APPENDIX F-I.5

Las Vegas Wash

Huffman-Broadway Group, Inc.
Environmental Consultants

Investigation of the Presence of Wetlands and Other Waters of the United States DesertXpress Project HUC 8 Las Vegas Watershed Clark County, Nevada

July 2010

Prepared for

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1.0 INTRODUCTION

1.1 Project Purpose and Scope of Work

DesertXpress Enterprises, LLC (DXE) is proposing to construct and operate a dedicated two-tracked high speed passenger railway and associated operations and maintenance facilities between Victorville, California, and Las Vegas, Nevada (DesertXpress Project; Exhibit A, Figure 1). A Draft Environmental Impact Statement was issued for the project in March of 2009 and the Final EIS is nearing completion. A Supplemental Draft EIS has been prepared and will be issued shortly to address certain modifications to the proposed alignment and station locations made by the Applicant, DXE, in response to various comments made on the Draft. The U.S. Department of Transportation, Federal Railroad Administration (FRA) is the lead agency responsible for preparing the project Environmental Impact Statement (EIS).

In preparation for the permit phase of the project, DXE has retained Huffman-Broadway Group, Inc. (HBG) to investigate the presence of wetlands and other waters potentially subject to Corps and EPA regulation under Section 404 of the Clean Water Act (CWA) along the DesertXpress Project's preferred and alternative alignments and study areas for the stations and ancillary facilities.

For the purpose of the jurisdictional delineation study, the proposed DesertXpress Project has been divided into six areas using the USGS HUC 8 [1] level of watershed classification. The scope of this report is to evaluate the presence or absence of wetlands and waters potentially subject to Corps CWA jurisdiction within the proposed DesertXpress Project alignments and facilities located within HUC 8 Las Vegas Wash Watershed (Exhibit A, Figure 2).

This study was conducted in accordance with *Code of Federal Regulations* (CFR) definitions of jurisdictional waters, the Corps' 1987 *Wetlands Delineation Manual*, the Corps' 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, and supporting guidance documents. The remaining portions of Section 1.0 provide project contact information, describe the location of the Study Area and provide technical details regarding the general environmental conditions found within the Study Area, including relevant technical information from the Draft EIS regarding water resource data and biological and cultural resource information. Section 2.0 provides regulatory background information and details regarding the technical criteria and types of field indicators evaluated for during the study. Section 3.0 provides a detailed description of the methods used during this investigation. Section 4.0 provides a description of technical findings and Section 5.0

[1] HUC = U.S. Geological Survey (USGS) Hydrologic Unit Code. The Hydrologic Unit system is a standardized watershed classification system developed by USGS in the mid 1970s. Hydrologic units are watershed boundaries organized in a nested hierarchy by size. They range in size from national regions, to the smaller cataloging units (HUCs), which are roughly equivalent to local watershed.

describes the types of areas found that potentially may be subject to Corps CWA jurisdiction. Section 6.0 is a Clean Water Act jurisdictional analysis using the Rapanos Guidance.

HBG is seeking, on behalf of DXE, a Preliminary Jurisdictional Determination pursuant to applicable Corps guidance documents.

1.2 Contact Information

Project Owner Contact	*Applicant's Agent & Wetland Regulatory Scientist*
DesertXpress Enterprises, LLC 6750 Via Austi Parkway Suite 250 Las Vegas, NV 89119 ***Contact***: Tom Stone (702) 491-8940 tstone@transmaxgroup.com	**Huffman-Broadway Group, Inc** 828 Mission Avenue San Rafael, California 94901 ***Contact***: Terry Huffman, Ph.D. (415) 925-2000 thuffman@h-bgroup.com

1.3 Study Area

The Study Area for this investigation is defined as the area where potential ground disturbing components of the proposed project would occur based on the alternatives identified and analyzed in conjunction with the EIS and Supplemental EIS prepared for the DesertXpress Project. The Study Area encompasses the portion of the proposed DesertXpress Project alignment alternatives and facilities located within the HUC-8 Las Vegas Wash Watershed (15010015) from the town of Sloan, Nevada, to the Las Vegas terminal station, a distance of approximately 17.5 miles. The terminal will be designed to interface with extensions of the Las Vegas Monorail™, with shuttles serving the resorts and the central business district (Exhibit A, Figure 3).

1.4 Environmental Setting

The Study Area encompasses those portions of the proposed DesertXpress Project alignments and facilities referred to in the Draft EIS as Segments 6 and 7 (together with a minor portion of Segment 5 Alternative 3B in the Town of Sloan HUC-12 watershed). The final alignment and facilities in Las Vegas have not been determined, but at the present time, Segment 6 will include the Interstate I-15 corridor from Sloan north to a central Las Vegas location. Segment 7 routing will likely depend on the selected location of the terminal station.

HUC-12 watersheds in the Las Vegas Wash Watershed through which the proposed alignment alternatives and facilities passes are:

- Town of Sloan
- Town of Arden
- Duck Creek
- Tropicana Wash
- City of Las Vegas-Las Vegas Wash

Named drainages crossed by the project include Duck Creek, Tropicana Wash, and Flamingo Wash. These drainages flow east into Las Vegas Wash and ultimately to the Colorado River via Lake Mead.

1.4.1 Topography

The Study Area is within the Basin and Range Geomorphic Province. The region is characterized by mountain ranges and hills of moderate relief that are partially buried and separated by broad alluviated basins. The Basin and Range province includes a large part of the southwestern United States. Elongate mountain ranges are separated by broad, nearly flat valleys.

The proposed alignments and facilities in the Las Vegas Wash Watershed extend across alleviated areas in the Las Vegas Valley. From an elevation of approximately 2,700 feet msl in Sloan, Nevada, south of Las Vegas, the alignment alternatives descend to an approximate elevation of 2,000 feet msl in the Las Vegas Valley at the proposed terminal locations.

1.4.2 Land Use

Most of this section of the DesertXpress Project alignment and facilities fall within the I-15 transportation corridor. BLM manages lands south of Las Vegas; land in the city is in private ownership. Between the start of Segment 6 near Sloan Road and the Las Vegas passenger station, the Segment 6 alignment alternatives and facilities would traverse a spectrum of existing land uses. Near Sloan Road, the sparsely developed character of the Ivanpah Valley includes industrial uses near the freeway. North of St. Rose Parkway, the industrial uses give way to the outer fringes of metropolitan Las Vegas. Clusters of new single and multi family residential developments and several hotel/casinos are located near the freeway. Residences in this area are within 70 feet of the proposed alignment.

North of Blue Diamond Road (State Route 160), land uses change; industrial uses are located to the west of the freeway while east of the freeway is undeveloped. After crossing I-215, the land uses fully reflect the intensive urban development of Las Vegas. Hotel/casino and commercial land uses are located on either side of the freeway. McCarran International Airport is located approximately a half mile to the east.

1.4.3 Geology and Soils

A limestone formation (Mmc, Mm) mantled by younger alluvium underlies the southern end of the Las Vegas Wash Watershed area. The majority of the area is underlain by alluvial deposits, including younger Holocene wash sediments and alluvial fan deposits (Qa, Qal, Qs), older Holocene/Pleistocene alluvial fan deposits (Qai, Qoa) that are

moderately to well consolidated to cemented in places, and older Pliocene consolidated sediments (QTs) that are moderately to well consolidated to strongly cemented.

Younger Holocene alluvial wash and fan deposits (Qa) in this area may be cemented in places by petrocalcic carbonate. Older Pleistocene alluvium (Qoa) may contain a petrocalcic carbonate horizon approximately 6 feet thick near the surface. Older Plio-Pleistocene consolidated sediments in this area have moderately to well consolidated to strongly cemented layers of petrocalcic carbonate; surface exposures are capped in places by a resistant petrocalcic crust.

The following table provides a description of soils associated with each geologic unit described above.

Geologic Unit (Symbol[s])	**Geologic Age**	**Description - Soils**
Younger alluvial deposits (Qa, Qal, Qs)	Holocene	Active wash, alluvial fan and sheet wash deposits of gravel, sand, and minor silt; unconsolidated to locally calcic-cemented.
Intermediate alluvial deposits (Qai)	Holocene-Pleistocene	Deposits of sand and gravel on relict, inactive alluvial fans; slightly to moderately consolidated.
Older alluvial deposits (Qoa)	Pleistocene	Pebble and small cobble gravel with pebbly sand; moderately to well consolidated to locally cemented; caliche horizon approx. 6 feet thick occurs at or near surface.
Consolidated sediments (Qts)	Pliocene to Pleistocene	Fine sand interbedded with silt, pebbly sand, and gravel; moderately to well consolidated to strongly cemented. Common caliche layers and resistant caliche surface crust.
Marine sedimentary and meta-sedimentary rocks (Mmc, Mm)	Mesozoic to Paleozoic (Carboniferous)	Monte Cristo limestone (Mm).

Source: Ninyo & Moore, 2007.

The general geology of the Las Vegas Valley is described in a recent USGS publication[2]:

> Las Vegas Valley is located in southern Nevada and lies within both the Great Basin and Mojave Desert sections of the Basin and Range physiographic province. The arid, northwest-trending valley is bounded on the west by several mountain ranges and drains a 1,564-square-mile watershed southeastward through Las Vegas Wash into Lake Mead.
>
> Las Vegas Valley is a sediment-filled structural trough that has formed over many millions of years through compression, extension, and faulting of the original flat-lying marine sediments that form the bedrock. Some

2 Pavelko, M. T., D. B. Wood, and R. J. Laczniak (U.S. Geological Survey, Las Vegas, Nevada). Las Vegas, Nevada: Gambling with water in the desert. Online at: http://pubs.usgs.gov/circ/circ1182/pdf/08LasVegas.pdf

bedrock blocks were down-dropped between the faults along the eastern and western margins of the present-day valley. Sediment eroded by wind and water from the surrounding bedrock highlands began filling the trough with gravel, sand, silt, and clay.

During some of the wetter periods in the past 1 million years or so, extensive playa lakes and spring-fed marshes covered the lower parts of the valley floor, depositing variably thick sequences of fine-grained sediment (citation). Coarse-grained sand and gravel tend to rim the valley, forming alluvial fans and terraces, especially in the northern, western, and southern parts. The deposits generally thicken and become finer-textured toward the central and eastern part of the valley, where their total thickness exceeds 5,000 feet (citation).

1.4.4 Biological Resources

Segment 6 would extend from the Sloan area and descend into the south end of the Las Vegas Valley through creosote bush scrub habitat. Once in Las Vegas, the segment crosses through disturbed creosote bush scrub habitat, rural developments, and urban areas. Segment 7 would be located in an urban environment (Las Vegas) with little to no habitat for sensitive species. These habitats are summarized in the following table:

Vegetation Community Type	**Sensitive Community**	**Associated Species**	**Description**
Creosote Bush Shrubland	No	A group of alliances: creosote bush may be the only shrub, other alliances are characterized by shared dominance with white bursage and/or brittlebush; also desert holly, saltbush species, and many other shrubs may be present in low densities	Various substrates and settings, including: sandy substrates, alluvial fans, bajadas; may occur on disturbed sites; 0-1,700 meters
Barren (Disturbed, graded)	No	May have sparse growth of mostly non-native species, especially invasive annual grasses	Various substrates and settings
Rural development	No	N/A	Usually flat to gently sloping sites, valley floors
Urban	No	N/A	Usually flat to gently sloping sites, valley floors

In the table below, sensitive species listed by US Fish and Wildlife Service and the State of Nevada are identified:

Biological Resource	Status Federal/State	Description	Potential for Occurrence in Segments 6 and 7
Sensitive Plant Communities & Wetlands			
Sensitive plant communities		None present in segments	No
Special-Status Plant Species			
Las Vegas catseye	--/SS	No Nevada Natural Heritage Program occurrences in vicinity of project study area.	No
Special-Status Wildlife Species			
Desert tortoise	T/T	No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable habitat occurs in relatively undisturbed habitat outside of urban areas.	Yes
American peregrine falcon	--/P	No Nevada Natural Heritage Program occurrences in vicinity of project study area.	Yes

1.4.5 Climate

Climate in the Las Vegas Valley is described by Pavelco et al.[3]

> More than 24 inches of precipitation fall annually in the Spring Mountains bounding the [Las Vegas] valley to the west, but less than 4 inches of rain fall annually on the valley floor; measurable amounts (greater than 0.01 inch) seldom occur more than 30 days each year. Temperatures range from below freezing in the mountains to more than 120° F on the valley floor. There are typically more than 125 days of 90° F or warmer temperatures each year in Las Vegas Valley.

1.4.6 Hydrology

Water Resources

The DesertXpress Project proposed alignments cross named and unnamed ephemeral drainages that generally flow east into the Las Vegas Wash and ultimately into the Colorado River via Lake Mead, a reservoir of the river. Named drainages crossed by the alignments include Duck Creek, Tropicana Wash, and Flamingo Wash. The drainages are ephemeral west of the Las Vegas metropolitan area but become perennial (from urban "nuisance" flow) as they flow eastward and terminate at the Las Vegas Wash. Flamingo Wash has been channelized and routed underground through a series of culverts. There is no surface expression of the Wash within the project alignments.

3 Ibid.

Groundwater Resources

Segment 6 and Segment 7 are located in the Las Vegas Groundwater Basin (Nevada Basin Number 212) (DCNR, 2007). The Las Vegas Groundwater Basin is estimated to be 1,000,960 acres (DCNR, 2007).

Pavelka et al.[4]describe groundwater resources in the Las Vegas area:

> The accelerating demand for water to support the rapid growth of the municipal-industrial sector in this desert region is being met with imported Colorado River System supplies and local ground water. The depletion of once-plentiful groundwater supplies is contributing to land subsidence and ground failures. Since 1935, compaction of the aquifer system has caused nearly 6 feet of subsidence and led to the formation of numerous earth fissures and the reactivation of several surface faults, creating hazards and potentially harmful impacts to the environment. . . .
>
> Ground water is generally pumped from the upper 2,000 feet of unconsolidated sediments that constitute the aquifer system in the central part of the valley. The deeper aquifers, generally below 300 feet, are capable of transmitting significant quantities of ground water, and have been referred to variously as the "principal," "artesian," or "developed-zone" aquifers (citations). In places, these principal aquifers are more than 1,000 feet thick and consist mainly of sands and gravels beneath the terraces along the margins of the valley. In the central and eastern parts, clays and silts predominate (citation). Overlying the principal aquifers, in most places, is a 100-to-300 foot-thick section of extensive clay, sand, and gravel deposits known as the "near-surface reservoir." The principal aquifers and the near-surface reservoir are separated by a variably-thick, laterally discontinuous aquitard, or confining unit. . . .
>
> Much of the ground water found in the aquifer system originates as rain or snow falling on the Spring Mountains to the west or on the Sheep and Las Vegas Ranges to the northwest. Some of the precipitation infiltrates into the underlying bedrock through faults and fractures, eventually moving into the deposits comprising the principal aquifers. The remainder of the precipitation runs off onto the sloping alluvial terraces and rapidly enters the sand and gravel deposits, where it either recharges the underlying principal aquifers or is evaporated or transpired into the atmosphere.

4 Ibid.

FEMA Floodplains

The DEIS for the DesertXpress Project identifies several 100-year floodplains in the vicinity of the alignment in the I-15 transportation corridor:

- Floodplain along an unnamed wash between West Cactus Avenue and East Silverado Ranch Boulevard. This wash becomes the Duck Creek drainage.
- Tropicana Wash 100-year floodplain between I-15 and the UPRR tracks extends west of I-15 and south of East Tropicana Avenue, and along the railway tracks east of Wynn Road and north of West Oquendo Road. The flood plain is not mapped beyond Linwood Road south.
- Floodplain that extends south of West Flamingo Road, west of South Las Vegas Boulevard, north of West Tropicana Avenue, and east of I-15. The Clark County Regional Flood Control District has constructed and proposed new conveyances within this area that have also significantly reduced the area of the 100-year floodplain.*1.5 Disclaimer*

Huffman-Broadway Group, Inc. have conducted a thorough historic review and site investigation and made a good-faith effort herein to thoroughly describe and document the presence of potential factors that the Corps may consider in determining jurisdiction under their CWA jurisdiction as part of the Corps jurisdictional verification / determination process, however, DXE reserves the right to challenge or seek revision to any areas over which the Corps may assert jurisdiction.

2.0 REGULATORY FRAMEWORK

2.1 Definition of Wetlands and Other Waters of the U.S.

Section 404 of the Federal Clean Water Act authorizes the Corps to regulate activities that discharge dredged or fill material to wetlands and other waters of the United States. As described by EPA's and the Corps' regulations (40 CFR § 230.3(s) and 33 CFR § 328.3(a), respectively), the term "waters of the United States" encompasses the following resources:

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purpose by industries in interstate commerce

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (a) (1) through (4) of this section;

(6) The territorial seas;

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

EPA and the Corps define wetlands as:

> …those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. (EPA regulations at 40 CFR § 230.3(t); Corps regulations at 33 CFR § 328.3(b)).

2.2 Limits of Jurisdiction

The following provides the regulatory definitions and criteria followed in determining the geographic extent of potential EPA/Corps jurisdiction as applicable to inland waters.

The geographic limits of relevant federal jurisdiction for non-tidal waters of the U.S. are defined as follows at 33 CFR § 328.4(c):

> *Non-Tidal Waters of the United States*: The limits of jurisdiction in non-tidal waters:
>
> (1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark.
>
> (2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.
>
> (3) When the water of the United States consists only of wetlands the jurisdiction extends to the limit of the wetland.

The terms "adjacent" and "ordinary high water mark," used in the above definition, are defined at 33 CFR § 328.3 as follows:

> The term *adjacent* means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are "adjacent wetlands." (33 CFR § 328.3(c))
>
> The term *ordinary high water mark* means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (33 CFR § 328.3(e))

A site must meet certain water, soil, and vegetation criteria to qualify as a jurisdictional wetland. The Corps' 1987 *Wetlands Delineation Manual* and various regional supplements describe these criteria and the methods used to determine whether they are met and the geographic extent of wetland areas identified in the field.

2.3 Identification of Ordinary High Water Marks (OHWM)

The Corps definition of Ordinary High Water Mark (OHWM) provides the criterion by which the OHWM line can be identified which consists of "*that line on the shore established by fluctuations of water and indirect physical characteristics*" (33 CFR § 328.3(e)). The Corps has developed a delineation manual for the identification of OHWMs within the Arid West Region, entitled *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual* (Lichvar and McColley 2008). Tables 1a and 1b, below provide a summarized listing from the manual of indicators associated with areas that become flood or ponded, but are not dominated by wetland vegetation and the duration of

flooding, ponding and/or near surface soil saturation (≤12 inches) is not sufficient to cause hydric soils to form or wetland hydrology conditions to occur.

Table 1a. Potential Geomorphic Indicators of Ordinary High Water Marks for the Arid West *

Potential Geomorphic OHWM Indicators		
(A) Below OHW	**(B) At OHW**	**(C) Above OHW**
1. In-stream dunes 2. Crested ripples 3. Flaser bedding 4. Harrow marks 5. Gravel sheets to rippled sands 6. Meander bars 7. Sand tongues 8. Muddy point bars 9. Long gravel bars 10. Cobble bars behind obstructions 11. Scour holes downstream of obstructions 12. Obstacle marks 13. Stepped-bed morphology in gravel 14. Narrow berms and levees 15. Streaming lineations 16. Dessication / mud cracks 17. Armored mud balls 18. Knick Points	1. Valley flat 2. Active floodplain 3. Benches: low, mid, most prominent 4. Highest surface of channel bars 5. Top of point bars 6. Break in bank slope 7. Upper limit of sand-sized particles 8. Change in particle size distribution 9. Staining of rocks 10. Exposed root hairs below intact soil layer 11. Silt deposits 12. Litter (organic debris, small twigs and leaves) 13. Drift (organic debris, larger than twigs)	1. Desert pavement 2. Rock varnish 3. Clast weathering 4. Salt splitting 5. Carbonate etching 6. Depositional topography 7. Caliche rubble 8. Soil development 9. Surface color/tone 10. Drainage development 11. Surface relief 12. Surface rounding

* Adapted from *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual* (Lichvar and McColley 2008).

Table 1b. Potential Vegetation Indicators of Ordinary High Water Marks for the Arid West *			
Potential Vegetation OHWM Indicators			
	(D) Below OHW	**(E) At OHW**	**(F) Above OHW**
Hydroriparian indicators	1. Herbaceous marsh species 2. Pioneer tree seedlings 3. Sparse, low vegetation 4. Annual herbs, hydromesic ruderals 5. Perennial herbs, hydromesic clonals	1. Annual herbs, hydromesic ruderals 2. Perennial herbs, hydromesic clonals 3. Pioneer tree seedlings 4. Pioneer tree saplings	1. Annual herbs, xeric ruderals 2. Perennial herbs, non-clonal 3. Perennial herbs, clonal and non-clonal co-dominant 4. Mature pioneer trees, no young trees 5. Mature pioneer trees w/upland species 6. Late-successional species
Mesoriparian indicators	6. Pioneer tree seedlings 7. Sparse, low vegetation 8. Pioneer tree saplings 9. Xeroriparian species	5. Sparse, low vegetation Annual herbs, hydromesic 6. ruderals 7. Perennial herbs, hydromesic clonals 8. Pioneer tree seedlings 9. Pioneer tree saplings 10. Xeroriparian species 11. Annual herbs, xeric ruderals	7. Xeroriparian species 8. Annual herbs, xeric ruderals 9. Perennial herbs, non-clonal 10. Perennial herbs, clonal and non-clonal codominent 11. Mature pioneer trees, no young trees 12. Mature pioneer trees, xeric understory 13. Mature pioneer trees w/upland species 14. Late-successional species 15. Upland species
Xeroriparian indicators	10. Sparse, low vegetation 11. Xeroriparian species 12. Annual herbs, xeric ruderals	12. Sparse, low vegetation 13. Xeroriparian species 14. Annual herbs, xeric ruderals	16. Annual herbs, xeric ruderals 17. Mature pioneer trees w/upland species 18. Upland species

* Adapted from *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual* (Lichvar and McColley 2008).

2.4 Wetlands Delineation Criteria

The Corps' 1987 *Wetlands Delineation Manual* identifies the key diagnostic criteria for determining the presence of wetlands. These include:

1. Wetland Hydrology: Inundation or saturation to the surface during the growing season.
2. Hydric Soils: Soils classified as hydric or that possess characteristics associated with reducing soil conditions.
3. Predominance of Wetland Vegetation: Vegetation classified as facultative, facultative wet, or obligate according to its tolerance of saturated (i.e., anaerobic) soil conditions.

Specific criteria used to determine the presence or absence of wetland hydrology, soil, and vegetation conditions are described in the sections below.

2.4.1 Wetland Hydrology

The 1987 Corps *Manual* states that wetland hydrology conditions occur when a "site is inundated either permanently or periodically at mean water depths less than or equal to 6.6 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation." Whether a site meets either of these criteria is determined by the presence of diagnostic indicators of wetland hydrology, which include those listed in Table 2.

Table 2. Wetland Hydrology Indicators
(Based on 1987 Corps Manual and Corps Guidance Documents)

Primary Indicators	Secondary Indicators
Watermarks	Oxidized Rhizospheres Associated with Living Roots
Drift Lines	Water-Stained Leaves
Water-Borne Sediment Deposits	FAC-Neutral Test
Drainage Patterns Within Wetlands	Local Soil Survey Data

A March 8, 1992 Corps memorandum entitled *Clarification and Interpretation of the 1987 Manual* provides further clarification:

> Areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days for more than 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas wet between 5 percent and 12.5 percent of the growing season in most years may or may not be wetlands. Sites saturated to the surface for less than 5 percent of the growing season are non-wetlands.

Wetland hydrology indicators have also been further defined and described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (Corps 2008). These indicators are similar to the indicators listed above from the 1987 Corps *Manual* and are presented in Table 3.

Table 3. Wetland Hydrology Indicators for the Arid West (Based on Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0)		
	Primary Indicators (*any one indicator is sufficient to make a determination that wetland hydrology is present*)	**Secondary Indicators** (*two or more indicators are required to make a determination that wetland hydrology is present*)
Group A – Observation of Surface Water or Saturated Soils		
A1* – Surface Water	**X**	
A2 – High Water Table	**X**	
A3 – Saturation	**X**	
Group B – Evidence of Recent Inundation		
B1 – Water Marks	**X** (Nonriverine)	**X** (Riverine)
B2 – Sediment Deposits	**X** (Nonriverine)	**X** (Riverine)
B3 – Drift Deposits	**X** (Nonriverine)	**X** (Riverine)
B6 – Surface Soil Cracks	**X**	
B7 – Inundation Visible on Aerial Imagery	**X**	
B9 –Water-Stained Leaves	**X**	
B10 – Drainage		**X**
B11 – Salt Crust	**X**	
B12 – Biotic Crust	**X**	
B13 – Aquatic Invertebrates	**X**	
Group C – Evidence of Current or Recent Soil Saturation		
C1 – Hydrogen Sulfide Odor	**X**	
C2 – Dry-Season Water Table		**X**
C3 – Oxidized Rhizospheres along Living Roots	**X**	
C4 – Presence of Reduced Iron	**X**	
C6 – Recent Iron Reduction in Tilled Soils	**X**	
C7 – Thin Muck Surface	**X**	
C8 – Crayfish Burrows		**X**

Table 3. Wetland Hydrology Indicators for the Arid West (Based on Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0)		
	Primary Indicators (*any one indicator is sufficient to make a determination that wetland hydrology is present*)	**Secondary Indicators** (*two or more indicators are required to make a determination that wetland hydrology is present*)
C9 – Saturation Visible on Aerial Imagery		**X**
Group D – Evidence from Other Site Conditions or Data		
D3 – Shallow Aquitard		**X**
D5 – FAC-Neutral Test		**X**
***** Denotes number of wetland hydrology indicator described in detail in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).*		

2.4.2 Hydric Soils

The 1987 Corps *Manual* states that the diagnostic environmental characteristics indicative of wetland soil conditions are met when "soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions." According to the Manual, indicators of soils developed under reducing conditions may include:

1. Organic soils (Histosols);
2. Histic epipedons;
3. Sulfidic material;
4. Aquic or peraquic moisture regime;
5. Reducing soil conditions;
6. Soil colors (chroma of 2 or less);
7. Soil appearing on hydric soils list; and
8. Iron and manganese concretions.

A February 20, 1992, Corps memorandum entitled *Regional Interpretation of the 1987 Manual* states that the most recent version of National Technical Committee for Hydric Soils (NTCHS) hydric soil criteria will be used (to make hydric soil determinations). These soil criteria specify at least 15 consecutive days of saturation or 7 days of inundation (flooding or ponding) during the growing season in most years.

The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Soils that are sufficiently wet because of artificial measures are included in the concept of hydric soils. Also, soils in which the hydrology has been artificially modified are hydric if the soil, in an unaltered state, was hydric. Some series, designated as hydric, have phases that are not hydric depending on water table, flooding, and ponding characteristics. As indicated above, like the NRCS, the Corps has typically accepted guidance for the identification of hydric soils developed by the National Technical Committee for Hydric Soils (NTCHS). The

NTCHS, a working group organized by NRCS, has developed criteria for identifying and mapping hydric soils throughout the United States and defines a hydric soil as "a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part [of the soil profile]" (http://soils.usda.gov/use/hydric/intro.html). The most recent (2000) version of the NTCHS hydric soils criteria identifies those soils that are likely to meet this definition. These criteria, which are accepted by most state and federal agencies, are as follows (http://soils.usda.gov/use/hydric/criteria.html):

1. All Histels except Folistels and Histosols except Folists, or
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Andic, Vitrandic, and Pachic subgroups, or Cumulic subgroups that are:
    a. Somewhat poorly drained with a water table equal to 0.0 foot (ft) from the surface during the growing season, or
    b. poorly drained or very poorly drained and have either:
        (i.) water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in), or for other soils,
        (ii.) water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or
        (iii.) water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or
3. Soils that are frequently ponded for a long duration or a very long duration (7 to 30 days) during the growing season, or
4. Soils that are frequently flooded for a long duration or a very long duration (7 to 30 days) during the growing season.

On the basis of computer database searches for soils meeting the second criterion, NRCS has developed hydric soils lists for many parts of the country. Although they are useful for determining whether a particular soil series *has the potential to support current hydric soil conditions*, caution should be used when using these lists for site-specific hydric soil determinations. Many soils on the lists have ranges in water table depths and other characteristics that allow them to be either hydric or nonhydric depending on landscape position and other site-specific factors (e.g., soil clay content, depth to bedrock). Accordingly, hydric soils lists are good ancillary tools to facilitate wetland determinations, but are not a substitute for onsite investigations.

Field indicators of hydric soils are morphological properties known to be associated with soils that meet the definition of a hydric soil. Presence of one or more field indicators suggests that processes associated with hydric soil formation have taken place on the site being observed. The field indicators are essential for hydric soil identification because

once formed, they persist in the soil during both wet and dry seasonal periods. However, few hydric soil indicators identify soils at a site as being currently hydric in accordance with the NTCHS hydric soils criteria described above. Field indicators of hydric soil conditions are listed in Table 4:

Table 4. Field Indicators of Hydric Soil Conditions
(Based on 1987 Corps Manual and Corps Guidance Documents)

1. Indicators of Historical Hydric Soil Conditions:	**2. Indicators of Current Hydric Soil Conditions:**
a. Histosols b. Histic epipedons; c. Soil colors (e.g., gleyed or low-chroma colors, soils with bright mottles (Redoximorphic features) and/or depleted soil matrix d. High organic content in surface of sandy soils e. Organic streaking in sandy soils f. Iron and manganese concretions g. Soil listed on county hydric soils list	a. Aquic or peraquic moisture regime (inundation and/or soil saturation for ≥7 continuous days) b. Reducing soil conditions (inundation and/or soil saturation for ≥ 7 continuous days) c. Sulfidic material (rotten egg smell)

The presence of one or more of the field indicators in "1 a, b, c, and/or d" above suggests that historical processes associated with hydric soil development have taken place at a given site. These indicators are useful in determining if soils at a site were historically formed under hydric soil conditions because the indicators persist in soils during both wet and dry periods and may remain for decades and even centuries after changes in site conditions occur that inhibit subsequent wetland development, such as the elimination of wetland hydrology (NRCS 1995). However, only the presence of field indicators "2 a, b, and/or c" confirms that hydric soils occur at a site during the period of observation.

Hydric soil indicators have also been further defined and described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (Corps 2008). These indicators are similar to those listed above from the 1987 Corps *Manual* and are presented below in Table 5.

Table 5. Hydric Soil Indicators for the Arid West
(Based on Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0)

Hydric Soil Indicators			Hydric Soil Indicators for Problem Soils**
All Soils	**Sandy Soils**	**Loamy & Clayey Soils**	
A1* – Histosol	S1 – Sandy Mucky Mineral	F1 – Loamy Mucky Mineral	A9 – 1 cm Muck
A2 – Histic Epipedon	S4 – Sandy Gleyed Matrix	F2 – Loamy Gleyed Matrix	A10 – 2 cm Muck
A3 – Black Histic	S5 – Sandy Redox	F3 – Depleted Matrix	F18 – Reduced Vertic
A4 – Hydrogen Sulfide	S6 – Stripped Matrix	F6 – Redox Dark Surface	TF2 – Red Parent Material
A5 – Stratified Layers	--	F7 – Depleted Dark Surface	Other (See Section 5 of the Regional Supplement, Version 2.0)--
A9 – 1 cm Muck	--	F8 – Redox Depressions	--
A11 – Depleted Below Dark Surface	--	F9 – Vernal Pools	--
A12 – Thick Dark Surface	--	--	--

***** Denotes number of hydric soil indicator described in detail in *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).*
****** Indicators of hydrophytic vegetation and wetland hydrology must be present.

It should also be noted for problematic areas that the 2008 Corps Regional Supplement specifies 14 days continuous ponding as an acceptable indicator of problematic hydric soils (USACE 2008, p. 101).

2.4.3 Prevalence of Wetland Vegetation

Species Classifications

Species classifications (e.g., tolerance of anaerobic soil conditions) are determined by consulting the *National List of Plant Species that Occur in Wetlands* (Reed 1988) and the relevant regional lists, which are published by FWS' National Wetlands Inventory (NWI). Regional Interagency Review Panels develop the lists by determining species' estimated probability of occurrence in wetlands vs. non-wetlands. Classifications are made by unanimous agreement of the Panel. If the Panel is unable to reach a unanimous decision on the status of a species, "no agreement" (NA) is recorded. If insufficient information exists to determine the status of a species, "no indicator" (NI) is recorded. Species that are not included in the NWI list are assigned a "not listed" (NL) designation in this report.

The resulting NWI lists include plants that grow in a range of soil conditions from permanently wet to dry. Species are divided into the following "indicator categories":

1. **"Obligate wetland" (OBL)** species, which, under natural conditions, occur almost always in wetlands (estimated probability >99 percent);
2. **"Facultative wetland" (FACW)** species, which usually occur in wetlands (estimated probability 67 – 99 percent), but are occasionally found in non-wetlands;
3. **"Facultative" (FAC)** species, which are equally likely to occur in wetlands or non-wetlands (estimated probability 34 – 66 percent);
4. **"Facultative upland" (FACU)** species, which sometimes occur in wetlands (estimated probability 1 – 33 percent), but more often occur in non-wetlands; and
5. **"Obligate upland" (UPL)** species, which occur in wetlands in other regions, but, under natural conditions, occur almost always in non-wetlands in the region specified (estimated probability >99 percent).

Species that have an indicator status of OBL, FACW, and FAC are typically considered to be adapted for life in anaerobic soil conditions (Corps 1987) and are used as evidence of hydrophytic vegetation when they dominate plant community composition or cover. Despite widespread use of the lists for wetland delineations, it is important to note that wetland indicator species assignments are not based on the results of a statistical analysis of species occurrence. The indicator assignments are approximations of wetland affinity based on a synthesis of submitted review comments, published botanical literature, and the field experience of the members of the Interagency Review Panel. For this reason and because many plants have properties that enable them to occur in a range of microhabitats (i.e., wetlands and non-wetlands), the presence of wetland indicator species is not unequivocal evidence of the presence of wetland hydrology and hydric soils. A positive indicator or indicators of wetlands should be emphasized, such as an assemblage of plants that can only be considered "hydrophytes" when they are growing in water or partly drained hydric soils (not effectively drained hydric soils) (Corps 1987). From the FWS perspective, all species on the NWI plant lists are hydrophytes at one time or another and the wetland indicator status (OBL, FACW, FAC, or FACU) reflects the likelihood that a given individual of a species is a hydrophyte or a certain population of these plants is hydrophytic. While OBL and FACW species are the most reliable plant indicators of wetlands, FAC and FACU species also contain populations of hydrophytes (Tiner 2006).

For the reasons stated above, the 1987 Corps *Manual* does not solely rely on the presence of hydrophytic vegetation to make wetland determinations.

Hydrophytic Vegetation Definitions

The Corps' 1987 *Manual* states that the wetland vegetation conditions are met when the prevalent vegetation (i.e., more than 50 percent of vegetation cover or tree basal area) consists of macrophytes that are typically adapted to sites having wetland hydrologic and soil conditions (e.g., periodic or continuous inundation or soil saturation). Hydrophytic vegetation is defined as "plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content" (Cowardin *et al*.

1979). Hydrophytic vegetative species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Positive indicators of the presence of hydrophytic vegetation include:

1. More than 50 percent of the dominant species are rated as Obligate ("OBL"), Facultative Wet ("FACW"), or Facultative ("FAC") on lists of plant species that occur in wetlands (see Reed 1988 for California);
2. Visual observations of plant species growing in sites of prolonged inundation or soil saturation; and
3. Reports in the technical literature indicating the prevalent vegetation is commonly found in saturated soils.

Hydrophytic vegetation indicators have been further defined and described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (Corps 2008). These indicators include:

1. Dominance Test. More than 50 percent of the dominant plant species across all strata are rated OBL, FACW, or FAC.
2. Prevalence Index. The prevalence index is 3.0 or less with indicators of hydric soils and wetland hydrology being present.
3. Morphological Adaptations. The plant community passes either the dominance test or the prevalence index after reconsideration of the indicator status of certain plant species that exhibit morphological adaptations for life in wetlands.

3.0 DELINEATION METHOD

This study was conducted in accordance with Code of Federal Regulations (CFR) definitions of jurisdictional waters, the Corps' 1987 *Wetlands Delineation Manual*, the Corps' 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual,* and supporting guidance documents. The following provides an overview of the objective of the delineation approach, how the Study Area is defined, and the methods used to identify and map (delineate) areas potentially subject to Corps jurisdiction under Section 404 of the CWA.

3.1 Objective and Establishment of Study Area Boundary

The objective of this investigation is to identify and map areas potentially meeting the Clean Water Act definition of wetlands and Other Waters of the United States within the potential impact footprint of the DesertXpress Project. This impact footprint, which is encompassed within the Study Area, includes the proposed alignment and any alternative alignment and support facilities such as passenger stations and operations and maintenance facilities (e.g., maintenance yard, power substations, and transmission lines). Temporary construction areas for equipment and materials laydown, new access roads, and borrow areas are also included within the Study Area. The boundary of the Study Area also represents a slightly larger area (increased alignment and facility ROW width by an average of 200 feet) to accommodate potential minor changes in the impact footprint.

3.2 Study Area Reconnaissance

Prior to initiating detailed field survey work, existing land forms within the Study Area that may potentially contain wetlands or other waters of the United States were identified by conducting vehicle and pedestrian on-site reconnaissance inspections during the month of April 2010 in conjunction with review of the following information:

- Aerial photography and satellite imagery of the area;
- USGS topographic mapping;
- NRCS soils mapping;
- Engineer scale topographic mapping of segment alternatives
- USGS National Hydrology Dataset; and
- Preliminary level vegetation mapping and wetland / OHWM data collection efforts conducted during February and March 2008 and September and October 2009 as part of an on-going Federal EIS process by the FRA's EIS contractor.

The above efforts led to the development, in coordination with Corps regulatory staff, and use of the project-specific methods described below.

3.3 Wetlands Identification and Delineation

Field surveys designed to identify the presence or absence of field indicators of wetland

vegetation, soils and hydrology conditions were conducted within low-lying landscape features where wetlands could potentially occur. These field surveys were conducted during the months of April, May, and June 2010.

3.3.1 Dominance of Wetland Vegetation

Presence or absence of a dominance of wetland vegetation / hydrophytes within the Study Area was evaluated using the methodology described in Sections 2.2 and 2.4.3. Indicator status of plants was confirmed by referring to the *National List of Plant Species that Occur in Wetlands: 1988 National Summary* (Reed). Plant cover data were collected for individual species associated within and immediately adjacent to the landscape features identified during the site reconnaissance survey as having the potential to meet the Corps' technical criteria for wetlands. Plant cover was visually estimated within 3-foot diameter plots at each soil sample location and was recorded on a Corps Wetland Determination Data Form – Arid West Region. Copies of completed data forms are provided in Exhibit B2. Subsequently, field data were analyzed to assess whether 50 percent or greater of the dominant species within the area sampled are hydrophytes. Sites that are depressional landforms that do not have a dominance of wetland vegetation forming at least 5 percent cover were not considered to be dominated by hydrophytes and were classified as a potential "other water of the United States" following the methodology described in Section 3.4, below, except if conditions for problematic vegetation were met as described in the Corps' 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).*

3.3.2 Presence of Hydric Soil Indicators

The presence or absence of hydric soil field indicators was evaluated following the methodology described in Section 2.3.2 using the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Corps 2008). At each potential wetland sampling location within the Study Area, hand-dug soil pits were excavated to a minimum of 20 inches or until a limiting layer or standing water is reached. The presence or absence of hydric soil indicators found at each soil pit location was recorded on a Corps Wetland Determination Data Form – Arid West Region. Copies of completed data forms are provided in Exhibit B2. For sampling locations where the possibility of problematic hydric soils is found, procedures for the identification of problematic hydric soils as defined by the above described publication were followed.

3.3.3 Presence of Wetland Hydrology Indicators

The presence or absence of wetland hydrology field indicators were assessed following the methodology described in Section 2.3.1 using the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (Corps 2008). The presence or absence of wetland hydrology indicators at each soil pit location was recorded on a Corps Wetland Determination Data Form – Arid West Region. Copies of completed data forms are provided in Exhibit B2. For sampling locations where the possibility of problematic hydrology indicators was found, procedures for the identification of problematic hydrology indicators, as defined by the above-described publication, were followed.

3.4 Identification and Delineation of Other Waters

Field surveys designed to identify the presence or absence of field indicators of an ordinary high water mark (OHWM) were conducted within low-lying landscape features where other waters of the United States could potentially occur. These field surveys were conducted during the months of April, May, and June 2010 after the detailed methodology was reviewed and approved by Corps staff during May 2010.

HBG identified drainages within each watershed that potentially met the Corps technical criteria for Other Waters of the United States (presence of field indicators of active surface water flow and associated Ordinary High Water Mark [OHWM]) using the following approach based on *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual*.

Initial efforts involved identification of all drainages within the Study Area having the potential for active surface flow. This was accomplished through field reconnaissance and imagery interpretation. Detailed sampling was then conducted to identify and delineated active drainages with an OHWM. This was accomplished by randomly sampling the identified drainages in a stratified manner by geographically dividing the Study Area into HUC 12 watershed units.

Field sampling within each HUC 12 watershed consisted of gathering OHWM data, including the measured width of the OHWM, for 3 to 5 main drainages (> 3 feet), if present, selected at random; and 6 to 10 (depending on watershed size) random samples of minor drainages (≤ 3 feet), if present. Each of the HCC 12 watersheds located within the Study Area was divided into approximate thirds. Then a minimum of one major drainage and two minor drainages, if present, was sampled within each third of a watershed. Where the length of the watershed along the project alignment alternatives was less than 5 miles, the watershed was divided into approximate halves instead. If the minor drainages (≤ 3 feet) occurring within each one-third watershed varied in OHWM width by more than 33 percent, sampling was increased in that third of the watershed.

Drainage data for each of the watershed drainages sampled were collected on a standardized field data sheet (Exhibit B2). Exhibit A, Figures 5-12 provide examples of the types of field indicators observed within various drainages along the DesertXpress Project alternative alignments. Each field sampling point was memorialized using a handheld GPS unit with submeter accuracy. Where stormwater flows originated upslope of the side of I-15 opposite the alignment, those drainages were hydrologically cut off by the freeway during construction and channeled into detention basins and / or manmade drainages on that side of I-15. As a consequence, drainages on the proposed alignment side of I-15 were hydrologically cut off from their sources and no longer technically meet the Corps OHWM criterion. This condition was noted on the field data sheets. Detailed OHWM indicator data for these historical drainage features were not collected.

All drainage data (field and photointerpreted drainage data) are summarized by HUC 12 watershed on the required Los Angeles District Excel JD Summary Data Sheet (see Exhibit B1). Widths for active drainages identified through photointerpretation are based on an average width calculated from field data. The length of each drainage is based on photointerpretation. Standardized field data sheets are provided in Exhibit B2. Representative photographs of various drainage features are presented in Exhibit A on Figures 13 – 23. The field data collected from each watershed were used to aid in the imagery interpretation process described in Section 3.5, below.

3.5 Mapping

Wetland indicator data sample locations and the locations of areas identified during field surveys that are potentially Other Waters of the United States due to the presence of an OHWM were mapped using a hand-held Trimble XT global positioning system (GPS) unit with sub-meter accuracy. This GPS data was incorporated into a Geographic Information System (GIS) and geo-referenced in overlay fashion onto digital orthorectified satellite imagery and/or high resolution aerial photograph depending on availability. Overlays were used to assist in analysis, identification, and digitization of the location and geographic extent of areas that could potentially qualify as waters of the United States. The imagery interpretation process involved the combined use of available imagery, field data, engineer level topographic mapping, field verification of mapped features and best professional judgment to map the geographic extent of areas potentially subject to Corps CWA jurisdiction. Exhibit C comprises detailed 1”=200’ scale mapping of the Study Area with field sampling points and delineated active linear drainage features. Labeling indicating their average OHWM width was overlain on orthorectified digital imagery. The maps are provided in digital PDF format due to the extensive numbers of maps required to show such detail.

4.0 TECHNICAL FINDINGS

The following sections describe the landscape features and field indicators found within the Study Area that provide a technical basis for (a) determining the presence or absence of a potential water of the United States; and (b) defining the geographic extent of any potential water of the United States identified. Two types of landscape features were found that potentially contain waters of the United States. These include:

1. Natural drainages
2. Manmade drainages

4.1 Field Indicators of Hydric Soils

Based on field observations within the Study Area soil indicators were not found that meet the wetland hydrology criteria defined by current Corps' regulatory guidance, including the *2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) except for a few locations within manmade ephemeral drainage channels that periodically receive irrigation runoff from adjacent landscaped areas. When periodic maintenance of broken irrigation sprinklers and piping occurs, the localized area no longer floods, ponds and/or saturates for long to very long periods of time. Onsite observations of surface conditions, including road and channel bank cuts and interpretation of aerial photography revealed three primary soil types, disturbed urban land, desert pavement, and more active wash sediments. Onsite examination revealed that soils or substrates within both natural drainages and manmade drainages consist of alluvial materials primarily made up of sorted sands and gravel, and are well drained, ranging from moderately well drained to excessively well drained.

4.2 Field Indicators of Wetland Hydrology Conditions

Based on field observations within the Study Area wetland hydrology indicators were not found that meet the wetlands hydrology criteria defined by current Corps' regulatory guidance, including the *2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0). Onsite observations revealed evidence of flooding within the low-lying natural and manmade drainages. These observations also showed that there was no evidence of ponding and soil saturation for long to very long periods of time. The lack of ponding and soil saturation conditions meeting the wetland hydrology criteria is a direct result of the moderately well drained to excessively well drained alluvial soils. This is also the case for portions of manmade drainages receiving irrigation runoff water (nuisance flow) from adjacent landscaped areas. When periodic maintenance of broken irrigation sprinklers and piping occurs, the localized area no longer floods, ponds, and/or saturates for long to very long periods of time.

Although wetland hydrology conditions were not found within the Study Area, the field indicators of active surface water flow or flooding found within natural and manmade drainages were sufficient enough to form Ordinary High Water Marks (OHWM). As indicated in Section 2.0, an OHWM provides a technical basis for (a) determining the

presence a potential water of the United States; and (b) defining the geographic extent of potential water of the United States.

The natural and manmade drainages within the Study Area found with an OHWM exhibited the following characteristics which are discussed in detail in the following subsections:

1. identifiable field indicators of surface flow
2. identifiable landscape features that supports surface flow
3. identifiable landscape features with a recognizable OHWM

Exhibit A, Figures 5-12 provides typical examples of field indicators of active surface water flow and OHWMs found within ephemeral drainages occurring within the DesertXpress Project Study Area. Exhibit A, Figures 13-23 provide photographs of various types of drainages observed within the HUC 8 Las Vegas Wash watershed.

4.2.1 Field Indicators of Surface Flow

Review of topographic mapping (USGS and Engineer scale) and imagery of the Study Area provided visual indication of the presence of curvilinear depressional land surface features where focused surface water flow could potentially be directed. Linear drainage features associated with road drainage and flood control were also found. Field investigations confirmed the presence of surface flow within a number of these channels or drainages while others lacked evidence / field indicators of active ephemeral surface water flow. No drainages were found to contain evidence of perennial or intermittent surface water flow, and no evidence of subsurface flow was found in the form of spring discharges, artesian flows or evidence of a high groundwater table. An exception to this was occasional points where nuisance flow discharges from landscaped areas adjacent to the Study Area were evident, but the runoff water in these areas appeared (on the basis of a lack of hydric soil indicators) to have flowed through the porous soils, neither ponding and/or causing saturated soil conditions to occur for long to very long durations. Channels further toward the Las Vegas Wash appeared to have perennial to intermittent flows.

Observation of active natural and manmade ephemeral drainages revealed evidence of surface water / hydrologic connectivity with other active drainages within and outside the Study Area. These ephemeral drainages are locally referred to as “desert dry washes.” The manmade drainages served to redirect surface flow from altered natural drainages. Indicators of drainages having active surface water flow paths included (1) water marks defined by linear deposits of fine-grained sediment, minerals and/or plant debris; (2) bank scour, erosion and/or shelving; (3) deposits of sorted alluvial materials; and (4) flow-deposited woody and soft tissue plant debris (Exhibit B2).

Flow-deposited woody and soft tissue plant debris were typically absent in drainages that did not have active surface flow. If woody debris was present, the pieces observed were relatively thick (i.e., greater that ¼ inch) weathered limb or root material or milled posts

or lumber. The wood pieces found were randomly placed and were not part of a collective flow line of deposited woody and/or soft tissue plant debris, which would be indicative of an active channel. The historical drainages were found to possess one or more of the same type of indicators found in active drainages, but the indicators found were considerably weathered. Surface flow indicators such as bank scour, erosion and shelving areas had rounded edges in contrast to those found in active drainages having angular edges. Water marks defined by linear deposits of fine grained sediment and minerals, and sorted alluvial materials such as gravels, cobbles and boulders were etched or varnished from weathering. The historical drainages were found to consist of the historical remains of channel drainages that were abandoned due to upslope changes in drainage due to either channel down-cutting or the channel becoming abandoned as the surface drainage became redirected or changed course due to deposition of alluvial material damming the channel flow path. The historical drainages were found to lack indicators of active flow.

Surface water flow patterns were also found within various portions of the landscape that were relatively flat. These surface flow areas were defined by flow-deposited fine-grained sediment or soft tissue plant debris. The visible surface flow pattern at these locations would continue for several feet then disappear either on a relatively flat soil surface or localized depression.

Based on the above technical findings and as documented in Exhibits B and C, drainages were found with indicators of active surface water flows within the Study Area.

4.2.2 Landscape Features that Support Surface Flow

Detailed field surveys identified land surface features that have the potential to convey surface flows. These features included a bed or channel and abutting banks. These physical features were found associated with both active flow areas and historical drainages. These drainage types can be summarized as follows:

1. Active drainage channel and abutting banks containing evidence of recent surface flows as indicated by the presence of unweathered sediment material (sand, gravel, cobbles, etc.) with unweathered surfaces, and the presence of flow deposited woody debris and/or soft tissue plant debris.
2. Active drainage channel and abutting banks containing evidence of historical surface flows as indicated by the presence of unweathered sediment material (sand, gravel, cobbles, etc.) with unweathered surfaces, but lacked the presence of flow deposited woody debris and/or soft tissue plant debris.
3. Historical drainage channels and abutting banks having no evidence of recent surface flow as indicated by weathered sedimentary gravel, cobbles, boulders, erosional or depositional deposits, and the lack of flow deposited woody debris and/ or soft tissue plant debris.

The frequency interval of flow events within drainages with observable plant debris (1 above) and unweathered sediment material is estimated to be within the 1 to 15 year

range. Strojan, et. al. (1987) found that surface litter decomposition rates for creosote bush and burro bush in the Mojave Desert were 42.5% and 58.4%, respectively over a 54 week period of study. Kemp, et. al. (2003) reported a similar one year decomposition rate for creosote bush and a 74% loss within a 41 month period. This lends support to qualitative observations made by one of the preparers of this report, Dr. Terry Huffman, who has observed over 20 + years of delineating wetlands within arid environments that soft plant tissue (i.e., pieces of plant leaves and thin bark) will decompose in arid drainage environments within a 2 to 3 year period. In addition, field observations over these years indicated that small woody stems (<1/4 inch) decompose over many more years, perhaps 10 + years. For older drainages where the surfaces of the sediment material (e.g., sand, gravel, cobbles, etc.) is no longer smoothed by the interaction of surface water flow and transport, but weathered, and lacks flow deposited woody and thin tissue plant debris, the frequency interval likely ranges to well over a decade in shallower channels to prehistoric times for deeply incised channels (i.e. > 6 feet in desert pavement areas).

The land surface of the Study Area is characterized by the presence of active and inactive alluvial fan systems. Ephemeral drainage channels are found on both types of these alluvial fan types. The majority of the ephemeral channels supporting active surface water flow were narrow, with an average width of less than 3 feet. Active alluvial fans were characterized by sandy soils, a uniform vegetation type, and evidence by surface flow patterns indicative of surface water sheetflow. Narrow channels within these areas were both weakly expressed and discontinuous. This discontinuity indicated that new channels could be formed with each major flood event resulting in the current channels being bypassed and blocked off. Channels >3 feet wide were also found. These channels were considerably deeper that the narrow channels found and were less common when considering the landscape as a whole in relationship to the Study Area. Evidence was found within both of these channel types where previously bypassed cutoff channels where becoming filled with sediment. The specific conditions varied within the Study Area.

Based on the above technical findings, drainages with active surface flow were found within the Study Area with physical features that allow for the conveyance of surface flows.

4.2.3 Landscape Features with a Recognizable OHWM

The desert dry washes with active flow were found to have identifiable features which represented the geographic reach of lateral surface water. These features included channels or beds with evidence of active flow and abutting banks which demarcated the lateral reach or extent of flow. Field indicators of the extent of active flow along the banks included water marks defined by linear deposits of fine grained sediment and/or minerals, bank scour, erosion, and/or shelving, and flow deposited woody and soft tissue plant debris (Exhibit B2).

Based on the above technical findings, the active drainages, described in the above

subsections, have recognizable landscape features from which the lateral extent of surface water flow can be geographically delineated. Field indicators of this surface water flow were used to identify the OHWM. Exhibit C shows the location of these active ephemeral drainages.

4.3 Field Indicators of Wetland Vegetation

Based on field observations within the Study Area, a dominance of wetland plant species was found within portions of manmade ephemeral drainages adjacent to or down-drainage of irrigated landscaped areas. These patches of wetland vegetation were typically found along the edge of the drainages in association with what appeared to be where periodic releases of runoff water from landscape irrigation was occurring. The wetland vegetation typically dominated < 5% of the total area of the ephemeral drainages. Wetland plant species found within these types of areas included Arrow Weed (*Pluchea sericea*; FACW), Bermuda Grass (*Cynodon dactylon*; FAC), Mule Fat (*Baccharis salicifolia*; FACW), Turpentine Broom (*Tamarix ramosissima*; NL), Narrow Leaf Cattail (*Typha angustifolia*; OBL) and California Fan Palm (*Washingtonia filifera*; NO).

Based on this result, the criteria defined by current Corps' regulatory guidance, including the *2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0), for wetland vegetation were met in these artificially irrigated portions of the manmade ephemeral drainages. However, the vegetation did not dominate entire drainages and, therefore the drainages were not determined to be dominated by wetland vegetation, but rather delineated as ephemeral drainages as described above through the measurement of an identifiable OHWM, if found to be present.

A dominance of wetland plant species or hydrophytes was not found within natural drainages or the majority of manmade drainages encountered within the Study Area where active ephemeral drainages were found. Based on this result, the criteria defined by current Corps' regulatory guidance, including the *2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) for wetland vegetation was not met for these areas.

5.0 AREAS POTENTIALLY SUBJECT TO JURISDICTION

This section presents the findings of this delineation with respect to the identification and geographic extent of areas found that could potentially be regulated by the Corps and the EPA as wetlands or other waters of the United States under Section 404 of the Clean Water Act.

5.1 Wetlands

No areas meeting the Corps technical criteria for wetlands were identified within the Study Area. These findings are based on the absence of hydric soil, wetland hydrology, and / or wetland vegetation indicators as required by the Corps' *1987 Manual, the Arid West Regional Supplement*, guidance documents, and regulations.

5.2 Other Waters of the U.S.

Ephemeral drainages or desert dry washes were found within the Study Area that meet the technical criteria to potentially be subject to CWA Section 404 jurisdiction as Other Waters of the United States (Exhibit C). This finding is based on the presence of an OHWM as required by Corps regulations. Length and width measurements of the ephemeral drainages found to contain an observable OHWM are provided by Exhibit B2.

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Exhibit A

Figures

Figure 1	DesertXpress Project Alignment Alternatives
Figure 2	Location of Alignment Alternatives Within HUC-8 Watershed
Figure 3	Location of Study Area
Figure 4	Location of Study Area Within HUC-8 / HUC-12 Watersheds
Figures 5-12	Typical Examples of Field Indicators of Active Surface Water Flow and Ordinary High Water Marks Found Within Ephemeral Drainages Occurring Within the DesertXpress Project Study Area.
Figures 13-23	Examples of Drainages Found Within HUC-8 Watershed

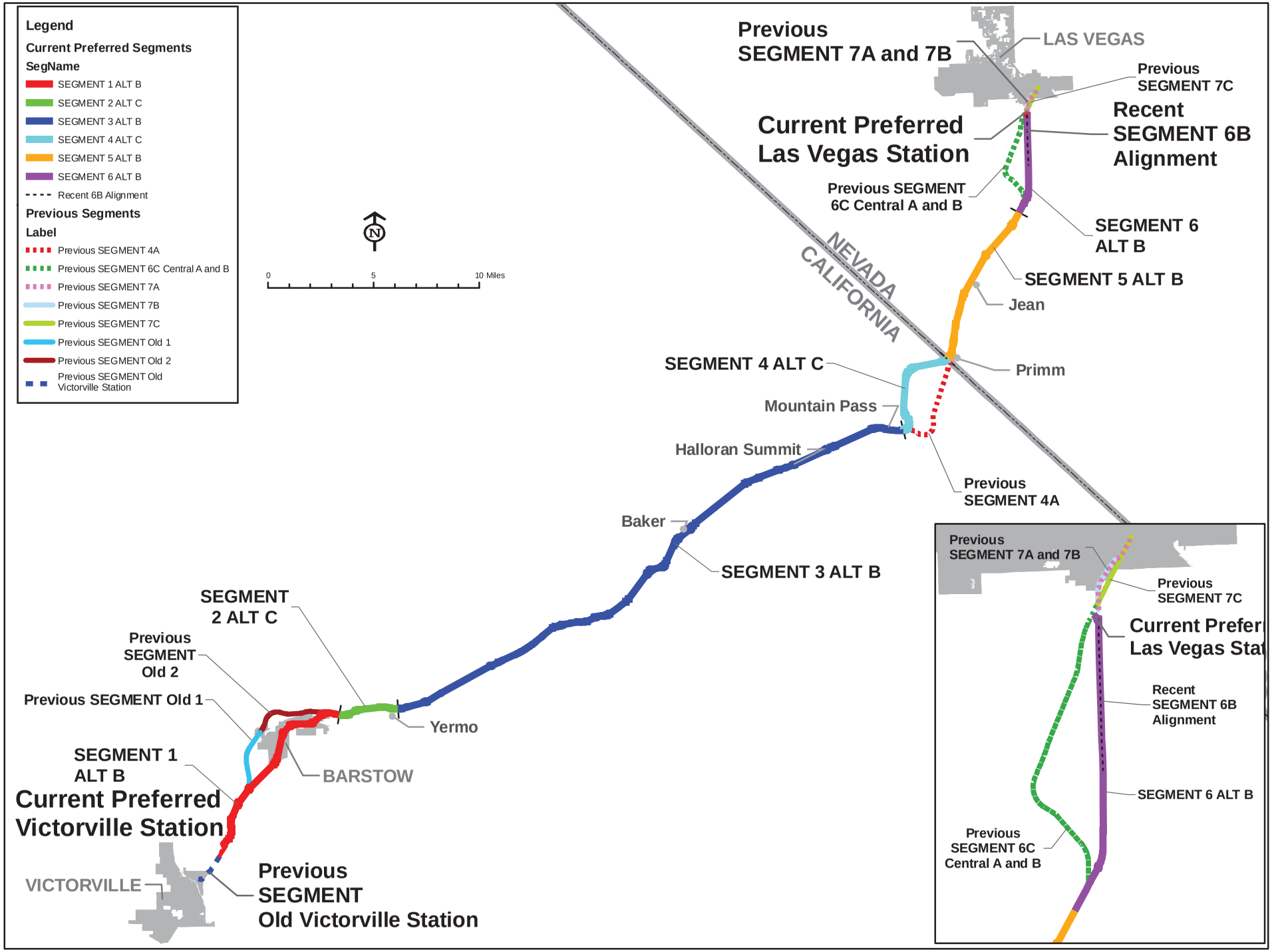

Figure 1. DesertXpress Project Alignment Alternatives F-I.5-38

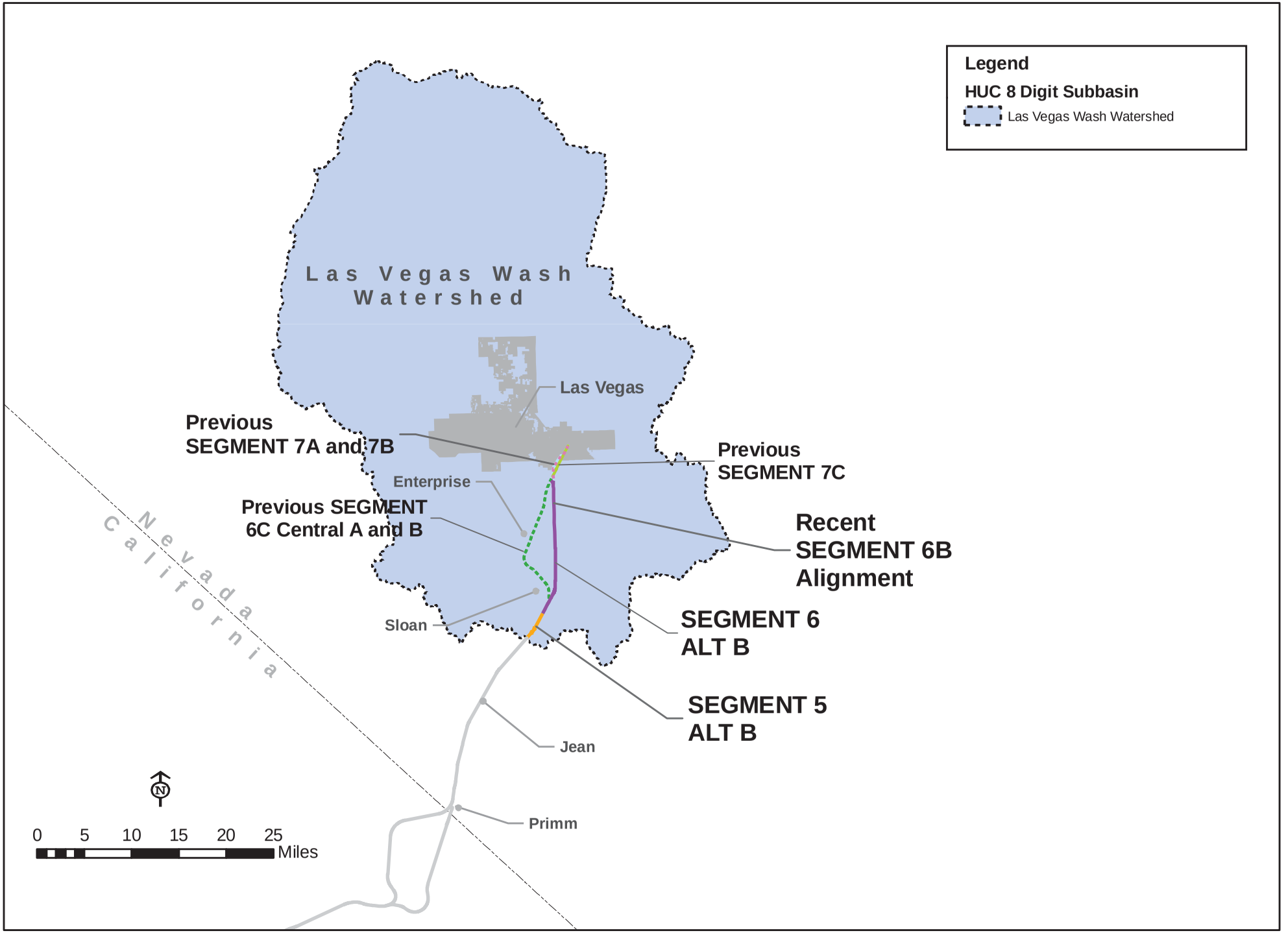

Figure 2. Location Of Alignment Alternatives Within HUC-8 Watershed

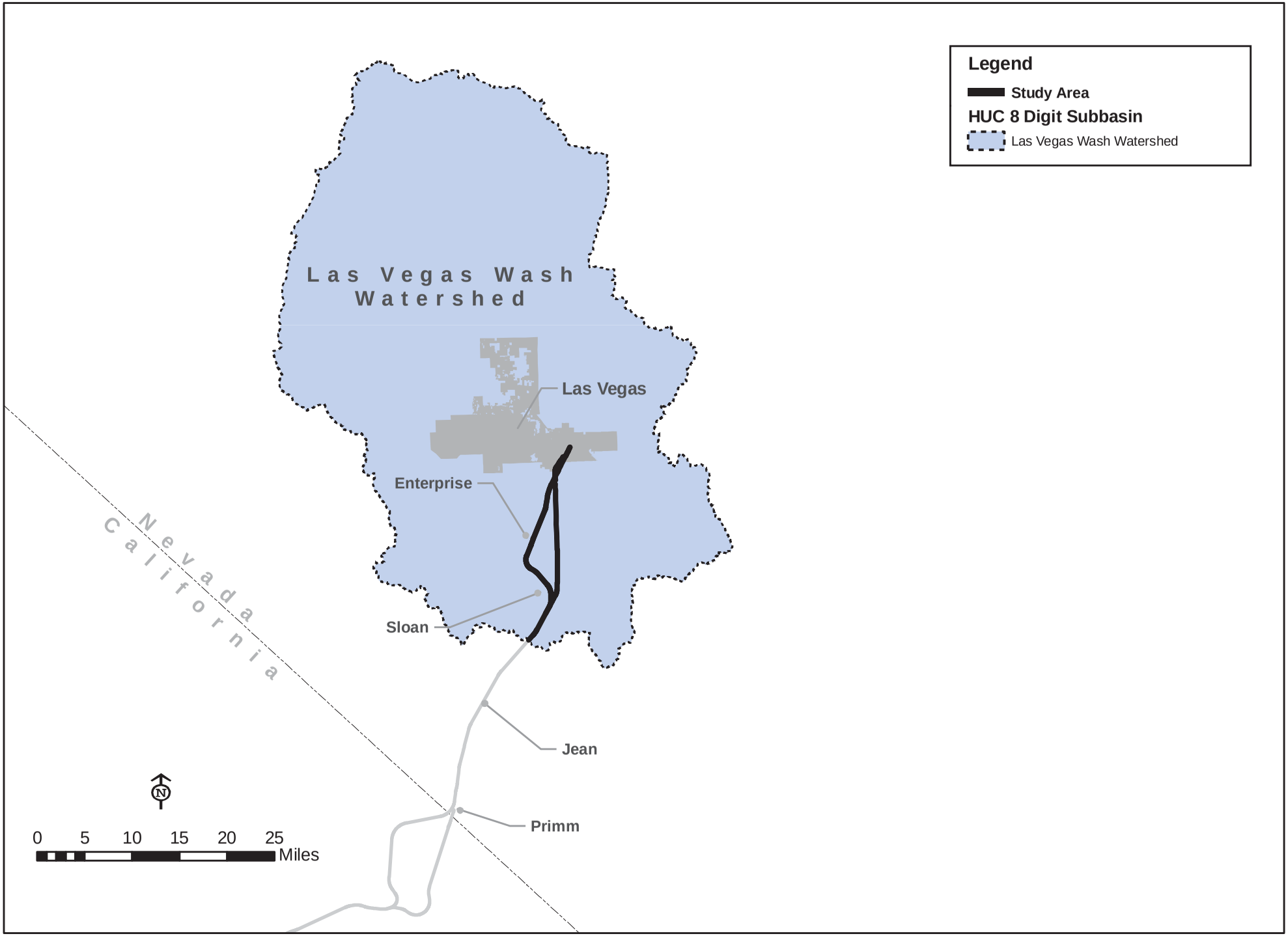

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Figure 3. Location of Study Area

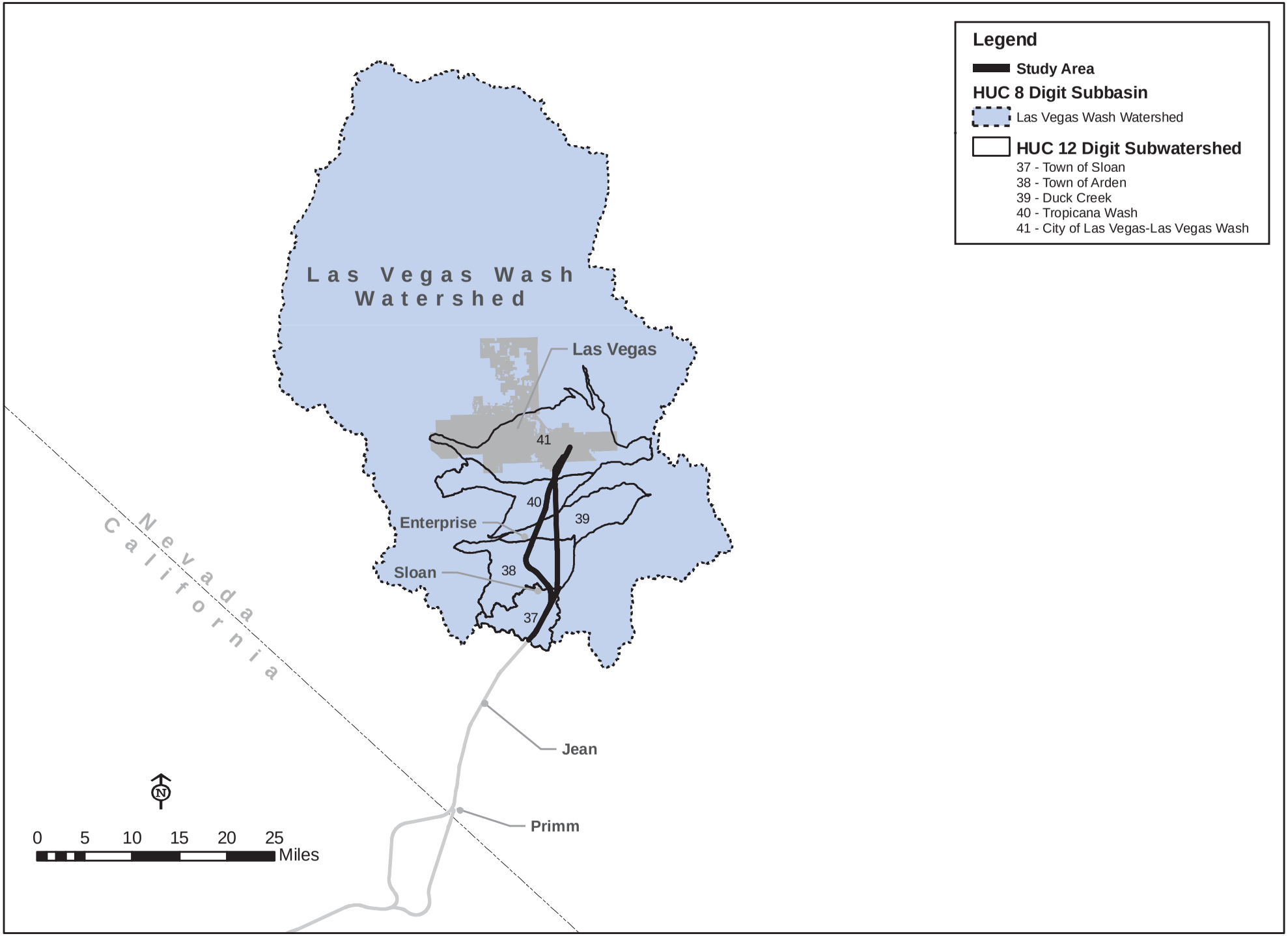

Figure 4. Location of Study Area Within HUC-8 / HUC-12 Watersheds

Exhibit A. Figure 5. Typical examples of field indicators of active surface water flow and Ordinary High Water Marks found within ephemerals drainages occurring within the DesertXpress Project Study Area.

Exhibit A. Figure 6. Typical examples of field indicators of active surface water flow and Ordinary High Water Marks found within ephemerals drainages occurring within the DesertXpress Project Study Area.

Exhibit A. Figure 7. Typical examples of field indicators of active surface water flow and Ordinary High Water Marks found within ephemerals drainages occurring within the DesertXpress Project Study Area.

Exhibit A. Figure 8. Typical examples of field indicators of active surface water flow and Ordinary High Water Marks found within ephemerals drainages occurring within the DesertXpress Project Study Area.

Exhibit A. Figure 9. Typical examples of field indicators of active surface water flow and Ordinary High Water Marks found within ephemerals drainages occurring within the DesertXpress Project Study Area.

Exhibit A. Figure 10. Typical examples of field indicators of active surface water flow and Ordinary High Water Marks found within ephemerals drainages occurring within the DesertXpress Project Study Area.

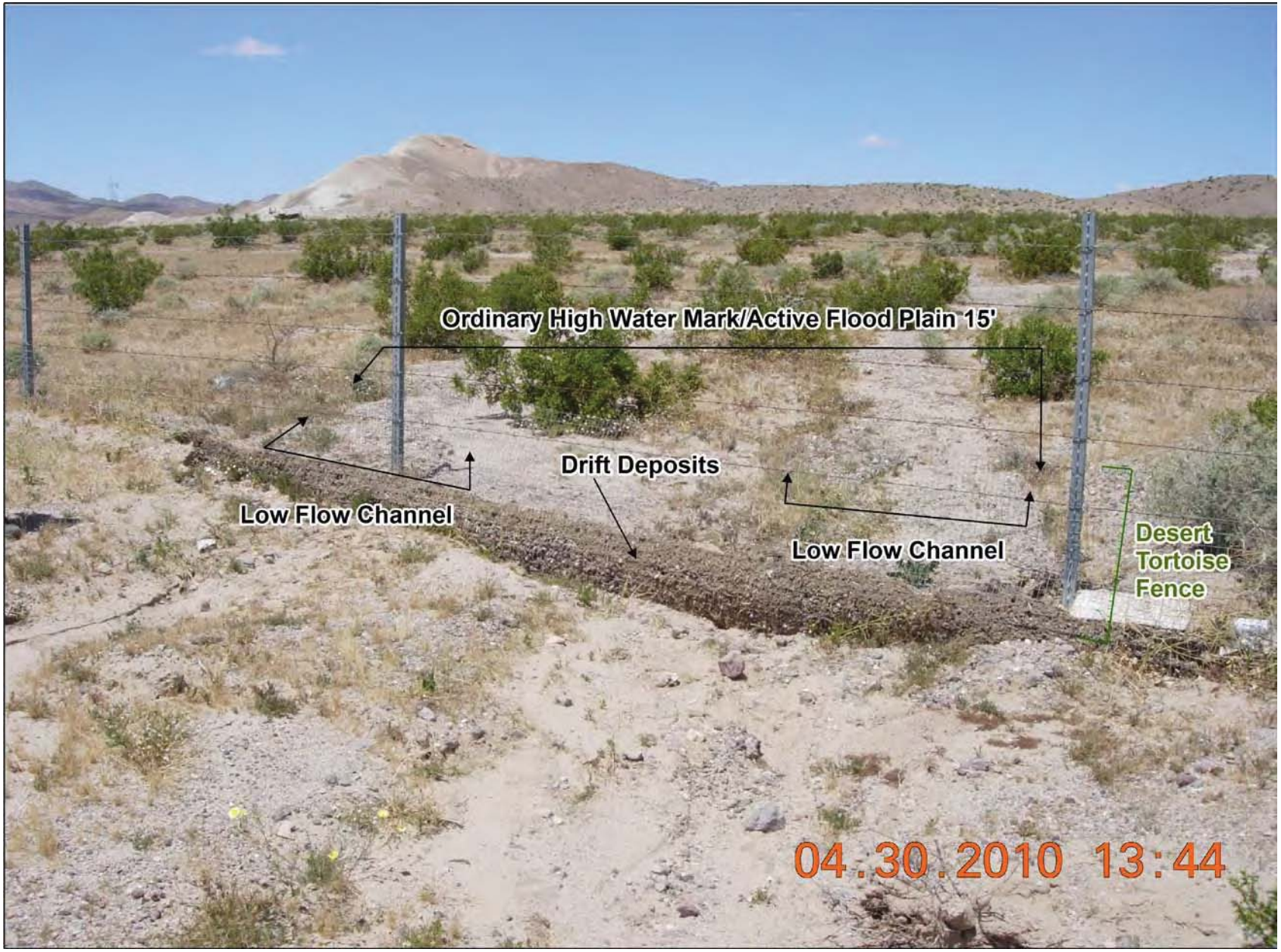

Exhibit A. Figure 11. Typical examples of field indicators of active surface water flow and Ordinary High Water Marks found within ephemerals drainages occurring within the DesertXpress Project Study Area.

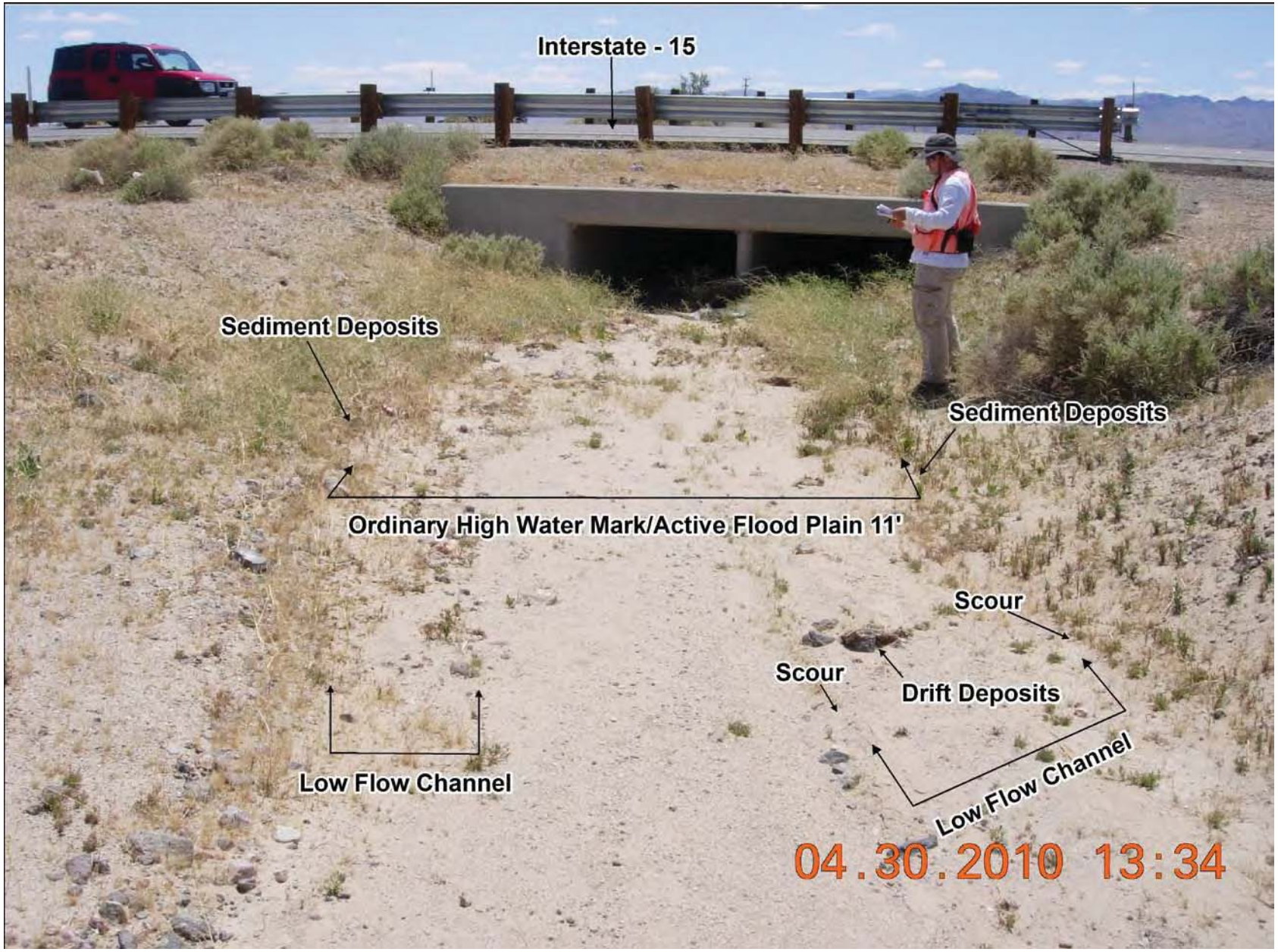

Exhibit A. Figure 12. Typical examples of field indicators of active surface water flow and Ordinary High Water Marks found within ephemerals drainages occurring within the DesertXpress Project Study Area.

Exhibit A. Figure 13. Manmade drainage connecting to ephemeral drainage within HUC 8 Las Vegas Wash Watershed / HUC 12 Town of Sloan Subwatershed

Exhibit A. Figure 14. Manmade drainage connecting to ephemeral drainage within HUC 8 Las Vegas Wash Watershed / HUC 12 Town of Sloan Subwatershed

Exhibit A. Figure 15. Ephemeral drainage within HUC 8 Las Vegas Wash Watershed / HUC 12 Town of Sloan Subwatershed

Exhibit A. Figure 16. Manmade drainage connecting to road culvert within HUC 8 Las Vegas Wash Watershed / HUC 12 Town of Sloan Subwatershed

Exhibit A. Figure 17. Manmade drainage connecting to road culvert within HUC 8 Las Vegas Wash Watershed / HUC 12 Town of Sloan Subwatershed

Exhibit A. Figure 18. Manmade drainage connecting to road culvert within HUC 8 Las Vegas Wash Watershed / HUC 12 Town of Sloan Subwatershed

Exhibit A. Figure 19. Manmade drainage connecting to road culvert within HUC 8 Las Vegas Wash Watershed / HUC 12, Town of Sloan Subwatershed

Exhibit A. Figure 20. Manmade drainage connecting to road culvert within HUC 8 Las Vegas Wash Watershed / HUC 12, Town of Sloan Subwatershed

Exhibit A. Figure 22. Manmade drainage connecting to ephemeral drainage within HUC 8 Las Vegas Watershed Wash / HUC 12 Town of Sloan Subwatershed

Exhibit A. Figure 23. Manmade drainage connecting to ephemeral drainage within HUC 8 Las Vegas Watershed Wash / HUC 12 Town of Sloan Subwatershed

Exhibit B

Field Data

Exhibit B1 Required Corps Waters Data Summary Table

Exhibit B2 Field Data*

(Exhibit B2 provided on attached CD in PDF format.)

Exhibit B1

Required Corps Waters Data Summary Table

Exhibit B1. Study Area Field Data for Areas Potentially Subject to Corps Jurisdiction, HUC-8 Las Vegas Wash Watershed, Preferred Route Drainages, DesertXpress Project

Waters_Name	Cowardin_Code	HGM_Code	Area (acres)	Linear (ft)	Waters Types	Latitude (dd nad83)	Longitude (dd nad83)	Local_Waterway	width (OHWM)	HBG Data Field Point
D-37-1	R6	RIVERINE	0.025903	352.6	NRPW	35.877964	-115.233649	Town of Sloan	3.20	37D1
D-37-2	R6	RIVERINE	0.018175	263.9	NRPW	35.878678	-115.233233	Town of Sloan	3.00	
D-37-3	R6	RIVERINE	0.011081	160.9	NRPW	35.878945	-115.232851	Town of Sloan	3.00	
D-37-4	R6	RIVERINE	0.015186	220.5	NRPW	35.879045	-115.232115	Town of Sloan	3.00	
D-37-5	R6	RIVERINE	0.038685	561.7	NRPW	35.879092	-115.232525	Town of Sloan	3.00	
D-37-7	R6	RIVERINE	0.221648	965.5	NRPW	35.885425	-115.225507	Town of Sloan	10.00	
D-37-8	R6	RIVERINE	0.012257	410.7	NRPW	35.889421	-115.223178	Town of Sloan	1.30	
D-37-18	R6	RIVERINE	0.085973	374.5	NRPW	35.892545	-115.220865	Town of Sloan	10.00	
D-37-25	R6	RIVERINE	0.018905	305.0	NRPW	35.898664	-115.216580	Town of Sloan	2.70	37D5
D-37-45	R6	RIVERINE	0.325895	1774.5	NRPW	35.934212	-115.191339	Town of Sloan	8.00	
D-37-46	R6	RIVERINE	0.004745	68.9	NRPW	35.932887	-115.192141	Town of Sloan	3.00	
D-37-47	R6	RIVERINE	0.154676	2245.9	NRPW	35.926199	-115.196701	Town of Sloan	3.00	
D-37-48	R6	RIVERINE	1.242528	3608.3	NRPW	35.903009	-115.212979	Town of Sloan	15.00	
D-37-55	R6	RIVERINE	0.004043	58.7	NRPW	35.886265	-115.225889	Town of Sloan	3.00	
D-37-56	R6	RIVERINE	0.011102	161.2	NRPW	35.880020	-115.230963	Town of Sloan	3.00	
D-37-59	R6	RIVERINE	0.041024	178.7	NRPW	35.883952	-115.226761	Town of Sloan	10.00	
D-37-60	R6	RIVERINE	0.005331	77.4	NRPW	35.885817	-115.224867	Town of Sloan	3.00	
D-37-65	R6	RIVERINE	0.059573	103.8	NRPW	35.950254	-115.182943	Town of Sloan	25.00	
D-37-66	R6	RIVERINE	0.332989	483.5	NRPW	35.949601	-115.183252	Town of Sloan	30.00	
D-37-67	R6	RIVERINE	0.029289	184.9	NRPW	35.947882	-115.183353	Town of Sloan	6.90	37MD2
D-37-68	R6	RIVERINE	0.675039	976.9	NRPW	35.946586	-115.183724	Town of Sloan	30.10	37M3
D-37-69	R6	RIVERINE	0.203159	1106.2	NRPW	35.944064	-115.184695	Town of Sloan	8.00	37MD9
D-37-71	R6	RIVERINE	0.075161	327.4	NRPW	35.940047	-115.187513	Town of Sloan	10.00	
D-37-72	R6	RIVERINE	0.014862	107.9	NRPW	35.939471	-115.188081	Town of Sloan	6.00	
D-37-73	R6	RIVERINE	0.252342	549.6	NRPW	35.939887	-115.187098	Town of Sloan	20.00	
D-37-74	R6	RIVERINE	0.004986	72.4	NRPW	35.949807	-115.183649	Town of Sloan	3.00	
D-37-75	R6	RIVERINE	0.010062	146.1	NRPW	35.940688	-115.186977	Town of Sloan	3.00	
D-37-76	R6	RIVERINE	0.168733	245.0	NRPW	35.943000	-115.185228	Town of Sloan	30.00	37M10
D-37-77	R6	RIVERINE	0.013113	190.4	NRPW	35.925353	-115.197513	Town of Sloan	3.00	
D-37-79	R6	RIVERINE	0.041667	605.0	NRPW	35.894414	-115.219772	Town of Sloan	3.00	37MD8
D-37-80	R6	RIVERINE	0.007441	216.1	NRPW	35.876315	-115.235396	Town of Sloan	1.50	
D-37-81	R6	RIVERINE	0.024787	399.9	NRPW	35.896261	-115.218203	Town of Sloan	2.70	37D7
D-37-82	R6	RIVERINE	0.087009	3790.1	NRPW	35.911727	-115.206926	Town of Sloan	1.00	37M4

Exhibit B1. Study Area Field Data for Areas Potentially Subject to Corps Jurisdiction, HUC-8 Las Vegas Wash Watershed, Preferred Route Drainages, DesertXpress Project

Waters_Name	Cowardin_Code	HGM_Code	Area (acres)	Linear (ft)	Waters Types	Latitude (dd nad83)	Longitude (dd nad83)	Local_Waterway	width (OHWM)	HBG Data Field Point
D-37-83	R6	RIVERINE	0.623623	905.5	NRPW	35.941570	-115.186058	Town of Sloan	30.00	
D-37-82B	R6	RIVERINE	0.017984	783.4	NRPW	35.908706	-115.209322	Town of Sloan	1.00	
D-37-90	R6	RIVERINE	0.547521	1590.0	NRPW	35.896901	-115.217301	Town of Sloan	15.00	
D-37-91	R6	RIVERINE	0.041481	602.3	NRPW	35.890582	-115.222167	Town of Sloan	3.00	
D-37-92	R6	RIVERINE	0.009743	424.4	NRPW	35.881835	-115.227860	Town of Sloan	1.00	
D-38-1	R6	RIVERINE	0.020964	304.4	NRPW	35.951746	-115.183015	Town of Arden	3.00	
D-38-2	R6	RIVERINE	0.019855	288.3	NRPW	35.952029	-115.183092	Town of Arden	3.00	
D-38-3	R6	RIVERINE	0.008182	118.8	NRPW	35.951979	-115.183307	Town of Arden	3.00	
D-38-5	R6	RIVERINE	0.009522	207.4	NRPW	35.966888	-115.182475	Town of Arden	2.00	
D-38-6	R6	RIVERINE	0.011063	481.9	NRPW	35.978791	-115.182238	Town of Arden	1.00	
D-38-7	R6	RIVERINE	0.003783	164.8	NRPW	35.979110	-115.182065	Town of Arden	1.00	
D-38-10	R6	RIVERINE	0.191804	278.5	NRPW	35.998438	-115.181372	Town of Arden	30.00	
D-38-11	R6	RIVERINE	0.009690	140.7	NRPW	35.999110	-115.181486	Town of Arden	3.00	
D-38-12	R6	RIVERINE	0.012080	175.4	NRPW	36.000227	-115.181417	Town of Arden	3.00	
D-38-13	R6	RIVERINE	0.006671	145.3	NRPW	36.000282	-115.181455	Town of Arden	2.00	
D-38-14	R6	RIVERINE	0.004674	101.8	NRPW	36.000622	-115.181553	Town of Arden	2.00	
D-38-15	R6	RIVERINE	0.029821	129.9	NRPW	36.000843	-115.181457	Town of Arden	10.00	
D-38-20	R6	RIVERINE	0.037176	269.9	NRPW	36.007242	-115.181181	Town of Arden	6.00	
D-38-21	R6	RIVERINE	0.012397	180.0	NRPW	36.018883	-115.181334	Town of Arden	3.00	
D-38-25	R6	RIVERINE	0.005028	219.0	NRPW	36.023180	-115.181370	Town of Arden	1.00	38D2
D-38-30	R6	RIVERINE	0.027583	240.3	NRPW	36.024871	-115.181394	Town of Arden	5.00	38D6
D-38-31	R6	RIVERINE	0.002750	119.8	NRPW	36.024737	-115.181575	Town of Arden	1.00	38D5
D-38-32	R6	RIVERINE	0.004534	197.5	NRPW	36.025673	-115.181478	Town of Arden	1.00	38D8
D-38-33	R6	RIVERINE	0.025269	366.9	NRPW	36.025581	-115.181160	Town of Arden	3.00	
D-38-34	R6	RIVERINE	0.040517	588.3	NRPW	36.024106	-115.181122	Town of Arden	3.00	
D-38-37	R6	RIVERINE	0.009380	136.2	NRPW	35.999810	-115.181469	Town of Arden	3.00	
D-38-40	R6	RIVERINE	0.005202	226.6	NRPW	35.980603	-115.182135	Town of Arden	1.00	
D-38-42	R6	RIVERINE	0.004380	95.4	NRPW	35.975147	-115.181841	Town of Arden	2.00	
D-38-44	R6	RIVERINE	0.003861	168.2	NRPW	35.966055	-115.182625	Town of Arden	1.00	
D-38-45	R6	RIVERINE	0.017190	249.6	NRPW	36.022831	-115.181082	Town of Arden	3.00	
D-38-47	R6	RIVERINE	0.007872	114.3	NRPW	36.018897	-115.181430	Town of Arden	3.00	
D-38-48	R6	RIVERINE	0.006067	88.1	NRPW	36.002028	-115.181044	Town of Arden	3.00	
D-38-49	R6	RIVERINE	0.018602	270.1	NRPW	36.001480	-115.183004	Town of Arden	3.00	

Exhibit B1. Study Area Field Data for Areas Potentially Subject to Corps Jurisdiction, HUC-8 Las Vegas Wash Watershed, Preferred Route Drainages, DesertXpress Project

Waters_Name	Cowardin_Code	HGM_Code	Area (acres)	Linear (ft)	Waters Types	Latitude (dd nad83)	Longitude (dd nad83)	Local_Waterway	width (OHWM)	HBG Data Field Point
D-38-50	R6	RIVERINE	0.017135	248.8	NRPW	36.001122	-115.183038	Town of Arden	3.00	
D-38-51	R6	RIVERINE	0.016811	244.1	NRPW	36.002222	-115.181244	Town of Arden	3.00	
D-38-52	R6	RIVERINE	0.002163	31.4	NRPW	36.002082	-115.181058	Town of Arden	3.00	
D-38-53	R6	RIVERINE	0.018602	270.1	NRPW	36.001654	-115.181071	Town of Arden	3.00	
D-38-54	R6	RIVERINE	0.005599	81.3	NRPW	36.002247	-115.181055	Town of Arden	3.00	
D-38-55	R6	RIVERINE	0.053168	772.0	NRPW	36.000214	-115.181224	Town of Arden	3.00	
D-38-56	R6	RIVERINE	0.010138	220.8	NRPW	35.972548	-115.181859	Town of Arden	2.00	
D-38-57	R6	RIVERINE	0.003843	55.8	NRPW	35.965841	-115.182657	Town of Arden	3.00	
D-38-59	R6	RIVERINE	0.001410	30.7	NRPW	35.968325	-115.182055	Town of Arden	2.00	
D-38-60	R6	RIVERINE	0.002998	130.6	NRPW	35.980891	-115.181663	Town of Arden	1.00	
D-38-70	R6	RIVERINE	0.004589	199.9	NRPW	36.022988	-115.181410	Town of Arden	1.00	
D-38-71	R6	RIVERINE	0.004320	188.2	NRPW	36.022565	-115.181412	Town of Arden	1.00	38D1
D-38-72	R6	RIVERINE	0.084532	1227.4	NRPW	36.017171	-115.181362	Town of Arden	3.00	
D-38-73	R6	RIVERINE	0.002594	113.0	NRPW	36.019313	-115.181441	Town of Arden	1.00	
D-38-74	R6	RIVERINE	0.090310	1311.3	NRPW	36.020681	-115.181045	Town of Arden	3.00	
D-38-75	R6	RIVERINE	0.004656	202.8	NRPW	36.022037	-115.181393	Town of Arden	1.00	
D-38-76	R6	RIVERINE	0.004293	187.0	NRPW	36.022144	-115.181402	Town of Arden	1.00	
D-38-77	R6	RIVERINE	0.004201	183.0	NRPW	36.022378	-115.181396	Town of Arden	1.00	
D-38-78	R6	RIVERINE	0.002324	202.5	NRPW	36.024190	-115.181470	Town of Arden	0.50	38D3
D-38-79	R6	RIVERINE	0.002312	201.4	NRPW	36.024248	-115.181445	Town of Arden	0.50	38D4
D-38-80	R6	RIVERINE	0.002374	206.8	NRPW	36.024346	-115.181473	Town of Arden	0.50	
D-38-81	R6	RIVERINE	0.005115	222.8	NRPW	36.025421	-115.181534	Town of Arden	1.00	38D7
D-38-82	R6	RIVERINE	0.037955	551.1	NRPW	36.001489	-115.184644	Town of Arden	3.00	
D-38-83	R6	RIVERINE	0.036804	534.4	NRPW	36.002205	-115.184596	Town of Arden	3.00	
D-38-84	R6	RIVERINE	0.037424	543.4	NRPW	36.002247	-115.182540	Town of Arden	3.00	
D-38-85	R6	RIVERINE	0.022803	331.1	NRPW	36.002376	-115.182187	Town of Arden	3.00	
D-39-3	R6	RIVERINE	0.057810	419.7	NRPW	36.037465	-115.181789	Duck Creek	6.00	39D21
D-39-4	R6	RIVERINE	0.008003	58.1	NRPW	36.039237	-115.181334	Duck Creek	6.00	
D-39-5	R6	RIVERINE	0.015455	224.4	NRPW	36.040349	-115.181254	Duck Creek	3.00	
D-39-6	R6	RIVERINE	0.003939	57.2	NRPW	36.040333	-115.181351	Duck Creek	3.00	
D-39-7	R6	RIVERINE	0.016494	239.5	NRPW	36.049787	-115.181532	Duck Creek	3.00	
D-39-8	R6	RIVERINE	0.032190	233.7	NRPW	36.056942	-115.181535	Duck Creek	6.00	
D-39-9	R6	RIVERINE	0.003444	50.0	NRPW	36.056970	-115.181270	Duck Creek	3.00	

Exhibit B1. Study Area Field Data for Areas Potentially Subject to Corps Jurisdiction, HUC-8 Las Vegas Wash Watershed, Preferred Route Drainages, DesertXpress Project

Waters_Name	Cowardin_Code	HGM_Code	Area (acres)	Linear (ft)	Waters Types	Latitude (dd nad83)	Longitude (dd nad83)	Local_Waterway	width (OHWM)	HBG Data Field Point
D-39-10	R6	RIVERINE	0.005227	75.9	NRPW	36.057223	-115.181218	Duck Creek	3.00	
D-39-11	R6	RIVERINE	0.015023	81.8	NRPW	36.058907	-115.181439	Duck Creek	8.00	
D-39-12	R6	RIVERINE	0.068685	997.3	NRPW	36.058749	-115.181291	Duck Creek	3.00	
D-39-13	R6	RIVERINE	0.047989	348.4	NRPW	36.062890	-115.181902	Duck Creek	6.00	
D-39-16	R6	RIVERINE	0.003492	50.7	NRPW	36.055298	-115.181233	Duck Creek	3.00	
D-39-17	R6	RIVERINE	0.091598	1330.0	NRPW	36.055087	-115.181138	Duck Creek	3.00	
D-39-21	R6	RIVERINE	0.004112	59.7	NRPW	36.041021	-115.181323	Duck Creek	3.00	
D-39-23	R6	RIVERINE	0.019780	287.2	NRPW	36.028090	-115.181236	Duck Creek	3.00	
D-39-24	R6	RIVERINE	0.043326	629.1	NRPW	36.026900	-115.181169	Duck Creek	3.00	
D-39-25	R6	RIVERINE	0.050165	364.2	NRPW	36.053456	-115.181531	Duck Creek	6.00	
D-39-26	R6	RIVERINE	0.045317	658.0	NRPW	36.039370	-115.181237	Duck Creek	3.00	
D-39-30	R6	RIVERINE	0.003147	45.7	NRPW	36.032788	-115.181206	Duck Creek	3.00	
D-39-32	R6	RIVERINE	0.003479	757.8	NRPW	36.052093	-115.185710	Duck Creek	0.20	
D-39-40	R6	RIVERINE	0.250413	3636.0	NRPW	36.033479	-115.181210	Duck Creek	3.00	
D-39-41	R6	RIVERINE	0.001853	26.9	NRPW	36.035427	-115.181271	Duck Creek	3.00	
D-39-42	R6	RIVERINE	0.005985	86.9	NRPW	36.031938	-115.181378	Duck Creek	3.00	
D-39-43	R6	RIVERINE	0.021670	629.3	NRPW	36.032898	-115.182348	Duck Creek	1.50	39D11
D-39-44	R6	RIVERINE	0.005305	231.1	NRPW	36.032949	-115.183060	Duck Creek	1.00	
D-39-45	R6	RIVERINE	0.009012	261.7	NRPW	36.033095	-115.182971	Duck Creek	1.50	39D13
D-39-46	R6	RIVERINE	0.014481	630.8	NRPW	36.033152	-115.182394	Duck Creek	1.00	39D14
D-39-47	R6	RIVERINE	0.015452	673.1	NRPW	36.033558	-115.182295	Duck Creek	1.00	39D15
D-39-48	R6	RIVERINE	0.014137	615.8	NRPW	36.034005	-115.182344	Duck Creek	1.00	39D16
D-39-49	R6	RIVERINE	0.015115	658.4	NRPW	36.036577	-115.182325	Duck Creek	1.00	39D17
D-39-50	R6	RIVERINE	0.041288	599.5	NRPW	36.037182	-115.182335	Duck Creek	3.00	39D19
D-40-1	R6	RIVERINE	0.013354	193.9	NRPW	36.085226	-115.181614	Tropicana Wash	3.00	
D-40-2	R6	RIVERINE	0.144752	2101.8	NRPW	36.095952	-115.181073	Tropicana Wash	3.00	
D-40-3	R6	RIVERINE	0.008347	121.2	NRPW	36.098824	-115.181289	Tropicana Wash	3.00	
D-40-4	R6	RIVERINE	0.001398	20.3	NRPW	36.109722	-115.181038	Tropicana Wash	3.00	
D-40-5	R6	RIVERINE	0.001405	20.4	NRPW	36.106993	-115.181046	Tropicana Wash	3.00	
D-40-6	R6	RIVERINE	0.006880	99.9	NRPW	36.089755	-115.181759	Tropicana Wash	3.00	
D-40-7	R6	RIVERINE	0.082287	298.7	NRPW	36.088305	-115.181659	Tropicana Wash	12.00	
D-40-8	R6	RIVERINE	0.002548	37.0	NRPW	36.088542	-115.181095	Tropicana Wash	3.00	
D-40-10	R6	RIVERINE	0.027410	99.5	NRPW	36.077738	-115.181751	Tropicana Wash	12.00	

Exhibit B1. Study Area Field Data for Areas Potentially Subject to Corps Jurisdiction, HUC-8 Las Vegas Wash Watershed, Preferred Route Drainages, DesertXpress Project

Waters_Name	Cowardin_Code	HGM_Code	Area (acres)	Linear (ft)	Waters Types	Latitude (dd nad83)	Longitude (dd nad83)	Local_Waterway	width (OHWM)	HBG Data Field Point
D-40-11	R6	RIVERINE	0.029236	424.5	NRPW	36.080817	-115.181226	Tropicana Wash	3.00	
D-40-12	R6	RIVERINE	0.007211	104.7	NRPW	36.080341	-115.181194	Tropicana Wash	3.00	
D-40-13	R6	RIVERINE	0.003988	57.9	NRPW	36.071828	-115.181142	Tropicana Wash	3.00	
D-40-14	R6	RIVERINE	0.010723	155.7	NRPW	36.065368	-115.181097	Tropicana Wash	3.00	
D-40-15	R6	RIVERINE	0.023113	83.9	NRPW	36.084409	-115.181454	Tropicana Wash	12.00	
D-40-16	R6	RIVERINE	0.007087	102.9	NRPW	36.103114	-115.181188	Tropicana Wash	3.00	
D-40-17	R6	RIVERINE	0.073616	1068.9	NRPW	36.088348	-115.183556	Tropicana Wash	3.00	
D-40-18	R6	RIVERINE	0.000792	11.5	NRPW	36.088658	-115.181895	Tropicana Wash	3.00	
D-40-19	R6	RIVERINE	0.075833	1101.1	NRPW	36.087448	-115.184482	Tropicana Wash	3.00	
D-40-20	R6	RIVERINE	0.001391	20.2	NRPW	36.089775	-115.181209	Tropicana Wash	3.00	
D-40-21	R6	RIVERINE	0.057039	828.2	NRPW	36.089096	-115.183141	Tropicana Wash	3.00	
D-40-22	R6	RIVERINE	0.013974	202.9	NRPW	36.089696	-115.181921	Tropicana Wash	3.00	
D-40-23	R6	RIVERINE	0.021371	310.3	NRPW	36.071306	-115.181152	Tropicana Wash	3.00	
D-40-24	R6	RIVERINE	0.029683	215.5	NRPW	36.064787	-115.181602	Tropicana Wash	6.00	
D-40-25	R6	RIVERINE	0.001233	17.9	NRPW	36.070768	-115.181154	Tropicana Wash	3.00	
		Totals:	**8.090163**	**62875.5**						

Exhibit B2

Field Data

(See attached CD in PDF format.)

LIST OF PLANT SPECIES ENCOUNTERED ALONG DRAINAGES WITHIN THE DESERT XPRESS PROJECT STUDY AREA

SCIENTIFIC NAME (AS LISTED IN JSA DATA SHEETS)	SCIENTIFIC NAME IF AVAILABLE IN NWI	SYNONYMY (SOURCE: CALFLORA 2010)	COMMON NAME	REGION 0 (NWI) CA	REGION 8 (NWI) NV	STRATUM (H, S, T)
Abronia villosa	NL	=*A. v.* var. *aurita* =*A. v.* var. *villosa* =*Bastardiopsis eggersii*	DESERT SAND VERBENA	NL	NL	Herb
Acacia gregii	*Acacia gregii*	NA	CATCLAW ACACIA	FACU	FACU	Shrub
Achnatherum speciosum	NL	=*Stipa speciosa*	DESERT STIPA	NL	NL	Shrub
Adenophyllum porophylloides	NL	= *Dyssodia porophylloides*	SAN FELIPE DOGWEED	NL	NL	Shrub
Allenrolfea occidentalis	*Allenrolfea occidentalis*	NA	IODINE BUSH	FACW+	FACW	Shrub
Ambrosia dumosa	NL	= *Fransera dumosa*	BURROWEED	NL	NL	Shrub
Ambrosia eriocentra	NL	= *Fransera eriosentra*	RAGWEED	NL	NL	Shrub
Amsinckia tesselata	NL	= *A. conica* = *A. cuneata* = *A. mojavenensis* = *A. purpusii* = *A. rostellata* = *A. setosissima*	FIDDLE-NECK	NL	NL	Herb

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Amsinskia intermedeon	NL	NA	FIDDLE-NECK	NL	NL	Herb
Aristida purpurea	NL	=*A. p.* var. *fendleriana* =*A. p.* var. *longiseta* =*A. p.* var. *neallegi* =*A. p.* var. *parishii* =*A. p.* var. *purpurea* =*A. p.* var. *wrightii*	PURPLE THREE AWN	NL	NL	Herb
Asclepias californica	NL	=*A. c.* ssp. *greenei* =*A. c.* ssp. *californica*	CALIFORNIA MILKWEED	NL	NL	Herb
Asclepias curassavica	*Asclepias curassavica*	NA	SCARLET MILKWEED	FAC	NL	Herb
Atriplex canescens	*Atriplex canescens*	NA	FOUR-WINGED SALTBUSH	FACU	UPL	Shrub
Atriplex hymenelytra	NL	NA	MANY-FRUITED SALTBUSH	NL	NL	Shrub
Atriplex polycarpa	*Atriplex*	NA	MANY-FRUIT SALTBUSH	FACU	FACU	Shrub

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	polycarpa					
Avena barbata	NL	*=A. hirsuta*	SLENDER WILD OAT	NL	NL	Herb
Baccharis brachyphylla	NL	NA	SHORT LEAVED BACCHARIS	NL	NL	Shrub
Baccharis salicifolia	*Baccharis glutinosa*	*=B. glutinosa* *=B. viminea* *=Molina salicifolia*	MULE FAT	FACW-	FACW	Shrub
Baccharis sarothroides	*Baccharis sarothroides*	NA	DESERT FALSE-WILLOW	FAC	NI	Shrub
Baileya spp.	NL	NA	DESERT MARIGOLD	NL	NL	Herb
Bouteloua barbata	NL	*=B. arenosa* *=Chrondrosum barbata* *=C. exile* *=C. microstachyum* *=C. polystachyum* *=C. subscorpiodes*	SIX WEEKS GRAMA	NL	NL	Herb
Brassica tournefortii	NL	NA	ASIAN MUSTARD	NL	NL	Herb

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Bromus madritensis	NL	*=Anisantha madritensis =A. matritensis =Bromus maritensis*	FOXTAIL CHESS	NL	NL	Herb
Bromus rubens	NL		RIPGUT BROME	NI	NI	Herb
Bromus tectorum	NL	*=Anisantha tectorum*	CHEAT GRASS	NL	NL	Herb
Camissonia boothii	NL	*=Oenothera decorticans*	BOOTH'S EVENING PRIMROSE	NL	NL	Herb
Camissonia brevipes	NL	*=Oenothera brevipes*	YELLOW CUPS	NL	NL	Herb
Cercidium floridum	NL	NA	BLUE PALO VERDE	NL	NL	Shrub
Cercidium microphyllum	NL	NA	FOOTHILLS PALO VERDE	NL	NL	Tree
Chaenactis fremontii	NL	NA	FREMONT PINCUSHION	NL	NL	Herb
Chamaesyce albomarginata	NL	*=Euphorbia albomarginata*	RATTLESNAKE WEED	NL	NL	Herb
Chaenactis	NL	*=C c.* var.	PEBBLE PINCUSHION	NL	NL	Herb

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carphoclinia		*carphoclinia* =*C. c.* var. *peirsonii*				
Chenopodium album	*Chenopodium album*	NA	WHITE GOOSEFOOT	FAC	FACU	Herb
Chilopsis linearis	*Chilopsis linearis*	NA	DESERT WILLOW	FACW*	FAC	Tree
Chorizanthe brevicorny	NL	=*C. b.* var. *brevicorny* =*C. b.* var. *spathulata*	BRITTLE SPINEFLOWER	NL	NL	Herb
Chorizanthe rigida	NL	=*Acanthogonum rigidum*	SPINEY-HERB	NL	NL	Herb
Chrysothamnus paniculatus	NL	=*Ericameria paniculatus*	MOJAVE RABBITBRUSH	NL	NL	Shrub
Coleogyne ramosisssima	NL	NA	BLACKBUSH	NL	NL	Shrub
Cryptantha pterocarya	NL	=*C. p.* var. *purposii* =*C. p.* var *cyclopetera* =*C. p.* var. *pterocarya*	WINGED NUT FORGET ME NOT	NL	NL	Herb
Cylindropuntia	NL	=*Opuntia acanthocarpa*	BUCKHORN CHOLLA	NL	NL	Shrub

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acanthocarpa						
*Cylindroopuntia arbuscula***	NL	*Unknown*	No info. available on this species. *C. arbuscula* may = typo	NL	NL	Shrub?
Cynodon dactylon	*Cynodon dactylon*	*=Capriola dactylon =C. aristiglumis =Panicum dactylon*	BERMUDA GRASS	FAC	FAC	Herb
Descurainia sophia	NL	*=Sisymbrium Sophia*	HERB SOPHIA	NL	NL	Herb
Encelia actoni	NL	*=E. virginensis ssp. actoni*	ACTON ENCELIA	NL	NL	Shrub
Encelia farinosa	NL	NA	BRITTLE BUSH	NL	NL	Shrub
Encelia frutescens	NL	*=Simsia frustescens*	BUTTON BRITTLE BUSH	NL	NL	Shrub
Encelia virginensis	NL	*= Frutescens* var. *virginensis*	NO COMMON NAME	NL	NL	Shrub
Ephedra nevadensis	NL	NA	NEVADA EPHEDRA	NL	NL	Shrub
Ephedra viridis	NL	NA	MORMON TEA	NL	NL	Shrub
Eriastrum densifolium	NL	NA	SHRUBBY ERIASTRUM	NL	NL	Shrub

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Ericameria cooperi	NL	=*Haplopappus cooperi*	COOPER'S GOLDENBUSH	NL	NL	Shrub
Ericameria laricifolia	NL	=*Haplopappus lacrifolia*	TURPENTINE BUSH	NL	NL	Shrub
Ericameria nauseosa	NL	=*E. n.* ssp. *consimilis* =*E. n.* var. *bernardina* =*E. n.* var. *ceruminosa* =*E. n.* var. *hololeuca* =*E. n.* var. *leiosperma* =*E. n.* var. *oreophila* =*E. n.* var. *speciosa* =*E. n.* var. *washoensis* =*Chrysothamnus nauseosus*	RUBBER RABBITBRUSH	NL	NL	Shrub
Ericameria paniculata	NL	=*Chrysothamnus paniculatus*	MOJAVE RABBITBRUSH	NL	NL	Shrub

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Ericameria pinifolia	NL	=*E. ericoides* ssp. *pinifolia* =*Haplopappus pinifolius*	PINE BUSH	NL	NL	Shrub
Eriogonum deflexum	NL	NA	FLAT TOPPED BUCKWHEAT	NL	NL	Herb
Eriogonum fasciculatum	NL	=*E. d.* var. *baratum* =*E. d.* var. *deflexum* =*E. d.* var. *nevadense* =*E. d.* var. *rectum*	CALIFORNIA BUCKWHEAT	NL	NL	Shrub
Eriogonum inflatum	NL	=*E. glaucum* =*E. inflatum* var. *inflatum*	DESERT TRUMPET	NL	NL	Shrub
Erioneuron pulchellum	NL	=*Triodia pulchella* =*Dasyochloa pulchella*	FLUFF GRASS	NL	NL	Herb

LIST OF PLANT SPECIES ENCOUNTERED ALONG DRAINAGES WITHIN THE DESERT XPRESS PROJECT STUDY AREA

SCIENTIFIC NAME (AS LISTED IN JSA DATA SHEETS)	SCIENTIFIC NAME IF AVAILABLE IN NWI	SYNONYMY (SOURCE: CALFLORA 2010)	COMMON NAME	REGION 0 (NWI) CA	REGION 8 (NWI) NV	STRATUM (H, S, T)
Eriophyllum ambiguum/E. wallacei [sic]	NL	=*E. ambiguum* var. *ambiguum* =*E. ambigium* var. *paleaceum* =*Antherapeas wallaceei* =*Eriophyllum wallacei* var. *rubellum* =*E. w.* var. *wallacei* =*E. w.* var. *calvescens* =*Eriophyllum aureum*	ANNUAL WOOLLY SUNFLOWER/WALLACE'S WOOLLY DAISY	NL	NL	Herb
Erodium cicutarium	NL	=*Erodium cicutarium* ssp. *cicutarium* =*E. cicutarium* ssp. *jacquinianum*	COASTAL HERON'S BILL	NL	NL	Herb
Eschscholzia minutiflora	NL	=*E. coville* =*E. minutiflora* ssp. *twisselmanii* =*E. minutiflora* var. *darwinensis*	PYGMY POPPY	NL	NL	Herb

LIST OF PLANT SPECIES ENCOUNTERED ALONG DRAINAGES WITHIN THE DESERT XPRESS PROJECT STUDY AREA

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		=*E. minuscula*				
Gilia latifolia	NL	NA	BROADLEAF GILLIA	NL	NL	Herb
Gutierrezia sarothrae	NL	NA	MATCHWEED	NL	NL	Shrub
Hordeum moines	NL	NA	BARLEY	NL	NL	Herb
Hordeum murinum	*Hordeum leporinum*	=*H. m.* ssp. *glaucum* =*H. m.* ssp. *leporinum* =*H. m.* ssp. *murinum*	MOUSE BARLEY	NI	NI	Herb
Hymenoclea salsola	NL	=*H. m.* var. *patula* =*H. m.* var. *pentalepsis* =*H. m.* var. *salsola*	CHEESE BUSH	NL	NL	Shrub
Krameria parviflora	NL	NA	RHATANY	NL	NL	Shrub
Larrea tridentata	NL	=*L. divaricata* ssp. *tridentate* =*L. divaricata* =*L. tridentata* var. *arenaria* =*L. tridentate* var.	CREOSOTE BUSH	NL	NL	Shrub

LIST OF PLANT SPECIES ENCOUNTERED ALONG DRAINAGES WITHIN THE DESERT XPRESS PROJECT STUDY AREA

SCIENTIFIC NAME (AS LISTED IN JSA DATA SHEETS)	SCIENTIFIC NAME IF AVAILABLE IN NWI	SYNONYMY (SOURCE: CALFLORA 2010)	COMMON NAME	REGION 0 (NWI) CA	REGION 8 (NWI) NV	STRATUM (H, S, T)
		tridentata				
Lepidium fremontii	NL	=*L. fremontii* var. *fremontii* =*L. f.* var. *stipitatum*	DESERT ALYSSUM	NL	NL	Herb
Lepidium latifolium	*Lepidium latifolium*	NA	BROAD LEAFED PEPPER-GRASS	FACW	FAC	Herb
Lepidium spp.	*Lepidium* spp.	NA	PEPPER-GRASS	FAC	NO to FACW+ depending on species	Shrub
Lepidium virginicum	*Lepidium virginicum*	NA	POOR-MAN'S PEPPER-GRASS	FACU	FACU	Herb
Lepidospartum squamatum	Possibly *Baccharis sarothroides*	=*Lepidospartum squamatum* var. *palmeri* =*Lepidospartum squamatum* var. *squamatum* =*Baccharis*	SCALE BROOM	NL Or FAC	NL	Shrub

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SCIENTIFIC NAME (AS LISTED IN JSA DATA SHEETS)	SCIENTIFIC NAME IF AVAILABLE IN NWI	SYNONYMY (SOURCE: CALFLORA 2010)	COMMON NAME	REGION 0 (NWI) CA	REGION 8 (NWI) NV	STRATUM (H, S, T)
		sarathroides var. *pluricephala* =*Lepidospartim squamatum* var. *obtectum*				
Leptochloa uninervia	*Leptochloa uninervia*	NA	MEXICAN SPRANGLETOP	FACW	FACW	Herb
Leymus triticoides	*Elymus triticoides*	=*Elymus triticoides* =*E. condensatus* var. *triticoides* =*E. orcuttianus* =*E. triticoides* var. *pubescens*	VALLEY WILD RYE	FAC+	FAC+	Herb
Lupinus concinnus	NL	=*L. c.* var. *pallidus* =*L. c.* var. *orcutti* =*L. c.* var *optatus* =*L. c.* var. *concinnus* =*L. c.* var. *agardhianus* =*L. c.* ssp. *orcuttii* =*L. c.* ssp. *optatus* =*L. pallidus* =*L. agardhianus*	ELEGANT LUPINE	NL	NL	Herb

LIST OF PLANT SPECIES ENCOUNTERED ALONG DRAINAGES WITHIN THE DESERT XPRESS PROJECT STUDY AREA

SCIENTIFIC NAME (AS LISTED IN JSA DATA SHEETS)	SCIENTIFIC NAME IF AVAILABLE IN NWI	SYNONYMY (SOURCE: CALFLORA 2010)	COMMON NAME	REGION 0 (NWI) CA	REGION 8 (NWI) NV	STRATUM (H, S, T)
Lycium andersonii	NL	=*L. a.* var. *andersonii* =*L. a.* var. *deserticola*	ANDERSON THORNBUSH	NL	NL	Shrub
Lycium cooperi	NL	NA	PEACH THORN	NL	NL	Shrub
Lycium parishii	NL	NONE	PARISH'S DESERT THORN	NL	NL	Shrub
Malacothrix coulteri	NL	= *Zollikoferia eluiensis* = *M.* var. *cognate*	SNAKE'S HEAD	NL	NL	Herb
Malacothrix glabrata	NL	= *M. californica* var. *glabrata*	DESERT DANDELION	NL	NL	Herb
Malva neglecta	NL	NA	COMMON MALLOW	NL	NL	Herb
Mentzelia spp.	NL	NA	STICK LEAF	NL	NL	Herb
Mimulus flemingii		=*M. parviflorus*	FLEMING MONKEYFLOWER	FACU-	NL	Herb
Mimulus fremontii	*Mimulus glabratus*	=*M. subsecundus eunanus fremontii* =*Mimulus glabratus* ssp. *fremontii*	FREMONT'S MONKEYFLOWER	OBL	OBL	Herb

LIST OF PLANT SPECIES ENCOUNTERED ALONG DRAINAGES WITHIN THE DESERT XPRESS PROJECT STUDY AREA

SCIENTIFIC NAME (AS LISTED IN JSA DATA SHEETS)	SCIENTIFIC NAME IF AVAILABLE IN NWI	SYNONYMY (SOURCE: CALFLORA 2010)	COMMON NAME	REGION 0 (NWI) CA	REGION 8 (NWI) NV	STRATUM (H, S, T)
Oenethera deltoides	NL	=*O. d.* ssp. *cognate* =*O. d.* ssp. *deltoides* =*O. d.* ssp. *howellii* =*O. d.* ssp. *piperi* =*O. d.* var. *cineracea*	BIRDCAGE EVENING PRIMROSE	NL	NL	Herb
Olea europea	NL	NA	OLIVE TREE	NL	NL	Tree
Opuntia basilaris	NL	NA	BEAVERTAIL CACTUS	NL	NL	Shrub
Parkinsonia aculeata	*Parkinsonia aculeata*	NA	JERUSALEM –THORN OR PALO VERDE	FACW*	NI	Tree
Pectocarya heterophylla [sic] * =*P. heterocarpa*	NL	=*P. penicillata* var. *heterocarpa*	CHUCKWALLA COMBSEED	NL	NL	Herb
Pectocarya platycarpa	NL	=*P. gracilis* =*P. linearis*	NUTTED BROAD COMB	NL	NL	Herb
Phacelia distans	NL	= *P. cinera* = *P. scabrella* = *P. distans* var.	COMMON PHACELIA	NL	NL	Herb

LIST OF PLANT SPECIES ENCOUNTERED ALONG DRAINAGES WITHIN THE DESERT XPRESS PROJECT STUDY AREA

SCIENTIFIC NAME (AS LISTED IN JSA DATA SHEETS)	SCIENTIFIC NAME IF AVAILABLE IN NWI	SYNONYMY (SOURCE: CALFLORA 2010)	COMMON NAME	REGION 0 (NWI) CA	REGION 8 (NWI) NV	STRATUM (H, S, T)
		austalis				
Phacelia fremontii	NL	*=P. hullii*	FREMONT'S PHACELIA	NL	NL	Herb
Plantago ovata	NL	NA	DESERT INDIAN WHEAT	NL	NL	Herb
Pluchea sericea	*Pluchea sericea*	NA	ARROW WEED	FACW	FACW	Shrub
Polypogon monspeliensis	*Polypogon monspeliensis*	NA	ANNUAL RABBIT-FOOT GRASS	FACW+	FACW+	Herb
Populus fremontii	*Populus fremontii*	---	FREMONT'S COTTONWOOD	FACW	FACW*	Tree
Prosopis glandulosa	*Prosopis juliflora*	*=P. glandulosa* var. *torreyana* *=P. juliflora* var. *torreyana* *= P. ordorata*	HONEY MESQUITE	FACU	NI	Shrub
Pucinella lemonni	*Pucinella lemonni*	NA	LEMON'S ALKALI GRASS	FAC	FACW*	Herb
Rafinesquia neomexicana	NL	NA	CALIFORNIA CHICORY	NL	NL	Herb
Rumexhymenose palus	NL	NA	WILD RUBARB	NL	NL	Herb
Salazaria	NL	NA	BLADDERSAGE	NL	NL	Shrub

LIST OF PLANT SPECIES ENCOUNTERED ALONG DRAINAGES WITHIN THE DESERT XPRESS PROJECT STUDY AREA

SCIENTIFIC NAME (AS LISTED IN JSA DATA SHEETS)	SCIENTIFIC NAME IF AVAILABLE IN NWI	SYNONYMY (SOURCE: CALFLORA 2010)	COMMON NAME	REGION 0 (NWI) CA	REGION 8 (NWI) NV	STRATUM (H, S, T)
mexicana						
Salix exigua	*Salix exigua*	NL	SANDBAR WILLOW	OBL	OBL	Shrub
Salix gooddingii	*Salix gooddingii*	---	GOODDING WILLOW	OBL	FACW	Tree
Salsola pestifer	*Salsola pestifer*	NA	RUSSIAN THISTLE	FACU	FACU	Herb
*Salsola tragus***	*Salsola kali/ Salsola pestifer*	=*S. australis* =*S. iberica* =*S. kali* var. *tenuifoli* =*S. pestifer* =*S. kali* var. *tenuifolia* =*S. kali* var. *tragus* =*S. ruthenica*	RUSSIAN THISTLE	FACU*/ FACU	FACU/ FACU	Herb
Salvia columbariae	NL	= *S. c.* var. *columbariae* =*S. c.* var. *ziegleri*	CHIA	NL	NL	Herb
Salvia dorrii	NL	=*S. d.* var. *dorrii* =*S. d.* var. *incana* =*S. d.* var. *pilosa*	DESERT SAGE	NL	NL	Shrub
Schismus arabicus	NL	NA	MEDITERRANEAN GRASS	NL	NL	Herb
Schismus barbatus	NL	= *Festuca barbata* = *S. calycinus*	MEDITERRANEAN GRASS	NL	NL	Herb

LIST OF PLANT SPECIES ENCOUNTERED ALONG DRAINAGES WITHIN THE DESERT XPRESS PROJECT STUDY AREA

SCIENTIFIC NAME (AS LISTED IN JSA DATA SHEETS)	SCIENTIFIC NAME IF AVAILABLE IN NWI	SYNONYMY (SOURCE: CALFLORA 2010)	COMMON NAME	REGION 0 (NWI) CA	REGION 8 (NWI) NV	STRATUM (H, S, T)
Senna armata	NL	= *Cassia armata*	DESERT SENNA, SPINY SENNA	NL	NL	Shrub
Sisymbrium altissimum	*Sisymbrium altissimum*	NA	TALL TUMBLE MUSTARD	FACU	FACU-	Herb
Spharalcea ambigua	NL	= *S. parvifolia*	APRICOT MALLOW	NL	NL	Shrub
Stanleya pinnata	NL	NA	DESERT PRINCE'S PLUME	NL	NL	Herb
Stephanomeria exigua	NL	NA	SMALL WIRELETTUCE	NL	NL	Herb
Stephanomeria pauciflora	NL	=*S. p.* var. *parishii* =*S. p.* var. *pauciflora* =*S. runcinata* var. *parishii* =*S. cinerea* =*S. lygoclesmoides* =*S. neomexicana* =*Lygodesmia pauciflora* =*Ptiloria pauciflora*	DESERT STRAW	NL	NL	Herb

LIST OF PLANT SPECIES ENCOUNTERED ALONG DRAINAGES WITHIN THE DESERT XPRESS PROJECT STUDY AREA

SCIENTIFIC NAME (AS LISTED IN JSA DATA SHEETS)	SCIENTIFIC NAME IF AVAILABLE IN NWI	SYNONYMY (SOURCE: CALFLORA 2010)	COMMON NAME	REGION 0 (NWI) CA	REGION 8 (NWI) NV	STRATUM (H, S, T)
Stephanomeria virgata	NL	NA	NL	NL	NL	Herb
Tamarix aphylla	*Tamarix aphylla*	NA	ATHEL TAMARISK	FACW-	FACW	Tree
Tamarix ramosissima	*Tamarix ramosissima*	NA	SALTCEDAR	FAC	FACW	Shrub
Thamnosma montana	NL	NA	TURPENTINE BROOM	NL	NL	Shrub
Triticum aestivum	NL	*= T. hybernum* *= T. macha* *= T. sativum* *= T. sphaerococcum* *= T. vulgare*	COMMON WHEAT	NL	NL	Herb
Typha angustifolia	*Typha angustifolia*	NA	NARROW LEAF CATTAIL	OBL	OBL	Herb
Ulmus pumila	NL	NONE	SIBERIAN ELM	NL	NL	Tree
Washingtonia filifera	*Washingtonia filifera*	NA	CALIFORNIA FAN PALM	FACW	NO	Tree
Yucca brevifolia	NL	*=Y. jaegeriana*	JOSHUA TREE	NL	NL	Tree
Yucca schidigera	NL	*=Y. californica*	MOJAVE YUCCA	NL	NL	Shrub

LIST OF PLANT SPECIES ENCOUNTERED ALONG DRAINAGES WITHIN THE DESERT XPRESS PROJECT STUDY AREA

SCIENTIFIC NAME (AS LISTED IN JSA DATA SHEETS)	SCIENTIFIC NAME IF AVAILABLE IN NWI	SYNONYMY (SOURCE: CALFLORA 2010)	COMMON NAME	REGION 0 (NWI) CA	REGION 8 (NWI) NV	STRATUM (H, S, T)
		=*Y. macrocarpa* =*Y. mohavensis*				

* = J.S.A. probably made a typographical error for this species.

**Using JSA taxonomy (*S. tragus)* we determined that in 1988, when the wetland manual was produced, this species could have been either *S. kali* (FACU*) or *S. pestifer* (FACU) (Region O), or FACU for both in Region 8.

NI = Not Indicated.

NL = Not Listed in NWI 1988.

Sources:

Calflora Database. 2010. Calflora Database was developed by the United States Forest Service working in collaboration with U.C. Berkeley. Available at: http://www.calflora.org/

National Wetlands Inventory and US Fish And Wildlife Service. 1988. National List of Plant Species that Occur in Wetlands. Compiled by Porter B. Reed, Jr., National Ecology Research Center, US Fish and Wildlife Service, St. Petersburg, Florida. In cooperation with US Army Corps of Engineers, US Environmental Protection Agency, and US Soil Conservation Service.

Exhibit B2

DesertXpress Field Data For Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed Number	HUC 12 Watershed Name	HBG Field Data	ICF Jones & Stokes Field Data	Comments
37	Town of Sloan	Yes	Yes	
38	Town of Arden	Yes	Yes	Delineated by HBG using adjacent watershed data.
39	Duck Creek	Yes	Yes	
40	Tropicana Wash	No	Yes	Delineated by HBG using adjacent watershed data.
41	City of Las Vegas-Las Vegas Wash	No	Yes	Only northernmost possible station locations would be in this watershed. Urban Drainage features. Delineated by HBG using adjacent watershed data.

*

Huffman-Broadway Group

Field Data Forms

For DesertXpress

HUC 12 Watershed *Town of Sloan*

Within Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed ID # 37

Huffman-Broadway Group

Field Data Forms

For DesertXpress

HUC 12 Watershed *Town of Sloan*

Within Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed ID # 37

DesertXpress

Field Notebook

HBG Watershed ID # 37

Watershed Name: Town of Sloan

If found, please return to:

George Ball
Huffman-Broadway Group, Inc.
828 Mission Avenue
San Rafael, California 94901
415.925.2000
gball@h-bgroup.com

Return Postage Guaranteed

Potential Geomorphic OHWM Indicators

(A) Below OHW	(B) At OHW	(C) Above OHW
1) In-stream dunes 2) Crested ripples 3) Flaser bedding 4) Harrow marks 5) Gravel sheets to rippled sands 6) Meander bars 7) Sand tongues 8) Muddy point bars 9) Long gravel bars 10) Cobble bars behind obstructions 11) Scour holes downstream of obstructions 12) Obstacle marks 13) Stepped-bed morphology in gravel 14) Narrow berms and levees 15) Streaming lineations 16) Dessication/mud cracks 17) Armored mud balls 18) Knick Points	1) Valley flat 2) Active floodplain 3) Benches: low, mid, most prominent 4) Highest surface of channel bars 5) Top of point bars 6) Break in bank slope 7) Upper limit of sand-sized particles 8) Change in particle size distribution 9) Staining of rocks 10) Exposed root hairs below intact soil layer 11) Silt deposits 12) Litter (organic debris, small twigs and leaves) 13) Drift (organic debris, larger than twigs)	1) Desert pavement 2) Rock varnish 3) Clast weathering 4) Salt splitting 5) Carbonate etching 6) Depositional topography 7) Caliche rubble 8) Soil development 9) Surface color/tone 10) Drainage development 11) Surface relief 12) Surface rounding

Potential Vegetation OHWM Indicators

	(D) Below OHW	(E) At OHW	(F) Above OHW
Hydroriparian indicators	1) Herbaceous marsh species 2) Pioneer tree seedlings 3) Sparse, low vegetation 4) Annual herbs, hydromesic ruderals 5) Perennial herbs, hydromesic clonals	1) Annual herbs, hydromesic ruderals 2) Perennial herbs, hydromesic clonals 3) Pioneer tree seedlings 4) Pioneer tree saplings	1) Annual herbs, xeric ruderals 2) Perennial herbs, non-clonal 3) Perennial herbs, clonal and non-clonal co-dominant 4) Mature pioneer trees, no young trees 5) Mature pioneer trees w/upland species 6) Late-successional species
Mesoriparian indicators	6) Pioneer tree seedlings 7) Sparse, low vegetation 8) Pioneer tree saplings 9) Xeroriparian species	5) Sparse, low vegetation Annual herbs, hydromesic 6) Ruderals 7) Perennial herbs, hydromesic clonals 8) Pioneer tree seedlings 9) Pioneer tree saplings 10) Xeroriparian species 11) Annual herbs, xeric ruderals	7) Xeroriparian species 8) Annual herbs, xeric ruderals 9) Perennial herbs, non-clonal 10) Perennial herbs, clonal and non-clonal codominent 11) Mature pioneer trees, no young trees 12) Mature pioneer trees, xeric understory 13) Mature pioneer trees w/upland species 14) Late-successional species 15) Upland species
Xeroriparian indicators	10) Sparse, low vegetation 11) Xeroriparian species 12) Annual herbs, xeric ruderals	12) Sparse, low vegetation 13) Xeroriparian species 14) Annual herbs, xeric ruderals	16) Annual herbs, xeric ruderals 17) Mature pioneer trees w/upland species 18) Upland species

HBG OHWM Field Data Sheet (Arid West)

HGB Team # | Project Name: DesertXpress | HBG Sub-Basin # (1 – 41) 37-TOWN OF SLOAN | HUC 12 #

Drainage Data

Date (M / D / Y)	Time (24-Hour)	GPS Unit #	Sample Point #	Map Sheet Ref #	OHW Width	Active (A) or Inactive (I) Channel	Up (U) / or Down (D) Slope from Road	Photo (Y/N)	Below OHWM	At OHWM	Above OHWM	Comments
5/15	1145	S	37 D1		3.2'	A	D	Y	A: 5, 10, 11, 12, 13, 16 D: 3	B: 2, 10, 11, 12 E: 5, 12	C: 5, 10, 11, 12 F: 5, 15, 18	Use note pages at back of notebook for comments. Put comment number in block below.
5/15	~~1447~~ 1423	S	~~37 D2~~ 37MD2		~~6.4'~~ 6.9	A	U	Y	A: 1, 6, 10, 11, 12, 13 D: 10	B: 2, 6, 8, 10, 11, 12 E: 12	C: 3, 5, 8, 9, 10, 12 F: 18	
5/15	1427	S	~~37 M4~~ 37M3		30.1"	A	D	Y	A: 1, 6, 10, 11, 12, 13 D: 10	B: 2, 6, 8, 10, 11, 12 E: 12	C: 3, 5, 8, 9, 10, 12 F: 18	
5/15	1440	S	~~37 M2~~ 37M4	* 1.0 → 1.0	~~45'(A)~~	A	Flat area	Y	A: 1, 6, 10, 11, 12, 13 D: 10	B: 2, 6, 8, 10, 11, 12 E: 12	C: 3, 5, 8, 9, 10, 12 F: 18	80' out EY (SEE COMMENT) NDOT, most likely 37M4 3 pts = 1
5/15	1453	S	~~37 D5~~ 37D5		2.7, 2.9	A	U	Y	A: 1, 6, 10, 11, 12, 13 D: 10	B: 2, 6, 8, 10, 11, 12 E: 12	C: 3, 5, 8, 9, 10, 12 F: ~~det~~ 18	
5/15	1456	S	37D6 ~~37D4~~		~~45'~~	I	U	Y	A: 1, 6, 10, 11, 12, 13 D: 10	B: 2, 6, 8, 10, 11, 12 E: 12	C: 3, 5, 8, 9, 10, 12 F: 18	
5/15	1505	S	37D7 ~~37D4~~		2.7, 2.9	A	U	Y	A: 1, 6, 10, 11, 12, 13 D: 10	B: 2, 6, 8, 10, 11, 12 E: 12	C: 3, 5, 8, 9, 10, 12 F: 18	

Reference: D = Drainage; M = Manmade; MD = Major Drainage; R = River

HBG OHWM Field Data Sheet (Arid West)

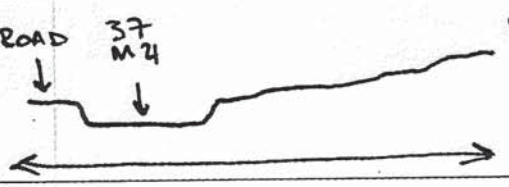
HGB Team #	Project Name: DesertXpress	HBG Sub-Basin # (1 – 41) 37 – TOWN OF SLOAN	HUC 12 #

Drainage Data

Date (M / D / Y)	Time (24-Hour)	GPS Unit #	Sample Point #	Map Sheet Ref #	OHW Width	Active (A) or Inactive (I) Channel	Up (U) / or Down (D) Slope from Road	Photo (Y/N)	Below OHWM	At OHWM	Above OHWM	Comments
5/15	1511	S	~~37MD8~~		3'	A	A	Y	A: 1,6,10,11,12,13 D: 10	B: 2,6,8,10,11,12 E: 12	C: 3,5,8,9,10,12 F: 18	Use note pages at back of notebook for comments. Put comment number in block below.
5/16	1112	S	37MD9 ~~37MD2~~		8'	A	U	Y	A: 1,6,10,11,12,13 D: 10	B: 2,6,8,10,11,12 E: 12	C: 3,5,8,9,10,12 F: 18	
5/16	1120	S	37M,10 ~~37MD7~~		30'	A	D	N	A: 1,6,10,12,13 D: 10	B: 2,6,8,10,11,12 E: 12	C: 3,5,8,9,10,12 F: 18	
9.1.10		S	37D11 *		1.0	A	D	Y	A: 1,6,10,11,12,13 D: 12	B: 2,6,8,10,11,12 E: 12	C: 3,5,8,9,10,12 F: 18	
9.1.10		S	37D12 *		1.0	A	D	Y	A: D:	B: E:	C: F:	same drainage data as 37D11
9.1.10		S	37D13 *		1.0	A	D	Y	A: D:	B: E:	C: F:	same drainage data as 37D11
									A: D:	B: E:	C: F:	

Reference: D = Drainage; M = Manmade; MD = Major Drainage; R = River

*

Comment Number	Comment
Mile 143.8 - 144.1	overpass Area with noticable drainage. Check to see patterns with EA.
37M2 37M4	 up or DOWN-slope from road? Flat No Slope

ICF Jones & Stokes

Wetland Determination Data Forms – Arid West Region

For DesertXpress

HUC 12 Watershed *Town of Sloan*

Within Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed ID # 37

WETLAND DETERMINATION DATA FORM – Arid West Region

roject/Site: DESERT XPRESS City/County: CLARK Sampling Date: 2/26/08
Applicant/Owner: CIRCLE POINT State: NV Sampling Point: 88-1W and 88-1E
Investigator(s): KELLY SHOOK, BRYAN MORSE, JOHN HOLSON Section, Township, Range:
Landform (hillslope, terrace, etc.): VALLEY FLOOR Local relief (concave, convex, none): NONE Slope (%): 3-7
Subregion (LRR): D ~~Lat:~~ N 35.885027 ~~Long:~~ W 115.227340 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE II
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Adj. land use: Open, undeveloped land to the east + west, transected by I-15 & LV Blvd. (on the east).

Photo #: 49 of the upland soilpit.
46 " " in channel " "
47 facing East along channel.
48 facing West. " "

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: Ø			
Sapling/Shrub Stratum			
1. Larrea tridentata	3	Y	NL UPL
2. Hymenoclea salsola	2	N	NL UPL
3.			
4.			
5.			
Total Cover: 5			
Herb Stratum			
1. Salsola tragus	2	Y	UPL
2. Aristida purpurea	1	N	NL UPL
3. Ambrosia dumosa	1	N	NL UPL
4. Bromus tectorum	1	N	NL UPL (FACU)
5. => S. kali.			(FACU)
6. OR = S. pestifer as per NWI			
7.			
8.			
Total Cover: 5			
Woody Vine Stratum			
1.			
2.			
Total Cover: Ø			

% Bare Ground in Herb Stratum 95 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species 10	x 5 = 50
Column Totals: 10 (A)	50 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: Veg. is same in both upland and drainage.

Sampling Point: 88-1W and 88-1E

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-4	←	10YR 7/2					Gravel	
5-12	←	" 6/4					Gravelly-Loam	
13-20	←	" 6/6					"	
1-2	10YR 5/4						Loamy sand	
3-20	" "						"	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

OHM: 10'W
4'H
1:1 slope

Sed. sorting in channel. 10'CBC under I-15.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert X Press City/County: Clark Sampling Date: 2/29/08
Applicant/Owner: Circle Point State: NV Sampling Point: 88-2W
Investigator(s): Kelly Shook, John Holson, Bryan Morse Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): 10-15
Subregion (LRR): D Lat: W -115.220693 Long: N 35.297096 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A Zone 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: See remarks on reverse page.

Photos
175 of the soil pit
174 facing N @ channel bank
173 " S @ channel bank
172 " E @ culvert
171 " W @ channel upstream

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1. Hymenoclea salsola	3	Y	NL ~~UPL~~
2.			
3.			
4.			
5.			
Total Cover:	3		
Herb Stratum			
1. Salsola tragus	2	Y	~~UPL~~
2. Schismus barbatus	1	N	NL ~~UPL~~
3. Bouteloua barbata var barbata	1	N	NL ~~UPL~~
4. (= S. kali			(FACU)
5. OR = S. pestifer as per Nat'l			(FACU+)
6.			
7.			
8.			
Total Cover:	4		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 96 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species 7	x 5 = 35
Column Totals: 7 (A)	35 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Sampling Point: 88-2W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	gravel							
1-12	10YR 5/4						Sand	
>12	pick ax refusal - caliche layer							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No ✓

Remarks:

Soil Pit excavated in channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: OHM: 10'W 25'H 1:2 slope

Permanent flow velocity dissipation devices (rock filled riprap) have been recently installed in channel, veg was removed, + fill was placed in portions of channel. Appears these devices were installed to minimize erosion of S. channel bank immed. west of FHWA I-15 ROW.

4' CBC under I-15 conveys flows from SE to NW. Blueline/Trib. to Duck Creek.

FI.5-95

Sed. entire

See associated data form 89-1W UPL

WETLAND DETERMINATION DATA FORM – Arid West Region

roject/Site: Desert X Press City/County: Clark Sampling Date: 2/29/08

Applicant/Owner: Circle Point State: NV Sampling Point: 89-1W - in channel

Investigator(s): Bryan Morse, Kelly Shook, John Hobson Section, Township, Range:

Landform (hillslope, terrace, etc.): Gentle slope Local relief (concave, convex, none): None Slope (%): 3-7

Subregion (LRR): D ~~Lat:~~ U-11 5.210269 ~~Long:~~ U 35.790556 Datum: NAD 83

NWI classification: N/A ZONE 11

Soil Map Unit Name:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Adj. land use is I-15 to East + open undevel. land to N, S, + W.

Photos: 166 facing W
165 " N
164 " S
163 " E @ CBC
161 " soil pit in channel

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: Ø			
Sapling/Shrub Stratum			
1. Baccharis brachyphylla	3	Y	NL UPL
2. Ambrosia eriocentra	3	Y	NL UPL
3. Hymenoclea salsola	2	Y	NL UPL
4. Ericameria laricifolia	1	N	NL UPL
5.			
Total Cover: 9			
Herb Stratum			
1. Schismus barbatus	1	Y	NL UPL
2. Bromus tectorum	1	Y	NL UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover: 2			
Woody Vine Stratum			
1.			
2.			
Total Cover: Ø			

% Bare Ground in Herb Stratum 98 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species 11	x 5 =	55
Column Totals: 11 (A)		55 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Penstemon bicolor (ssp. unknown) found in wash, GPS pt. taken.

Sampling Point: 89-1W in Channel

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-20	7.5 YR 5/4						Sand w/ gravel/cobble	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks: Soil pit in channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ___ Depth (inches): _____

Water Table Present? Yes ____ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: 8' CBC under I-15. Blueline drainage from S. to N. Trib. to Duck Creek. Shallow, braided ephemeral drainage (natural) parallels I-15 on W. side.

OHM: 60'W x 1'h 1:2 side slopes.

See associated data form created for 'in channel' 89-1W.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Clark Sampling Date: 2/29/08
Applicant/Owner: Circle Point State: NV Sampling Point: 89-1W UPL
Investigator(s): Kelly Shook, Bryan Morse, John Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Gentle hillslope Local relief (concave, convex, none): none Slope (%): 10-15
Subregion (LRR): D ~~Lat~~ N -115.209845 ~~Long~~ N -35.906792 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A 20NE11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation No, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: See associated data form created for 89-1W in channel. Upland soil pit.

Photo 162: Upland soil pit

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1. Larrea tridentata	10	Y	NL UPL
2. Ambrosia dumosa	3	Y	NL UPL
3.			
4.			
5.			
Total Cover:	13		
Herb Stratum			
1. Erodium cicutarium	1	Y	NL UPL
2. Bromus tectorum	2	Y	NL UPL
3. Phacelia fremontii	1	Y	NL UPL
4. Schismus barbatus	1	Y	NL UPL
5.			
6.			
7.			
8.			
Total Cover:	5		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 95 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species 18	x 5 = 90
Column Totals: 18 (A)	90 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Sampling Point: 89-1WUPL

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-20	10YR 5/4						Sand & gravel	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:
Soil pit in upland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (Includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
See remarks on reverse.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert XPress City/County: Clark Sampling Date: 2/29/08
Applicant/Owner: Circle Point State: NV Sampling Point: 90-1W
Investigator(s): John Holson, Bryan Morse, Kelly Shook Section, Township, Range:
Landform (hillslope, terrace, etc.): Gentle hillslope Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D Lat: W -115.182945 Long: N 35.949976 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks:
Photo 144 facing W at wash upstream
143 " S along I-15
142 " N " "
141 " E at culverts
140 " 60'l pit.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1. Baccharis brachyphylla	15	Y	UPL
2. Ambrosia eriocentra	2	Y	UPL
3. Acacia greggii	1	N	FACU
4.			
5.			
Total Cover:	18		
Herb Stratum			
1. Schismus barbatus	1	Y	UPL
2. Brassica tournefortii	1	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	2		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 98 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species 1	x 4 = 4
UPL species 19	x 5 = 95
Column Totals: 20 (A)	99 (B)

Prevalence Index = B/A = 4.95

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Sampling Point: 90-1W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2			—				Gravel	
2-20	10YR 6/4		✓				Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No ✓

Remarks: Soil pit excavated in channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Trib. to Duck Creek. 4-12' CBCs under I-5. Flows enter CBCs from south.

OHM = 35'W x 2'H
1:2 bank slope

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Clark Sampling Date: 2/29/08
Applicant/Owner: Circle Point State: NV Sampling Point: 90-2W
Investigator(s): Kelly Shook, Bryan Morse, John Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Gentle hillslope Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D Lat: 35.947964 Long: -115.193158 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Photos
149 facing E at culvert
148 " N at channel bank
147 " S along I-15
146 " W at wash upstream
145 " soilpit

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1. Hymenoclea salsola	5	Y	NL UPL
2. Sphaeralcea ambigua	2	Y	NL UPL
3. Baccharis brachyphylla	2	Y	NL UPL
4.			
5.			
Total Cover:	9		
Herb Stratum			
1. Bromus tectorum	2	Y	NL UPL
2. Schismus barbatus	1	N	NL UPL
3. Boutelova barbata var. barbata	1	N	NL UPL
4. Erodium cicutarium	1	N	NL UPL
5. Eriogonum pulchellum	1	N	NL UPL
6.			
7.			
8.			
Total Cover:	6		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 94 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species 15	x 5 = 75
Column Totals: 15 (A)	75 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 90-2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2							Gravel	
2-20	10YR 5/4						loamy sand w/ gravel	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks: Soil pit dug in channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: 4' CBC under I-15; channel is blue line on topo; trib. to Duck Creek.

Channel OHM: 6'W x 3'h 1:2 bank slope

Southern swale that parallels I-15: OHM 30' W x 15' h

WETLAND DETERMINATION DATA FORM – Arid West Region

roject/Site: Desert X Press City/County: Clark County Sampling Date: 2/29/08
Applicant/Owner: Circle Point State: NV Sampling Point: 90-3W
Investigator(s): Bryan Morse, Kelly Shook, John Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Slope (%): 1-5
Subregion (LRR): D Lat: W 115.189362 Long: N 35.945087 Datum: NAD83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ✓ No ____
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks:
Adj. land use on east is I-15 + on west is undevel. desert.

Photo
154 soil pit
153 facing N at channel bank
152 " S along I-15
151 " W at adj. land use
150 " E at culvert

VEGETATION

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Use scientific names.)			
1.			
2.			
3.			
4.			
Total Cover: Ø			
Sapling/Shrub Stratum			NL
1. Humanoclea salsola	5	Y	UPL
2. Ambrosia eriocentra	5	Y	NL UPL
3.			
4.			
5.			
Total Cover: 10			
Herb Stratum			NL
1. Bouteloua barbata var. barbata	2	Y	UPL
2. Plantago ovata	1	Y	NL UPL
3. Schismus barbatus	1	Y	NL UPL
4.			
5.			
6.			
7.			
8.			
Total Cover: 4			
Woody Vine Stratum			
1.			
2.			
Total Cover: Ø			

% Bare Ground in Herb Stratum 96 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species 14	x 5 =	70
Column Totals: 14 (A)		70 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 90-3W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 5/4						Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ✓ Sediment Deposits (B2) (Riverine) Minor
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ___ Depth (inches): _____

Water Table Present? Yes _____ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Concave depression immed. in front of 4' CBC under I-15. Channel is blue line on topo & trib. to Duck Creek. Flows enter " " via channel/swale that parallels I-15 on west side (channel flows from S to E).

OHM: 15'w x 1.5'h; bank slope 1:1

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Clark County Sampling Date: 2/29/08
Applicant/Owner: Circle Point State: NV Sampling Point: 90-4W
Investigator(s): John Hobson, Bryan Morse, Kelly Shook Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope - gentle Local relief (concave, convex, none): none Slope (%): 1-4
Subregion (LRR): D Long: -115.186801 Lat: 35.940350 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ✓ No ____
Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:
Adj. land use is I-15 to the east + undevel. desert to N, S, + W.
X = Wetlands not present, lacks indicators

Photo
160 facing N at channel bank
159 " S along channel
158 " W at adjacent landuse
157 " E at culvert
156 " soil pit

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1. Ambrosia eriocentra	4	Y	NL UPL
2. Hymenoclea salsola	4	Y	NL UPL
3. Encelia frutescens	2	Y	NL UPL
4.			
5.			
Total Cover:	10		
Herb Stratum			
1. Bouteloua barbata var. barbata	1	Y	NL UPL
2. Schismus barbatus	1	Y	NL UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	2		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 98 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species 12	x 5 = 60
Column Totals: 12 (A)	60 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Sampling Point: 90-4W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 5/3						Sandy Loam	
1-20	10YR 5/4						Loamy Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ✓ Sediment Deposits (B2) (Riverine) minor
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: 36" CBC under I-15. Channel is blue line on topo + trib. to Duck Creek.

OHM: 5'w
1'h
1:2 bank slope

Exhibit B2

DesertXpress Field Data For Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed Number	HUC 12 Watershed Name	HBG Field Data	ICF Jones & Stokes Field Data	Comments
37	Town of Sloan	Yes	Yes	
38	Town of Arden	Yes	Yes	Delineated by HBG using adjacent watershed data.
39	Duck Creek	Yes	Yes	
40	Tropicana Wash	No	Yes	Delineated by HBG using adjacent watershed data.
41	City of Las Vegas-Las Vegas Wash	No	Yes	Only northernmost possible station locations would be in this watershed. Urban Drainage features. Delineated by HBG using adjacent watershed data.

*

Huffman-Broadway Group

Field Data Forms

For DesertXpress

HUC 12 Watershed *Town of Arden*

Within Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed ID # 38

DesertXpress

Field Notebook

HBG Watershed ID # 38

Watershed Name: TOWN OF ARDEN

If found, please return to:

George Ball
Huffman-Broadway Group, Inc.
828 Mission Avenue
San Rafael, California 94901
415.925.2000
gball@h-bgroup.com

Return Postage Guaranteed

Potential Geomorphic OHWM Indicators

(A) Below OHW	(B) At OHW	(C) Above OHW
1) In-stream dunes 2) Crested ripples 3) Flaser bedding 4) Harrow marks 5) Gravel sheets to rippled sands 6) Meander bars 7) Sand tongues 8) Muddy point bars 9) Long gravel bars 10) Cobble bars behind obstructions 11) Scour holes downstream of obstructions 12) Obstacle marks 13) Stepped-bed morphology in gravel 14) Narrow berms and levees 15) Streaming lineations 16) Dessication/mud cracks 17) Armored mud balls 18) Knick Points	1) Valley flat 2) Active floodplain 3) Benches: low, mid, most prominent 4) Highest surface of channel bars 5) Top of point bars 6) Break in bank slope 7) Upper limit of sand-sized particles 8) Change in particle size distribution 9) Staining of rocks 10) Exposed root hairs below intact soil layer 11) Silt deposits 12) Litter (organic debris, small twigs and leaves) 13) Drift (organic debris, larger than twigs)	1) Desert pavement 2) Rock varnish 3) Clast weathering 4) Salt splitting 5) Carbonate etching 6) Depositional topography 7) Caliche rubble 8) Soil development 9) Surface color/tone 10) Drainage development 11) Surface relief 12) Surface rounding

Potential Vegetation OHWM Indicators

	(D) Below OHW	(E) At OHW	(F) Above OHW
Hydroriparian indicators	1) Herbaceous marsh species 2) Pioneer tree seedlings 3) Sparse, low vegetation 4) Annual herbs, hydromesic ruderals 5) Perennial herbs, hydromesic clonals	1) Annual herbs, hydromesic ruderals 2) Perennial herbs, hydromesic clonals 3) Pioneer tree seedlings 4) Pioneer tree saplings	1) Annual herbs, xeric ruderals 2) Perennial herbs, non-clonal 3) Perennial herbs, clonal and non-clonal co-dominant 4) Mature pioneer trees, no young trees 5) Mature pioneer trees w/upland species 6) Late-successional species
Mesoriparian indicators	6) Pioneer tree seedlings 7) Sparse, low vegetation 8) Pioneer tree saplings 9) Xeroriparian species	5) Sparse, low vegetation Annual herbs, hydromesic 6) Ruderals 7) Perennial herbs, hydromesic clonals 8) Pioneer tree seedlings 9) Pioneer tree saplings 10) Xeroriparian species 11) Annual herbs, xeric ruderals	7) Xeroriparian species 8) Annual herbs, xeric ruderals 9) Perennial herbs, non-clonal 10) Perennial herbs, clonal and non-clonal codominent 11) Mature pioneer trees, no young trees 12) Mature pioneer trees, xeric understory 13) Mature pioneer trees w/upland species 14) Late-successional species 15) Upland species
Xeroriparian indicators	10) Sparse, low vegetation 11) Xeroriparian species 12) Annual herbs, xeric ruderals	12) Sparse, low vegetation 13) Xeroriparian species 14) Annual herbs, xeric ruderals	16) Annual herbs, xeric ruderals 17) Mature pioneer trees w/upland species 18) Upland species

HBG OHWM Field Data Sheet (Arid West)

HGB Team #	Project Name: *DesertXpress*	HBG Sub-Basin # (1 – 41) 38	HUC 12 #

Drainage Data

Date (M / D / Y)	Time (24-Hour)	GPS Unit #	Sample Point #	Map Sheet Ref #	OHW Width	Active (A) or Inactive (I) Channel	Up (U) / or Down (D) Slope from Road	Photo (Y/N)	Below OHWM	At OHWM	Above OHWM	Comments
9.1.10	1045	S	38D1		1.0	A	U	Y	A: 5, 10, 11, 12, 13, 16 D: 3	B: 2, 10, 11, 12 E: 5, 12	C: 5, 10, 11, 12 F: 18	Use note pages at back of notebook for comments. Put comment number in block below.
9.1.10	1044	S	38D2		1.0	A	U	Y	A: 5, 10, 11, 12, 13, 16 D: 3	B: 2, 10, 11, 12 E: 5, 12	C: 5, 10, 11, 12 F: 18	
9.1.10	1043	S	38D3		0.5	A	U	Y	A: 5, 10, 11, 12, 13, 16 D: 3	B: 2, 10, 11, 12 E: 5, 12	C: 5, 10, 11, 12 F: 18	
9.1.10	1042	S	38D4		0.5	A	U	Y	A: 5, 10, 11, 12, 13, 16 D: 3	B: 2, 10, 11, 12 E: 5, 12	C: 5, 10, 11, 12 F: 18	
9.1.10	1026	S	38D5		1.0	A	U	Y	A: D:	B: E:	C: F:	SAME DRAINAGE DATA AS 38D4
9.1.10	1031	S	38D6		5.0 +.5	A	U	Y	A: D:	B: E:	C: F:	RTH FIELD VERIFIED
9.1.10	1031	S	38D7		1.0	A	U	Y	A: D:	B: E:	C: F:	SAME DRAINAGE DATA AS 38D4

Reference: D = Drainage; M = Manmade; MD = Major Drainage; R = River

HBG OHWM Field Data Sheet (Arid West)

HGB Team #	Project Name: *DesertXpress*	HBG Sub-Basin # (1 – 41) 38	HUC 12 #

Drainage Data												Comments
Date (M / D / Y)	Time (24-Hour)	GPS Unit #	Sample Point #	Map Sheet Ref #	OHW Width	Active (A) or Inactive (I) Channel	Up (U) / or Down (D) Slope from Road	Photo (Y/N)	Below OHWM	At OHWM	Above OHWM	Use note pages at back of notebook for comments. Put comment number in block below.
9.1.10	1036	5	3808		1.0	A	U	Y	A:	B:	C:	Same Drainage Data AE 38 D4
									D:	E:	F:	
									A:	B:	C:	
									D:	E:	F:	
									A:	B:	C:	
									D:	E:	F:	
									A:	B:	C:	
									D:	E:	F:	
									A:	B:	C:	
									D:	E:	F:	
									A:	B:	C:	
									D:	E:	F:	
									A:	B:	C:	
									D:	E:	F:	

Reference: D = Drainage; M = Manmade; MD = Major Drainage; R = River

ICF Jones & Stokes

Wetland Determination Data Forms – Arid West Region

For DesertXpress

HUC 12 Watershed *Town of Arden*

Within Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed ID # 38

DesertXpress

Field Notebook

HBG Watershed ID # 38

Watershed Name: Town of Arden

If found, please return to:

George Ball
Huffman-Broadway Group, Inc.
828 Mission Avenue
San Rafael, California 94901
415.925.2000
gball@h-bgroup.com

Return Postage Guaranteed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 2/28/08

Applicant/Owner: Circle Point State: NV Sampling Point: 95-1W

Investigator(s): Kelly Shook, Bryan Morse, John Holson Section, Township, Range:

Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): None Slope (%): 3

Subregion (LRR): D Lat: -115.182471 Long: 35.961702 Datum: NAD 83

Soil Map Unit Name: NWI classification: N/A ZONE 11

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation Yes, Soil yes, or Hydrology ? significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓

Hydric Soil Present? (currently under construction) Yes ____ No N/A

Wetland Hydrology Present? Yes ____ No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Flood control facility – 12'W x 8'h CBC conveys flows from South to N under St. Rose Pkwy ramps @ I-15 interchange on west side of I-15. Concrete apron extends southward from CBC ~50ft, then changes to boulder-lined channel for 300' then changes to earthen-lined. Ultimately flows to Duck Creek.

Photo
133 facing S at culvert
134 " N along drainage channel

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	0		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: No vegetation present.

Sampling Point: 95-1W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A

Hydric Soil Present? Yes _____ No _____

Remarks: N/A. See comments on reverse.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: CCRFCD facility that ultimately flows to Duck Creek.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: DesertXpress City/County: Uninc./Clark Sampling Date: 2/29/08
Applicant/Owner: Circle Point State: NV Sampling Point: 95-2W
Investigator(s): Bryan Morse, Kelly Shook, John Halsor Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope - gentle Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D Lat: 35.761702 N Long: -115.182604 W Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil yes, or Hydrology ND significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No N/A	
Wetland Hydrology Present?	Yes ____	No N/A	

Remarks: Flood control facility - 12'w x 8'h CBC w/ 75'L concrete apron that conveys flows northward under St. Rose Pkwy off ramp @ I-15 interchange. No veg. Area is bladed & graded & flood control facility is under construction now. Farther detention basin was constructed @ S entrance to CBC in NDOT ROW. Connects to Duck Creek.

Photo
139 facing S at Detention Basin.
138 " N at culvert.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: Ø			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover: Ø			
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover: Ø			
Woody Vine Stratum			
1.			
2.			
Total Cover: Ø			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: Ø (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: No veg present.

SOIL

Sampling Point: 95-2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A

Hydric Soil Present? Yes _____ No _____

Remarks: N/A.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

N/A

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: N/A.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Clark County Sampling Date: 2/28/08
Applicant/Owner: Circle Point State: NV Sampling Point: 96-1W
Investigator(s): Kelly Shook, Bryan Morse, John Hobson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Floor Local relief (concave, convex, none): concave Slope (%): —
Subregion (LRR): D Lat: N 36.115191 Long: W 115.199793 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ✓ No ____
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: 2 – 10'CBCs under I-15. Flows enter CBCs from N + S via the earthen-lined channel parallel & west of I-15 (no defined bed + bank/swale characteristics) + from the west along natural braided channel/swale (no defined bed + bank) (blue line on topo). Terrain is concave & mouth of CBCs (on west side of I-15) + ponding occurs.

Photos
H4 facing W at wash upstream.
113 " N along I-15.
112 " S "
111 " E at culvert (CBCs)
110 " soil pit.

VEGETATION

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Use scientific names.)			
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Encelia frutescens	15	Y	NL UPL
2. Hymenoclea salsola	7	Y	NL UPL
3. Sphaeralcea ambigua	3	N	NL UPL
4.			
5.			
Total Cover:	25		
Herb Stratum			
1. Bromus tectorum	25	Y	NL UPL
2. Bouteloua barbata	25	Y	NL UPL
3. Cynodon dactylon	5	N	FAC
4. Erodium cicutarium	5	N	NL UPL
5. Pucinellia lemmoni	2	N	FACW*
6. Aristida purpurea	2	N	NL UPL
7. Leptochloa uninerva	1	N	FACW
8.			
Total Cover:	65		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 42 % Cover of Biotic Crust 3

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	3	x 2 =	6
FAC species	5	x 3 =	15
FACU species		x 4 =	
UPL species	82	x 5 =	410
Column Totals:	90	(A)	431 (B)

Prevalence Index = B/A = 4.8

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 96-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 5/4		—				Loam	transition is not
5-20	7.5YR 6/4		—				Loam	obvious.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

Soil pit dug in channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ___ Depth (inches): _____

Water Table Present? Yes ____ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil (dried) is cracking + peeling, signs of ponding — remnant biotic crusts showing polygons + curls detached from underlying sediments.

WETLAND DETERMINATION DATA FORM – Arid West Region

oject/Site: Desert X press City/County: Clark County Sampling Date: 2/28/08
Applicant/Owner: Circle Point State: NV Sampling Point: 96-2W
Investigator(s): John Holson, Kelly Shook, Bryan Morse Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D ~~Lat:~~ -115.181835 ~~Long:~~ N 35.998297 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ____ No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Duck Creek. Blue line on topo. 3-12' CBCs under I-15. Conveys flow from west to east. Natural channel OHM= 75'W x 4'h; 1:2 bank slope. Land use to east is I-15 & to N, S, & W is undevel. desert.

Photos
119 facing soil pit
118 " S along I-15
116 " W at Duck Creek upstream
117 " E at culvert (CBCs)
115 "

VEGETATION

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Use scientific names.)			
1.			
2.			
3.			
4.			
Total Cover: Ø			
Sapling/Shrub Stratum			
1. Ambrosia eriocentra	8	Y	NL-UPL
2. Fericameria laricifolia	4	Y	NL-UPL
3. Acacia greggii	3	Y	FACU
4.			
5.			
Total Cover: 15			
Herb Stratum			
1. Erodium cicutarium	1	Y	NL-UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover: 1			
Woody Vine Stratum			
1.			
2.			
Total Cover: Ø			

% Bare Ground in Herb Stratum 99 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species 3	x 4 = 12
UPL species 13	x 5 = 65
Column Totals: 16 (A)	77 (B)

Prevalence Index = B/A = 4.81

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 96-2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	7.5 YR 5/6						Sand w/ gravel/cobble	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks: Soil pit dug in channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Duck Creek.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 2/27/08
Applicant/Owner: Circle Point State: NV Sampling Point: 97-1W
Investigator(s): Kelli Shook, Bryan Morse, John Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D Lat: W -115.181352 Long: N 36.027574 Datum: NAD 83
Soil Map Unit Name: N/A NWI classification: N/A ZONE U
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	N/A
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ✓	

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Topo indicates a blue line. No swales or drainages were observed in the field on the land parcels immed. west of I-15 ROW. Parcel has been recently bladed & graded. Natural drainage may have been diverted away from this area. A 24" CMP under I-15 conveys road runoff via swale (30' wide x 1' high, 1:4 slope) that parallels I-15 on the west. Flows travel ultimately to Dick Creek.

Photo
82 facing SW at adjacent land use.
81 " W " " " "
80 " NW " " " "
79 " N along I-15.
77 " S " " "
76 " E at culvert.
83 " E along private property block wall at possible previous drainage path.

VEGETATION

NO OHWM indicators on parcel.

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.	Ø		
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)
Total Number of Dominant Species Across All Strata: ____ (B)
____ (A/B) Ø
~~Total Cover:~~ ____
~~Status~~ ____ ~~% Cover of Biotic Crust~~ ____

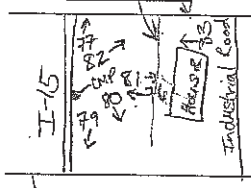


Photo vantage points Site 97-1W ____ Ø (B)

___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: No veg present.

SOIL

Sampling Point: 97-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A

Hydric Soil Present? Yes _____ No _____

Remarks: No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: See remarks on reverse.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 2/27/08
Applicant/Owner: Circle Point State: NV Sampling Point: 97-2W
Investigator(s): John Hotson, Bruce Morse, Kelly Shook Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D ~~Lat:~~ N -115.611416 ~~Long:~~ N 36.024806 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Blue line on topo. 3-12'CBCs cross under I-15. Flow along natural channel is from west to east (OHM 20'W x 4'H) + enters the CBCs for ultimate conveyance to Duck Creek. Flow also enters the CBCs via swale that collects I-15 road run off on west side of I-15 (and parallel to)

Photo 89-upland soil pit.
88-facing W along wash.
87- " S " swale parallel to I-15
85- " N " " " " "
86- " E at CBCs.
84- in channel soil pit.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1. Acacia greggii	5	Y	FACU
2. Ericameria laricifolia	1	N	UPL
3.			
4.			
5.			
Total Cover:	6		
Herb Stratum			
1. Cynodon dactylon	10	Y	FAC
2. Bromus tectorum	1	N	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	11		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 89 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species 1	x 3 = 3
FACU species 1	x 4 = 4
UPL species 2	x 5 = 10
Column Totals: 4 (A)	17 (B)

Prevalence Index = B/A = 4.25

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 97-2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
pit in channel:								
0-1 Gravel, 1-19	7.5 YR 6/4		—				Loamy sand	Abrupt change
19+	7.5 YR 7/4+		no mottles				Loam	no organic material
pit in plant:								
0-1	Gravel		—					
1-8	7.5 YR 6/4		—				Loamy sand	
>8	pick ax refusal - caliche layer							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: shelving, sed. sorting. See remarks on reverse.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: DesertXpress City/County: Las Vegas / Clark Sampling Date: 2/27/08
Applicant/Owner: Circle Point State: NV Sampling Point: 94-3W
Investigator(s): KS, BM, J Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 1-5%
Subregion (LRR): D Lat: W -115.180889 Long: N 36.022942 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No N/A	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Blue line shown on topo, however no defined bed & bank observed in field; narrow swale. Upland veg. No soil pits excavated. 36" CMP under I-15 (subsurface) conveys flows from ditch that // I-15 on west side. Land use: I-15 on the east, undevel parcel on immed west.
Photo: 94 facing S of // channel.
93 " N " " "
92 " W of natural swale.
91 " E at CMP.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1. Larrea tridentata	5	Y	NL-UPL
2. Ambrosia dumosa	10	Y	NL-UPL
3. Ephedra viridis	2	N	NL-UPL
4.			
5.			
Total Cover:	17		
Herb Stratum			
1. Aristida purpurea	1	Y	NL-UPL
2. Bromus tectorum	1	Y	NL-UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	2		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 98 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species 19	x 5 = 95
Column Totals: 19 (A)	95 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Key: CMP = corrugated metal pipe
// = parallel

Sampling Point: 97-3W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No N/A.

Remarks: No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: See remarks on reverse.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 2/27/08
Applicant/Owner: Circle Point State: NV Sampling Point: 97-4W
Investigator(s): KS, BM, J. Holson Section, Township, Range: —
Landform (hillslope, terrace, etc.): Valley-floor Local relief (concave, convex, none): none Slope (%): —
Subregion (LRR): D Lat: W -115.18557 Long: N 36.018635 Datum: NAD 83
Soil Map Unit Name: — NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil No, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: 2-10' CBCs (20' wide total). Earthen lined channel // to I-15 on W. side + drains east to CBCs under I15 (subsurface). Blue line on topo represents drainage that flows west to east to the " " ". No veg present in the 300' wide project study area because appears was recently removed for construction of // drainage along I-15. Upstream of 300' wide study area add Catclaw acacia. Drainage Dtw 9'W x 3'H. Bank slope is 1:2. Shelving in drainage. Cut bed + bank, sed. sorting. Trib. to Duck Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: Ø (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Photo: 99 facing W along wash. 98 " N " " // channel to E 97 " S " " 96 " E CBC 95 soil pit

Key: CBC = concrete box culvert // = parallel

Sampling Point: 97-4

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-2	Cobbles + rock							
3-20	Loamy sand		7.5YR 6/4 +		uniform	throughout		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks: Soil pit dug in channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Blue line on topo. See remarks on reverse.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: LV/ Clark Sampling Date: 2/28/08
Applicant/Owner: Circle Point State: NV Sampling Point: 97-SW
Investigator(s): KS, BM, J. Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): —
Subregion (LRR): D lat: W-115.181004 long: N 36.009685 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No N/A
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Shown on topo as a blue line, however significant disturbance has modified natural drainage. Terrain in study area has been recently bladed + graded + soils excavated down 6 feet to form what appears to be pass, detention basins (300'W x 6'H) immed SW of I-15/Silverado Blvd Int-Δ. Trib. to Duck Creek or Trop. Wash. Check CCRFCD website. Photos: 103 facing W @ undevel adj. lan; 102 " S; 101 " N at SRB; 100 " East I-15

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: Ø (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:
No veg.

SOIL

Sampling Point: 97-5W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No N/A.

Remarks: No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: See remarks on reverse.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert XPress City/County: LV / Clark Sampling Date: 2/28/08
Applicant/Owner: Circle Point State: NV Sampling Point: 97-6W
Investigator(s): KS, BM, JHolson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): — Slope (%): 1-5
Subregion (LRR): D Lat: W-115.191061 Long: N 36.007219 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A Zone 11

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil Yes, or Hydrology ND significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil ND, or Hydrology ND naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ____ No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: 6-10' CBCs under I-15 flows enter via natural drainage from the west + from South in drainage that // I-15. Nat. drainage that has been bladed + graded recently in the study area + N bank has been lined w/ boulders. Not. drainage OHM = 25' W x 4' H, bank slope 1:2. // drainage along I-15 OHM = 50' W x 1' H, bank slope 1:4. Check CCRFCD website. Trib. to Duck Creek.

Photo: 109 Upland pit
108 Facing N @ boulders
107 " " @ // I-15 channel
106 " W up nat. drainage
105 " E @ CBCs
104 Nat. drainage
103 Upland pit

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. Schismus barbatus	1%	Y	NL UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	1		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 99 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species 1	x 5 =	5
Column Totals: 1 (A)		5 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:
Kartesz veg key.

SOIL

Sampling Point: D97-6W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
in natural drainage: 0-20	7.5YR 5/4		Loamy sand + cobble					
Upland pit: 0-20	7.5YR 5/4		"	"	"	"		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Trib. to Duck Creek. See remarks on reverse.

Exhibit B2

DesertXpress Field Data For Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed Number	HUC 12 Watershed Name	HBG Field Data	ICF Jones & Stokes Field Data	Comments
37	Town of Sloan	Yes	Yes	
38	Town of Arden	Yes	Yes	Delineated by HBG using adjacent watershed data.
39	Duck Creek	Yes	Yes	
40	Tropicana Wash	No	Yes	Delineated by HBG using adjacent watershed data.
41	City of Las Vegas-Las Vegas Wash	No	Yes	Only northernmost possible station locations would be in this watershed. Urban Drainage features. Delineated by HBG using adjacent watershed data.

*

Huffman-Broadway Group

Field Data Forms

For DesertXpress

HUC 12 Watershed *Duck Creek*

Within Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed ID # 39

DesertXpress

Field Notebook

HBG Watershed ID # 39

Watershed Name: Duck Creek

If found, please return to:

George Ball
Huffman-Broadway Group, Inc.
828 Mission Avenue
San Rafael, California 94901
415.925.2000
gball@h-bgroup.com

Return Postage Guaranteed

Potential Geomorphic OHWM Indicators

(A) Below OHW	(B) At OHW	(C) Above OHW
1) In-stream dunes 2) Crested ripples 3) Flaser bedding 4) Harrow marks 5) Gravel sheets to rippled sands 6) Meander bars 7) Sand tongues 8) Muddy point bars 9) Long gravel bars 10) Cobble bars behind obstructions 11) Scour holes downstream of obstructions 12) Obstacle marks 13) Stepped-bed morphology in gravel 14) Narrow berms and levees 15) Streaming lineations 16) Dessication/mud cracks 17) Armored mud balls 18) Knick Points	1) Valley flat 2) Active floodplain 3) Benches: low, mid, most prominent 4) Highest surface of channel bars 5) Top of point bars 6) Break in bank slope 7) Upper limit of sand-sized particles 8) Change in particle size distribution 9) Staining of rocks 10) Exposed root hairs below intact soil layer 11) Silt deposits 12) Litter (organic debris, small twigs and leaves) 13) Drift (organic debris, larger than twigs)	1) Desert pavement 2) Rock varnish 3) Clast weathering 4) Salt splitting 5) Carbonate etching 6) Depositional topography 7) Caliche rubble 8) Soil development 9) Surface color/tone 10) Drainage development 11) Surface relief 12) Surface rounding

Potential Vegetation OHWM Indicators

	(D) Below OHW	(E) At OHW	(F) Above OHW
Hydroriparian indicators	1) Herbaceous marsh species 2) Pioneer tree seedlings 3) Sparse, low vegetation 4) Annual herbs, hydromesic ruderals 5) Perennial herbs, hydromesic clonals	1) Annual herbs, hydromesic ruderals 2) Perennial herbs, hydromesic clonals 3) Pioneer tree seedlings 4) Pioneer tree saplings	1) Annual herbs, xeric ruderals 2) Perennial herbs, non-clonal 3) Perennial herbs, clonal and non-clonal co-dominant 4) Mature pioneer trees, no young trees 5) Mature pioneer trees w/upland species 6) Late-successional species
Mesoriparian indicators	6) Pioneer tree seedlings 7) Sparse, low vegetation 8) Pioneer tree saplings 9) Xeroriparian species	5) Sparse, low vegetation Annual herbs, hydromesic 6) Ruderals 7) Perennial herbs, hydromesic clonals 8) Pioneer tree seedlings 9) Pioneer tree saplings 10) Xeroriparian species 11) Annual herbs, xeric ruderals	7) Xeroriparian species 8) Annual herbs, xeric ruderals 9) Perennial herbs, non-clonal 10) Perennial herbs, clonal and non-clonal codominent 11) Mature pioneer trees, no young trees 12) Mature pioneer trees, xeric understory 13) Mature pioneer trees w/upland species 14) Late-successional species 15) Upland species
Xeroriparian indicators	10) Sparse, low vegetation 11) Xeroriparian species 12) Annual herbs, xeric ruderals	12) Sparse, low vegetation 13) Xeroriparian species 14) Annual herbs, xeric ruderals	16) Annual herbs, xeric ruderals 17) Mature pioneer trees w/upland species 18) Upland species

HBG OHWM Field Data Sheet (Arid West)

HGB Team # GH, TH | Project Name: DesertXpress | HBG Sub-Basin # (1–41) 39 - DUCK CREEK | HUC 12 #

Drainage Data

Date (M / D / Y)	Time (24-Hour)	GPS Unit #	Sample Point #	Map Sheet Ref #	OHW Width	Active (A) or Inactive (I) Channel	Up (U) / or Down (D) Slope from Road	Photo (Y/N)	Below OHWM	At OHWM	Above OHWM	Comments
5/13	1709	5	39MD1		12'	A	D	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,12 F: 5,15,18	NOT ON PREFERRED ROUTE OBSERVATION POINT
5/13	1720	5	39MD2		12.4'	A	D	N	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,12 F: 5,15,18	Berm Blocking Way to track NOT ON ROUTE
9.1.10	0958	5	39D11 *		1.5	A	D	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,12 F: 5,15,18	
9.1.10	0950	5	39D12 *		1.5	A	D	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,15 E: 5,12	C: 10,11,12 F: 5,15,18	
9.1.10	0957	5	39D13		1.5	A	D	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,18 F: 5,15,18	
9.1.10	0948	5	39 D14		1.0	A	D	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,18 F: 5,15,18	
9.1.10	0941	5	3915		1.0	A	D	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,18 F: 5,15,18	

Reference: D = Drainage; M = Manmade; MD = Major Drainage; R = River

*

HBG OHWM Field Data Sheet (Arid West)

HGB Team # GH, TH | Project Name: DesertXpress | HBG Sub-Basin # (1 – 41) 39 | HUC 12 #

Drainage Data

Date (M / D / Y)	Time (24-Hour)	GPS Unit #	Sample Point #	Map Sheet Ref #	OHW Width	Active (A) or Inactive (I) Channel	Up (U) / or Down (D) Slope from Road	Photo (Y/N)	Below OHWM	At OHWM	Above OHWM	Comments
9.1.10	0939	5	39D16		1.0	A	U	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,12 F: 5,15,18	Use note pages at back of notebook for comments. Put comment number in block below.
9.1.10	1004	5	39D17 *		1.0	A	U	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,12 F: 5,15,18	
9.1.10	1005	5	39D18 *		1.0	A	U	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,12 F: 5,15,18	
9.1.10	1006	5	39D19 *		3.0 +.0	A	U	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,12 F: 5,15,18	
9.1.10	1013	5	39D20 *		3.0	A	U	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,12 F: 5,15,18	OUTSIDE OF ROUTE
9.1.10	1015	5	39D21 *		6.0 +.0	A	U	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,12 F: 5,15,18	RTH FIELD VERIFIED
9.1.10	1007	5	39D22 *		6.0 +.5	A	U	Y	A: 5,9,10,12,13 D: 7,10	B: 2,12,13 E: 5,12	C: 10,11,12 F: 5,15,18	RTH FIELD VERIFIED

Reference: D = Drainage; M = Manmade; MD = Major Drainage; R = River

ICF Jones & Stokes

Wetland Determination Data Forms – Arid West Region

For DesertXpress

HUC 12 Watershed *Duck Creek*

Within Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed ID # 39

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 2/27/08
Applicant/Owner: Circle Point State: NV Sampling Point: 97-1W
Investigator(s): Kell, Shook, Bryan Morse, John Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D Lat: N 11 5,181352 Long: N 34.027574 Datum: NAD 83
Soil Map Unit Name: N/A NWI classification: N/A zone 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ____ N/A
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Topo indicates a blue line. No swales or drainages were observed in the field on the land parcels immed. west of I-15 (all). Parcel has been recently bladed/graded. Natural drainage may have been diverted away from this area. A 24" CMP under I-15 conveys road runoff via swale (3' wide x 1' high, 1:4 slope) that parallels I-15 on the west. Flows travel ultimately to Duck Creek.

Photo
82 facing SW at adjacent landuse.
81 " NW " " " " "
80 " NW " " " " "
79 " N along I-15.
77 " S " " "
76 " E at culvert.
83 " E along private property block wall, at possible previous drainage path.

VEGETATION

NO OHWM indicators on parcel.

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.	Ø		
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)
Total Number of Dominant Species Across All Strata: ____ (B)
____ (A/B) Ø

Total Cover: ____
Return ____ % Cover of Biotic Crust ____

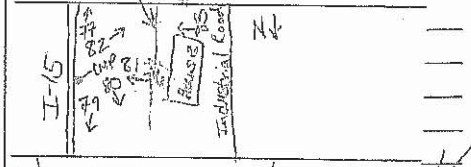


Photo vantage points Site 97-1W

____ (B) Ø

___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: No veg present.

SOIL

Sampling Point: 97-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A

Hydric Soil Present? Yes _____ No _____

Remarks: No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: See remarks on reverse.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: DESERT XPRESS City/County: CLARK Sampling Date: 2/27/08
Applicant/Owner: CIRCLE POINT State: NV Sampling Point: 98-1W + 98-1E
Investigator(s): KS, BM, J. Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D Lat: N -115.181581 Long: N 36.043378 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes?, Soil Yes?, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No N/A
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Mistake in Photos: Wipe Bar reflect 77-1 instead of 98-1.

Remarks: 8 CBCs (100' wide total) under I-15 SB onramp @ Blue Diamond Hwy interchange. CCRFCD facilities, fully fenced. E+W sides have the same conditions.
Photos: 51 facing E @ CBCs
52 " S @ channel
53 " N @ channel
Flow enters CBCs from earthen-lined canals from the South (30' wide) + from the west (15' wide) parallels I-15 parallels Blue Diamond Hwy
Fully developed urban area. 2:1 slope in channels.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: Ø (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: Ø (A)	Ø (B)	

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: No veg present.

Sampling Point: 98-1W+E

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No N/A.

Remarks: No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Unnamed trib to Duck Creek. See remarks on reverse.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert X Press City/County: Clark Sampling Date: 2/27/08
Applicant/Owner: Circle Point State: NV Sampling Point: 98-2W + 98-2E
Investigator(s): KS, BM, J. Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D ~~Lat:~~ 12-115, 181426 ~~Long:~~ N 36, 040834 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No N/A
Wetland Hydrology Present? Yes ____ No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: 4 CBCs (50' wide total) under I-15. CCRFCD facilities, fully fenced. Conditions the same on East + west sides of alignment. Flow enters the CBCs from the south (earthen lined channel (30' w bed) + from the west through a 20' CBC under the Silverton Hotel property; 2:1 slope in channel that parallels I-15. (and subsurface channel)

Photos: 59 facing S along channel
58 " E @ CBCs
57 " N along channel
Mistake: Wipeboard in Photos reflect 77-2 instead of 98-2.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: Ø (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: No veg present.

SOIL

Sampling Point: 98-2 WT E

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A

Hydric Soil Present? Yes ____ No ____

Remarks: No soil pits excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ____ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Unnamed trib to Duck Creek. See remarks on reverse

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Clark Sampling Date: 2/27/08
Applicant/Owner: Circle Point State: NV Sampling Point: 98-3W
Investigator(s): Bryan Morse, Kelly Shook, John Hilson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D Lat: N 36.033914 Long: W -115.181805 Datum: NAD 83
Soil Map Unit Name: N/A NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation NO, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ____ N/A
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks:
See remarks on reverse page.
NO OHWM indicators on parcel.

Photos
64 facing N along I-15.
63 " S " "
62 " E at culvert.
61 " W at swale upstream.
60 " E " " downstream.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1. Larrea tridentata	6	N	NL UPL
2. Acacia greggii	10	Y	FACU
3. Ambrosia dumosa	15	Y	NL UPL
4.			
5.			
Total Cover:	31		
Herb Stratum			
1. Salsola tragus	1	N	UPL
2. Bromus tectorum	1	N	NL UPL
3. (= S. kali)			FACU
4. HR = S. pestifer			FACU
5. as per NWI			
6.			
7.			
8.			
Total Cover:	2		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 98 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 10	x 4 =	40
UPL species 23	x 5 =	115
Column Totals: 33 (A)		155 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Sampling Point: 98-3W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A.

Hydric Soil Present? Yes _____ No _____

Remarks: No soil pit was excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Channel shown as blue line on topo, but there's no defined bed & bank across undeveloped parcel (only a slight swale). Relatively new housing development west of this undevel. parcel may have redirected flow away from parcel. A 36" CMP crosses under I-15; flows parallel I-15 southbound toward Duck Creek in an earthen-lined channel (20'w x 1'h; 1:4" bank" slope).

F-15-150

Increased trash, asphalt, concrete & cinderblock in

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 2/29/08
Applicant/Owner: Circle Point State: NV Sampling Point: 98-4W
Investigator(s): John Holsen, Kelly Shook, Bryan Morse Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Floor Local relief (concave, convex, none): None Slope (%): 1-5
Subregion (LRR): D Lat: N 36.032305 Long: W 115.181749 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (if no, explain in Remarks.)
Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks:
Adj. land use to east is I-15 & construction equipment yard to southwest, undevel. land to west & northwest.

Photos
68 facing E at culvert.
67 " E " wash upstream.
66 " E " " "
65 " soil pit.
69 " N along I-15.
70 " S " " "

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1. Acacia greggii	3	Y	FACU
2. Ericameria laricifolia	2	Y	NL UPL
3. Ambrosia dumosa	1	N	NL UPL
4.			
5.			
Total Cover:	6		
Herb Stratum			
1. Cynodon dactylon	1	Y	FAC
2. Brassica tournefortii	1	Y	NL UPL
3. Bromus tectorum	1	Y	NL UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	3		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 97 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 1	x 3 =	3
FACU species 1	x 4 =	4
UPL species 4	x 5 =	20
Column Totals: 6	(A)	27 (B)

Prevalence Index = B/A = 4.5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Sampling Point: 92-4 W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 5/6						Sandy loam w/ gravel	
>11	pick ax refusal - large rock + gravel >5"							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No ✓

Remarks: Soil pit dug in channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5) sediment sorting

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Channel shown as blue line on topo & trib to Duck Creek. 36" CMP crosses under I-15. Drainage DHM: 6'w x 1'h + 1:2 slope. Drains east to and to large swale that parallels I-15. Drainage crosses undevel. private parcel & trash is disposed of in drainage.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 2/27/08
Applicant/Owner: Circle Point State: NV Sampling Point: 98-SW+E
Investigator(s): KS, BM, John Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Floor Local relief (concave, convex, none): Ø Slope (%): 1-5
Subregion (LRR): D ~~Lat~~: W -115.181098 ~~Long~~: N 31.032487 Datum: NAD 83
Soil Map Unit Name: N/A NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation NO, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ✓ No ____
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Drainage parallels I-15. No blue line on topo. This earthen-lined "swale" OHM = 30'W x 1'h + 1:4 slope. Analysis area is 400'L - a 24" CMP is at midpoint in the 400'L. 24" CMP crosses under I-15 + on East side another wide, shallow "swale" parallels I-15 + conveys flow south toward Duck Creek.

Photo 75 facing E at CMP
74 " S of channel
73 " N " "
72 soil pit (in channel)

Land use: I-15; part undeveloped parcel to the west + block wall w/ construction yard. See point, 98-4 for more detailed land use info.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1. Cynodon dactylum	45	Y	FAC
2. Brassica tournefortii	1	N	NL-UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	46		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 54 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 45	x 3 =	135
FACU species	x 4 =	
UPL species 1	x 5 =	5
Column Totals: 46 (A)		140 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Sampling Point: 98-5WTE

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/6						Sandy loam	
>6	Pix ax refusal - rocks + cobbles >5"							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: rocks + cobble >5"

Depth (inches): 6

Hydric Soil Present? Yes ___ No ✓

Remarks: Soil pit dug in channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Substrate sorting. Trib to Duck Creek.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 3/6/08
Applicant/Owner: Circle Point State: NV Sampling Point: 98-7
Investigator(s): Kelly Shook, Margaret Widdowson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D ~~Lat~~ W -115.185350 ~~Long~~: D 36.052044 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)
Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ____ N/A.
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: USGS shows blue line. This drainage has OHM of 24" wide, 6" high, with 2:1 side slope. Remnant desert scrub surrounded by urban land use. Trib. to Duck Creek.

Photo 331 facing E of drainage downstream.
332 " W " " upstream.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1. Ambrosia dumosa	20	Y	NI-UPL
2. Larrea tridentata	10	N	NI-UPL
3. Acacia greggii	3	N	FACU
4.			
5.			
Total Cover:	33		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 3	x 4 =	12
UPL species 30	x 5 =	150
Column Totals: 33	(A)	170 (B)

Prevalence Index = B/A = 5.15

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Remant desert scrub surrounded by urban land use.

SOIL

Sampling Point: 98-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks: No soil present. Surface substrate is sand, gravel, and pebbles.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Trib. to Duck Creek. See remarks on reverse.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 2/27/08
Applicant/Owner: Circle Point State: NV Sampling Point: 97-1W
Investigator(s): Kelly Shook, Bryan Morse, John Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D Lat: W -115.181352 Long: N 36.027574 Datum: NAD 83
Soil Map Unit Name: N/A NWI classification: N/A ZONE U
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	N/A
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ✓	

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Topo indicates a blue line. No swales or drainages were observed in the field on the land parcels immed. west of I-15 ROW. Parcel has been recently bladed + graded. Natural drainage may have been diverted away from this area. A 24" CMP under I-15 conveys road runoff via swale (30' wide x 1' high, 1:4 slope) that parallels I-15 on the west. Flows travel ultimately to Duck Creek.

Photo
82 facing SW at adjacent landuse.
81 " W " " " " "
80 " NW " " " " "
79 " N along I-15.
77 " S " " "
76 " E at culvert.
83 " E along private property block wall of possible previous drainage path.

VEGETATION

NO OHWM indicators on parcel.

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.	Ø		
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)
Total Number of Dominant Species Across All Strata: ____ (B)
____ (A/B)
~~Total Cover:~~ ____
~~ratum~~ ____ ~~% Cover of Biotic Crust~~ ____

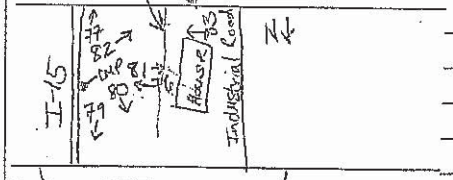


Photo vantage points
Site 97-1W

's ____ (B)
Ø

___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: No veg present.

SOIL

Sampling Point: 97-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____ N/A

Remarks: No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: See remarks on reverse.

Exhibit B2

DesertXpress Field Data For Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed Number	HUC 12 Watershed Name	HBG Field Data	ICF Jones & Stokes Field Data	Comments
37	Town of Sloan	Yes	Yes	
38	Town of Arden	Yes	Yes	Delineated by HBG using adjacent watershed data.
39	Duck Creek	Yes	Yes	
40	Tropicana Wash	No	Yes	Delineated by HBG using adjacent watershed data.
41	City of Las Vegas-Las Vegas Wash	No	Yes	Only northernmost possible station locations would be in this watershed. Urban Drainage features. Delineated by HBG using adjacent watershed data.

*

Huffman-Broadway Group

Field Data Forms

For DesertXpress

HUC 12 Watershed *Duck Creek*

Within Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed ID # 39

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas/Clark Sampling Date: 3/1/08
Applicant/Owner: Circle Point State: NV Sampling Point: C93-1W
Investigator(s): KS, BM, J. Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): None Slope (%): —
Subregion (LRR): D Lat: N 115.224922 Long: N 36.029467 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation yes, Soil yes, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Blue line on topo. Concrete open box channel - CCRFCD facility (see web site for facility details) - conveys flows from west to east under the UPRR to Duck Creek / Las Vegas Wash.

Photo 215 facing N
214 " W
213 " E
212 " S

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: Ø			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover: Ø			
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover: Ø			
Woody Vine Stratum			
1.			
2.			
Total Cover: Ø			

% Bare Ground in Herb Stratum N/A % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: Ø (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Concrete-lined. No veg.

Sampling Point: C93-1W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks: Concrete-lined. No soil pit dug.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Concrete-lined facility.

WETLAND DETERMINATION DATA FORM – Arid West Region

roject/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 3/1/08
Applicant/Owner: Circle Point State: NV Sampling Point: C94-1W
Investigator(s): KS, BM, JHolson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 3-7
Subregion (LRR): D Lat: N-115.211676 Long: N 36.053304 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No N/A	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Blue line on topo + trib to Tropicana Wash. 6' CBC under UPRR - filled w/ rock + gravel except for ~8 inches at top... Limited flow capacity but no sign of ponding on either east or west side of culvert. OHM = 4'W x 1'h with 1:3 side slopes. Adj. land use is UPRR, undevel. parcels immed. west w/ residential area west of that (possible that some or all flow has been redirected into CCFCD facilities for these residential areas), and residential area east of UPRR.

Photos 195 facing S
194 " N
193 " E @ CBC
192 " W

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1. Stephanomeria exigua	1	Y	NL UPL
2. Aristida purpurea	1	Y	NL UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	2		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 98 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 = ____	
FACW species ____	x 2 = ____	
FAC species ____	x 3 = ____	
FACU species ____	x 4 = ____	
UPL species 2	x 5 = 10	
Column Totals: 2 (A)	10 (B)	

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Sampling Point: C94-1W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	Rock + cobble @ surface.							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A

Hydric Soil Present? Yes _____ No _____

Remarks:

No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sed. sort, shelving.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 3/1/08
Applicant/Owner: Circle Point State: NV Sampling Point: C94-2W
Investigator(s): K.S, BM, J. Halson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley-floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D Lat: N -115.214173 Long: N 36.049092 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No N/A
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: Blue line on topo + trib. to Duck Creek or Tropicana Wash. 2-24" concrete pipes under UPRR are filled half the way up w/ rocks + sand. Adj. land use - UPRR, undeveloped desert to W + SW, land under construction to NW.

Photos 199 - facing W
198 " S
197 " E
196 " N

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Larrea tridentata	8	Y	NL UPL
2. Baccharis brachyphylla	7	Y	NL UPL
3. Hymenoclea salsola	2	N	NL UPL
4. Ambrosia dumosa	2	N	NL UPL
5.			
Total Cover:	19		
Herb Stratum			
1. Schismus barbatus	1	N	NL UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	1		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 99 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species 20	x 5 = 100
Column Totals: 20 (A)	100 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Sampling Point: C94-2W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A

Hydric Soil Present? Yes _____ No _____

Remarks: Sand + gravel/cobble on surface.
No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Litter + debris.
Sed. sorting.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas/Clark Sampling Date: 3/1/08
Applicant/Owner: Circle Point State: NV Sampling Point: C94-3W
Investigator(s): KS, BM, J. Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): —
Subregion (LRR): D Lat: W -115.216140 Long: N 36.045569 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation yes, Soil yes, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Blue line on topo. Concrete open box channel - CCRFCD facility. (~30' wide) Conveys flows from west to east under the UPRR, and ultimately to the Las Vegas Wash. See website for facility details

Photo 203 facing N
202 " S
201 " E
200 " W

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	0		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum N/A % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 0 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Concrete lined. No veg.

Sampling Point: C94-3W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A

Hydric Soil Present? Yes _____ No ✓

Remarks: No soil pit excavated. Concrete-lined channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Concrete-lined channel.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: DesertXpress City/County: Las Vegas/Clark Sampling Date: 3/1/08
Applicant/Owner: Circle Point State: NV Sampling Point: C94-4W
Investigator(s): KS, BM, J. Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): —
Subregion (LRR): D Lat: W -115.219751 Long: N 36.040104 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil Yes, or Hydrology ND significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ND, Soil No, or Hydrology ND naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? (see wetland facility for details) Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Blue line on topo. Concrete open box channel – CCRFCD facility – parallels upper ROW on west side + conveys flows from west side of LV Valley under the upper, to the east to Duck Creek/Las Vegas Wash.

Photo 207 facing S
206 " W
205 " E
204 " N

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: Ø			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover: Ø			
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover: Ø			
Woody Vine Stratum			
1.			
2.			
Total Cover: Ø			

% Bare Ground in Herb Stratum N/A. % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: Ø (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:
No veg.

Sampling Point: C94-4W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks: Concrete-lined facility. No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Concrete lined channel.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 3/1/08
Applicant/Owner: Circle Point State: _____ Sampling Point: C94-SW
Investigator(s): KS, BM, J Holson Section, Township, Range: _____
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): —
Subregion (LRR): D Lat: N 115.223038 Long: N 36.032506 Datum: NAD 83
Soil Map Unit Name: _____ NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation yes, Soil yes, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No ✓
Hydric Soil Present? Yes _____ No ✓
Wetland Hydrology Present? Yes _____ No ✓
Is the Sampled Area within a Wetland? (see wetland for facility details) Yes _____ No ✓

Remarks: Blue line on topo. Concrete open box channel - CCRFCD facility parallels UPRR on west side & conveys flows from west side of Las Vegas Valley under UPRR, eastward to Duck Creek / LV Wash.

Photo 211 facing N
210 facing W
209 " E
208 " S

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	0		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum N/A % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 0 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:
No Veg.

Sampling Point: C94-SW

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks: No soil pit excavated. Concrete-lined channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Concrete-lined channel.

Exhibit B2

DesertXpress Field Data For Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed Number	HUC 12 Watershed Name	HBG Field Data	ICF Jones & Stokes Field Data	Comments
37	Town of Sloan	Yes	Yes	
38	Town of Arden	Yes	Yes	Delineated by HBG using adjacent watershed data.
39	Duck Creek	Yes	Yes	
40	Tropicana Wash	No	Yes	Delineated by HBG using adjacent watershed data.
41	City of Las Vegas-Las Vegas Wash	No	Yes	Only northernmost possible station locations would be in this watershed. Urban Drainage features. Delineated by HBG using adjacent watershed data.

*

ICF Jones & Stokes

Wetland Determination Data Forms – Arid West Region

For DesertXpress

HUC 12 Watershed *Tropicana Wash*

Within Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed ID # 40

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: DXP City/County: Clark Sampling Date: 3/6/07

Applicant/Owner: Circle Point State: NV Sampling Point: 99-1W

Investigator(s): KS, BM Section, Township, Range:

Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): Slope (%): 2

Subregion (LRR): D ~~Lat:~~ W -115.181387 ~~Long:~~ N 36.080184 Datum: NAD 83

Soil Map Unit Name: N/A NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation Y, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ND, ~~Soil~~ ____, ~~or Hydrology~~ ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓

Hydric Soil Present? Yes ____ No ✓

Wetland Hydrology Present? Yes ____ No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: This is a concrete-lined facility. (See CCRFCD website for dimensions) that conveys flows from west side of LV Valley easterly to Tropicana Wash (trib to LV Wash), Colorado River. Parallels I-15 on the west + ultimately converges into Blue line on topo.

Photos 324 facing E 325 " N

Photos taken on W side of I-15 show rock-lined channel under construction for transitioning to concrete-(A) lined.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)

Total Number of Dominant Species Across All Strata: Ø (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 99-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A.

Hydric Soil Present? Yes _____ No _____

Remarks: No soil pit dug.

See remarks on reverse.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

11,

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 3/6/08
Applicant/Owner: Circle Point State: NV Sampling Point: 100-3 and 100-4
Investigator(s): Margaret Widdowson, Kelly Shook Section, Township, Range: —
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): None Slope (%): —
Subregion (LRR): D ~~Lat:~~ N 36.092400 ~~Long:~~ W 115.183817 Datum: NAD 83 ZONE 11
Soil Map Unit Name: — NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No N/A	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: USGS topo indicates blue lines however no channels exist on property. Terrain has been bladed + graded and no longer conveys flow. Adjacent land use is light industrial and I-15. Major flood control facilities convey flow around this area in concrete channels parallel to I-15 + below surface at I-15 interchange w/ Tropicana Ave. Flows into Tropicana Wash. Non-jurisdictional.

Photo 320 facing SW. 321 facing NE. Photos 322-328.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Ambrosia dumosa	10	Y	UPL
2. Larrea tridentata	2	N	UPL
3. Acacia gregii	3	N	FACU
4.			
5.			
Total Cover:			
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	0		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 3	x 4 =	12
UPL species 12	x 5 =	60
Column Totals: 15	(A)	72 (B)

Prevalence Index = B/A = 4.8

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Vegetation is beside remnant channel.

SOIL

Sampling Point: 100-3 & 100-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A.

Hydric Soil Present? Yes _____ No _____

Remarks: No soil present. No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: CCRFCD have redirected flows off-site thru concrete-lined facilities.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: DXP City/County: Clark Sampling Date: 3/6/07

Applicant/Owner: Circle Point State: NV Sampling Point: 100-5W

Investigator(s): KS, BM Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, (none)): _____ Slope (%): 1

Subregion (LRR): D ~~Lat:~~ W-115.181303 ~~Long:~~ N 36.093571 Datum: NAD 83

Soil Map Unit Name: N/A NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation Y, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation NO, ~~Soil _____, or Hydrology _____~~ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks: This is a blue line on topo & conveys flows from W side of LV Valley easterly to Tropicana Wash (Trib to Colorado River). It is a rock-lined drainage under construction by CCRFCD to become a concrete-lined channel parallel to I-15 on the west side & conveying flows eastward. See CCRFCD website for facility dimensions.

Photos 322 facing NE (Photo taken on W side of I-15.)

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)

Total Number of Dominant Species Across All Strata: Ø (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 100-SW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A

Hydric Soil Present? Yes _____ No ✓

Remarks: No soil pit dug.

See comments on reverse.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

11.

Exhibit B2

DesertXpress Field Data For Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed Number	HUC 12 Watershed Name	HBG Field Data	ICF Jones & Stokes Field Data	Comments
37	Town of Sloan	Yes	Yes	
38	Town of Arden	Yes	Yes	Delineated by HBG using adjacent watershed data.
39	Duck Creek	Yes	Yes	
40	Tropicana Wash	No	Yes	Delineated by HBG using adjacent watershed data.
41	City of Las Vegas-Las Vegas Wash	No	Yes	Only northernmost possible station locations would be in this watershed. Urban Drainage features. Delineated by HBG using adjacent watershed data.

*

ICF Jones & Stokes

Wetland Determination Data Forms – Arid West Region

For DesertXpress

HUC 12 Watershed *Tropicana Wash*

Within Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed ID # 40

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: DXP City/County: Clark Sampling Date: 3/6/07

Applicant/Owner: Circle Point State: NV Sampling Point: 99-2W

Investigator(s): Kelly Shook, Bryan Morse Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Valley Floor Local relief (concave, convex, none): _____ Slope (%): 2

Subregion (LRR): D Lat: W -115.18252 Long: N 36.077815 Datum: NAD 83

Soil Map Unit Name: N/A NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation Y, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation N/D, Soil _____, or Hydrology → naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ✓	Is the Sampled Area within a Wetland? Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks: This is a blue line on topo & a CCRFCD concrete-lined channel (see CCRFCD website for facility dimensions). It conveys flows from west LV Valley easterly to parallel the W side of I-15 & ultimately converges with the Tropicana Wash (trib to LV Wash → Colorado River). Photo 326 facing W (taken on W side of I-15)

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)

Total Number of Dominant Species Across All Strata: Ø (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 99-2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (**S1**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A.

Hydric Soil Present? Yes _____ No _____

Remarks: No soil pit dug.

See remarks on reverse.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: DKP City/County: Clark Sampling Date: 7/7/07

Applicant/Owner: Circle Point State: NV Sampling Point: 100-1W

Investigator(s): KS, BM Section, Township, Range:

Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): Slope (%): 1

Subregion (LRR): D Lat: W -115.181004 Long: N. 36.098605 Datum: NAD 83

Soil Map Unit Name: N/A NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation Y, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation NO, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓

Hydric Soil Present? Yes ____ No ✓

Wetland Hydrology Present? Yes ____ No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: This is a blue line on Topo & named Tropicana Wash (Trib to LV Wash / Colorado River). It is a fully constructed CCRFCD facility that conveys flow from W → E. It transitions from open box, concrete lined channels (multiple; see photos) to underground CBCs on the west of I-15 through the I-15/Tropicana Ave. Interchange & eastward.

Photos: 100-1W-main-Fe facing E; 100-1W-main-F-W facing W. Both photos taken on W side of I-15.

VEGETATION See CCRFCD website for facility dimensions.

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)

Total Number of Dominant Species Across All Strata: Ø (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 100-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A.

Hydric Soil Present? Yes _____ No _____

Remarks: No soil pit dug.

See remarks on reverse.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

11.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 3/1/08
Applicant/Owner: Circle Point State: NV Sampling Point: C99-1W
Investigator(s): KS, BM, JHolson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D Lat: W -115.204862 Long: N 36.061298 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation yes, Soil yes, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No ✓
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks: 12' concrete bridge under UPRR. Flows drain from west to east to Tropicana Wash. Concrete & barbed wire litter the drainage. Adj. land to the west & south is under construction, UPRR & old telephone line to the east, & I-215 to the north. OHM = 9'w x 1.5'h w/ 1:1 side slope

Photo 183 facing S soil pit
182 " S
181 " N @ I-215
180 " W
179 " E @ bridge under UPRR

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Ambrosia dumosa	5	Y	NL UPL
2. Rumex hymenosepalus	2	Y	NL FAC
3. Larrea tridentata	2	Y	NL UPL
4.			
5.			
Total Cover:	9		
Herb Stratum			
1. Schismus barbatus	1	N	NL UPL
2. Bromus tectorum	1	N	NL UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	2		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 98 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 10	x 3 =	60
FACU species	x 4 =	
UPL species 9 11	x 5 =	45 55
Column Totals: 11 (A)		5155 (B)

Prevalence Index = B/A = 4.6 5.0

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Sampling Point: C99-1W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-22	10YR 6/6						Sand w/ cobble	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ___ Depth (inches): _____

Water Table Present? Yes _____ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Shelving, substrate sorting.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas/Clark Sampling Date: 3/1/08
Applicant/Owner: Circle Point State: NV Sampling Point: C99-2W
Investigator(s): KS, BM, JHolson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Floor Local relief (concave, convex, none): Ø Slope (%): 3-7
Subregion (LRR): D ~~Lat~~ W -115.206662 Long: N 36.062563 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation yes, Soil yes, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No N/A	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: 12' concrete bridge under UPRR. OHM = 5'W x 1'h with 1:2 side slopes. Tributary to Tropicana Wash. See C99-1W dataform for adj. land use description. K-rails are placed in channel to prevent vehicle access but allow bike/ped. access.

Photo 187 facing S
186 " W
185 " E @ UPRR bridge
184 " E

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: Ø (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:
__ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:
No veg.

Sampling Point: C99-2W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A.

Hydric Soil Present? Yes _____ No _____

Remarks:

No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas/Clark Sampling Date: 3/1/08
State: NV Sampling Point: C99-3W
Applicant/Owner: Circle Point
Investigator(s): KS, RM, J. Halsor Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): Ø Slope (%): 1-5
Subregion (LRR): D Lat: N 36.20552 Long: W 115.07233 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A Zone 11

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation yes, Soil yes, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No N/A	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Blue line on topo. 36" CMP under UPRR. Conveys flow to Tropicana Wash. OHM: 6'W x 1'H with 1:2 side slopes. Predominantly sodale characteristics. Adj. land use: UPRR, I-215 to the south, Industrial/office complex to the east.

Photo 191 facing S
190 " N
189 " W
186 " E

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: Ø			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover: Ø			
Herb Stratum			
1. Salsola tragus	10	Y	UPL
2. SC (= S. kali)			(FACW)
3. AR (= S. pestifer)			(FACW)
4. as per NWI			
5.			
6.			
7.			
8.			
Total Cover: 10			
Woody Vine Stratum			
1.			
2.			
Total Cover: Ø			

% Bare Ground in Herb Stratum 90 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 40	x 4 =	40
UPL species 10	x 5 =	50
Column Totals: 10 (A)		5040 (B)

Prevalence Index = B/A = 504.0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Sampling Point: C99-3W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A

Hydric Soil Present? Yes _____ No _____

Remarks:

No soil pit excavated, Surface is gravel + sand.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

shelving, sed. sorting

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas/Clark Sampling Date: 3/6/08
Applicant/Owner: Circle Point State: NV Sampling Point: C99-4W
Investigator(s): Kelly Shook, Margaret Widdowson, Bryan Morse Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%):
Subregion (LRR): D ~~Lat:~~ N -115.195559 Long: N 36.083060 Datum: NAD 83 ZONE 11
Soil Map Unit Name: NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No (If no, explain in Remarks.)
Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No ✓
Hydric Soil Present? Yes No N/A
Wetland Hydrology Present? Yes No ✓
Is the Sampled Area within a Wetland? Yes No ✓

Remarks: CCRFCD facility – open, concrete-lined channel conveys flows from west to east under the UPRR; trib. to Tropicana Wash. CCRFCD website indicates this is a ~~_____~~ light industrial. Adjacent land use is fully developed metro/industrial and UPRR.

Photo
316 facing channel bottom,
315 " W.
314 " S.
313 " E.
312 " N.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)
Total Number of Dominant Species Across All Strata: Ø (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: No veg present.

Sampling Point: C99-4W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A.

Hydric Soil Present? Yes _____ No _____

Remarks: No soil pit excavated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas / Clark Sampling Date: 2/25/08
Applicant/Owner: Circle Point State: NV Sampling Point: C100-1W
Investigator(s): Kelly Shook, Bryan Moser, John Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D Lat: N 115.191626 Long: N 36.104709 Datum: NAD 83
Soil Map Unit Name: N/A NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation No, Soil No, or Hydrology Possibly significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Land use in area: UPRR to east. Auto repair yards to west & also construction equipment staging. Culvert under UPRR is ~6' wide w/ earthen bottom. Dead American coot on top of west bank – Margaret Widdowson took photo.

Photos: 34-37 of soil pit; 38 facing S; 39 " N; 40 " E (culvert opening)

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Tamarix ramosissima	12	Y	FACW
2. Acacia greggii	3	N	FACU
3. Olea europea	2	N	NL UPL
4.			
5.			
Total Cover:	17		
Herb Stratum			
1. Cynodon dactylon	10	Y	FAC
2. Typha latifolia	2	N	OBL
3. Brassica tournefortii	1	N	NL UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	13		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 87 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	12	x 2 =	24
FAC species	10	x 3 =	30
FACU species	3	x 4 =	12
UPL species	3	x 5 =	15
Column Totals:	30 (A)		83 (B)

Prevalence Index = B/A = 2.76

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Sampling Point: C100-1W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-20	10YR 3/1	100					Loamy clay	There is trash/debris interspersed in the upper 8" of the soil pit.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ___

Remarks: No upland pit excavated because the area is paved to the west and railroad ballast to the east.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3) Cut banks, sediment sorting.
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______

Water Table Present? Yes ___ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: There is a concave depression immediately west of the railroad culvert opening.
OHM = ~3'H ~7'W > 1:2 side slope. Topo map shows as a blue line.
Check CCRFCD for east side ... to Flamingo Wash - for now, doesn't look like it connects?

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas/Clark Sampling Date: 2/25/08
Applicant/Owner: Circle Point State: NV Sampling Point: C101-UW
Investigator(s): Kelly Shank, John Holson, Bryan Morse Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): None Slope (%): 1-5
Subregion (LRR): D Lat: N 35.187007 Long: W 36.114401 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A 2012E11

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation Yes, Soil Yes, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ____ N/A	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: USGS topo map indicates a blue line. This CCRFCD facility is a gravel-lined channel that transitions to concrete lined as it passes under the I-15 interchange at Flamingo Road. This channel is named Flamingo Wash and is a trib to the Colorado River. The CCRFCD indicates this facility's dimensions are 30'W, 4'D, 1:1 side slope.

Photos
32 facing East
33 " West

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1. Cynodon dactylon	5	Y	FAC
2. Salsola tragus	2	Y	UPL
3. (Brassica tournefortii	1	N	UPL (FACU)
4. (= S. Kali)			(FACU)
5. OR = S. pestifer)			(FACU)
6. as per AMT			
7.			
8.			
Total Cover:	8		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 92 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 5	x 3 =	15
FACU species 2	x 4 =	8
UPL species 81	x 5 =	655
Column Totals: 8 (A)		3028 (B)

Prevalence Index = B/A = 3753.5

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: C101-HW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
N/A.								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks: No soil pit excavated. See remarks on reverse page.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: This channel is named Flamingo Wash, a tributary to the Colorado River (Lake Mead).

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas/Clark Sampling Date: 2/25/08
Applicant/Owner: Circle Point State: NV Sampling Point: C100-2W and C100-2E
Investigator(s): KS, BM, J. Holson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): none Slope (%): 1-5
Subregion (LRR): D ~~Lat:~~ N -115.184971 Long: N 36.115524 Datum: NAD 83
Soil Map Unit Name: N/A NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ND, Soil ND, or Hydrology ND significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ND, Soil ND, or Hydrology ND naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ~~✓~~
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ____ No ✓
Is the Sampled Area within a Wetland? Yes ~~✓~~ No X

Remarks:

Photos:
41 facing N @ soil pit
43 " S @ channel
44 " N @ "
45 " E @ culvert

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1. Acacia greggii	15	Y	FACU
2. Chilopsis linearis	5	N	FAC FACW
3. Prosopis glandulosa	3	N	FAC
4. Atriplex canescens	2	N	UPL FACU FACU
5.			
Total Cover:	25		
Herb Stratum			
1. Cynodon dactylon	15	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	15		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 85 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: ~~3~~ 3 (A)
Total Number of Dominant Species Across All Strata: ~~3~~ 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: ~~50~~ 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species ~~8~~	x 2 =	16
FAC species ~~18~~ 20	x 3 =	~~54~~ 60
FACU species ~~17~~ 18	x 4 =	~~68~~ 72
UPL species 2	x 5 =	10
Column Totals: ~~40~~ 40 (A)		~~132~~ 142 (B)

Prevalence Index = B/A = ~~3.3~~ 3.6

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ~~✓~~

Remarks:

SOIL

Sampling Point: C100-2W and C100-2E

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	———						Gravel	
2-5	10 YR 4/2						Sandy	Soil smells like fuel-
6-12	7.5 YR 7/4						Sandy	possibly from runoff
15-18+	10 YR 7/2						Sandy-clay	from adj. auto repair yard to the west.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks: One soil pit dug in channel on W-side (C100-2W). No soil pit dug in upland or on east side because the area is paved to the west & UPRR ballast on the east.

* Soil is well drained to moderately well drained

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3) Sed. sorting.
- ___ FAC-Neutral Test (D5) Stepped banks.

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓ *

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: OHM = 17'W
7'h
1:1 slope
8' wide CMP culvert.

* Does not meet wetland hydrology criteria.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Desert Xpress City/County: Las Vegas/Clark Sampling Date: 3/6/08
Applicant/Owner: Circle Point State: NV Sampling Point: C101-2W
Investigator(s): Kelly Shook, Margaret Widdowson Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley floor Local relief (concave, convex, none): None Slope (%): 3
Subregion (LRR): D ~~Lat:~~ N -115.185025 ~~Long:~~ N 36.115595 Datum: NAD 83
Soil Map Unit Name: NWI classification: N/A ZONE 11
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ✓ No ____
Hydric Soil Present? Yes ____ No ✓ N/A
Wetland Hydrology Present? Yes ✓ No ____
Is the Sampled Area within a Wetland? Yes ____ No ✓ NOT ENTIRE Channel, but ENTIRE

Remarks: Drainage is channelized with boulders along each bank. Very slow water flow to the north east under UPRR; this is the Flamingo Wash. OHM = 40' W x 4' H with side slope of 2:1. Adjacent land use is hotel/casino, UPRR, & I-15/Flamingo Rd. interchange.

Photos
318 facing S at channel downstream under bridge.
319 " N " " upstream.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum (Filifera var. robusta)			NO
1. Washingtonia cf. robusta	2	N	FACW
2. Pluchea sericea	3	Y	FACW
3.			
4.			
5.			
Total Cover:	5		
Herb Stratum			
1. Cynodon dactilon	15	Y	FAC
2. Typha angustifolia	2	N	OBL*
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	17		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 83 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 2	x 1 = 2
FACW species 83	x 2 = 166
FAC species 15	x 3 = 45
FACU species	x 4 =
UPL species 2	x 5 = 10
Column Totals: 22 (A)	223 (B)

Prevalence Index = B/A = 2.86

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: Typha patches (approx. 4 m²) on channel edge on pebble substrate.

Sampling Point: C101-2W

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks: No soil pit excavated. Surface substrate is rock + pebble with human excrement, hypodermic needles, + trash.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ✓ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (Inches): 6-8

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Flamingo Wash. Small area of surface water flowing very slowly northeastward down the wash. Water source is likely runoff from adjacent (mined, West Rio Hotel landscape Irrigation.

Exhibit B2

DesertXpress Field Data For Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed Number	HUC 12 Watershed Name	HBG Field Data	ICF Jones & Stokes Field Data	Comments
37	Town of Sloan	Yes	Yes	
38	Town of Arden	Yes	Yes	Delineated by HBG using adjacent watershed data.
39	Duck Creek	Yes	Yes	
40	Tropicana Wash	No	Yes	Delineated by HBG using adjacent watershed data.
41	City of Las Vegas-Las Vegas Wash	No	Yes	Only northernmost possible station locations would be in this watershed. Urban Drainage features. Delineated by HBG using adjacent watershed data.

*

ICF Jones & Stokes

Wetland Determination Data Forms – Arid West Region

For DesertXpress

HUC 12 Watershed *City of Las Vegas-Las Vegas Wash*

Within Las Vegas Wash Watershed (HUC 15010015)

HBG Watershed ID # 41

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: DXP City/County: Clark Sampling Date: 3/14/08

Applicant/Owner: Circle Point State: NV Sampling Point: 102-1W

Investigator(s): Kelly Shook, Bryan Morse Section, Township, Range:

Landform (hillslope, terrace, etc.): Valley Floor Local relief (concave, convex, none): Slope (%): 2

Subregion (LRR): D ~~Lat:~~ W -115.165232 ~~Long:~~ N 36.151421 Datum: NAD 83

Soil Map Unit Name: N/A NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation Y, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____ No ____ N/A.	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks: This is a constructed CCRFCD facility that conveys flows from W → E parallel to & under I-15. See CCRFCD website for dimensions. Photo 102-1W facing S

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	Ø		
Woody Vine Stratum			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)

Total Number of Dominant Species Across All Strata: Ø (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: Ø (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = Ø

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 102-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

N/A,

Hydric Soil Present? Yes _____ No _____

Remarks: No soil pit dug.

See comments on reverse.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Exhibit C

Maps of Potential Jurisdictional Areas

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segment 5 Alt B, Map Sheet C250

F-15-208

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segment 5 Alt B, Map Sheet C251

F-IS-209

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segment 5 Alt B, Map Sheet C252

F-15-210

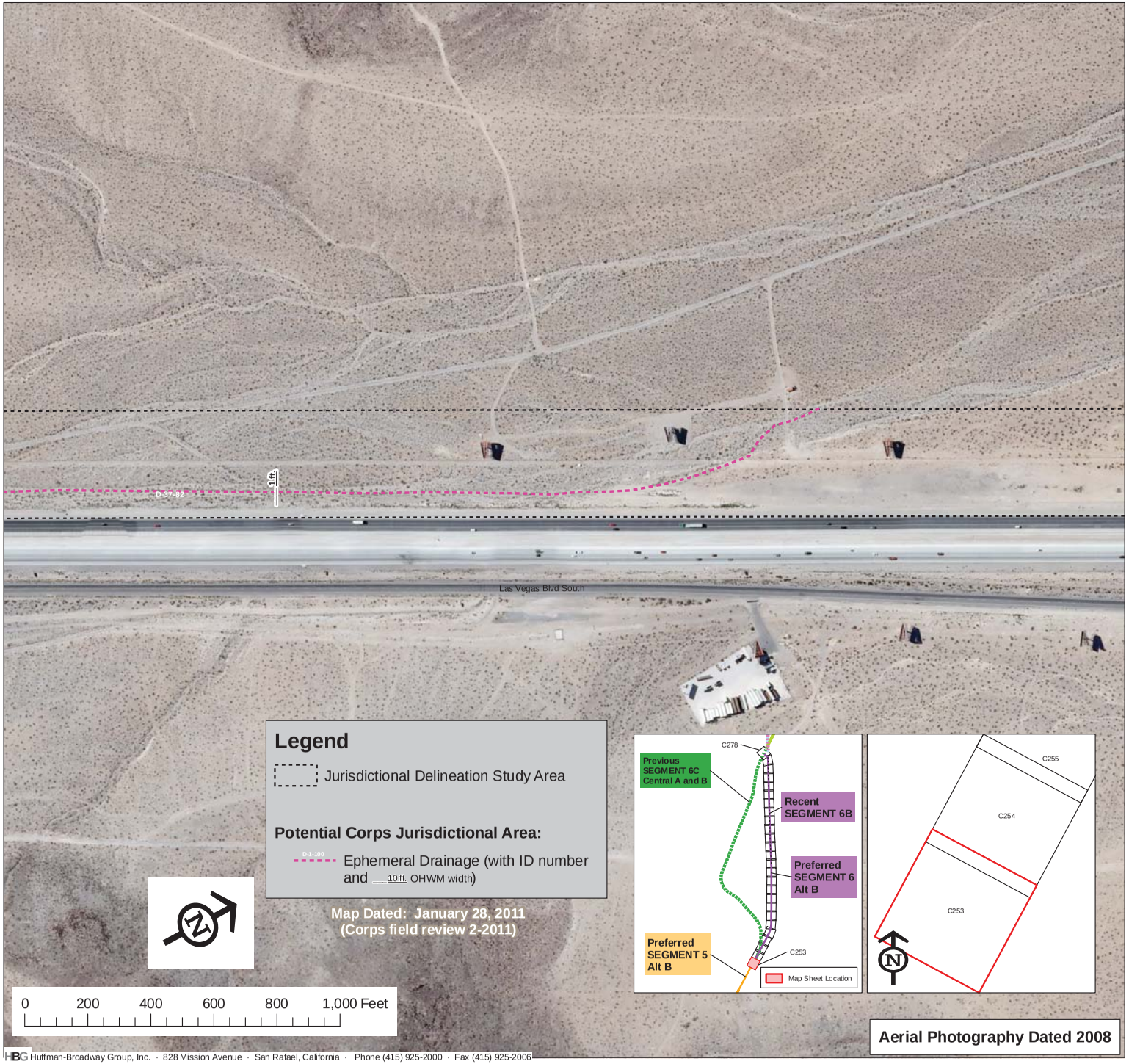

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C253 F-I.5-211

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C254 F-I.5-212

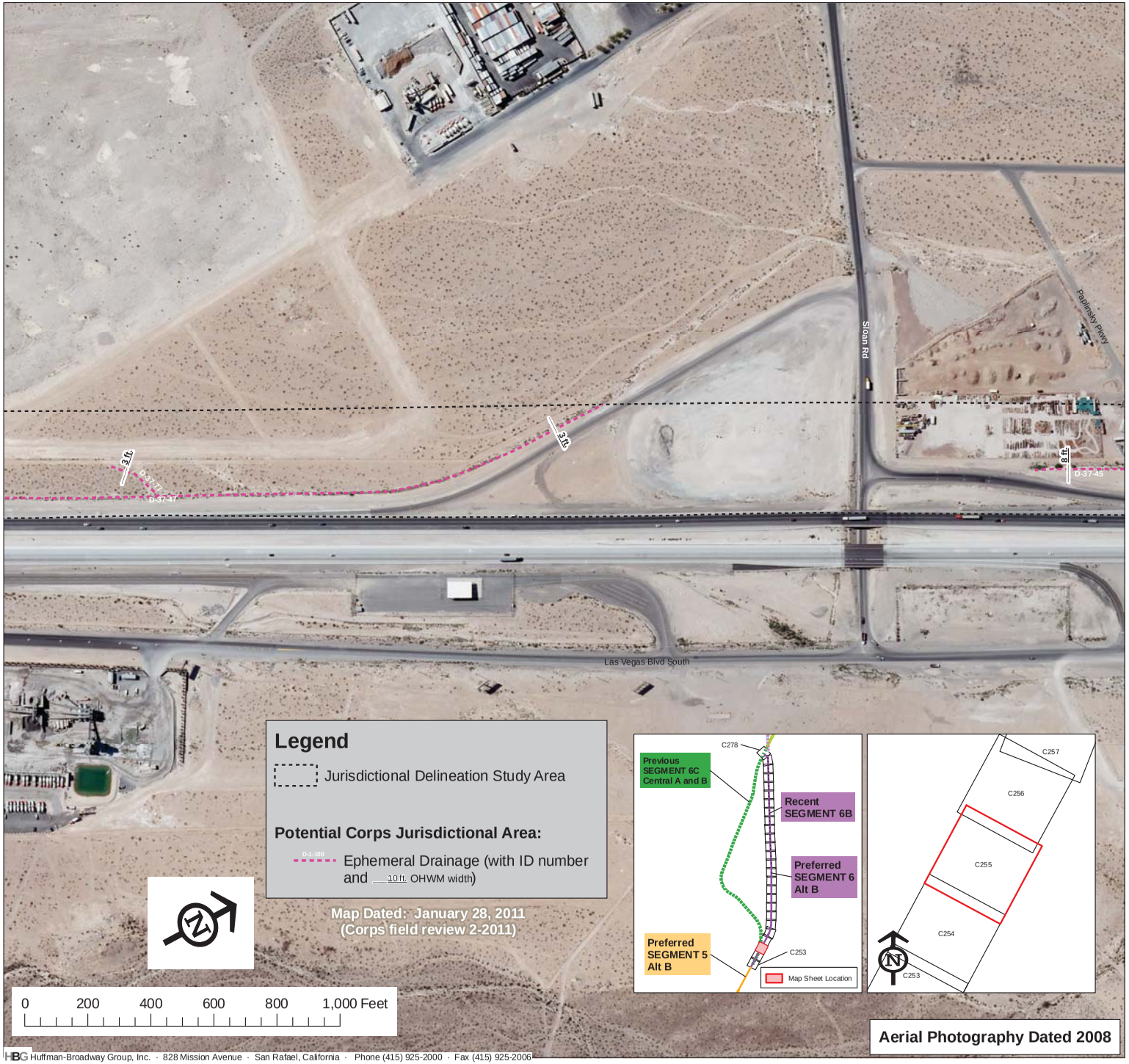

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C255 F-I.5-213

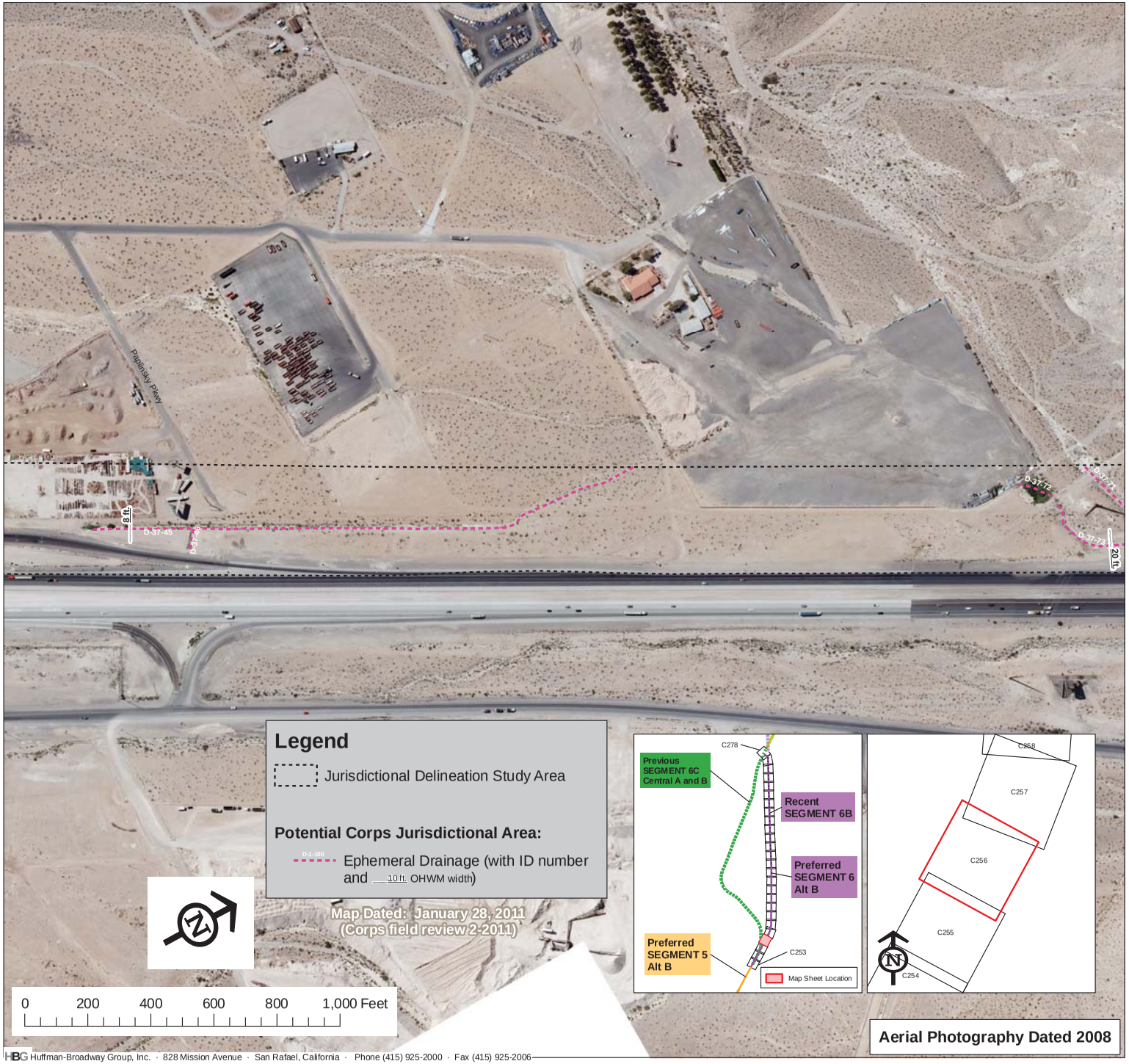

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C256 F-I.5-214

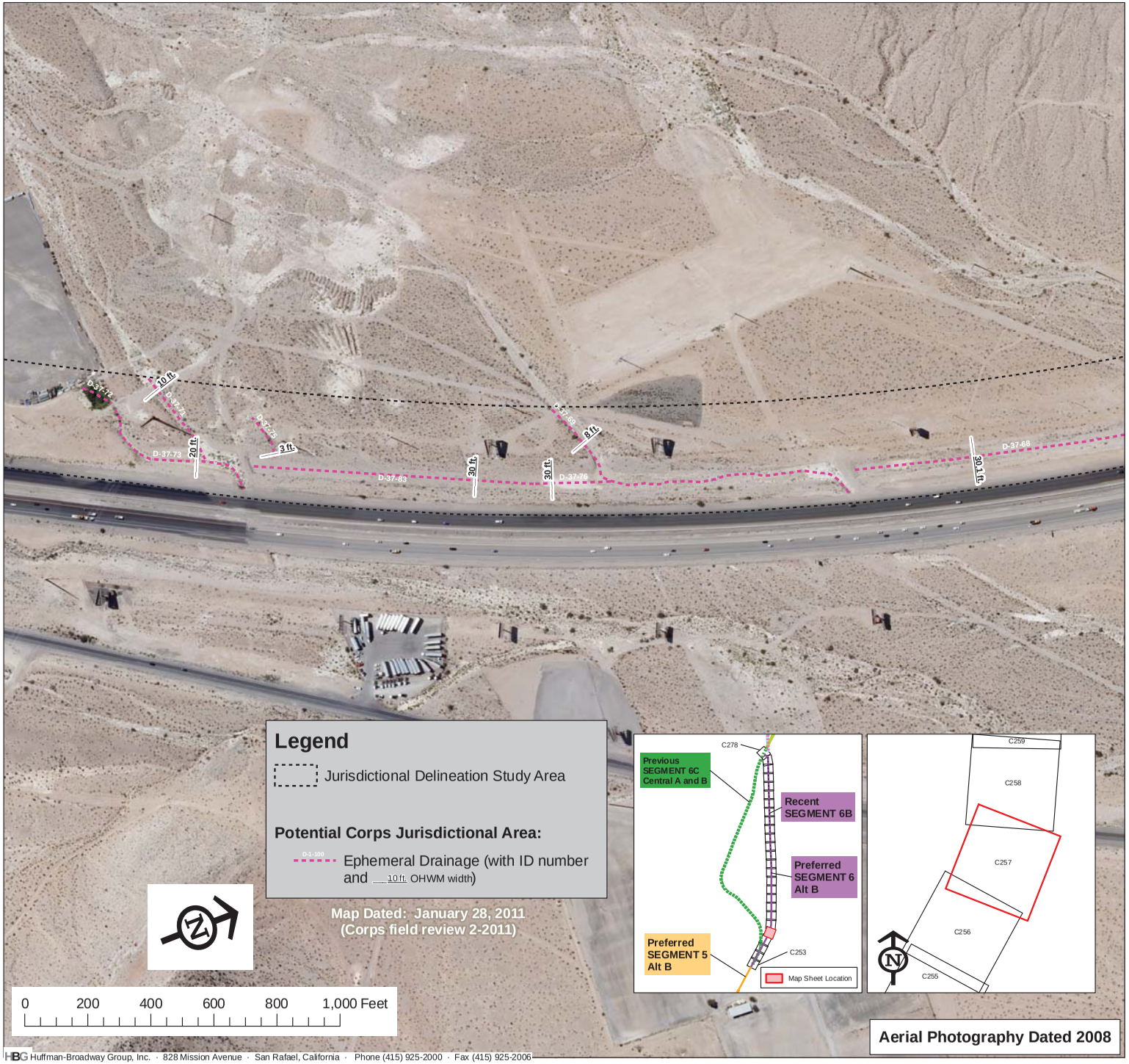

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C257

F-I.5-215

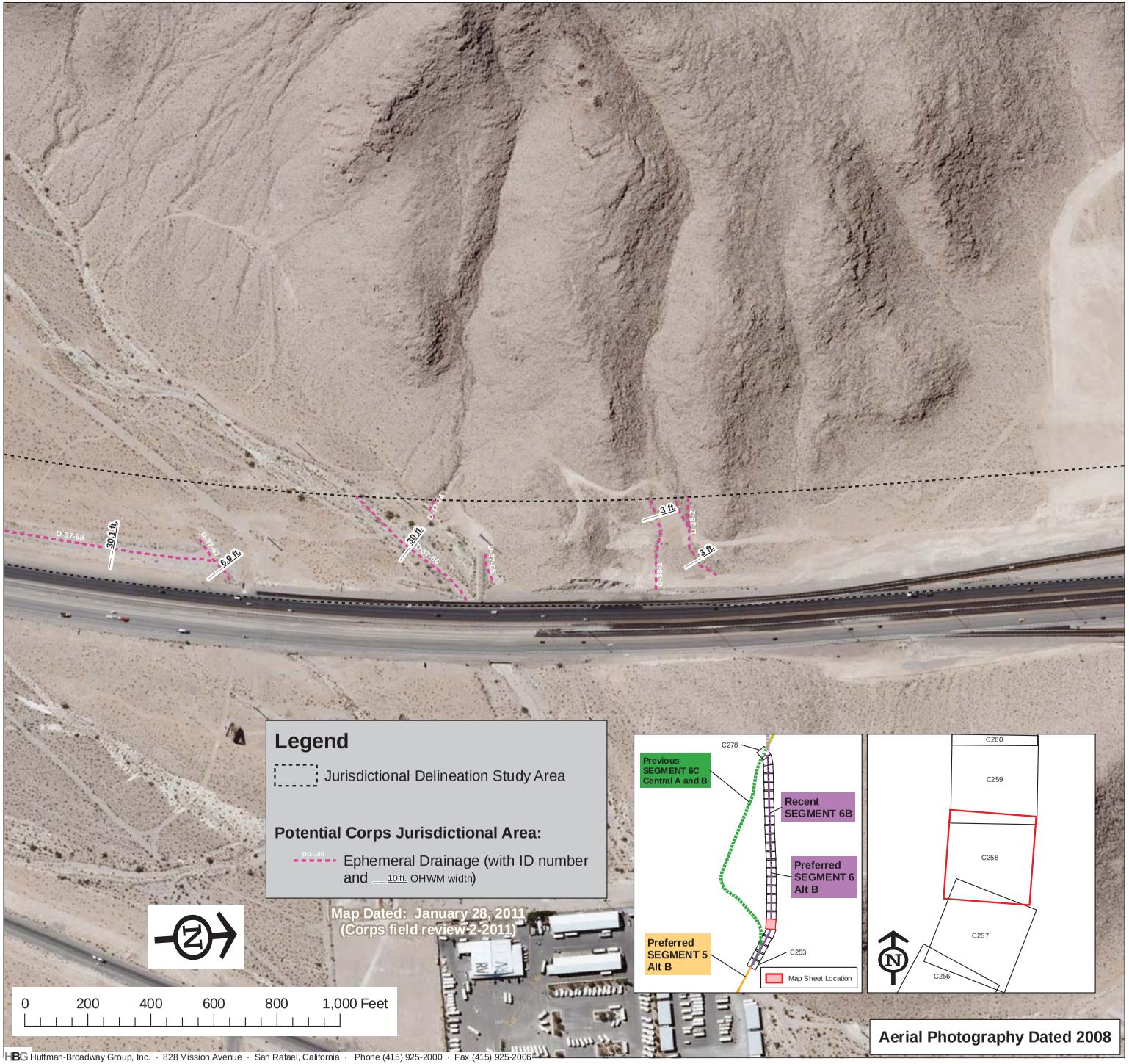

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C258

F-I.5-216

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C259 F-I.5-217

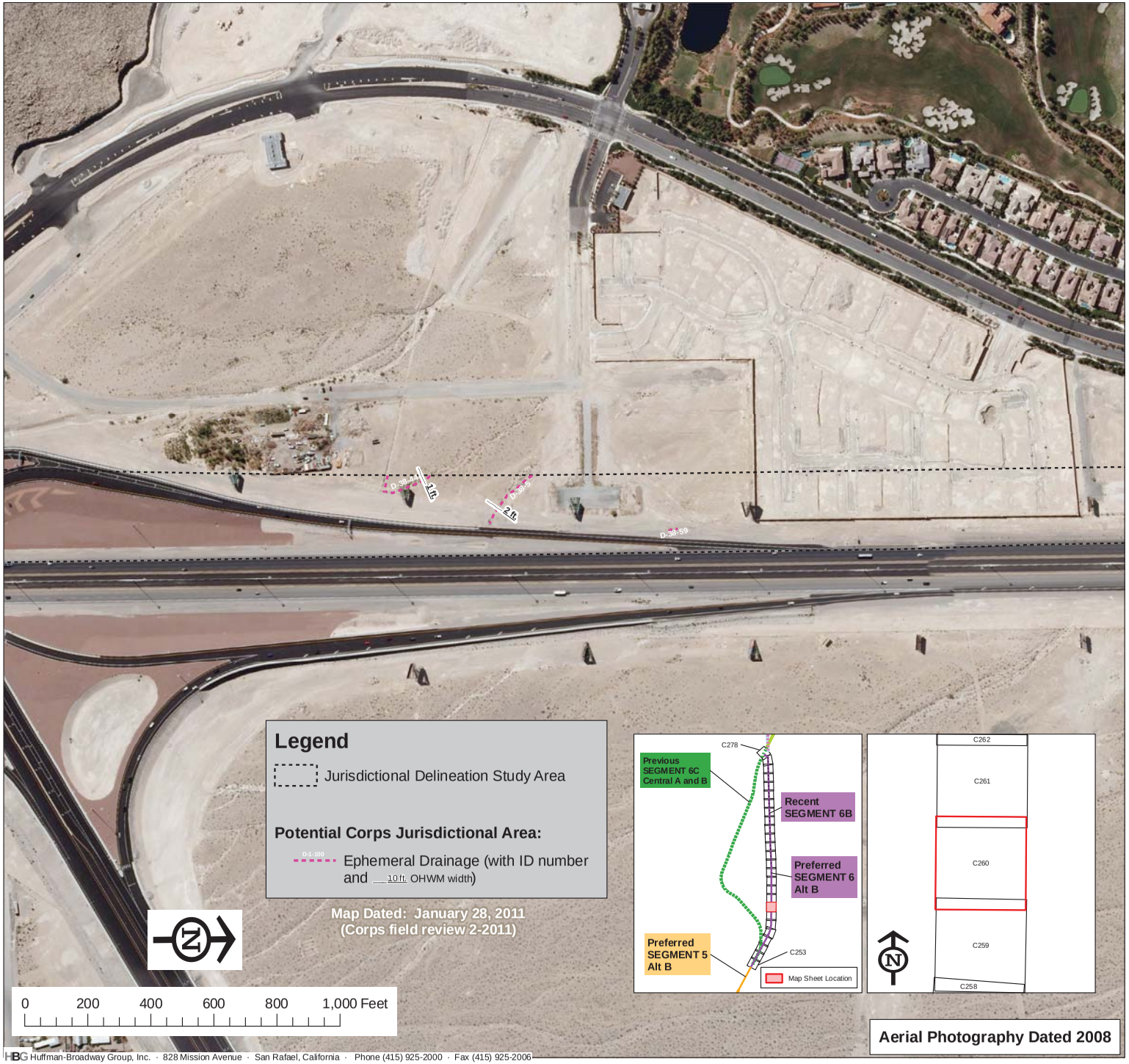

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C263 F-I.5-221

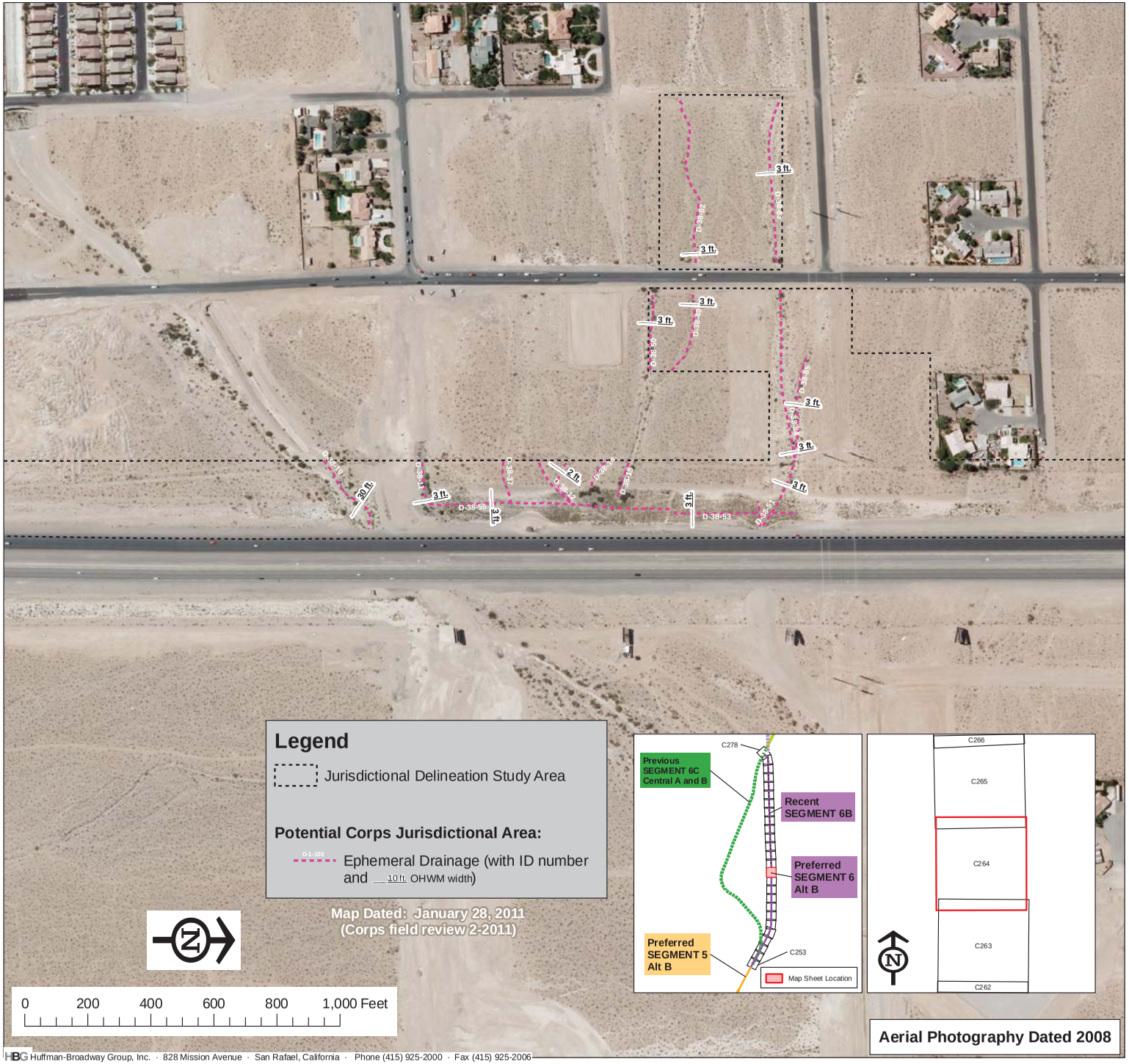

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C264 F-I.5-222

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C265 F-I.5-223

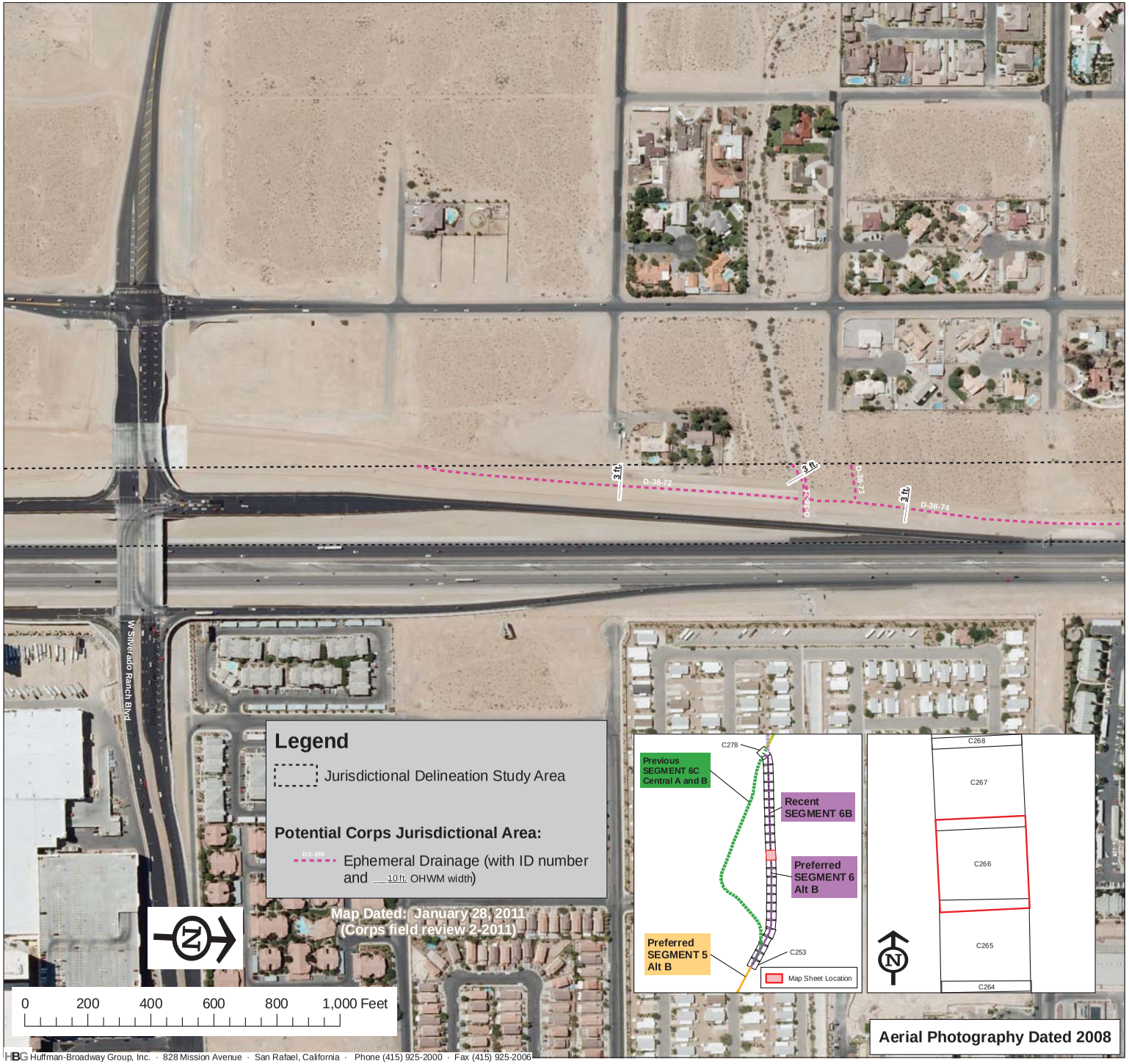

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C266

F-I.5-224

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C267 F-I.5-225

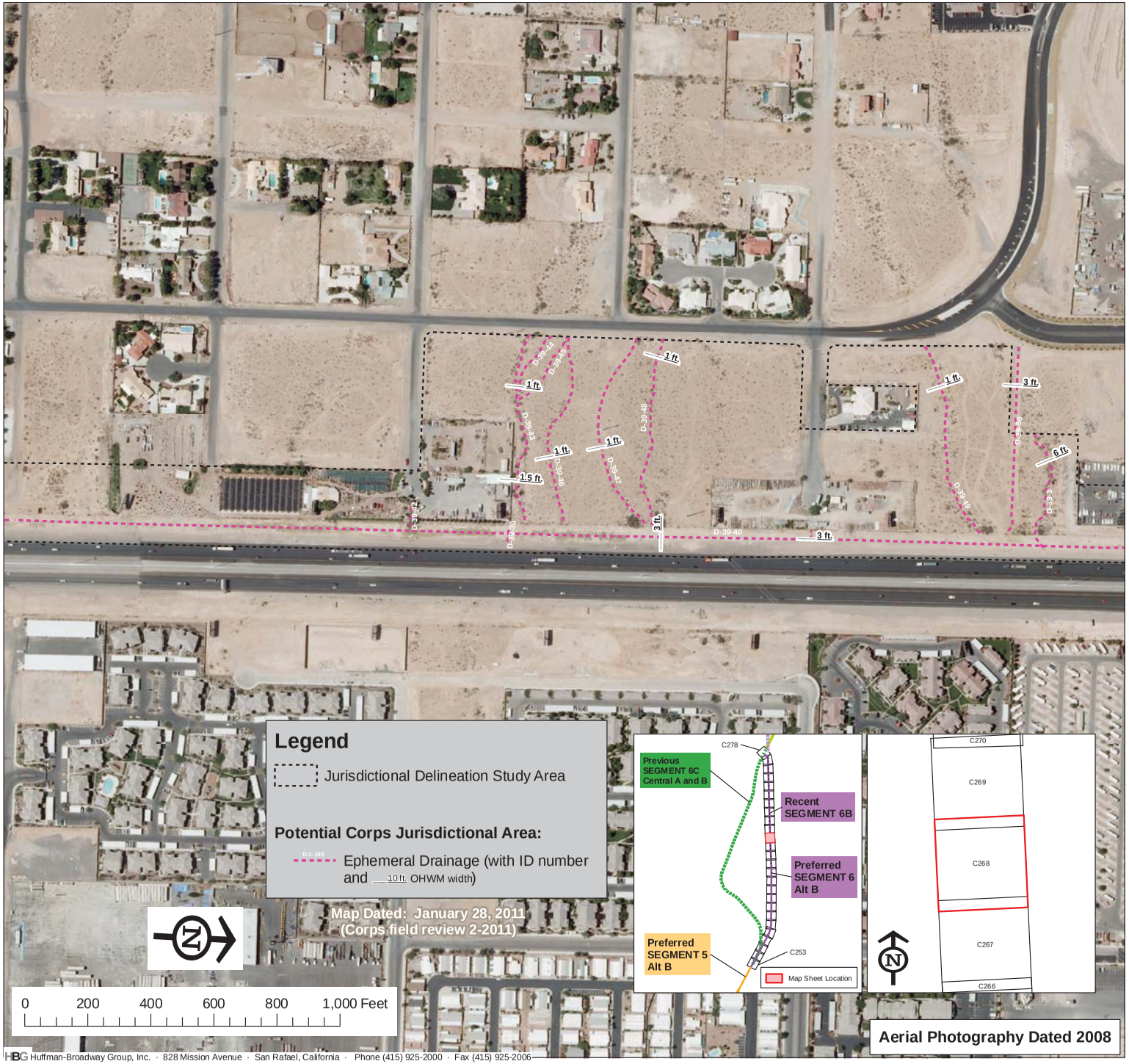

Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C268 F-I.5-226

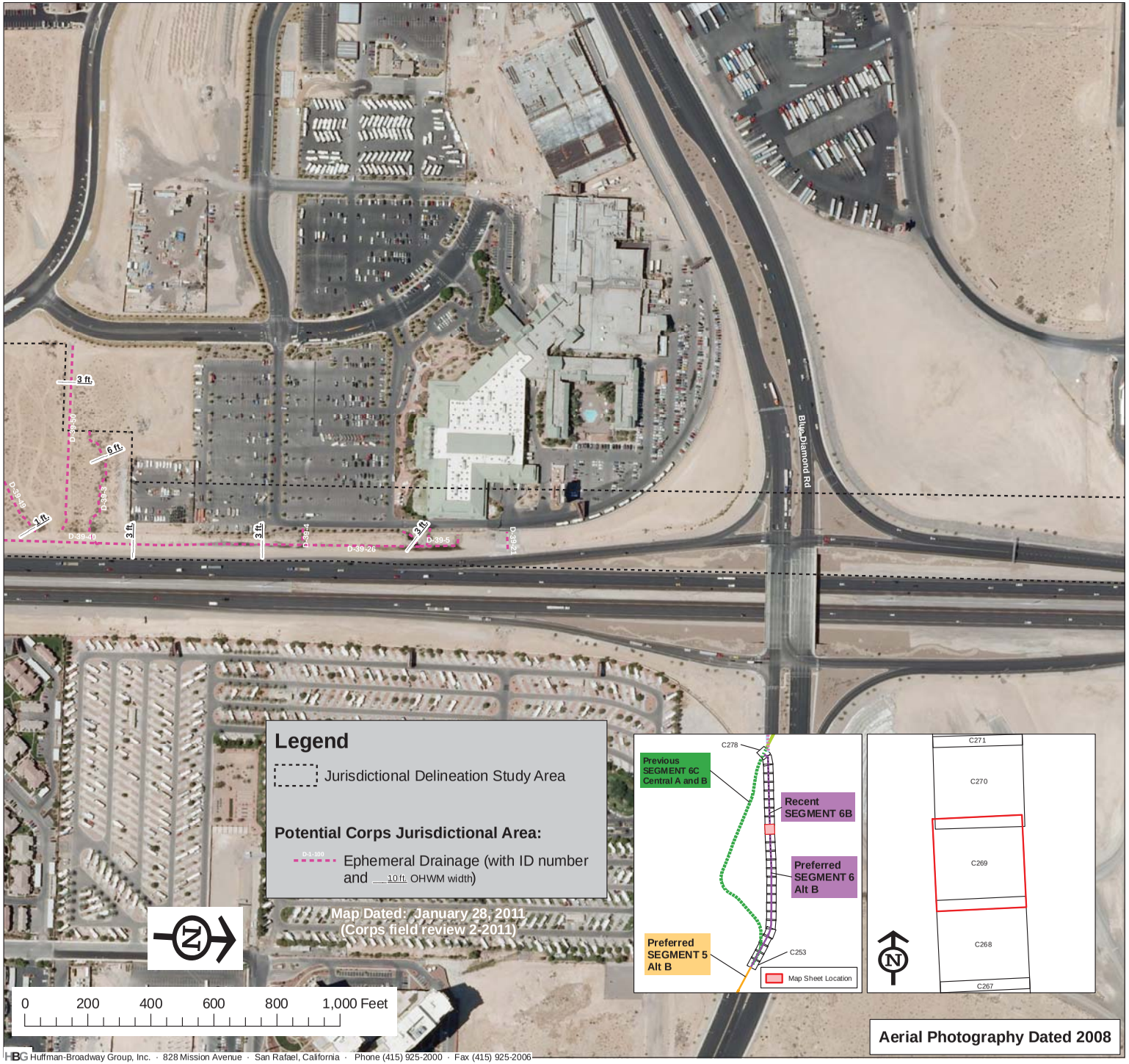

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C269

F-I.5-227

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C270 F-I.5-228

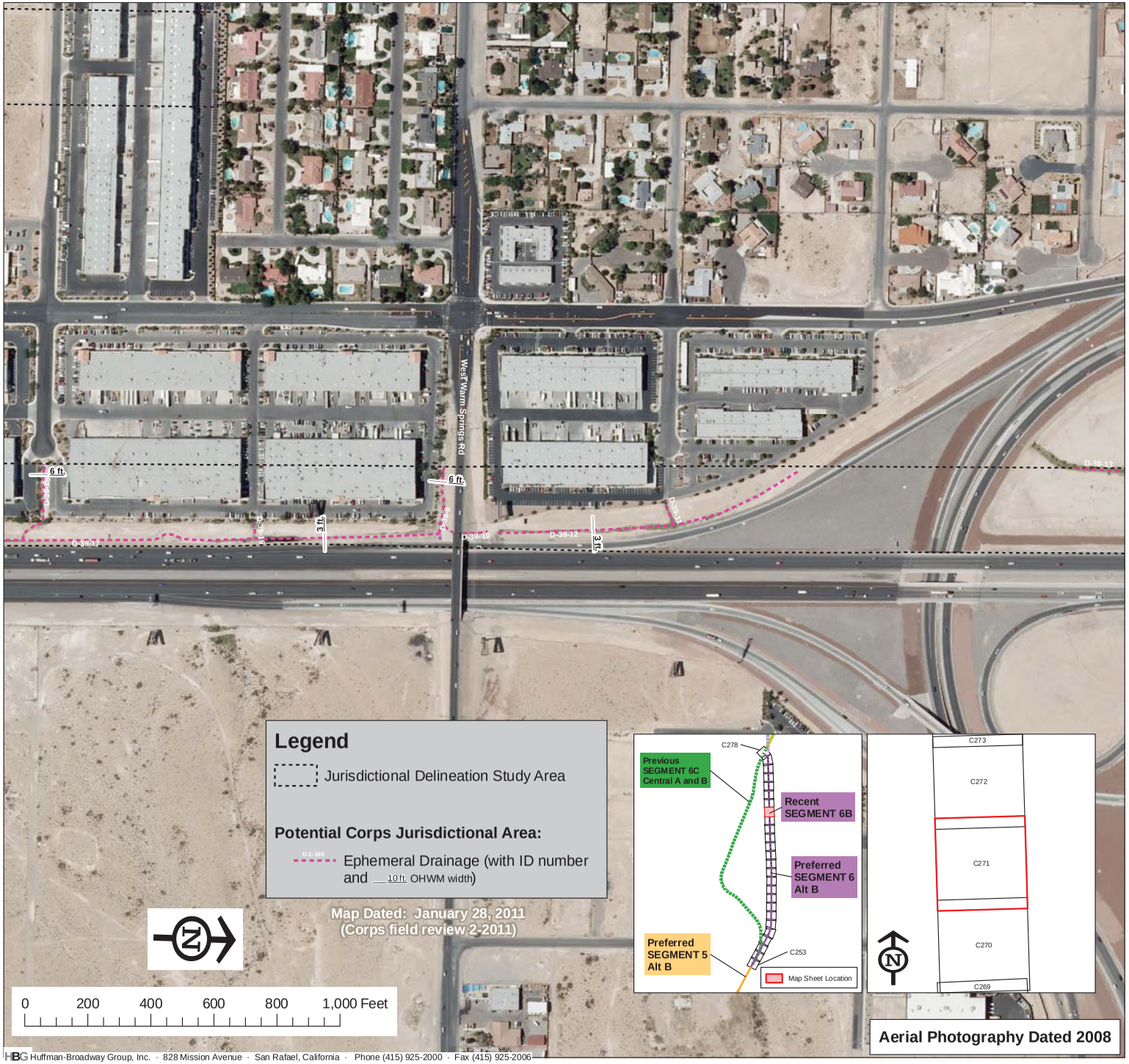

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C271

F-I.5-229

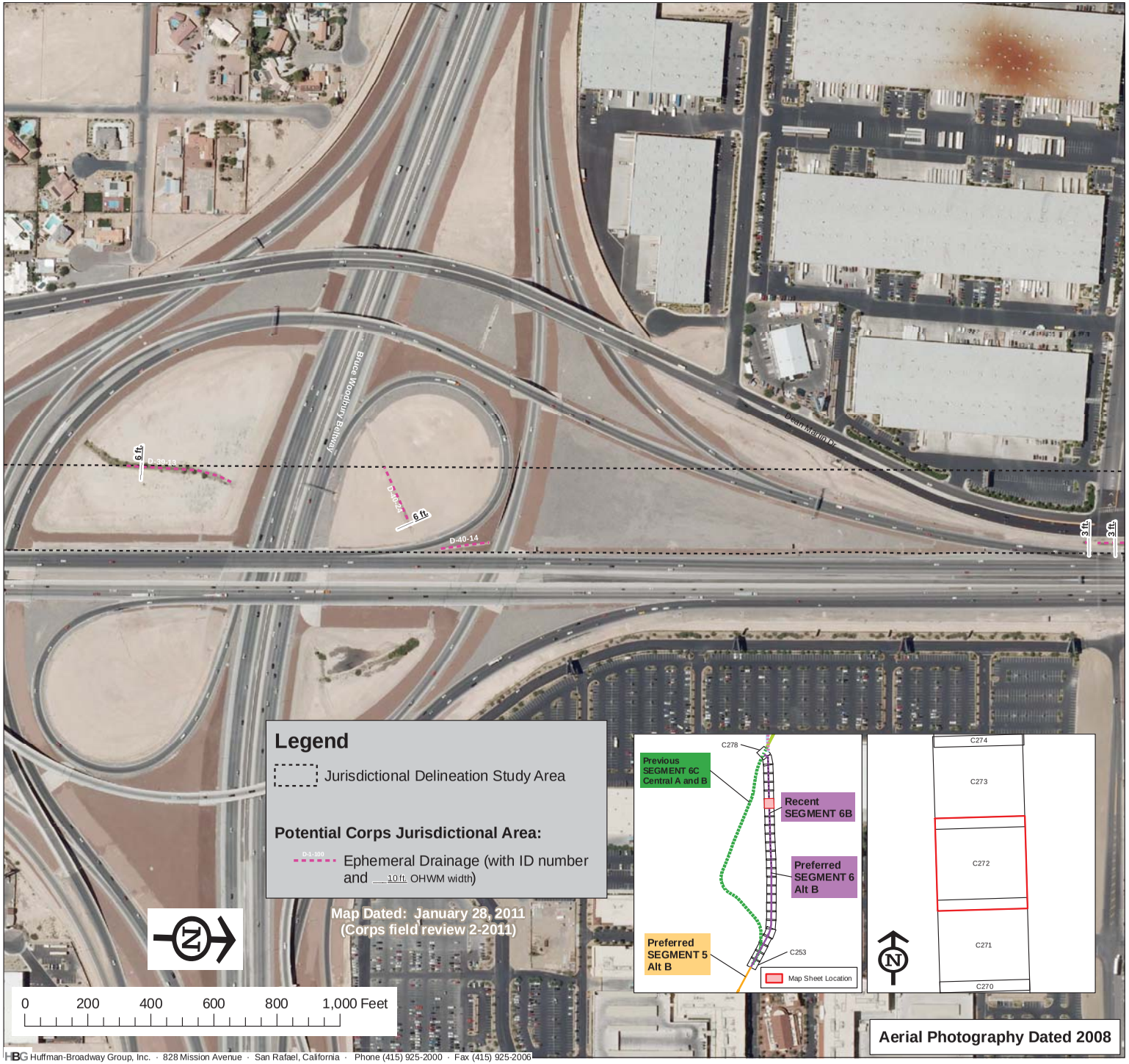

Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C272

F-I.5-230

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C273

F-I.5-231

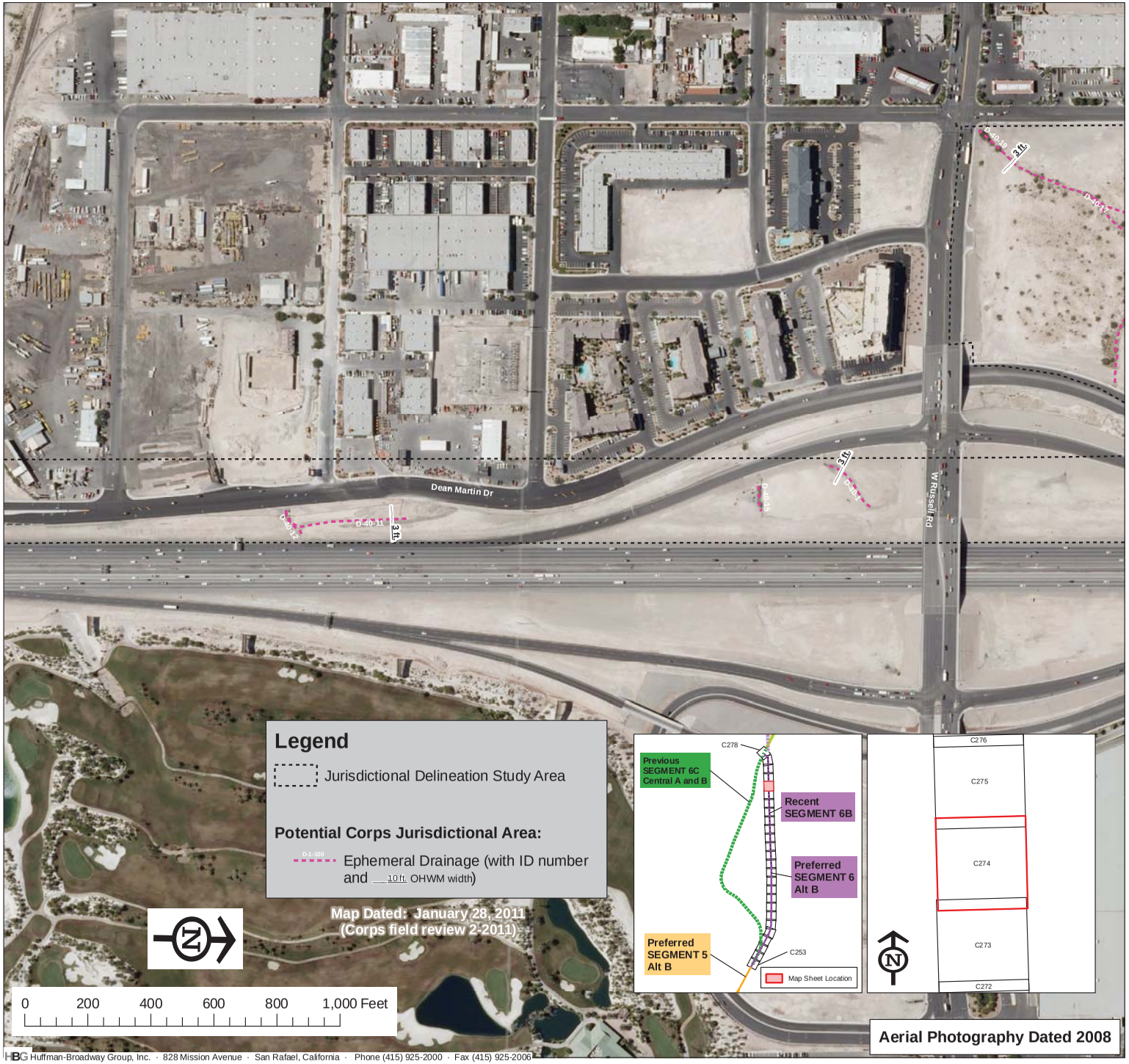

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C274 F-I.5-232

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C275 F-I.5-233

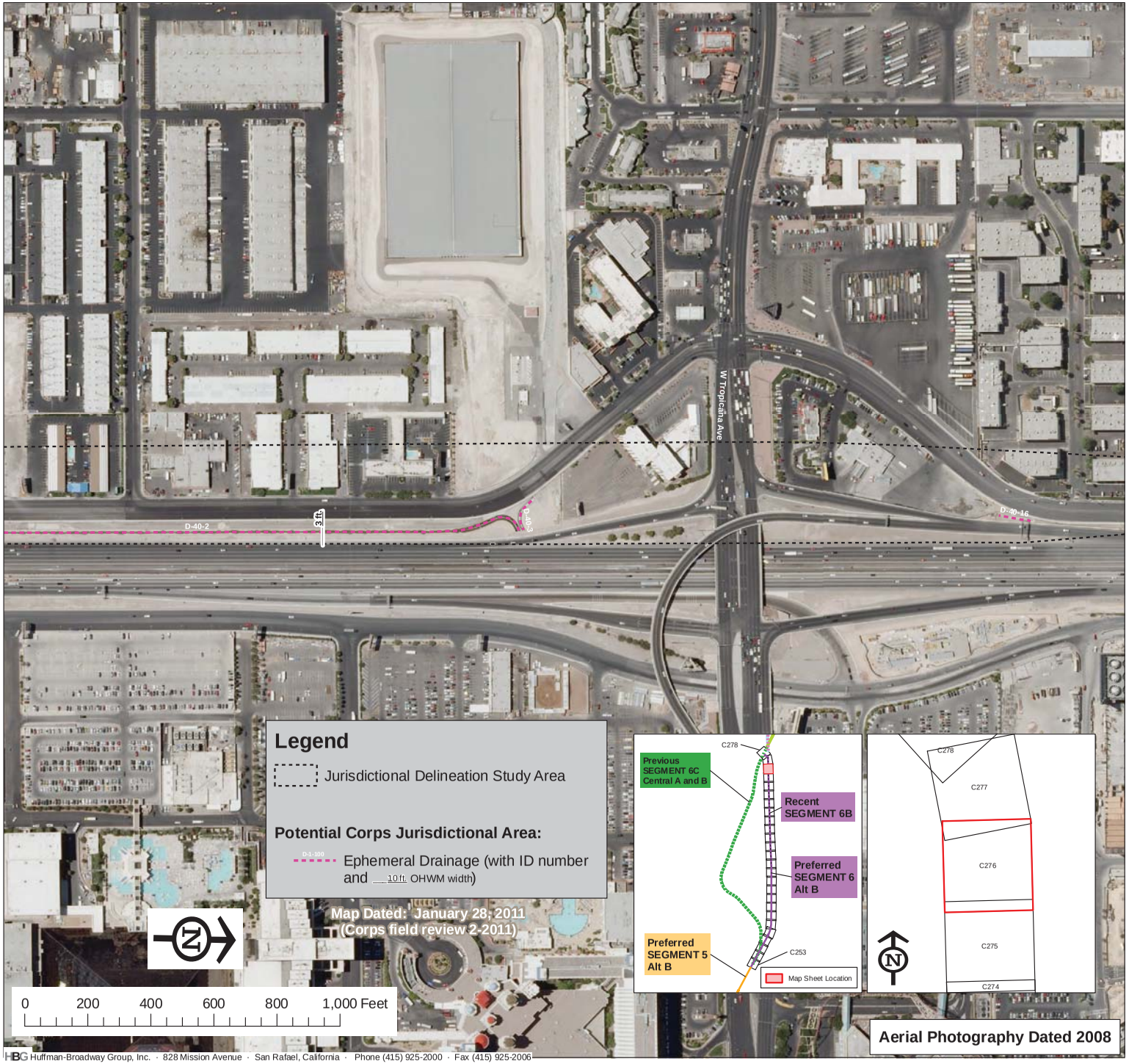

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C276 F-I.5-234

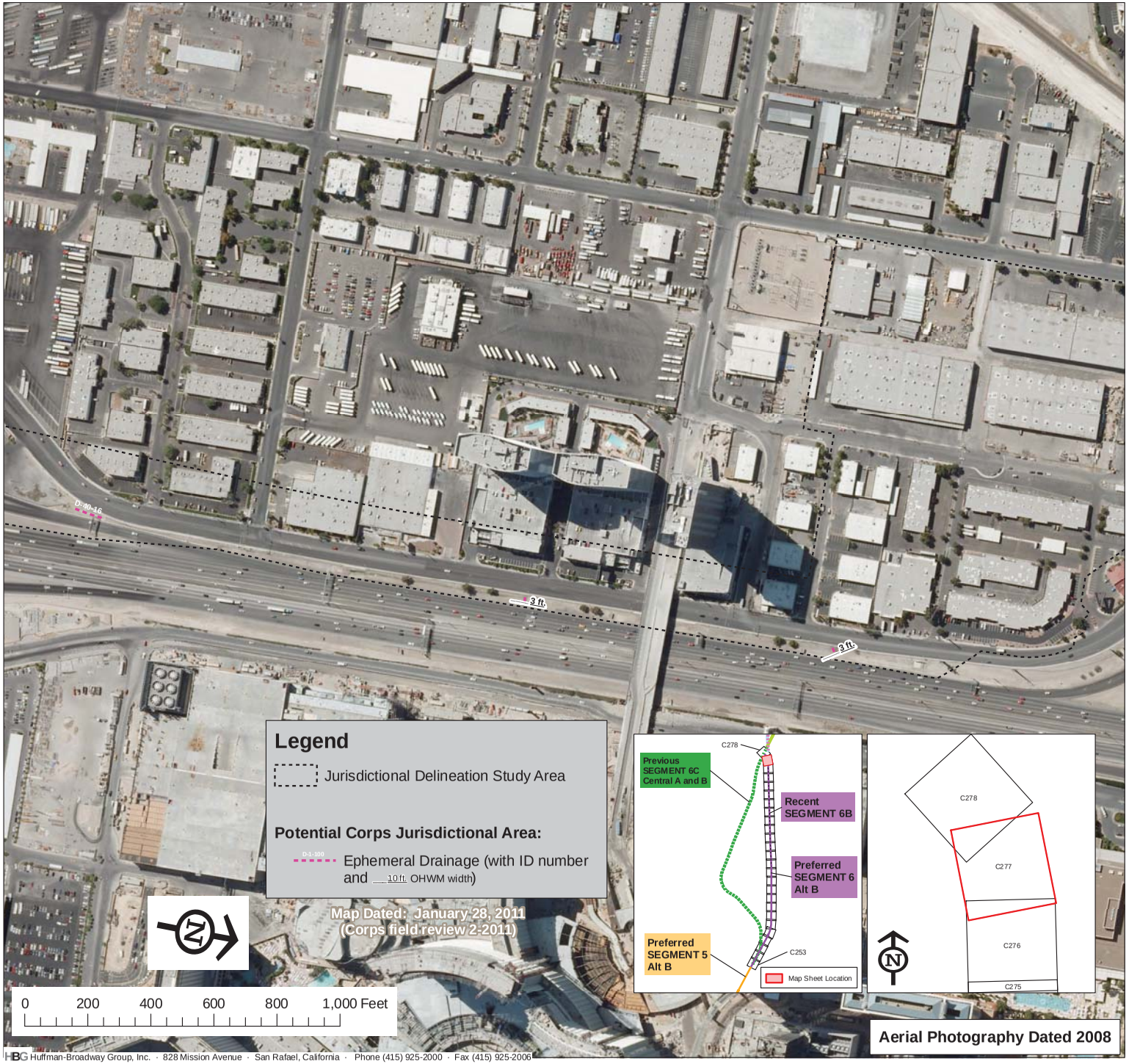

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C277 F-I.5-235

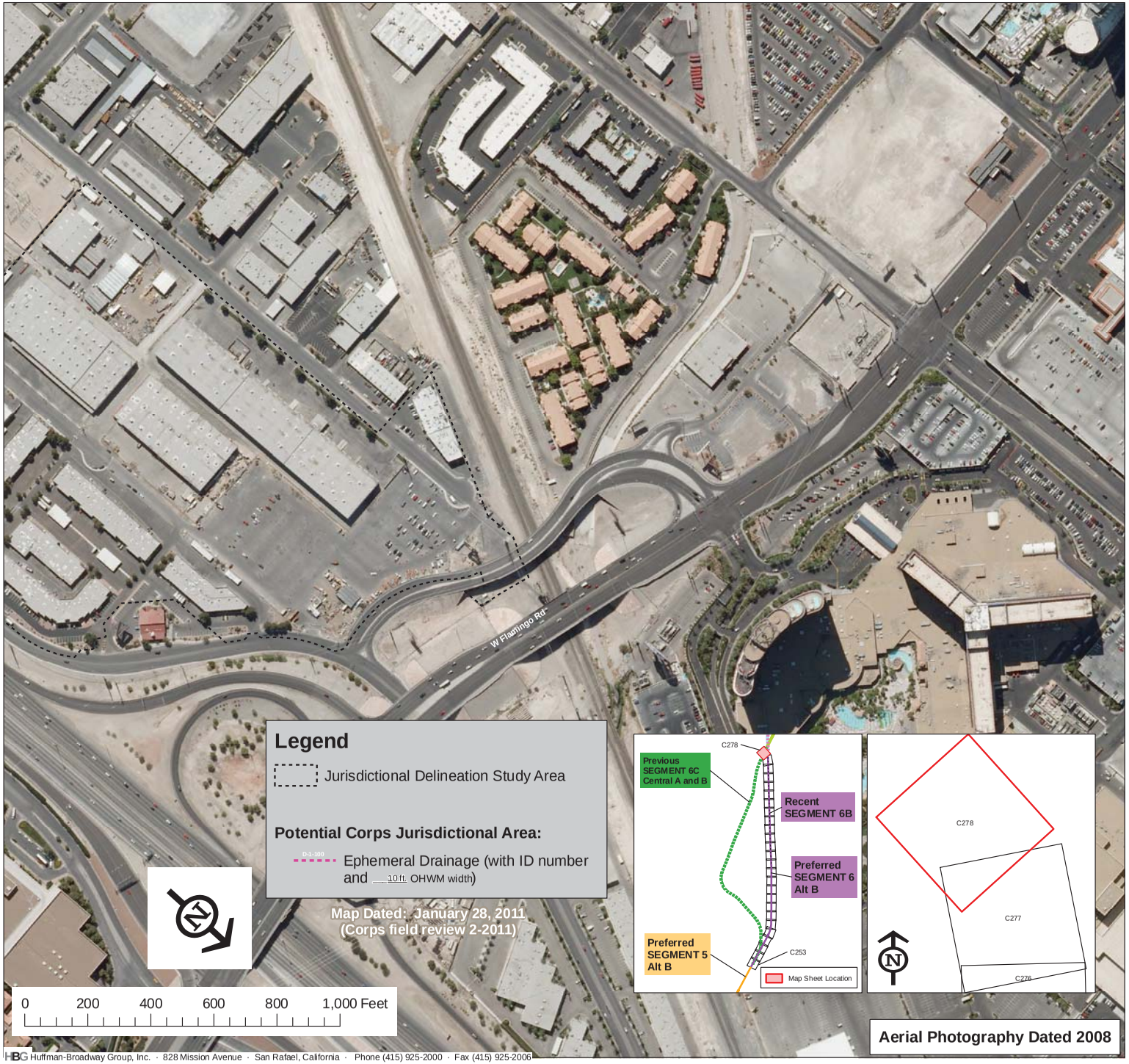

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Exhibit C. Areas Potentially Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, DesertXpress Project, HUC 8 Las Vegas Wash Watershed, Clark County, Nevada, Current Preferred Segments 6 Alt B and 6 Alt C, Map Sheet C278 F-I.5-236