

Supplier Document Status Stamp

BSC	A. Records Designator: <input type="checkbox"/> QA: QA <input checked="" type="checkbox"/> QA: NA B. LSN Relevancy: <input type="checkbox"/> LSN Relevant <input checked="" type="checkbox"/> Not LSN Relevant C. Privileged or Copyright Protected: <input type="checkbox"/> Yes _____ <input checked="" type="checkbox"/> No D. Procurement Document No. <u>NHC4-00207</u> E. BSC Standard Document No. <u>V0-A000-NHC4-00207-00002-001-009</u>																																									
F. SUPPLIER DOCUMENT STATUS																																										
1. <input checked="" type="checkbox"/> WORK MAY PROCEED. 2. <input type="checkbox"/> REVISE AND RESUBMIT. WORK MAY PROCEED SUBJECT TO RESOLUTION OF INDICATED COMMENTS. 3. <input type="checkbox"/> REVISE AND RESUBMIT. WORK MAY NOT PROCEED. 4. <input type="checkbox"/> REVIEW NOT REQUIRED. WORK MAY PROCEED. 5. <input type="checkbox"/> FOR INFORMATION ONLY.																																										
PERMISSION TO PROCEED DOES NOT CONSTITUTE ACCEPTANCE OR APPROVAL OF DESIGN DETAILS, CALCULATIONS, ANALYSES, TEST METHODS, OR MATERIALS DEVELOPED OR SELECTED BY THE SUPPLIER AND DOES NOT RELIEVE SUPPLIER FROM FULL COMPLIANCE WITH CONTRACTUAL OBLIGATIONS.																																										
G. REVIEW COPY	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%; text-align: center;">NVM</td> <td style="width:10%; text-align: center;">NE</td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> </tr> <tr> <td style="text-align: center;"><i>EC</i></td> <td style="text-align: center;"><i>KAM</i></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	NVM	NE																			<i>EC</i>	<i>KAM</i>																			
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I. DOCUMENT CATEGORY <u>NA</u> (Attach 3, Attach 4, or SSRS Form as applicable)																																										
J. <u>Eugene C. Allen</u> <i>E.C. Allen</i> <u>6/14/07</u> RESPONSIBLE ENGINEER/ANALYST (Printed Name and Signature) DATE																																										

Title: Waters of the U.S. Jurisdictional Determination Report - Caliente Rail Corridor, GIS Data, Map Documents, and Pictures

Supplier Document #: N/A

Supplier Rev.: 03

Supplier Date: 11/13/06

NVM Nevada Transportation Manager Gene Allen
NE Nevada Engineering Kathy Mistek

Note: Document resubmitted to remove privileged markings, no technical changes were made.

Complete only applicable items.

Subcontractor: PBS&J	Item Number/Title/Revision: Waters of the U.S. Jurisdictional Determination Report - GIS Data, Map Documents and Pictures Rev 03	Submittal Date: Nov. 16, 2006 13 05 6-1-07	SRCT No.: T06-00104
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Section I. Submittal Information (includes above information)

Submittal Description and Revision Summary for Entire Submittal:

This delivery includes a report. It is to provide GIS products and data of water features and wetlands sites used in the preparation of the Waters of the U.S. Jurisdictional Determination Report for Yucca Mountain Project Caliente Rail Corridor.

It includes a geodatabase, three shapefiles, 15 mxd files used for pictorial representation of Waters of the U.S. which crosses the Caliente Rail Corridor, Adjacent Wetlands and Potential Wetlands, and Isolated Wetlands, 28 pdfs of the maps (mxd files), pictures taken in the field during data collection, and The Waters of the U.S. Jurisdictional Determination Report.

*Note: Attachment1 (PBSJ_WOUSDataDefinitions) provides the detailed data definition for the "WOUS_CRC_Final" geodatabase.

- The geodatabase "CRC" contains (47) feature classes. The feature classes were used for the purpose of creating pictorial figures embedded in the Waters of the U.S Jurisdictional Determination Report. The feature classes in the geodatabase provided were renamed by including a prefix based upon the corresponding chapter title or associated chapter title provided by Bechtel GIS Baseline Data Dictionary. And those feature classes changed or modified were given a new filename and described below.
 - base_mapindex24K – This polygon feature was created as a map index for the creation of figures.
 - Base_mapindexWetl – This polygon feature was created as a map index for the creation of figures.
 - base_nafrdoeu2 – Received from BSC
 - base_ntsu2 – Received from BSC
 - base_nvquadu – Received from BSC
 - base_nvstacou – Received from BSC
 - base_trsnvu – Received from BSC
 - base_wstacou_modified – This polygon feature was modified by merging together associated counties to its state. Counties merged for the states of Nevada, California and Utah only.
 - Caliente_100ftBuffer – This polygon feature represents a 100 foot buffer of each side of the alignment centerline.
 - CalienteRailCorridorAnno
 - calu1205eis – This polyline feature represents the Caliente Rail Corridor.
 - calu1205eis660ftBuff – This polygon feature represents a 660 foot buffer of each side of the alignment centerline.
 - calu1205eis660ft_100ft_Buff – This polygon feature represents a 660 foot buffer of each side of the alignment centerline except in the Caliente segment where resurveyed is 100 foot buffer.
 - CitiesTowns – This point feature represents cities and towns in the United States.
 - corr_basins – This polygon feature was obtained from PB, see hydro_huc250k_intersect.
 - econ_smltwnu – Received from BSC
 - econ_wcityu – Received from BSC
 - envr_nlnvcvu – Received from BSC
 - geogannou – Received from BSC
 - geogannouAnno – Received from BSC
 - geol_nvsoilu – Received from BSC
 - geol_soilu – Received from BSC
 - hydro_calmajstrmu – Received from BSC
 - hydro_huc250k – This polygon feature represents the Hydrologic Unit coverage for the Lower Colorado, Great Basin, and California Regions obtained from USGS, with no attribute tables joined.
 - hydro_huc250k_intersect – The hydro_huc250K Subbasins intersecting with the Caliente Rail Corridor.
 - hydro_huc250k_mod – Delineation of hydrologic contributory area based upon USGS contour information, created by Scott Lueck of PB.
 - hydro_huc250k_mod2 – Modification of hydro_huc250k_mod by Scott Lueck.
 - hydro_nvspringu – Received from BSC
 - hydro_strmnevuv – Received from BSC
 - hydro_strmu – Received from BSC
 - hydro_subbasinu – Received from BSC
 - hydro_USGSStreamCrossings – This point feature created where USGS DLG data intersects with an outdated Caliente Rail Corridor alignment centerline.

Complete only applicable items.

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- hydro_WAStreamSub1- This polyline feature is a preliminary stream alignment derived from USGS 30 meter DEMs.
 - juris_allomentsu – Received from BSC
 - juris_hmau – Received from BSC
 - juris_Indownru4 – Received from BSC
 - juris_nvIndownru4 – Received from BSC
 - MajorRd_clip- This polyline feature represents major roads clipped to the extent of the project area, obtained from ESRI, and contains full metadata.
 - Photo_locations_white river – locations of the photographs taken for the White River Valley (Figure_Appendix D)
 - topo200u – Received from BSC
 - tran_nvmajoru – Received from BSC
 - tran_railwstu – Received from BSC
 - tran_roadnevu2 – Received from BSC
 - tran_usrailu – Received from BSC
 - WetlandsArrows – This polyline feature represents the direction of which the wetlands extend for the Caliente Rail Corridor segment.
 - YuccaMt – This point feature represents the approximate location of Yucca Mountain.
2. 15 maps (mxd) and 28 pdfs of maps used for the Waters of the U.S. Jurisdictional Determination Report.
- Figure_1 – Overview of the Caliente Rail Corridor Alignment Project Location
 - Figure_2 – Overview of the Hydrographic Regions and Areas in relation to the alignment.
 - Figure_3A – Waters of the U.S. crossing Caliente and Eccles segments, and the Hydrographic Area of Colorado River Basin.
 - Figure_3B – Waters of the U.S. crossing the Eccles segment, and the Hydrographic Area of Colorado River Basin.
 - Figure_3C – Waters of the U.S. crossing the CS1 Bennett Pass segment, Potential Waters of the U.S., and the Hydrographic Areas of Central Region and Colorado River Basin.
 - Figure_3D – Waters of the U.S. crossing the OV1, OV3 and BW1 segments, the Hydrographic Areas of Central Region and Death Valley Basin, and the Nevada Test and Training Range.
 - Figure_3E – Waters of the U.S. crossing the CS6 Busted Butte segment, the Hydrographic Areas of Death Valley Basin, Nevada Test Site, and Nevada Test and Training Range.
 - Figure_4A – Overall Wetlands for the Caliente/Eccles Segments
 - Figure_4B – Wetlands and Wetlands Data Points for the Eccles segment (Dutch Flats).
 - Figure_4C – Southern portion of Wetlands and Potential Wetlands and Wetlands Data Points for the Caliente segment.
 - Figure_4D_4Q –Wetlands and Wetlands Data Points for the Caliente segment.
 - Figure_4R – Wetlands and Wetlands Data Points for the Caliente/Eccles segments.
 - Figure_4S –Wetlands and Wetlands Data Points for the CS1 Pahroc Summit segment.
 - Figure_4T –Wetlands and Wetlands Data Point for the OV3 segment.
 - Figure_AppendixD – White River Map
3. In the \pictures\Phase3Deliverable\Caliente_9-13-06 folder: There were a total of 273 jpg files. Pictures were taken in the field during the 3rd phase of data collection. Each original picture then includes a thumbnail with filename "small" and a watermarked picture stamped with Latitudes/Longitudes, date and time picture was taken has filename "tag". JPG files have a prefix "PBSJ8" which were taken with a Ricoh GPS camera and contain Latitudes/Longitudes for.
4. In the \pictures\Phase3Deliverable\Caliente_9-13-06\RRM Photos 2006_June\ subfolder: There were 77 jpg files taken in the field during the 3rd phase of data collection that have a prefix "PBSJ7" which was taken with a digital camera and do not have GPS coordinates.
5. In pictures\Phase2Deliverable\Caliente_4-03-06 folder: There were 718 jpg files total. Pictures were taken in the field during the 2nd phase of data collection. Each original picture then includes a thumbnail with filename "small" and a watermarked picture stamped with Latitudes/Longitudes, date and time picture was taken has filename "tag". Pictures with prefix "PBSJ3" and "PBSJ4" were taken with a Ricoh GPS camera and contain Latitudes/Longitudes.

Complete only applicable items.

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- In pictures\Phase2Deliverable\Caliente_5-26-05 folder: There were a total of 528 jpg files. Pictures were taken in the field during the 2nd phase of data collection. Each original picture then includes a thumbnail with filename "small" and a watermarked picture stamped with Latitudes/Longitudes, date and time picture was taken has filename "tag". Pictures with prefix 'PBSJ6' which were taken with a Ricoh GPS camera and contain Latitudes/Longitudes.
- In pictures\Phase2Deliverable\Caliente_4-03-06\PBSJ5_Photo Log.xls: There is a list of 87 photos taken with a digital camera during the 2nd phase of data collection that have a prefix "PBSJ5". Prefix "PBSJ5" were taken with a digital camera and do not have GPS coordinates. This photo log includes notes captured by an Environmental staff briefly describing direction orientation, plant specie(s) indicators, and other special notes about each wash channel or wetlands site of which the photo was taken at the Caliente and Eccles segments. Each photo is associated to either a "WS-PT" = SyncWashEnvr (Wash data points) or "WT-PT" = SyncWetPnt (Wetlands data point) and its Site number (field name 'SITE2' in attribute table), or SyncCtchAll (Catch All points).
- The Waters of the U.S. Jurisdictional Determination Report is a jurisdictional determination of non-wetland Waters of the United States and adjacent wetlands was conducted along the proposed and alternative rail segments within the Caliente Rail Corridor. The jurisdictional determination was conducted on public and accessible private lands pursuant to Section 404 of the Clean Water Act (CWA) and in compliance with U.S. Army Corps of Engineers (USACE) guidance.

Special Instructions:

Section II. Data File Information (Add lines below if needed for additional files. Indicate "Last item" or "End of list" on last line used.)

Filename	Rev.	File Size	Description (File description and revision summary for file)	Application and Version/ Add-in or Extension and Version
CRC.mdb	02	1,102,564 KB	CRC is the name of the ESRI geodatabase being delivered. Within this geodatabase are (47) feature class files.	ArcGIS 9.1
(Folder) pictures\Phase2Deliverable\Caliente_5-26-05	01	88,576 KB	For the Caliente/Eccles segments in the subfolder entitled Caliente_5-26-05 with 528 jpg files	Corel PHOTO-PAINT 8.0 Image
(Folder) pictures\Phase2Deliverable\Caliente_4-03-06	01	59,494 KB	For the Caliente/Eccles segments associates with PBSJ5_Photo Log.xls in the subfolder entitled Caliente_4-03-06 with 805 jpg files	Corel PHOTO-PAINT 8.0 Image
(Folder) pictures\Phase3Deliverable\Caliente_9-13-06*.*	02	52,224 KB	For the Caliente segment there are 273 jpg files. In addition, this folder contains a sub-folder entitled RRM Photos 2006_June with 77 jpg files.	Corel PHOTO-PAINT 8.0 Image
Figure_1.mxd	01	456 KB	Caliente Rail Corridor Project Location	ArcGIS 9.1
Figure_2.mxd	01	474 KB	Hydrographic Regions and Areas	ArcGIS 9.1
Figure_3A.mxd	02	607 KB	Caliente Rail Corridor Waters of the U.S. Caliente/Eccles Segments	ArcGIS 9.1
Figure_3B.mxd	02	650 KB	Caliente Rail Corridor Waters of the U.S. Eccles Segment (Dutch Flat area)	ArcGIS 9.1
Figure_3C.mxd	02	567 KB	Caliente Rail Corridor Waters of the U.S. CS1 Bennett Pass Segment	ArcGIS 9.1
Figure_3D.mxd	03	553 KB	Caliente Rail Corridor Waters of the U.S. OV1/OV3/BW1 Segments	ArcGIS 9.1
Figure_3E.mxd	03	410 KB	Caliente Rail Corridor Waters of the U.S. CS6 Busted Butte Segment	ArcGIS 9.1
Figure_4A.mxd	02	784 KB	Caliente Rail Corridor Wetlands Caliente/Eccles Segments	ArcGIS 9.1
Figure_4B.mxd	02	711 KB	Caliente Rail Corridor Wetlands Eccles Segment	ArcGIS 9.1

Transportation Data Pedigree Form

Complete only applicable items.

Subcontractor:		Item Number/Title/Revision:		Submittal Date:	SRCT No.:
PBS&J		Waters of the U.S. Jurisdictional Determination Report - GIS Data, Map Documents and Pictures Rev 03		Nov. 19, 2006 13 03 6-1-07	T06-00104
Figure_4C.mxd	02	598 KB	Caliente Rail Corridor Wetlands Caliente Segment	ArcGIS 9.1	
Figure_4D_4Q.mxd	02	795 KB	Caliente Rail Corridor Wetlands Caliente Segment	ArcGIS 9.1	
Figure_4R.mxd	02	642 KB	Caliente Rail Corridor Wetlands Caliente/Eccles Segments	ArcGIS 9.1	
Figure_4S.mxd	02	589 KB	Caliente Rail Corridor Isolated Wetlands CS1-Pahroc Summit Segment	ArcGIS 9.1	
Figure_4T.mxd	02	580 KB	Caliente Rail Corridor Isolated Wetlands OV-3 Segment	ArcGIS 9.1	
Figure_Appendix D.mxd	02	361 KB	White River Valley Map	ArcGIS 9.1	
Figure_1.pdf	01	454 KB	Caliente Rail Corridor Project Location	Adobe Acrobat 7.0 Professional	
Figure_2.pdf	01	843 KB	Hydrographic Regions and Areas	Adobe Acrobat 7.0 Professional	
Figure_3A.pdf	02	1,268 KB	Caliente Rail Corridor Waters of the U.S. Caliente/Eccles Segments	Adobe Acrobat 7.0 Professional	
Figure_3B.pdf	02	4,016 KB	Caliente Rail Corridor Waters of the U.S. Eccles Segment (Dutch Flat area)	Adobe Acrobat 7.0 Professional	
Figure_3C.pdf	02	3,971 KB	Caliente Rail Corridor Waters of the U.S. CS1 Bennett Pass Segment	Adobe Acrobat 7.0 Professional	
Figure_3D.pdf	03	2,380 KB	Caliente Rail Corridor Waters of the U.S. OV1 Segment	Adobe Acrobat 7.0 Professional	
Figure_3E.pdf	03	3,480 KB	Caliente Rail Corridor Waters of the U.S. CS6 Busted Butte Segment	Adobe Acrobat 7.0 Professional	
Figure_4A.pdf	02	1,826 KB	Caliente Rail Corridor Wetlands Caliente/Eccles Segments	Adobe Acrobat 7.0 Professional	
Figure_4B.pdf	02	1,126 KB	Caliente Rail Corridor Wetlands Eccles Segment	Adobe Acrobat 7.0 Professional	
Figure_4C.pdf	02	1,952 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4D.pdf	02	1,809 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4E.pdf	02	885 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4F.pdf	02	871 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4G.pdf	02	883 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4H.pdf	02	828 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4I.pdf	02	816 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4J.pdf	02	980 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4K.pdf	02	802 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4L.pdf	02	735 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4M.pdf	02	960 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4N.pdf	02	780 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4O.pdf	02	908 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4P.pdf	02	1,286 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4Q.pdf	02	833 KB	Caliente Rail Corridor Wetlands Caliente Segment	Adobe Acrobat 7.0 Professional	
Figure_4R.pdf	02	1,278 KB	Caliente Rail Corridor Wetlands Caliente/Eccles Segments	Adobe Acrobat 7.0 Professional	
Figure_4S.pdf	02	554 KB	Caliente Rail Corridor Wetlands CS1-Pahroc Summit Segment	Adobe Acrobat 7.0 Professional	

Transportation Data Pedigree Form

Complete only applicable items.

Subcontractor: PBS&J		Item Number/Title/Revision: Waters of the U.S. Jurisdictional Determination Report - GIS Data, Map Documents and Pictures Rev 03		Submittal Date: Nov. 13, 2006 <i>13 03 6-1-07</i>	SRCT No.: T06-00104
Figure_4T.pdf	02	1,675 KB	Caliente Rail Corridor Wetlands OV-3 Segment	Adobe Acrobat 7.0 Professional	
Figure_Appendix D.pdf	02	3,601 KB	White River Valley Map	Adobe Acrobat 7.0 Professional	
PBSJ5_PhotoLog.xls	01	32 KB	Photo Log - RM Photos Caliente/Eccles Segments Jan-06	Microsoft Office Excel 2003	
YMP WOUS Report November 13, 2006_Final_SRCT-06-00104.pdf	03	153,818 KB	Waters of the U.S. Jurisdictional Determination Report for Yucca Mountain Project - Caliente Rail Corridor	Adobe Acrobat 7.0	
PBSJ_WOUSData Definitions.doc	03	107 KB	Data Definitions for CRC Waters of the U.S. GIS Features	Microsoft Word Document	
-----Last Item-----					

Section III. Metadata

<input checked="" type="checkbox"/> GIS Metadata All GIS data is preferred in ArcGIS9.1 UTM, NAD1983, Zone11, Feet.	Projection: NAD 1983 UTM Zone 11N Datum: D_North_American_1983, Semimajor Axis: 6378137.00 Semiminor Axis: 6356752.3141403561 Inverse Flattening: 298.25722210100002 Zone: 11N Units: Feet
<input type="checkbox"/> CAD Metadata CAD drawings are preferred in Bentley MicroStation V8 and/or InRoads and should adhere to established CAD standards.	Level descriptions: Scale: Units of Measurement: Horizontal and Vertical Datum:

Section IV. Data Screening (Completed by BSC personnel)

Suitable for Review? <input checked="" type="checkbox"/> Yes* <input type="checkbox"/> No	Screener Name: Cathy Stettler	Signature: 	Date: 11/17/06
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*If "Yes", Data Storage Location: nvtdata\PB\Phase1\06-00104 WOUS Rpt_GIS Data Rev 03 11-13-06

Comments: (Justification for rejecting submittal is **required**; other comments are optional.)

Section V. STR Disposition of Submittal

Process for Review? <input type="checkbox"/> Yes <input type="checkbox"/> No**	** If "No", date returned:	Comments:
STR Name: EUGENE ALLEN		Signature:
		Date: 6/4/07

Data Definitions for CRC Waters of the U.S. GIS Features

Feature Class: SyncCtchAll

Description: This feature class contains a point representation of other miscellaneous points of interest for the Caliente Rail Corridor project.

Purpose: This feature class is used for identifying significant access routes or other points of interest while in the field.

Revision History:

Rev2 – Revision 2 includes additional miscellaneous points of interest. Other fields not mentioned were for the use of the field data collection application. The data was transformed into the NAD 83 UTM Zone 11N Feet coordinate system.

Number of records: 2291

Field Name	Data Type	Description of field
OBJECTID	String	Unique identifier for SyncCtchAll generated by the software. This identifier will act as a primary key.
COMMENTS	String	Comments captured as the engineers or environmental scientists located these catch all points. Special notes about each catch all point are stored as comments.
CATCHALLID	String	Brief description of miscellaneous points of interests.
X_coord	Number	The easting or x coordinate of the center of this catch all point. Coordinates are in NAD_1983_UTM_Zone_11N feet.
Y_coord	Number	The northing or y coordinate of the center of this catch all point. Coordinates are in NAD_1983_UTM_Zone_11N feet.
TYPE_	String	Types of miscellaneous points of interests.
PHOTOID_1 & PHOTOID_2	String	Photo identification name
PHOTO_DIR1 & PHOTO_DIR2	String	Direction photo were taken.

Field Name	Data Type	Description of field
Shape	Point	

Feature Class: SyncWashEnvr

Description: This point feature class represents investigated wash channels. Each record contains a width and depth attribution of the wash.

Purpose: To identify Waters of the U.S. and Non-Waters of the U.S.

Revision History:

Rev3 – Revision 3, includes additional wash sites. Other fields not mentioned were for the use field data collection application, and the data was transformed into the NAD 83 UTM ZN 11 Feet coordinate system.

Number of records: 866

Field Name	Data Type	Description of field
OBJECTID	Number	Unique identifier for SyncWashEnvr generated by the software. This identifier will act as a primary key.
DOMSPEC1 thru DOMSPEC6	String	Indicates the dominant plant specie(s) found at the wash site.
REMARKS1	String	Remarks captured as the environmental scientists located these wash points. Special notes about each wash site may also be stored as remarks.
WATERS_US	String	"YES" or "NO" if is jurisdictional Waters of the U.S.
BED_WIDTH	Number	A numeric value indicating the width of the wash in inches.
OHWM_DPTH	Number	A numeric value indicating the ordinary high water mark (depth) of the wash in inches.
X_coord	Number	The easting or x coordinate of the center of this wash point. Coordinates are in NAD_1983_UTM_Zone_11N feet.

Field Name	Data Type	Description of field
Y_coord	Number	The northing or y coordinate of the center of this wash point. Coordinates are in NAD_1983_UTM_Zone_11N feet.
Shape	Point	

Feature Class: SyncWetIPnt

Description: This point feature class represents wetland data points.

Purpose: To identify and delineate wetlands sites.

Revision History:

Rev2 – Revision 2, includes additional wetlands sites. Other fields not mentioned were for the use of the field data collection application. And the data was transformed data into the NAD 83 UTM ZN 11 Feet coordinate system.

Number of records: 121

Field Name	Data Type	Description of field
OBJECTID	Number	Unique identifier for SyncWetIPnt generated by the software. This identifier will act as a primary key.
SITE	String	Unique Wetlands Data Point identifier named by a PBS&J employee used for the figures & report.
DOMSPEC1 thru DOMSPEC6	String	The dominant plant specie(s) indicators found at the wetlands site.
REMARKS1	String	Remarks captured as the environmental scientists located these wash points. Special notes about each wetlands site may also be stored as remarks.
X_coord	Number	The easting or x coordinate of the center of this wetlands point. Coordinates are in NAD_1983_UTM_Zone_11N feet.
Y_coord	Number	The northing or y coordinate of the center of this wetlands point. Coordinates are in NAD_1983_UTM_Zone_11N feet.

PHOTOID_1 thru PHOTOID_4	String	Photo identification name
PHOTO_DIR1 thru PHOTO_DIR4	String	Direction photo were taken.
Shape	Point	

Feature Class: SyncWetlPoly

Description: This polygon site represents determined wetlands and potential wetlands along the rail alignment.

Purpose: To delineate the boundaries of each wetlands.

Revision History:

Rev2 – Revision 2, additional wetlands sites. Other fields not mentioned were for the use of the field data collection application, and transformed data into the NAD 83 UTM ZN 11 Feet coordinate system.

Number of records: 52

Field Name	Data Type	Description of field
OBJECTID	Number	Unique identifier for SyncWetlPoly generated by the software. This identifier will act as a primary key.
COMMENTS	String	Comments captured as the environmental scientists located these wetlands polygons. Special notes about each wetlands site may also be stored as remarks.
STATUS	String	"Jurisdictional" or "Non-Jurisdictional" indicates wetlands classification.
WETLPLY_ID1	String	Name identifier of each wetlands or potential wetlands. "CC" is Caliente Corridor, "WT" is wetlands and "PWT" is potential wetlands.

Field Name	Data Type	Description of field
WET_TYPE	String	"Adjacent" or "Isolated" as type of Wetlands.
Shape	Polygon	

Feature Class: SyncWshLnEnv

Description: This linear feature represents jurisdictional and non jurisdictional Waters of the U.S. along the rail alignment. Each record contains a width and depth attribution of the wash.

Purpose: To delineate and compliment the Waters of the U.S. data points collected in the field.

Revision History:

Rev3 – Revision 3, additional wash sites. Other fields not mentioned were for the use of the field data collection application, and transformed data into the NAD 83 UTM ZN 11 Feet coordinate system.

Number of records: 202

Field Name	Data Type	Description of field
OBJECTID	Number	Unique identifier for SyncWshLnEnv generated by the software. This identifier will act as a primary key.
COMMENTS	String	Comments captured as the environmental scientists located these wetlands polygons. Special notes about each wetlands site may also be stored as remarks.
DOMSPEC1 thru DOMSPEC6	String	The dominant plant specie(s) indicator found at each wash site.
WATERS_US	String	"YES" or "NO" if is jurisdictional Waters of the U.S. "PW" if Potential Waters of the U.S.
BED_WIDTH	Number	A numeric value indicating the width of the wash in inches.
OHWM_DPTH	Number	A numeric value indicating the ordinary high water mark (depth) of the wash in inches.

Waters of the U.S. Jurisdictional Determination Report – Data Definition

Field Name	Data Type	Description of field
WOUS_ID	String	Name given to identify each wash.
WASH	Number	"0" not displayed and "1" is Waters of the U.S displayed on figures.
SEGMENT_1	String	Name of the Caliente Rail Corridor segment crossing a wash channel.
Shape	Polyline	



Waters of the U.S. Jurisdictional Determination Report for Yucca Mountain Project – Caliente Rail Corridor

**Task 1.1 Information on Wetlands and Floodplains
REV. 03 November 13, 2006
06-00104**

Prepared by:



Prepared for:



Caliente Rail Corridor Hydrologic Analyses

Subcontract NN-HC4-00207

13 November 2006

**Waters of the U.S.
Jurisdictional Determination Report
for
Yucca Mountain Project
Caliente Rail Corridor**

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November 2006

CONTENTS

1.0 INTRODUCTION	1
2.0 PROJECT DESCRIPTION	1
3.0 SITE DESCRIPTION	2
3.1 Soils.....	2
3.2 Hydrology.....	2
3.3 Vegetation	4
4.0 WATERS OF THE U.S. DETERMINATION	4
4.1 Waters of the U.S. – Ephemeral and Perennial Streams	5
4.1.1 Methods	5
4.1.2 Results.....	6
4.2 Wetlands.....	9
4.2.1 Methods	10
4.2.2 Results	11
<i>Vegetation</i>	12
<i>Hydrology</i>	13
<i>Soils</i>	14
5.0 REFERENCES	21
6.0 CHANGE HISTORY	22

TABLES

Table 1. Hydrographic Region and Area Designations within Caliente Rail Corridor, Nevada.....	3
Table 2. Indicator Plant Species Identified Within Ephemeral Waters of the U.S., Caliente Rail Corridor, Nevada	6
Table 3. Waters of the U.S. Identified within the Caliente Rail Corridor, Nevada.....	7
Table 4. Summary of wetlands within the Caliente and Eccles Segments of the Caliente Rail Corridor (CRC), Nevada.....	11
Table 5. Indicator plant species identified in wetlands or adjacent uplands within the Caliente Rail Corridor, Nevada.....	12
Table 6. Summary information of wetland polygons within the Caliente Rail Corridor, Nevada.	15

APPENDICES

Appendix A – Figures

- Figure 1. Caliente Rail Corridor Alignment, Project Location
- Figure 2. Hydrographic Regions and Areas
- Figures 3A-E. Caliente Rail Corridor Waters of the U.S.
- Figures 4A-T. Caliente Rail Corridor Adjacent and Isolated Wetlands

- Appendix B – Example Site Photographs
- Appendix C – Wetland Data Forms
- Appendix D – White River Valley Map and Photographs
- Appendix E – Data Collection Fields

ACRONYMS/ABBREVIATIONS

CCE	Wetland sample point on the east side of the Caliente Corridor
CCW	Wetland sample point on the west side of the Caliente Corridor
CFR	Code of Federal Regulations
CRC	Caliente Rail Corridor
CWA	Clean Water Act
DOE	Department of Energy
DOQQ	Digital Orthophoto Quarter-Quadrangle
EIS	Environmental Impact Statement
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
FR	Federal Register
GIS	Geographic Information System
GPS	Global Positioning System
NRCS	Natural Resources Conservation Service (formerly SCS)
NWI	National Wetlands Inventory
OBL	Obligate
OHWM	Ordinary high water mark
PWT	Potential Wetland
SCS	Soil Conservation Service
UNNWL	Unnamed Wetland
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Service
WOUS	Waters of the United States
WT	Wetland

1.0 INTRODUCTION

The U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management is analyzing Yucca Mountain as a site to construct a long-term repository for the Nation's spent nuclear fuel and high-level radioactive waste. The DOE is also analyzing construction of a new branch rail line in Nevada to transport waste to the proposed Yucca Mountain Waste Repository site. Five potential rail transport routes were evaluated and the Caliente Rail Corridor (CRC) was selected as the preferred corridor.

A jurisdictional determination of waters of the United States (WOUS), including adjacent wetlands, was conducted along the proposed and alternative rail segments within the CRC. The jurisdictional determination was conducted on public and accessible private lands pursuant to Section 404 of the Clean Water Act (CWA) and Executive Order 11990 – Protection of Wetlands, and in compliance with U.S. Army Corps of Engineers (USACE) guidance. This jurisdictional determination report will be used to support the Environmental Impact Statement (EIS) analyzing alternative rail alignments within the corridor and for the CWA Section 404 permit application.

Delineations of isolated wetlands located within the CRC were completed and this report will also be used to support a wetlands assessment in compliance with 10 Code of Federal Regulations (CFR) 1022, Compliance with Floodplain-Wetlands Environmental Review. Please note that all figures can be found in Appendix A.

2.0 PROJECT DESCRIPTION

The CRC originates at a junction on the Union Pacific Railroad (UPRR) mainline near Caliente, Nevada and extends west across Lincoln, Nye, and Esmeralda counties to the Yucca Mountain site (Figure 1). The total length of the project area is 504.8 miles, which includes all of the different alignments within the CRC. The project would consist of the construction of a single track rail line, sidings, service road, staging yard, and operational interface area with the UPRR mainline. The corridor evaluated for WOUS and wetlands is generally 0.25 mile wide and includes common segments and segments with alternative alignments. Due to the relatively large extent of wetlands in the southern portion of the Caliente Segment, the evaluation corridor was restricted to a 200 foot width in this area. This was done because impacts to wetlands will be avoided and minimized to the maximum extent practicable and if this alignment is selected, the proposed rail line would be on or near the existing rail bed, which is generally an upland area. The referenced area occurs in Lincoln County, NV near the southern end of the proposed Caliente Segment and extends from approximately 0.5 mile north of Caliente where U.S. 93 crosses Meadow Valley Wash approximately 4.52 miles northward to Beaver Dam Road.

The corridor is separated into segments and assigned an alpha-numeric identification. The segment identifier is based on geographic location of rail alignment options and includes the following:

<u>Segment Identifier</u>	<u>Location</u>
CS	Common Segment
BW	Beatty Wash
OV	Oasis Valley
BC	Bonnie Claire
GF	Goldfield
SR	South Reveille
GV	Garden Valley
WR	White River
CAL	Caliente
ECC	Eccles

3.0 SITE DESCRIPTION

General descriptions of the soils, hydrology, and vegetation communities found within the CRC are provided in this section. The project area lies within the Great Basin and Mojave Desert. The Great Basin is a triangular shaped area between the Rocky Mountains (to the east) and the Sierra Nevada Mountains (to the west). The Great Basin includes the Great Salt Lake in Utah, and portions of the Mojave Desert, and Death Valley in California. The Great Basin is also known as the "basin and range" area since it consists primarily of a series of alternating basins (valleys with interior drainage) and mountain ranges. Hydrographically isolated basins or valleys are separated by north-south trending mountains. Parts of the Mojave Desert consist of external drainage and are considered the transition area from the hotter Sonoran Desert to the south and the higher Great Basin to the north.

3.1 Soils

General descriptions of soil series are available from the Natural Resources Conservation Service (NRCS) (formerly the Soil Conservation Service (SCS)), U.S. Department of Agriculture (USDA). The predominant soil series found throughout the CRC are briefly described below.

Meadow Valley Wash and Clover Creek consist mainly of the Geer and Pahranaagat soil series. The Geer soil series is a very deep, moderately well drained soil that formed in mixed alluvium, mainly ignimbrite, basalt, limestone, and lacustrine sediments (USDA 1976). These soils are on floodplains and alluvial fans. Slope gradients generally range from 0 to 2 percent.

The St. Thomas series, consisting primarily of shallow, well-drained soils that formed in colluvium and residuum from limestone and dolomite, are the primary soil types found in the mountains. These soils generally occur on hills and mountains with 8 to 75 percent slopes. The Crosgrain and Arizo soil series are the primary soil types on the fan piedmonts. The Crosgrain series are shallow, well-drained soils that formed in mixed alluvium on ballenas (older fan piedmonts), with slopes ranging from 4 to 30 percent. The Arizo series are very deep, excessively drained soils that formed in mixed alluvium on recent alluvial fans, with slopes ranging from 0 to 15 percent (USDA 1993).

Basin floors in the CRC generally consist of the Mazuma and Ragtown soil series. The Mazuma series are very deep, well-drained soils that formed in alluvium and lacustrine materials from mixed rock sources. Mazuma soils occur on fan skirts and alluvial flats, with slopes ranging from 0 to 15 percent. The Ragtown series are very deep, moderately well-drained soils that formed in moderately fine and fine-textured lacustrine materials from mixed rock sources. This series occurs on lake plain terraces with slopes ranging from 0 to 4 percent (USDA 1993).

Hydric soil types can indicate the presence of wetlands. Soils classified as hydric are saturated, flooded, or ponded long enough to develop anaerobic conditions that favor growth of hydrophytic vegetation. The majority of the soils mapped within the CRC are not classified as hydric by the NRCS (USDA 1995).

3.2 Hydrology

Hydrology characteristics are defined by watershed. A watershed is a geographic area drained by a single major stream, river, or lake. It is bounded by a divide that separates it from adjacent watersheds. A watershed is also referred to as a hydrographic region or drainage basin.

Nevada has been divided into 14 hydrographic regions or basins (Division of Water Resources 1971). Shown in Figure 2, the CRC crosses three of these regions – Colorado River Basin, Central Region, and Death Valley Basin. These regions are further divided into hydrographic areas (valleys) and sub-areas based on unique hydrologic characteristics such as differences in surface flows. The surface hydrology

in the Central Region is characterized by internally draining sub-areas and therefore considered an intrastate basin. The Colorado River Basin and Death Valley Basin drain externally to interstate river systems and so are considered interstate basins. The significance of intrastate versus interstate basins lies in the definition of waters of the U.S. found in 33 CFR 328.3(a). For the USACE to exert jurisdiction over streams, lakes, and wetlands (among other types) within intrastate basins there must be an alternative connection, other than the tributary system, to interstate or foreign commerce. Examples of alternative connections include recreation, fish or shellfish, or industrial use by industries involved in interstate commerce. Table 1 lists the hydrographic regions and areas which each segment the CRC crosses.

Table 1. Hydrographic Region and Area Designations within Caliente Rail Corridor, Nevada

CRC Segment	Region and Area	Hydrographic Regions Intrastate or Interstate
Colorado River Basin		
Eccles	Panaca Valley, Clover Valley	Interstate
Caliente	Panaca Valley	Interstate
WR1	Pahroc Valley, White River Valley	Interstate
CS1 Bennett Pass	Panaca Valley	Interstate
CS1 Pahroc Summit	Pahroc Valley	Interstate
Central Region		
CS1 Bennett Pass	Dry Lake Valley	Intrastate
CS1 Pahroc Summit	Dry Lake Valley	Intrastate
WR1	Coal Valley	Intrastate
GV1	Garden Valley, Coal Valley	Intrastate
GV2	Garden Valley, Coal Valley	Intrastate
GV3	Garden Valley, Coal Valley	Intrastate
GV8	Garden Valley, Coal Valley	Intrastate
CS2 East	Penoyer Valley, Railroad Valley	Intrastate
CS2 West	Penoyer Valley, Railroad Valley	Intrastate
SR2	Railroad Valley	Intrastate
SR3	Railroad Valley	Intrastate
CS3 East	Railroad Valley, Hot Creek Valley	Intrastate
CS3 Warm Springs	Stone Cabin Valley, Hot Creek Valley	Intrastate
CS3 West 1	Stone Cabin Valley	Intrastate
CS3 West 2	Ralston Valley, Stone Cabin Valley	Intrastate
GF1	Alkali Spring Valley, Stonewall Flat, Ralston Valley	Intrastate
GF3	Ralston Valley, Stonewall Flat	Intrastate
GF4	Alkali Spring Valley, Lida Valley, Stonewall Flat, Ralston Valley	Intrastate
CS4	Lida Valley	Intrastate
BC2	Lida Valley, Sarcobatus Flat	Intrastate
BC3	Lida Valley, Sarcobatus Flat	Intrastate
CS5	Sarcobatus Flat	Intrastate
Death Valley Basin		
OV1	Oasis Valley	Interstate
OV3	Oasis Valley	Interstate
BW1	Oasis Valley, Crater Flat	Interstate

CRC Segment	Region and Area	Hydrographic Regions Intrastate or Interstate
CS6 Busted Butte	Crater Flat, Fortymile Canyon	Interstate
CS5	Oasis Valley	Interstate

Ephemeral and intermittent washes dominate the stream types in the arid southwestern U.S. Due to the arid conditions of the desert, the project area is generally dry except during and immediately following storm events. Normally dry washes and playa surfaces may be inundated for hours following summer storms and weeks following winter storms.

3.3 Vegetation

The CRC is located in the southern part of the Great Basin from Caliente and to the west where it crosses into the Mojave Desert south of Beatty Wash. Land cover types typical of the Mojave Desert and Great Basin that occur in the CRC were quantified in the Yucca Mountain Repository EIS (DOE 2002). The dominant cover type for over half of the corridor is creosote-bursage, with blackbrush, hopsage, and Mojave mixed scrub covering approximately one-third of the corridor (DOE 2002).

Plant species typical of the Mojave Desert dominate the vegetation at low elevations along the southern end of the CRC. Low-elevation valleys, alluvial fans, and large washes are dominated by white bursage (*Ambrosia dumosa*), creosotebush (*Larrea tridentata*), Nevada jointfir (*Ephedra nevadensis*), littleleaf ratany (*Krameria erecta*), and pale wolfberry (*Lycium pallidum*). Low-elevation hillsides are dominated by similar species, with the addition of shadscale (*Atriplex confertifolia*), California buckwheat (*Eriogonum fasciculatum*), and spiny hopsage (*Grayia spinosa*) (DOE 2002).

At middle elevations, generally at the northern and eastern portions of the CRC, species typical of the Great Basin are dominant. Ridge tops and slopes are dominated by blackbrush (*Coleogyne ramosissima*), heathgoldenrod (*Ericameria teretifolius*), Nevada jointfir, broom snakeweed (*Gutierrezia sarothrae*), green ephedra (*Ephedra viridis*), and California buckwheat. On some steep north-facing slopes, big sagebrush (*Artemisia tridentata*) is predominant (DOE 2002).

Some common exotic plant species present in the CRC include red brome (*Bromus madritensis rubens*), Russian thistle (*Salsola* spp.), tumble mustard (*Sisymbrium altissimum*), halogeton (*Halogeton glomeratus*), and Arabian schismus (*Schismus arabicus*) (DOE 2002).

Within the interstate basins of the 0.25-mile corridor, desert spring and marsh vegetation communities occur along portions of the Meadow Valley Wash and at the isolated springs described in Section 4.2. Riparian (streambank) shrubs and trees, including willows (*Salix* sp.), tamarisk (*Tamarix* sp.), and cottonwoods (*Populus* sp.), occur along Clover Creek and Meadow Valley Wash.

4.0 WATERS OF THE U.S. DETERMINATION

The USACE regulates the discharge of dredged or fill material into WOUS. The term "waters of the U.S." applies to the jurisdictional limits of the authority of the USACE and typically includes streams, lakes and adjacent wetlands. For purposes of this report, ephemeral and perennial streams are referenced as WOUS, while wetlands are referenced separately.

The Colorado River and Amargosa River are interstate waters. In the CRC, Meadow Valley Wash and Clover Creek are part of the tributary system of the Colorado River, and Beatty Wash and Fortymile Wash are tributaries to the Amargosa River, and were investigated for WOUS under the jurisdiction of the USACE. The corridor segments within interstate hydrographic regions are listed in Table 1.

The limits of USACE jurisdiction extend to the ordinary high water mark (OHWM). If wetlands are found adjacent to a jurisdictional WOUS, then USACE jurisdiction extends to the limits of the wetland. The OHWM is generally defined as the clear, natural line on the shore or channel bank established by water fluctuations. In arid stream systems, the USACE has proposed a definition of ordinary high water based on physical features, including development of a channel bed and bank resulting from the most frequent or repeating hydrologic discharges. Techniques for identifying and determining limits of the USACE jurisdiction are provided in the *Review of Ordinary High Water Mark Indicators for Delineating Arid Streams in the Southwestern United States* (USACE 2004) and *Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest* (USACE 2001).

Segments of the CRC that are within interstate hydrographic regions (see Table 1) were surveyed for WOUS and adjacent wetlands by PBS&J from January 2005 through June 2006. As mentioned previously, with the exception of the southern portion of the Caliente segment (see Figure 4a) the field survey generally covered an area 0.25 mile wide centered on the CRC rail alignment. The focus of the field surveys was to identify a definable channel bed and bank and determine the OHWM of washes in the project area, as well as delineate wetland areas. It is important to note that large storm events and higher than average snowfall occurred in Clover Creek and Meadow Valley Wash in January 2005 which could have lead to an overestimation on the extent of jurisdictional waters in those areas.

The field survey corridor was provided by Bechtel-SAIC as geographic information system (GIS) electronic shape files. The CRC shapefiles, USGS topographic maps, and site-specific aerial photography electronic files were uploaded to a field tablet (personal computer) with a global positioning system (GPS) and ArcPad© software for reference in the field. The field tablet included an ArcPad© application customized by PBS&J to store, organize, and manage the data collected in the field. The application design emulates the standardized USACE wetlands data collection form and another form with OHWM indicators for delineating ephemeral washes in arid stream systems. Both electronic forms included fields for collecting vegetation, soils, hydrology, and geomorphology data at each WOUS and wetland, and for recording photographs at each site. Data entry fields from these forms are listed in Appendix E.

Informational resources were reviewed prior to the field survey to assist in locating and identifying potential WOUS. Aerial photography (digital ortho-photo quarter-quadrangle (DOQQ) and site-specific aerial photography) and U.S. Geological Survey (USGS) topographic maps were used to identify drainage patterns and washes in the project area. The site-specific aerial photographs used were taken throughout 2005. The *Review of Ordinary High Water Mark Indicators for Delineating Arid Streams in the Southwestern United States* was used as guidance for identifying and determining limits of the USACE jurisdiction. Delineations of wetlands adjacent to WOUS were performed using the USACE 1987 *Wetland Delineation Manual*.

4.1 Waters of the U.S. – Ephemeral and Perennial Streams

4.1.1 Methods

In an arid region, fluvial geomorphology principles provide a basis for understanding channel formation/evolution, bed and bank morphology, and sediment arrangement within arid streams. Stream channel form, cross-section, gradient, and watershed conditions control the type, size, and shape of the stream. These principles were used to identify an OHWM. The OHWM was identified by first determining areas on the land surface that were definitively above or below the OHWM (USACE 2004). Strong evidence of non-jurisdictional conditions is represented by features that are consistently above the OHWM such as rock varnishing, desert pavement, developed soils, and upland plant species, whereas conditions such as cobble bars, gravel sheets, in-stream sand ripples, particulate distribution, and desiccation/mud cracks are features below the OHWM (USACE 2004).

The horizontal extent of jurisdiction is based on flow from small to moderate storm events under normal conditions. The *Review of Ordinary High Water Mark Indicators for Delineating Arid Streams in the Southwestern United States* discusses the potential for using vegetation patterns to assist in identifying an OHWM in the arid southwest because of the close association between riparian vegetation and stream hydrology. Therefore, the presence of riparian species was used to indicate that a wash received more frequent flows associated with smaller storm events and to more accurately determine the extent of WOUS.

In general, vegetation communities and plant species identified in ephemeral washes throughout the CRC varied little, if any, from vegetation found on the adjacent uplands. Riparian vegetation in an arid environment can be divided into three wetness classes: (1) hydriparian areas are perennially saturated; (2) mesoriparian areas are seasonally moist; and (3) xeroriparian areas are predominantly dry with infrequent flood events (USACE 2004). The common wetness class identified within the CRC is xeroriparian, with mesoriparian areas along Clover Creek, and mesoriparian to hydriparian areas along Meadow Valley Wash. Xeroriparian vegetation includes species that may be limited to, or are noticeably more abundant in, ephemeral washes. Desert willow (*Chilopsis linearis*) was one species that was noticeably more abundant in ephemeral washes. Desert willow occurs throughout the ephemeral washes in the CRC and was used as an indicator species. The presence of willow indicates the wash is generally large and wet enough to support xeroriparian species and contains sufficient flows to identify an OHWM.

There were two plant species identified in ephemeral WOUS (see Table 2) on public lands within the CRC as possibly occurring in riparian areas or wetlands, as listed on the National List of Plant Species That Occur in Wetlands: Intermountain (Region 8) (USFWS 1988). A facultative (FAC) species is equally likely to occur in both upland and riparian areas. Plants species that usually occur in wetter areas are classified as facultative wetland (FACW). Other plants identified in and adjacent to WOUS are not listed as species that occur in wetlands in any region of the country, or insufficient information is available to determine an indicator status.

Table 2. Indicator Plant Species Identified Within Ephemeral Waters of the U.S., Caliente Rail Corridor, Nevada

Scientific Name	Common Name	Region 8 Indicator Status*
<i>Chilopsis linearis</i>	Desert willow	FAC
<i>Populus fremontii</i>	Fremont's cottonwood	FACW

*Notes: FAC = Facultative; FACW=Facultative Wetland (USFWS 1988)

Each potential WOUS identified on the topographic map and/or aerial photography was located in the field and a location data point was recorded with the GPS unit. If WOUS indicators were present (definable channel bed and bank, OHWM, and applicable vegetation) throughout the 0.25-mile corridor, the electronic data collection form was completed. The GPS unit was used to document points along the WOUS to create a continuous line (wash line) throughout the corridor. The dominant vegetative species, hydrologic characteristics, width of channel bed, and approximate depth of the OHWM were documented. If the channel width varied throughout the corridor, an average width was recorded. Generally, the width at the location of the rail alignment was recorded. Photographs were taken at each wash determined to be WOUS.

4.1.2 Results

A total of 74 stream channels were identified as likely jurisdictional WOUS within the CRC; the USACE will make all final jurisdictional determinations. Widths of the washes ranged from 1 to 50 feet, with average and median widths of 9 and 4 feet, respectively. The locations of each WOUS are shown on

Figures 3A through 3E. WOUS segments occurring within the 0.25- mile corridors surveyed are highlighted in blue. Connections to interstate tributaries are not shown for all WOUS; however, all WOUS have been determined to connect to jurisdictional tributaries. Widths and depths of each jurisdictional WOUS found are listed in Table 3. Corridor segments not shown in the figures or listed in the table did not have jurisdictional WOUS identified during the field surveys.

The corridor crosses the White River Valley in the vicinity of the intersection of CS1-West with State Highway 318. Historically, the White River drained into the Colorado River; however, the flow has been disrupted since the last pluvial period (Houghton 1976). The hydrology has been primarily altered by changes in topography and geological conditions. No evidence of a discernable channel bed and bank was found in the area where the corridor crosses the White River Valley. Additional field observations within the White River Valley south of the crossing (historically downstream), confirmed the lack of a discernable channel bed and bank. Because no physical indicators of a WOUS exist throughout the White River Valley, it has been determined that the White River and associated tributaries do not have connectivity to the Colorado River System and do not appear to have other nexus with interstate or foreign commerce, therefore are not WOUS as defined by 33 CFR 328(a). Photographs and a topographic map of the area where the corridor crosses the White River Valley and which support this conclusion are provided in Appendix D. The topographic map shows that the valley bottom region crossed by the rail line is flat with no flow channel. It also shows where deposition of alluvium from channels flowing into the valley bottom has caused changes in elevation that block downstream flow. Similar conditions also occur downstream of this crossing.

A large wash, labeled WOUS 1 in Table 1 and Figures 3A and 3C, crosses CS1 just west of U.S. Highway 93 in Meadow Valley. This wash crossing is on private land and was not surveyed. However, the wash was examined upstream and downstream of the intersection with the CRC and was determined to be jurisdictional. The wash therefore is labeled jurisdictional in this report.

Table 3. Waters of the U.S. Identified within the Caliente Rail Corridor, Nevada

CRC Segment	WOUS ID #	Figure #	Width at OHWM (feet)	Approximate Depth at OHWM (inches)
Caliente/Eccles	1	3a	3.5	4
Caliente/Eccles	2	3a	8	12
Caliente/Eccles	2A	3a	8	12
Caliente	3	3a	2.5	3
Caliente	4	3a	1	2
Caliente	5	3a	10	2
Caliente	6A	3a	12	12
Caliente	6B	3a	25	3
Caliente	7	3a	4	3
Eccles	8	3a	1.5	3
Eccles	9	3a	2	5
Eccles	10	3a	4	3
Eccles	11	3a	1	1
Eccles	12	3a	2	1
Eccles	13A	3a, 3b	3	2
Eccles	13B	3a, 3b	5.5	2
Eccles	13C	3a, 3b	6	3
Eccles	14	3a, 3b	3	1
Eccles	15	3a, 3b	1.5	2
Eccles	16	3a, 3b	2	2
Eccles	17	3a, 3b	3.5	3
Eccles	18	3a, 3b	15	2

CRC Segment	WOUS ID #	Figure #	Width at OHWM (feet)	Approximate Depth at OHWM (inches)
Eccles	19A	3a, 3b	17	12
Eccles	19B	3a, 3b	25	12
Eccles	19C	3a, 3b	17	12
Eccles	19D	3a, 3b	25	12
Eccles	19E	3a, 3b	8	12
Eccles	19F	3a, 3b	12	12
Eccles	19G	3a, 3b	40	12
Eccles	19H	3a, 3b	30	12
Eccles	19I	3a, 3b	10	12
Eccles	19J	3a, 3b	50	12
Caliente	19K	3a	35	12
Caliente	19L	3a	25	12
Eccles	20A	3a, 3b	9	3
Eccles	20B	3a, 3b	8	3
Eccles	20C	3a, 3b	5	3
Eccles	21	3a, 3b	6.5	2
Eccles	22	3a, 3b	4	3
Eccles	23	3a, 3b	8	2
Eccles	24	3a, 3b	20	3
Eccles	25	3a, 3b	5	1
Eccles	26	3a, 3b	12	1
Eccles	27	3a, 3b	6	2
Eccles	28	3a, 3b	40	3
Eccles	29	3a, 3b	15	2
Eccles	30	3a, 3b	8	3
Eccles	31	3a, 3b	8	2
Eccles	32	3a, 3b	20	2
Eccles	33	3a, 3b	1.5	2
Eccles	34A	3a, 3b	1.5	1
Eccles	34B	3a, 3b	10	2
Eccles	35A	3a, 3b	4	1
Eccles	35B	3a, 3b	8	2
Eccles	36	3a, 3b	30	1
Eccles	37	3a, 3b	40	1
Eccles	38	3a, 3b	30	1
Eccles	39	3a, 3b	8	1
Eccles	40A	3a, 3b	6	3
Eccles	40B	3a, 3b	1	2
CS1 Bennett Pass	41A	3c	3	2
CS1 Bennett Pass	41B	3c	1.5	1
CS1 Bennett Pass	42	3c	1.5	1
CS1 Bennett Pass	43	3c	2	2
CS1 Bennett Pass	44	3c	4	3
CS1 Bennett Pass	45	3c	3.5	2
CS1 Bennett Pass	46A	3c	7.5	4
CS1 Bennett	46B	3c	6	3

CRC Segment	WOUS ID #	Figure #	Width at OHWM (feet)	Approximate Depth at OHWM (inches)
Pass				
CS1 Bennett Pass	46C	3c	2	2
CS1 Bennett Pass	47	3c	3.5	3
CS1 Bennett Pass	48	3c	3	2
CS1 Bennett Pass	49	3c	3	1
CS1 Bennett Pass	50	3c	1.5	1
CS1 Bennett Pass	51	3c	1.7	1
CS1 Bennett Pass	52	3c	1.7	1
CS1 Bennett Pass	53	3c	1.7	1
CS1 Bennett Pass	54	3c	2.5	3
CS1 Bennett Pass	55	3c	2	1
OV3	56	3d	2	2
OV1	57	3d	6	1
OV1	58	3d	8	6
BW1	59	3d	2	2
BW1	60	3d	2	2
BW1	61	3d	15	6
BW1	62	3d	1	1
BW1	63	3d	3	3
BW1	64	3d	2	2
BW1	65	3d	1.5	2
BW1	66	3d	2	2
BW1	67	3d	2	2
BW1	68	3d	5	2
BW1	69	3d	1.5	1
BW1	70	3d	1.5	1
CS6 Busted Butte	71	3e	3	2
CS6 Busted Butte	72	3e	2	2
CS6 Busted Butte	73	3e	2	2
CS6 Busted Butte	74	3e	2	2

4.2 Wetlands

Wetlands include 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 (33 CFR 328.3(b)). Wetlands normally exhibit three general parameters – wetland hydrology, hydrophytic vegetation, and hydric soils. Evidence of each of these three parameters are typically required to positively identify a wetland.

In addition to the three parameters discussed above, a wetland must be immediately adjacent to, or have a conceivable, periodic surface water connection to other waters of the U.S. to meet the definition of adjacent wetland in 33 CFR 328.3. Unvegetated perennial or intermittent stream channels with an ordinary high water mark, as well as open water areas such as lakes are examples of areas typically considered to be waters of the U.S. by the USACE. Jurisdiction will ultimately be decided by the USACE relative to each of the wetlands identified within the project area.

4.2.1 Methods

The identification and delineation of wetlands within the CRC was performed using all available information and during three field efforts conducted in May 2005, January 2006, and June 2006. The January and June 2006 field efforts focused on the Clover Creek area of the Eccles Alignment and the Meadow Valley Wash area of the Caliente Segment.

Aerial photographs taken throughout 2005 and USGS topographic maps were examined for the presence of known and potential water features and springs in and adjacent to the entire CRC; including both interstate and intrastate hydrographic regions. Available National Wetland Inventory (NWI) mapping was also reviewed to locate potential wetland habitat along the entire CRC.

Delineations of wetlands adjacent to WOUS in the interstate hydrographic regions were performed within the CRC using the routine method as described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). Additional guidance for delineations was taken from the *Draft Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2005). The indicator status of vegetation species was derived from the *National List of Plant Species That Occur in Wetlands: Intermountain Region (Region 8)* (USFWS 1988). Wetlands were classified using the U.S. Fish and Wildlife Service Classification system (Cowardin et al. 1979).

The USACE Wetlands Delineation Manual requires the simultaneous presence of hydrophytic vegetation, wetland hydrology, and hydric soils during the growing season to positively delineate an area as a wetland. The growing season for the Caliente Area is estimated by the Natural Resources Conservation Service (NRCS) to extend from April 20th to October 21st (184 days) (NRCS 2002). According to the delineation manual, to be considered a wetland an area must remain inundated or saturated to the surface continuously for a minimum of five percent of the growing season (Environmental Laboratory 1987). For the Caliente project area this translates into a requirement of nine consecutive days of soil saturation.

Wetland boundaries were primarily established using the resource grade GPS unit and ArcPad© on the field tablet. The accuracy of the GPS unit ranges from 10 to 15 feet. Wetland boundaries of each wetland polygon were then evaluated in the office and shifted as needed to best conform to the signature observed on the 2005 aerial photography. Wetland boundaries were not flagged in the field.

For purposes of this report 2 areas are classified as potential wetland (PWT) (Figure 4A). Accessibility to these wetlands was limited by private property access restrictions. Identification of PWTs was accomplished using visual observations from public access locations and by review of aerial photography taken throughout 2005. PWT boundaries were estimated by identifying hydrophytic vegetation in the field (where possible) and/or by examining aerial photography. These wetlands are considered "potential" until confirmed by the presence of the three wetland parameters. Estimated potential wetland boundaries were drawn on the field tablet.

4.2.2 Results

A total of 54 sample points were performed (see data forms in Appendix C) and a total of approximately 82.8 acres of wetland area identified (Table 4). Of the wetlands identified, 81.6 acres are preliminarily considered to be jurisdictional, and 1.2 acres considered to be non-jurisdictional due to their lack of surface connections to the tributary system, or to wetlands adjacent to the tributary system (Table 4). Note that the U.S. Army Corps of Engineers will make the final jurisdictional determinations. Figures 4A through 4T depict all wetlands identified within the CRC (Appendix A). Select site photographs from representative WOUS and wetlands are included in Appendix B. All site photographs and CRC collected data are included with the electronic ArcGIS files.

Throughout the entire 505 mile long study area the majority of wetlands identified occurred along Meadow Valley Wash north of Caliente and, to a lesser degree, along Clover Creek, just east of Caliente. Wetlands in these areas occur within the Caliente and Eccles segments (see Figures 4A through 4R in Appendix A).

Table 4. Summary of wetlands within the Caliente and Eccles Segments of the Caliente Rail Corridor (CRC), Nevada.

Wetland ID	Sample Point(s) ^a	Figure No.	Photo No. ^b	USFWS Classification ^c	Preliminary Jurisdictional Determination ^d	Size (acres)
CC01	CCE-1,2,3	4a, 4c, 4d, 4e	17, 18	PEM	Jurisdictional	3.4
CC02	CCW-4	4a, 4c, 4d	19	PEM	Jurisdictional	<0.1
CC03	CCW-5,3	4a, 4c, 4d	20	PEM	Jurisdictional	0.1
CC04	CCW-1,2,3	4a, 4c, 4d, 4e	21	PEM	Jurisdictional	0.3
CC04a	CCW-1,2,3	4a, 4e	--	PEM	Jurisdictional	0.2
CC04b	CCW-1,2,3	4a, 4c, 4d	--	PEM	Jurisdictional	<0.1
CC05	CCW-6,7	4a, 4e	22	PEM	Jurisdictional	0.1
CC06	CCW-8	4a, 4e	23	PEM	Jurisdictional	0.1
CC07	CCE-4	4a, 4e, 4f, 4g, 4h	23, 24	PEM	Jurisdictional	7.9
CC08	CCW-9	4a, 4e, 4f	25	PEM	Jurisdictional	0.1
CC09	CCW-10	4a, 4f, 4g	26	PEM	Jurisdictional	2.0
CC10	CCW-11	4a, 4g, 4h	27	PEM	Jurisdictional	1.5
CC11	CCE-5	4a, 4h	28	PEM	Non-Jurisdictional	<0.1
CC12	CCE-6	4a, 4h, 4i	29	PEM	Jurisdictional	1.5
CC13	CCE-7,8	4a, 4i	30	PEM	Jurisdictional	1.3
CC14	CCW-12	4a, 4i	31	PEM	Jurisdictional	0.4
CC15	CCW-13	4a, 4i, 4j	32	PEM	Jurisdictional	0.2
CC16	CCE-9	4a, 4j	33	PEM	Non-Jurisdictional	<0.1
CC17	CCE-10, 11, 12	4a, 4j, 4k	34, 35, 36	PEM	Jurisdictional	6.9
CC18	CCW-14	4a, 4j	37	PEM	Jurisdictional	0.1
CC19	CCE-13,14; CCW-15	4a, 4k	--	PEM	Jurisdictional	1.2
CC20	CCE-13,14, 15	4a, 4k, 4l	38, 39	PEM	Jurisdictional	0.6
CC21	CCW-18	4a, 4l, 4m, 4n	40, 41, 42, 43	PEM	Jurisdictional	11.4
CC22	--	4a, 4l	44	PEM	Non-Jurisdictional	0.1
CC23	CCW-17	4a, 4n	45	PEM	Non-Jurisdictional	0.1
CC24	CCE-16, CCE-18	4a, 4n, 4o	46	PEM	Jurisdictional	0.2
CC25	CCW-16, 20	4a, 4o, 4p	47, 48	PEM	Jurisdictional	3.0
CC26	CCE-19	4a, 4o	49	PEM	Jurisdictional	1.1
PWT-1	None	4a	--	PSS	Jurisdictional	5.6
PWT-2	None	4a, 4q, 4r	--	PEM/PSS	Jurisdictional	11.8
WT-01	WT-1	4a, 4r	10	PSS	Jurisdictional	3.3

Wetland ID	Sample Point(s) ^a	Figure No.	Photo No. ^b	USFWS Classification ^c	Preliminary Jurisdictional Determination ^d	Size (acres)
WT-01A	WT-1	4a, 4r	-	PSS	Jurisdictional	1.4
WT-02	WT-2	4a, 4r	11	PEM/PSS	Jurisdictional	0.6
WT-03	WT-3	4a, 4r	12	PSS	Non-Jurisdictional	0.6
WT-04	WT-4	4a, 4r	13	PEM	Jurisdictional	0.7
WT-05	WT-5	4a, 4c	7	PEM	Jurisdictional	6.1
WT-06	WT-6	4a, 4c	--	PSS	Jurisdictional	0.3
WT-07	WT-7	4a, 4b	--	PEM	Jurisdictional	3.9
WT-08*	WT-8	4a, 4b	--	PEM	Non-Jurisdictional	0.1
WT-09	WT-9	4a, 4b	14	PEM (will likely develop into a PSS)	Jurisdictional	4.1
WT-10	WT-10	4a, 4b	15	PEM (will likely develop into a PSS)	Jurisdictional	0.1
WT-11*	WT-11	4a, 4b	16	PSS	Jurisdictional	0.2
WT-12	WT-12	4s	50, 51	PEM	Non-Jurisdictional	0.1
WT-13	WT-13	4s	51	PEM	Non-Jurisdictional	<0.1
WT-14	WT-14	4s	50, 51	PEM	Non-Jurisdictional	<0.1
WT-15	WT-15	4t	52, 53	PEM	Non-Jurisdictional	<0.1
APPROXIMATE TOTAL						82.8

*Provisional wetland determination, site will require additional investigation if it will be impacted. ^aSee Appendix C. ^bSee Appendix B. ^cBased on Cowardin et al. 1979. PEM = Palustrine emergent; PSS = Palustrine scrub-shrub. ^dThe Corps of Engineers will make the final jurisdictional determination.

Vegetation

According to the USFWS classification for wetlands (Cowardin et al. 1979), all of the wetlands within the project area are classified as palustrine emergent and palustrine scrub-shrub wetlands. Though plant species composition varied among wetland polygons, the most prevalent hydrophytic herbaceous species encountered were clustered field sedge (*Carex praegracilis*), wiregrass (*Juncus balticus*), inland saltgrass (*Distichlis spicata*), foxtail barley (*Hordeum jubatum*), spikerush (*Eleocharis palustris*), hardstem bulrush (*Scirpus acutus*), cattail (*Typha sp.*), and Olney's three-square (*Scirpus americanus*). In scrub-shrub wetlands the most prevalent hydrophytic shrub species encountered were saltcedar (*Tamarix ramosissima*), willow (*Salix sp.*), and Fremont's cottonwood (*Populus fremontii*). A complete list of plant species and their indicator status identified in, and immediately adjacent to wetlands, are listed in Table 5.

Table 5. Indicator plant species identified in wetlands or adjacent uplands within the Caliente Rail Corridor, Nevada

Scientific Name	Common Name	USFWS 1988 Region 8 Indicator Status*
<i>Agropyron repens</i>	Quackgrass	FACU
<i>Agropyron smithii</i>	Western wheatgrass	FACU
<i>Agrostis alba</i>	Redtop	FACW
<i>Alopecurus pratensis</i>	Meadow foxtail	NI
<i>Anemopsis californica</i>	Yerba mansa	OBL
<i>Carex nebrascensis</i>	Nebraska sedge	OBL
<i>Carex praegracilis</i>	Clustered field sedge	FACW
<i>Carex sp.</i>	Sedge	FAC-OBL
<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush	Not listed
<i>Convolvulus arvensis</i>	Field bindweed	Not listed
<i>Distichlis spicata</i>	Inland saltgrass	FAC+
<i>Eleagnus angustifolia</i>	Russian olive	FAC
<i>Eleocharis palustris</i>	Creeping spikerush	OBL
<i>Epilobium sp.</i>	Willowherb	FAC-FACW
<i>Hordeum jubatum</i>	Foxtail barley	FAC
<i>Iva axillaris</i>	Poverty sumpweed	FACW
<i>Juncus balticus</i>	Baltic rush	FACW
<i>Juncus bufonius</i>	Toad rush	FACW
<i>Mimulus guttatus</i>	Seep monkeyflower	OBL
<i>Phragmites australis</i>	Common reed	FACW+

Scientific Name	Common Name	USFWS 1988 Region 8 Indicator Status*
<i>Polypogon monspeliensis</i>	Rabbitfoot grass	FACW+
<i>Populus fremontii</i>	Fremont's cottonwood	FACW
<i>Potentilla anserina</i>	Silverweed	OBL
<i>Puccinellia lemmonii</i>	Lemmon's alkaligrass	FAC
<i>Ranunculus sp.</i>	Buttercup	OBL
<i>Rhus trilobata</i>	Skunkbush	NI
<i>Rosa woodsii</i>	Woods rose	FAC-
<i>Salix exigua</i>	Sandbar willow	OBL
<i>Salix sp.</i>	Willow	FAC-OBL
<i>Sarcobatus vermiculatus</i>	Black greasewood	FACU
<i>Scirpus acutus</i>	Hardstem bulrush	OBL
<i>Scirpus americanus</i>	Olney's three-square	OBL
<i>Scirpus maritimus</i>	Alkali bulrush	OBL
<i>Tamarisk ramosissima</i>	Saltcedar	FACW
<i>Taraxacum officinale</i>	Dandelion	FACU+
<i>Typha latifolia</i>	Broadleaf cattail	OBL
<i>Veronica americana</i>	American speedwell	OBL
<i>Veronica sp.</i>	Speedwell	OBL

*FACU=Facultative Upland; FAC=Facultative; FACW=Facultative Wetland; OBL=Obligate NI=Non-Indicator (USFWS 1988). When two indicators are listed it reflects the lowest to the highest frequency of occurrence in wetlands.

Hydrology

Within the Clover Creek area of the Eccles alignment the primary source of water supporting wetlands WT-7, 9, 10 and 11 is Clover Creek and its alluvial aquifer. Wetland hydrology of this area was determined to result primarily from overbank flooding and the close proximity of the alluvial aquifer to the soil surface (i.e., high water table). Wetland hydrology of wetland WT-8 appears to result from ponding of surface runoff against the railroad berm. Primary indicators of wetland hydrology in the Clover Creek portion of the project area included soil saturation, high water table, drainage patterns, drift lines, water marks, and biotic crust (i.e., algal mats). The only secondary indicator of wetland hydrology observed was passing the FAC-neutral test.

Similarly, the hydrology of the Meadow Valley area is either directly or indirectly linked to Meadow Valley Wash. The source of hydrology for wetlands such as WT-1, 1A, 2, 4 thru 6, and PWT 1 and 2, all of which occur immediately adjacent to Meadow Valley Wash, is primarily overbank flooding. Emergent wetlands not directly affected by the stream itself, such as wetland CC21, are likely driven by groundwater associated with the stream (i.e., alluvial aquifer). This is particularly evident in Figure 4J and photos 34, 35, and 36 which show that the valley containing Meadow Valley Wash narrows substantially. This valley narrowing appears to act as grade control on both surface and subsurface water flow and has resulted in a high water table close to or inundating the soil surface, especially upgradient of this geologic feature. Note that the proposed alignment follows the historic railroad bed, which is generally 2 to 3 feet above the surrounding terrain and considered upland for almost its entire length (Figures 4D – 4Q, see photos 17, 21, 24, 26, 27, 29, 30, 31, 32, 34, 35, 38, 43, 47 of the historic railroad berm in Appendix B). Primary indicators of wetland hydrology found in the Meadow Valley portion of the project area included inundation, soil saturation, high water table, drainage patterns, soil surface cracks, and biotic crust (i.e., algal mats). Secondary indicators of wetland hydrology observed were mud casts (i.e., livestock pugging), salt deposits, oxidized rhizospheres, and passing the FAC-neutral test.

The hydrology of wetlands WT-12 thru 15 is somewhat different from those found in the eastern portion of the project area and appeared to be primarily dependent on groundwater (i.e., a spring) at both of these locations (Figures 4S and T). At wetlands WT-12, 13 and 14 the spring was developed by excavating or blasting a hole into the parent material and excavating a channel to convey water into a basin used as a stock watering pond. At the time of the field survey water was flowing from the spring head through the channel to the stock pond where it was less than two feet deep. Wetland WT-15 contained a small pool of standing water. Primary indicators of wetland hydrology found in the western portion of the project

area included inundation, soil saturation, sediment deposits, and drainage patterns. Secondary indicators of wetland hydrology observed were oxidized rhizospheres and passing the FAC-neutral test.

Soils

Soils found in wetlands in the Eccles portion of the project area consist of the Veet-Mosida association (VM) which is considered to be a well-drained very gravelly sandy loam (NRCS 2006a). The soil series that occur at wetland sites within the Caliente segment include: Pahrnagat silty clay loam - drained (Pg), Pahrnagat silty clay loam (Pe), Zoate-rock outcrop association (ZR), Geer silt loam - slightly saline (Gg), and Geer silt loam - strongly saline (Gh) (SCS 1976). The Pahrnagat silty clay loam and the Geer silt loam - strongly saline soil series are classified as hydric (NRCS 2006b). Pahrnagat silty clay loams are considered to be poorly to somewhat poorly drained, the Geer silt loam series is considered to be moderately well drained, while the Zoate-rock outcrop association is considered to be well drained. During June 2006 field work the soils in the Meadow Valley Wash area were generally found to be comprised of silty clay material. Hydric soil indicators observed in both the Eccles and Caliente segments included aquic moisture regime, sulfidic odor, gleying, chroma of 1, and chroma of 2 with mottles. In some instances field indicators of hydric soils were lacking; possibly due to high soil pH limiting the formation of redoximorphic features, irrigation, or other factors. In these instances best professional judgment was used and more emphasis was placed on the presence of hydrophytic vegetation and wetland hydrology indicators.

Soils in the vicinity of wetlands WT-12, 13, and 14 have not been mapped by the NRCS. Soils in this area were primarily silt loams and gravelly loams during the field survey. Hydric soil indicators observed in this area were low chroma and an aquic moisture regime. The soils in the vicinity of WT-15 also have not been mapped by the NRCS. Soils at this location had a texture of silty loam in the upper horizons and a silty clay loam at deeper depths. Hydric soil indicators observed were a sulfidic odor and low chroma with mottles.

Table 6 provides more specific information on the hydrology, vegetation, soils, and wetland boundaries of all wetlands identified in the CRC.

Table 6. Summary information of wetland polygons within the Caliente Rail Corridor, Nevada.

Wetland ID	Dominant Vegetation	Hydrology Indicators	Hydric Soil Indicators	Boundary Notes	General Remarks*
CC1 & CC7	<i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Eleocharis palustris</i> <i>Hordeum jubatum</i> <i>Distichlis spicata</i>	Algal mats (dried), Mud cracks (up to 16 inches deep), mud casts from livestock	Aquic moisture regime (assumed), low chroma	Wetland boundary determined by a change in elevation, and by a switch in dominant vegetation to rabbitbrush and greasewood. The old railroad grade berm comprises the western boundary. Wetland extends to east beyond the project limits.	The hydrology of these two polygons appears to be driven primarily by a gravity type irrigation system originating from Meadow Valley Wash at the north end of the fields. Soils are silty clay in texture, which would be expected to seal when wetted from above and thereby limit the development of redoximorphic features in the deeper horizons. Salt concentrations may also limit the development of strong redoximorphic features. It is also noted that the length of soil saturation appears to be long enough for the development of hydrophytic vegetation and to meet the minimum hydrology requirement, but may not be long enough to develop strong hydric soil indicators. In addition, these fields have been observed from the highway to be wet in the winter and spring on various occasions in 2005 and 2006 by project staff. These two polygons are connected by a culvert under the road that separates them and connect to Meadow Valley Wash via a channel at the southern end.
CC2	<i>Juncus balticus</i> <i>Hordeum jubatum</i> <i>Distichlis spicata</i> <i>Polypogon monspeliensis</i>	Sediment deposits, mud casts from livestock, depressional topography	Low chroma	This wetland is located in a depression with a clear change in vegetation to rabbitbrush and greasewood.	Wetland occurs approximately 30 feet north of the channel of Meadow Valley Wash. Due to its proximity to the Wash, this wetland was considered jurisdictional.
CC3	<i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Hordeum jubatum</i> <i>Distichlis spicata</i> <i>Sarcobatus vermiculatus</i>	Salt crust, mud cracks, depressional topography	Aquic moisture regime (assumed)	This wetland is located in a slight depression with a change in vegetation to primarily greasewood.	This wetland would likely connect to jurisdictional wetland polygon CC1 if the railroad bed was not present, and is therefore considered jurisdictional.
CC4, 4a, & 5	<i>Carex praegracilis</i> <i>Juncus balticus</i>	Algal mats (dried), depressional topography	Aquic moisture regime (assumed)	These wetlands are located in a slight depression with a change in elevation corresponding to a change in vegetation to greasewood and rabbitbrush.	These wetlands would likely connect to jurisdictional wetland polygons CC1 and CC7 if the railroad bed was not present, and are therefore considered jurisdictional.
CC4b	<i>Distichlis spicata</i>	Algal mats (dried), depressional topography	Aquic moisture regime (assumed)	This wetland is located in a slight depression with a change in vegetation to greasewood and rabbitbrush.	This wetland would likely connect to jurisdictional wetland polygon CC1 if the railroad bed was not present, and is therefore considered jurisdictional.
CC6	<i>Scirpus acutus</i> <i>Scirpus maritimus</i>	Inundation	Aquic moisture regime (assumed)	This wetland is located in a pronounced depression with a distinct change in vegetation to greasewood and rabbitbrush.	The site was inundated to approximately 6 inches above the soil surface. Hydrology for this wetland appears to be driven by a high groundwater table. This wetland would likely connect to Meadow Valley Wash if the highway was not present, and is therefore considered jurisdictional.
CC8	<i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Hordeum jubatum</i> <i>Distichlis spicata</i>	Drainage patterns, salt crust	Aquic moisture regime (assumed)	Boundary is based on a change in elevation, change in plant species to rabbitbrush and greasewood and in some locations the limits of the observed salt crust.	This wetland would likely connect to jurisdictional wetland polygon CC7 if the railroad bed was not present, or Meadow Valley Wash if the road was not present, and is therefore considered jurisdictional.
CC9	<i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Distichlis spicata</i>	Depressional topography, FAC-neutral test, oxidized	Low chroma with mottles	Boundary is based on a distinct change in elevation, and/or a change in plant species to rabbitbrush and greasewood.	Considered jurisdictional because it connects to Meadow Valley Wash via a culvert.

Wetland ID	Dominant Vegetation	Hydrology Indicators	Hydric Soil Indicators	Boundary Notes	General Remarks*
		rhizospheres			
CC10	<i>Eleocharis palustris</i> <i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Distichlis spicata</i>	Depressional topography, algal mats (dried), FAC-neutral test	Aquic moisture regime (assumed)	Boundary is based on a distinct change in elevation, and/or a change in plant species to rabbitbrush and greasewood.	Site contains patches of cattail and bulrush at southern end, as move northward the site becomes inundated/saturated and bulrushes are common (west side of berm opposite pond at polygon CC12). This wetland would likely connect to jurisdictional wetland polygon CC7 if the railroad bed was not present and is therefore considered jurisdictional.
CC11	<i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Hordeum jubatum</i> <i>Distichlis spicata</i>	Depressional topography, mud cracks, FAC-neutral test	Low chroma	Boundary is based on a distinct change in elevation, and/or a change in plant species to greasewood.	This wetland was likely formed by the railroad bed causing water to pond. This wetland was considered non-jurisdictional due to no observed surface connection to jurisdictional waters of the U.S.
CC12	<i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Scirpus maritimus</i> Aquatic macrophytes	Inundation	Inundation - aquic moisture regime	Boundary is based on a distinct change in elevation, and/or a change in plant species to rabbitbrush and greasewood.	Pond area inundated to approximately 18 inches in depth. Hydrology appears to be groundwater. This wetland would likely connect to jurisdictional wetland polygon CC7 via wetland polygon CC10 if the railroad bed was not present, or to wetlands adjacent to Meadow Valley Wash if the road was not present and is therefore considered jurisdictional.
CC13	<i>Agrostis alba</i> <i>Juncus balticus</i> <i>Carex praegracilis</i> <i>Distichlis spicata</i>	Depressional topography, mud cracks, salt crust, FAC-neutral test	Low chroma with mottles	Boundary is based on a change in elevation, and/or a change in plant species to dominance by rabbitbrush and greasewood.	Hydrology appears to be derived from groundwater. Site has multiple upland islands. This wetland would likely connect to Meadow Valley Wash if the highway and the railroad bed were not present and is therefore considered jurisdictional.
CC14	<i>Agrostis alba</i> <i>Juncus balticus</i> <i>Carex nebrascensis</i>	Depressional topography, hummocky (perhaps from livestock), mud cracks, drainage patterns, FAC-neutral test	Low chroma with mottles	Boundary is based on a change in elevation, and/or a change in plant species to dominance by greasewood.	Site also contains some scattered hardstem bulrush. Hydrology appears to be derived from groundwater, but may be drying out. The site drains to Meadow Valley Wash at the southern end through a culvert and so was considered jurisdictional.
CC15	<i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Hordeum jubatum</i>	Depressional topography, mud cracks, drainage patterns, FAC-neutral test, oxidized rhizospheres	Low chroma with mottles	Boundary is based on a change in elevation, and/or a change in plant species to dominance by greasewood.	Pockets of alkali bulrush and cattail occur at lower elevations. This wetland would likely connect to Meadow Valley Wash if the highway was not present and is therefore considered jurisdictional.
CC16	<i>Hordeum jubatum</i>	Depressional topography, mud cracks, oxidized rhizospheres	Aquic moisture regime (assumed)	Boundary is based on a change in elevation, and/or a change in plant species to dominance by Woods rose and skunkbush.	This wetland is considered non-jurisdictional due to no observed surface connection to jurisdictional waters of the U.S.
CC17	<i>Scirpus acutus</i> <i>Carex nebrascensis</i> <i>Agrostis alba</i>	Inundated or saturated; drainage	Aquic moisture regime, low chroma with	Boundary is based on a change in elevation, and/or a change in plant species to dominance by upland species.	Large wetland complex which encompasses Meadow Valley Wash at the canyon mouth and that is wettest at the southern end and becomes drier as move northward (see sample points CCE-11 & 12). Considered

Wetland ID	Dominant Vegetation	Hydrology Indicators	Hydric Soil Indicators	Boundary Notes	General Remarks*
	<i>Juncus balticus</i> <i>Carex praegracilis</i> <i>Hordeum jubatum</i>	patterns	mottles		jurisdictional due to occurrence in and adjacent to Meadow Valley Wash's channel.
CC18	<i>Agrostis alba</i> <i>Juncus balticus</i> <i>Carex praegracilis</i> <i>Scirpus pungens</i> <i>Distichlis spicata</i>	Saturated to surface	Sulfidic odor, low chroma;	Boundary is based on a change in elevation, and/or a change in plant species to dominance by greasewood and rabbitbrush.	Hydrology appears to be derived from groundwater. Cattails occur in lower elevational areas. This wetland would likely connect to Meadow Valley Wash if the highway was not present and is therefore considered jurisdictional.
CC19 & 20	<i>Distichlis spicata</i>	Mud casts, salt crust, drainage patterns	Low chroma, sulfidic odor	Boundary is based on a change in elevation, and/or a change in plant species to dominance by greasewood and rabbitbrush.	In lower elevation areas dominant species are spikerush and redtop. These wetland polygons are a continuation of polygon CC17, and so is considered jurisdictional.
CC21	<i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Hordeum jubatum</i> <i>Agrostis alba</i> <i>Scirpus acutus</i> <i>Scirpus americanus</i>	Inundation/soil saturation, depression topography, mud casts, FAC-neutral test, oxidized rhizospheres	Aquic moisture regime, low chroma with mottles	Boundary is based on a change in elevation, and/or a change in plant species to dominance by greasewood and rabbitbrush.	Extensive wetland complex adjacent to Meadow Valley Wash with areas of inundation. Dominant hydrology appears to be groundwater. Considered jurisdictional due to its adjacency to Meadow Valley Wash and its connection to wetland polygons CC20, which connects to CC19, which connects to CC17.
CC22	<i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Hordeum jubatum</i> <i>Agrostis alba</i> <i>Polypogon monspeliensis</i> <i>Agropyron repens</i>	Depressional topography, FAC-neutral test	Aquic moisture regime (assumed)	Boundary is based on a change in elevation, and/or a change in plant species to dominance by greasewood and rabbitbrush.	Small wetland sliver adjacent to alignment. This wetland appears to be a result of the construction of the railroad bed. It appears to have no surface connection to jurisdictional waters of the U.S. and is therefore considered non-jurisdictional.
CC23	<i>Carex nebrascensis</i> <i>Juncus balticus</i> <i>Potentilla anserina</i> <i>Agrostis alba</i>	Inundation/soil saturation	Low chroma, mottling	Boundary is based on a change in elevation, and/or a change in plant species to dominance by rabbitbrush.	Small spring. This wetland is considered non-jurisdictional due to no observed surface connection to jurisdictional waters of the U.S.
CC24	<i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Carex nebrascensis</i> <i>Agropyron smithii</i>	Depressional topography with drainage patterns, mud casts (livestock), oxidized rhizospheres, FAC-neutral test	Aquic moisture regime (assumed)	Boundary is based on a change in elevation, and/or a change in plant species to dominance by rabbitbrush.	Located in what appears to be an historic drainage or irrigation ditch. With the exception of the area delineated, the majority of the ditch appears to have lost wetland hydrology. This wetland would likely be a part of jurisdictional wetland CC25 if the railroad bed were not present and is therefore considered jurisdictional.
CC25	<i>Carex praegracilis</i> <i>Juncus balticus</i> <i>Hordeum jubatum</i> <i>Agrostis alba</i> <i>Potentilla anserina</i> <i>Anemopsis californica</i>	Soil saturation assumed to occur in April/May because soil was very moist throughout profile.	Low chroma, mottling	Boundary is based on a change in elevation, and/or a change in plant species to dominance by rabbitbrush.	Large wetland complex that connects to polygon CC-21 to the west, outside of the project area. For this reason it is considered jurisdictional.

Wetland ID	Dominant Vegetation	Hydrology Indicators	Hydric Soil Indicators	Boundary Notes	General Remarks*
CC26	<i>Distichlis spicata</i> <i>Juncus balticus</i> <i>Puccinellia lemmonii</i>	Depressional topography, mud casts, salt crust	Low chroma with mottles	Boundary was based on preponderance of evidence including relative thickness of salt crust, deeper depths of mud casts, and slight changes in microtopography.	Connects to polygon CC25 via a culvert under the railroad bed. For this reason it is considered jurisdictional.
WT-01 & -01A	<i>Salix sp.</i> <i>Tamarix ramosissima</i>	Drainage patterns, FAC-Neutral test	Aquic moisture regime (assumed)	Channel is incised below surrounding landscape. Wetland occurs on bankfull bench between the channel and the nearly vertical sideslopes.	Dominated by scrub-shrub vegetation adjacent to Meadow Valley Wash. Considered jurisdictional.
WT-02	<i>Tamarix ramosissima</i> <i>Agropyron sp.</i>	Inundated in pockets, drainage patterns	Aquic moisture regime (assumed)	Channel is incised below surrounding landscape. Wetland occurs between the channel and the steep sideslopes.	Dominated by scrub-shrub vegetation. Connects to Meadow Valley Wash, and so is considered jurisdictional.
WT-03	<i>Eleagnus angustifolia</i>	Inundated	Aquic moisture regime (assumed)	Occurs in a swale adjacent to the railroad berm. Boundary confined to the lower part of the swale where water ponds.	Depressional topography, dominated by scrub-shrub vegetation. No apparent surface connection to jurisdictional waters of the U.S. and is therefore considered non-jurisdictional.
WT-04	<i>Scirpus acutus</i> <i>Typha sp.</i> <i>Juncus balticus</i> <i>Salix sp.</i> <i>Tamarix ramosissima</i>	Inundated, saturated in upper 12 inches, drainage patterns, FAC-Neutral test	Aquic moisture regime (assumed)	Channel is incised below surrounding landscape. Wetland occurs between the channel and the steep sideslopes.	Dominated by emergent vegetation. Connects to Meadow Valley Wash, and so is considered jurisdictional.
WT-05	<i>Scirpus acutus</i> <i>Typha sp.</i> <i>Salix sp.</i> <i>Tamarix ramosissima</i>	Inundated, saturated in upper 12 inches, drainage patterns, FAC-Neutral test	Aquic moisture regime (assumed)	Channel is incised below surrounding landscape. Wetland occurs in the channel itself and between the channel and the nearly vertical sideslopes.	Dominated by emergent vegetation. Channel is vegetated. Occurs within and adjacent to Meadow Valley Wash, considered jurisdictional.
WT-06	<i>Typha sp.</i> <i>Salix sp.</i> <i>Populus fremontii</i>	Inundated, saturated in upper 12 inches, drainage patterns, FAC-Neutral test	Aquic moisture regime (assumed)	Channel is incised below surrounding landscape. Wetland occurs as a fringe adjacent to the channel.	Dominated by scrub-vegetation adjacent to Meadow Valley Wash. Considered jurisdictional.
WT-07	<i>Polypogon monspeliensis</i> <i>Veronica sp.</i>	Algal mats (dried), saturated in upper 12 inches, drainage patterns, FAC-Neutral test	Aquic moisture regime (assumed)	Occurs in a topographic depression between railroad tracks. Sideslopes are steep and the boundaries are distinct.	Depressional topography, dominated by emergent vegetation that has a surface connection to Clover Creek. For this reason it is considered jurisdictional.
WT-08	Unidentified forb	Mud cracks, depressional topography	--	Occurs in a topographic depression between railroad tracks. Sideslopes are steep and the boundaries are distinct - transition to rabbitbrush.	Depressional topography with evidence of ponding at the base of a railroad berm. A final wetland determination has not been completed for this site, however for the time being it is conservatively being considered a wetland. No surface connection to Clover Creek found and so is

Wetland ID	Dominant Vegetation	Hydrology Indicators	Hydric Soil Indicators	Boundary Notes	General Remarks*
					considered non-jurisdictional.
WT-09	<i>Salix sp.</i> <i>Tamarix ramosissima</i>	Saturated in upper 12 inches, drainage patterns in wetlands, FAC-Neutral test	Aquic moisture regime (assumed)	Boundary based on topography and change to barren ground.	This site is considered a problem area and atypical situation due to disturbances by the 2005 flood and subsequent reclamation efforts, also in 2005. At the time of the field survey the site appeared to be developing into a scrub-shrub wetland (numerous seedlings 1-6 inches tall). Occurs adjacent to Clover Creek and so is considered jurisdictional.
WT-10	<i>Eleocharis palustris</i> <i>Salix sp.</i> <i>Tamarix ramosissima</i> <i>Typha sp.</i>	Saturated in upper 12 inches, drainage patterns in wetlands, FAC-Neutral test	Aquic moisture regime (assumed)	Wetland is limited to the bottom of the ditch-like area.	This site is considered a problem area and atypical situation due to disturbances by the 2005 flood and subsequent reclamation efforts, also in 2005. At the time of the field survey the site appeared to be developing into an emergent wetland. Occurs close to Clover Creek and so was considered jurisdictional.
WT-11	<i>Eleocharis palustris</i> <i>Salix sp.</i> <i>Tamarix ramosissima</i> <i>Typha sp.</i> <i>Epilobium sp.</i> <i>Juncus balticus</i> <i>Polypogon monspeliensis</i>	Saturated in upper 12 inches, drainage patterns in wetlands, FAC-Neutral test	Aquic moisture regime (assumed), sulfidic odor	Boundary is complex and requires more thorough investigation if the site will be impacted.	A spring occurs at this location which flows to Clover Creek. Site is dominated by scrub-shrub vegetation. Considered jurisdictional.
WT-12	<i>Juncus balticus</i> <i>Mimulus guttatus</i> <i>Juncus bufonius</i> <i>Hordeum jubatum</i>	Inundated, saturated in upper 12 inches, water marks, sediment deposits, FAC-Neutral test	Low chroma	Boundary follows the edge of the pond and a shift to rabbitbrush.	A sparsely vegetated stock pond with algae growing in it. Baltic rush only occurs at the pond inlet, the rest of the pond and adjacent fringe are sparsely vegetated, perhaps due to livestock use and/or varying water levels. Considered to be an atypical situation because of man-made conditions and low vegetative cover. Pond was approximately 2 feet deep during the time of the survey. No surface connection to jurisdictional waters of the U.S. found, and so is considered non-jurisdictional.
WT-13	<i>Juncus balticus</i> <i>Mimulus guttatus</i> <i>Juncus bufonius</i> <i>Hordeum jubatum</i> <i>Eleocharis palustris</i> <i>Veronica americana</i> <i>Ranunculus sp.</i>	Inundated, saturated in upper 12 inches, water marks, sediment deposits, drainage patterns, FAC-Neutral test	Aquic moisture regime (assumed)	Boundary is distinct and is based on topographic shift and change to upland plant species.	Improved spring and channel that lead to the stock pond (WT-12). No surface connection to jurisdictional waters of the U.S. found, and so is considered non-jurisdictional. Considered to be an atypical situation because of man-made conditions
WT-14	<i>Juncus balticus</i> <i>Distichlis spicata</i> <i>Carex sp.</i> <i>Mimulus guttatus</i> <i>Poa sp.</i>	Saturated in upper 12 inches, drainage patterns	Low Chroma	Boundary is based on a topographic shift and change to upland plant species.	Slope seep area. No surface connection to jurisdictional waters of the U.S. found, and so is considered non-jurisdictional. Considered to be an atypical situation because of man-made conditions

Wetland ID	Dominant Vegetation	Hydrology Indicators	Hydric Soil Indicators	Boundary Notes	General Remarks*
WT-15	<i>Distichlis spicata</i> <i>Chrysothamnus nauseosus</i>	Inundated, saturated in upper 12 inches, drainage patterns	Sulfidic odor, low chroma with mottles	Boundary based on soil saturation conditions. Saturated area contained a minimal salt crust, whereas unsaturated area contained a heavy salt. Also, soils in adjacent uplands did not have any hydric soil indicators.	Small seep/spring. Depressional topography. No connection to the tributary system observed, and so is considered non-jurisdictional.

*Discussions of jurisdiction are preliminary. The Corps of Engineers will make the final jurisdictional determinations.

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6.0 CHANGE HISTORY

<u>Revision Number</u>	<u>Date</u>	<u>Description of Change</u>
03	November 13, 2006	Revision includes the addition of 2 wash lines (WOUS 65 and WOUS 68) south of Beatty Wash.
02	September 12, 2006	Revision includes additional analysis in the Caliente and White River areas
01	April 3, 2006	Revision includes additional analysis of selected areas along the corridor including Garden Valley (GV8) Alignment
00	June 27, 2005	Initial issue

Appendix A
Figures

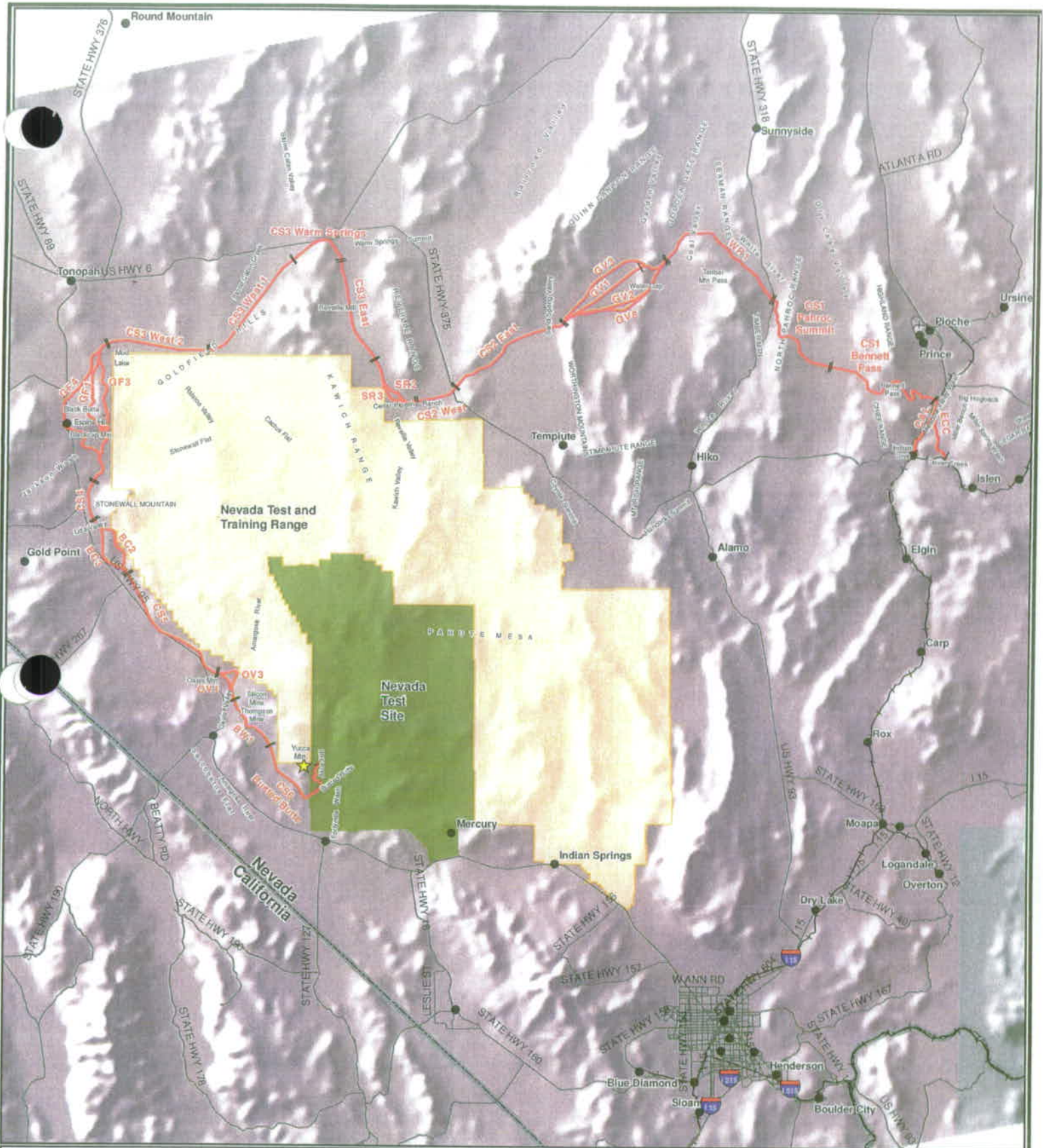
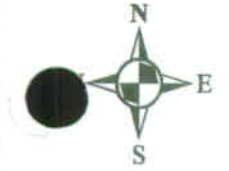
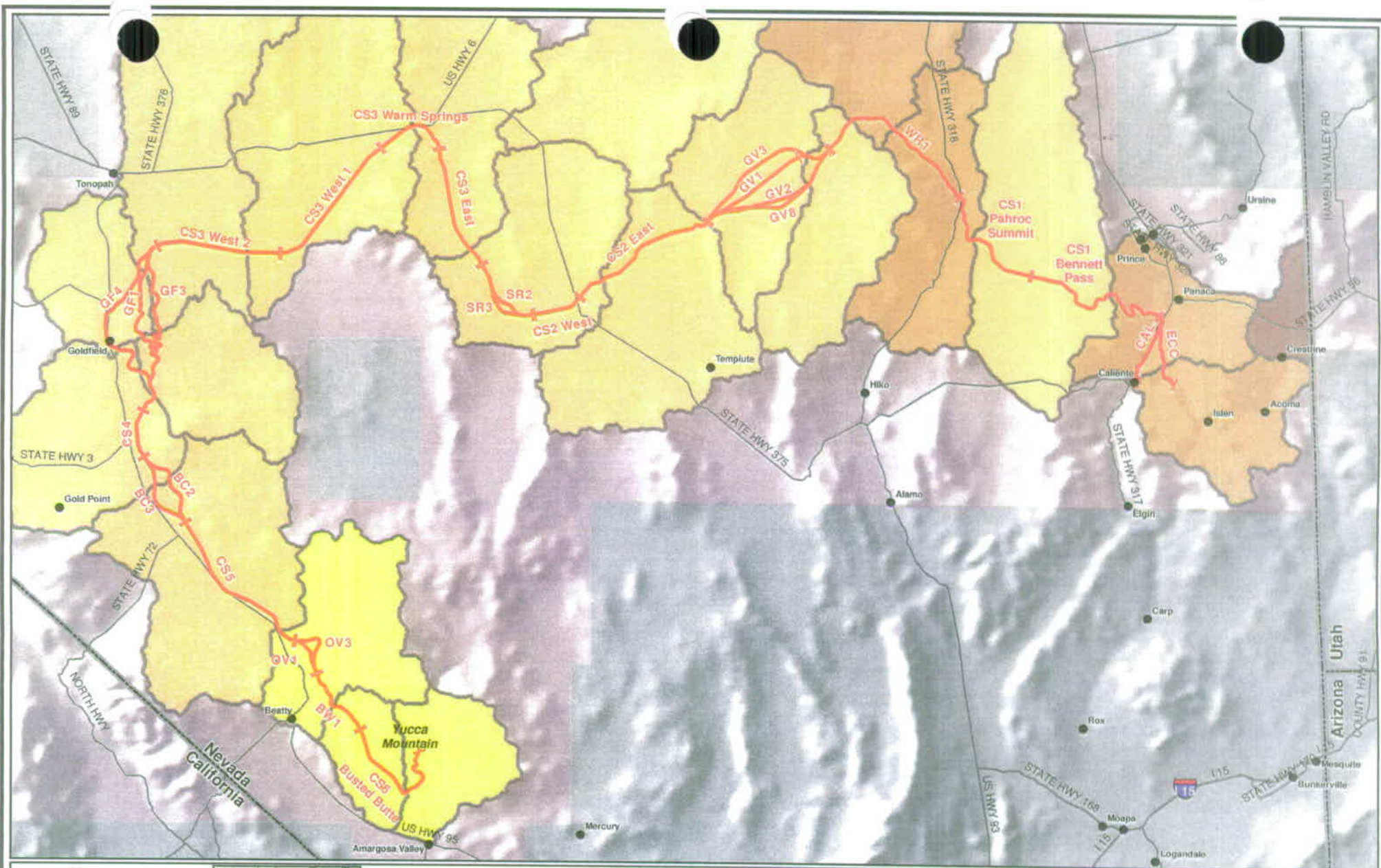


Figure 1
Caliente Rail Corridor Alignment
Project Location

- Legend**
- Caliente Rail Corridor
 - Railroad
 - Nevada Test and Training Range
 - Nevada Test Site
 - ★ Yucca Mountain





- | | | | |
|--|----------------------------------|--|------------------------|
| | Caliente Rail Corridor Alignment | | Central Region |
| | Alignment Segments | | Colorado River Basin |
| | Hydrographic Areas | | Death Valley Basin |
| | | | Escalante Desert Basin |

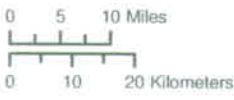


Figure 2
Hydrographic Regions and Areas

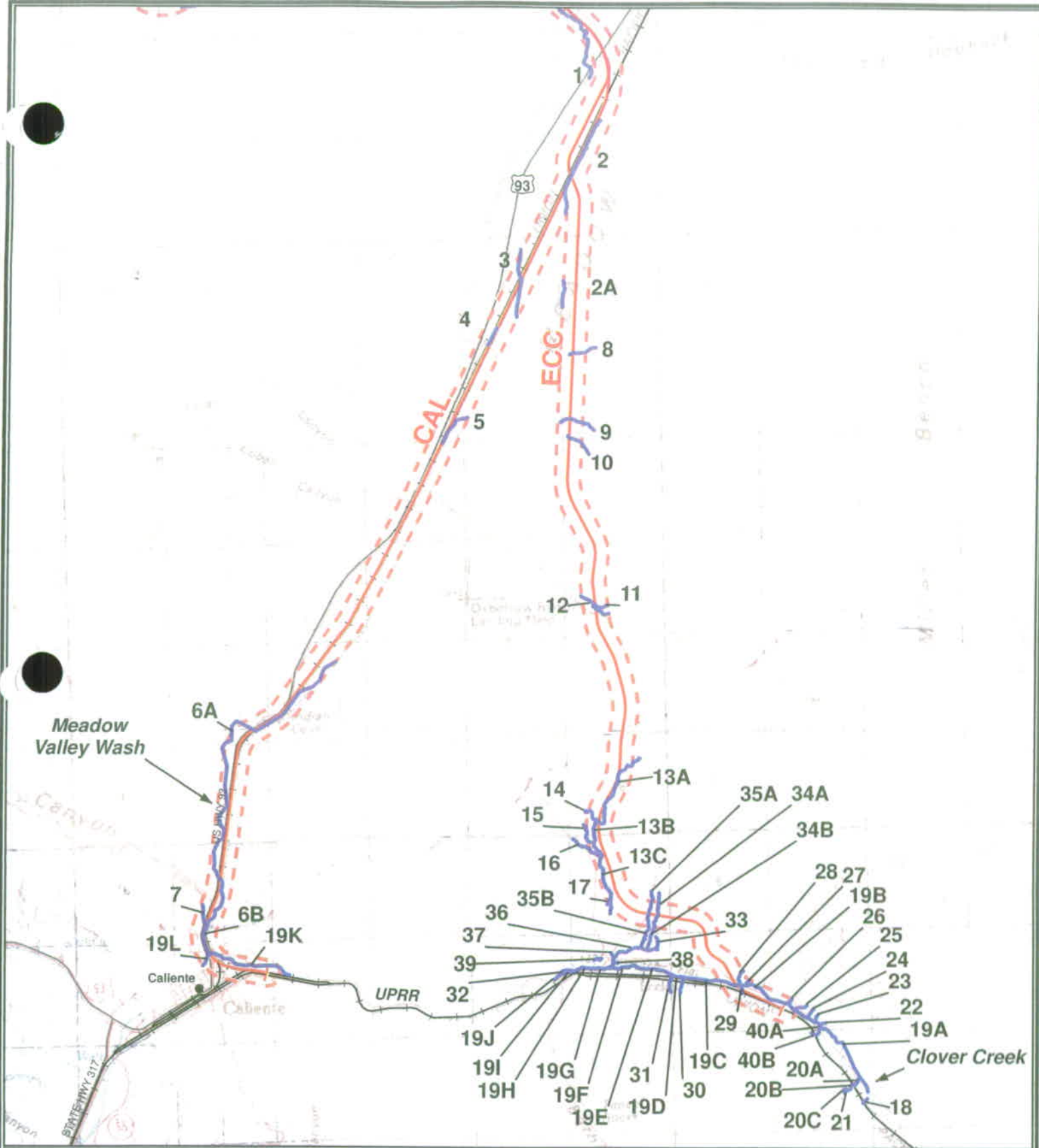
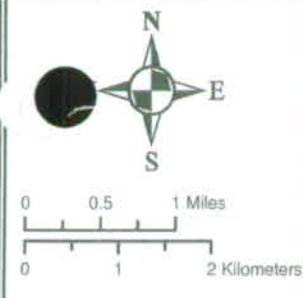
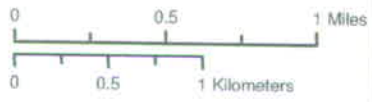
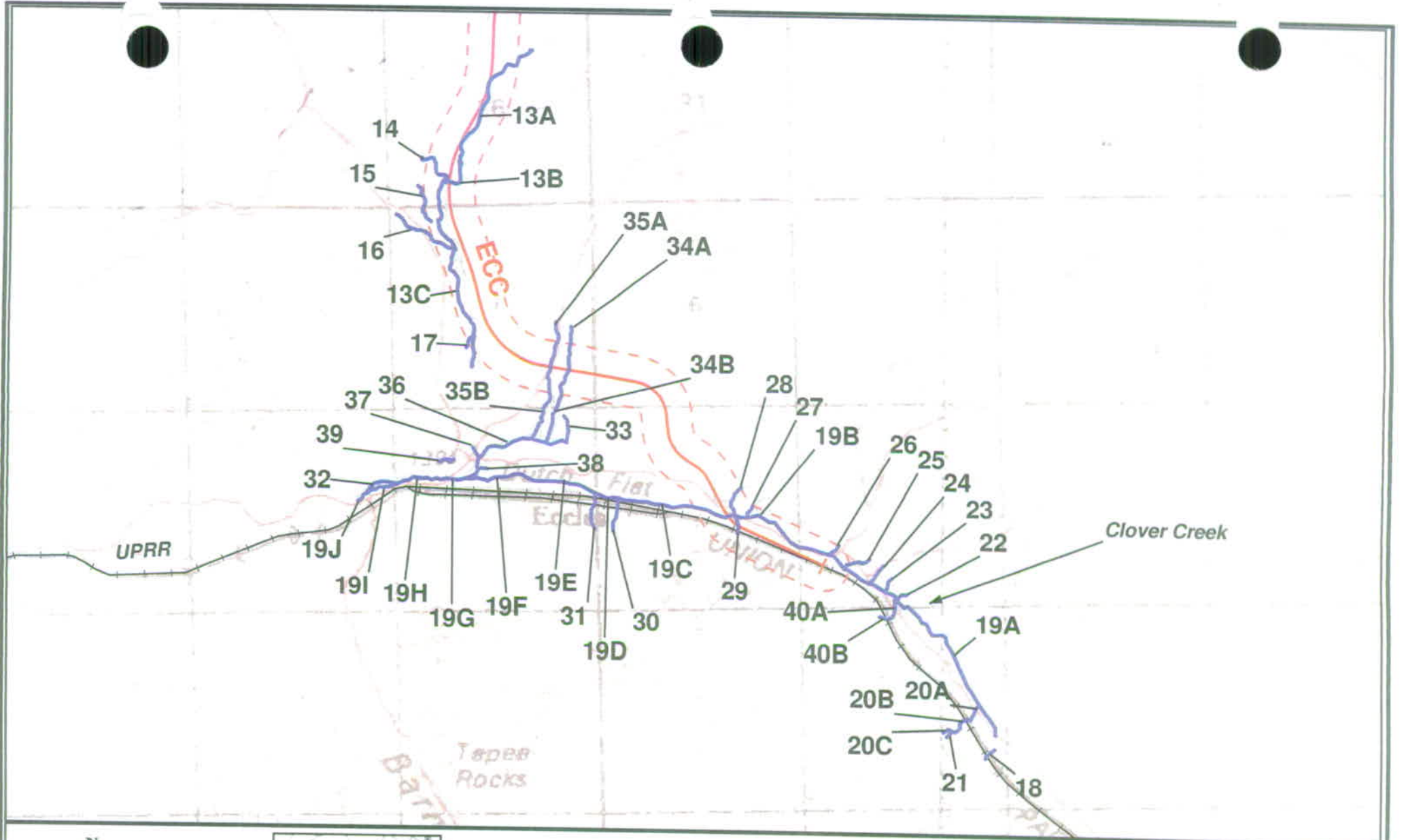


Figure 3A
Caliente Rail Corridor
Waters of the U.S.

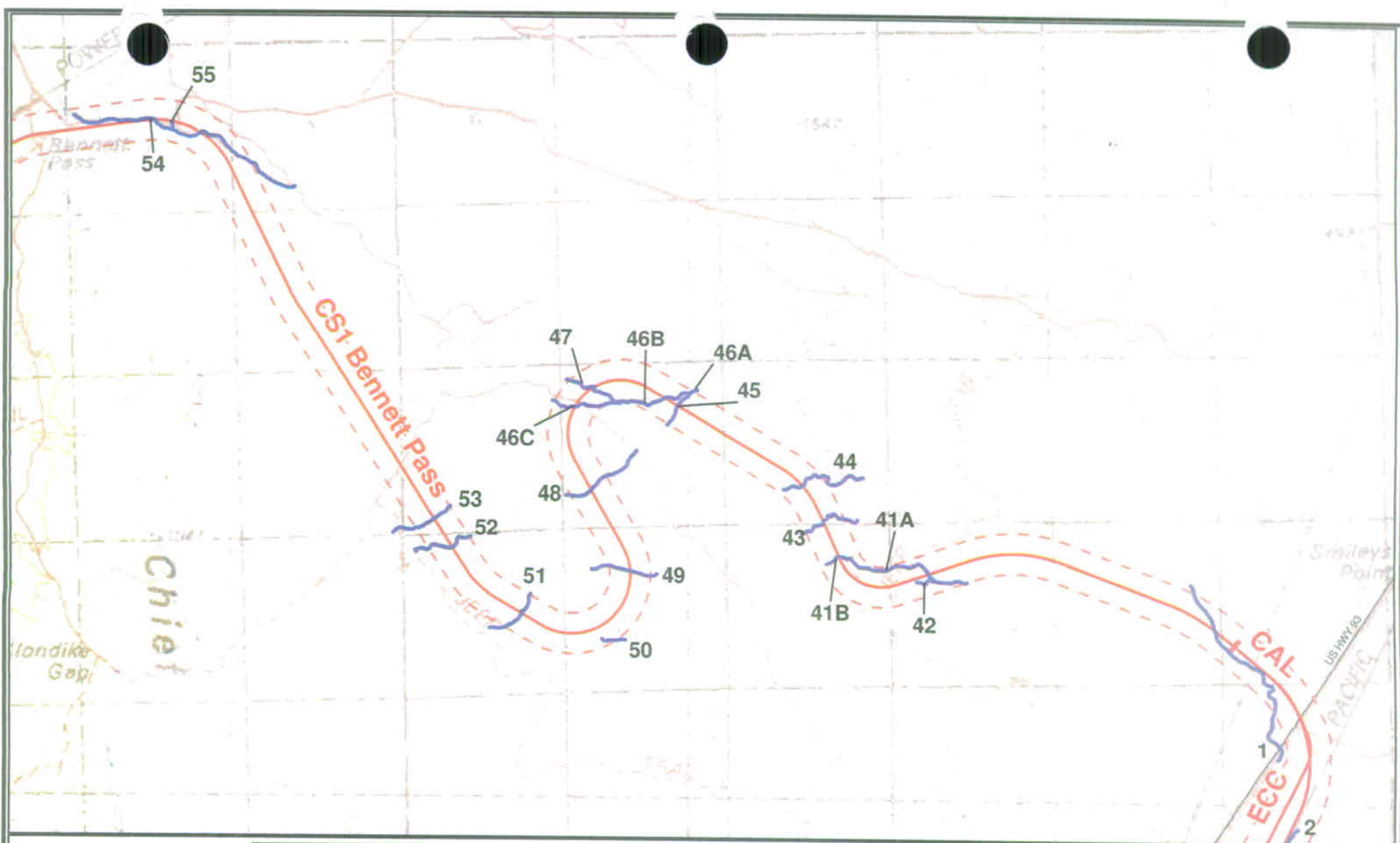


- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Segment Terminus
- Waters of the U.S.
- Hydrographic Areas
- Colorado River Basin



- - - Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- | Segment Terminus
- Hydrographic Areas
- Waters of the U.S.
- Colorado River Basin

Figure 3B
Caliente Rail Corridor
Waters of the U.S.



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Segment Terminus
- Waters of the U.S
- Hydrographic Areas
- Central Region
- Colorado River Basin

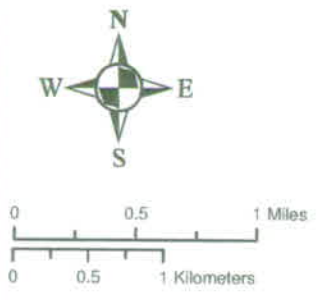
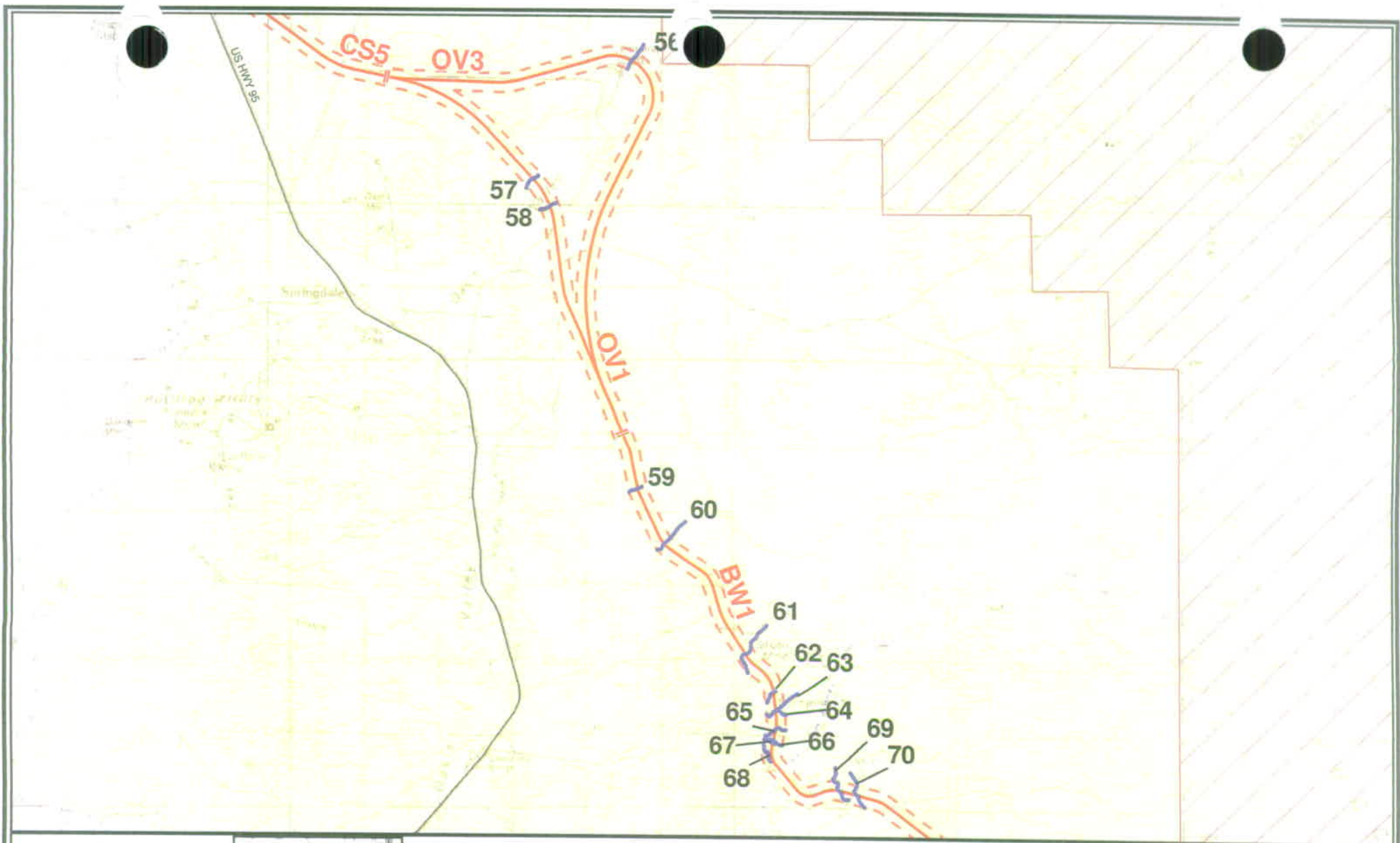
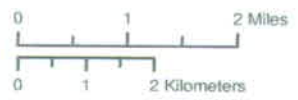


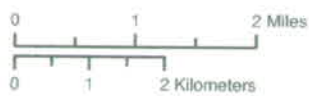
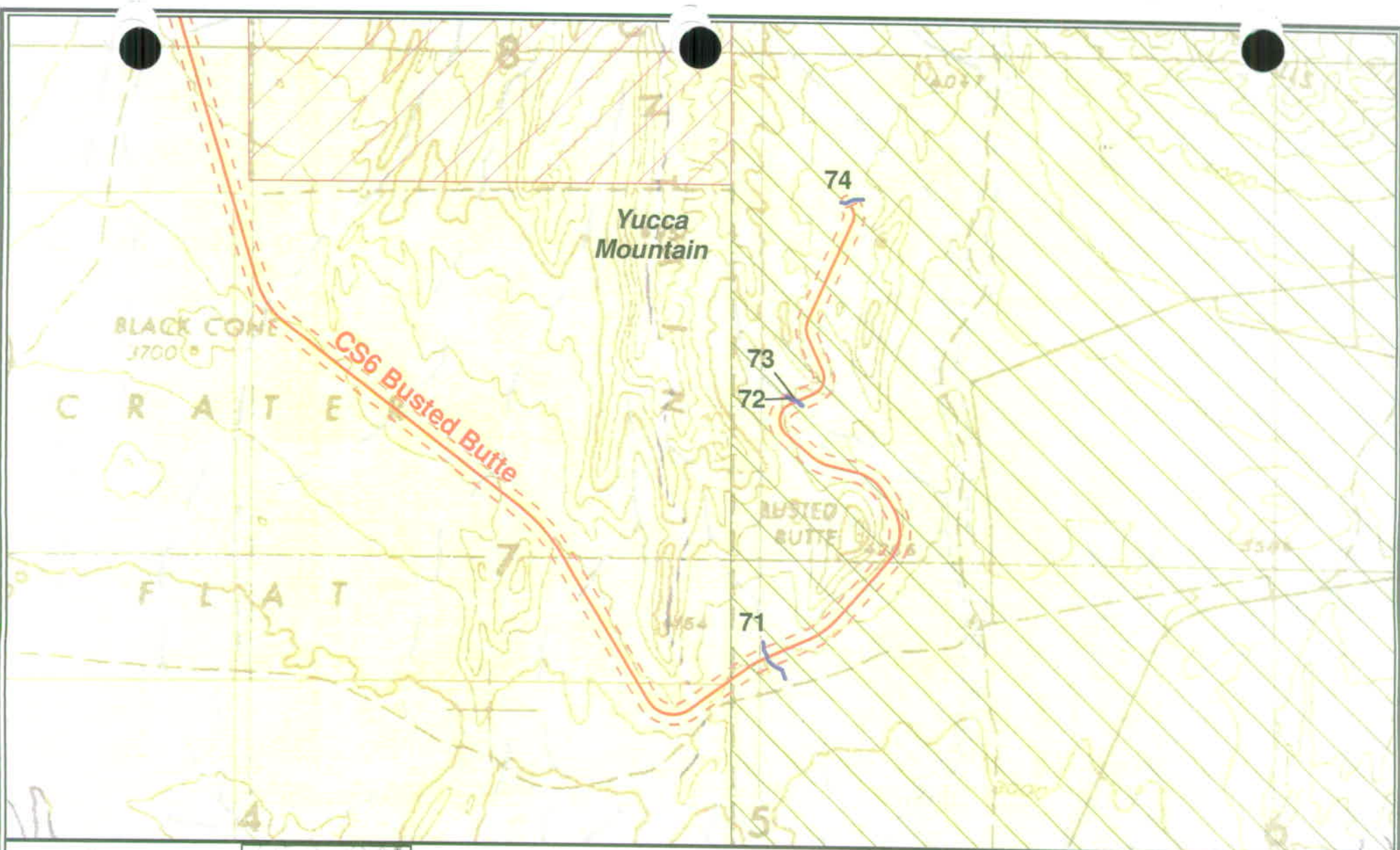
Figure 3C
Caliente Rail Corridor
Waters of the U.S.



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Segment Terminus
- Waters of the U.S.
- Nevada Test and Training Range
- Hydrographic Areas
- Central Region
- Death Valley Basin

Figure 3D
Caliente Rail Corridor
Waters of the U.S.













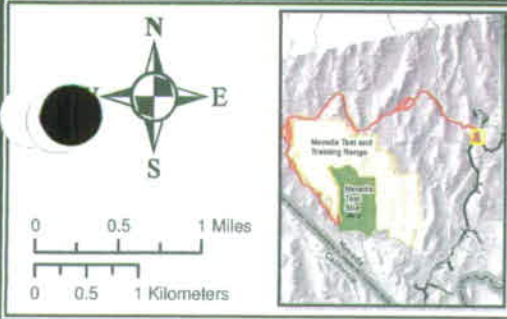
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|  Waters of the U.S. |  Nevada Test and Training Range |

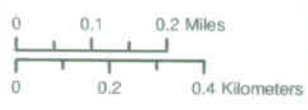
Figure 3E
Caliente Rail Corridor
Waters of the U.S.



Figure 4A
Caliente Rail Corridor
Wetlands
Caliente/Eccles Segments



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Segment Terminus
- Wetlands Data Points
- WT-1 Wetlands Identifier
- Jurisdictional
- Non-Jurisdictional

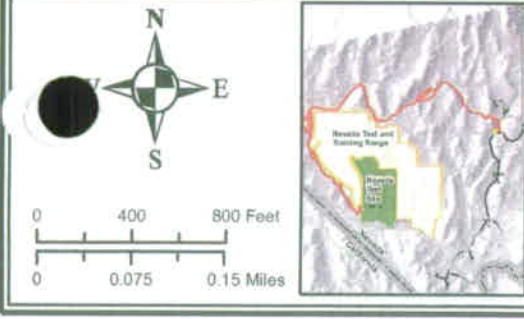


- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Segment Terminus
- Wetlands Data Points
- WT-1 Wetlands Identifier
- Jurisdictional
- Non-Jurisdictional

Figure 4B
Caliente Rail Corridor
Wetlands
Eccles Segment



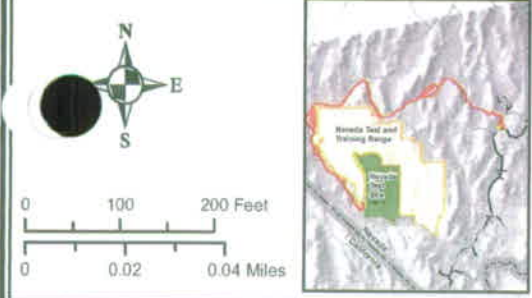
Figure 4C
Caliente Rail Corridor
Wetlands
Caliente Segment



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Segment Terminus
- Wetlands Data Points
- Jurisdictional
- Non-Jurisdictional
- WT-1** Wetlands Identifier



Figure 4D
Caliente Rail Corridor
Wetlands
Caliente Segment



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Jurisdictional
- Non-Jurisdictional
- Upland
- CCE-1 Wetlands Data Point
- CC1 Wetlands Identifier
- Wetlands Extends

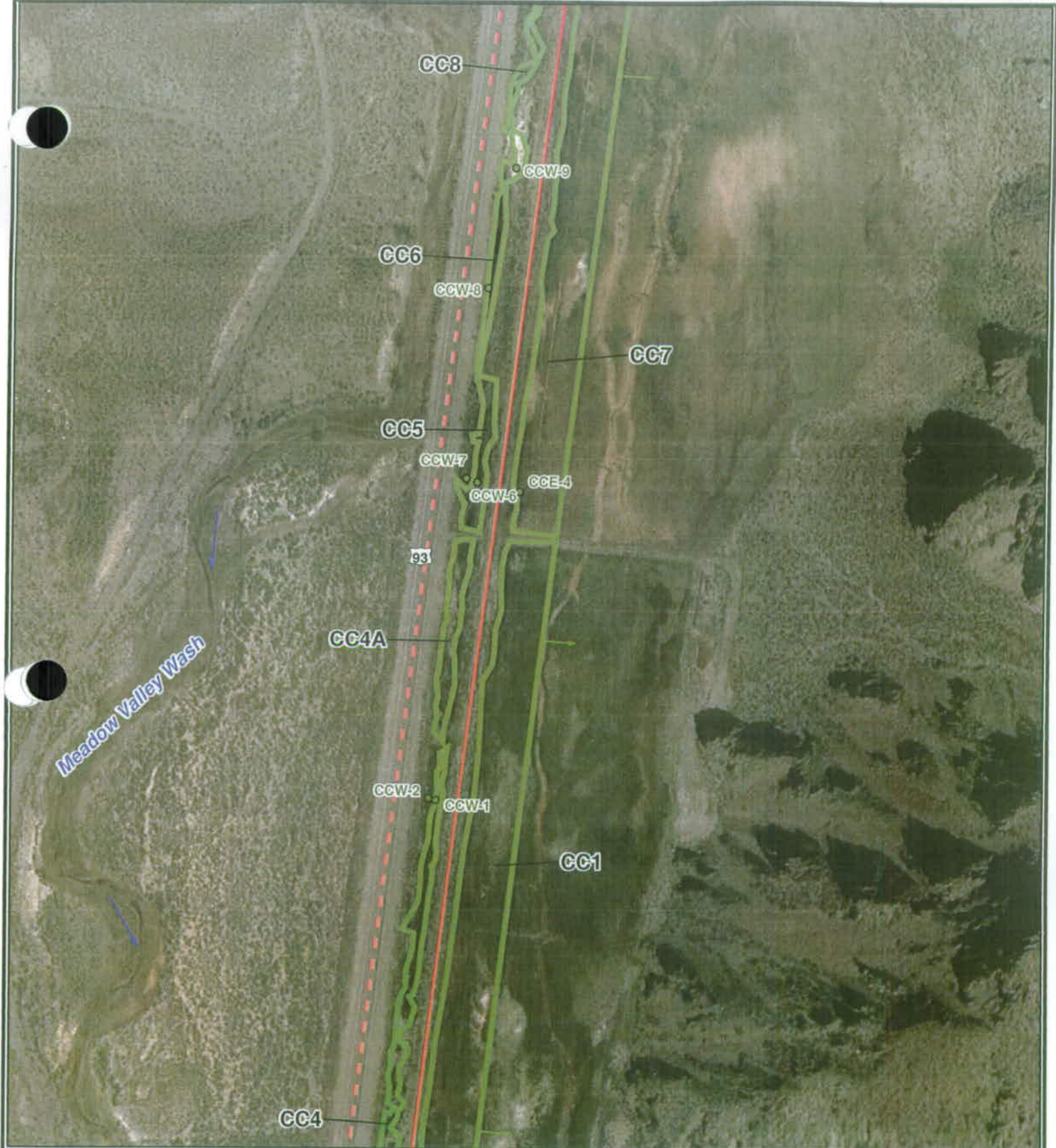
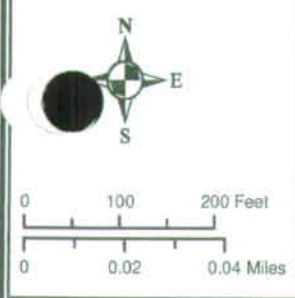
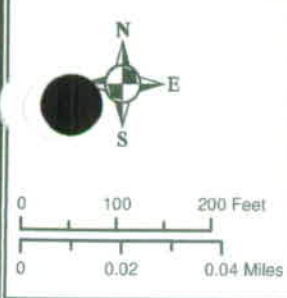
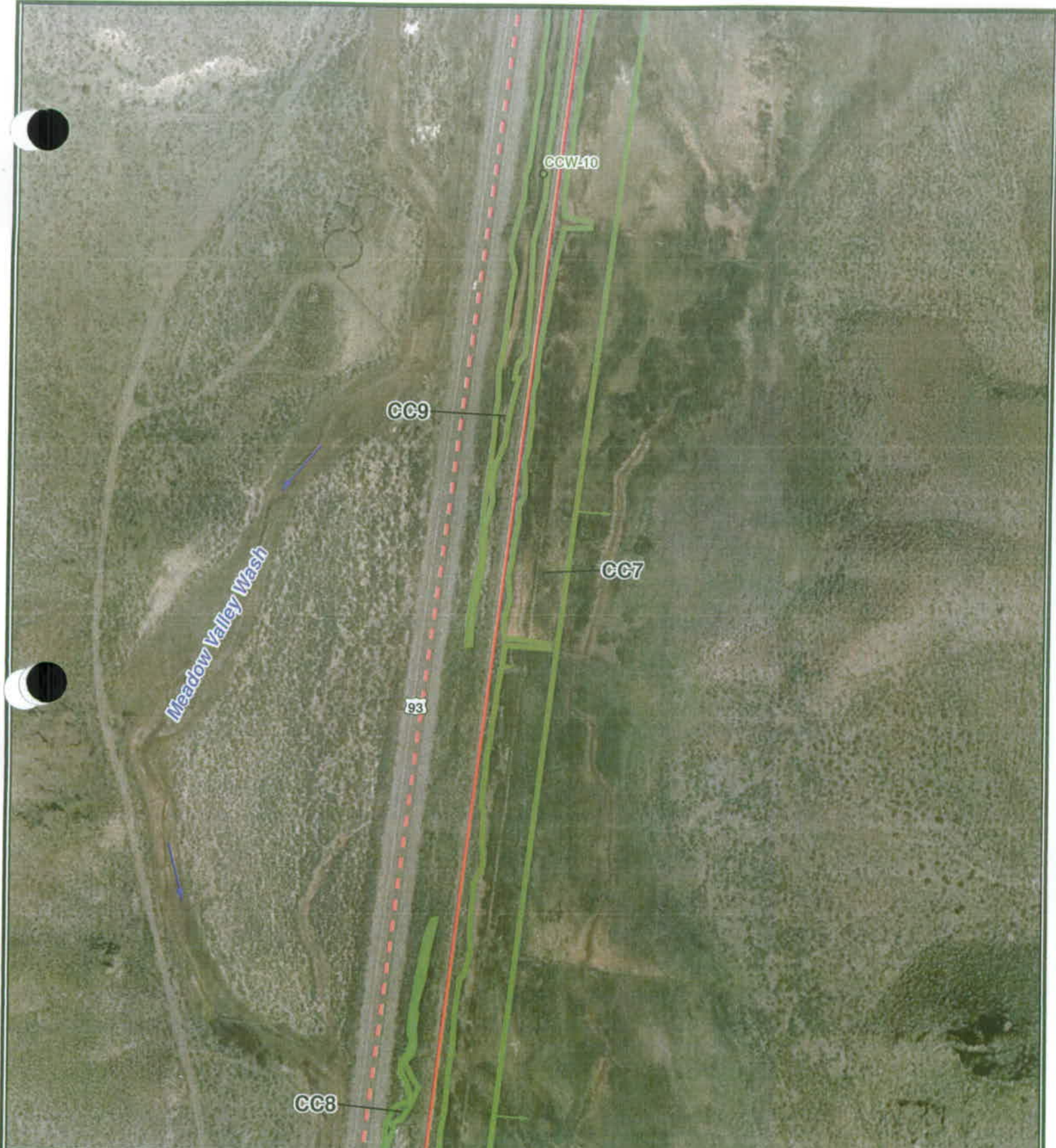


Figure 4E
Caliente Rail Corridor
Wetlands
Caliente Segment



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Jurisdictional
- Non-Jurisdictional
- Upland
- CCE-1 Wetlands Data Point
- CC1 Wetlands Identifier
- Wetlands Extends



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Jurisdictional
- Non-Jurisdictional
- Upland
- CCE-1
● Wetlands Data Point
- CC1 Wetlands Identifier
- Wetlands Extends

Figure 4F
Caliente Rail Corridor
Wetlands
Caliente Segment

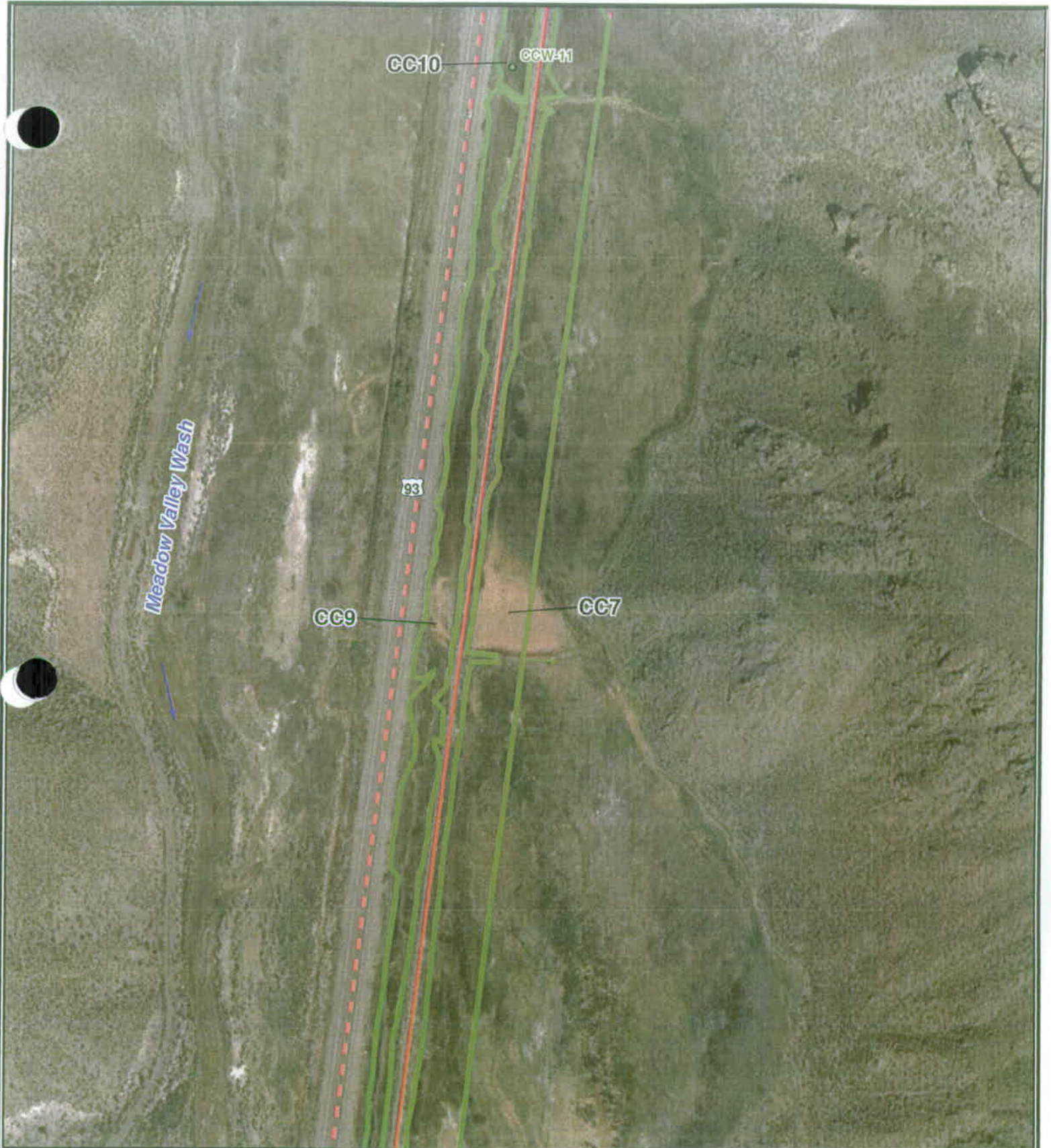
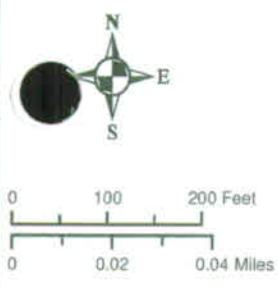


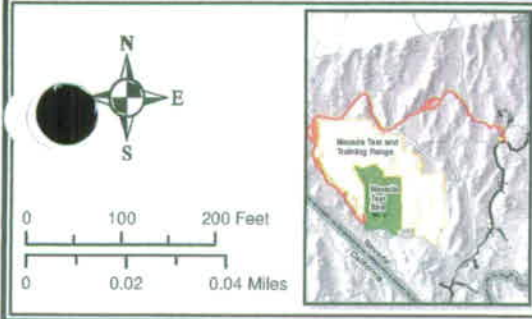
Figure 4G
Caliente Rail Corridor
Wetlands
Caliente Segment



-  Caliente Rail Corridor
-  Caliente Rail Corridor Alignment
-  Jurisdictional
-  Non-Jurisdictional
-  Upland
-  **CCE-1** Wetlands Data Point
-  **CC1** Wetlands Identifier
-  Wetlands Extends



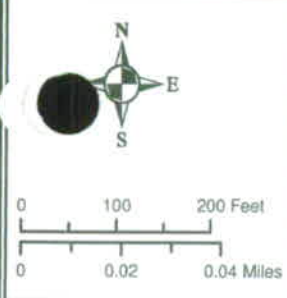
Figure 4H
Caliente Rail Corridor
Wetlands
Caliente Segment



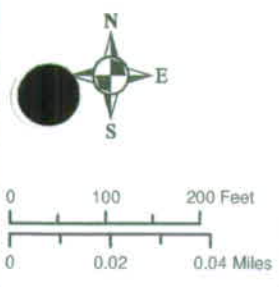
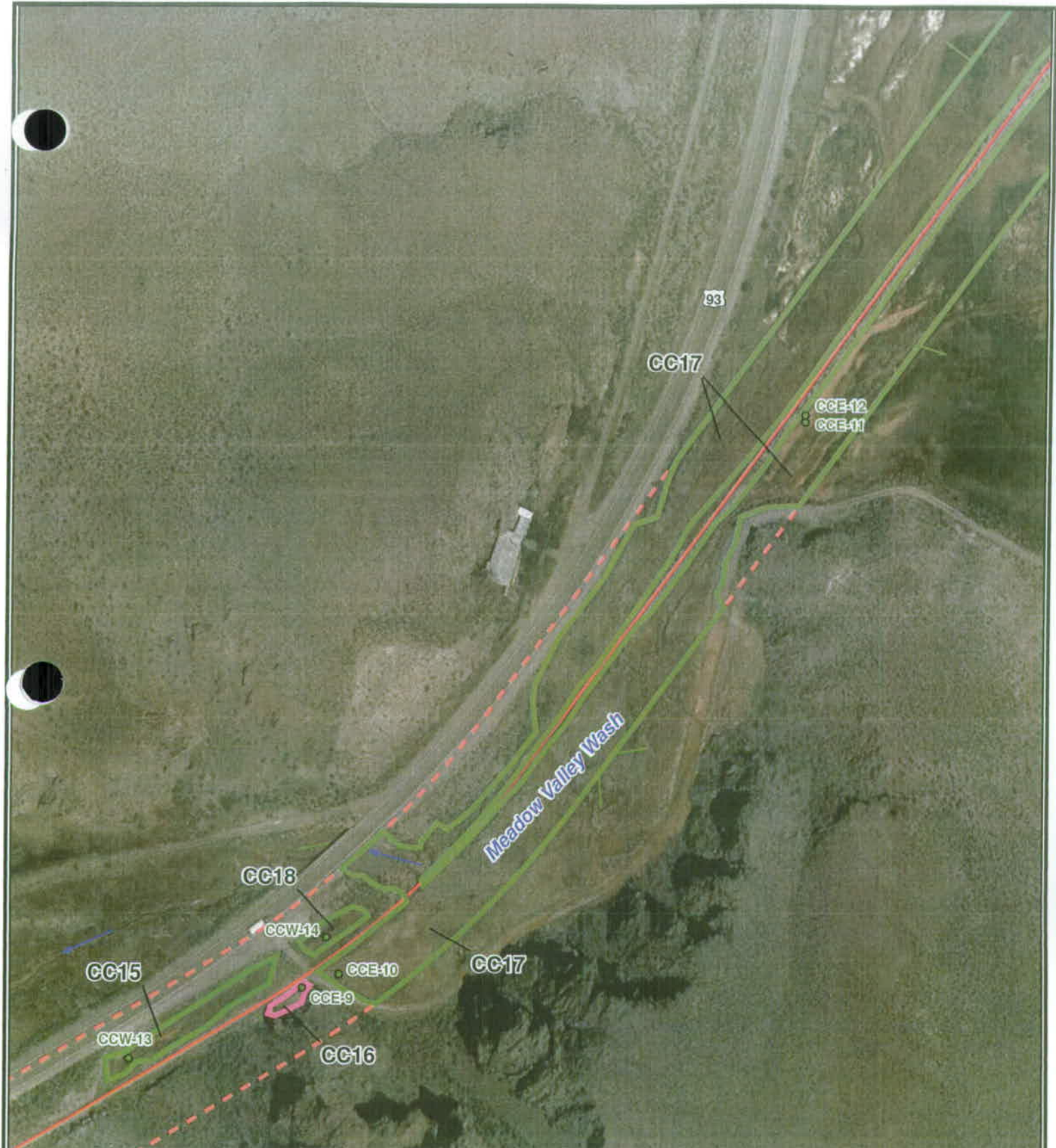
- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Jurisdictional
- Non-Jurisdictional
- Upland
- CCE-1 Wetlands Data Point
- CC1 Wetlands Identifier
- Wetlands Extends



Figure 41
Caliente Rail Corridor
Wetlands
Caliente Segment



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Jurisdictional
- Non-Jurisdictional
- Upland
- CCE-1 Wetlands Data Point
- CC1 Wetlands Identifier
- Wetlands Extends



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Jurisdictional
- Non-Jurisdictional
- Upland
- CCE-1 Wetlands Data Point
- CC1 Wetlands Identifier
- Wetlands Extends

Figure 4J
Caliente Rail Corridor
Wetlands
Caliente Segment

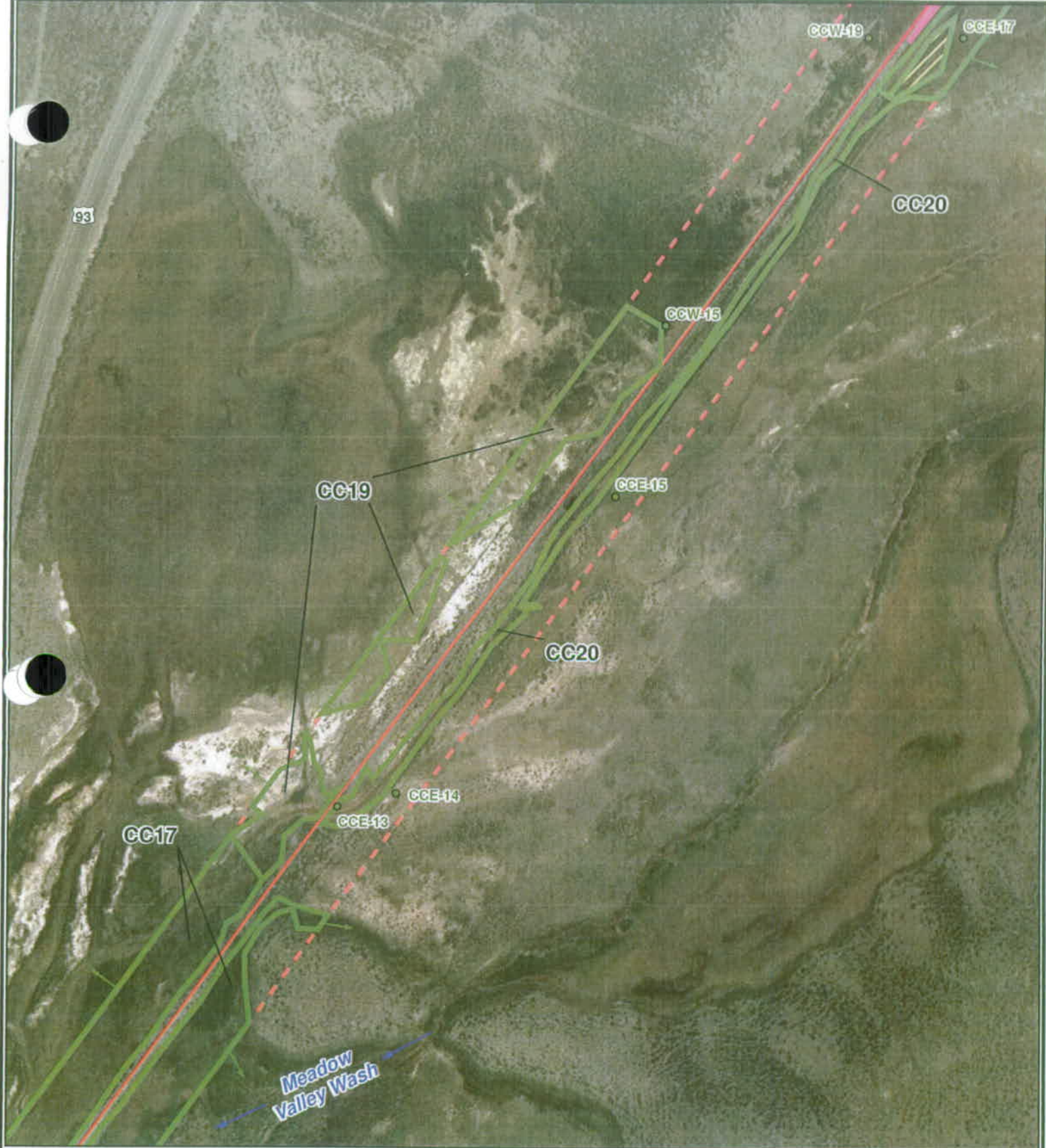
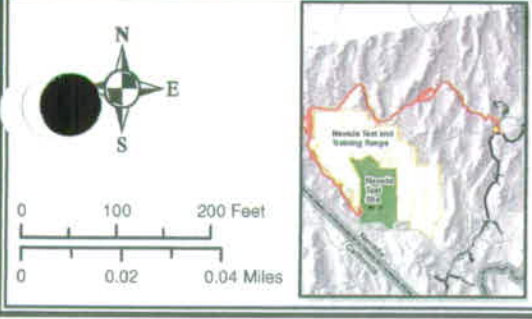


Figure 4K
Caliente Rail Corridor
Wetlands
Caliente Segment



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Jurisdictional
- Non-Jurisdictional
- Upland
- CCE-1
● Wetlands Data Point
- CC1 Wetlands Identifier
- Wetlands Extends

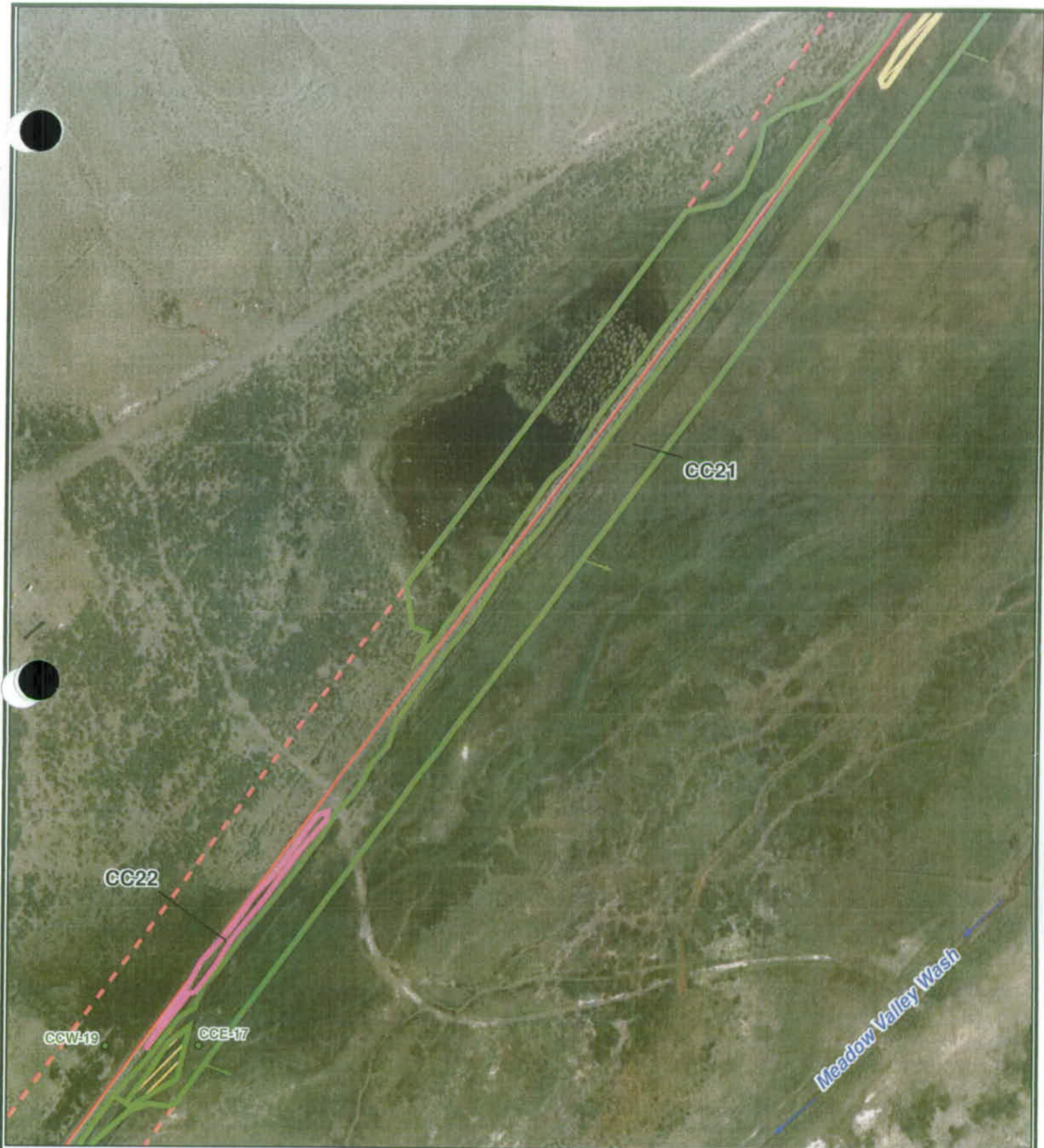
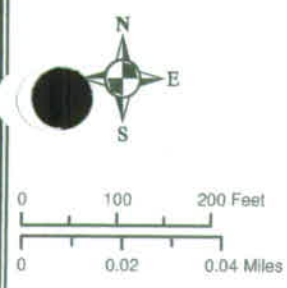


Figure 4L
Caliente Rail Corridor
Wetlands
Caliente Segment

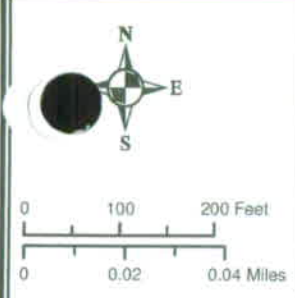


- - - Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- ▭ Jurisdictional
- ▭ Non-Jurisdictional
- ▨ Upland
- **CCE-1** Wetlands Data Point
- **CC1** Wetlands Identifier
- Wetlands Extends



Meadow Valley Wash

Figure 4M
Caliente Rail Corridor
Wetlands
Caliente Segment



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Jurisdictional
- Non-Jurisdictional
- Upland
- CCE-1 Wetlands Data Point
- CC1 Wetlands Identifier
- Wetlands Extends

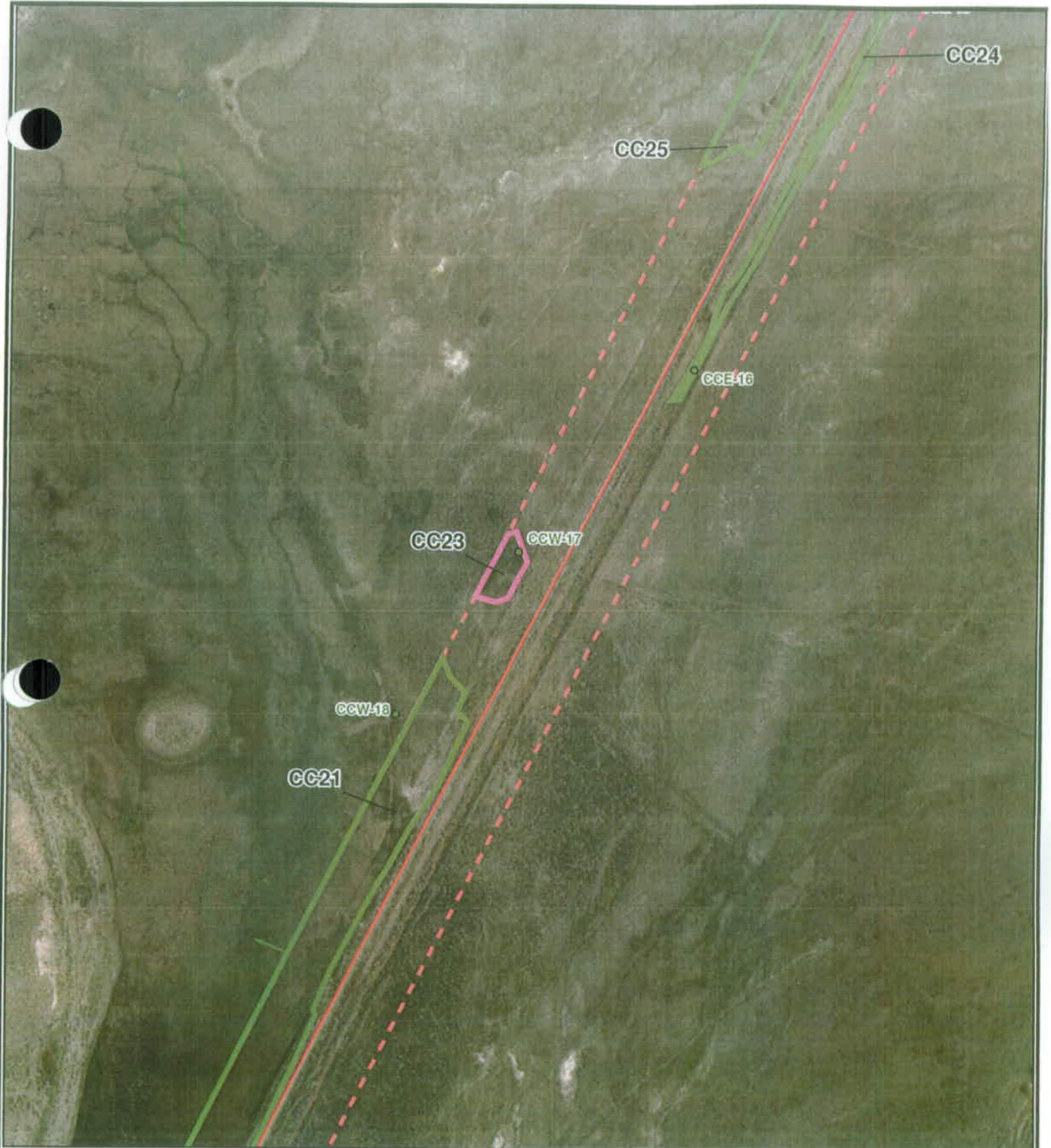
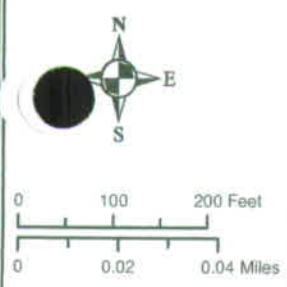


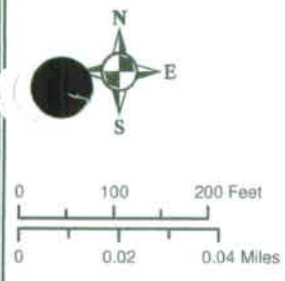
Figure 4N
Caliente Rail Corridor
Wetlands
Caliente Segment



-  Caliente Rail Corridor
-  Caliente Rail Corridor Alignment
-  Jurisdictional
-  Non-Jurisdictional
-  Upland
-  **CCE-1** Wetlands Data Point
-  **CC1** Wetlands Identifier
-  Wetlands Extends



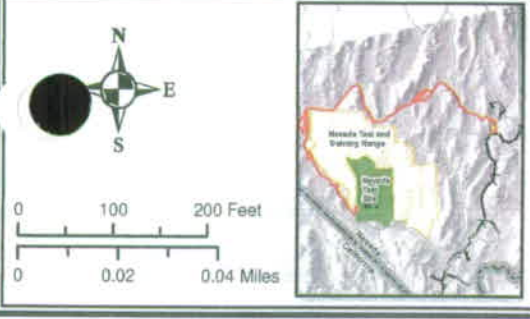
Figure 40
Caliente Rail Corridor
Wetlands
Caliente Segment



-  Caliente Rail Corridor
-  Caliente Rail Corridor Alignment
-  Jurisdictional
-  Non-Jurisdictional
-  Upland
-  CCE-1 Wetlands Data Point
-  CC1 Wetlands Identifier
-  Wetlands Extends



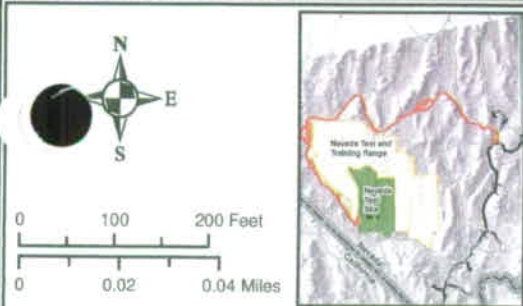
Figure 4P
Caliente Rail Corridor
Wetlands
Caliente Segment



-  Caliente Rail Corridor
-  Caliente Rail Corridor Alignment
-  Jurisdictional
-  Non-Jurisdictional
-  Upland
-  **CCE-1** Wetlands Data Point
-  **CC1** Wetlands Identifier
-  Wetlands Extends



Figure 4Q
Caliente Rail Corridor
Wetlands
Caliente Segment



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Jurisdictional
- Non-Jurisdictional
- Upland
- CCE-1
- Wetlands Data Point
- CC1 Wetlands Identifier
- Wetlands Extends

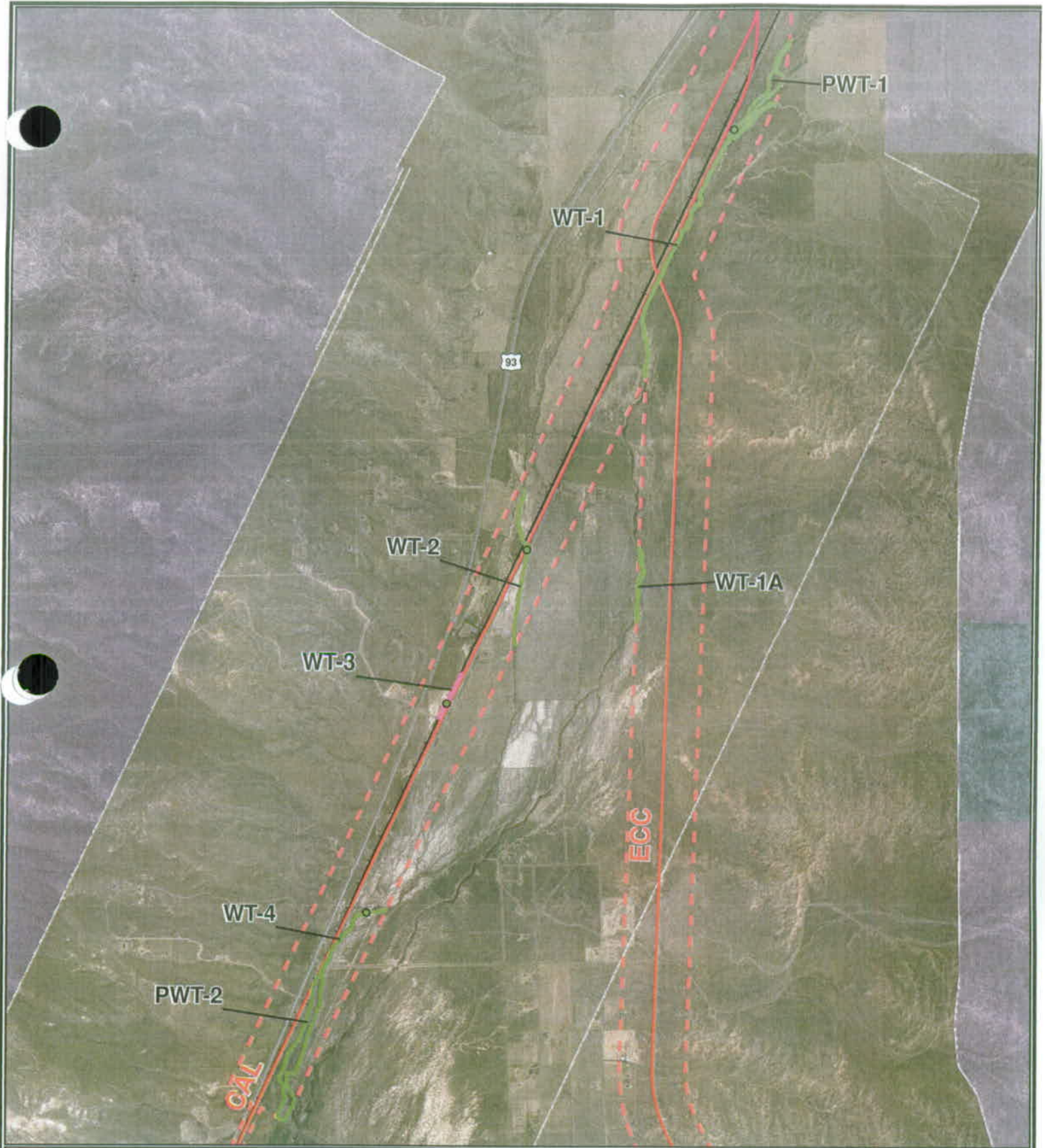
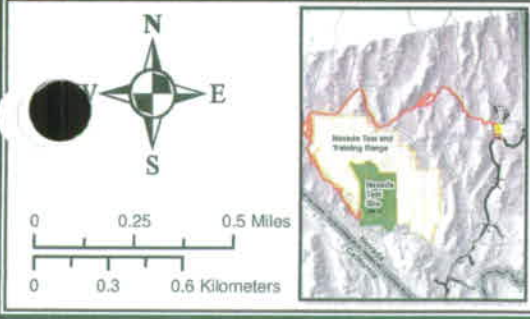
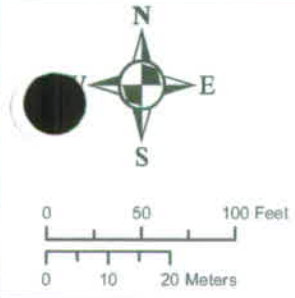
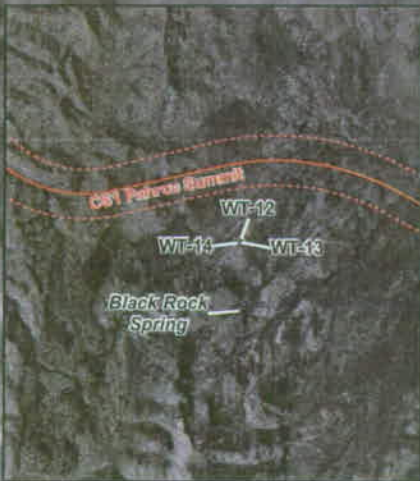
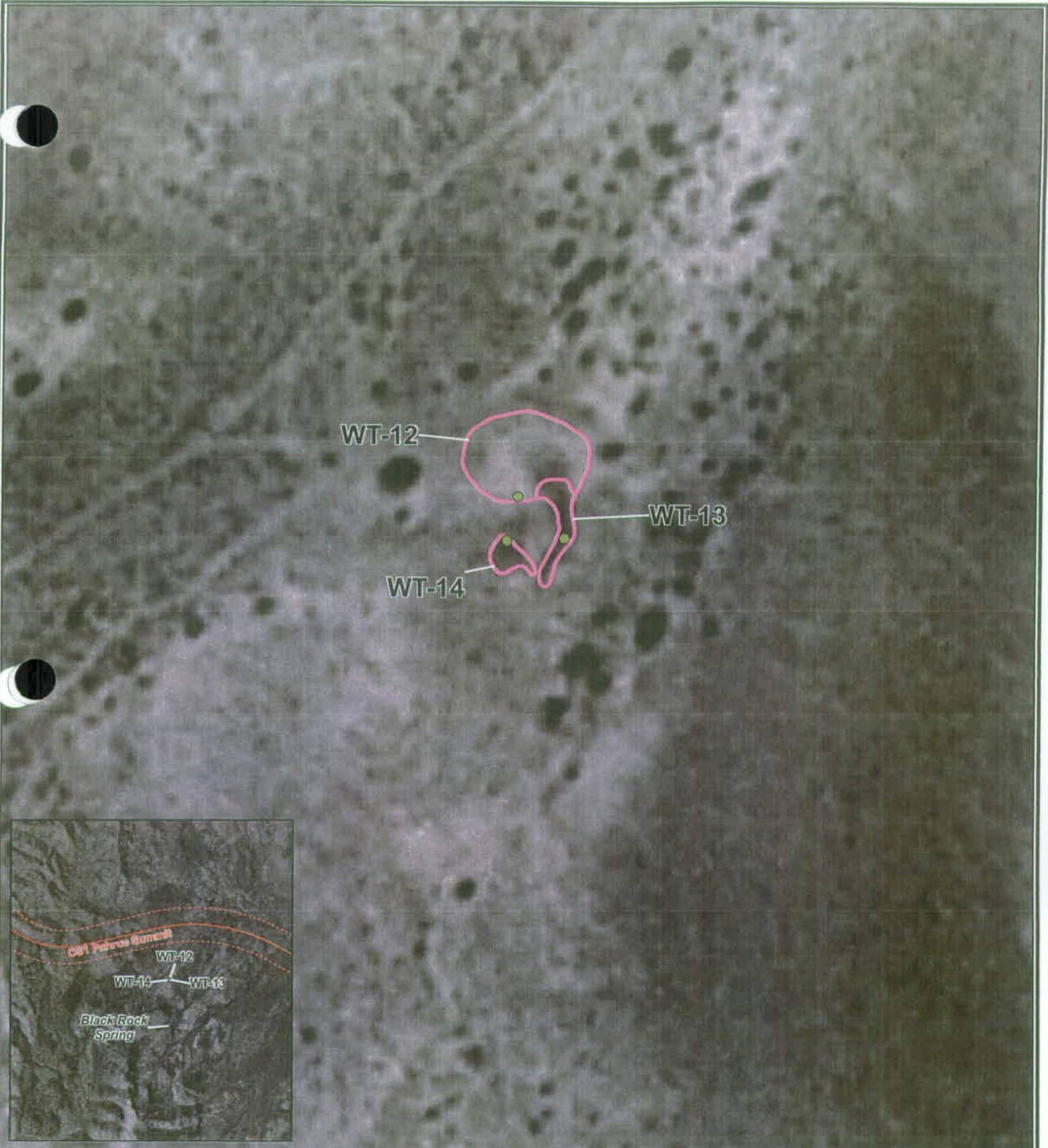


Figure 4R
Caliente Rail Corridor
Wetlands
Caliente/Eccles Segments



- - - Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- | Segment Terminus
- Wetlands Data Points
- WT-1 Wetlands Identifier
- Jurisdictional
- Non-Jurisdictional



- Caliente Rail Corridor
- Caliente Rail Corridor Alignment
- Non-Jurisdictional
- Wetlands Data Points
- WT-1** Wetlands Identifier

Figure 4S
Caliente Rail Corridor
Wetlands
CS1-Pahroc Summit

Wetland Data Point UTM: 2240647.41, 13775118.09

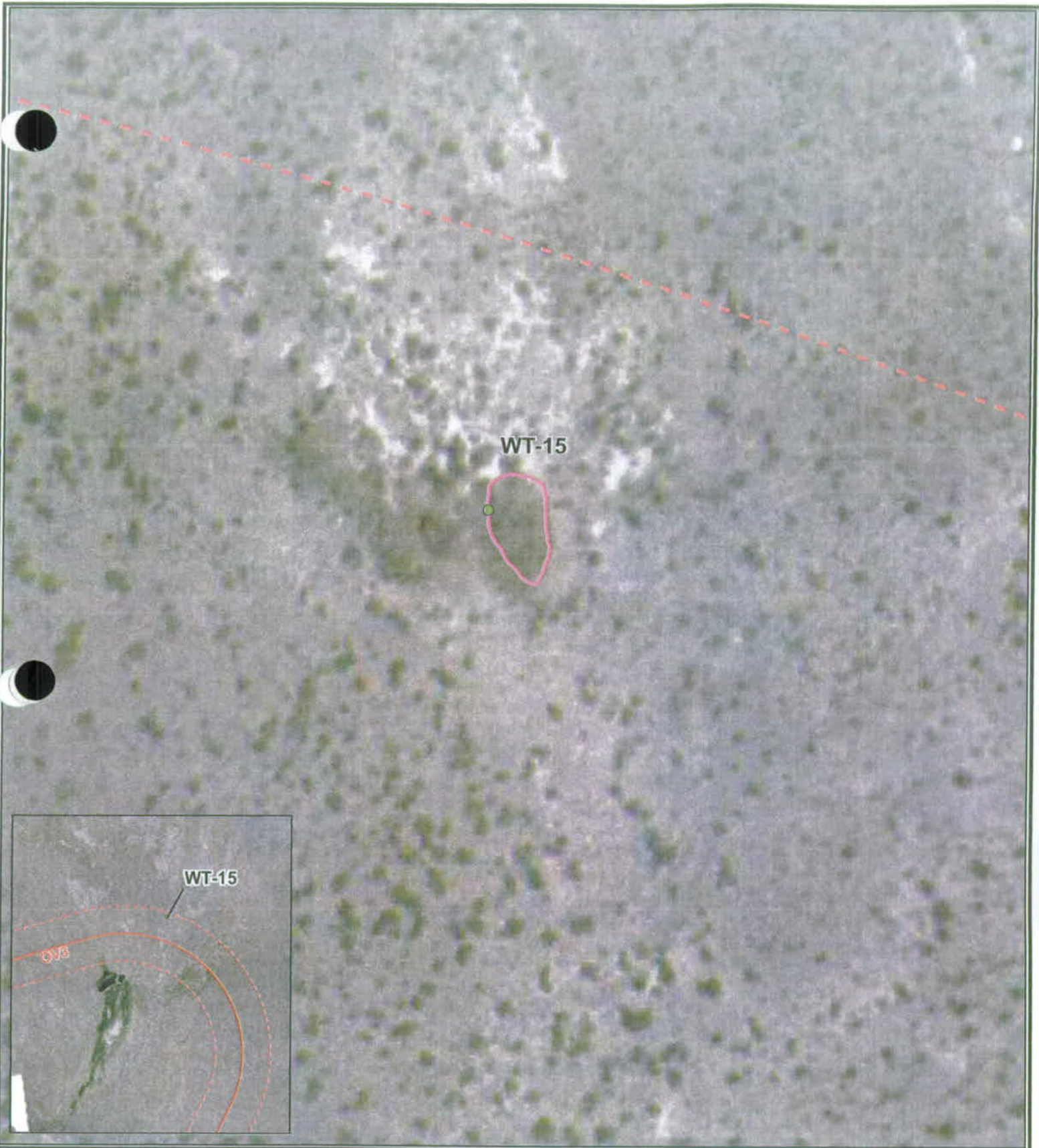

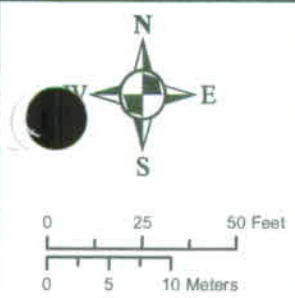


Figure 4T
Caliente Rail Corridor
Wetlands
OV-3 Segment

-  Caliente Rail Corridor
-  Caliente Rail Corridor Alignment
-  Non-Jurisdictional
-  Wetlands Data Points
- WT-1** Wetlands Identifier



Appendix B
Example Site Photographs



Photo 1. Photograph of WOUS 19D showing the re-shaped channel on Clover Creek.

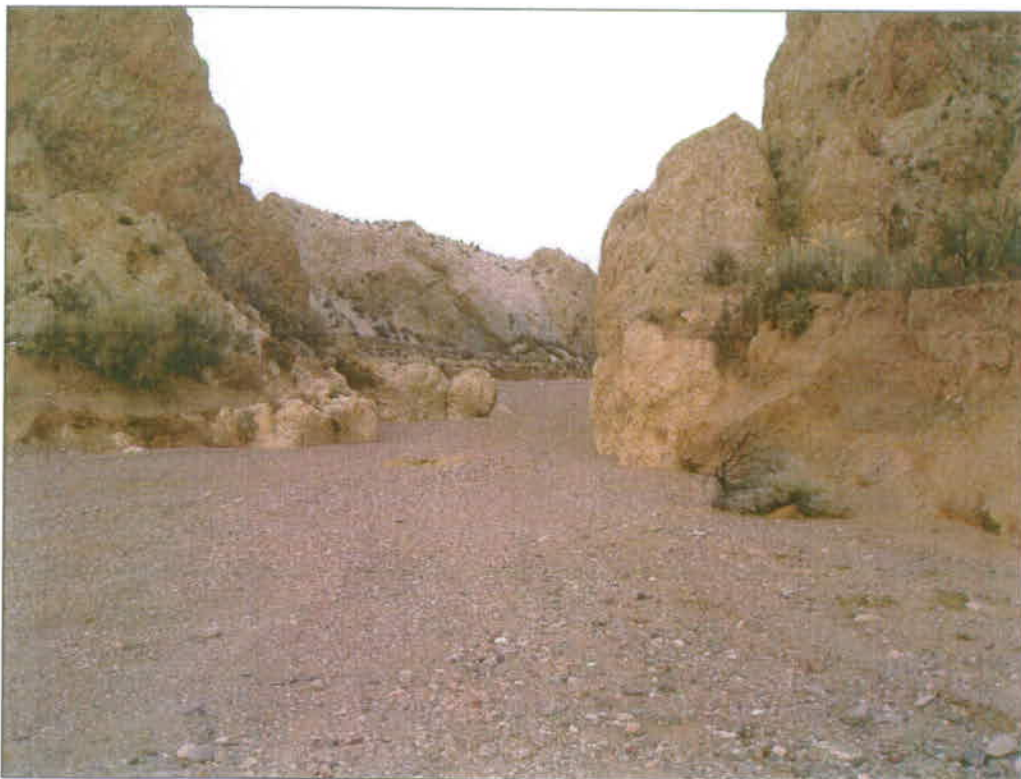


Photo 2. Photograph of WOUS 28 showing the large drainage entering Clover Creek from the north.



Photo 3. Photograph of WOUS 34B looking south.



Photo 4. Photograph of Clover Creek looking east at WOUS 19J.

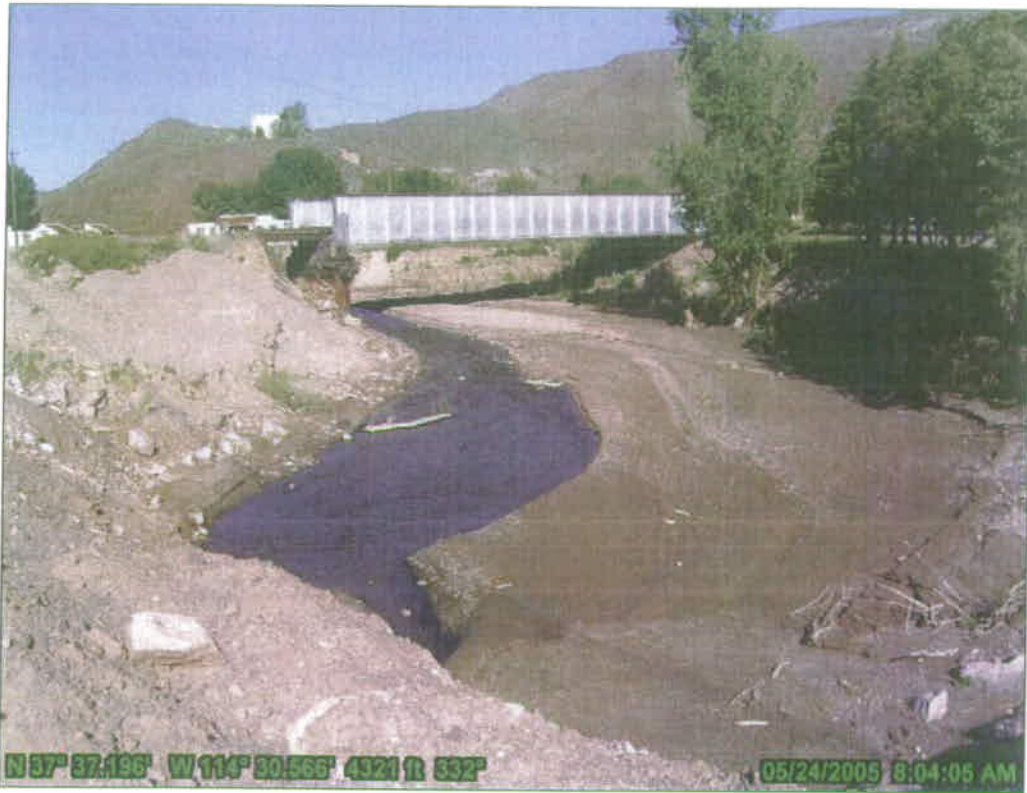


Photo 5. Photograph of Clover Creek looking west at WOUS 19K east of US 93.



Photo 6. Photograph of main Meadow Valley Wash channel (riparian corridor) looking south on WOUS 2.

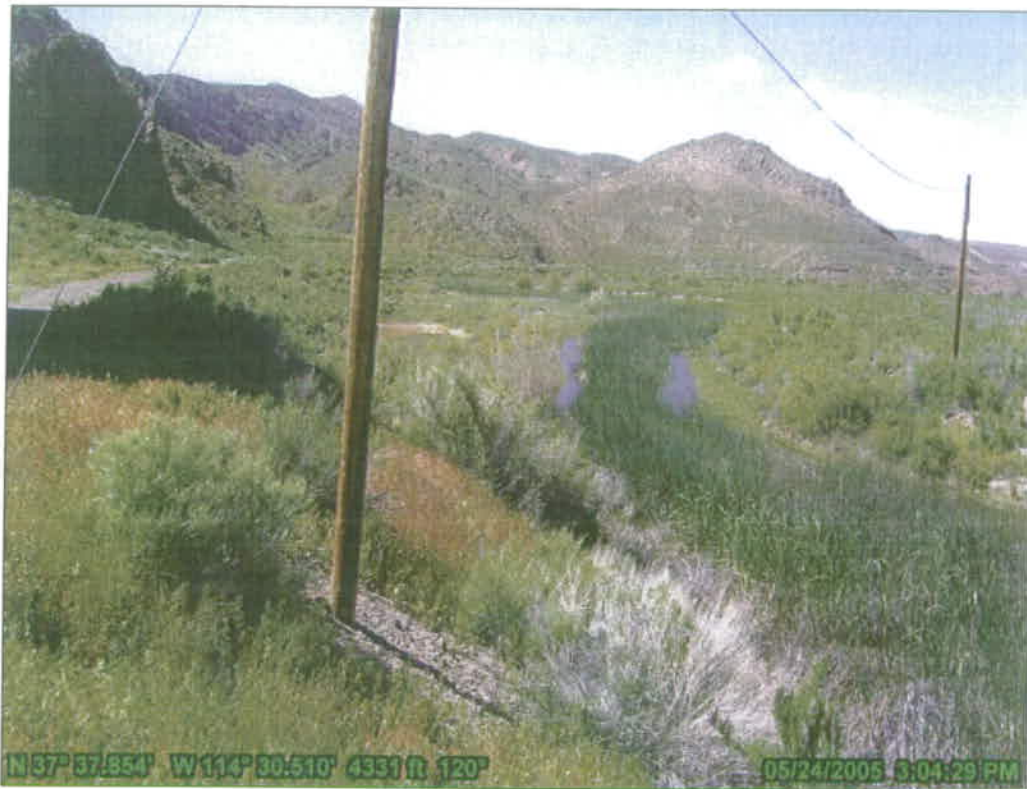


Photo 7. Photograph of Meadow Valley Wash riparian corridor along WOUS 6A and WT-5 adjacent wetlands.



Photo 8. Photograph of a non-jurisdictional ephemeral wash in the White River area.



Photo 9. Photograph of a non-jurisdictional ephemeral wash in the White River area.



Photo 10. Looking south at the incised channel and adjacent wetland WT-1.



Photo 11. Looking southeast from railroad bridge at wetland WT-2.



Photo 12. Looking north along the western side of wetland WT-3.



Photo 13. Looking north at wetland WT-4.



Photo 14. Photograph of WT-9 showing wetland fringe next to the Clover Creek channel.



Photo 15. Looking east northeast at wetland WT-10. Area had been disturbed by channel work in 2005.



Photo 16. Looking west at upper end of WT-11.

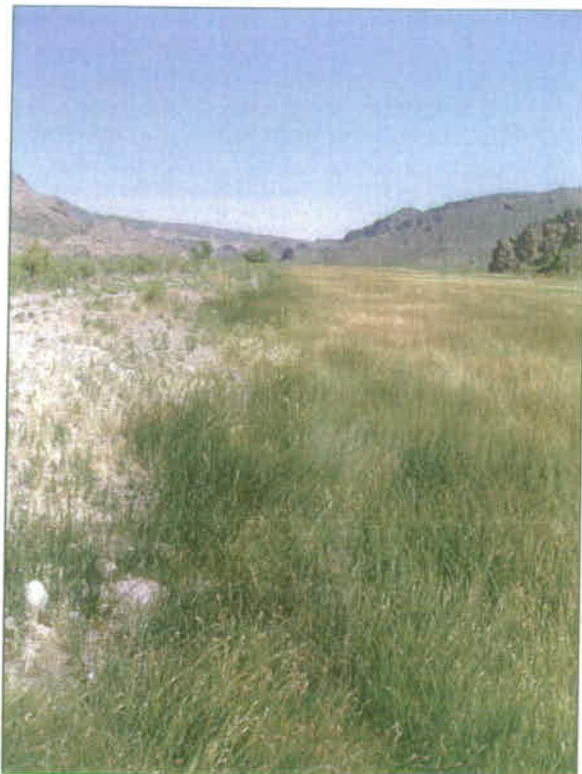


Photo 17. Wetland CC-1. Looking north along the western boundary of wetland CC-1. Historic railroad bed on left side of photo.



Photo 18. Wetland CC-1. Deep mud cracks observed at wetland CC-1.



Photo 19. Wetland CC-2. Looking north.



Photo 20. Wetland CC-3. Looking south.



Photo 21. Wetland CC-4. Looking south; historic railroad bed on left side of photo.



Photo 22. Wetland CC-5. Looking west at CCW-6 (at shovel); note the dried, white algal mats in the center portion of the photo that is indicative of ponded water.



Photo 23. Wetland CC-6. Looking north. Wetland CC-6 is located at the base of the highway sideslope. Wetland CC-7 can be seen between the railroad bed and the hillslopes on the right side of the photo.



Photo 24. CC-7. Looking north along the western boundary. Spikerush in foreground. Historic railroad bed on left side of photo.



Photo 25. Wetland CC-8. Looking north at the southern end of CC-8 at sample point CCW-9.



Photo 26. Wetland CC-9. Looking north at sample point CCW-10 (at shovel). Historic railroad bed on right side of photo.



Photo 27. Wetland CC-10. Looking north at the southern end of wetland CC-10 and sample point CCW-10 (at shovel). Historic railroad bed on right side of photo.



Photo 28. Wetland CC-11. Looking north.

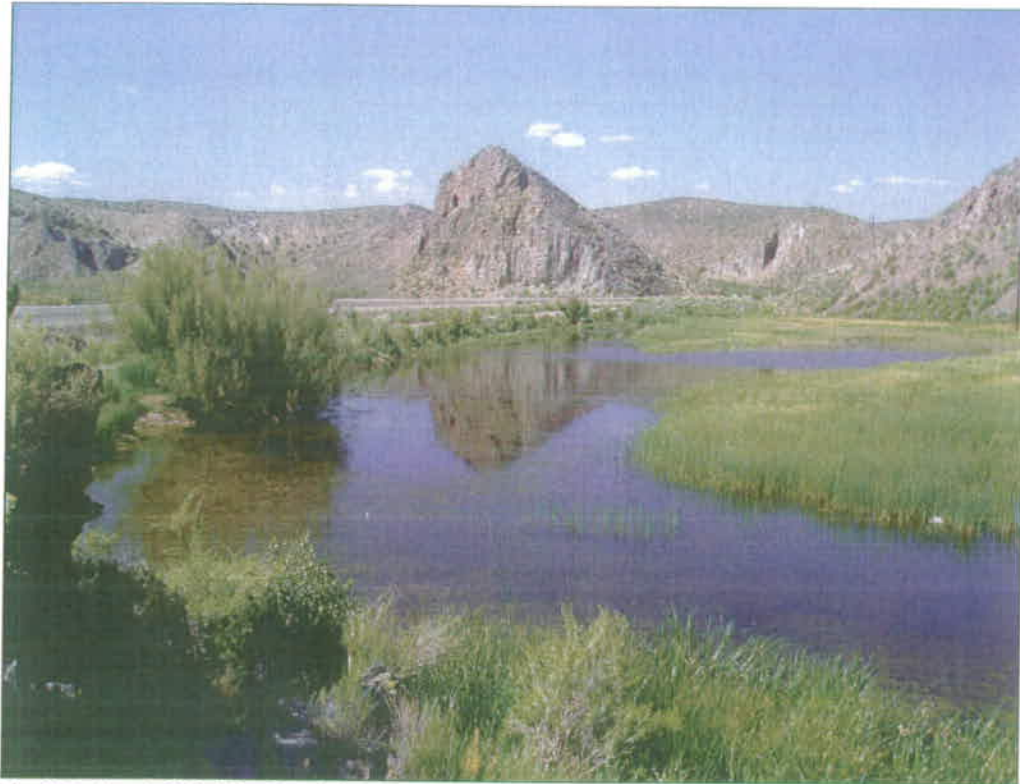


Photo 29. Wetland CC-12. Looking north at the southern end and western boundary. Historic railroad bed on left side of photo bordering the pond.



Photo 30. Wetland CC-13. Looking southwest at sample point CCE-8. Historic railroad bed on right side of photo.



Photo 31. Wetland CC-14. Looking northeast.



Photo 32. Wetland CC-15. Looking northeast at southern end of wetland and sample point CCW-13 (at shovel). Historic railroad bed on right side of photo.



Photo 33. Wetland CC-16. Looking southwest.



Photo 34. Wetland CC-17. Looking northeast at southern end of wetland from sample point CCE-10. Historic railroad bed on left side of photo.



Photo 35. Wetland CC-17. Looking southwest from sample points CCE-11 and 12. Historic railroad bed on right side of photo.



Photo 36. Wetland CC-17. Looking southwest along the west side of the old railroad bed and at the canyon mouth.



Photo 37. Wetland CC-18. Looking northeast.



Photo 38. Wetland CC-20. Looking southwest at sample point (at shovel) CCE-13. Historic railroad bed/trestle on right side of photo.



Photo 39. Wetland CC-20. Looking north from sample point CCE-13.



Photo 40. Wetland CC-21. Looking south at the southern end of wetland and sample point CCE-17.



Photo 41. Wetland CC-21. Looking south at the central portion of wetland and sample point CCW-19 (at shovel). The dark green at the base of the hills is hardstem bulrush.



Photo 42. Wetland CC-21. Bulrush marsh seen on Figure 5I of the report.



Photo 43. Wetland CC-21. Looking north along the western boundary. The marsh/pond shown on Figure 5J of the report is located over the berm on the left side of the photo. The railroad bed/alignment is on the right side of the photo on the other side of the barbwire fence.



Photo 44. Wetland CC-22. Looking southwest. The wetland is a sliver in the center portion of the photo.



Photo 45. Wetland CC-23. The spring is the mound found directly behind the shovel in the photo. The shovel marks sample point CCW-18.



Photo 46. Wetland CC-24. Looking north at the southern end of wetland near sample point CCE-16. Cattle have trampled and degraded this wetland.



Photo 47. Wetland CC-25. Looking south at sample point CCW-17. Railroad bed is on the left side of the photo. Historic railroad bed on left side of photo.



Photo 48. Wetland CC-25. Looking northeast at the northern/western boundary of wetland (see Figure 5L in the report).



Photo 49. Wetland CC-26. Looking north at sample point CCE-19. Historic railroad bed on left side of photo.



Photo 50. Photograph of isolated wetland channel WT-13 and a portion of the stock pond (WT-12). The other isolated wetland WT-14 is visible on the slope.



Photo 51. Photograph showing the stock water pond (WT-12) and WT-14 on the slope behind the pond.



Photo 52. Photograph of wetland WT-15.



Photo 53. Photograph of wetland WT-15 showing standing water.

Appendix C
Wetland data forms

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ Meadow Valley Wash – Caliente Alignment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & LB)</u>	Date: <u>01/13/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>WT-1</u>

NOTE: Located at the northern end of the Caliente alignment where Meadow Valley Wash parallels the old railroad grade. WT-PT-47

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	<i>Salix sp. (Salix gooddingii?)</i>	S	FACW(?)	9			
2	<i>Tamarix ramosissima</i>	S	FACW	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/2 = 100%

Remarks: Palustrine scrub-shrub fringe adjacent to Meadow Valley Wash. Fringe width varies, but is generally 8 to 15 feet wide on either side of the channel. Little to no understory observed.

HYDROLOGY

_____ Recorded Data (Describe in Remarks): _____ Stream, Lake, or Tide Gauge _____ Aerial Photographs _____ Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: _____ Inundated _____ Saturated in Upper 12 Inches _____ Water Marks _____ Drift Lines _____ Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): _____ Oxidized Root Channels in Upper 12 Inches _____ Water-Stained Leaves _____ Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test _____ Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: The wash is incised well below the surrounding terrain. The wetland fringe occurs on a depositional bench adjacent to both sides of the channel. The bench is indicative of bankfull discharge and ranges from approximately 1 to 2.5 feet above the bottom of the channel. Water was flowing in the channel and appeared to be generally less than 12 inches in depth.

SOILS

Map Unit Name Pd – Pahrnagat silt loam, strongly saline Drainage Class: Somewhat poorly drained
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluventic haplaquolls Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: No soil pit excavated, aquic moisture regime assumed due to a prevalence of FACW vegetation, wetland hydrology indicators and distinct boundaries at the bottom of the cliffs.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks: The wetland is classified as a palustrine scrub-shrub wetland dominated by willows and tamarisk. Wetland hydrology is provided by overbank flooding of Meadow Valley Wash, as well as water supplied by its alluvial aquifer. An aquic moisture regime was assumed to occur during the growing season.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ Meadow Valley Wash – Caliente Alignment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & LB)</u>	Date: <u>01/13/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>WT-2</u>

NOTE: Site occurs in a swale oriented NNW to SSE that is crossed by an old railroad bridge, and which connects to Meadow Valley Wash. WT-PT-55

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	<i>Tamarix ramosissima</i>	S	FACW	9			
2	<i>Wheatgrass sp.</i>	H	FAC (?)	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/2 = 50%

Remarks: Site occurs in a swale below the adjacent terrain. Palustrine emergent north of the railroad bridge, palustrine scrub-shrub south of the railroad bridge. Wheatgrass is dominant north of the bridge, tamarisk south of the bridge.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>~ 0 - 8</u> (in.) Depth to Free Water in Pit: <u>--</u> (in.) Depth to Saturated Soil: <u>--</u> (in.)	

Remarks: Frozen surface water in pockets. Channel becomes more well defined below the railroad bridge. Upstream of railroad bridge the areas adjacent to the small channel are relatively flat.

SOILS

Map Unit Name Gg - Geer silt loam, slightly saline Drainage Class: Moderately well drained
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Soil frozen, no soil pit excavated. Aquic moisture regime is assumed to occur during the growing season.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks: A palustrine emergent and palustrine scrub-shrub area dominated by wheatgrass and tamarisk, respectively. Pounded (frozen) water occurred in pockets. No soil pit excavated, but an aquic moisture regime was assumed. Provisionally determined to be a wetland area, but further investigation during the growing season may provide more information on this site. Due to an apparent connection to the tributary system, this site is likely jurisdictional.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ Meadow Valley Wash – Caliente Alignment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & LB)</u>	Date: <u>01/13/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>WT-3</u>

NOTE: Site occurs on the property with the fancy brick gate in the vicinity of the proposed siding facility on the west side of the tracks. WT-PT-58

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	<i>Eleagnus angustifolia</i>	S	FAC	9			
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/1= 100%

Remarks: Palustrine scrub-shrub area with little to no understory. Scattered tamarisk also observed.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>~ 0 - 18</u> (in.) Depth to Free Water in Pit: <u>--</u> (in.) Depth to Saturated Soil: <u>--</u> (in.)	

Remarks: Site was inundated – frozen water. Water appears to pond in this area. Depth of inundation ranged from 0 to approximately 18+ inches. No connection apparent to the tributary system. Pondered water stopped at the driveway crossing the ditch at the south end. Two berms perpendicular to the drainage appeared to facilitate water ponding.

SOILS

Map Unit Name	Gg – Geer silt loam, slightly saline	Drainage Class:	Moderately well drained
(Series and Phase):		Field Observations	
Taxonomy (Subgroup):	Typic torriorthents	Confirm Mapped Type?	___ Yes <u>X</u> No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- | | |
|--|--|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfidic Odor
<input checked="" type="checkbox"/> Aquic Moisture Regime
<input type="checkbox"/> Reducing Conditions
<input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Concretions
<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Other (Explain in Remarks) |
|--|--|

Remarks: Soil frozen, no soil pit excavated. Due to inundation being present, an aquic moisture regime is assumed to occur during the growing season. Though frozen, the soils appeared clayey, which may seal and cause water to pond.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>X</u>	Yes	___	No	Is this Sampling Point Within a Wetland? <u>X</u> Yes ___ No
Wetland Hydrology Present?	<u>X</u>	Yes	___	No	
Hydric Soils Present?	<u>X</u>	Yes	___	No	

Remarks: A palustrine scrub-shrub area dominated by Russian olive and containing ponded (frozen) water. No soil pit excavated, but an aquic moisture regime was assumed due to the site being inundated during the site visit. Provisionally determined to be a wetland area, but further investigation during the growing season may provide more information on the site. This site should be investigated during the growing season to make the final wetland determination. Due to there being no apparent connection to the tributary system, this site is likely non-jurisdictional.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ Meadow Valley Wash – Caliente Alignment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & LB)</u>	Date: <u>01/13/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>WT-4</u>

NOTE: Located in the wash that crosses Carrigan Road and parallels the alignment before flowing diagonally to the southeast away from the Caliente Alignment. WT-PT-67

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	<i>Scirpus acutus</i>	H	OBL	9			
2	<i>Typha sp.</i>	H	OBL	10			
3	<i>Juncus balticus</i>	H	FACW	11			
4	<i>Salix sp. (Salix exigua?)</i>	S	OBL	12			
5	<i>Tamarix ramosissima</i>	S	FACW	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 5/5 = 100%

Remarks: Palustrine emergent wetland. Channel is vegetated primarily with bulrush and cattail, scattered clumps of willow and tamarisk occur on wash margins.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>~ 12</u> (in.) Depth to Free Water in Pit: <u>--</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	

Remarks: Flowing water observed in the wash. Channel is vegetated.

SOILS

Map Unit Name	Gh- Geer silt loam, strongly saline	Drainage Class:	Moderately well drained
(Series and Phase):		Field Observations	
Taxonomy (Subgroup):	Typic torriorthents	Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: No soil pit excavated. Aquic moisture regime assumed. Site is inundated/saturated and boundaries are distinct.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Remarks: A palustrine emergent wetland that occurs in the bottom of a wash with flowing water. Site is dominated by bulrush and cattail. An aquic moisture regime was assumed. The wetland connects to Meadow Valley Wash and is likely jurisdictional.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ Meadow Valley Wash – Caliente Alignment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & LB)</u>	Date: <u>01/16/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Community ID: _____ Transect ID: _____ Plot ID: <u>WT-5</u>

NOTE: Located from Caliente northward in Meadow Valley Wash. WT-PT-93

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<i>Scirpus acutus</i>	H	OBL	9		
2	<i>Typha sp.</i>	H	OBL	10		
3	<i>Salix sp. (Salix exigua?)</i>	S	OBL	11		
4	<i>Tamarix ramosissima</i>	S	FACW	12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/4 = 100%

Remarks: Palustrine emergent wetland. Channel bottom is vegetated primarily with bulrush and cattail, scattered clumps of willow and tamarisk occur on wash margins.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>~ 12</u> (in.) Depth to Free Water in Pit: <u>--</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	

Remarks: Flowing water observed in the wash. Channel is vegetated.

SOILS

Map Unit Name GE - Geer fine sandy loam, gravel substratum Drainage Class: Moderately well drained
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: No soil pit excavated. Aquic moisture regime assumed. Site is inundated/saturated and boundaries are distinct.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks: A palustrine emergent wetland that occurs in the channel bottom and banks of Meadow Valley Wash. Site is dominated by bulrush and cattail and flowing water was observed. An aquic moisture regime was assumed. The wetland occurs in and adjacent to Meadow Valley Wash and is therefore likely jurisdictional.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ Meadow Valley Wash – Caliente Alignment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & LB)</u>	Date: <u>01/16/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Community ID: _____ Transect ID: _____ Plot ID: <u>WT-6</u>

NOTE: Located in Caliente from the confluence of Meadow Valley Wash with Clover Creek southward to the project boundary. WT-PT-95

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<i>Typha sp.</i>	H	OBL	9			
2	<i>Salix sp. (Salix exigua?)</i>	S	OBL	10			
3	<i>Populus fremontii</i>	T	FACW	11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/3 = 100%

Remarks: Palustrine scrub-shrub wetland fringe adjacent to the channel bottom and dominated by willow species. Some cottonwoods also observed, as well as clumps of cattails. The width of the wetland fringe varies.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>~ 4</u> (in.) Depth to Free Water in Pit: <u>--</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	

Remarks: Flowing water observed in the wash. Wetland fringe appears to be supported by overbank flows and the alluvial aquifer.

SOILS

Map Unit Name	GE - Geer fine sandy loam, gravel substratum	Drainage Class:	Moderately well drained
(Series and Phase):		Field Observations	
Taxonomy (Subgroup):	Typic torriorthents	Confirm Mapped Type?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:	
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input checked="" type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)

Remarks: No soil pit excavated. Aquic moisture regime assumed. Boundaries are distinct.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Remarks: A palustrine scrub-shrub wetland that occurs as a wetland fringe adjacent to Meadow Valley Wash. Site is dominated by willow, cattails, and cottonwoods. Flowing water was observed in the wash at the time of the survey. An aquic moisture regime was assumed. The wetland occurs in Meadow Valley Wash and so is likely jurisdictional.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ Clover Creek at Dutch Flats</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & LB)</u>	Date: <u>01/12/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>WT-7</u>

NOTE: Site is located between the two sets of tracks where they diverge from one another; in a depressional area. WT-PT-22

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	<i>Polygonum monspeliensis</i>	H	FACW+	9			
2	<i>Unidentified Veronica sp.</i> (<i>Veronica americana?</i>)	H	OBL	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/2 = 100%

Remarks: Palustrine emergent vegetation. Site also contains some scattered *Typha sp.*, *Scirpus acutus*, and *Eleocharis palustris*. Willow trees (*Salix gooddingii?*) are scattered along margins.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input checked="" type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> -- </u> (in.) Depth to Free Water in Pit: <u> -- </u> (in.) Depth to Saturated Soil: <u> 0 </u> (in.)	

Remarks: April 17, 2005 aerial photograph shows this area as being saturated to the surface. Algal mats found onsite indicate long term inundation. Depth of inundation appears to have varied, with greatest depths appear to be approximately 6 inches. Wetland drains to CC at W end. Occurs in a depression between railroad tracks.

SOILS

Map Unit Name _____ Drainage Class: _____
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Soils frozen solid - no soil pit dug. Aquic moisture regime assumed due to prevalence of FACW and OBL vegetation, strong evidence of wetland hydrology, and distinct boundaries.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks: Palustrine emergent wetland dominated by speedwell and rabbitsfoot grass; scattered clumps of cattails, bulrush, and spikerush also occur. Willows occur along margins. Wetland hydrology evidenced by apparent saturation in an April 17, 2005 aerial photograph, frozen soils, and primary indicators such as algal mats, drift lines, and water marks. Hydric soils assumed. The site has distinct boundaries created by railroad grades and connects to Clover Creek and is therefore likely jurisdictional.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ Clover Creek – Dutch Flats</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & LB)</u>	Date: <u>01/12/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>WT-8</u>

NOTE: Small potential non-jurisdictional wetland located on the south side of the RR tracks in a depressional area. WT-PT-44

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	<i>Unidentified forb</i>	H	Unk	9			
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). Unknown

Remarks: Unidentified forb in a depressional area that is not observed in upland areas. Dead rabbitbrush also present, likely due to ponding water. Need flower to be able to identify the forb.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> -- </u> (in.) Depth to Free Water in Pit: <u> -- </u> (in.) Depth to Saturated Soil: <u> 0 </u> (in.)	

Remarks: Soil frozen solid indicating soil saturation to surface. Depressional area adjacent to the south side of the railroad grade. Mud cracks indicate water has ponded here in the past. No apparent outlet or connection to Clover Creek.

SOILS

Map Unit Name AL – Alluvial Land Drainage Class: Moderately to Well Drained
 (Series and Phase): NA Field Observations
 Taxonomy (Subgroup): Alluvium Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks: No soil pit excavated due to frozen soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u>??</u> Yes <u>??</u> No	Is this Sampling Point Within a Wetland? <u>X</u> Yes <u> </u> No
Wetland Hydrology Present? <u>X</u> Yes <u> </u> No	
Hydric Soils Present? <u>??</u> Yes <u>??</u> No	

Remarks: A wetland determination was unable to be completed due to the time of year of the survey. The site should provisionally considered to be a wetland due to evidence of ponding and the presence of an unidentified forb that is not found in surrounding upland areas (and therefore somewhat likely to be hydrophytic). A soil pit was not excavated due to soils being frozen. It is recommended that, if necessary, this site be reinvestigated during the growing season. No outlet or surface connection was found to connect this site to Clover Creek, therefore if the site is a wetland, it would likely be non-jurisdictional.

SOILS

Map Unit Name	AL - Alluvial Land	Drainage Class:	Moderately to Well Drained
(Series and Phase):	NA	Field Observations	
Taxonomy (Subgroup):	Alluvium	Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Soils frozen – no soil pit excavated. Aquic soil regime assumed due to strong evidence of wetland hydrology, a prevalence of FACW species, and a distinct boundary. Due to the flood in 2005 and subsequent regrading of the site it is unlikely that redoximorphic characteristics would have developed by the time of the investigation.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Remarks: Site appears to be a developing palustrine scrub-shrub wetland that will be dominated by willow species and some tamarisk. The site was disturbed by the 2005 flood and then by reclamation efforts likely by Union Pacific Railroad, thus the problem area and atypical situation classifications given on the first page of this form. Wetland hydrology was evidenced by soil saturation evident in an April 17, 2005 aerial photograph, the presence of algal mats, frozen soils (indicative of soil saturation to the surface), and drainage patterns. No soil pit was excavated. Note that future flows in Clover Creek could change the configuration of the wetland. The wetland is adjacent to Clover Creek, and therefore likely jurisdictional.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ Clover Creek - Dutch Flats Area</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & LB)</u>	Date: <u>01/14/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Is the site significantly disturbed (Atypical Situation)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Is the area a potential Problem Area?: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>WT-10</u>

NOTE: Small linear area at the west end of the Dutch Flats project area located between Clover Creek and the railroad tracks. WT-PT-89.

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	<i>Eleocharis palustris</i>	H	OBL	9			
2	<i>Salix sp. (Salix gooddingii?)</i>	Seedlings	FACW	10			
3	<i>Tamarix ramosissima</i>	Seedlings	FACW	11			
4	<i>Typha sp. or possibly Sparangium sp. (?) (grazed)</i>	H	OBL	12			
5				13			
6				14			
7				15			
				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/4 = 100%

Remarks: Site has been reworked and grazed. Site is linear in a ditch-like configuration.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> -- </u> (in.) Depth to Free Water in Pit: <u> -- </u> (in.) Depth to Saturated Soil: <u> 0 </u> (in.)	
Remarks: Patches of soil saturation to the surface were evident during site visit as well as in an April 17, 2005 aerial photograph.	

SOILS

Map Unit Name	AL – Alluvial Land	Drainage Class:	Moderately to Well Drained
(Series and Phase):	NA	Field Observations	
Taxonomy (Subgroup):	Alluvium	Confirm Mapped Type?	Yes <input type="checkbox"/> No <input type="checkbox"/>

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- | | |
|--|--|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfidic Odor
<input checked="" type="checkbox"/> Aquic Moisture Regime
<input type="checkbox"/> Reducing Conditions
<input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Concretions
<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Other (Explain in Remarks) |
|--|--|

Remarks: No soil pit excavated – soils frozen. Aquic moisture regime assumed. The boundaries are distinct and limited to the bottom of the ditch-like area. Because the area was affected by the 2005 flood and has recently been reworked it is unlikely that hydric soil indicators have developed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Hydric Soils Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	

Remarks: A developing palustrine emergent wetland containing hydrophytic vegetation and soil saturation. The area was affected by the 2005 flood and has been reworked. Due to its proximity to Clover Creek, this site is likely jurisdictional.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ Clover Creek – Dutch Flats Area</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & LB)</u>	Date: <u>01/15/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>WT-11</u>

NOTE: Small pocket just north of the project area at the west end of the Dutch Flats project area at the head of a spring. WS-PT-281

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	<i>Eleocharis palustris</i>	H	OBL	9			
2	<i>Salix exigua</i>	S	OBL	10			
3	<i>Tanarix ramosissima</i>	S	FACW	11			
4	<i>Typha sp. or possibly Sparangium sp. (?) (grazed)</i>	H	OBL	12			
5	<i>Epilobium sp.</i>	H	FACW(?)	13			
6	<i>Juncus balticus</i>	H	FACW	14			
7	<i>Polypogon monspeliensis</i>	H	FACW+	15			
				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 7/7 = 100%

Remarks: Palustrine scrub-shrub wetland area at the head of a spring.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>2</u> (in.) Depth to Free Water in Pit: <u>--</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	

Remarks: Site is located at the head of a spring. Patches of soil saturation to the surface evident during site visit. Flowing water in spring and channel. The water from the spring flows down a natural channel and eventually into Clover Creek.

SOILS

Map Unit Name ZR - Zoate Rock outcrop association - Zoate cobbly loam Drainage Class: Well drained
 (Series and Phase): 4 to 15% slopes Field Observations _____
 Taxonomy (Subgroup): Aridic durixerolls Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input checked="" type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: No soil pit excavated. Aquic moisture regime assumed. Sulfidic odor encountered just by walking around the site.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> X </u> Yes <u> </u> No
Wetland Hydrology Present? <u> X </u> Yes <u> </u> No	
Hydric Soils Present? <u> X </u> Yes <u> </u> No	

Remarks: A palustrine scrub-shrub wetland dominated by an overstory of sandbar willow and a variety of hydrophytic herbaceous species. Due to its proximity to Clover Creek and the spring, this site is likely jurisdictional. The specific boundaries of this site appear to be relatively complex and will require a more thorough investigation if this site will be impacted.

Approved by HQUSACE 2/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ CS1 Segment</u>		Date: <u>5/25/05</u>
Applicant/Owner: <u>Bechtel-SAIC</u>		County: <u>Lincoln</u>
Investigator: <u>PBS&J (JG/LB)</u>		State: <u>NV</u>
Do Normal Circumstances exist on the site:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Palustrine (see final remarks)</u>
Is the site significantly disturbed (Atypical Situation)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: (If needed, explain on reverse.)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>WT-12</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<i>*Juncus balticus</i>	H	FACW	9		
2	<i>Mimulus guttatus</i>	H	OBL	10		
3	<i>Juncus bufonius</i>	H	FACW	11		
4	<i>Hordeum jubatum</i>	H	FAC	12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant (*) Species that are OBL, FACW, or FAC (excluding FAC- 4/4 = 100% (at sample point)

Remarks:

JUNBUF below berm of pond, but not dominant. This SP located on open-water (OW) stock pond edge; pond and fringe are comprised of <5% hydrophytic vegetation. Technically OW not a WL as a result of small WL veg % cover. Delineated more as a special aquatic site with the potential to convert to WL.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p>_____ Stream, Lake, or Tide Gauge</p> <p><input checked="" type="checkbox"/> Aerial Photographs</p> <p>_____ Other</p> <p>_____ No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: <u>DNA</u> (in.)</p> <p>Depth to Free Water in Pit: <u>Est. 2" (filling)</u> (in.)</p> <p>Depth to Saturated Soil: <u>0</u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input checked="" type="checkbox"/> Inundated (pond)</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input checked="" type="checkbox"/> Water Marks</p> <p>_____ Drift Lines</p> <p><input checked="" type="checkbox"/> Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
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Remarks:

Hydrology sourced by developed spring; water enters pond via a man-made channel; no outlet and no connection via bed and bank (BB) or wetland to a JD water.

SOILS

Map Unit Name: No soil data available. Drainage Class: No soil data available.
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): No soil data available. Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A/B	7.5YR5/1			Gravelly silt loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
 Light gray color is the result of soil developing from the gray rock substrate that was exposed w/ blasting and/or excavation when spring head was developed and stock water pond was created.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u>(X)</u> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <u>X</u> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <u>X</u> Yes <input type="checkbox"/> No	
Hydric Soils Present? <u>X</u> Yes <input type="checkbox"/> No	

Remarks:
 Stock-water pond has positive hydric soils and hydrology, however vegetation has only developed near the stream inflow area (<5% of pond and fringe), perhaps as a result of low inflow during normal years. The 2004-2005 winter was extremely wet which may account for the ponding and low vegetative cover. The "wetland" boundary was placed around the circumference of the ponded area to illustrate current conditions and though not technically a wetland because of the low WL vegetation cover is indeed a special aquatic site of high value in this desert environment.

Cowardin Classification: Palustrine, Emergent

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ CS1 Segment</u>	Date: <u>5/25/05</u>
Applicant/Owner: <u>Bechtel-SAIC</u>	County: <u>Lincoln</u>
Investigator: <u>PBS&J (JG/LB)</u>	State: <u>NV</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Riverine/Palustrine</u> (see final remarks)
Is the site significantly disturbed (Atypical Situation)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>WT-13</u>
(If needed, explain on reverse.)	

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<i>* Juncus balticus</i>	H	FACW	9		
2	<i>Mimulus guttatus</i>	H	OBL	10		
3	<i>Juncus bufonius</i>	H	FACW	11		
4	<i>* Hordeum jubatum</i>	H	FAC	12		
5	<i>*Eleocharis palustris</i>	H	OBL	13		
6	<i>Veronica americana</i>	H	OBL	14		
7	<i>Ranunculus sp.</i>	H	OBL	15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 7/7 = 100%

Remarks:
High species diversity along wetland fringe and in stream bed.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p>_____ Stream, Lake, or Tide Gauge</p> <p><input checked="" type="checkbox"/> Aerial Photographs</p> <p>_____ Other</p> <p>_____ No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: <u>DNA</u> (in.)</p> <p>Depth to Free Water in Pit: <u>Est. 2"</u> (in.) (filling)</p> <p>Depth to Saturated Soil: <u>2"</u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input checked="" type="checkbox"/> Inundated (stream)</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input checked="" type="checkbox"/> Water Marks</p> <p>_____ Drift Lines</p> <p><input checked="" type="checkbox"/> Sediment Deposits</p> <p><input checked="" type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
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Remarks:
Developed spring and outflow stream; SP located on side of stream. Bed 2 ft wide, 2" deep. Rock may have been blasted to open spring. Connected to stock-water pond but no connection to JD water or wetlands below pond.

SOILS

Map Unit Name: No soil data available. Drainage Class: No soil data available.
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): No soil data available. Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3	A	10YR 5/2,3/3			Silt loam, small frags (<2mm)
3-5	A	10YR 2/2			Silt gravelly loam
5-7	B	10YR 3/2			Gravelly loam
7-10	B	7.5YR 4/4			Silty gravel (10-20mm)

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input checked="" type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

Aquic moisture regime assumed. Depth to water in pit is 2 inches. Sample point in fringe area where there is soil development; stream has been excavated and side-cast (unknown how long ago). Hydric soil development poor in streambed because of lack of soil depth (gravelly and perhaps solid rock <6" deep). Entire soil profile illustrates lack of hydric soil development at any layer to 10", but will fall under "atypical" wetland definition as a result of man-made conditions.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks:

Spring and stream do qualify as a wetland as a result of positive hydrology and vegetation parameters; hydric soil indicators lacking at a depth of 10" because of man-made conditions (excavation and lack of adequate soil cover and/or insufficient time to develop) that qualify this wetland as "Atypical". Site was saturated at 2 inches below the soil surface - aquic moisture regime assumed.

Cowardin Classification: Riverine, Lower Perennial, Emergent; Palustrine, Emergent

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/CS1 Segment</u>		Date: <u>5/25/05</u>
Applicant/Owner: <u>Bechtel-SAIC</u>		County: <u>Lincoln</u>
Investigator: <u>PBS&J (JG/LB)</u>		State: <u>NV</u>
Do Normal Circumstances exist on the site:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Palustrine (see final remarks)</u>
Is the site significantly disturbed (Atypical Situation)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: (If needed, explain on reverse.)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>WT-14</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 * <i>Juncus balticus</i>	H	FACW	9		
2 * <i>Distichlis spicata</i> (likely, no seedhead)	H	FAC+	10		
3 <i>Carex sp.</i> (immature seedhead)	H	FAC-OBL	11		
4 <i>Mimulus guttatus</i>	H	OBL	12		
5 <i>Poa sp.</i>	H	FAC (unk)	13		
6			14		
7			15		
8			16		

Percent of Dominant (*) Species that are OBL, FACW, or FAC (excluding FAC- 100%)

Remarks:
High species diversity along wetland fringe and in stream bed.

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated (stream) <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>DNA</u> (in.) Depth to Free Water in Pit: <u>Est. 8" (filling)</u> (in.) Depth to Saturated Soil: <u>0-2"</u> (in.)	
Remarks: No spring, evidence of slight water movement in upper reaches of slope; no water flowing at surface at this time but soil saturated throughout WL either at surface or in shallow regions (<<12").	

SOILS

Map Unit Name: <u>No soil data available.</u>	Drainage Class: <u>No soil data available.</u>
(Series and Phase): _____	Field Observations _____
Taxonomy (Subgroup): <u>No soil data available.</u>	Confirm Mapped Type? <u> </u> Yes <u> X </u> No

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3	A	10YR 3/2			Gravelly Silt loam, small frags (<1mm)
3-6	AB	10YR 3/2			Silt gravelly loam
7-8	B1	10YR 2/1			Silt sandy loam
8-10	B2	7.5YR 2.5/2			Silty gravelly loam , frags (2 cm)

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
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Remarks:
 Low-chroma hydric layer at 7-8 inches. This wetland appears to be an original slope seep and is undisturbed; hydric soils even in this "natural" wetland are minimal likely given soil type constraints.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> X </u> Yes <u> </u> No
Wetland Hydrology Present? <u> X </u> Yes <u> </u> No	
Hydric Soils Present? <u> X </u> Yes <u> </u> No	

Remarks:
 Hydrophytic veg and hydrology strongly present, hydric soil noted in one inch of the profile.
 Cowardin Classification: Palustrine, Emergent

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS/ Oasis Valley</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (BS&DB)</u>	Date: <u>01/16/2006</u> County: <u>Nye</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>WT-15</u>

NOTE:

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	<i>Distichlis spicata</i> (likely)	H	FAC+	9			
2	<i>Chrysothamnus nauseosus</i>	S	NONE	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/2= 50%

Remarks: Sparsely vegetated-mostly saltgrass (likely, no seed head) and *Chrysothamnus nauseosus*

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> -- </u> (in.) Depth to Free Water in Pit: <u> -- </u> (in.) Depth to Saturated Soil: <u> 0 </u> (in.)	

Remarks: Groundwater seep.

SOILS

Map Unit Name (Series and Phase):	No soil data available	Drainage Class:	No soil data available
Taxonomy (Subgroup):	No soil data available	Field Observations	
		Confirm Mapped Type?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2	O		Gley 1 2.5 N		Silty Loam
2-8	A	2.5 Y 3/2			Silty Loam
8-16	B	2.5 Y 3/2	Gley 1 2.5 N	Few-distinct	Clayey Silty Loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input checked="" type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Soil pit dug in saturated area—North of seep.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Remarks: Although not 100 percent on vegetation within seep area, soils hydric and hydrology present. Photo 1 & 2

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/20/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-1</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Carex praegracilis	H	FACW	9		
2	Juncus balticus	H	FACW	10		
3	Distichlis spicata	H	FAC+	11		
4	Iva axillaris	H	FACW	12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/4=100%

Remarks:
 Scattered rabbitbrush and greasewood, not dominant.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:
 No evidence of hydrology.

SOILS

Map Unit Name Pg- Pahrnagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
2	A	10YR 4/2			SILTY CLAY
12	B	10YR 4/3			SILTY CLAY

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:
 No field indicators of hydric soils observed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> </u> Yes <u> X </u> No
Wetland Hydrology Present? <u> </u> Yes <u> X </u> No	
Hydric Soils Present? <u> </u> Yes <u> X </u> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u>	Date: <u>06/20/2006</u>
Applicant/Owner: <u>Bechtel-SAIC</u>	County: <u>Lincoln</u>
Investigator: <u>PBS&J (RRM & DB)</u>	State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>CCE-2</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Carex praegracilis	H	FACW	9		
2	Juncus balticus	H	FACW	10		
3	Eleocharis palustris	H	OBL	11		
4	Hordeum jubatum	H	FAC	12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/4=100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: Mud cracks, assumed saturated in the spring, live stock pugging.	

SOILS

Map Unit Name Pg- Pahrnagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
5	A	10YR 4/2			SILTY CLAY
11	B	10YR 2/1			SILTY CLAY

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> X </u> Yes <u> </u> No
Wetland Hydrology Present? <u> X </u> Yes <u> </u> No	
Hydric Soils Present? <u> X </u> Yes <u> </u> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/20/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-3</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	9			
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/1=100%

Remarks:
Non-dominants include scattered rabbitfoot grass & foxtail barley, and unknown 2 (small ground forb).

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:
Ponding and saturation obviously occur here early in the spring.

SOILS

Map Unit Name Pg- Pahrnagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? ___ Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
3	A	10YR 4/2			SILTY CLAY
11	B	7.5YR 4/3			SILTY CLAY

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input checked="" type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

Aquic moisture regime assumed due to the evidence of wetland hydrology.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u>X</u> Yes ___ No	Is this Sampling Point Within a Wetland? <u>X</u> Yes ___ No
Wetland Hydrology Present? <u>X</u> Yes ___ No	
Hydric Soils Present? ___ Yes <u>X</u> No	

Remarks:

Atypical situation where vegetation and hydrology parameters are found to be met, but field indicators of hydric soils are lacking. This area is irrigated from the surface, which may limit the formation of redoximorphic features in this heavy soil type. For example the clayey soil may seal shut and inhibit the downward movement of water. In addition, the irrigation is likely turned on for a limited amount of time (e.g., a month) each year, which would be long enough for hydrophytic vegetation to establish and to meet the hydrology requirements, but may not be long enough for redox features to develop. In addition, the pH of the soil (note dominance by saltgrass here) may be high enough to inhibit the formation of redox features.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/20/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-4</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Eleocharis palustris</u>	<u>H</u>	<u>OBL</u>	9		
2	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	10		
3				11		
4				12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/2=100%

Remarks: _____

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Depressional topography. Evidence that ponding and soil saturation occurred earlier in the year.

SOILS

Map Unit Name Pg- Pahrnagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
6	A	10YR 3/2			SILTY CLAY
10	B	10YR 4/2			CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
 Aquic moisture regime assumed due to evidence of hydrology.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks:
 Atypical situation where vegetation and hydrology parameters are found to be met, but field indicators of hydric soils are lacking. This area is irrigated from the surface, which may limit the formation of redoximorphic features in this heavy soil type. For example the clayey soil may seal shut and inhibit the downward movement of water. In addition, the irrigation is likely turned on for a limited amount of time (e.g., a month) each year, which would be long enough for hydrophytic vegetation to establish and to meet the hydrology requirements, but may not be long enough for redox features to develop. In addition, the pH of the soil may be high enough to inhibit the formation of redox features.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & SPG)</u>	Date: <u>06/21/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-5</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	9		
2	<u>Hordeum jubatum</u>	<u>H</u>	<u>FAC</u>	10		
3	<u>Carex praeegracilis</u>	<u>H</u>	<u>FACW</u>	11		
4	<u>Juncus balticus</u>	<u>H</u>	<u>FACW</u>	12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/4=100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:
 Evidence of soil saturation and inundation earlier in the year. Depressional area on the east side of the tracks. Likely formed due to road berm construction.

SOILS

Map Unit Name Pg- Pahrnagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): Field Observations
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
9.5	A	10YR 2/1			CLAY
12	C	10YR 5/3			CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
 Soil is very moist.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/22/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-6</u>

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	Juncus balticus	H	FACW	9			
2	Scirpus maritimus	H	OBL(NI)	10			
3	Carex praegracilis	H	FACW	11			
4	Distichlis spicata	H	FAC+	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/4=100%

Remarks: Aquatic macrophytes abundant, but not identified.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>18</u> (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Pond. Average depth estimated to be 18 inches on day of field visit. Steep banks surround the pond, so the wetland fringe is narrow. Shelving and staining of a post at the south end of the pond indicate the OHWM is approximately 1.5 feet above the current water elevation.

SOILS

Map Unit Name: Pg- Pahrnagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? _____ Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
 No soil pit necessary. Aquic moisture regime assumed - boundaries are distinct and the site is dominated by FACW and OBL plants.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No			
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No			

Remarks:
 Poned area dominated by emergent vegetation and aquatic macrophytes. Banks are steep and the boundary is distinct.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/22/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-7</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Carex praegracilis	H	FACW	9			
2	Agrostis stolonifera	H	FACW	10			
3	Juncus balticus	H	FACW	11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/3=100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> -- </u> (in.) Depth to Free Water in Pit: <u> -- </u> (in.) Depth to Saturated Soil: <u> -- </u> (in.)	

Remarks:

SOILS

Map Unit Name Pg- Pahrnagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
12	A	7.5YR 4/1	7.5YR 4/4	Few, large, faint	CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input checked="" type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
Soil is moist.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u>X</u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u>X</u> Yes <u> </u> No
Wetland Hydrology Present? <u>X</u> Yes <u> </u> No	
Hydric Soils Present? <u>X</u> Yes <u> </u> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u>	Date: <u>06/22/2006</u>
Applicant/Owner: <u>Bechtel-SAIC</u>	County: <u>Lincoln</u>
Investigator: <u>PBS&J (RRM & DB)</u>	State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>CCE-8</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	9		
2				10		
3				11		
4				12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: <u>Depressional topography. Evidence of ponding and soil saturation earlier in the growing season includes salt crust and mud cracks.</u>	

SOILS

Map Unit Name	Gg-Geer silt loam-strongly saline	Drainage Class:	Moderately well drained.
(Series and Phase):		Field Observations	
Taxonomy (Subgroup):	Typic torriorthents	Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
12	A	7.5YR 5/3	7.5YR 5/1	Abundant, large, distinct	SILTY CLAY

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfidic Odor
<input checked="" type="checkbox"/> Aquic Moisture Regime
<input type="checkbox"/> Reducing Conditions
<input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Concretions
<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Other (Explain in Remarks) |
|--|---|

Remarks:

Aquic moisture regime assumed due to the evidence of wetland hydrology observed at the site. Due to the abundance of the mottles it was difficult to discern which soil color was dominant. However, the 7.5 YR 5/3 color appeared to be more prevalent and so was identified as the matrix color. Soil is moist.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Remarks:

Hydric soils were assumed to occur even though the field indicators of hydric soils were somewhat ambiguous. The evidence of wetland hydrology and the fact that the soils were moist, and surrounding upland soils dry, provided a preponderance of evidence that the site does fulfill all three parameters.

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u>	Date: <u>06/22/2006</u>
Applicant/Owner: <u>Bechtel-SAIC</u>	County: <u>Lincoln</u>
Investigator: <u>PBS&J (RRM & DB)</u>	State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>CCE-9</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Hordeum jubatum	H	FAC	9			
2	Carex praegracilis	H	FACW	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: <u>Depressional topography created by the railroad berm. Water appears to pond in this area.</u>	

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained.
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10	A	7.5YR 5/3	5YR 5/4	Common, distinct	SILTY CLAY

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input checked="" type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:
Soil is moist.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> X </u> Yes <u> </u> No
Wetland Hydrology Present? <u> X </u> Yes <u> </u> No	
Hydric Soils Present? <u> X </u> Yes <u> </u> No	

Remarks:

Approved by HQUSACE 2/92

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u>	Date: <u>06/22/2006</u>
Applicant/Owner: <u>Bechtel-SAIC</u>	County: <u>Lincoln</u>
Investigator: <u>PBS&J (RRM & DB)</u>	State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>CCE-10</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Scirpus acutus</u>	<u>H</u>	<u>OBL</u>	9		
2	<u>Typha latifolia</u>	<u>H</u>	<u>OBL</u>	10		
3	<u>Carex nebrascensis</u>	<u>H</u>	<u>OBL</u>	11		
4				12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 100%

Remarks:
This point should be just to the east of the rail.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: Evidence of saturation and inundation drainage patterns.	

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained.
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? ___ Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input checked="" type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
 No soil pit necessary. Site is dominated by OBL vegetation and is inundated. Aquic moisture regime assumed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u>X</u> Yes ___ No	Is this Sampling Point Within a Wetland? <u>X</u> Yes ___ No
Wetland Hydrology Present? <u>X</u> Yes ___ No	
Hydric Soils Present? <u>X</u> Yes ___ No	

Remarks:
 Inundated dominated by obligates, distinct boundaries.

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/23/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-11</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Carex praegracilis</u>	<u>H</u>	<u>FACW</u>	9		
2	<u>Juncus balticus</u>	<u>H</u>	<u>FACW</u>	10		
3	<u>Agrostis stolonifera</u>	<u>H</u>	<u>FACW</u>	11		
4				12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/3=100%

Remarks: Lower elevation areas in the vicinity are dominated by Scirpus sp.

HYDROLOGY

Recorded Data (Describe in Remarks): _____ Stream, Lake, or Tide Gauge _____ Aerial Photographs _____ Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: _____ Inundated _____ Saturated in Upper 12 Inches _____ Water Marks _____ Drift Lines _____ Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches _____ Water-Stained Leaves _____ Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test _____ Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? ___ Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1	A	5YR 4/4			SILTY CLAY
1-10	B	10YR 4/2	5YR 4/6	FEW, DISTINCT	SILTY CLAY

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input checked="" type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u>X</u> Yes ___ No	Is this Sampling Point Within a Wetland? <u>X</u> Yes ___ No
Wetland Hydrology Present? <u>X</u> Yes ___ No	
Hydric Soils Present? <u>X</u> Yes ___ No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u>	Date: <u>06/23/2006</u>
Applicant/Owner: <u>Bechtel-SAIC</u>	County: <u>Lincoln</u>
Investigator: <u>PBS&J (RRM & DB)</u>	State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>CCE-12</u>
(If needed, explain on reverse.)	

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Carex praegracilis	H	FACW	9			
2	Juncus balticus	H	FACW	10			
3	Agropyron repens	H	FACU	11			
4	Agropyron smithii	H	FACU	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/4=50%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:

Evidence of soil saturation earlier in the growing season.

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 4/2	5YR 4/6	FEW, DISTINCT	CLAY

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input checked="" type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> X </u> Yes <u> </u> No
Wetland Hydrology Present? <u> X </u> Yes <u> </u> No	
Hydric Soils Present? <u> X </u> Yes <u> </u> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/23/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-13</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Eleocharis palustris</u>	<u>H</u>	<u>OBL</u>	9			
2	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	10			
3	<u>Agrostis stolonifera</u>	<u>H</u>	<u>FACW</u>	11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/3=100%

Remarks: _____

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Evidence of saturation
Mottled Crust
Mud Crusting

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? _____ Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3	A	7.5YR 5/4			SILTY CLAY
3-10	B	10YR 5/1			SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input checked="" type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
 Sulfidic odor in B horizon. Moist throughout soil profile.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks:

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Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-14</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	9			
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/1= 100%

Remarks: _____

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: Salt Crust	

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained.
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? ___ Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10	A	7.5YR 5/4			SILTY CLAY

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u>X</u> Yes ___ No	Is this Sampling Point Within a Wetland? ___ Yes <u>X</u> No
Wetland Hydrology Present? <u>X</u> Yes ___ No	
Hydric Soils Present? ___ Yes <u>X</u> No	

Remarks:

Soils not even close. Evidence of cattle but no pugging. No other plant species.

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Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-15</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Carex praegracilis	H	FACW	9		
2	Agropyron smithii	H	FACU	10		
3	Alopecurus pratensis	H	NI	11		
4	Juncus balticus	H	FACW	12		
5	Puccinella lemonii	H	FAC	13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/4= 75%

Remarks:
 Mesic Site

HYDROLOGY

Recorded Data (Describe in Remarks): _____ Stream, Lake, or Tide Gauge _____ Aerial Photographs _____ Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: _____ Inundated _____ Saturated in Upper 12 Inches _____ Water Marks _____ Drift Lines _____ Sediment Deposits _____ Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches _____ Water-Stained Leaves _____ Local Soil Survey Data _____ FAC-Neutral Test _____ Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:
 No pugging but have evidence of cows. Pugging evident in other locations. For this reason wetland hydrology is likely not present at this site.

SOILS

Map Unit Name Pe- Pahrnagat silty clay loam Drainage Class: Poorly drained to somewhat poorly drained

(Series and Phase): _____ Field Observations _____

Taxonomy (Subgroup): Fluvaquentic endoaqualls Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 4/3	5YR 4/6	FEW to COMMON, DISTINCT	SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Remarks:
No strong evidence of wetland hydrology or hydric soils.

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Investigator: <u>PBS&J (RRM & DB)</u>	State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>CCE-16</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus balticus	H	FACW	9		
2	Agropyron smithii	H	FACU	10		
3	Carex nebrascensis	H	OBL	11		
4				12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/3= 66%

Remarks: The site has been heavily used by cattle (i.e., trails, grazed).

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:

Likely a historic irrigation or drainage ditch. Majority of ditch has lost hydrology but this area has pugging evident of being wet earlier in season. Total average width of ditch bottom is 6 feet.

SOILS

Map Unit Name	Pa -Pahranagat silt loam, drained, strongly saline	Drainage Class:	Poorly to somewhat poorly drained
(Series and Phase):		Field Observations	
Taxonomy (Subgroup):	Typic torriorthents	Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 4/3	5YR 4/6	FEW, DISTINCT	SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
 Aquic moisture regime assumed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Remarks: The site is somewhat questionable, but the preponderance of evidence suggests that this portion of the ditch receives enough water to fulfill the wetland hydrology and hydric soil parameters.

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Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-17</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus balticus	H	FACW	9		
2	Carex praegracilis	H	FACW	10		
3	Agropyron repens	H	FACU	11		
4	Puccinellia lemmonii	H	FAC	12		
5	Potentilla anserina	H	OBL	13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/5 = 80%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:
 Evidence of soil saturation earlier in the growing season. Inundation 3 inches lower in elevation observed nearby (15 ft away).

SOILS

Map Unit Name Pa -Pahranagat silt loam, drained, strongly saline Drainage Class: Poorly to somewhat poorly drained

(Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 4/3	5YR 4/3	COMMON, FAINT	SILTY CLAY

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input checked="" type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

Mottling starts at 7 inches. Found 10YR 4/3 soils in nearby saturated conditions. Aquic moisture regime assumed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks:

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Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-18</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	9			
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/1 = 100%

Remarks: _____

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks);
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Salt crust present, but is thin. The site is approximately 12 inches higher than nearby areas with livestock mudding. Based on the topography and the minimal evidence of wetland hydrology, the site is judged to not meet the wetland hydrology requirement.

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained

(Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR 5/4			SILTY CLAY LOAM
4-11	B	10YR 4/3	7.5YR 3/4	COMMON, FAINT to DISTINCT	SILTY CLAY

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input checked="" type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:
 Higher elevation than surrounding area. Due to lack of hydrologic indicators and hydric soil field indicators this site does not meet the hydric soil parameter.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Remarks:

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Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCE-19</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Juncus balticus</u>	<u>H</u>	<u>FACW</u>	9			
2	<u>Puccinellia lemmonii</u>	<u>H</u>	<u>FAC</u>	10			
3	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/3 = 100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: A thick salt crust, depressional topography, and livestock pugging all indicate that the site has soil saturation earlier in the growing season.	

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2.5	A	10YR 5/4			SILTY CLAY
2.5-6	B	10YR 4/2	5YR 3/4	ABUNDANT, DISTINCT	SILTY CLAY
6-10	C	10YR 4/3			SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input checked="" type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/20/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-1</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Carex praegracilis	H	FACW	9			
2	Juncus balticus	H	FACW	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/2=100%

Remarks:

HYDROLOGY

_____ Recorded Data (Describe in Remarks): _____ Stream, Lake, or Tide Gauge _____ Aerial Photographs _____ Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: _____ Inundated _____ Saturated in Upper 12 Inches _____ Water Marks _____ Drift Lines _____ Sediment Deposits _____ Drainage Patterns in Wetlands Secondary Indicators (2 or more required): _____ Oxidized Root Channels in Upper 12 Inches _____ Water-Stained Leaves _____ Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test _____ Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Lowest part of swale, evidence of soil saturation in upper 12 inches earlier in the growing season. Site is irrigated early in the growing season.

SOILS

Map Unit Name Pg- Pahranaqat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): Field Observations
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
3	A	10YR 4/2			SILTY CLAY
11	B	10YR 4/3			SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
 Aquic moisture regime assumed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks:
 Atypical situation where vegetation and hydrology parameters are found to be met, but field indicators of hydric soils are lacking. This area is irrigated from the surface, which may limit the formation of redoximorphic features in this heavy soil type. For example the clayey soil may seal shut and inhibit the downward movement of water. In addition, the irrigation is likely turned on for a limited amount of time (e.g., a month) each year, which would be long enough for hydrophytic vegetation to establish and to meet the hydrology requirements, but may not be long enough for redox features to develop.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/20/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-2</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Pascopyron (Agropyron) smithii</u>	<u>H</u>	<u>FACU</u>	9			
2	<u>Carex praegracilis</u>	<u>H</u>	<u>FACW</u>	10			
3	<u>Juncus balticus</u>	<u>H</u>	<u>FACW</u>	11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/3 = 67%

Remarks:

Scattered rabbitbrush and greasewood also occur in the vicinity, but are not dominant.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: This area occurs on a shelf approximately 12 inches higher than CCW-1. Site topography is not conducive to water ponding.

SOILS

Map Unit Name Pg- Pahrnagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
2	A	10YR 4/3			SILTY CLAY
11	B	10YR 5/3			SILTY CLAY

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

No evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Remarks:

This sample point occurs on a bench approximately 12 inches higher than CCW-1, which is located approximately 6 feet away in the bottom of the swale. For this reason the site is unlikely to have wetland hydrology and there are no indications of hydric soils.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/20/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-3</u>

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	9	_____	_____	_____
2	<u>Sarcobatus vermiculatus</u>	<u>H</u>	<u>FACU</u>	10	_____	_____	_____
3	_____	_____	_____	11	_____	_____	_____
4	_____	_____	_____	12	_____	_____	_____
5	_____	_____	_____	13	_____	_____	_____
6	_____	_____	_____	14	_____	_____	_____
7	_____	_____	_____	15	_____	_____	_____
8	_____	_____	_____	16	_____	_____	_____

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/2 = 50%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Past soil saturation is evident (some mud cracks), however minimum number of consecutive days (9) probably not achieved at this location.

SOILS

Map Unit Name Pg- Pahrnagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
11	A	10YR 5/3			SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: No field indicators of hydric soils observed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u>	Date: <u>06/20/2006</u>
Applicant/Owner: <u>Bechtel-SAIC</u>	County: <u>Lincoln</u>
Investigator: <u>PBS&J (RRM & DB)</u>	State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>CCW-4</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus balticus	H	FACW	9		
2	Distichlis spicata	H	FAC+	10		
3	Hordeum jubatum	H	FAC	11		
4	Polypogon monspeliensis	H	FACW	12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/4=100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input checked="" type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Depressional topography, livestock pugging.

SOILS

Map Unit Name Pg- Pahrnagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10	A	7.5YR 4/1			SILTY CLAY

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u>X</u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u>X</u> Yes <u> </u> No
Wetland Hydrology Present? <u>X</u> Yes <u> </u> No	
Hydric Soils Present? <u>X</u> Yes <u> </u> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern Portion of Caliente Segment</u>	Date: <u>06/20/2006</u>
Applicant/Owner: <u>Bechtel-SAIC</u>	County: <u>Lincoln</u>
Investigator: <u>PBS&J (RRM & DB)</u>	State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: _____ Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>CCW-5</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Carex praegracilis	H	FACW	9			
2	Hordeum jubatum	H	FAC	10			
3	Distichlis spicata	H	FAC+	11			
4	Juncus balticus	H	FACW	12			
5	Sarcobatus vermiculatus	Shrubs & seedlings	FACU	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/5 = 80%

Remarks:
Greasewood seedlings scattered throughout. Palustrine emergent.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:
The hydrology of this site is somewhat questionable, however, the site does have depressional topography, mud cracks, and a thin salt crust in areas. For these reasons it was assumed to be inundated/saturated earlier in the growing season.

SOILS

Map Unit Name	Pg-Pahranagat silty clay loam, drained	Drainage Class:	Poor to somewhat poor
(Series and Phase):		Field Observations	
Taxonomy (Subgroup):	Fluvaquentic Endoaqualls	Confirm Mapped Type?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
2	A	10YR 4/3			SILTY CLAY
11	B	10YR 4/2			SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
 Aquic moisture regime assumed due to evidence of hydrology and the depressional topography.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Hydric Soils Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	

Remarks:
 Atypical situation where vegetation and hydrology parameters are found to be met, but field indicators of hydric soils are lacking. This area is irrigated from the surface, which may limit the formation of redoximorphic features in this heavy soil type. For example the clayey soil may seal shut and inhibit the downward movement of water. In addition, the irrigation is likely turned on for a limited amount of time (e.g., a month) each year, which would be long enough for hydrophytic vegetation to establish and to meet the hydrology requirements, but may not be long enough for redox features to develop. In addition, the pH of the soil may be high enough to inhibit the formation of redox features.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & SPG)</u>	Date: <u>06/21/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-6</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus balticus	H	FACW	9			
2	Carex praegracilis	H	FACW	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/2 = 100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Depressional topography with algal mats provides evidence of soil saturation, and inundation in deeper part of swale earlier in the growing season.

SOILS

Map Unit Name	Pg-Pahranagat silty clay loam, drained	Drainage Class:	Poor to somewhat poor
(Series and Phase):		Field Observations	
Taxonomy (Subgroup):	Fluvaquentic Endoaqualis	Confirm Mapped Type?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
6	A	10YR 4/2			SILTY CLAY
10.5	B	10YR 4/3			SILTY CLAY

Hydric Soil Indicators:	
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input checked="" type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)

Remarks:
Aquic moisture regime assumed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Hydric Soils Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	

Remarks:

Atypical situation where vegetation and hydrology parameters are found to be met, but field indicators of hydric soils are lacking. This area is irrigated from the surface, which may limit the formation of redoximorphic features in this heavy soil type. For example the clayey soil may seal shut and inhibit the downward movement of water. In addition, the irrigation is likely turned on for a limited amount of time (e.g., a month) each year, which would be long enough for hydrophytic vegetation to establish and to meet the hydrology requirements, but may not be long enough for redox features to develop.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & SPG)</u>	Date: <u>06/21/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-7</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Juncus balticus</u>	<u>H</u>	<u>FACW</u>	9			
2	<u>Carex praegracilis</u>	<u>H</u>	<u>FACW</u>	10			
3	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	11			
4	<u>Iva axillaris</u>	<u>H</u>	<u>FACW</u>	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 100%

Remarks: _____

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Site is located approximately 12 inches higher than CCW-6 and does not possess topography conducive to ponding water for long or very long periods of time. No strong evidence of wetland hydrology here.

SOILS

Map Unit Name Pg-Pahranagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
3	A	10YR 4/2			SILTY CLAY
10	B	10YR 5/3			SILTY CLAY

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

No evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> </u> Yes <u> X </u> No
Wetland Hydrology Present? <u> </u> Yes <u> X </u> No	
Hydric Soils Present? <u> </u> Yes <u> X </u> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & SPG)</u>	Date: <u>06/21/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-8</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Scirpus acutus</u>	<u>H</u>	<u>OBL</u>	9			
2	<u>Scirpus maritimus</u>	<u>H</u>	<u>OBL(NI)</u>	10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/2 = 100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>~6</u> (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Depressional topography, algal mats present. Appears to be sub-irrigated by Meadow Valley Wash located on the other side of the highway.

SOILS

Map Unit Name Pg-Pahranagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input checked="" type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:
 No soil pit needed, site is inundated/saturated, aquic moisture regime is assumed. Dominant vegetation obligate, boundaries are distinct.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> X </u> Yes <u> </u> No
Wetland Hydrology Present? <u> X </u> Yes <u> </u> No	
Hydric Soils Present? <u> X </u> Yes <u> </u> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & SPG)</u>	Date: <u>06/21/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-9</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	9			
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/1 = 100%

Remarks: Scattered greasewood also occurs, but is not dominant.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>6</u> (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Depressional topography. Site drains to the bulrush marsh to the south (sample point CCW-8). Evidence of inundation, saturation. Salt crust is thick on soil surface.

SOILS

Map Unit Name (Series and Phase):	Pg-Pahranagat silty clay loam, drained	Drainage Class:	Poor to somewhat poor
Taxonomy (Subgroup):	Fluvaquentic Endoaqualls	Field Observations	Confirm Mapped Type? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
12	A	7.5YR 4/4			SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
Soil is moist. Aquic moisture regime assumed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Remarks:
Atypical situation where vegetation and hydrology parameters are found to be met, but field indicators of hydric soils are lacking. This area is irrigated from the surface, which may limit the formation of redoximorphic features in this heavy soil type. For example the clayey soil may seal shut and inhibit the downward movement of water. In addition, the irrigation is likely turned on for a limited amount of time (e.g., a month) each year, which would be long enough for hydrophytic vegetation to establish and to meet the hydrology requirements, but may not be long enough for redox features to develop. In addition, the pH of the soil (note dominance by saltgrass here) may be high enough to inhibit the formation of redox features.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & SPG)</u>	Date: <u>06/21/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-10</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Juncus balticus</u>	<u>H</u>	<u>FACW</u>	9		
2	<u>Carex praeegracilis</u>	<u>H</u>	<u>FACW</u>	10		
3	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	11		
4				12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 100%

Remarks:
 Scattered Nebraska sedge, redtop, and poverty sumpweed also occur, but are not dominant.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Evidence of saturation and inundation in lower areas.

SOILS

Map Unit Name Pg-Pahranagat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Hqrizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
7	A	10YR 4/3			SILTY CLAY
12	B	10YR 4/2	5YR 4/6	Common, large, distinct	SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> X </u> Yes <u> </u> No
Wetland Hydrology Present? <u> X </u> Yes <u> </u> No	
Hydric Soils Present? <u> X </u> Yes <u> </u> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u>	Date: <u>06/21/2006</u>
Applicant/Owner: <u>Bechtel-SAIC</u>	County: <u>Lincoln</u>
Investigator: <u>PBS&J (RRM & SPG)</u>	State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>CCW-11</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Eleocharis palustris	H	OBL	9		
2	Juncus balticus	H	FACW	10		
3	Distichlis spicata	H	FAC+	11		
4				12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 100%

Remarks:
Patches of bulrush and cattail in lower elevations.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Evidence that inundation (algal mats) and saturation occurred earlier in the growing season.

SOILS

Map Unit Name Pg-Pahrana gat silty clay loam, drained Drainage Class: Poor to somewhat poor
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic Endoaqualls Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
12	A	10YR 4/3			SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
 Aquic moisture regime assumed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> X </u> Yes <u> </u> No
Wetland Hydrology Present? <u> X </u> Yes <u> </u> No	
Hydric Soils Present? <u> </u> Yes <u> </u> No	

Remarks:
 Atypical situation where vegetation and hydrology parameters are found to be met, but field indicators of hydric soils are lacking. This area is irrigated from the surface, which may limit the formation of redoximorphic features in this heavy soil type. For example the clayey soil may seal shut and inhibit the downward movement of water. In addition, the irrigation is likely turned on for a limited amount of time (e.g., a month) each year, which would be long enough for hydrophytic vegetation to establish and to meet the hydrology requirements, but may not be long enough for redox features to develop.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/22/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <u>X</u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u>X</u> No Is the area a potential Problem Area?: <u> </u> Yes <u>X</u> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-12</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Scirpus acutus</u>	<u>H</u>	<u>OBL</u>	9			
2	<u>Juncus balticus</u>	<u>H</u>	<u>FACW</u>	10			
3	<u>Agrostis stolonifera</u>	<u>H</u>	<u>FACW</u>	11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/3=100%

Remarks:

HYDROLOGY

<u> </u> Recorded Data (Describe in Remarks): <u> </u> Stream, Lake, or Tide Gauge <u> </u> Aerial Photographs <u> </u> Other <u>X</u> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <u>X</u> Inundated <u>X</u> Saturated in Upper 12 Inches <u> </u> Water Marks <u> </u> Drift Lines <u> </u> Sediment Deposits <u>X</u> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <u>X</u> Oxidized Root Channels in Upper 12 Inches <u> </u> Water-Stained Leaves <u> </u> Local Soil Survey Data <u>X</u> FAC-Neutral Test <u> </u> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks: Hummocky, mud cracks, depressional topography.

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained.
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? Yes No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10	A	10YR 4/2	5YR 5/4	Common, distinct	SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input checked="" type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/22/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-13</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Carex praegracilis	H	FACW	9			
2	Juncus balticus	H	FACW	10			
3	Hordeum jubatum	H	FAC	11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/3 = 100%

Remarks:
Patches of cattails and bulrush occur in nearby low areas.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:
Site appears to be sub-irrigated. Depressional topography. Evidence of ponding earlier in the growing season.

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained.
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? _____ Yes X No _____

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10	A	10YR 5/2	5YR 4/4	Few, distinct	SILTY CLAY
			10YR 5/1	Few, faint	

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input checked="" type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

Soil is moist throughout profile. As indicated above, the soil contains two different types of mottles.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/22/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-14</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus balticus	H	FACW	9			
2	Agrostis stolonifera	H	FACW	10			
3	Carex praegracilis	H	FACW	11			
4	Typha latifolia	H	OBL	12			
5	Scirpus acutus	H	OBL	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 5/5 = 100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: <u>0</u> (in.)	

Remarks:
Soil is saturated to the surface.

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained.
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10	A	10YR 4/1			SILTY CLAY

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

Saturated to surface.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No			
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No			

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/23/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-15</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Carex praegracilis	H	FACW	9			
2	Alopecurus pratensis	H	NI	10			
3	Juncus balticus	H	FACW	11			
4	Puccinellia lemmonii	H	FAC	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/3= 100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:
No evidence of hydrology.

SOILS

Map Unit Name Pe- Pahrnagat silty clay loam Drainage Class: Poorly drained to somewhat poorly drained

(Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Fluvaquentic endoaqualls Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR 3/2			CLAY
5-8	B	10YR 4/3			SILTY CLAY
8-11	C	10YR 5/3			FINE SAND

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input checked="" type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:
 No evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> </u> Yes <u> X </u> No
Wetland Hydrology Present? <u> </u> Yes <u> X </u> No	
Hydric Soils Present? <u> </u> Yes <u> X </u> No	

Remarks:
 No evidence of wetland hydrology or hydric soils.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u>	Date: <u>06/23/2006</u>
Applicant/Owner: <u>Bechtel-SAIC</u>	County: <u>Lincoln</u>
Investigator: <u>PBS&J (RRM & DB)</u>	State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-16</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Hordeum jubatum</u>	<u>H</u>	<u>FAC</u>	9		
2	<u>Carex praeegracilis</u>	<u>H</u>	<u>FACW</u>	10		
3	<u>Potentilla anserina</u>	<u>H</u>	<u>OBL</u>	11		
4	<u>Juncus balticus</u>	<u>H</u>	<u>FACW</u>	12		
5	<u>Anemopsis californica</u>	<u>H</u>	<u>OBL</u>	13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 5/5 = 100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:
Evidence of soil saturation earlier in the growing season.

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4.5	A	10YR 2/2			SILTY CLAY
4.5-10	B	10YR 4/1	5YR 4/6	ABUNDANT, PROMINENT	SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
Soil is very moist.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No			
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No			

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/23/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-17</u>

VEGETATION

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	Juncus balticus	H	FACW	9			
2	Carex nebrascensis	H	OBL	10			
3	Agrostis stolonifera	H	FACW	11			
4	Potentilla anserina	H	OBL	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/4 = 100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0-1.5</u> (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: <u>0</u> (in.)	

Remarks:

Sample point is located near a small spring and the soil is saturated/inundated in that area, approximately 15' from sample point.

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3.5	A	10YR 2/2			SILTY LOAM
3.5-10	B	10YR 4/1	5YR 4/6	ABUNDANT, PROMINENT	SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input checked="" type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:
 Soil is moist throughout profile.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> X </u> Yes <u> </u> No
Wetland Hydrology Present? <u> X </u> Yes <u> </u> No	
Hydric Soils Present? <u> X </u> Yes <u> </u> No	

Remarks:
 Small polygon surrounding a small spring.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/23/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-18</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus balticus	H	FACW	9		
2	Agrostis stolonifera	H	FACW	10		
3	Carex praeegracilis	H	FACW	11		
4	Hordeum jubatum	H	FAC	12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/4= 100%

Remarks:

Wetland becomes wetter as move to the south, dominated by bulrush and Olney's threesquare.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0-2</u> (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:

Pockets of inundation, 0-2 inches deep in the vicinity (to the southwest). Appears to be subirrigated.

SOILS

Map Unit Name Gg-Geer silt loam-strongly saline Drainage Class: Moderately well drained
 (Series and Phase): _____ Field Observations _____
 Taxonomy (Subgroup): Typic torriorthents Confirm Mapped Type? Yes X No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR 4/1	5YR 4/6	COMMON, PROMINENT	SILTY CLAY
4-10	B	10YR 4/1	5YR 4/6	ABUNDANT, PROMINENT	SILTY CLAY

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input checked="" type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No			
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No			

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern</u> <u>Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/24/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-19</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus balticus	H	FACW	9			
2	Carex praegracilis	H	FACW	10			
3	Hordeum jubatum	H	FAC	11			
4	Distichlis spicata	H	FAC+	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 5/5 = 100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: No strong evidence of wetland hydrology.	

SOILS

Map Unit Name	Pa -Pahranagat silt loam, drained, strongly saline	Drainage Class:	Poorly to somewhat poorly drained		
(Series and Phase):		Field Observations			
Taxonomy (Subgroup):	Fluvaquentic Endoaqualls	Confirm Mapped Type?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6.5	A	10YR 4/3	10YR 4/6	FEW, FAINT	SILTY CLAY
6.5-10	B	10YR 4/3			LOAMY FINE SAND
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)			
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Hydric Soils Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Yucca Mountain Rail Corridor EIS Southern Portion of Caliente Segment</u> Applicant/Owner: <u>Bechtel-SAIC</u> Investigator: <u>PBS&J (RRM & DB)</u>	Date: <u>06/24/2006</u> County: <u>Lincoln</u> State: <u>Nevada</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>CCW-20</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<u>Distichlis spicata</u>	<u>H</u>	<u>FAC+</u>	9			
2	<u>Juncus balticus</u>	<u>H</u>	<u>FACW</u>	10			
3	<u>Puccinellia lemmonii</u>	<u>H</u>	<u>FAC</u>	11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/3= 100%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	

Remarks:

Evidence that soil saturation occurs earlier in the growing season. Salt crust.

SOILS

Map Unit Name		Gg-Geer silt loam-strongly saline	Drainage Class:		Moderately well drained
(Series and Phase):			Field Observations		
Taxonomy (Subgroup):			Confirm Mapped Type? Yes <input checked="" type="checkbox"/> No		
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2	A	10YR 2/2			SILTY CLAY LOAM
2-11	B	7.5YR 4/3	5YR 4/6	ABUNDANT, DISTINCT	LOAM
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input checked="" type="checkbox"/> Aquic Moisture Regime		<input checked="" type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			
Remarks:					
Moist throughout profile. Aquic moisture regime assumed.					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Hydric Soils Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Remarks:					
Problem area where vegetation and hydrology parameters are found to be met, but field indicators of hydric soils are lacking. The pH of the soil (note dominance by saltgrass here) may be high enough to inhibit the formation of redox features.					

Approved by HQUSACE 2/92

Appendix D
White River Valley Map and Photographs

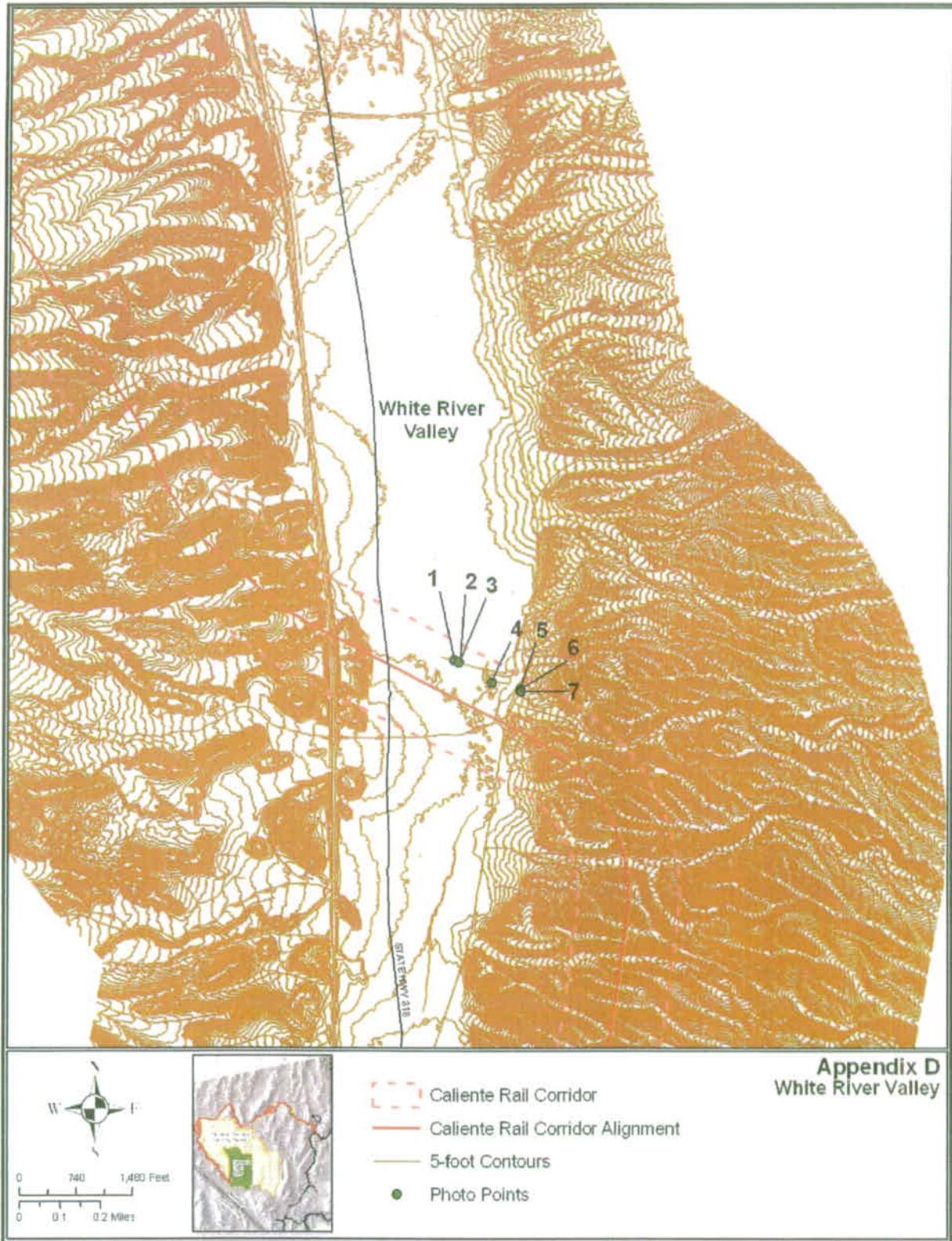




Photo 1. From Photo Point #1 looking east along man-made berm.



Photo 2. From Photo Point #2 looking north.



Photo 3. From Photo Point #3 looking south.



Photo 4. From Photo Point #4 looking west.



Photo 5. From Photo Point #4 looking south.



Photo 6. From Photo Point #5 looking north.

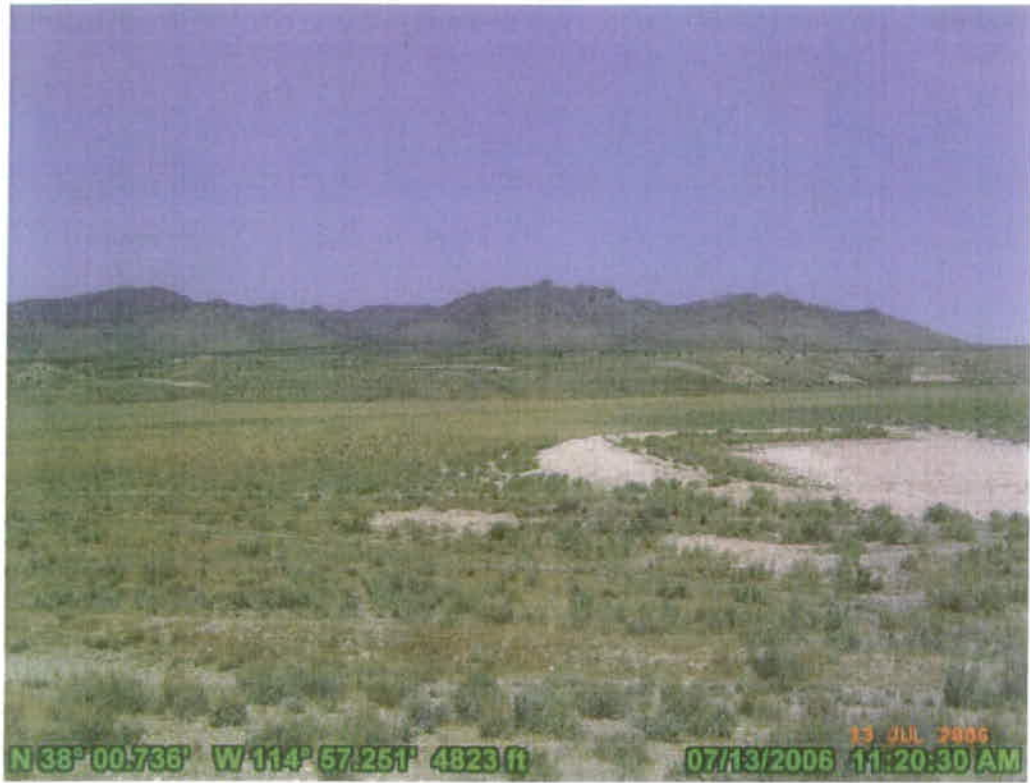


Photo 7. From Photo Point #6 looking west.



Photo 8. From Photo Point #7 looking southwest.

Appendix E
Data Collection Fields

Waters of the U.S. Determination

Main Page tab:

- Waters of the U.S.
- Project / Site
- County
- State
- Collector
- Company
- Unit Name

Is the Site Significantly Disturbed (Atypical Situation)

Dominant Plant Species

- Common Name
- Scientific Name
- Location
- Density (% Cover)
- Type
- Stratum
- Indicator
- Photo ID

Geomorphology tab:

Flow Type

- Channelized
- Sheet Flow
- Debris Flow

Stream Type

- Discontinuous
- Ephemeral
- Alluvial Fan
- Anastomosing
- Single Thread Channel
- Multi Threaded Channel

OHWI Indicators

- Bed / Bank
- Bed Width (in.)
- OHWI Depth (in.)

Wetlands Determination

Vegetation tab:

- Project / Site
- Do normal Circumstances Exist on the Site?
- Is the Site Significantly Disturbed (Atypical)?
- Is the Area a Potential Problem Area?
- Collector
- Company
- Unit Name
- Dominant Plant Species
- Scientific Name / Common Name
- Stratum
- Indicator
- Percent of Dominant Species (OBL, FACW, or FAC)

Hydrology tab:

- Recorded Data Available (Describe in Remarks)
- Stream, Lake, or Tide Gauge
- Aerial Photographs
- Other
- Depth of Surface Water
- Depth to Free Water in Pit
- Depth to Saturated Soil

Primary Indicators:

- Inundated
- Saturated in Upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- Oxidized Root Channels in Upper 12'
- Water Stained Leaves
- Local Soil Survey Data
- FAC – Neutral Test
- Other (Explain in Remarks)

Soils tab:

- Map Unit Name (Series and Phrase)
- Taxonomy (Subgroup)
- Drainage Class
- Field Observations / Confirm Mapped Type

Profile Description

- Depth (in.)
- Horizon
- Matrix Colors (Munsell Moist)
- Mottle Abundance / Contrast
- Texture, Concretions, Structure, etc.

Hydric Soil Indicators

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- Aquic Moisture Regime
- High Organic Content in Surface Layer
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils
- Listed on National Hydric Soils
- Other (Explain in Remarks)

WETLANDS DETERMINATION

- Hydrophytic Vegetation Present
- Wetland Hydrology Present
- Hydric Soils Present
- Is this Sampling Point within a Wetland

Photos tab:

- Photo ID

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
SPECIAL INSTRUCTION SHEET

1. QA: N/A
Page 1 of 1

This is a placeholder page for records that cannot be scanned.

2. Record Date 11/13/06	3. Accession Number ATTN to: ENG.20070614.0004
4. Author Name(s) N/A	5. Authorization Organization Parsons Brinckerhoff
6. Title/Description Waters of the U.S. Jurisdictional Determination Report for Yucca Mountain Project - Caliente Rail Corridor, GIS Data, Map Documents and Pictures	
7. Document Number(s) V0-A000-NHC4-00207-00002-001	8. Version Designator 009
9. Document Type Media	10. Medium 2 DVD's
11. Access Control Code N/A	
12. Traceability Designator V0-A000-NHC4-00207-00002-001-009	
13. Comments DVD's: 1 Original & 1 copy Validation of complete file transferred. All files copied. Software used: ArcGIS 9.2, Corel PHOTO-PAINT 8.0 Image, PDF, Word	

14. RPC Electronic Media Verification

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JUN 26 2007

MD5 Validation

Vera L. Poole

BSC-BS

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02/13/2006	04:34 PM	145,046	PBSJ3_RIMG0247_tag.jpg
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02/07/2006	04:48	PM	123,531	PBSJ4_RIMG0022_tag.jpg
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dir.txt
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Page 20

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dir.txt
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Page 24

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