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June 5, 2013

California Energy Commission
Dockets Unit
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: **PSEGS SUMMARY OF SURVEY FOR JURISDICTIONAL STATE WATERS**
PALEN SOLAR ELECTRIC GENERATING SYSTEM
DOCKET NO. (09-AFC-7C)

Enclosed for filing with the California Energy Commission is the electronic version of **PSEGS SUMMARY OF SURVEY FOR JURISDICTIONAL STATE WATERS**, for the Palen Solar Electric Generating System (09-AFC-7C).

Sincerely,

Marie Fleming

Alice E. Karl, Ph.D.
P.O. Box 74006
Davis, CA 95617

5 June 2013

Ms. Ann Crisp
California Energy Commission
1516 9th St.
Sacramento, CA 95814-5512

Re: Palen Solar Electric Generating System (PSEGS), Summary of Survey for Jurisdictional State Waters

Dear Ms. Crisp,

This letter transmits a summary of the methods and results of the supplemental survey for State Waters for the PSEGS Modified Linear Facilities. A jurisdictional delineation was prepared for the entire project site in 2009 (AECOM 2009). The current survey only addresses the new and altered linear features, specifically the gen-tie extension and the additional natural gas pipeline, to supplement the existing delineation.

Methods for Delineating State Waters on the PSEGS Modified Linear Facilities

Prior to delineating the potential jurisdictional State Waters on the new and altered linear features, the 2009 State Waters Jurisdictional Delineation for PSPP (AECOM 2009) and newer guidance from the CEC (Vyverberg 2010) were reviewed to ensure that the 2013 PSEGS surveys incorporated the more recent recognition of hydrological conditions that are specific to the arid southwest and was also consistent with the previous, approved delineation for PSPP. The surveyor for the 2013 PSEGS State Waters assessment, Dr. Alice Karl, also brought to the assessment over three decades of experience examining and analyzing factors associated with geomorphology and hydrology in the southwestern deserts as they relate to wildlife. Given that wildlife values associated with streams are the basis of the 1602 permit, this experience is assumed to be beneficial for assessing State Waters. Table 1 provides a matrix that defines the channel types present on the PSEGS new and altered linear features, in the context of the earlier delineation and the more current CEC guidance. Those hydrological features, as they occur on the PSEGS Modified Linear Facilities, are more thoroughly described below:

> **Primary Channel** – Distinct, arboreal channel in which one of the dominant species is a riparian tree species (typically ironwood [*Olneya tesota*] on the PSEGS Modified Linear Facilities, but occasionally palo verde [*Parkinsonia florida*]); other dominant species are primarily upland species (creosote bush [*Larrea tridentata*], white bursage [*Ambrosia dumosa*]) (Photograph 2). Other wash-dependent species (e.g., cheesebush [*Ambrosia salsola*], desert lavender [*Hyptis emoryi*], chuckwalla bush [*Bebbia juncea*], belloperone [*Justicia californica*], catclaw acacia [*Senegalia greggii*]) may be present but are generally only sparsely present except in deep, well-developed washes (Photograph 1). Primary channels are usually, but not necessarily, broad and/or incised.

Table 1. A comparison of the PSEGS 2013 channel designation with those of Vyverberg (2010) and the PSPP jurisdictional delineation (AECOM 2009).

Jurisdictional State Waters Category	PSEGS 2013 Designation	Analogous Vyverberg Designation	PSPP 2009 Designation	
Desert Dry Wash Woodland	*Primary channel*	*Single-thread channel*	*Vegetated ephemeral wash* (i.e., with wash-dependent vegetation)	Primary wash
	Secondary channel	*Single-thread or discontinuous channel*		*Secondary wash*
	Riparian interfluves are a feature of larger and deeper channels that do not occur in this part of PSEGS; there, they are considered an integral part individual channel morphology rather than a discrete channel feature	*Riparian interfluves* are part of a larger, compound channel, not occurring in this portion of PSEGS		*Riparian interfluve*
	Sheet flood - a discrete hydrological feature replete with highly braided primary and secondary channels, discontinuous channels, and rilled to hydrologically altered surfaces between those channels	*Sheet flood*	As a unit, *sheet flood* was not included as a State Water; individual channels in the sheet flood areas were assessed for inclusion as a State Water	
Unvegetated Ephemeral Dry Wash	U_H - Single-thread or discontinuous channel with upland vegetation, but no or only rare wash-dependent vegetation	*Discontinuous channel*	*Unvegetated ephemeral wash* (no or only occasional wash-dependent vegetation)	
	U_L -Single-thread or discontinuous channel, with a low density of upland vegetation and no or very rare wash-dependent vegetation	*Discontinuous channel*	Not included as a State Water	
	Swale	*Discontinuous channel*	Not included as a State Water	

Secondary Channel –At PSEGS, these channels are typically, narrow, shallow, single-thread and often discontinuous channels with scattered to occasional riparian trees; there

are few individuals of other wash-dependent species. Upland species dominate the shrub layer. (See Photographs 3 and 4).

Sheet or Sheet Flood – These are hydrologically dynamic zones where water has obviously flowed overland, both in and out of channels, during intensive storm events. These zones comprise a highly braided system of single-thread and discontinuous channels - including both Desert Dry Wash Woodland (DDWW) (Photographs 5 and 6) and "unvegetated" ephemeral washes (see below) - and interfluvial spaces where gravels have been rilled by the action of flowing water (Photograph 7). Sheet zones are considered a unit, rather than a series of discrete individual channels, because internal channel morphologies are subject to rapid change and because the entire zone is important for seed and sediment transport.

Desert Dry Wash Woodland – DDWW includes both individual arboreal washes (*sensu* Holland [1986]; e.g., Photograph 1) and actual woodland. The latter is a subset of sheet flood described above, in which riparian trees (typically ironwood at PSEGS) are scattered throughout the sheet zone (Photographs 5 and 6). While common along the edges of primary and secondary washes, the trees are not always confined to distinct channels in sheet flood zones. Cheesebush is the most common riparian shrub species in the sheet flood DDWW at the PSEGS Modified Linear Facilities.

"Unvegetated" Ephemeral Wash (U_H) – These are primarily discontinuous channels, but may be single thread for part of their reaches. These washes are not actually unvegetated and, in fact, upland vegetation reaches a higher density there than outside of the channels, as a result of the higher water availability (Photograph 8). This higher density of shrub-layer species provides greater cover and sequestering/nesting opportunities for wildlife, as well as increased foraging opportunities due to the trapping of sediment and seeds, resulting in a higher density and diversity of understory plants. Wash-dependent vegetation, typically small ironwood trees or shrubs, may be occasionally present. These channels may or may not have distinct beds and banks.

"Unvegetated" Ephemeral Wash, Low Shrub Density (U_L) – These are the same as U_H, except that shrub-layer density is low; individuals of riparian species are rare (Photograph 9).

Swale – Swales are typically discontinuous, very shallow depressions less than approximately 5 cm deep that are either completely isolated or ultimately connect to a channel. On the PSEGS Modified Linear Facilities, they often arise on desert pavement patches. Vegetation is variable, ranging from herbaceous species only, to scattered, primarily upland, shrubs (Photograph 8).

To quantify Waters of the State on the Modified Linear Facilities, both edges of each linear right-of-way (ROW; Figure 1) were walked for their entire lengths, to precisely map and describe all channels. Waypoints were taken for each channel that crossed the ROW boundaries, typically

at both sides of the channel where it crossed the ROW boundary. Waypoints were taken at the outer, upper edge of each channel to be both conservation-oriented and account for the three-meter accuracy of the Global Positioning System (GPS) unit (Garmin 76CSx). For very narrow channels (less than approximately a meter wide, one waypoint was sometimes taken for the channel, rather than two. The following variables were measured and described for each channel crossed:

- Channel type (see Table 1)
- Channel width, depth and substrate
- Shrub, perennial grass, and tree species present, and relative abundance of each (i.e., dominant, common or occasional)
- Presence of wash-dependent vegetation
- Height of tree species, where present

All channels were mapped to show channel direction and continuity, where present, from ROW edge to edge.

To calculate acreages of State Waters, the Universal Transverse Mercator (UTM) locations for each waypoint and channel type were mapped using Global Information System (GIS). The channels were then fully delineated internally in the narrow ROWs using the field maps and data and aerial photography. In all cases, the edges of channels or sheet areas were mapped conservatively (i.e., conservation-oriented). For instance, where a sheet area that crossed the ROW was composed primarily of unvegetated washes, it was mapped as DDWW if the area was clearly part of a larger DDWW system upslope or down. The percent cover of riparian vegetation in DDWW was conservatively assumed to be comparable to the higher quality wash in the southwestern portion of the solar facility, mapped in 2009 for the PSPP jurisdictional delineation (AECOM 2009).

Summary of State Waters on the PSEGS Modified Linear Facilities

A total of 13.88 acres of State Waters was delineated on the PSEGS Modified Linear Facilities (Table 2). DDWW and Unvegetated Ephemeral Washes totaled 7.44 and 6.44 acres, respectively, which is 4.44 and 6.44 acres, respectively, more than the original estimate provided in the response to Data Request 5 (Centerline 2013). These increases were due to the more recent recognition of hydrological conditions and stream processes that are specific to the arid southwest and important for wildlife values.

Table 2. Acreage of State Waters on PSEGS Modified Linear Facilities, and Changes from Acreage Reported in DR-5.

Linear Facility	State Waters Type	Acres	Acreage Estimated for DR-5[1]	Additional Acreage for Compensation
Gen-Tie	Desert Dry Wash Woodland	6.19	2.2	3.99
	Unvegetated Ephemeral Wash	5.97	0	5.97
	Non-Waters (Sonoran Creosote Bush Scrub)	4.82		
	Total Mapped Vegetation Acres	**16.98**		
	Gen-tie corridor within I-10 ROW	0.66		
	Gen-tie corridor within Red Bluff Substation	1.34		
	Total Acres in gen-tie corridor	**18.98[2]**	**18.92**	
Gas Pipeline	Desert Dry Wash Woodland	1.25	0.8	0.45
	Unvegetated Ephemeral Wash	0.47	0	0.47
	Non-Waters (Sonoran Creosote Bush Scrub)	1.5	2.42	
	Total Mapped Vegetation Acres	**3.22**		
	Gas line corridor within I-10 ROW	0.34		
	Total Acres in gas line corridor	**3.56**	**3.6**	
Total in corridor, outside I-10 ROW or Red Bluff Substation	Desert Dry Wash Woodland	7.44	3.0	4.44
	Unvegetated Ephemeral Wash	6.44	0	6.44
	Total State Waters	**13.88**	**3.0**	**10.88**

1. In DR-5, acreage for the gen-tie was not calculated to be more than the permitted gen-tie. That acreage is included here.
2. Includes 0.06 acres mapped inside the permitted gen-tie corridor (See Figure 2.1-1).

Maps of the State Waters are provided in Figure 1. Attachment 1 provides the original data sheets for the State Waters assessment.

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AECOM (EDAW). 2009. Palen Solar Power Project Biological Jurisdictional Delineation Report for Regulated Waters of the United States and State. Riverside County, California. Submitted to Solar Millennium, LLC, Berkeley, CA and Chevron Energy Solutions, San Francisco, CA. 116 pp.

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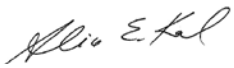
Centerline, LLC. 2013. Palen Solar Holdings, LLC's response to CEC Staff Data Request 1 (1-18). Palen Solar Electric Generating System Docket No. 09-AFC-7C. Filed with the CEC on 25 March 2013.

Holland, R. 1986. Preliminary descriptions of the terrestrial natural communities of California. California Department of Fish and Game, Nongame Heritage Program, Sacramento, CA. 155 pp.

Vyverberg, K. 2010. A review of stream processes and forms in dryland watersheds. California Department of Fish and Game, Sacramento, CA. 36 pp.

Please feel free to contact me if you have further questions regarding these data. I can be reached at (530) 304-4121 or heliophile@mindspring.com

Respectfully,

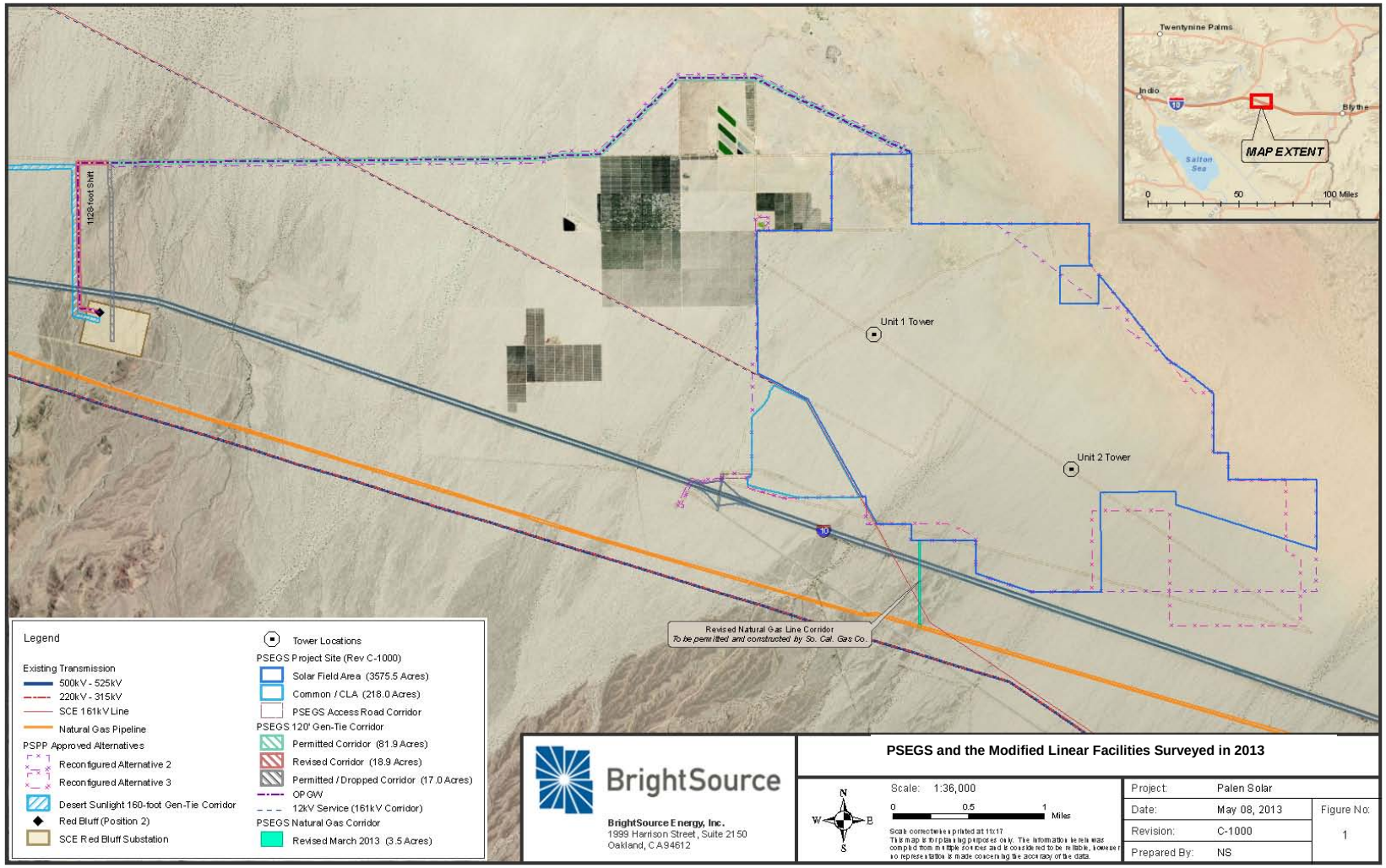


Alice E. Karl, Ph.D.

Attachments:

Figure 1. Location of the PSEGS Modified Linear Facilities Surveyed in 2013.
Figure 2. Maps of Jurisdictional State Waters on the PSEGS Modified Linear Facilities
Photographs. Representative Channel Types
Attachment 1. Field Data Sheets: 2013 State Waters Assessment on the PSEGS Modified Linear Facilities

Figures



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PSEGS and the Modified Linear Facilities Surveyed in 2013

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Date:	May 08, 2013
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Prepared By:	NS

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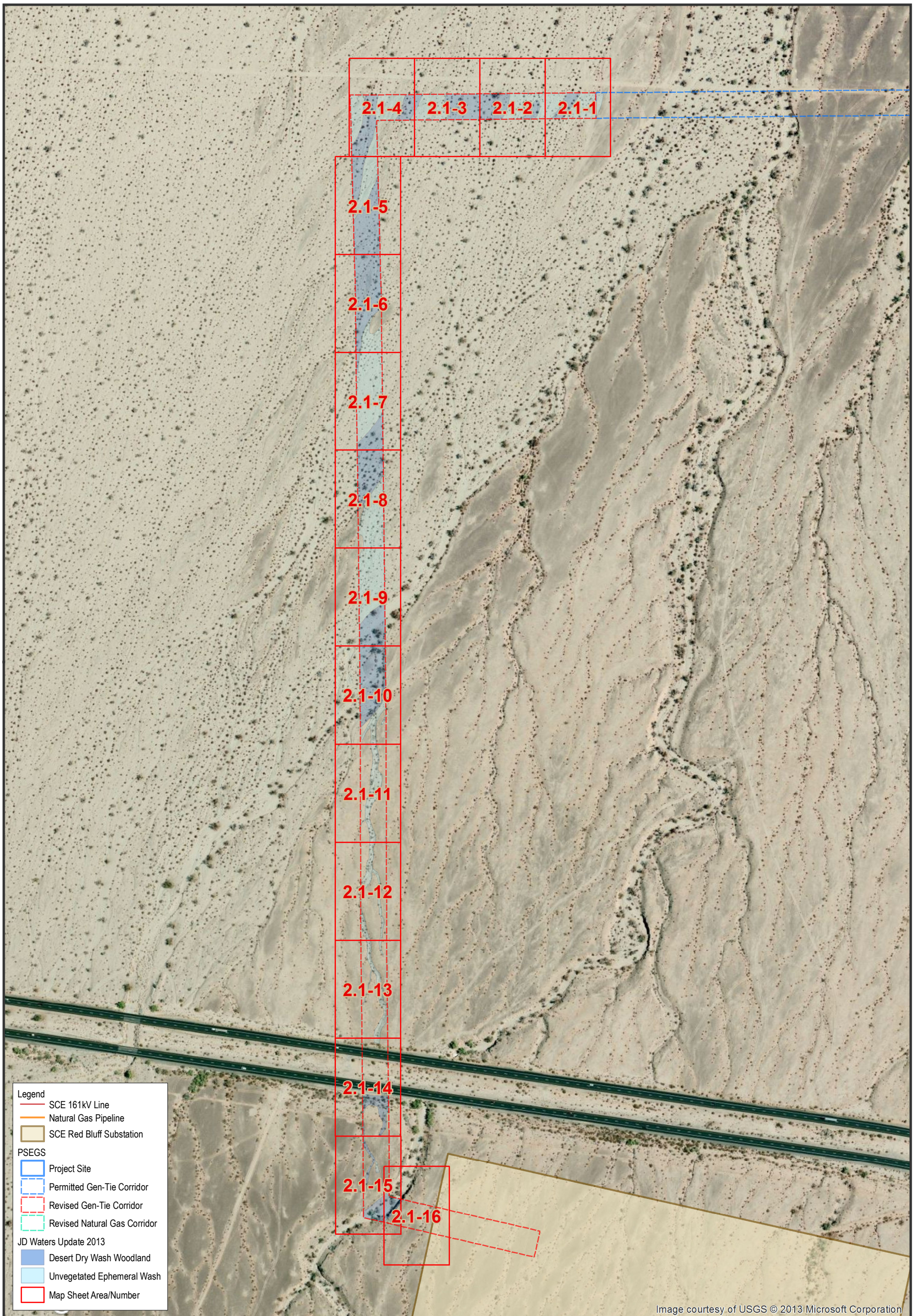

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Project:	Palen Solar
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Prepared By:	NS

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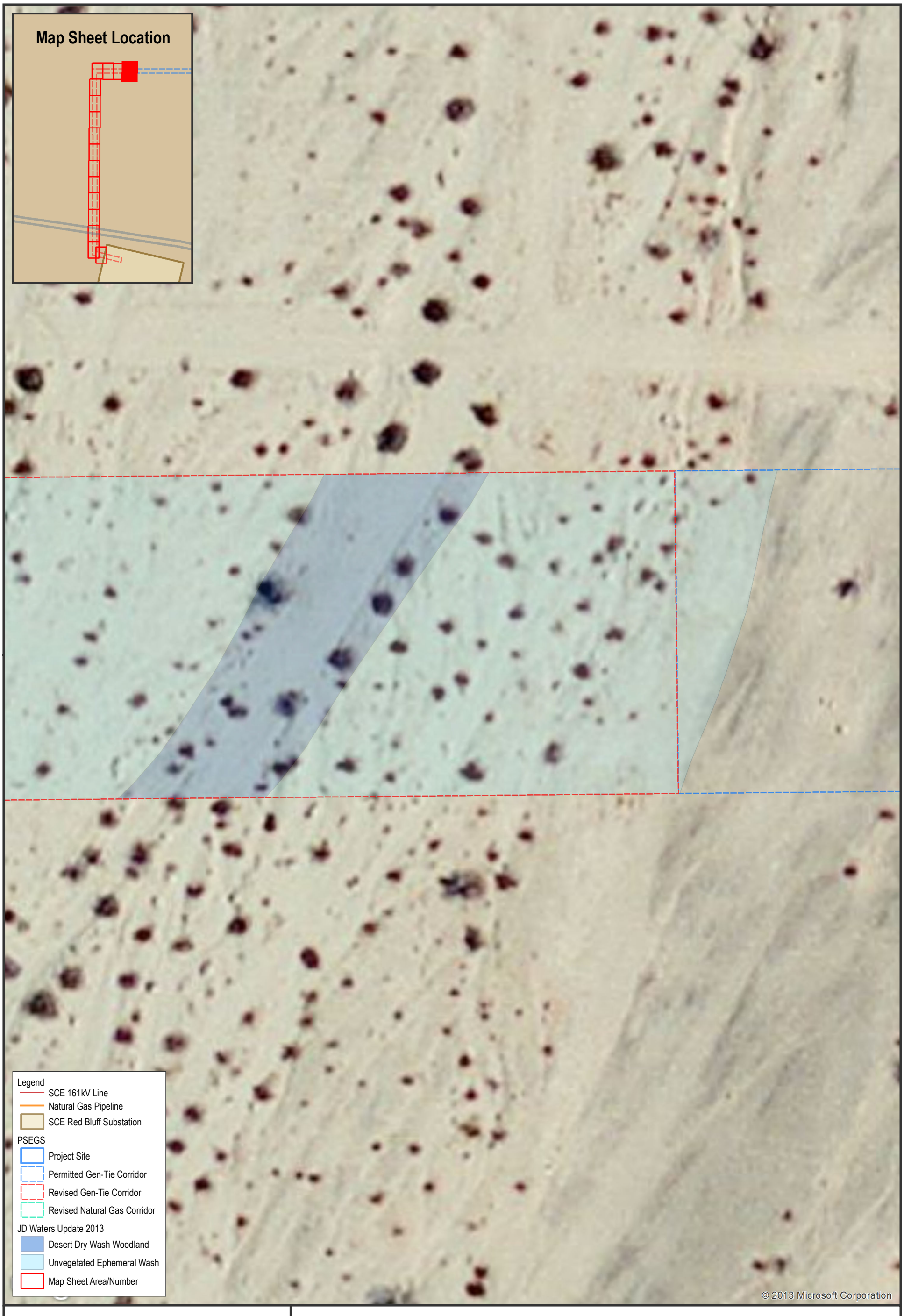

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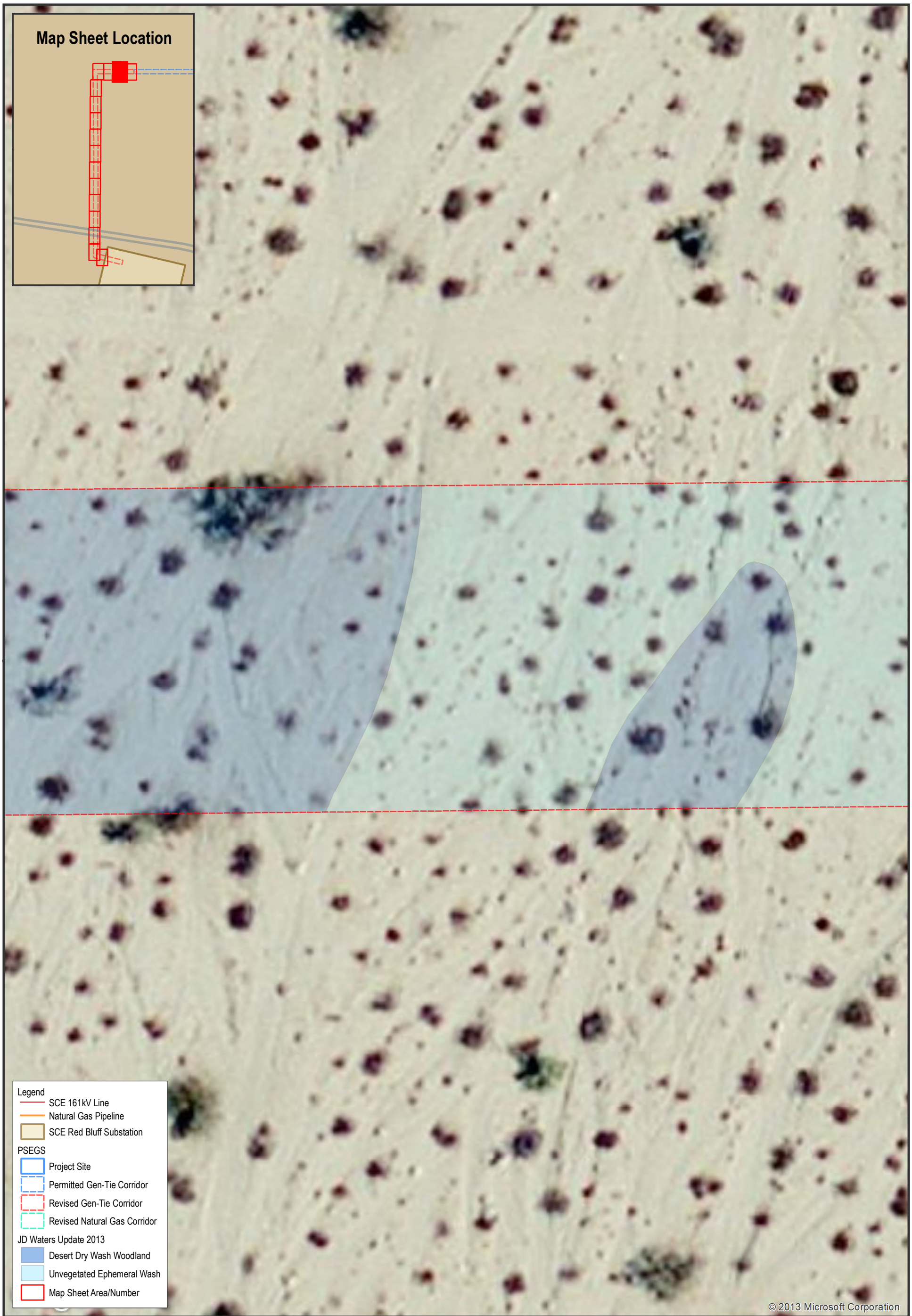

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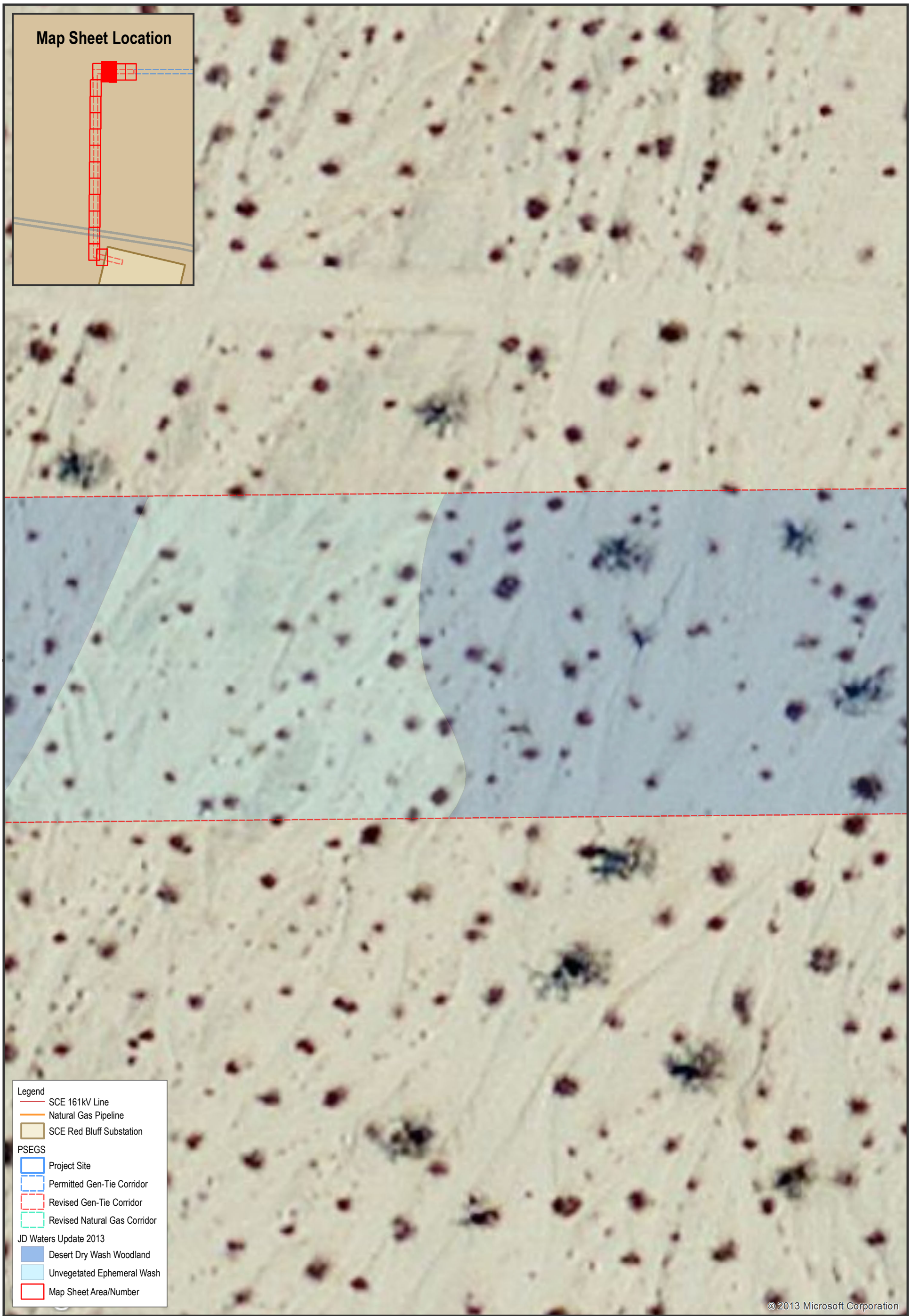

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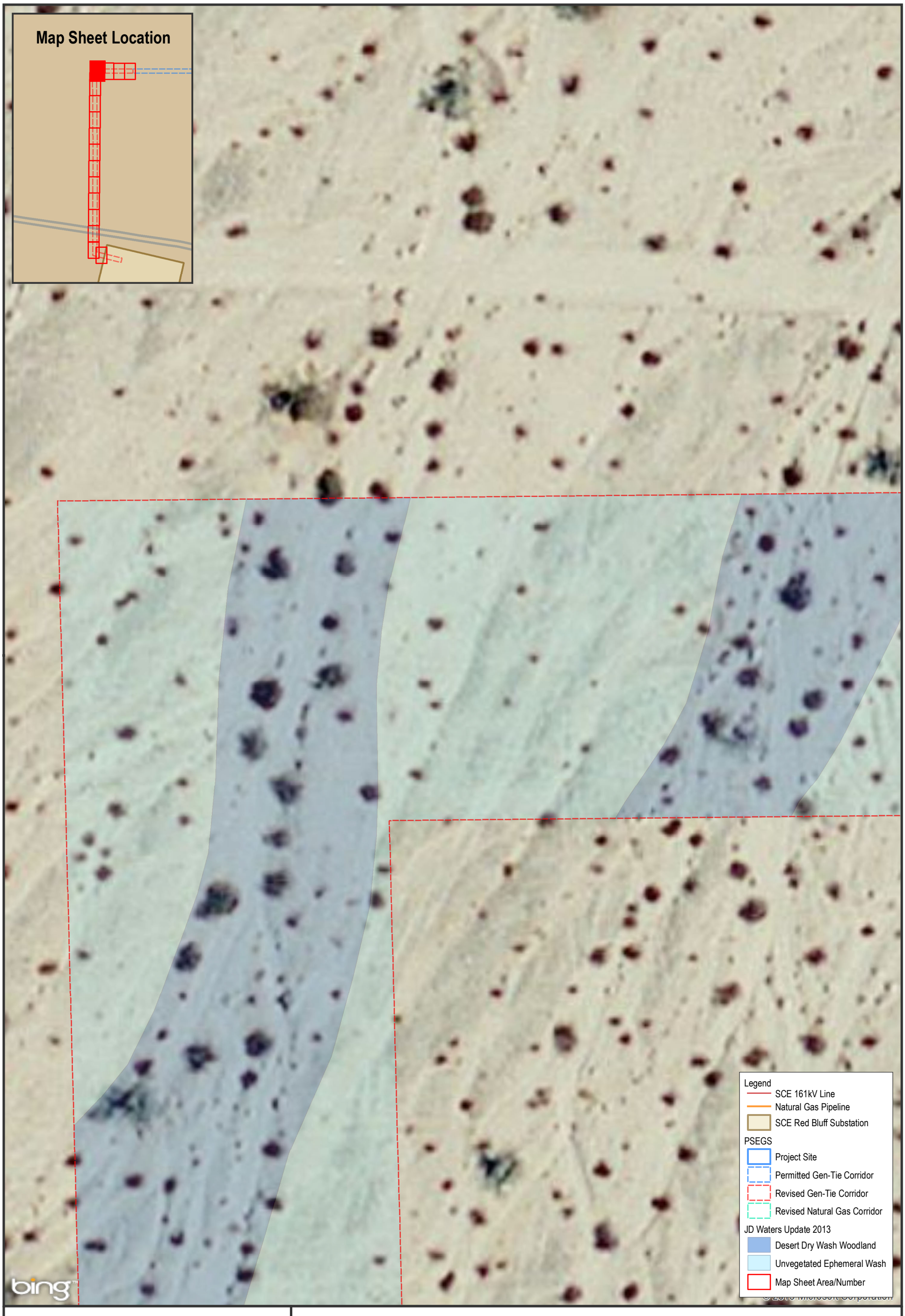

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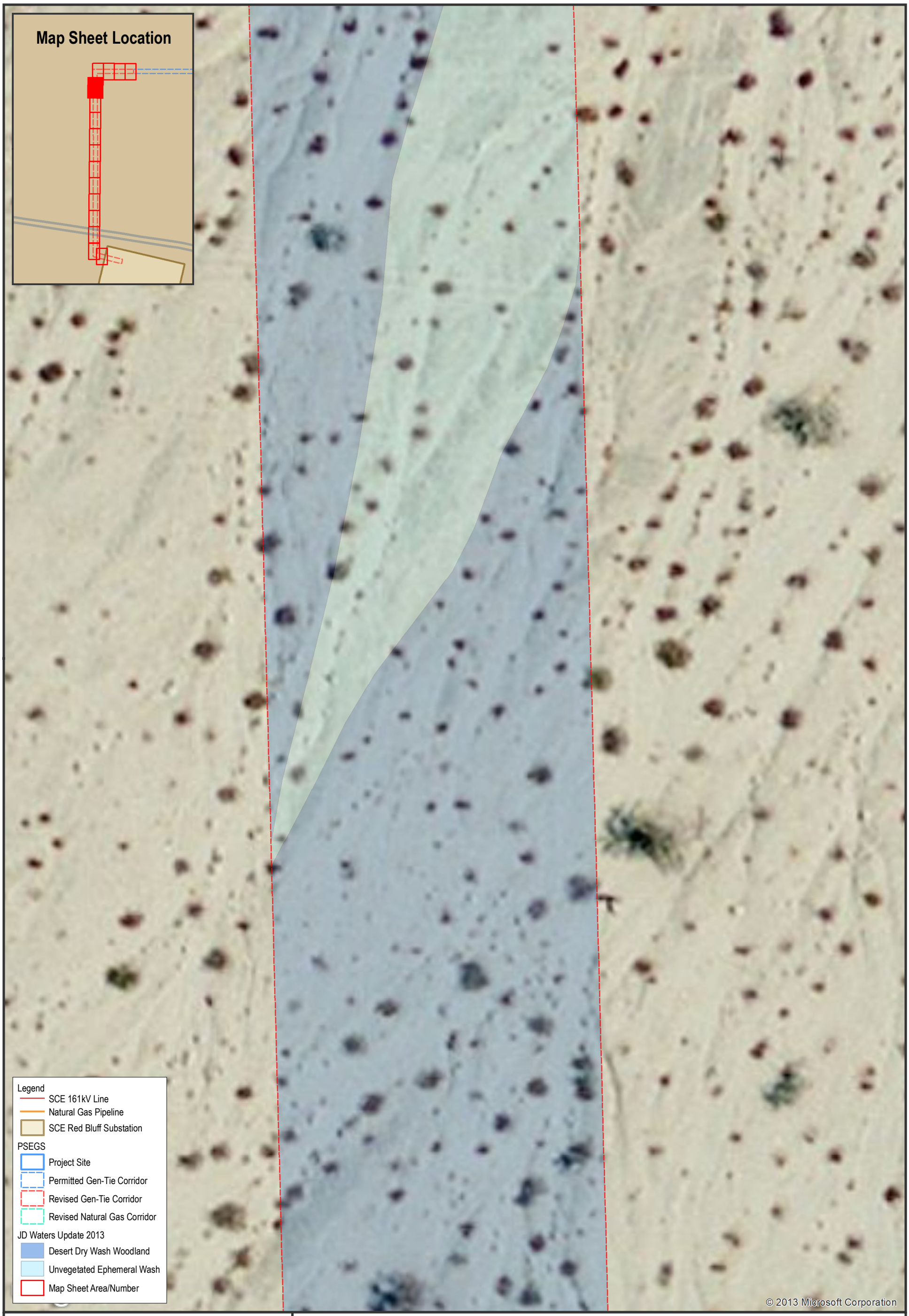

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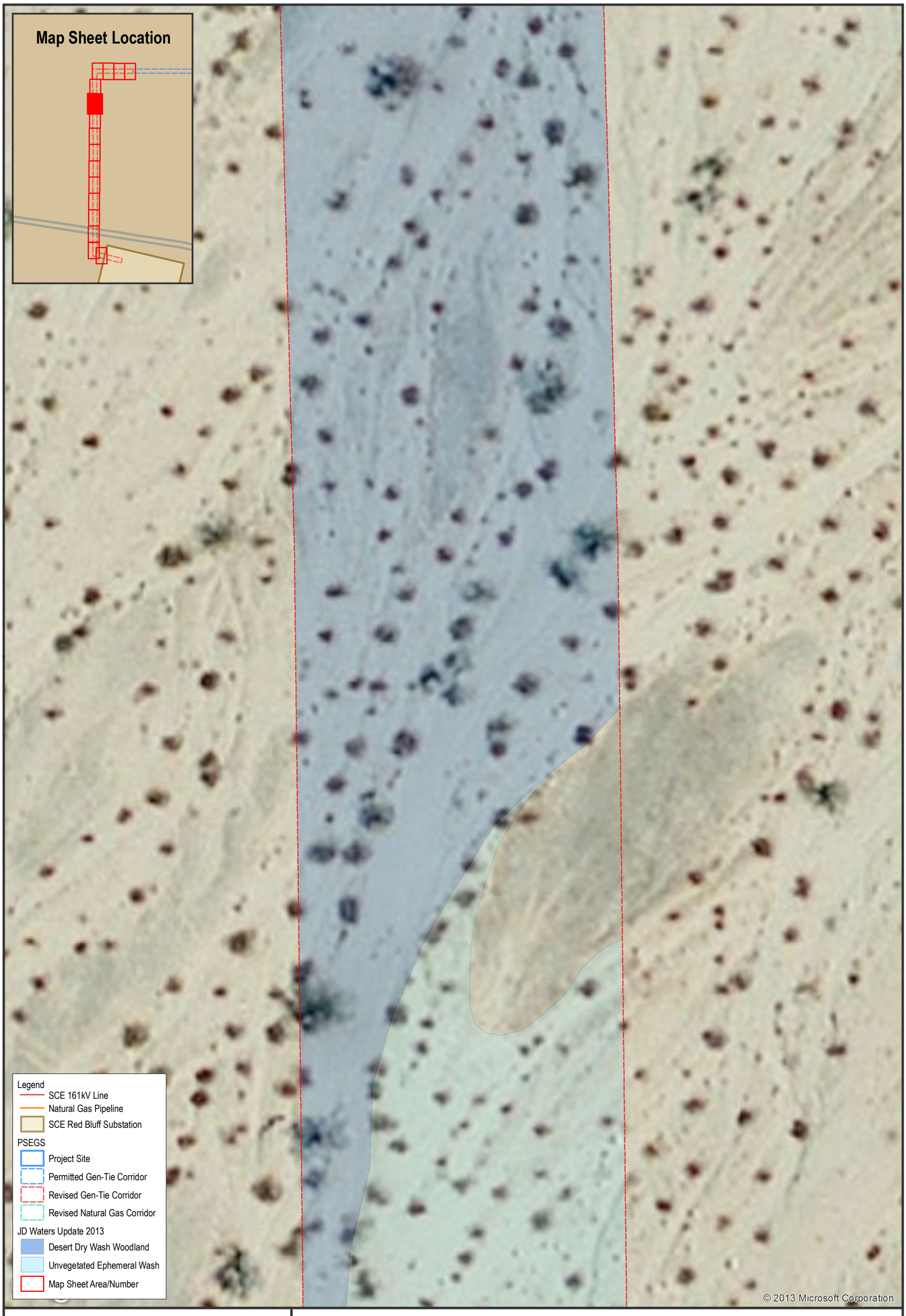

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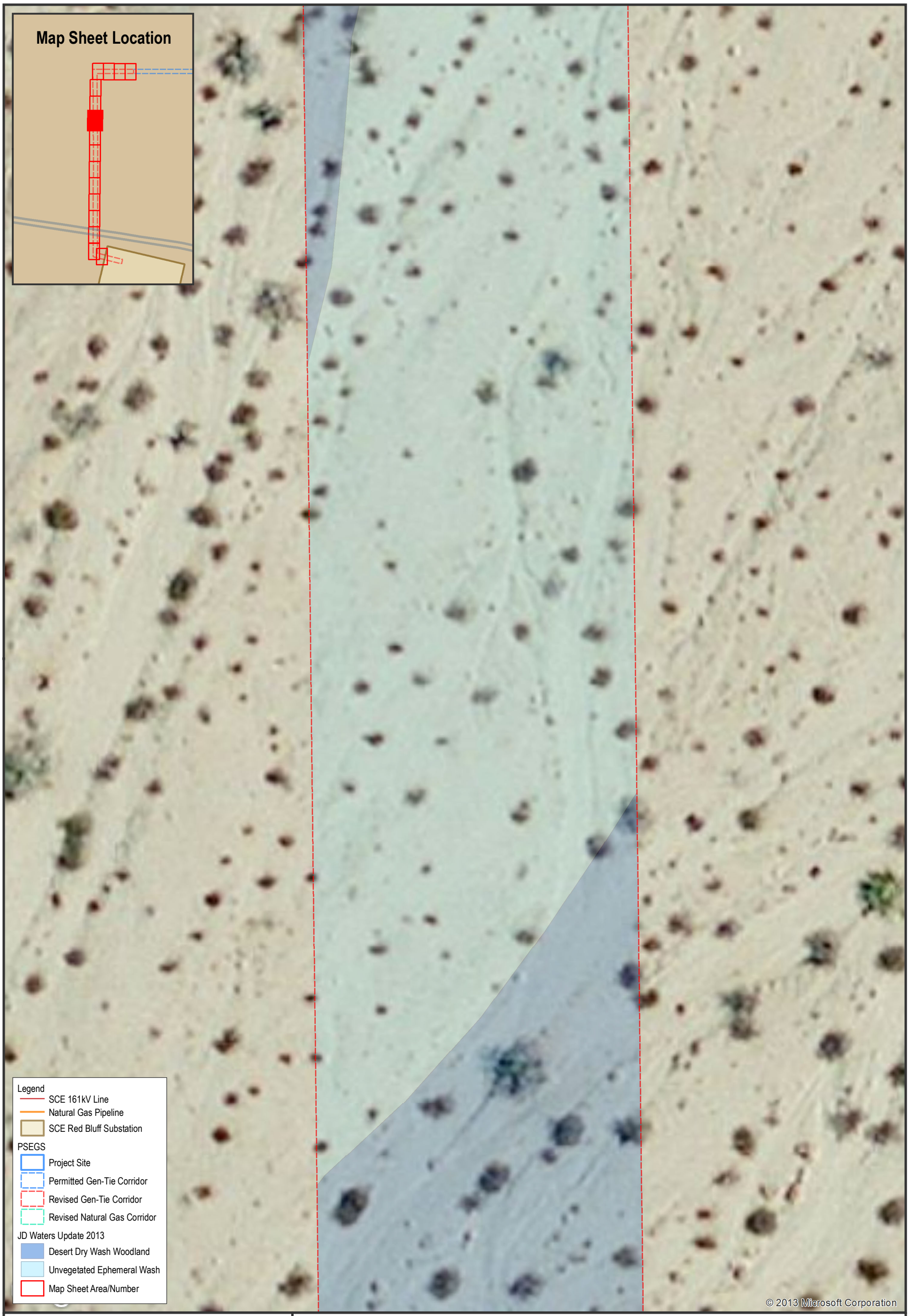

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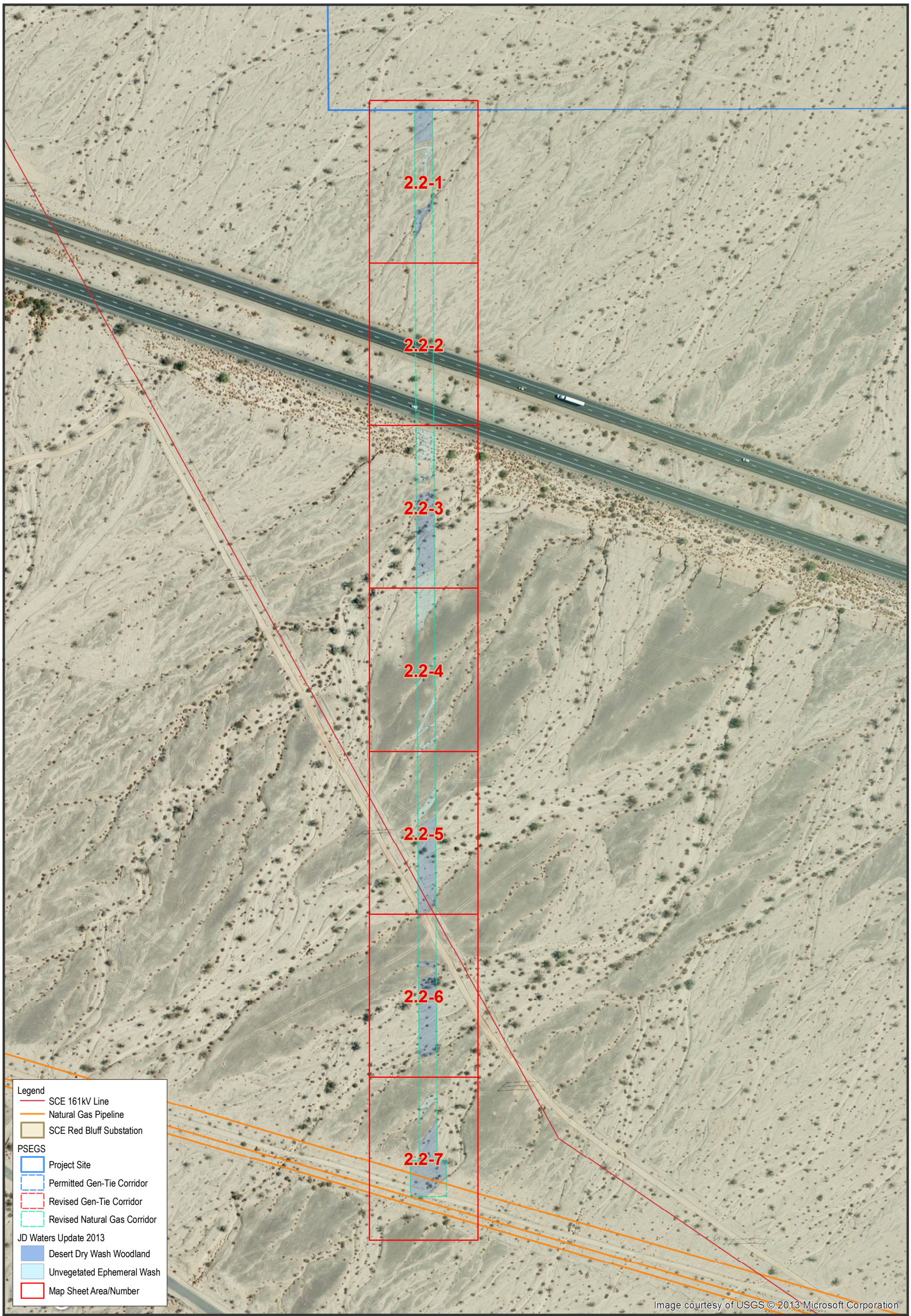
Prepared By:	NS

Figure No: 2.1-16

Path: C:\WORKSPACE\BrightSource\CA_Palen\2013 Bio Survey\Waters Update\Waters Update 2013 - Figure 2.mxd



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2013 State Jurisdictional Waters Update of PSEGS Modified Linears

N W E S

Scale: 1:3,000

0 190 380 Feet

Scale correct when printed at 11x17
This map is for planning purposes only. The information herein was compiled from multiple sources and is considered to be reliable, however no representation is made concerning the accuracy of the data.

Project:	Palen Solar
Date:	Jun 03, 2013
Revision:	C-1000
Prepared By:	NS

Figure No: 2.2

Path: C:\WORKSPACE\BrightSource\CA_Palen\2013 Bio Survey\Waters Update\Waters Update 2013 - Figure 2.mxd

2013 State Jurisdictional Waters Update of PSEGS Modified Linears

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N
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Scale: 1:400

0 25 50 Feet

Scale correct when printed at 11x17
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Project:	Palen Solar
Date:	Jun 03, 2013
Revision:	C-1000
Prepared By:	NS

Figure No: 2.2-1

Path: C:\WORKSPACE\BrightSource\CA_Palen\2013 Bio Survey\Waters Update\Waters Update 2013 - Figure 2.mxd

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2013 State Jurisdictional Waters Update of PSEGS Modified Linears

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Scale: 1:400

0 25 50 Feet

Scale correct when printed at 11x17
This map is for planning purposes only. The information herein was compiled from multiple sources and is considered to be reliable, however no representation is made concerning the accuracy of the data.

Project:	Palen Solar
Date:	Jun 03, 2013
Revision:	C-1000
Prepared By:	NS

Figure No: 2.2-2

Path: C:\WORKSPACE\BrightSource\CA_Palen\2013 Bio Survey\Waters Update\Waters Update 2013 - Figure 2.mxd

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N W E S

Scale: 1:400

0 25 50 Feet

Scale correct when printed at 11x17
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Project:	Palen Solar
Date:	Jun 03, 2013
Revision:	C-1000
Prepared By:	NS

Figure No: 2.2-3

Path: C:\WORKSPACE\BrightSource\CA_Palen\2013 Bio Survey\Waters Update\Waters Update 2013 - Figure 2.mxd

2013 State Jurisdictional Waters Update of PSEGS Modified Linears

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Scale: 1:400

0 25 50 Feet

Scale correct when printed at 11x17
This map is for planning purposes only. The information herein was compiled from multiple sources and is considered to be reliable, however no representation is made concerning the accuracy of the data.

Project:	Palen Solar
Date:	Jun 03, 2013
Revision:	C-1000
Prepared By:	NS

Figure No: 2.2-4

Path: C:\WORKSPACE\BrightSource\CA_Palen\2013 Bio Survey\Waters Update\Waters Update 2013 - Figure 2.mxd

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2013 State Jurisdictional Waters Update of PSEGS Modified Linears

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Scale: 1:400

0 25 50 Feet

Scale correct when printed at 11x17
This map is for planning purposes only. The information herein was compiled from multiple sources and is considered to be reliable, however no representation is made concerning the accuracy of the data.

Project:	Palen Solar
Date:	Jun 03, 2013
Revision:	C-1000
Prepared By:	NS

Figure No: 2.2-5

Path: C:\WORKSPACE\BrightSource\CA_Palen\2013 Bio Survey\Waters Update\Waters Update 2013 - Figure 2.mxd

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N
W E
S

Scale: 1:400

0 25 50 Feet

Scale correct when printed at 11x17
This map is for planning purposes only. The information herein was compiled from multiple sources and is considered to be reliable, however no representation is made concerning the accuracy of the data.

Project:	Palen Solar
Date:	Jun 03, 2013
Revision:	C-1000
Prepared By:	NS

Figure No: 2.2-6

Path: C:\WORKSPACE\BrightSource\CA_Palen\2013 Bio Survey\Waters Update\Waters Update 2013 - Figure 2.mxd

2013 State Jurisdictional Waters Update of PSEGS Modified Linears

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W E
S

Scale: 1:400

0 25 50 Feet

Scale correct when printed at 11x17
This map is for planning purposes only. The information herein was compiled from multiple sources and is considered to be reliable, however no representation is made concerning the accuracy of the data.

Project:	Palen Solar
Date:	Jun 03, 2013
Revision:	C-1000
Prepared By:	NS

Figure No: 2.2-7

Path: C:\WORKSPACE\BrightSource\CA_Palen\2013 Bio Survey\Waters Update\Waters Update 2013 - Figure 2.mxd

Photographs

Representative Photographs of the Channel Types at PSEGS

Primary Channels:

Photograph 1. A primary channel and DDWW. This channel is several meters deep, is a main tributary, and has multiple wash-dependent tree and shrub species.

Photograph 2. Another example of a primary wash and DDWW at PSEGS. This channel has a distinct bed and bank, even though shallow, two wash-dependent species and is dominated by a riparian tree species (*Olneya tesota*).

Secondary Channels:

Photograph 3. Small, shallowly incised wash dominated by upland vegetation, but ironwood trees, albeit stunted, are common. This wash was categorized as DDWW because of the number of trees, although it is of marginal quality.

Photograph 4. Very shallow wash dominated by upland shrubs. This wash is not DDWW at this point.. Upslope, this wash diminished completely (discontinous channel). Downslope it ultimately became more defined and ironwood became common (DDWW downslope).

Sheet Flood:

Photograph 5. DDWW sheet flood. This is a matrix of braided discontinuous and single-thread channels, some of which are secondary and primary channels. Note the scattered ironwood trees and the gravel rills that indicate water flow.

Photograph 6. DDWW sheet flood on the gas pipeline ROW, north of I-10. Note the many dead and dying ironwood trees resulting from the severing of this sheet flow by the freeway.

Photograph 7. Sheet floodwith only upland species. This sheet has unvegetated ephemeral washes, discontinuous channels and gravel rills indicating water flow throughout the sheet matrix.

Unvegetated Ephemeral Wash:

Photograph 8. A U_H channel, with high density of shrubs, all upland species. This channel began as a swale upslope on the desert pavement. Note the secondary wash in the right side of the photograph.

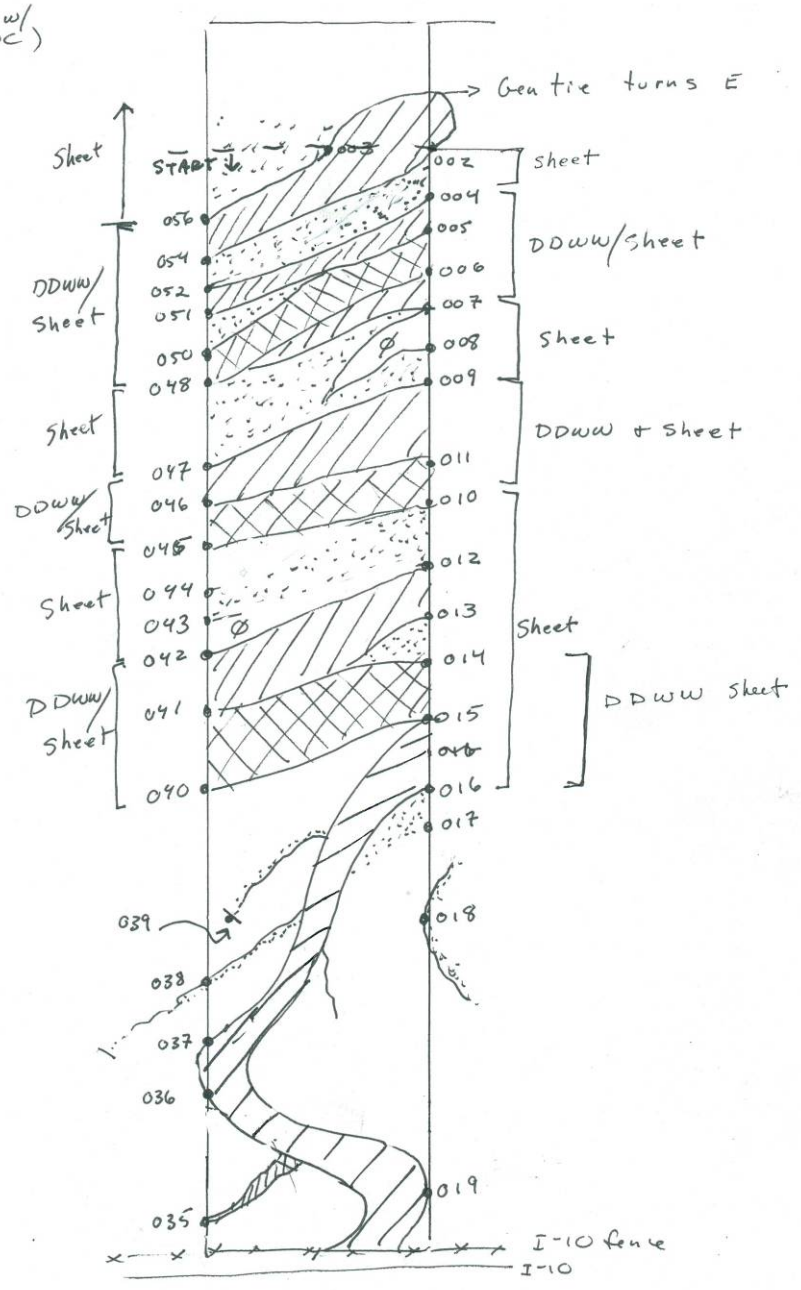
Photograph 9. A U_L channel, with low density of shrubs, all upland species. This is a discontinuous channel.

Attachment 1

Field Data Sheets: 2013 State Waters Assessment on the PSEGS Modified Linear Facilities

DATE 24 April 2013
LOCATION IN SITE Gentie N of I-10 (N-S portion)
LEGEND:
- U_L
- 2° (usually w/ U_L + DC)
- 1°

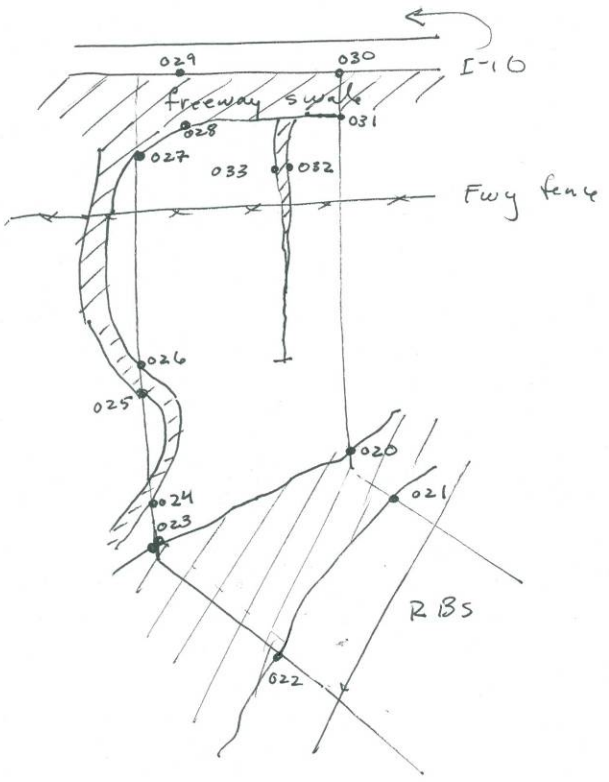
N



PROJECT Palen Solar Energy Project- Waters Mapping

DATE 24 April 2013
LOCATION IN SITE Gen-tie So of I-10
LEGEND:

N



Project: Palen SEGS

Date: 24 April 2013
Project Part: Central, N-S portion

Waypoint I.D.	UTMs Easting	UTMs Northing	Channel Type	Channel Depth (cm)	Channel Substrate	Tree/Shrub Layer Vegetation Dominants	Common	Occasional	Tree/Shrub Height	Other Observations
002	0655971	3731871	2° w/ U_L + DC	4-8	Coarse sand	LATR AMDU	OLTE		OLTE - 18-25'	
003	0655952	3731779								
004	0655972	3731791	2° w/ U_L + DC	8	Coarse sand	LATR AMDU	OLTE		OLTE - 25-30'	
005	0655977	3731663		9						
005	"	"	1°	9	Coarse sand	LATR AMDU	OLTE		OLTE - 25-30'	
006	0655975	3731629								
006	"	"	2° w/ U_L + DC	8-9	Sand + light gravel	LATR AMDU	OLTE		OLTE - 22'	
007	0655978	3731517								
008	0655979	3731492	U_L (mostly)	7-8	Sand, gravel, rills	LATR AMDU				
009	0655981	3731369								
009	"	"	2° w/ U_L + DC small 1° washes	9-10	Sand, gravel, rills	LATR AMDU	HYSA OLTE		OLTE - 20-22'	
011	0655982	3731308								
011	"	"	2°	9-10	Sand, gravel, rills	LATR AMDU	OLTE		OLTE - 20-25'	
010	0655984	3731287								
010	"	"	U_L	7		LATR AMDU				Shrubs are small + sparse
012	0655984	3731222								
012	"	"	2°	16	Coarse sand	LATR AMDU	OLTE		OLTE - <20'	
013	0655988	3731219								
013	"	"	U_L	7	Coarse sand	LATR AMDU				Sparse shrubs
014	0655985	3731102								
014	"	"	1°	52-60	Sand w/scatt. cobbles + gravels	OLTE HYSA	LATR AMDU		OLTE - 20-25'	
015	0655988	3731104								
015	"	"	2°	7	Sand	LATR AMDU	OLTE		OLTE 9-10'	~280 cm wide
016	0655990	3730963								
016	"	"	U_L	7	Sand	LATR AMDU				Sparse
017	0655991	3730946								
018	0655992	3730778	U_L	19	Sand + gravel	LATR		OLTE (downslope)	OLTE - ≤15'	1.5m wide channel, barely touches ROW
019	0655993	3730558	2° + U_L	110	Sand + gravel	LATR	AMDU			Near I-10 only is LATR/AMDU. Downslope are small OLTE, 6m wide
020	0655993	3730277	1°	6-7m	Gravel + cobbles over sand	CEFL OLTE ACGR	LATR HYSA			
021	0656019	3730270								
022	0655991	3730239	Same wash as 020→021 but other side of ROW							
023	0655962	3730254								

020 → 021 both sides of OLTE

Project: Palen SEGS

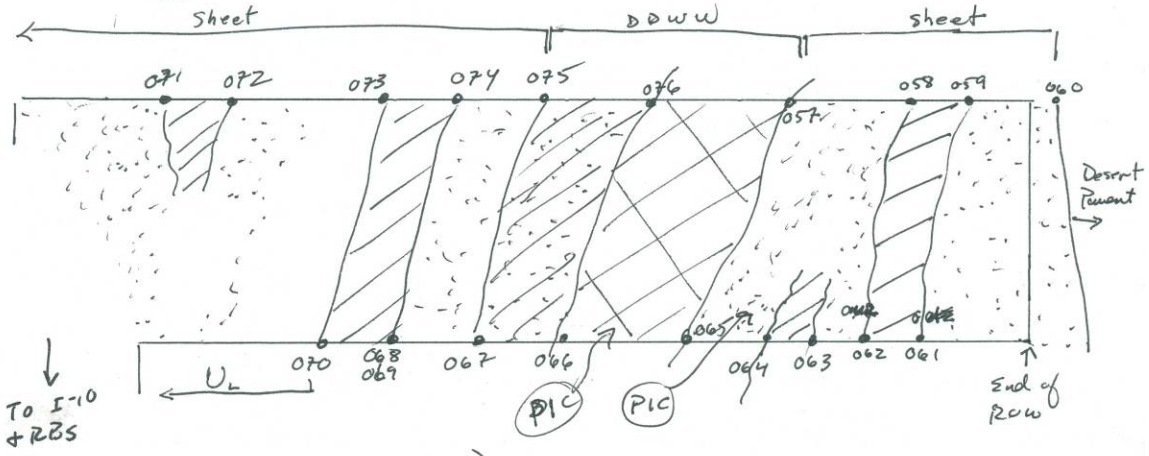
Date: 24 April 2013
Project Part: Gentie, N-S portion

Waypoint I.D.	UTMs Easting	UTMs Northing	Channel Type	Channel Depth (cm)	Channel Substrate	Tree/Shrub Layer Vegetation Dominants	Tree/Shrub Layer Vegetation Common	Tree/Shrub Layer Vegetation Occasional	Rip Tree/Shrub Height	Other Observations
024	0655970	3730303	2°	3	coarse sand	LATR OLTE	KRER		OLTE - 9-12'	Wash is 4 m wide
025	0655964	3730346								
026	0655964	3730353	All is same wash							
027	0655964	3730393								
028	0655976	3730418	1°		30% cobbles and gravel over sand; occa. small boulder	CEFL LATR	OLTE HYSA		CEFL - 20-25'	This is the freeway swale
029	0655972	3730405								
030	0656001	3730415							OLTE - 15-20'	
031	0655999	3730397								
032	0655999	3730395	2°		Sand & gravel	LATR HYSA CEFL OLTE			Trees <10'	Ends upslope, in ROW
033	0655985	3730395								
035	0655960	3730545	2° + DC	3	sand & gravel	LATR OLTE			OLTE - 5-9'	<1 m wide
036	0655957	3730666	2°	<1m	sand, gravel	LATR	~~OLTE~~ AMDU	OLTE	OLTE - <10'	Same as wash w/WYPT 19
037	0655956	3730713								
038	0655953	3730787	UL	3	sand	LATR	AMDU KRER HYSA			Ends off ROW to W; 1 m wide
039	0655958	3730906	UL	7		AMDU				90 cm wide. AMDU is sparse
040	0655951	3730928	1°							See 014-015 Main wash
041	0655951	3731074								
~~041~~ 042	0655947	3731157	2°							See 012-013
043	0655947	3731194	UL	3-6	Sand	LATR				
044	0655945	3731202								
045	0655945	3731229	2°							See 010-011
046	0655948	3731281								
047	0655943	3731324	UL							See 008-009
048	0655942	3731407								
050	0655940	3731507	UL	4-6	Sand	LATR				
051	0655942	3731547								
052	0655941	3731572	UL & DC							See 004-005
054	0655941	3731640								
~~054~~ 056	0655937	3731744	2°							See 002-003

Margin notes: South of I-10 (waypoints 024–033); West side of ROW (waypoints 036–041); Delete 49 (at 050); ndo - n0053 (deleted) (at 054); Note: No 055 (at 056)

DATE 24 April 2013
LOCATION IN SITE Gen tie Na of I-10; E-W portion
LEGEND:

- ~~Desert pavement~~ U_L
- ~~2°~~ 2° wash
- 1° and 2° washes



Descriptions

057 = U_L, sheet. Depths 4-10cm Floor - Coarse sand w/ rilled gravels mainly disc. channels (DC)
↓ LATR w/ ENFA, AmDU, H4SA; rare OLTE
058-059 · 2° channel. Floor - Coarse sand w/ some rilled gravel
LATR w/ OLTE (OLTE → 18')
059-060 = U_L, sheet
061-062 = 2° channel (see 058 → 059)
062-063 = U_L, sheet (see 057 → 058)
063-064 = 2° channel; H4SA codom, OLTE snags
* Photo NOTE - Most of the trees are upslope in better 2° channels
064-065 = U_L, sheet (See 057 → 058
065-066 = 1° + 2° washes coalesce into to a 1° wash; broader, more distinct washes than to west; more trees.
* Photo NOTE - Pic says 2° but it's 1° here Sandy.
066-067 = Many fewer trees than to east and washes are poorly defined; much disc. channels w/ trees not in channels. Runnels are sandy, to 4cm deep, <<1 to 3m wide.
LATR w/ AmDU; scattered OLTE (25-30' tall)
068-069 = U_L, sheet
069-070 = 2° channel (see 061-062)
070 - west end = U_L, sheet
071-072 = 2° channel, narrow. Floor - sand w/ rilled gravel. LATR w/ ~~occa~~ AmDU+ H4SA; occa. OLTE (→ 25-30' tall)

UTMs

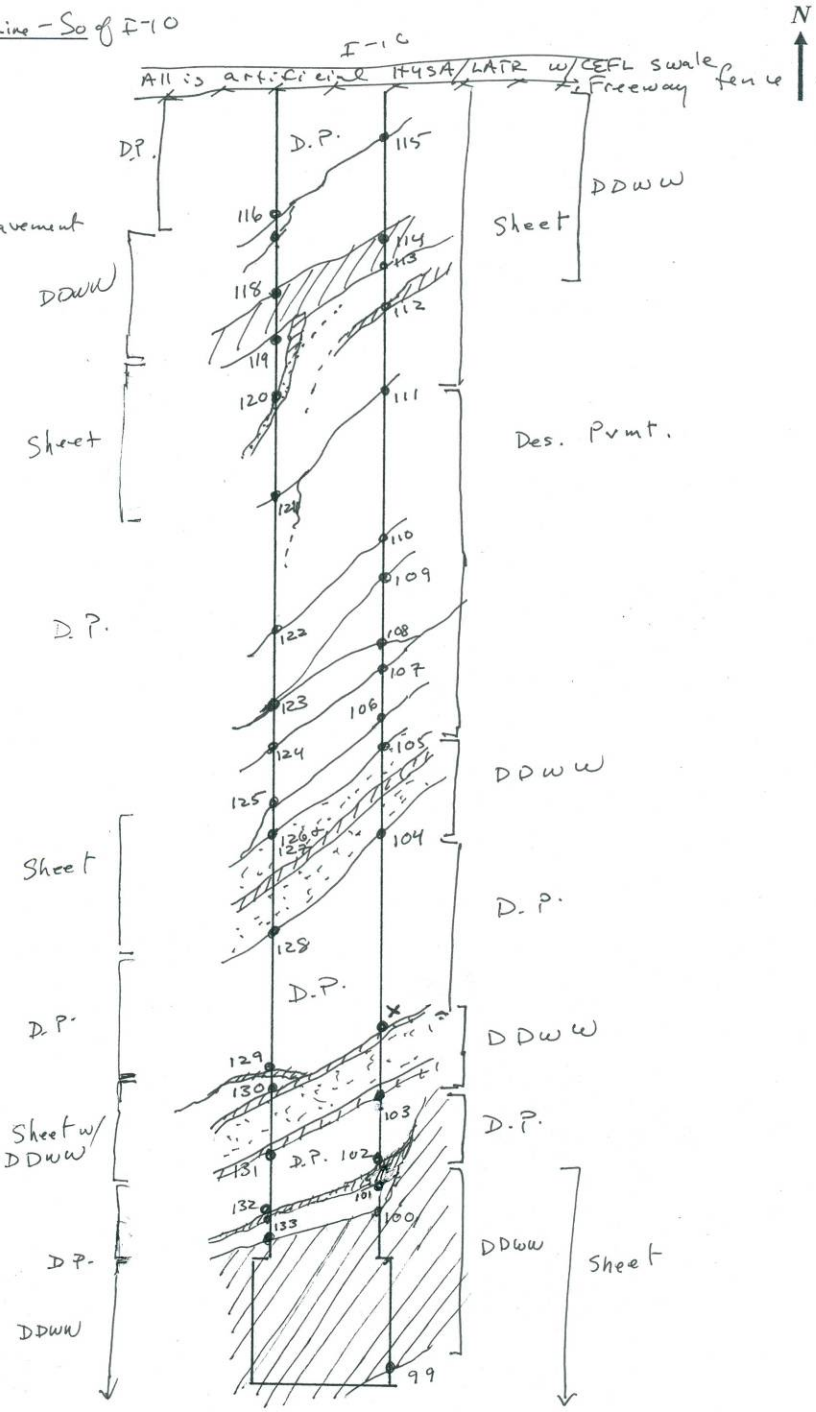
057	0656154	3731821
058	0656239	3731824
059	0656256	3731819
060	0656294	3731828
061	0656233	3731788
062	0656217	3731788
063	0656194	3731789
064	0656178	3731789
065	0656150	3731790
066	0656104	3731787
067	0656071	3731786
068 (~~069~~)	0656022	3731788
(069)	0656019	3731786
070	0655999	3731785
071	0655956	3731819
072	0655975	3731817
073	0656013	3731820
074	0656037	3731820
075	0656068	3731823
076	0656126	3731824

PROJECT Palen Solar Energy Project- Waters Mapping **Page** 1/3

DATE 30 April 2013
LOCATION IN SITE Gas Line – So of I-10
LEGEND:

- U_L
- 2°
- 1°

DP = Desert pavement



Project: Palen SEGS

Date: 30 April 2013
Project Part: Gas Line – S. of I-10

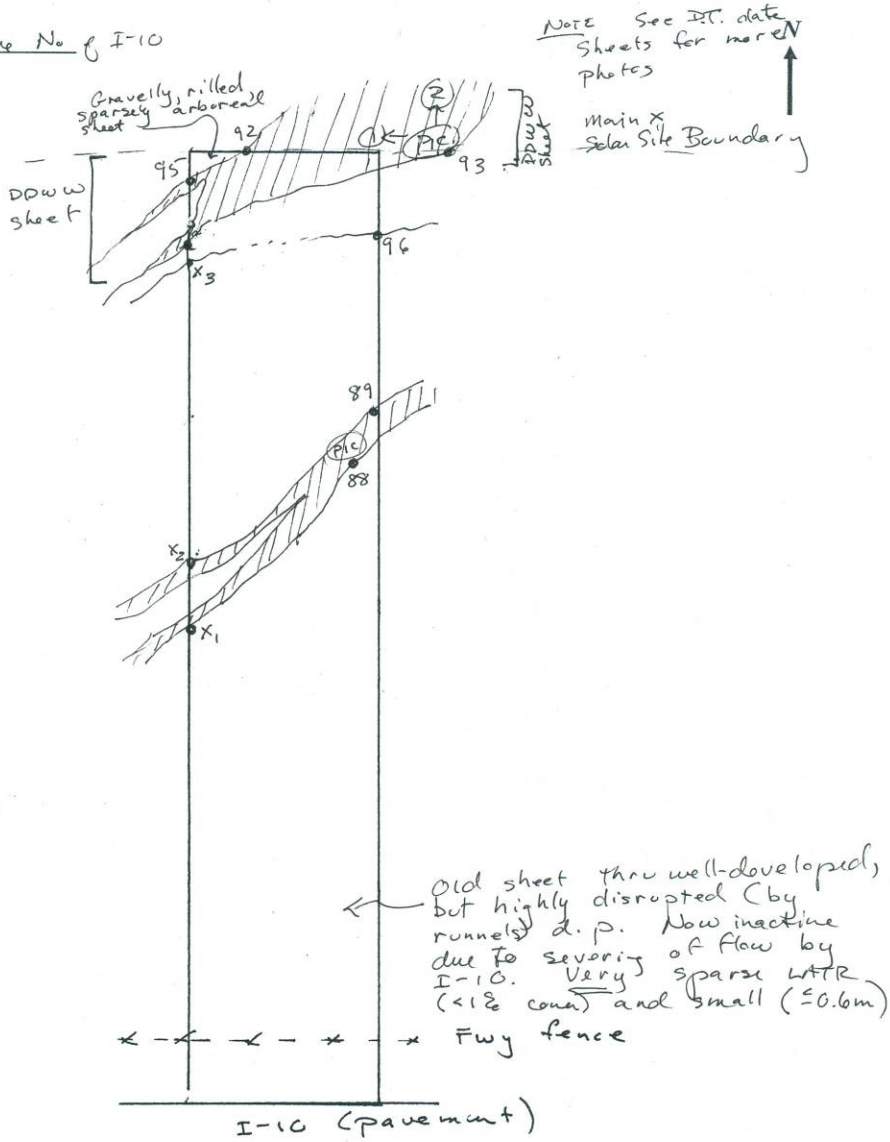
Waypoint I.D.	UTMs Easting	UTMs Northing	Channel Type	Channel Depth	Channel Substrate	Tree/Shrub Layer Vegetation Dominants	Common	Occasional	Tree/Shrub Height (Rip)	Other Observations
E side of Row 99	0664968	3726941	2°, but large, wash	1m	Sandy w/gravel bars	OLTE LATR			OLTE ~25'	
100	0664961	3726999								
101	0664962	3726807	2°	2m	Sandy	LATR		OLTE	OLTE ≤10'	Meets main channel (99-100); 4m floor (wide), 11m top edges
102	0664962	3727016								
103	0664966	3727054	Densely rilled sheet; all DC and U_L exc. both edges are distinct channels		Sand, rilled gravels	LATR		AMDU		Sparse LATR (<4 & coma)
X	0664951	3727123								
	The 2 channels in this sheet (103→X)		2°	1m	Sand w/ gravel + cobbles	OLTE LATR			OLTE 25-30', LATR 1.4m	Floors are 0.5–3m wide
104	0664968	3727194	U_H + DC same as 103 – X above, w/ central	w/2° channels 1 main channel		LATR		AMDU		Sparse
105	0664962	3727254								
	The main channel 104→105		2°	0.4m		LATR OLTE			OLTE 25-30'	
106	0664959	3727271	2°	4-30 cm	Sandy	LATR		OLTE	OLTE ≤10'	
107	0664959	3727314	2°	4-30 cm	Sandy	LATR		OLTE	OLTE ≤10'	
108	0664957	3727325	U_L	3cm	Sandy	LATR AMDU		OLTE upslope	Stunted	U_H downslope (more LATR) Floor 1.2m wide
109	0664955	3727342	U_L	3 cm	Sand	LATR AMDU		OLTE upslope	Stunted	U_H downslope (more LATR) Floor 1-2m wide
110	0664958	3727380	U_L (DC upslope)	4-20 cm	Gravel over Sand	LATR AMDU				U_H downslope (LATR) Floor ~40cm wide
111	0664954	3727420	Sheet – many DC + U_L							
113	0664959	3727493								
112	0664954	3727460	2°	0.4–0.6	sand, gravel	OLTE + LATR			OLTE are small	Floor ~1m wide
113	see above		1°	0.6	Sand	OLTE	LATR	AMDU HYSA	OLTE ~30'	3m wide (floor)
114	0664955	3727501								
Row E side ↑ W side ↓ 115	0664953	3727519	2°	1-1.8m	Sandy w/gravel	OLTE	LATR	ACOR (rare)	OLTE ~10-15', +scrubby	Floor ~1m wide Channel ~4m wide
116	0664938	3727515	See 115							Connects to waypt 115
117	0664940	3727504	2°	30cm	Sand w/gravel	LATR		OLTE	OLTE scrubby	Connects to 116→115 wash
118	0664940	3727487	Connects to 113→114							
119	0664940	3727478								

Project: Palen SEGS

Date: 30 April 2013
Project Part: GAS LINE - So. of I-10

Waypoint I.D.	UTMs Easting	UTMs Northing	Channel Type	Channel Depth	Channel Substrate	Tree/Shrub Layer Vegetation Dominants	Tree/Shrub Layer Vegetation Common	Tree/Shrub Layer Vegetation Occasional	Tree/Shrub Height	Other Observations
120	0664940	3727471	UL	0.3m	sand	LATR				2° wash ~200m upslope, LATR is sparse
121	0664943	3727406	UL; edge of sheet	<30 cm	sand	LATR				Channel is 4 m wide Connects to 111 Sparse LATR
122	0664943	3727361	See	110						Connects to 110
123	0664943	3727319	See	108 + 109						Connects to 108 + 109
124	0664942	3727299	See	107						Connects to 107
125	0664943	3727251	See	106						Connects to 106
(127 =) 126	0664943	3727239	See	104 - 105						Same sheet wash as 104-105
128	0664942	3727163								
129	0664946	3727126	DC but a 2° runnel	2cm	sand	OLTE, LATR, AMDU		MYSA	OLTE - 10'	Flow is <1 → 2m wide
130	0664946	3727113	See	103 - X						Same sheet as 103 → X
131	0664946	3727093								
132	0664942	3727001	2° wash in d.p.	1-8m	sand	LATR	OLTE		OLTE - small ≤10'	Flow - 0.5m wide
133	0664949	3726973	2° - connects to			100				See 99-100

DATE 29 April 2013
LOCATION IN SITE Gas Line No. 6 I-10
LEGEND:



Date: 29 April 2013 **Project: Palen SEGS** Page 2 / 2

Project Part: Gas Line N. of I-10

Waypoint I.D.	UTMs Easting	UTMs Northing	Channel Type	Channel Depth	Channel Substrate	Tree/Shrub Layer Vegetation Dominants	Common	Occasional	Tree/Shrub Height	Other Observations
88	0664950	3727758	2°	≤1m	Course sand w/ gravel & small cobble	LATR	OLTE snags	AMDU HYSA	OLTE small + mostly dead	4 m wide
89	0664951	3727772				rills				
92	0664945	3727842	Two 2° channels coalesce into a broad sheeting and courses	6-10cm	Sand and gravel rills w/ gravel rills	LATR HYSA OLTE			OLTE - to ~25'.	Many OLTE dead or dying. Wash ~35m across.
93	0664974	3727841								
						area, which is also 2°. Many shallow runnels and gravelly islands.				
94	0664937	3727822	2°	40cm	sand	AMDU OLTE			OLTE <20'	Floor ≤1m wide; entire channel width = 2.7m
95	0664936	3727833	2° runnel	3-6cm	Sand	AMDU OLTE			OLTE - <20'	Floor ~1m wide
X1	0664938	3727734	Continuation of runnel (DC) to waypt 96							
X2	0664938	3727754	Continuation of 2° wash to 88-89 wash							
X3	0664937	3727818	Continuation to 88-89 wash							

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

PALEN SOLAR ELECTRIC GENERATING SYSTEM AMENDMENT

Docket No. 09-AFC-7C
PROOF OF SERVICE
(Revised 05/23/2013)

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Eileen Allen
Commissioners' Technical Adviser for Facility Siting

DECLARATION OF SERVICE

I, Marie Fleming, declare that on June 5, 2013, I served and filed copies of the attached PSEGS Summary of Survey for Jurisdictional State Waters, dated June 5, 2013. This document is accompanied by the most recent Proof of Service, which I copied from the web page for this project at: http://www.energy.ca.gov/sitingcases/palen/compliance/.

The document has been sent to the other persons on the Service List above in the following manner:

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For service to all other parties and filing with the Docket Unit at the Energy Commission:

___ I e-mailed the document to all e-mail addresses on the Service List above and personally delivered it or deposited it in the U.S. mail with first class postage to those parties noted above as "hard copy required"; OR

__X__ Instead of e-mailing the document, I personally delivered it or deposited it in the U.S. mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: June 5, 2013

Marie Fleming