

Morena Dam Sunny Day Dam Breach Overview

**San Diego County, California
State Dam ID: 8.005
& National Dam ID: CA00110**

0 100 200 Miles

Modeling Date: June-2018
 Map Creation Date: September-2018
 BY: C. Kissick

Legend

- Cross Section
- Flow Path
- Detailed Sheet Extent
- Approx. Maximum Flooding Extent



Notes:

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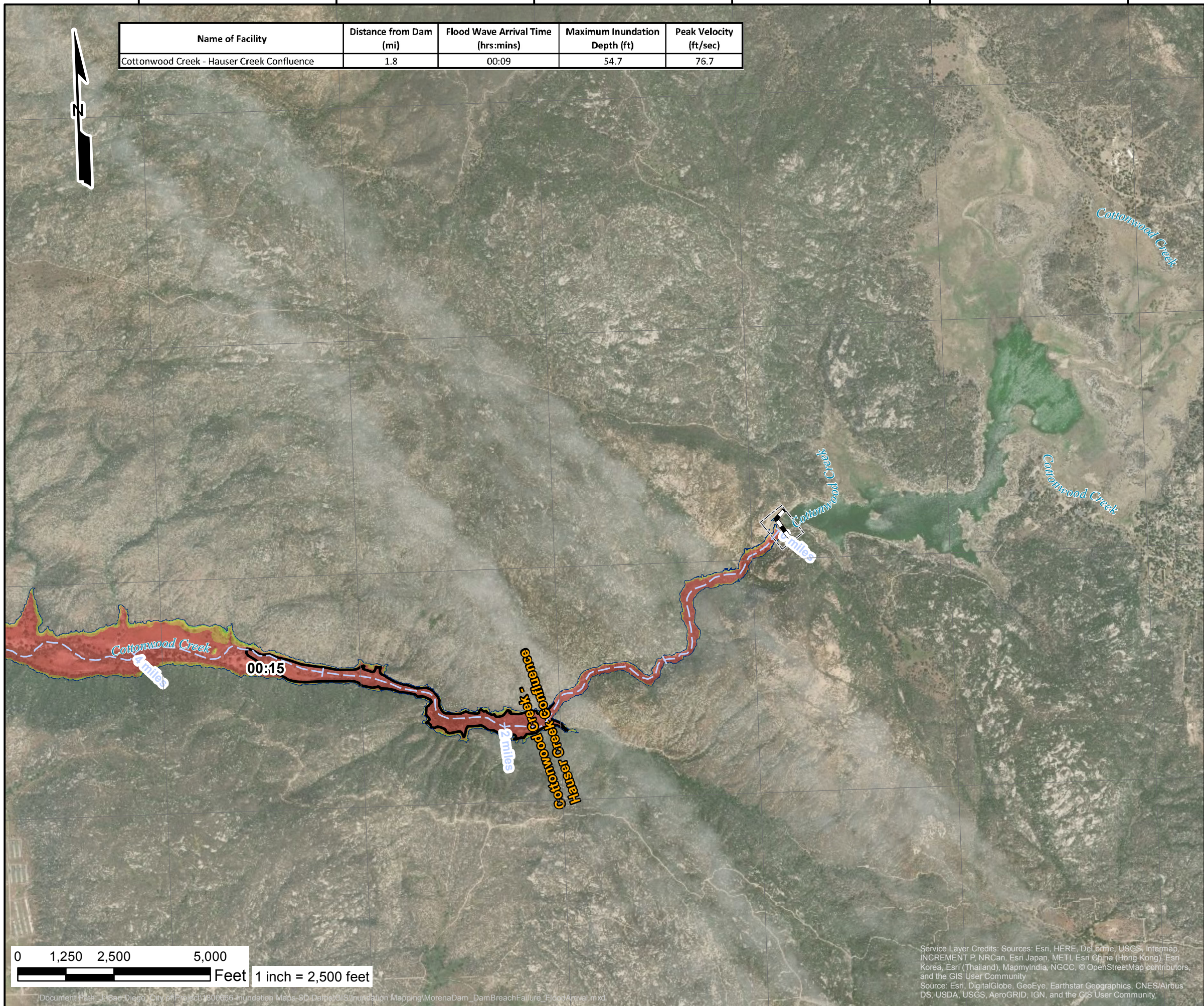
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 and Inundation Maps Created By:
 GEI Consultants, Inc.
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 Rancho Cordova, CA 95670

Engineer Chong Vang
 License No. 80454

0 9,500 19,000 38,000 Feet
 1 inch = 19,000 feet

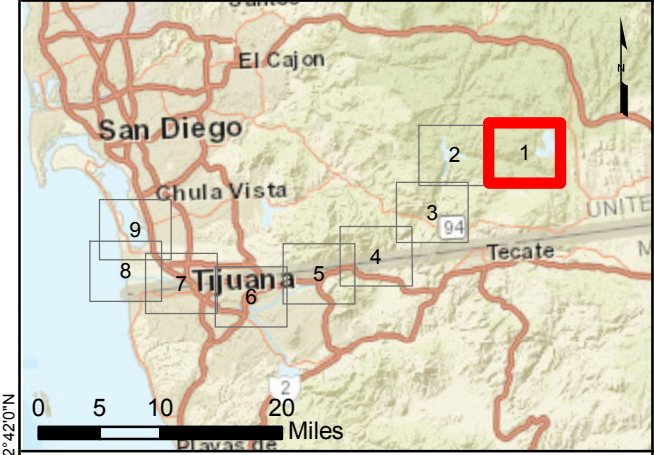
116°36'0"W 116°35'0"W 116°34'0"W 116°33'0"W 116°32'0"W 116°31'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Cottonwood Creek - Hauser Creek Confluence	1.8	00:09	54.7	76.7



Morena Dam Sunny Day Dam Breach Flood Arrival Times

San Diego County, California
City of San Diego Dam #8.005
& National Dam ID CA00110



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Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School

Critical Road

Approx. Time to 1 Foot Depth (hrs:mins)

Cross Section

Flow Path

Approx. Maximum Flooding Extent

Municipal Boundary

Maximum Inundation Depth (ft)

- 1 to 2
- 2 to 5
- 5 to 10
- 10 to 20
- 20+

* Variations in color are dependent upon the background imagery

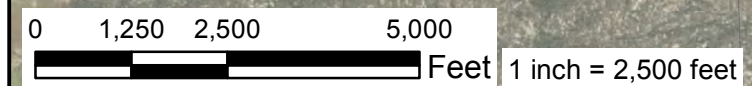
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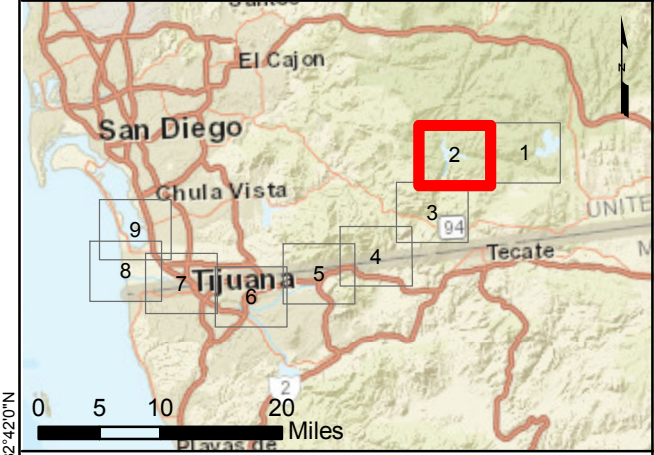
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116°42'0"W 116°41'0"W 116°40'0"W 116°39'0"W 116°38'0"W 116°37'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Downstream of Hauser Creek Rd. Bridge	5.1	00:23	75.8	60.4
Barrett Dam Face	9.4	00:26	94.7	87.5



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Flood Arrival Times**
San Diego County, California
City of San Diego Dam #8.005
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Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School

Critical Road

Approx. Time to 1 Foot Depth (hrs:mins)

Cross Section

Flow Path

Approx. Maximum Flooding Extent

Municipal Boundary

Maximum Inundation Depth (ft)

- 1 to 2
- 2 to 5
- 5 to 10
- 10 to 20
- 20+

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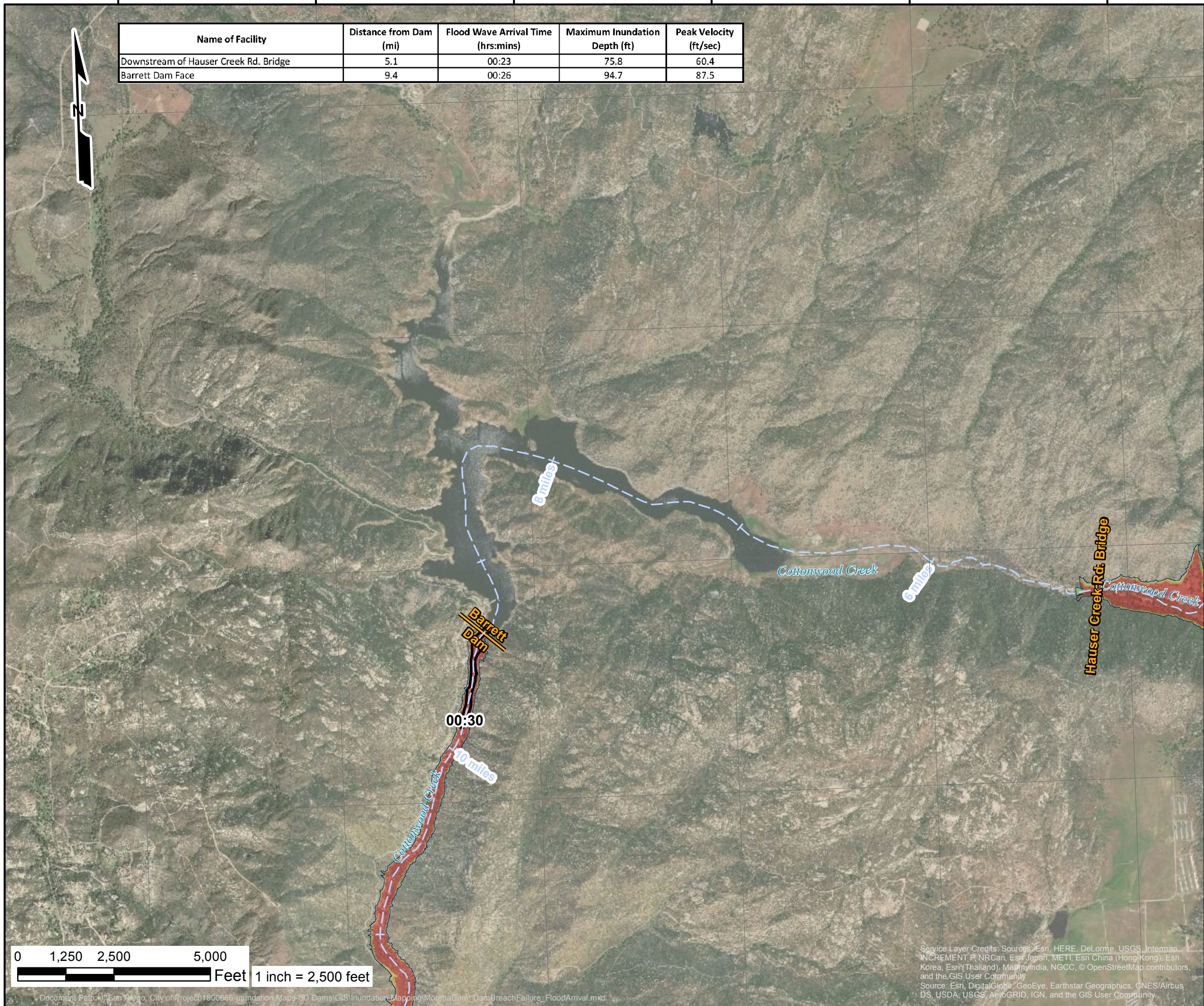
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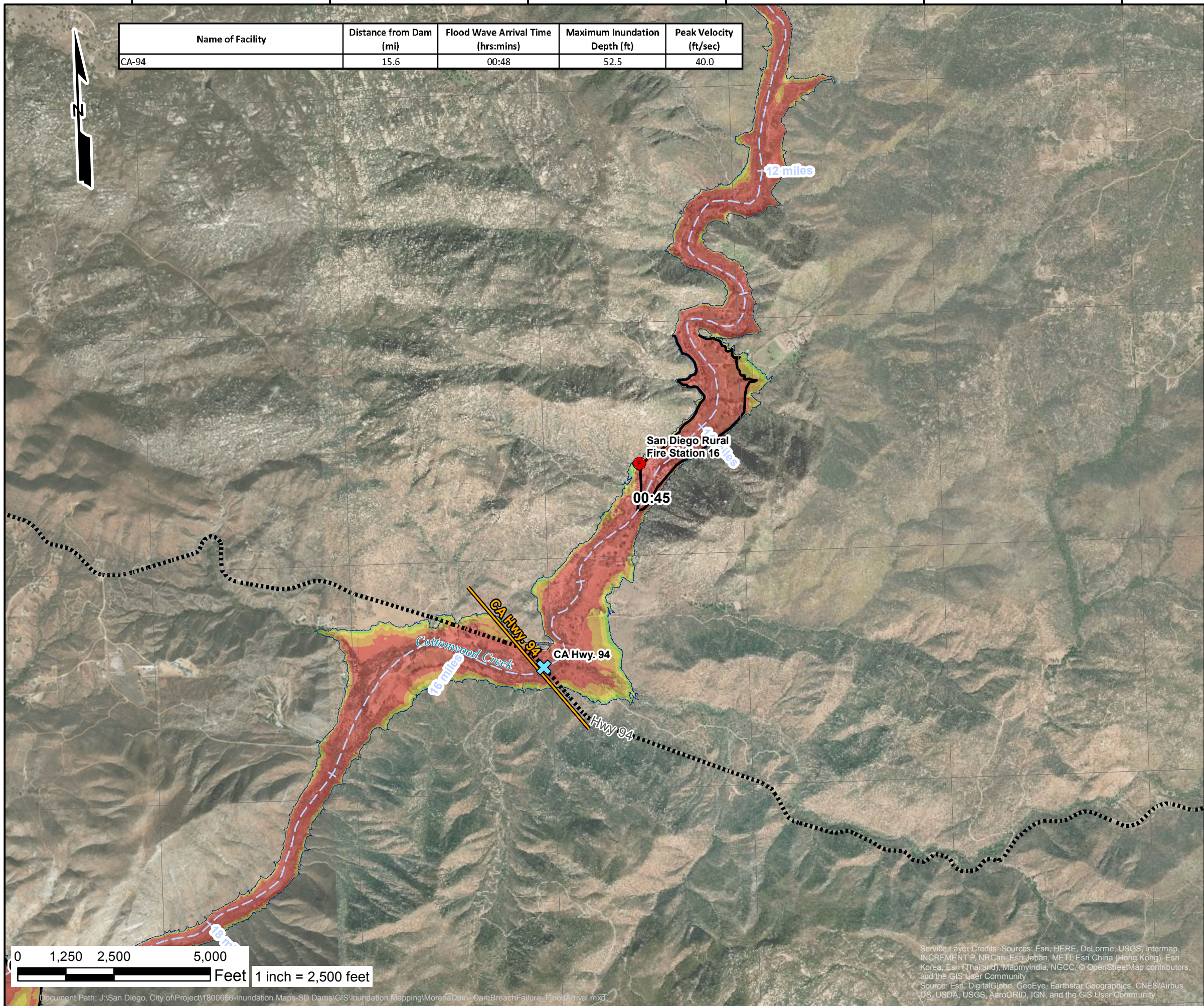
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116°44'0"W 116°43'0"W 116°42'0"W 116°41'0"W 116°40'0"W 116°39'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
CA-94	15.6	00:48	52.5	40.0



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Legend

- Critical Structures (within 200ft of Max. Flood Extent)**
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 - Approx. Time to 1 Foot Depth (hrs:mins)
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 - Municipal Boundary
- Maximum Inundation Depth (ft)**
- 1 to 2
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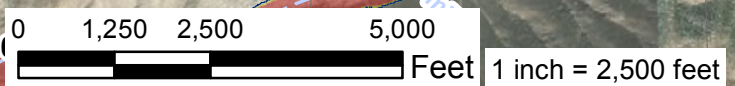
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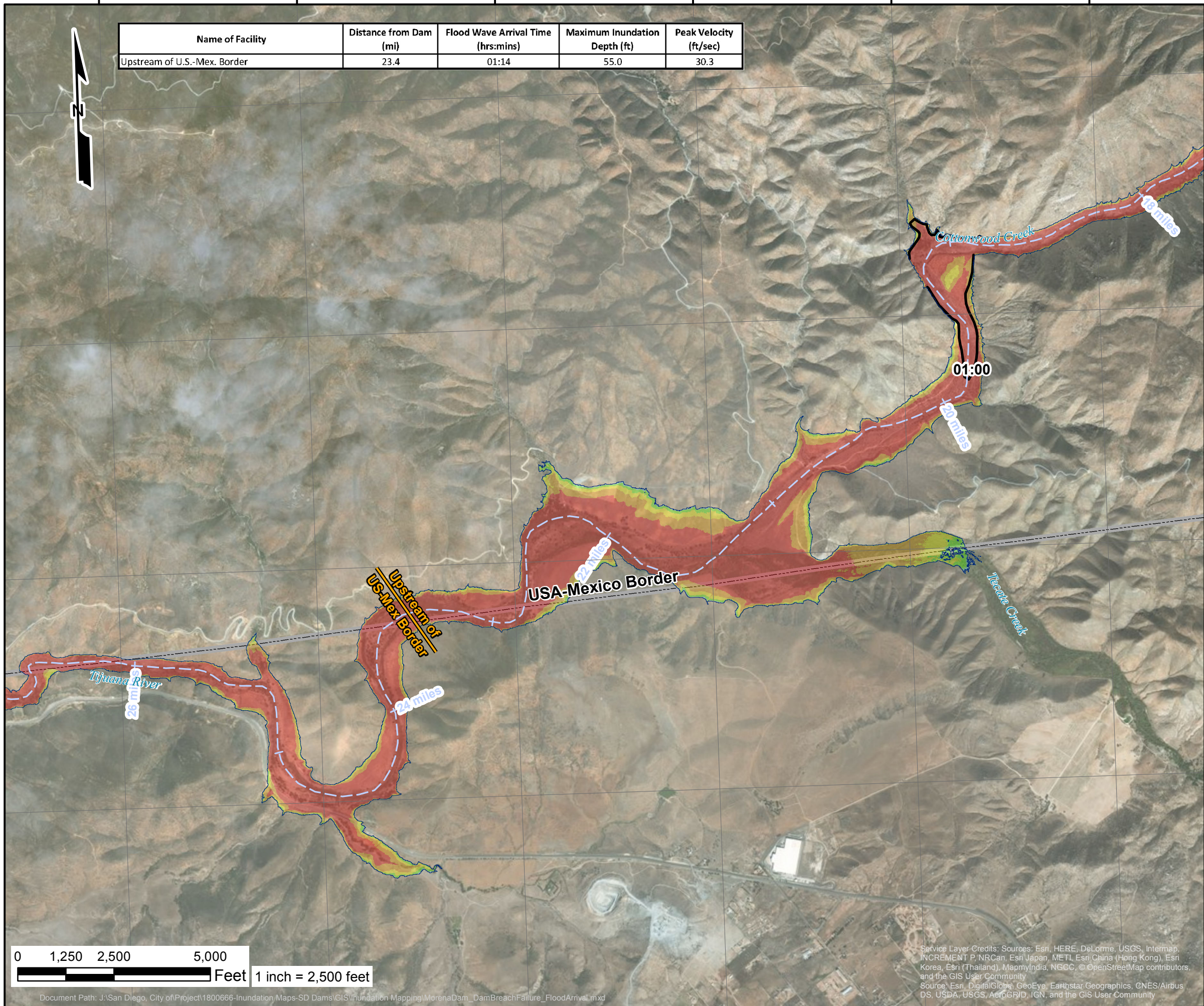
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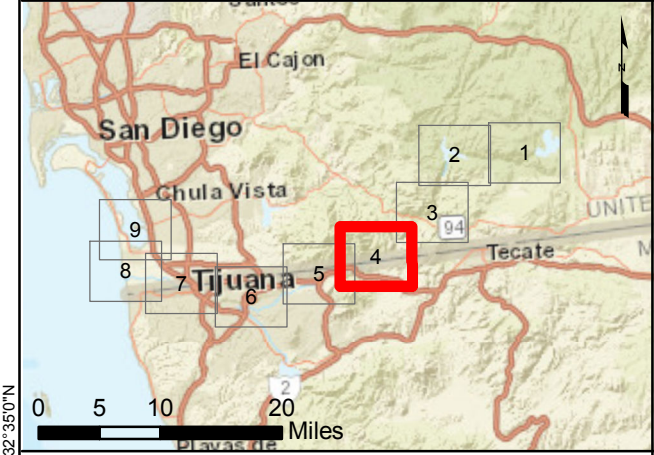
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116°49'0"W 116°48'0"W 116°47'0"W 116°46'0"W 116°45'0"W 116°44'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Upstream of U.S.-Mex. Border	23.4	01:14	55.0	30.3



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Legend

- Critical Structures (within 200ft of Max. Flood Extent)**
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 - School
 - Critical Road
 - Approx. Time to 1 Foot Depth (hrs:mins)
 - Cross Section
 - Flow Path
 - Approx. Maximum Flooding Extent
 - Municipal Boundary
- Maximum Inundation Depth (ft)**
- 1 to 2
 - 2 to 5
 - 5 to 10
 - 10 to 20
 - 20+
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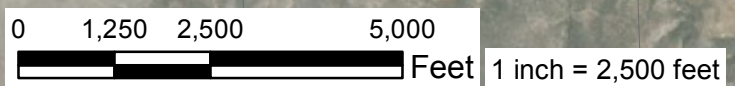
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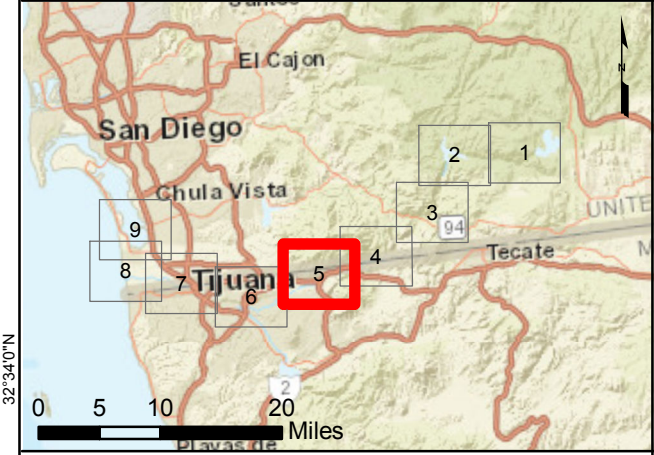
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116°54'0"W 116°53'0"W 116°52'0"W 116°51'0"W 116°50'0"W 116°49'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Mexico Federal Hwy. 2D	29.0	01:32	83.2	31.9



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Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School
- Critical Road

Approx. Time to 1 Foot Depth (hrs:mins)

Cross Section

Flow Path

Approx. Maximum Flooding Extent

Municipal Boundary

Maximum Inundation Depth (ft)

- 1 to 2
- 2 to 5
- 5 to 10
- 10 to 20
- 20+

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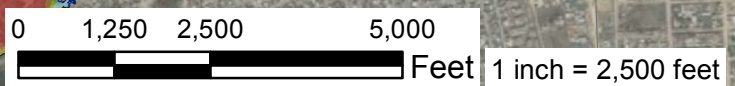
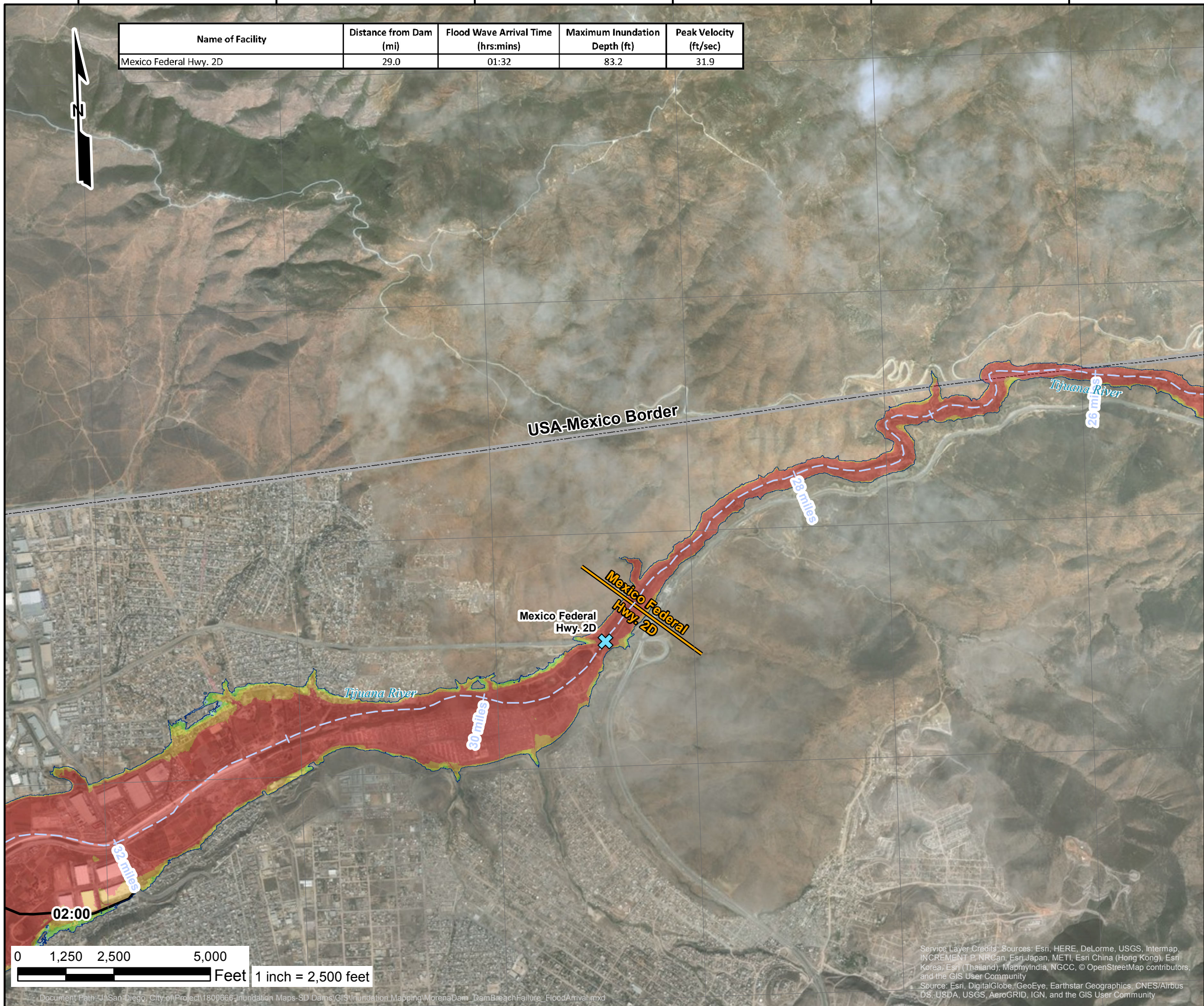
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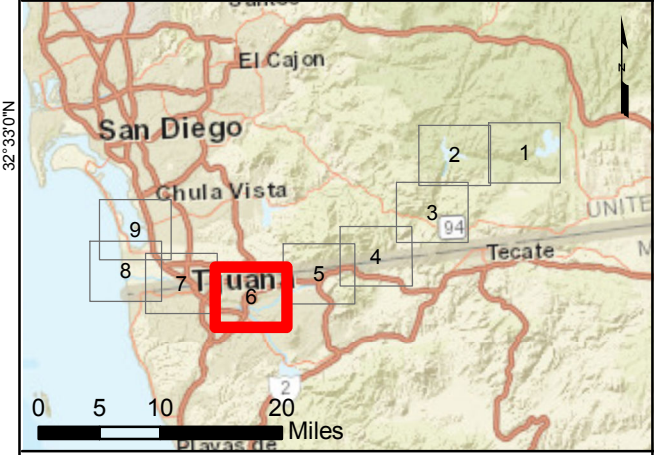
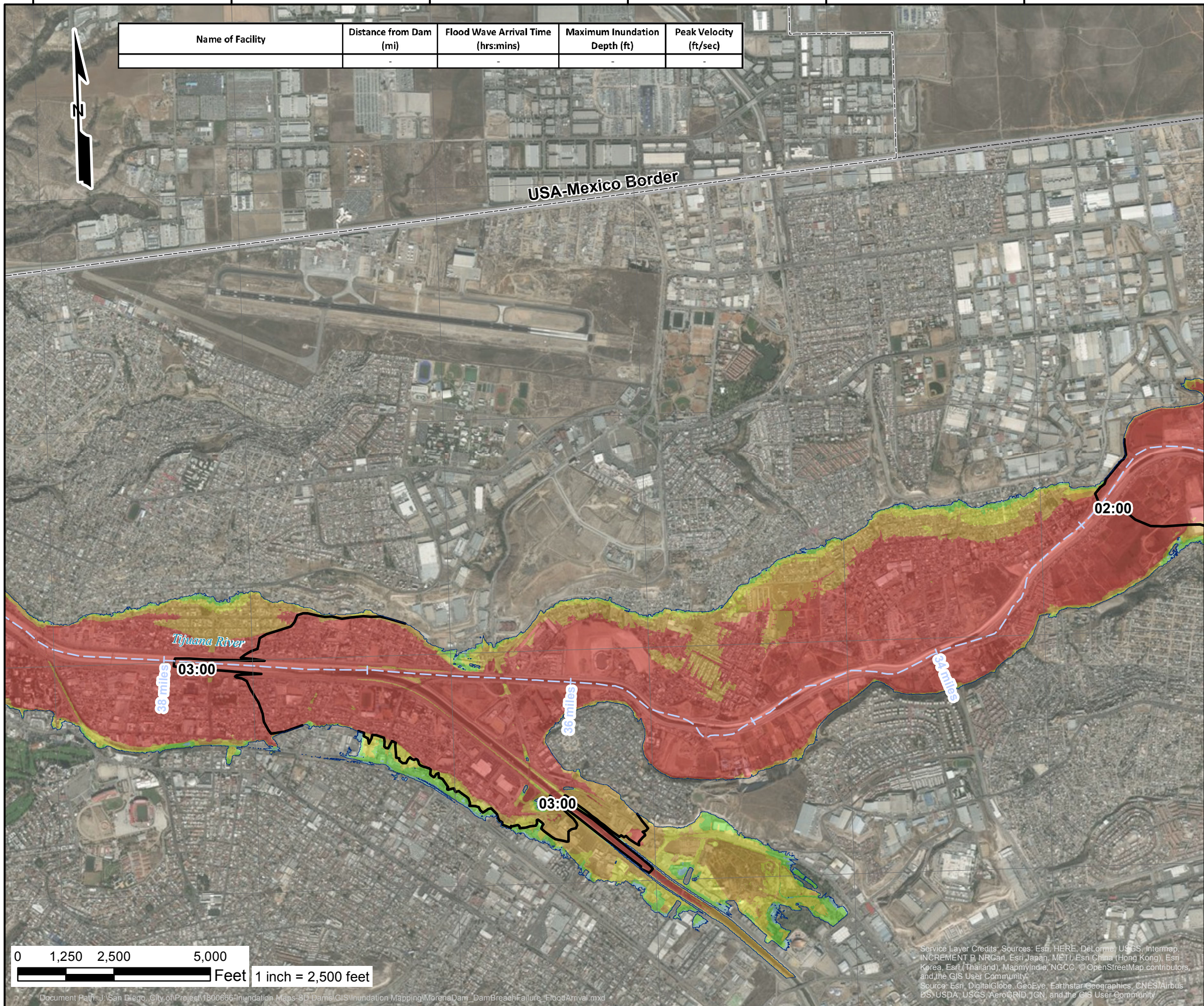
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117°00'W 116°59'0"W 116°58'0"W 116°57'0"W 116°56'0"W 116°55'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
-	-	-	-	-



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Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School

Other Symbols:

- Critical Road
- Approx. Time to 1 Foot Depth (hrs:mins)
- Cross Section
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- Municipal Boundary

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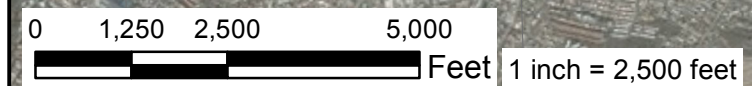
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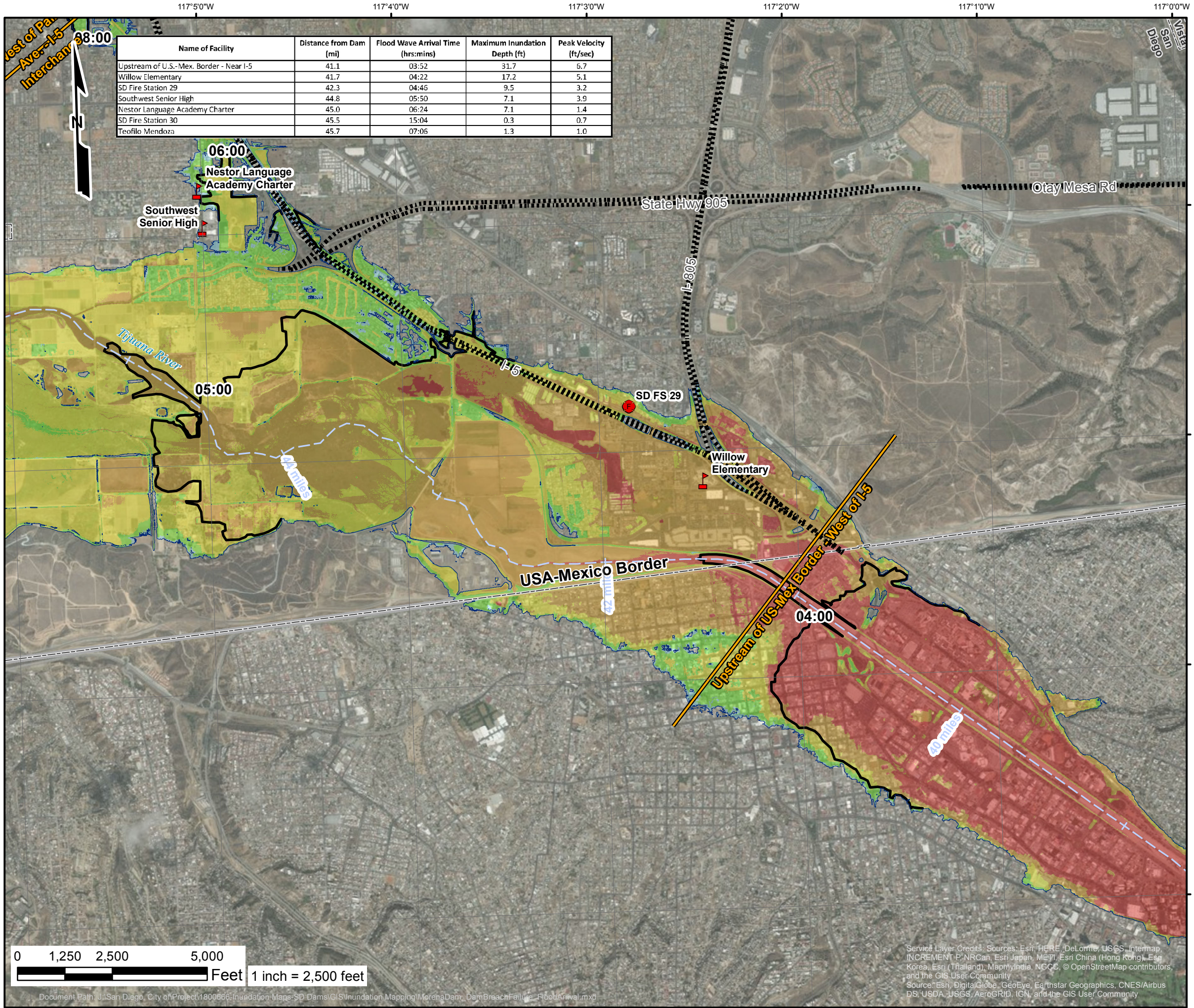
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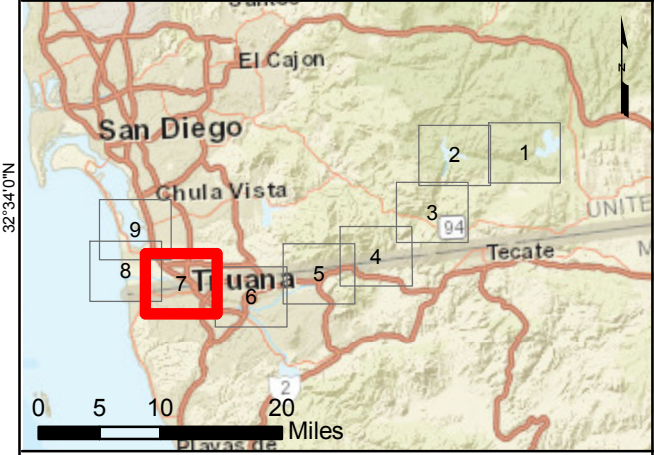


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Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Upstream of U.S.-Mex. Border - Near I-5	41.1	03:52	31.7	6.7
Willow Elementary	41.7	04:22	17.2	5.1
SD Fire Station 29	42.3	04:46	9.5	3.2
Southwest Senior High	44.8	05:50	7.1	3.9
Nestor Language Academy Charter	45.0	06:24	7.1	1.4
SD Fire Station 30	45.5	15:04	0.3	0.7
Teofilo Mendoza	45.7	07:06	1.3	1.0

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Other Symbols:

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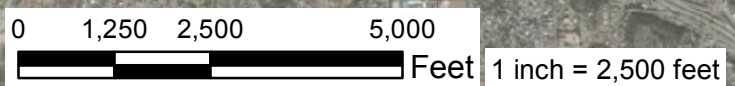
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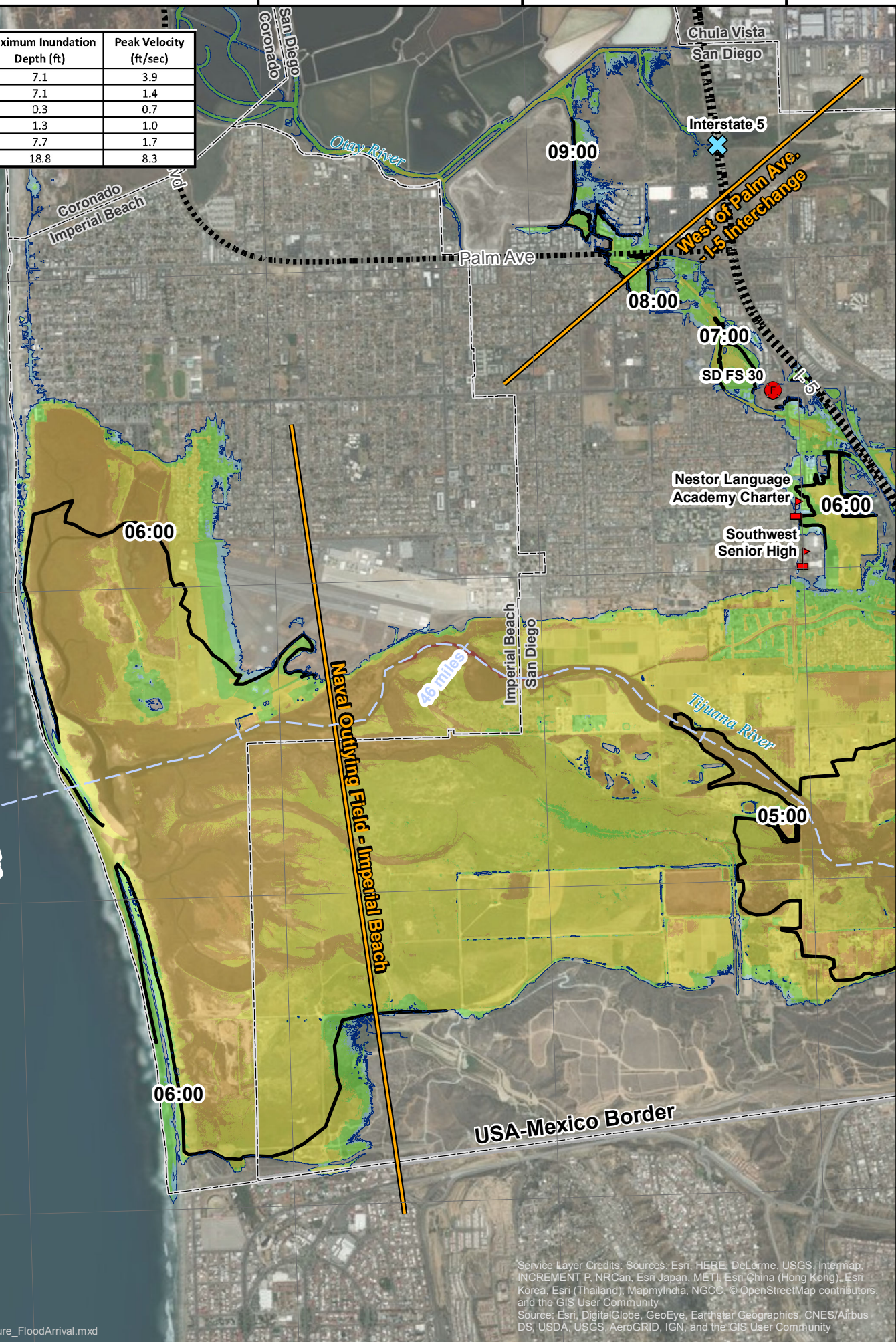
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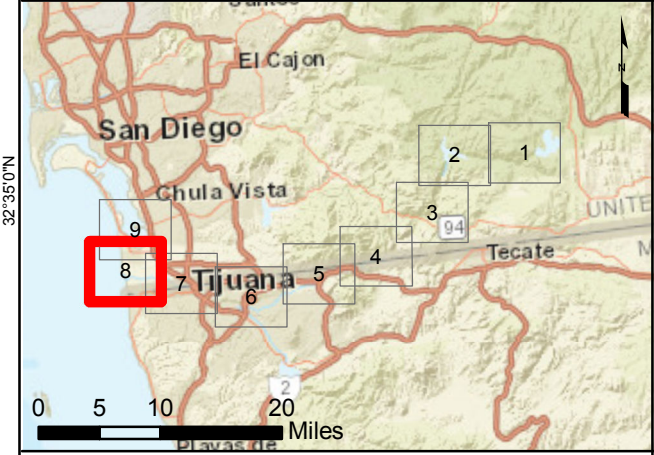
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117°10'0"W 117°9'0"W 117°8'0"W 117°7'0"W 117°6'0"W 117°5'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Southwest Senior High	44.8	05:50	7.1	3.9
Nestor Language Academy Charter	45.0	06:24	7.1	1.4
SD Fire Station 30	45.5	15:04	0.3	0.7
Teofilo Mendoza	45.7	07:06	1.3	1.0
West of Palm Ave - I-5 Interchange	46.2	07:46	7.7	1.7
Naval Outlying Field - Imperial Beach	46.6	05:26	18.8	8.3



Morena Dam Sunny Day Dam Breach Flood Arrival Times San Diego County, California City of San Diego Dam #8.005 & National Dam ID CA00110



Modeling Date: June-2018
Map Creation Date: September-2018
BY: C. Kissick

Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School

Other Symbols:

- Critical Road
- Approx. Time to 1 Foot Depth (hrs:mins)
- Cross Section
- Flow Path
- Approx. Maximum Flooding Extent
- Municipal Boundary

Maximum Inundation Depth (ft)

- 1 to 2
- 2 to 5
- 5 to 10
- 10 to 20
- 20+

* Variations in color are dependent upon the background imagery

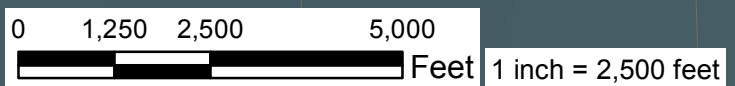
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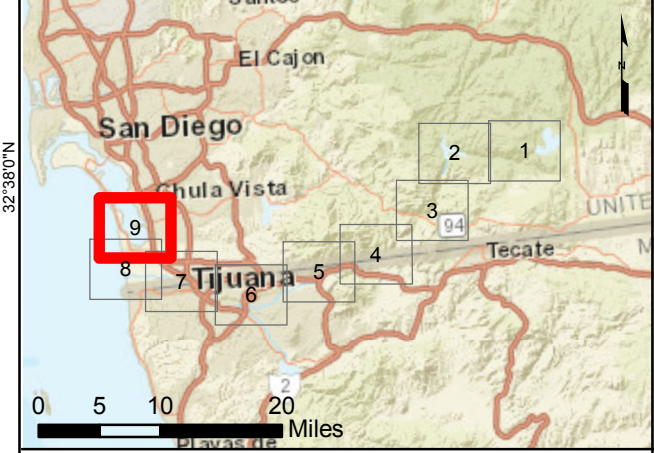
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

117°9'0"W 117°8'0"W 117°7'0"W 117°6'0"W 117°5'0"W 117°4'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
SD Fire Station 30	45.5	15:04	0.3	0.7
Teofilo Mendoza	45.7	07:06	1.3	1.0
West of Palm Ave - I-5 Interchange	46.2	07:46	7.7	1.7



**Morena Dam
Sunny Day Dam Breach
Flood Arrival Times**
San Diego County, California
City of San Diego Dam #8.005
& National Dam ID CA00110



Modeling Date: June-2018
Map Creation Date: September-2018
BY: C. Kissick

Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School

Critical Road

Approx. Time to 1 Foot Depth (hrs:mins)

Cross Section

Flow Path

Approx. Maximum Flooding Extent

Municipal Boundary

Maximum Inundation Depth (ft)

- 1 to 2
- 2 to 5
- 5 to 10
- 10 to 20
- 20+

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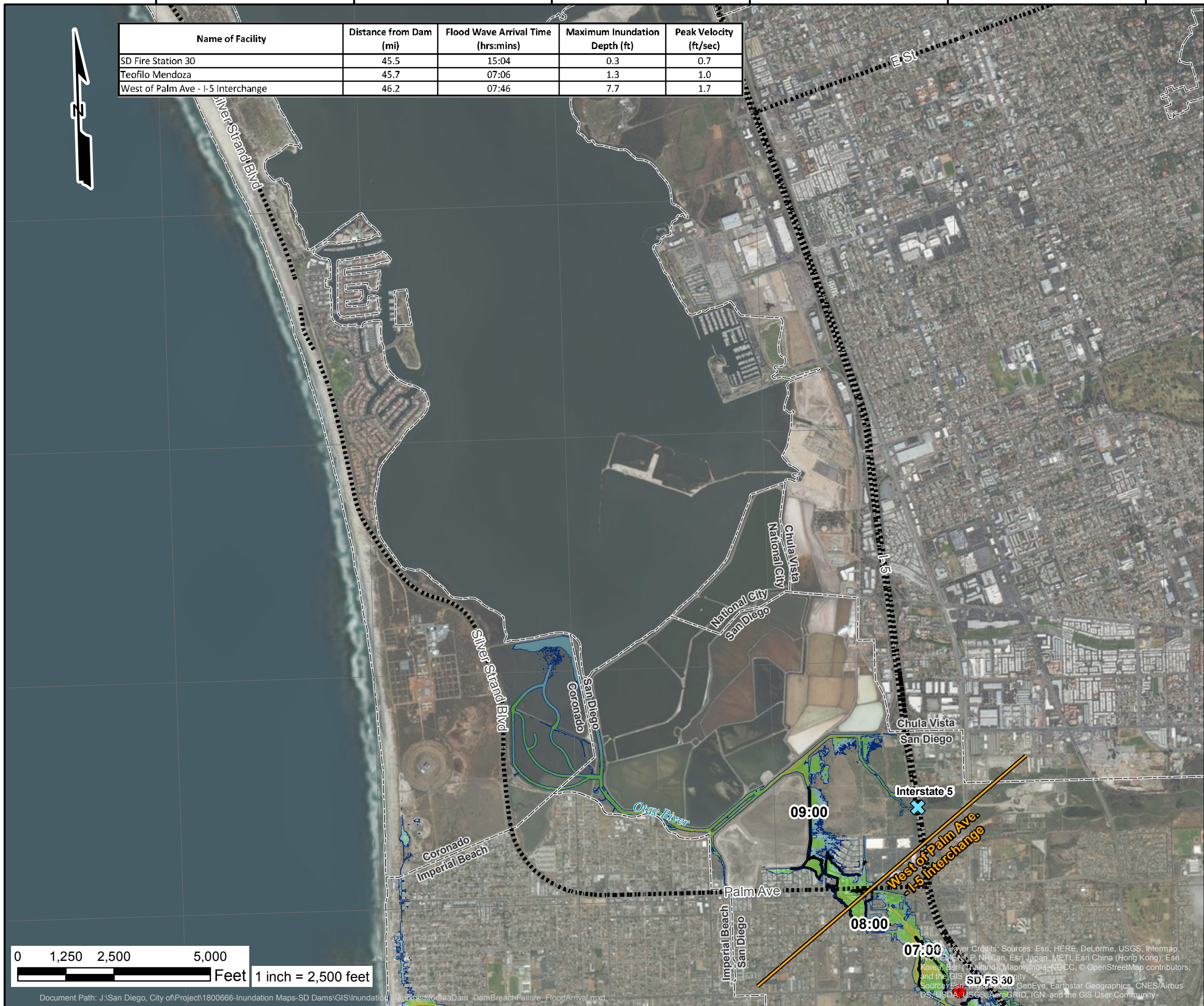
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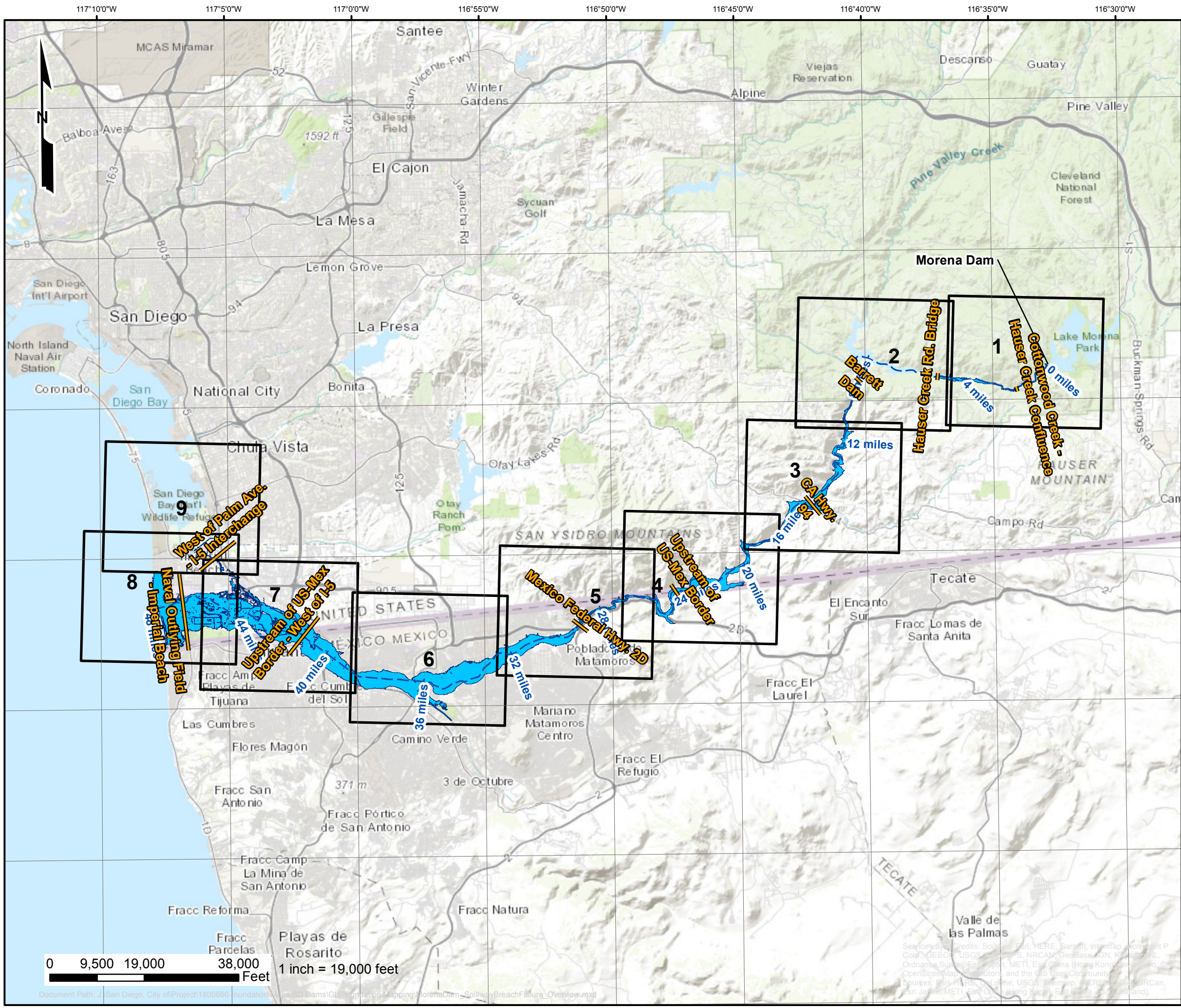


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0 1,250 2,500 5,000 Feet 1 inch = 2,500 feet

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Morena Dam Spillway Sunny Day Spillway Breach Overview

San Diego County, California
State Dam ID: 8.005
& National Dam ID: CA00110

0 100 200 Miles

Modeling Date: June-2018
 Map Creation Date: September-2018
 BY: C. Kissick

Legend

- Cross Section
- Flow Path
- Detailed Sheet Extent
- Approx. Maximum Flooding Extent



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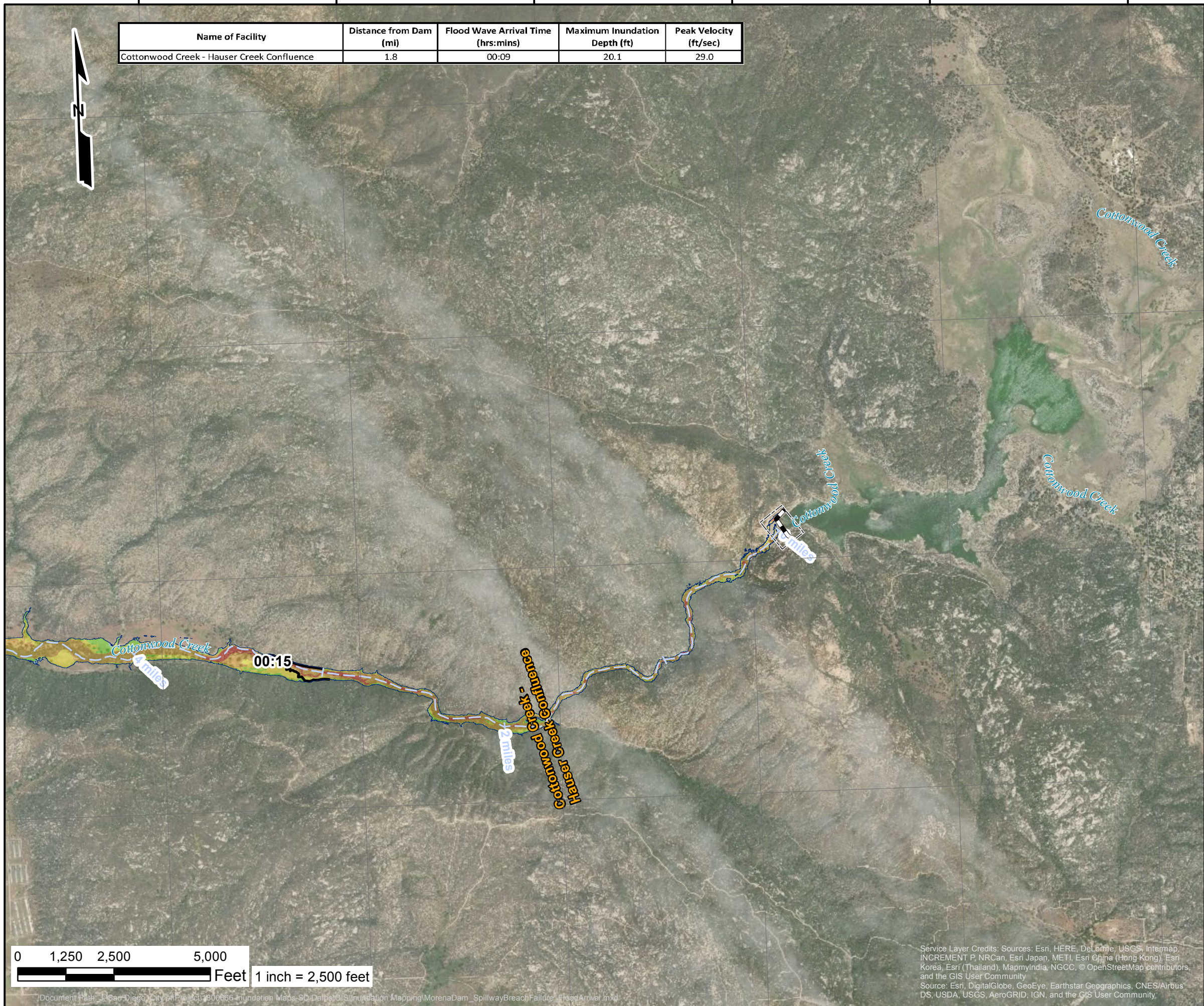
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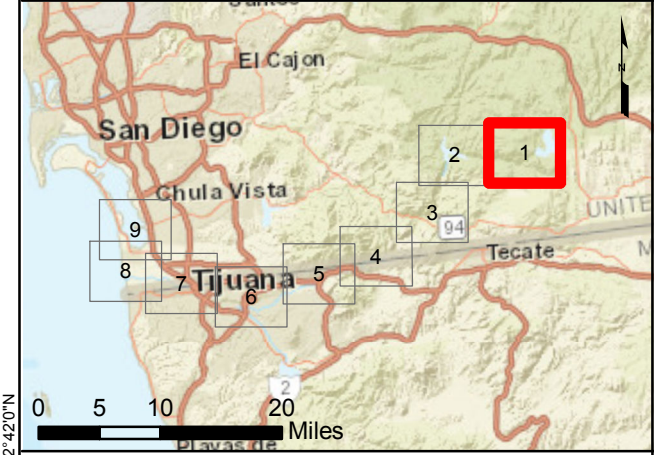
0 9,500 19,000 38,000 Feet
 1 inch = 19,000 feet

116°36'0"W 116°35'0"W 116°34'0"W 116°33'0"W 116°32'0"W 116°31'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Cottonwood Creek - Hauser Creek Confluence	1.8	00:09	20.1	29.0



Morena Dam Spillway Sunny Day Spillway Breach Flood Arrival Times San Diego County, California City of San Diego Dam #8.005 & National Dam ID CA00110



Modeling Date: June-2018
Map Creation Date: September-2018
BY: C. Kissick

Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School

Other Symbols:

- Critical Road
- Approx. Time to 1 Foot Depth (hrs:mins)
- Cross Section
- Flow Path
- Approx. Maximum Flooding Extent
- Municipal Boundary

Maximum Inundation Depth (ft)

- 1 to 2
- 2 to 5
- 5 to 10
- 10 to 20
- 20+

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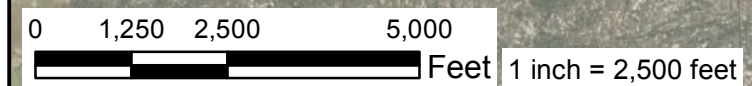
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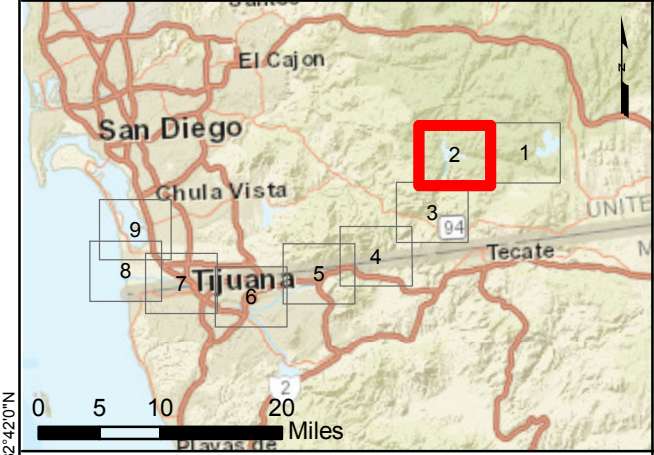
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116°42'0"W 116°41'0"W 116°40'0"W 116°39'0"W 116°38'0"W 116°37'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Downstream of Hauser Creek Rd. Bridge	5.1	00:28	30.6	21.6
Barrett Dam Face	9.4	02:16	89.2	83.4



**Morena Dam Spillway
Sunny Day Spillway Breach
Flood Arrival Times**
San Diego County, California
City of San Diego Dam #8.005
& National Dam ID CA00110



Modeling Date: June-2018
Map Creation Date: September-2018
BY: C. Kissick

Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School

Critical Road

Approx. Time to 1 Foot Depth (hrs:mins)

Cross Section

Flow Path

Approx. Maximum Flooding Extent

Municipal Boundary

Maximum Inundation Depth (ft)

- 1 to 2
- 2 to 5
- 5 to 10
- 10 to 20
- 20+

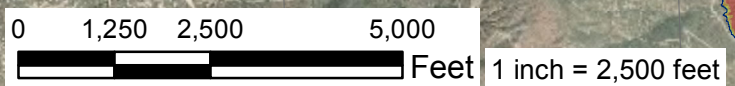
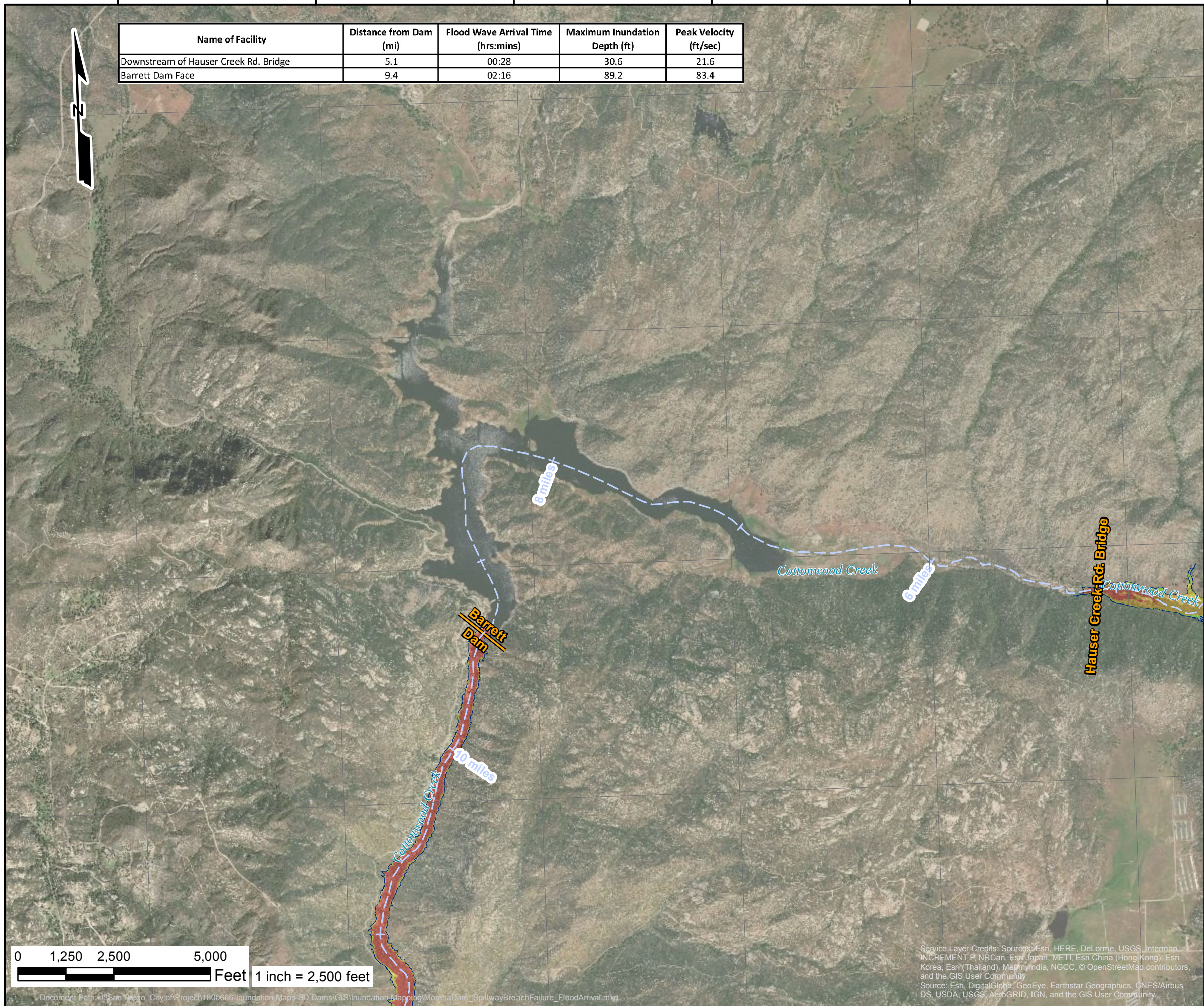
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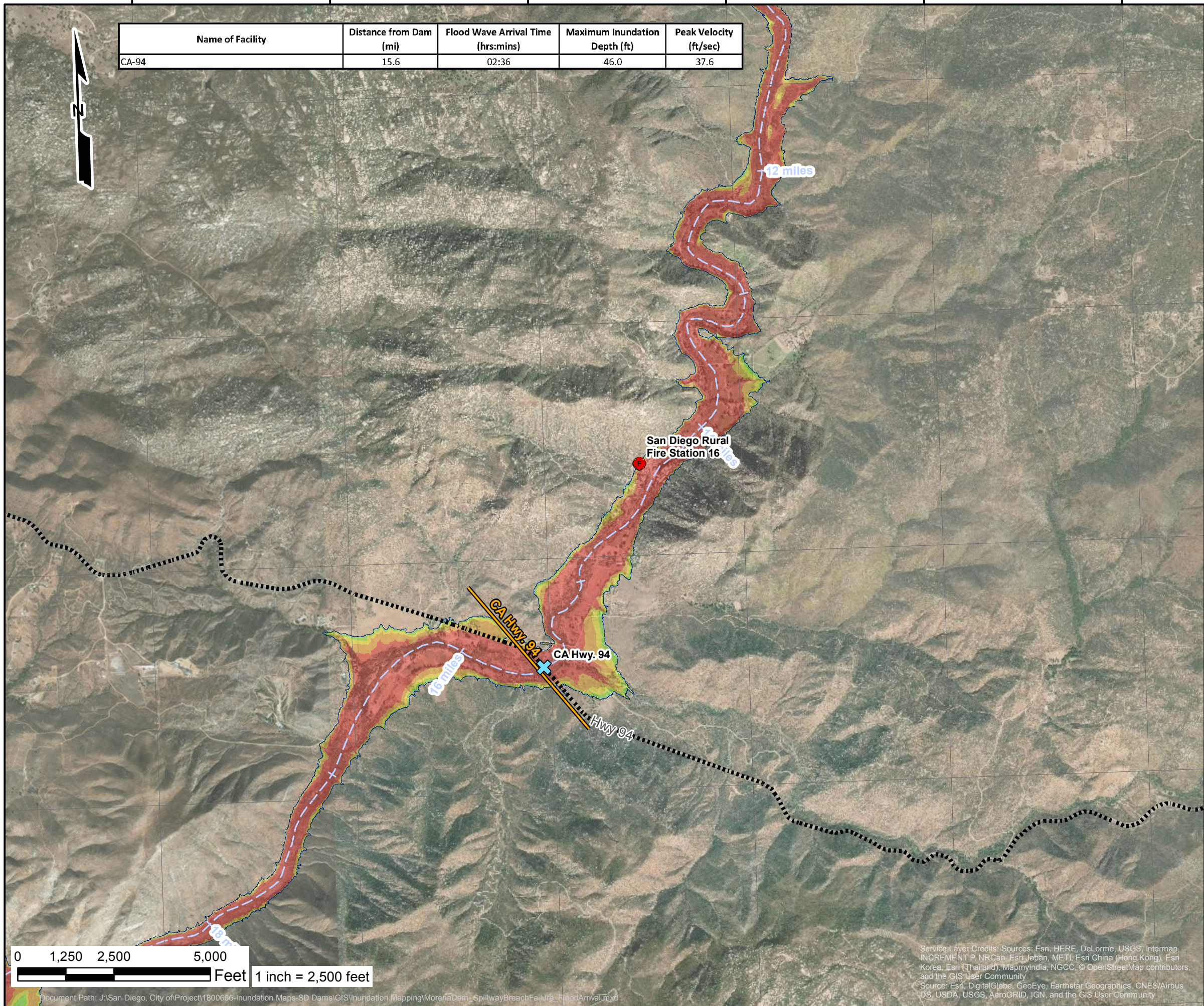
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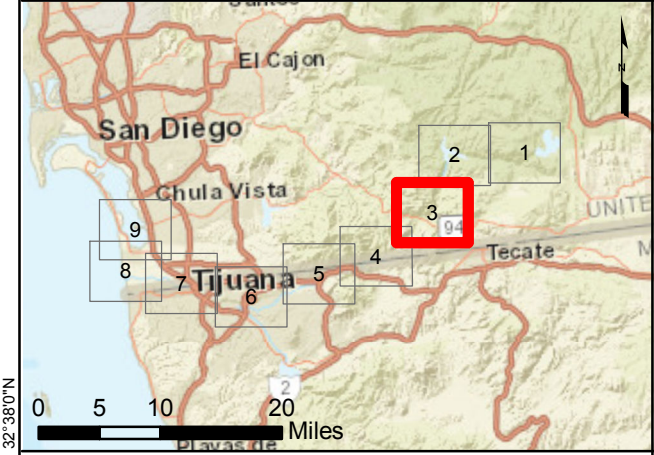
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116°44'0"W 116°43'0"W 116°42'0"W 116°41'0"W 116°40'0"W 116°39'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
CA-94	15.6	02:36	46.0	37.6



**Morena Dam Spillway
Sunny Day Spillway Breach
Flood Arrival Times**
San Diego County, California
City of San Diego Dam #8.005
& National Dam ID CA00110



Modeling Date: June-2018
Map Creation Date: September-2018
BY: C. Kissick

Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School

Other Symbols:

- Critical Road
- Approx. Time to 1 Foot Depth (hrs:mins)
- Cross Section
- Flow Path
- Approx. Maximum Flooding Extent
- Municipal Boundary

Maximum Inundation Depth (ft)

- 1 to 2
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- 20+

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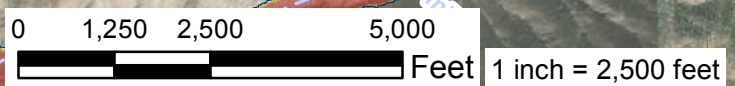
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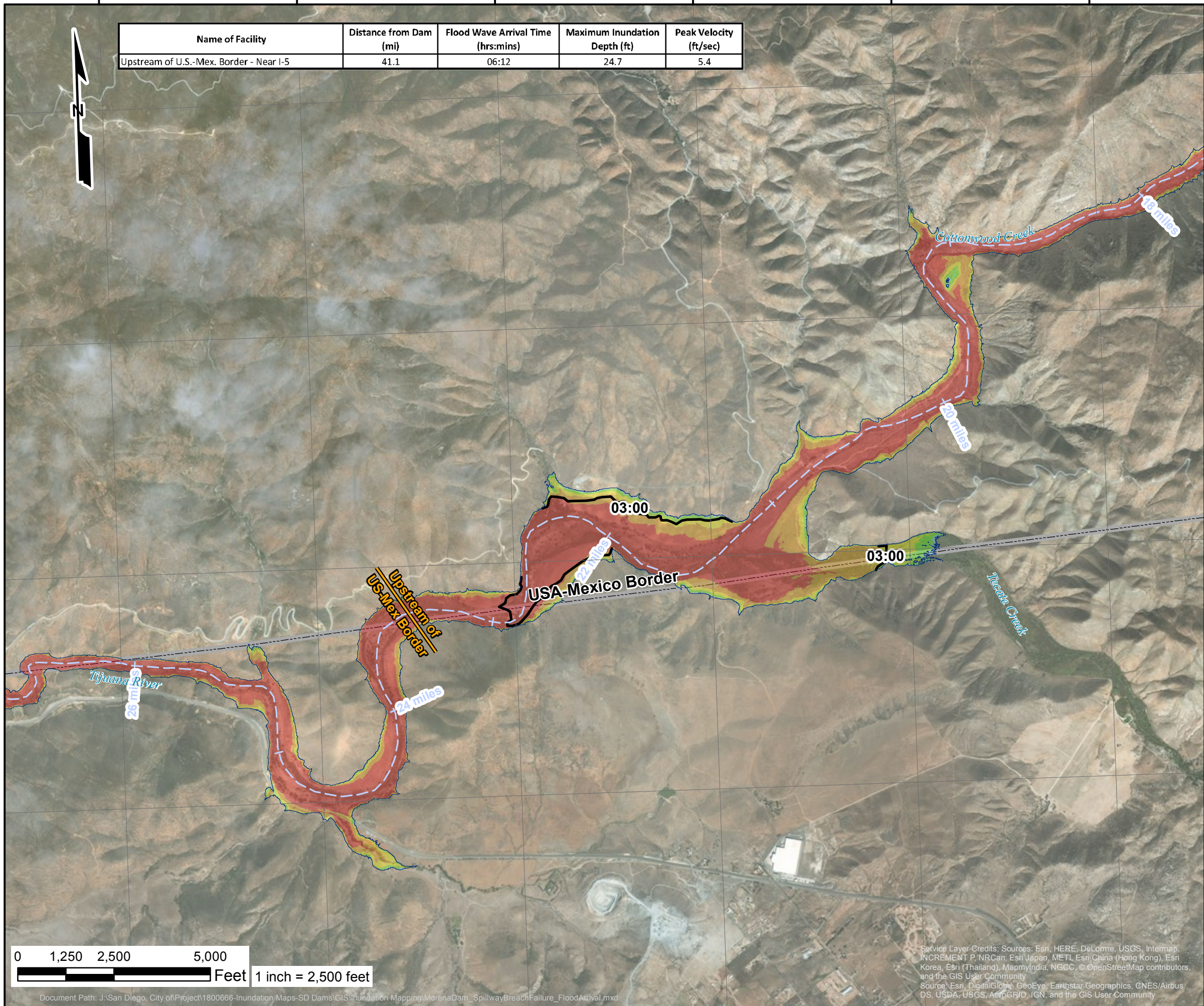
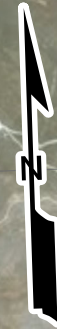
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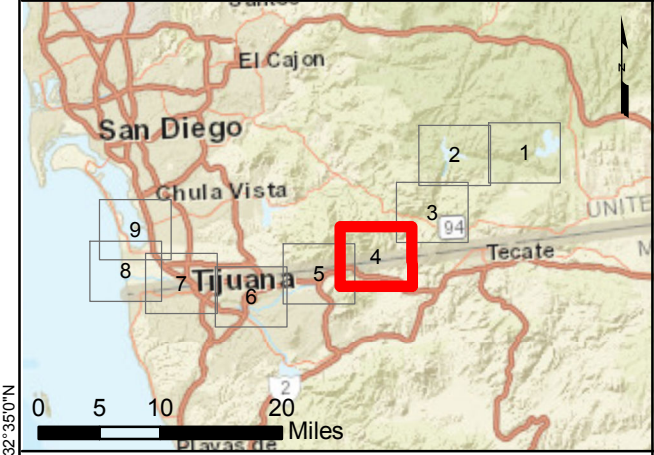
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116°49'0"W 116°48'0"W 116°47'0"W 116°46'0"W 116°45'0"W 116°44'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Upstream of U.S.-Mex. Border - Near I-5	41.1	06:12	24.7	5.4



Morena Dam Spillway Sunny Day Spillway Breach Flood Arrival Times San Diego County, California City of San Diego Dam #8.005 & National Dam ID CA00110



Modeling Date: June-2018
Map Creation Date: September-2018
BY: C. Kissick

Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School

Critical Road
 Approx. Time to 1 Foot Depth (hrs:mins)
 Cross Section
 Flow Path
 Approx. Maximum Flooding Extent
 Municipal Boundary

Maximum Inundation Depth (ft)

- 1 to 2
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- 20+

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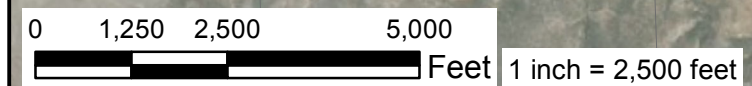
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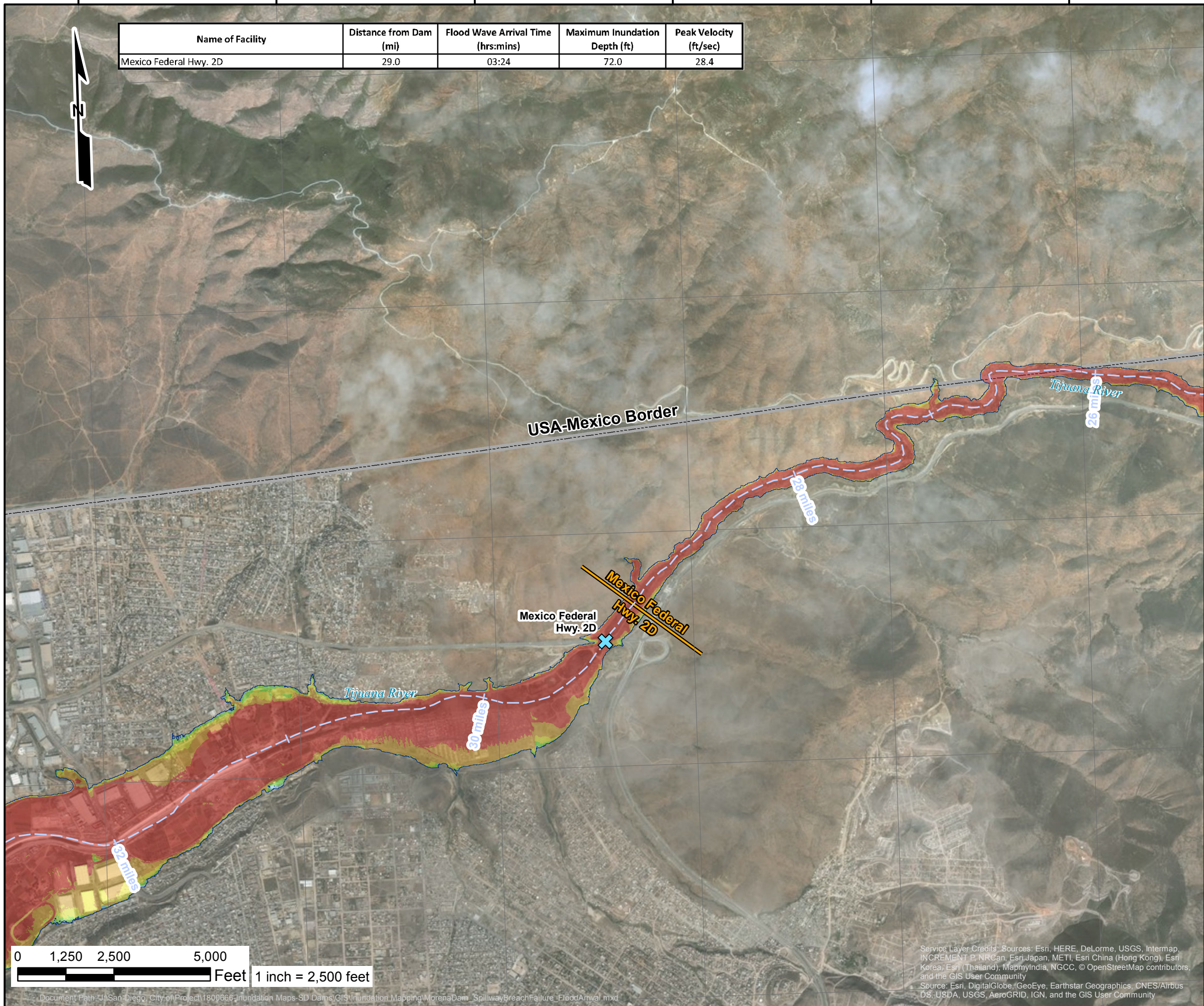
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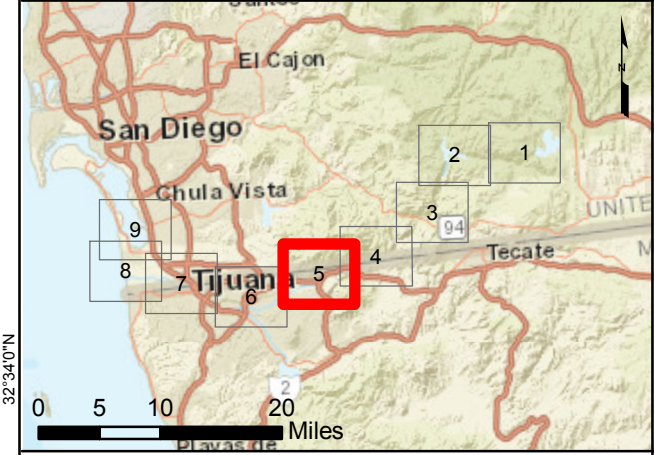
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116°54'0"W 116°53'0"W 116°52'0"W 116°51'0"W 116°50'0"W 116°49'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Mexico Federal Hwy. 2D	29.0	03:24	72.0	28.4



**Morena Dam Spillway
Sunny Day Spillway Breach
Flood Arrival Times**
San Diego County, California
City of San Diego Dam #8.005
& National Dam ID CA00110



Modeling Date: June-2018
Map Creation Date: September-2018
BY: C. Kissick

Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
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- School

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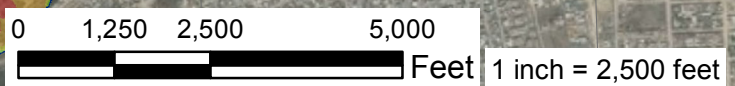
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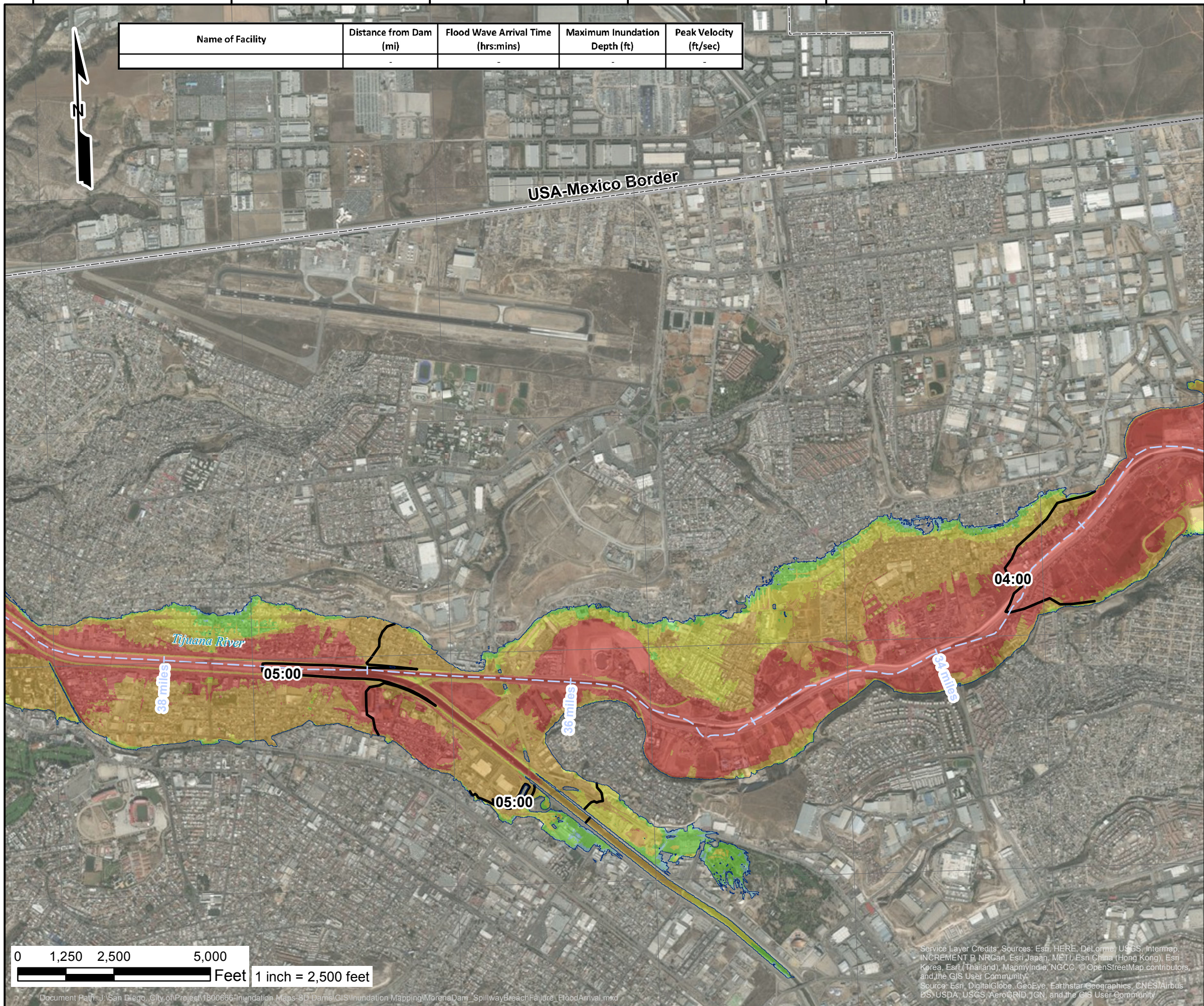
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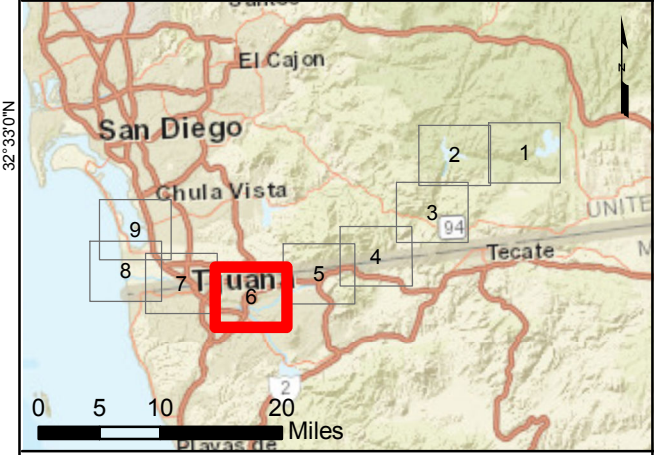
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117°00'W 116°59'0"W 116°58'0"W 116°57'0"W 116°56'0"W 116°55'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
-	-	-	-	-



**Morena Dam Spillway
Sunny Day Spillway Breach
Flood Arrival Times**
San Diego County, California
City of San Diego Dam #8.005
& National Dam ID CA00110



Modeling Date: June-2018
Map Creation Date: September-2018
BY: C. Kissick

Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School

Critical Road

Approx. Time to 1 Foot Depth (hrs:mins)

Cross Section

Flow Path

Approx. Maximum Flooding Extent

Municipal Boundary

Maximum Inundation Depth (ft)

- 1 to 2
- 2 to 5
- 5 to 10
- 10 to 20
- 20+

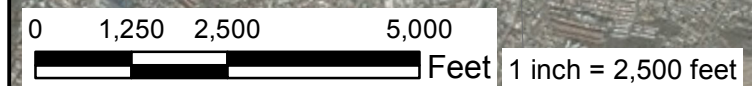
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Notes:

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Inundation Analysis Performed by
and Inundation Maps Created By:
GEI Consultants, Inc.
2868 Prospect Park Dr. #400
Rancho Cordova, CA 95670

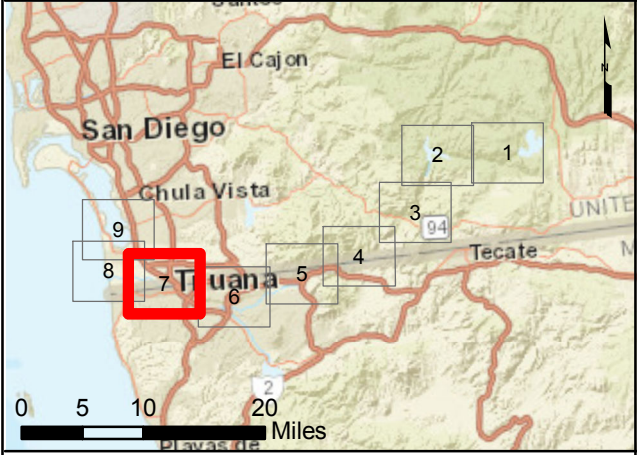
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Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Upstream of U.S.-Mex. Border - Near I-5	41.1	06:12	24.7	5.4
Willow Elementary	41.7	07:08	9.6	3.1
SD Fire Station 29	42.3	08:00	11.1	1.8
Southwest Senior High	44.8	12:36	3.0	0.6
Nestor Language Academy Charter	45.0	20:04	2.3	0.1
SD Fire Station 30	45.5	25:50	0.3	0.5

**Morena Dam Spillway
Sunny Day Spillway Breach
Flood Arrival Times
San Diego County, California
City of San Diego Dam #8.005
& National Dam ID CA00110**



Modeling Date: June-2018
Map Creation Date: September-2018
BY: C. Kissick

Legend

Critical Structures (within 200ft of Max. Flood Extent)

- Critical Road Point
- CalFire Facility
- Licensed Healthcare Facility
- Law Enforcement Facility
- School

Other Symbols:

- Critical Road
- Approx. Time to 1 Foot Depth (hrs:mins)
- Cross Section
- Flow Path
- Approx. Maximum Flooding Extent
- Municipal Boundary

Maximum Inundation Depth (ft)

- 1 to 2
- 2 to 5
- 5 to 10
- 10 to 20
- 20+

* Variations in color are dependent upon the background imagery

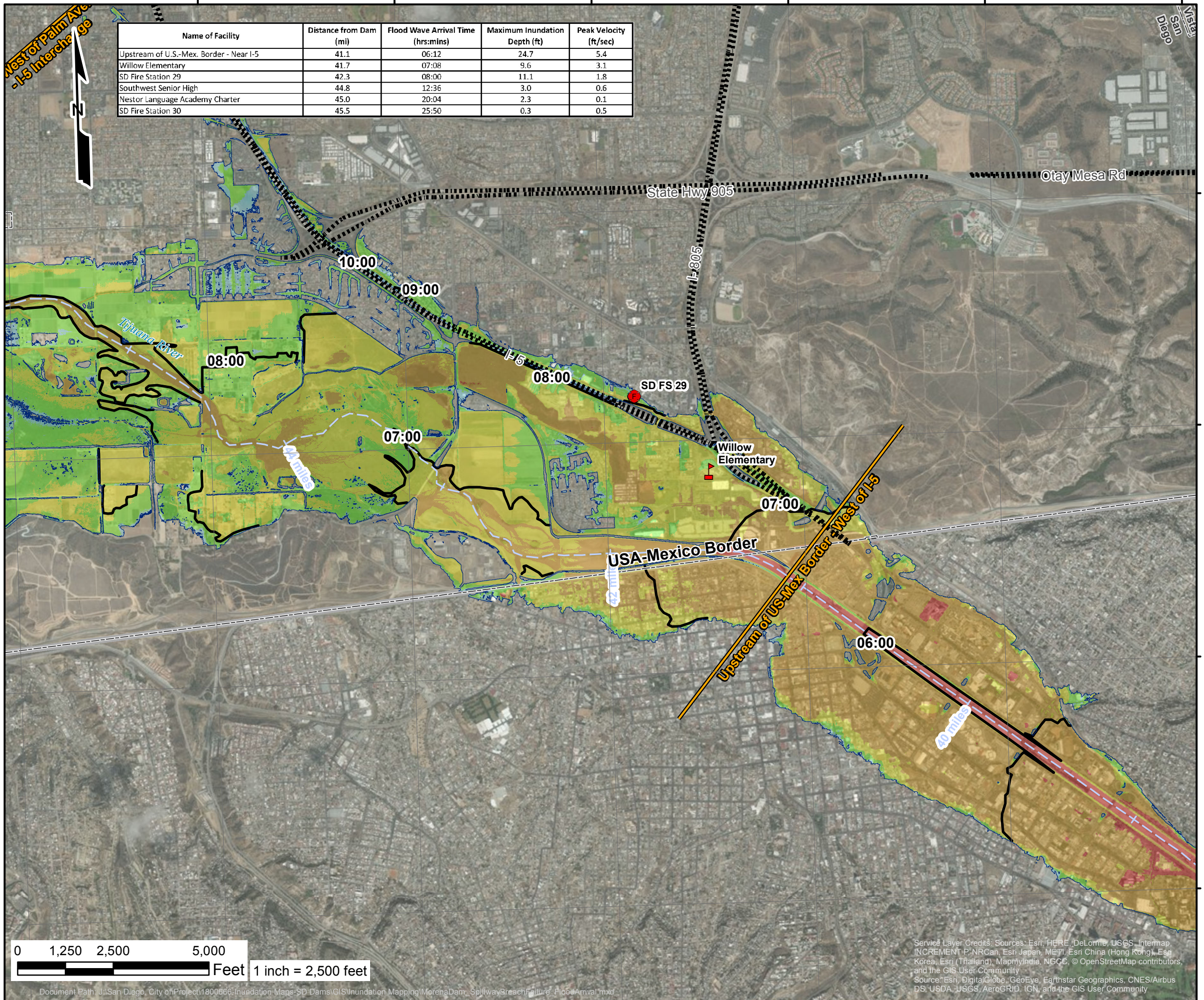
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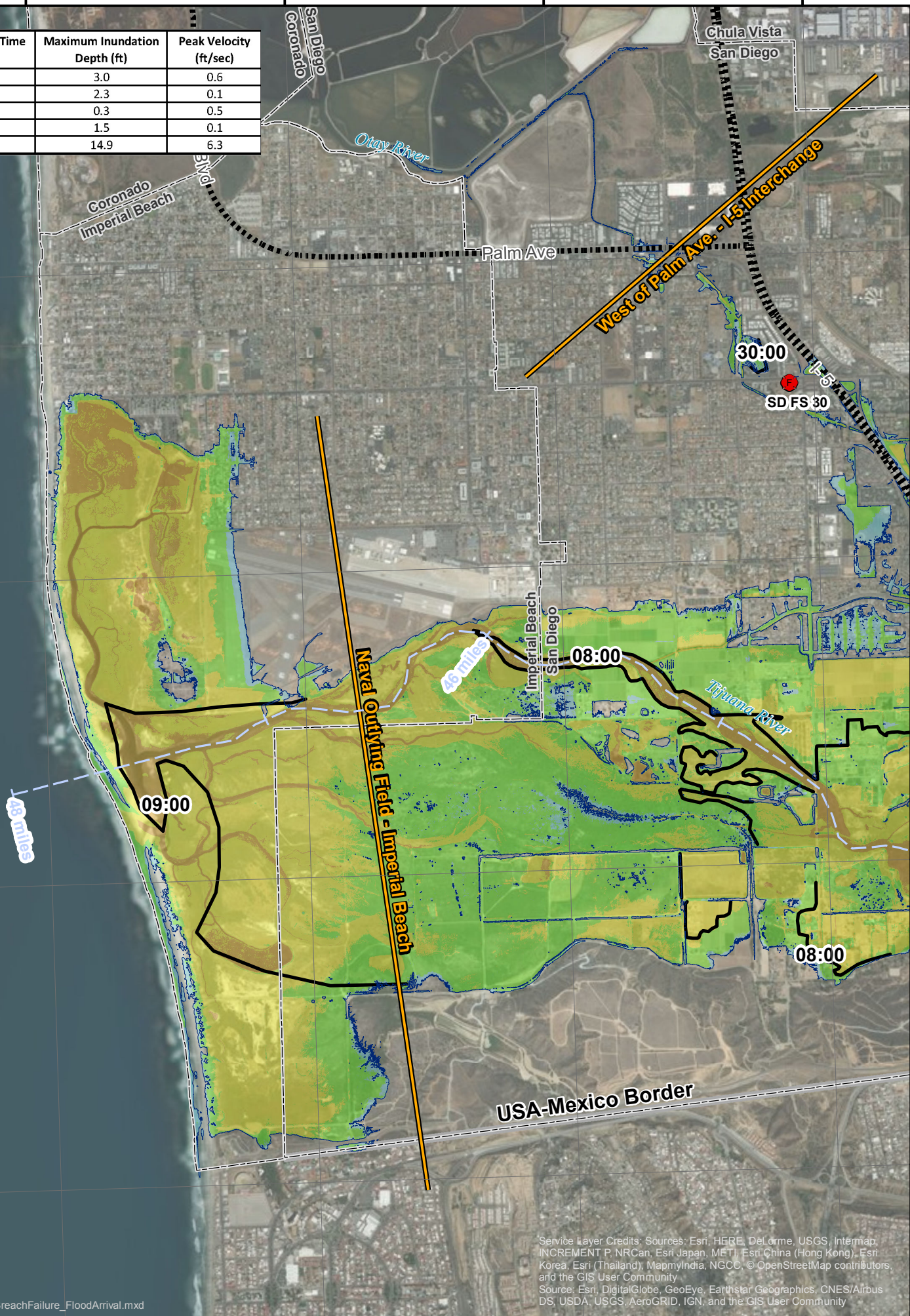
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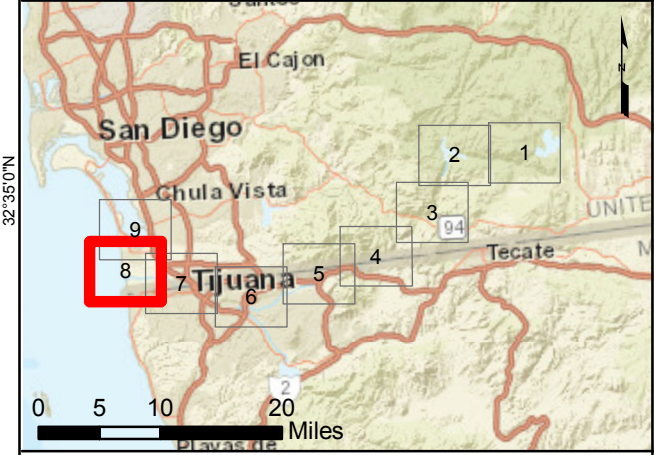
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117°10'0"W 117°9'0"W 117°8'0"W 117°7'0"W 117°6'0"W 117°5'0"W

Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
Southwest Senior High	44.8	12:36	3.0	0.6
Nestor Language Academy Charter	45.0	20:04	2.3	0.1
SD Fire Station 30	45.5	25:50	0.3	0.5
West of Palm Ave - I-5 Interchange	46.2	66:00	1.5	0.1
Naval Outlying Field - Imperial Beach	46.6	08:16	14.9	6.3



Morena Dam Spillway Sunny Day Spillway Breach Flood Arrival Times San Diego County, California City of San Diego Dam #8.005 & National Dam ID CA00110



Modeling Date: June-2018
Map Creation Date: September-2018
BY: C. Kissick

Legend

Critical Structures (within 200ft of Max. Flood Extent)

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Critical Road

Approx. Time to 1 Foot Depth (hrs:mins)

Cross Section

Flow Path

Approx. Maximum Flooding Extent

Municipal Boundary

Maximum Inundation Depth (ft)


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- 2 to 5
- 5 to 10
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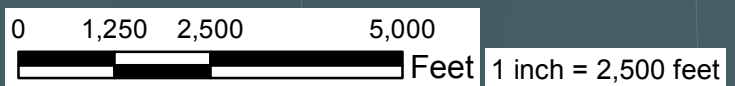
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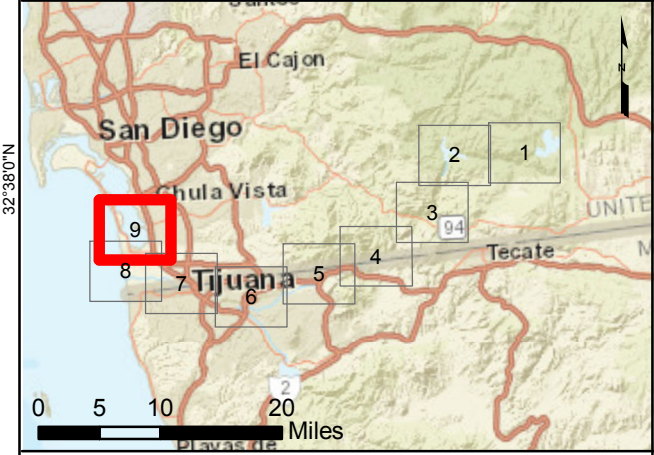
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Name of Facility	Distance from Dam (mi)	Flood Wave Arrival Time (hrs:mins)	Maximum Inundation Depth (ft)	Peak Velocity (ft/sec)
SD Fire Station 30	45.5	25:50	0.3	0.5
West of Palm Ave - I-5 Interchange	46.2	66:00	1.5	0.1



Morena Dam Spillway Sunny Day Spillway Breach Flood Arrival Times

**San Diego County, California
City of San Diego Dam #8.005
& National Dam ID CA00110**



Modeling Date: June-2018
 Map Creation Date: September-2018
 BY: C. Kissick

Legend

Critical Structures (within 200ft of Max. Flood Extent)

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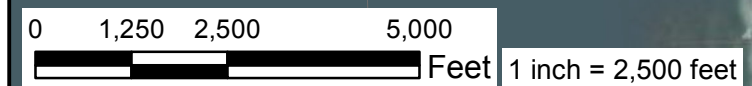
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30:00 SD FS 30
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