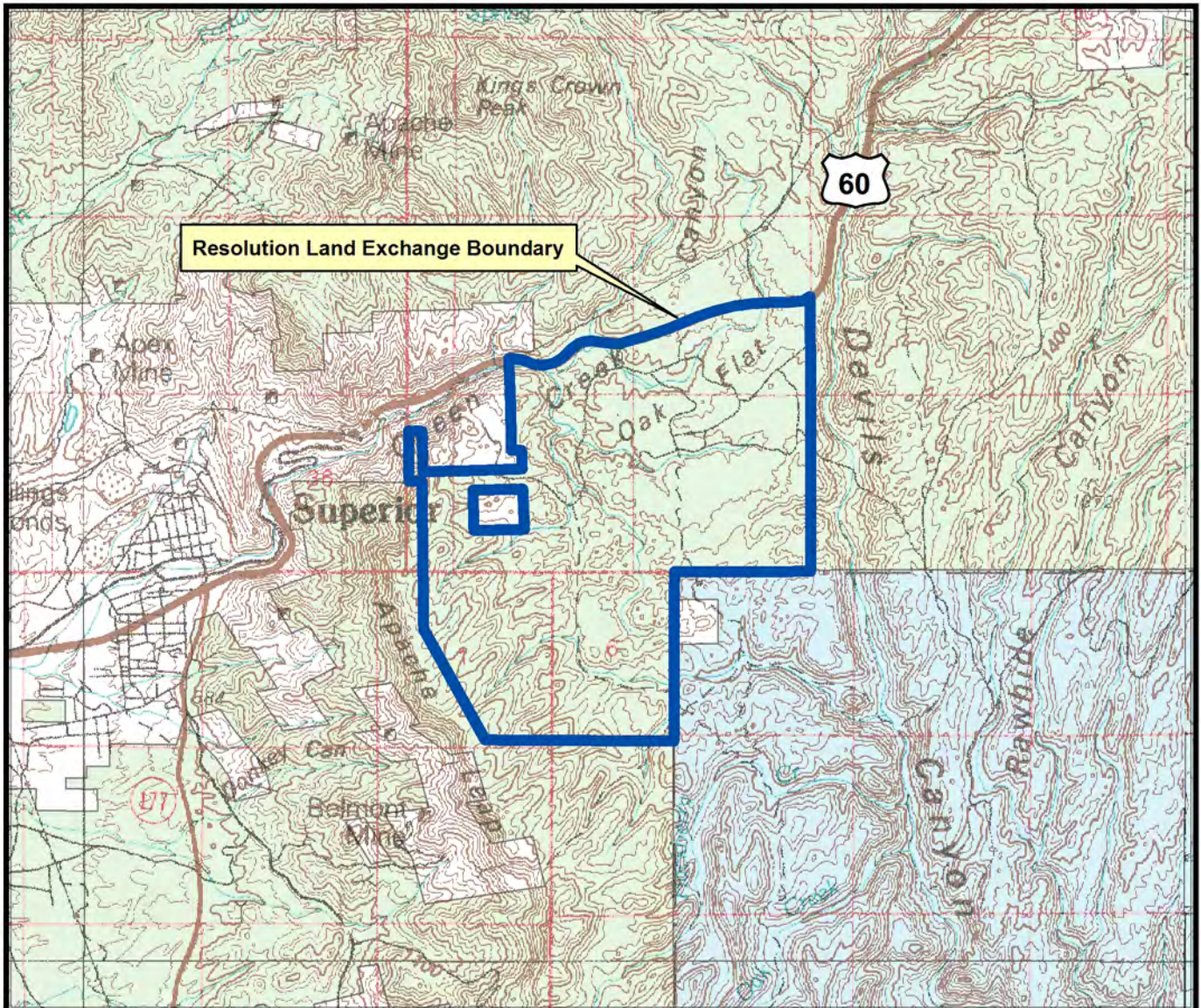
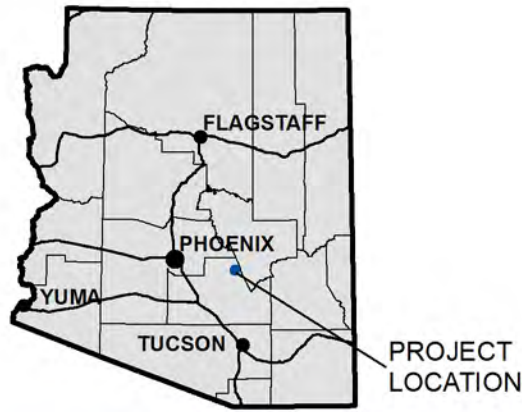
U.S. Fish and Wildlife Service (USFWS). 2012. National Wetland Inventory. Digital Data. Available on-line at: <http://www.fws.gov/wetlands/Data/Mapper.html>. Accessed November 12, 2012.

U.S. Forest Service (USFS). 2004. Forest Service Handbook 5409.13 – Land Acquisition Handbook. Chapter 30. Land Exchanges. Section 33.43c – Wetlands and Floodplains. p.46.

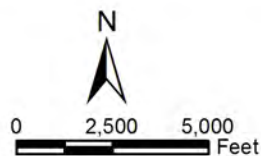
WestLand Resources, Inc. 2011. Jurisdictional Waters Determination for the Resolution West Plant and East Plant Analysis Areas, Pinal County, Arizona. July 28, 2011. WestLand Resources, Inc. Arizona.

FIGURES

ARIZONA



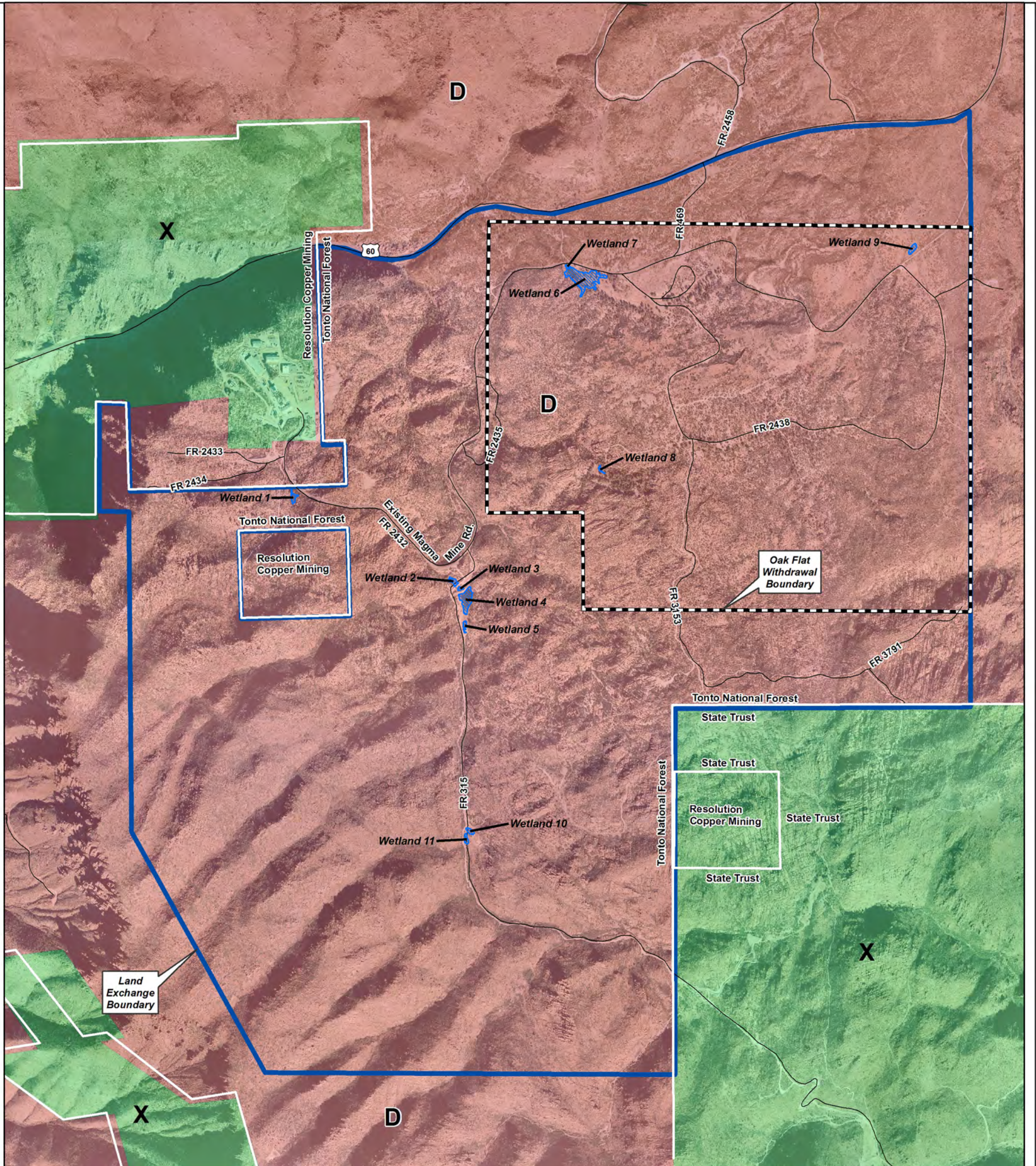
Pinal County, Arizona,
 Superior, Pinal Ranch, Teapot Mntn,
 & Hot Tomale Peak USGS 7.5' Quadrangles



**RESOLUTION COPPER MINING
 Federal Land Exchange Parcel**

VICINITY MAP

Figure 1



Legend

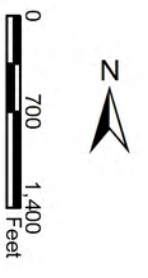
- Resolution Holdings
- Resolution Land Exchange Boundary
- Wetland Area & Number

FEMA MAP SERVICE AZ 6-6-2011

Flood Zone

- Minimal Flood Hazard Above 500 Year Flood Level
- D No Analysis
- X 500 Year Flood Level

Image Source: Cooper Aerial Surveys Co. 2010



Westland Resources, Inc.
Engineering and Environmental Consultants

RESOLUTION COPPER MINING
Federal Land Exchange Parcel
WETLAND AND FLOODPLAIN MAP

Figure 2