

**SOUTHERN CALIFORNIA STEELHEAD PASSAGE ASSESSMENT,  
LOWER SANTA MARGARITA RIVER, CALIFORNIA AND  
CUP SURFACE WATER AVAILABILITY ANALYSIS (TM 1.1)**

**APPENDIX E**

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**LONGITUDINAL AND TOPOGRAPHICAL SURVEY SHEETS**



UPSTREAM END OF SURVEY

Lake O'Neill

PLATE 2

SITE 1

Basilone Rd.

SURVEYED THALWEG ALIGNMENT

SITE 2

PLATE 3

SITE 3

PLATE 4

Vandegrift Blvd.

Stuart Mesa Rd.

DOWNSTREAM END OF SURVEY

- NOTES:
1. AERIAL PHOTO SHOWN IS DATED 2007.
  2. SURVEY DATA SHOWN WAS COLLECTED ON MARCH 8-12, 2011.



SCALE (MILES)  
0 0.5 1 2

DRAFT

LONGITUDINAL AND RECONNAISSANCE SURVEY - SANTA MARGARITA RIVER  
MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA



DATE: AUGUST 5, 2011    JN: 2199-5002    JH / JB / GT  
LOCATION AND EXTENT OF LONGITUDINAL AND RECONNAISSANCE SURVEY    PLATE: 1 of 5





**LEGEND**

- ✕ SURVEY POINT IN RIVER (W/Thawelg Elev)
- SURVEY BENCHMARK
- ✕ SURVEY STATION
- ✕ SURVEY CONTROL POINT

**LEGEND**

- ✕ SURVEY WELL POINT
- ◆ 7W-088 EXISTING WELL

**NOTES:**

1. AERIAL PHOTO SHOWN IS DATED 2007.
2. SURVEY DATA SHOWN WAS COLLECTED ON MARCH 8-12, 2011.



LONGITUDINAL AND RECONNAISSANCE SURVEY - SANTA MARGARITA RIVER  
MARINE CORPS BASE CAMP PENDELTON - SAN DIEGO, CA

DATE: AUGUST 5, 2011	JN: 2199-5002	JH / JB / GT
SURVEY PLAN VIEW FROM STA:0+00 TO STA:170+00		PLATE: 2 of 5

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CRITICAL PASSAGE - CONTAIN AREAS OF LOW WATER DEPTH

SITE 2

VANDEGRIFT BLVD

CRITICAL PASSAGE - CONTAIN AREAS OF LOW WATER DEPTH

SITE 3

LEGEND

- ✕ SURVEY POINT IN RIVER (W/Thawelg Elev)
- SURVEY BENCHMARK
- ✕ SURVEY STATION
- ✕ SURVEY CONTROL POINT

LEGEND

- ✕ SURVEY WELL POINT
- ◆ TW-088 EXISTING WELL

NOTES:

1. AERIAL PHOTO SHOWN IS DATED 2007.
2. SURVEY DATA SHOWN WAS COLLECTED ON MARCH 8-12, 2011.



LONGITUDINAL AND RECONNAISSANCE SURVEY - SANTA MARGARITA RIVER  
MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA

DATE: AUGUST 5, 2011	JN: 2199-5002	JH / JB / GT
SURVEY PLAN VIEW FROM STA:170+00 TO STA:340+00		PLATE: 3 of 5

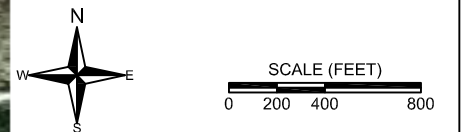
**DRAFT**







- NOTES:**
1. AERIAL PHOTO SHOWN IS DATED 2007.
  2. SURVEY DATA SHOWN WAS COLLECTED ON MARCH 8-12, 2011.



- |   |  |
|---|--|
| <p><b>LEGEND</b></p> <ul style="list-style-type: none"> <li>✕ SURVEY POINT IN RIVER (W/Thawelg Elev)</li> <li>■ SURVEY BENCHMARK</li> <li>✖ SURVEY STATION</li> <li>✕ SURVEY CONTROL POINT</li> </ul> | <p><b>LEGEND</b></p> <ul style="list-style-type: none"> <li>✕ SURVEY WELL POINT</li> <li>◆ TW-088 EXISTING WELL</li> </ul> |
|---|--|

LONGITUDINAL AND RECONNAISSANCE SURVEY - SANTA MARGARITA RIVER  
MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA

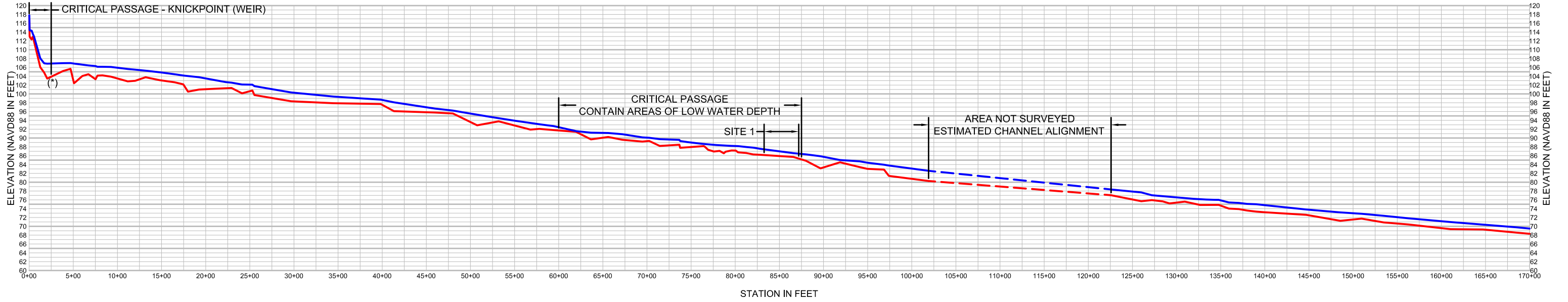
DATE: AUGUST 5, 2011	JN: 2199-5002	JH / JB / GT
SURVEY PLAN VIEW FROM STA: 340+00 TO STA 490+00		PLATE: 4 of 5

**DRAFT**

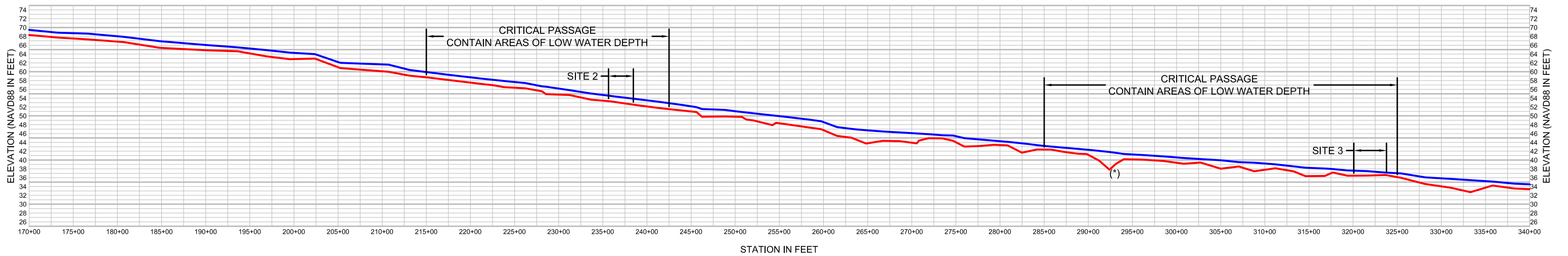




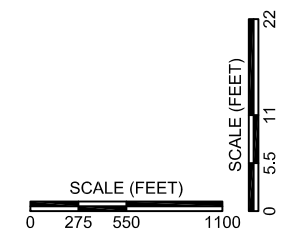
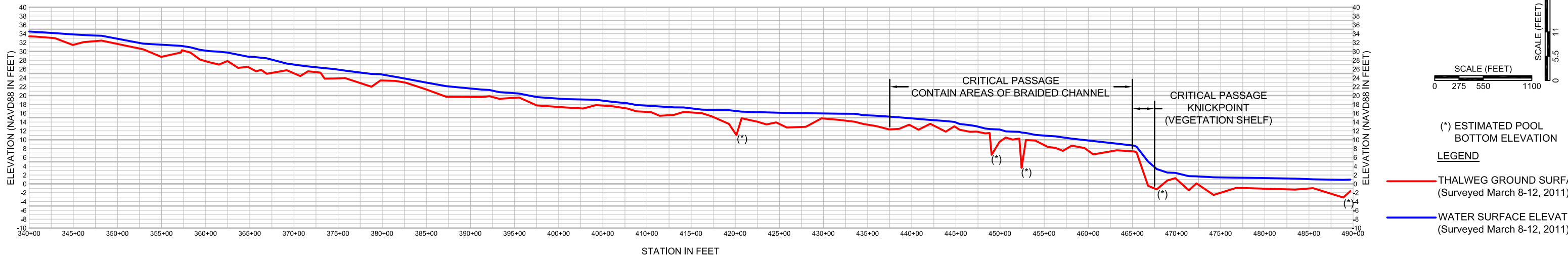
THALWEG PROFILE FROM STA:0+00 TO STA:170+00



THALWEG PROFILE FROM STA:170+00 TO STA:340+00



THALWEG PROFILE FROM STA:340+00 TO STA:490+00



(\*) ESTIMATED POOL BOTTOM ELEVATION

LEGEND

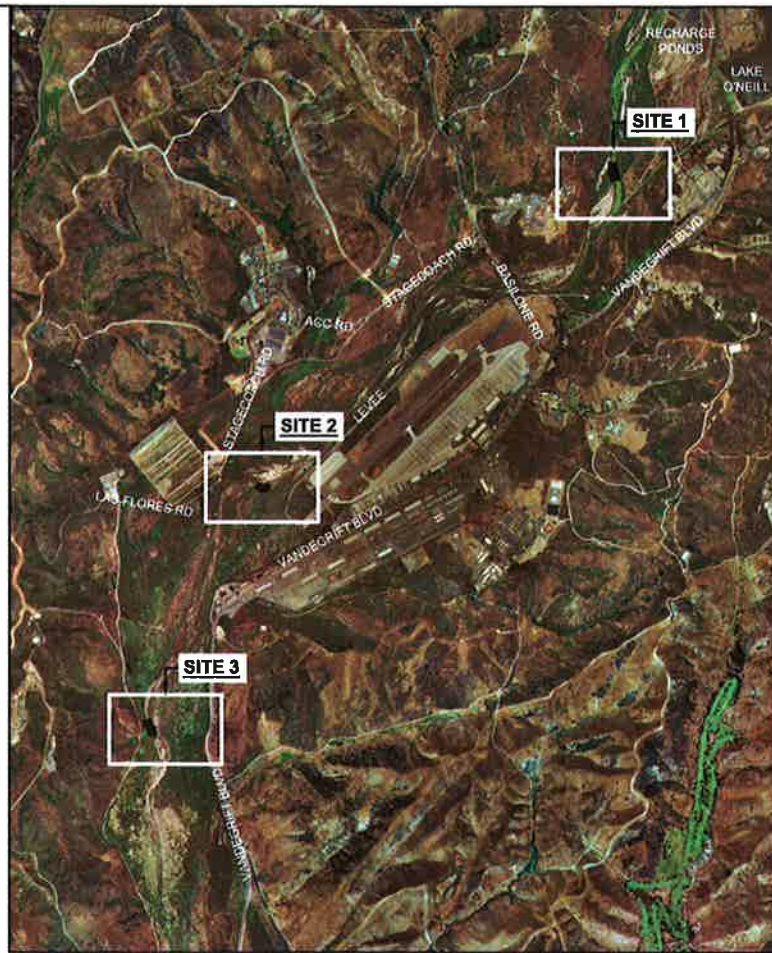
- THALWEG GROUND SURFACE (Surveyed March 8-12, 2011)
- WATER SURFACE ELEVATION (Surveyed March 8-12, 2011)

LONGITUDINAL AND RECONNAISSANCE SURVEY - SANTA MARGARITA RIVER MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA		
DATE: AUGUST 5, 2011	JN: 2199-5002	JH / JB / GT
LONGITUDINAL THALWEG AND WATER SURFACE ELEVATION PROFILE		PLATE: 5 of 5

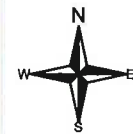
**DRAFT**



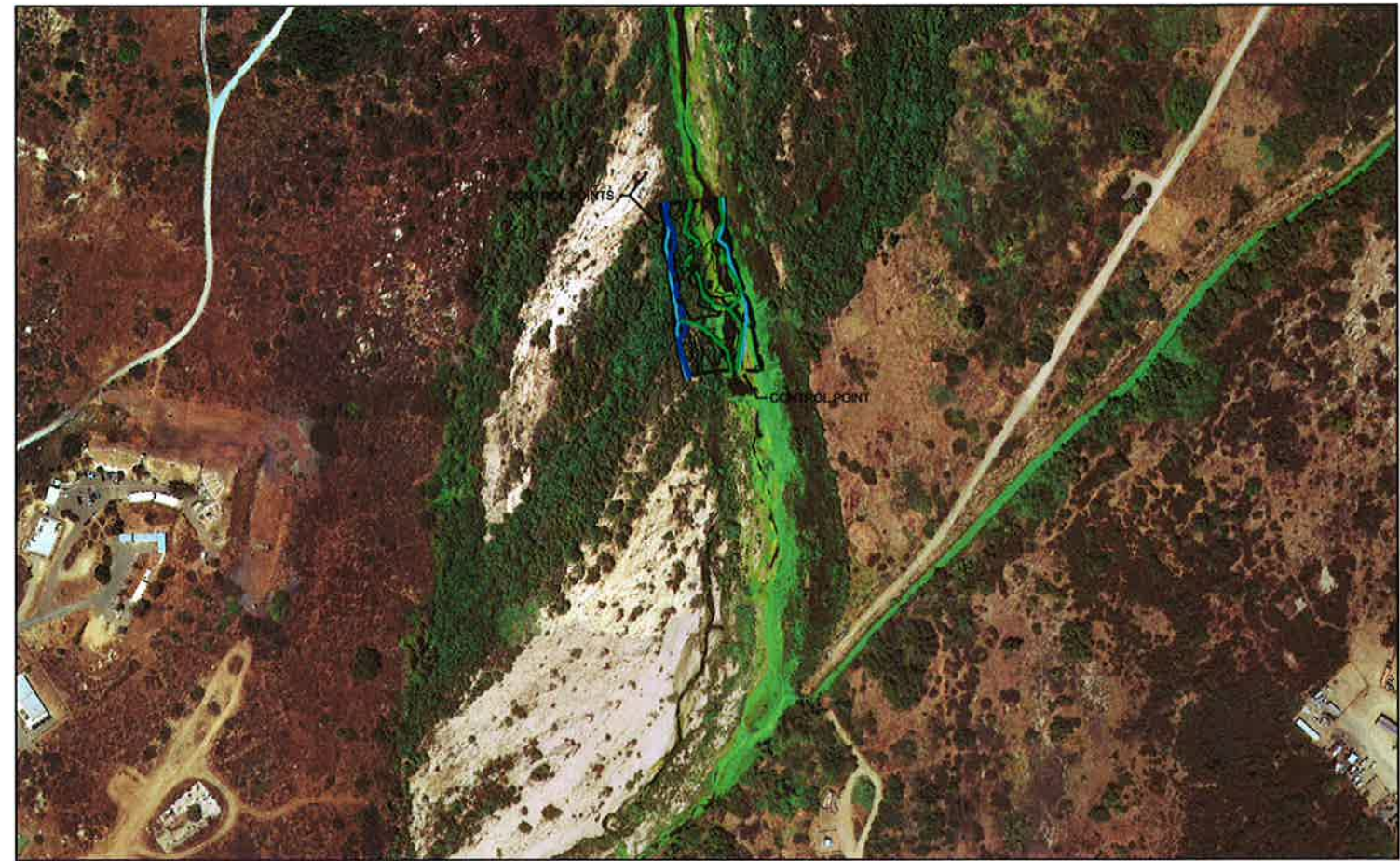
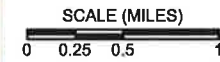




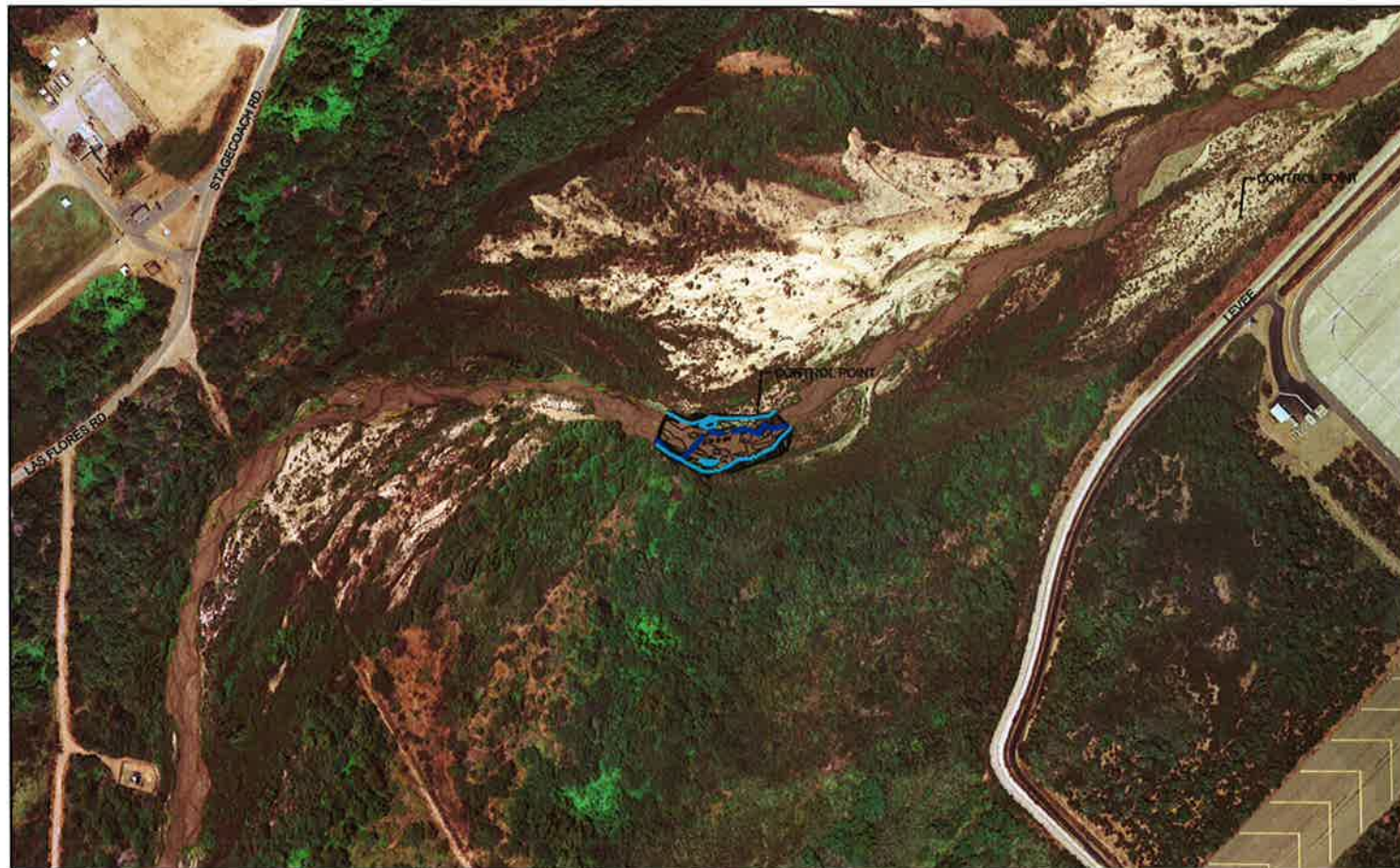
**INDEX MAP**



**NOTE:**  
AERIAL PHOTO SHOWN  
IS DATED 2009.



**SITE 1 LOCATION MAP**




**SITE 2 LOCATION MAP**



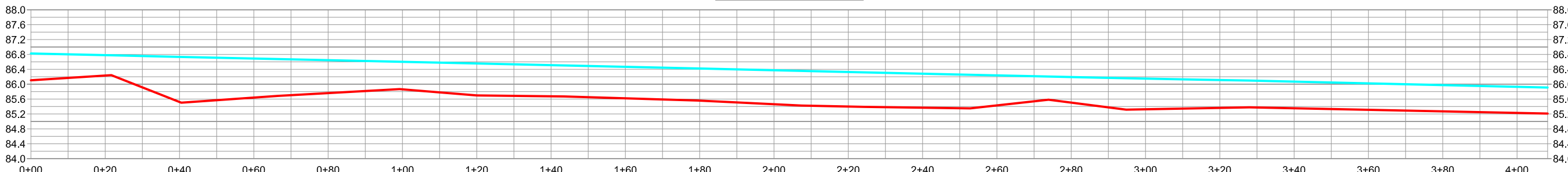
**SITE 3 LOCATION MAP**

**DRAFT**

<b>TOPOGRAPHIC SITE SURVEY</b> <b>SANTA MARGARITA RIVER</b> MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA		
DATE: JULY 15, 2011	JN: 2199-5002	JB / GT
 <b>STETSON</b> ENGINEERS INC.		<b>LOCATION MAP</b> <b>PLATE:</b> 1 of 10



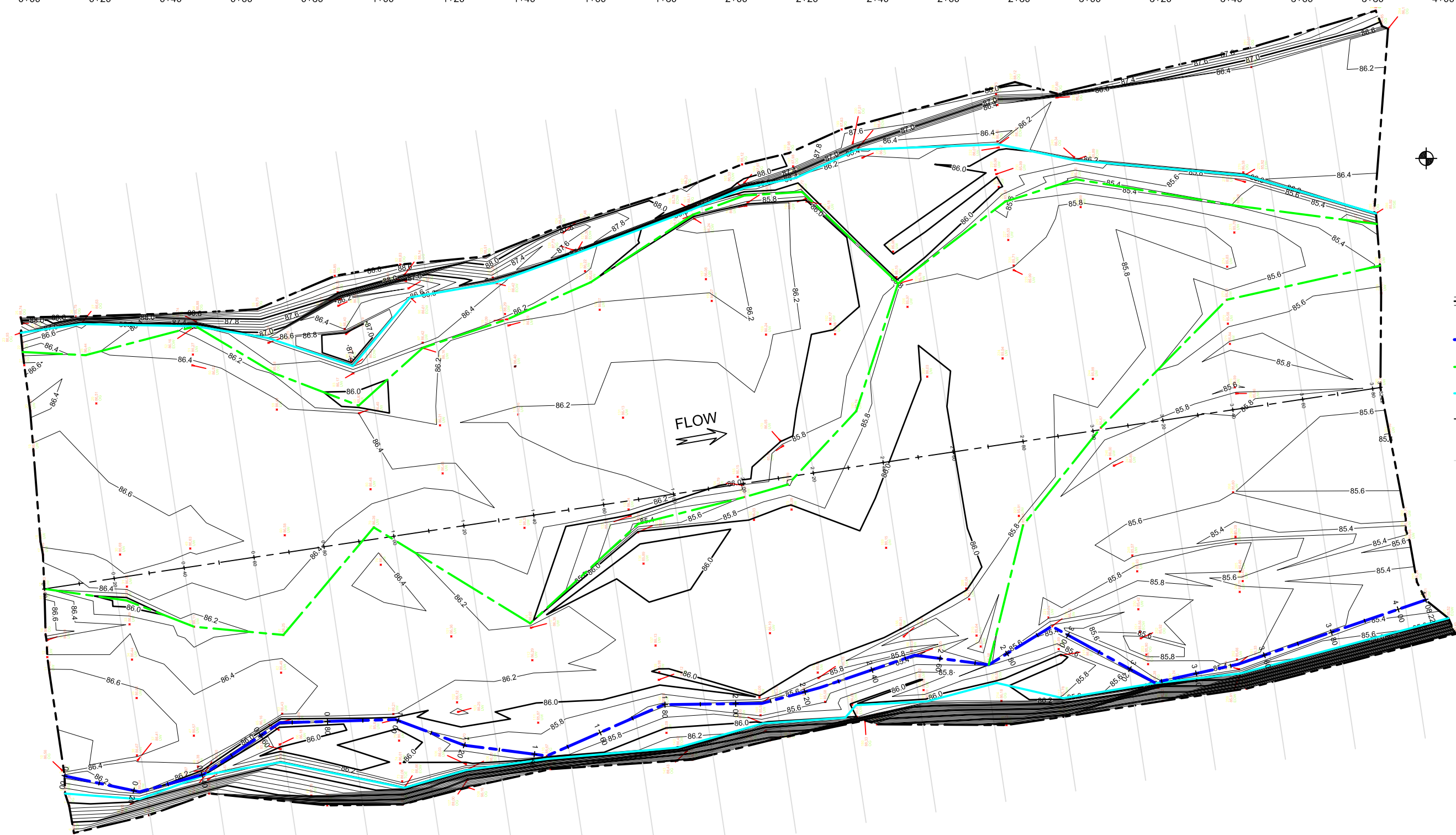
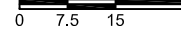
# THALWEG PROFILE



## LEGEND

- THALWEG GROUND SURFACE (Surveyed April 12, 2011)
- WATER SURFACE ELEVATION (Surveyed April 12, 2011)

SCALE (FEET)

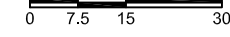


## LEGEND

- SURVEY CONTROL POINT
- SURVEY POINT
- GROUND SURFACE CONTOURS (Surveyed April 12, 2011)
- THALWEG ALIGNMENT
- OTHER LOW FLOW STREAM
- EDGE OF WATER
- CREEK CENTER ALIGNMENT (For Cross-Sections See Sheet 3)
- CROSS-SECTION



SCALE (FEET)

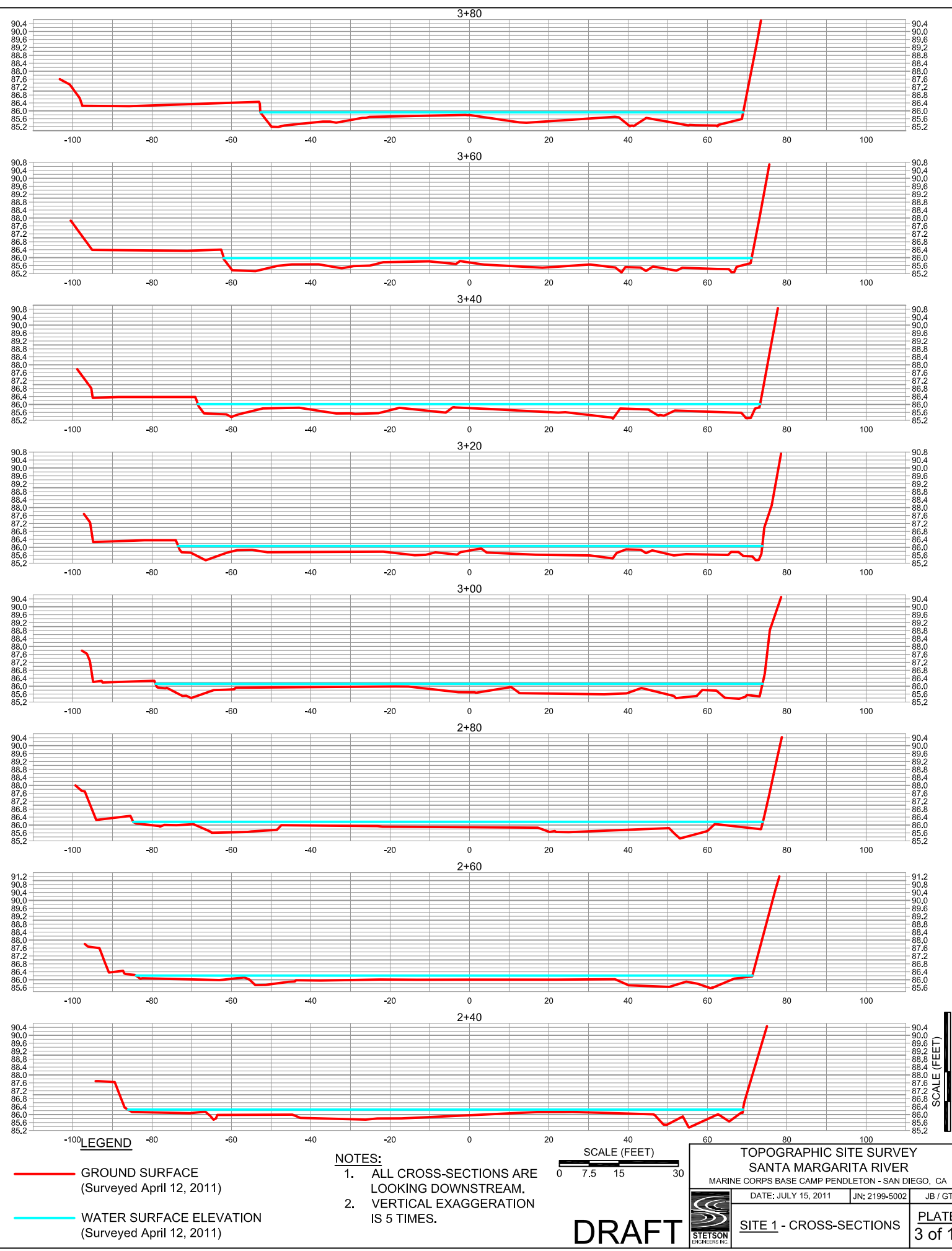
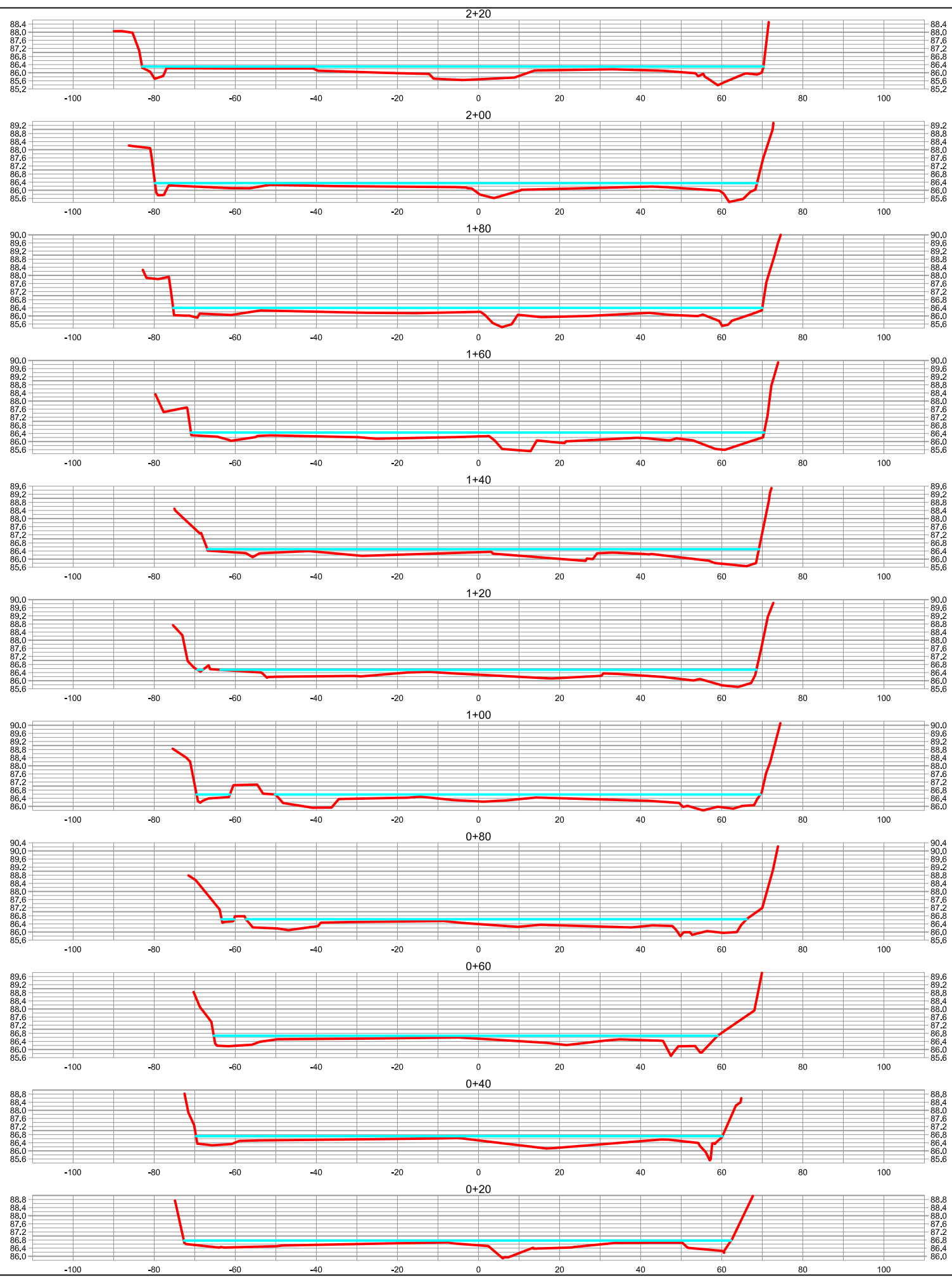


TOPOGRAPHIC SITE SURVEY SANTA MARGARITA RIVER MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA		
DATE: JULY 15, 2011	JN: 2199-5002	JB / GT
SITE 1 - TOPOGRAPHIC MAP AND LONGITUDINAL THALWEG PROFILE		PLATE: 2 of 10

**DRAFT**





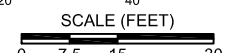


**LEGEND**

- GROUND SURFACE (Surveyed April 12, 2011)
- WATER SURFACE ELEVATION (Surveyed April 12, 2011)

**NOTES:**

1. ALL CROSS-SECTIONS ARE LOOKING DOWNSTREAM.
2. VERTICAL EXAGGERATION IS 5 TIMES.

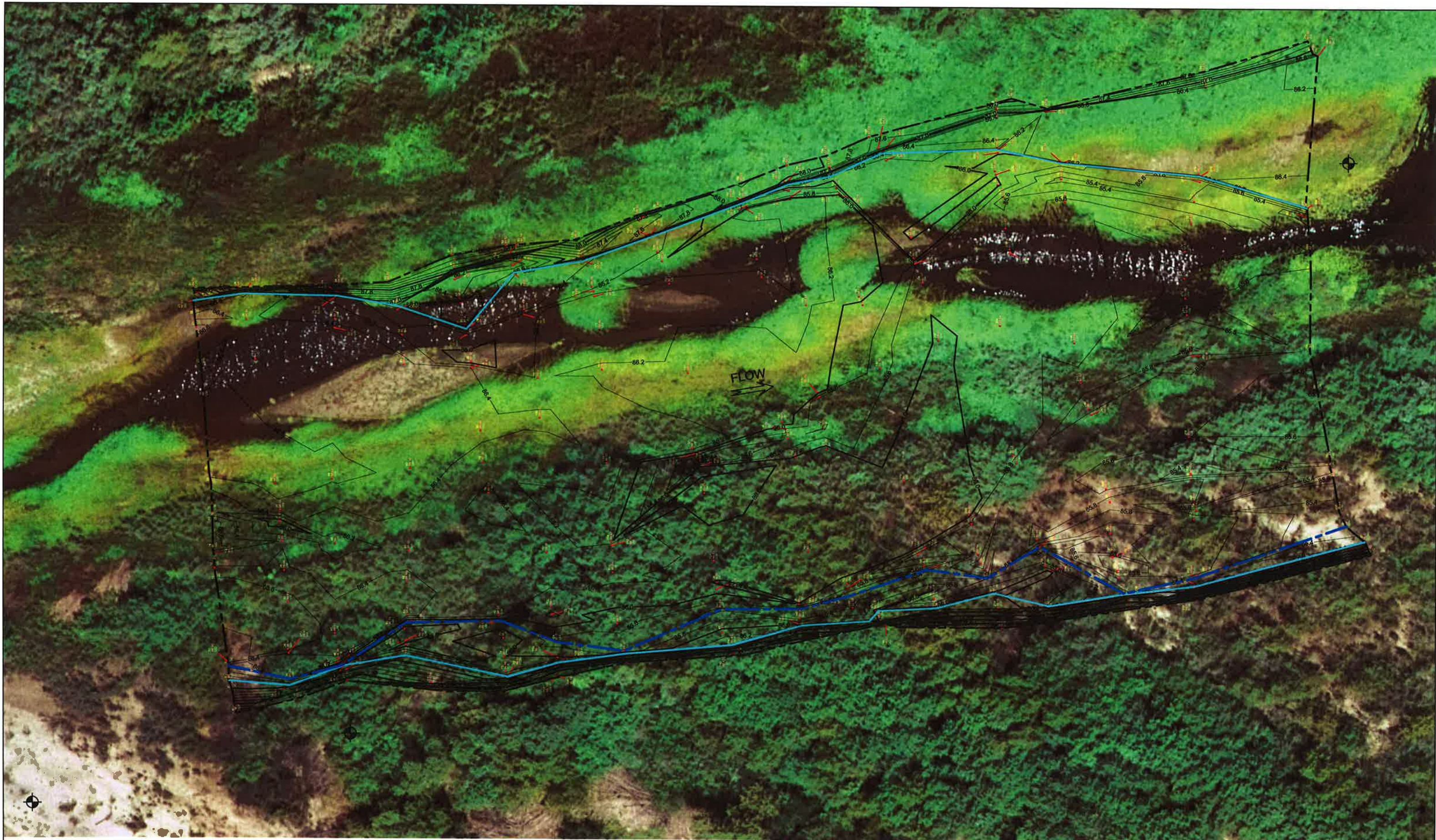


**DRAFT**

<b>TOPOGRAPHIC SITE SURVEY</b>	
<b>SANTA MARGARITA RIVER</b>	
MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA	
DATE: JULY 15, 2011	JN: 2199-5002 JB / GT
<b>SITE 1 - CROSS-SECTIONS</b>	
<b>PLATE: 3 of 10</b>	

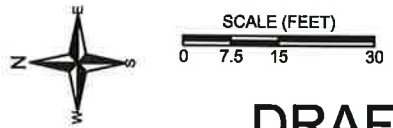






- LEGEND**
-  SURVEY CONTROL POINT
  -  SURVEY POINT
  -  GROUND SURFACE CONTOURS  
(Surveyed April 13, 2011)
  -  THALWEG ALIGNMENT
  -  EDGE OF WATER

**NOTE:**  
AERIAL PHOTO SHOWN  
IS DATED 2009.



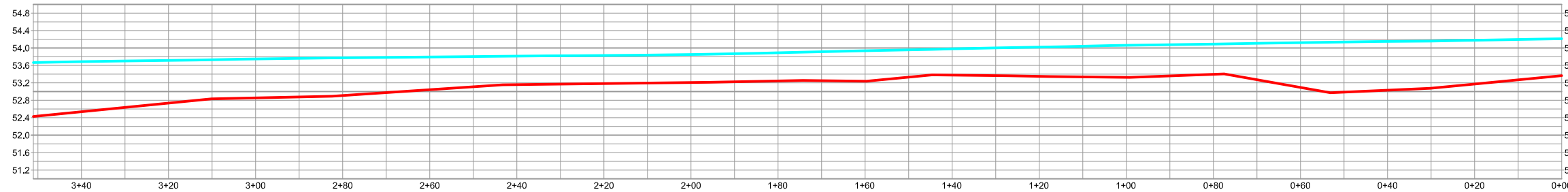
<b>TOPOGRAPHIC SITE SURVEY</b> <b>SANTA MARGARITA RIVER</b> MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA		
DATE: JULY 15, 2011	JN: 2199-5002	JB / GT
<b>SITE 1 - TOPOGRAPHIC MAP</b> WITH 2009 AERIAL PHOTO		<b>PLATE:</b> 4 of 10

**DRAFT**



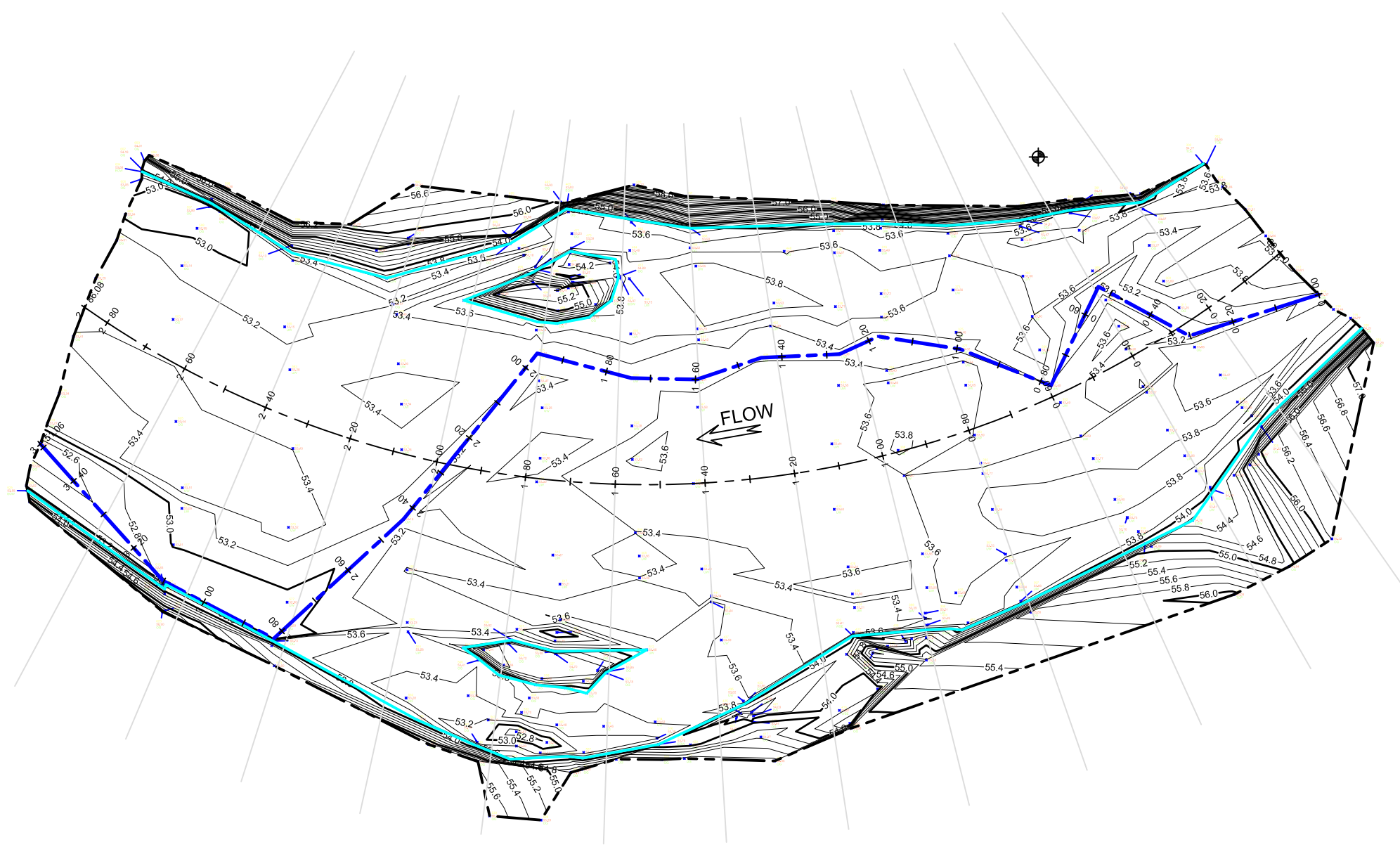
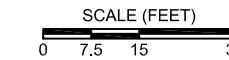


### THALWEG PROFILE



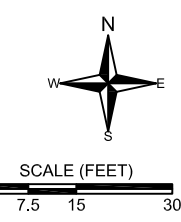
### LEGEND

- THALWEG GROUND SURFACE (Surveyed April 12, 2011)
- WATER SURFACE ELEVATION (Surveyed April 12, 2011)



### LEGEND

- SURVEY CONTROL POINT
- SURVEY POINT
- GROUND SURFACE CONTOURS (Surveyed April 12, 2011)
- THALWEG ALIGNMENT
- EDGE OF WATER
- CREEK CENTER ALIGNMENT (For Cross-Sections See Sheet 5)
- CROSS-SECTION

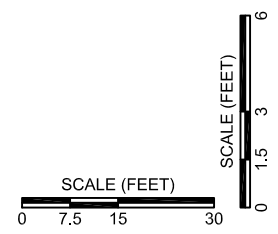
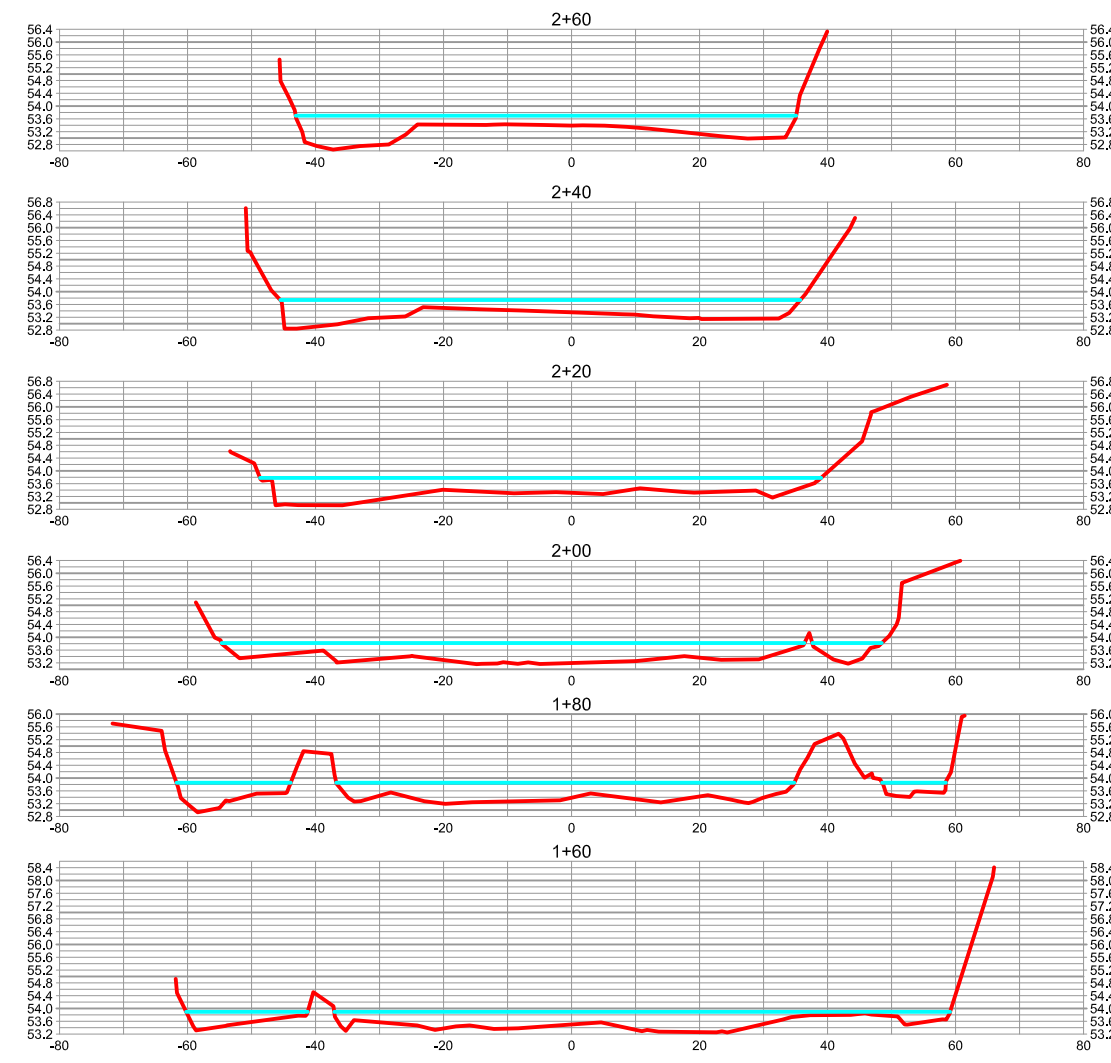
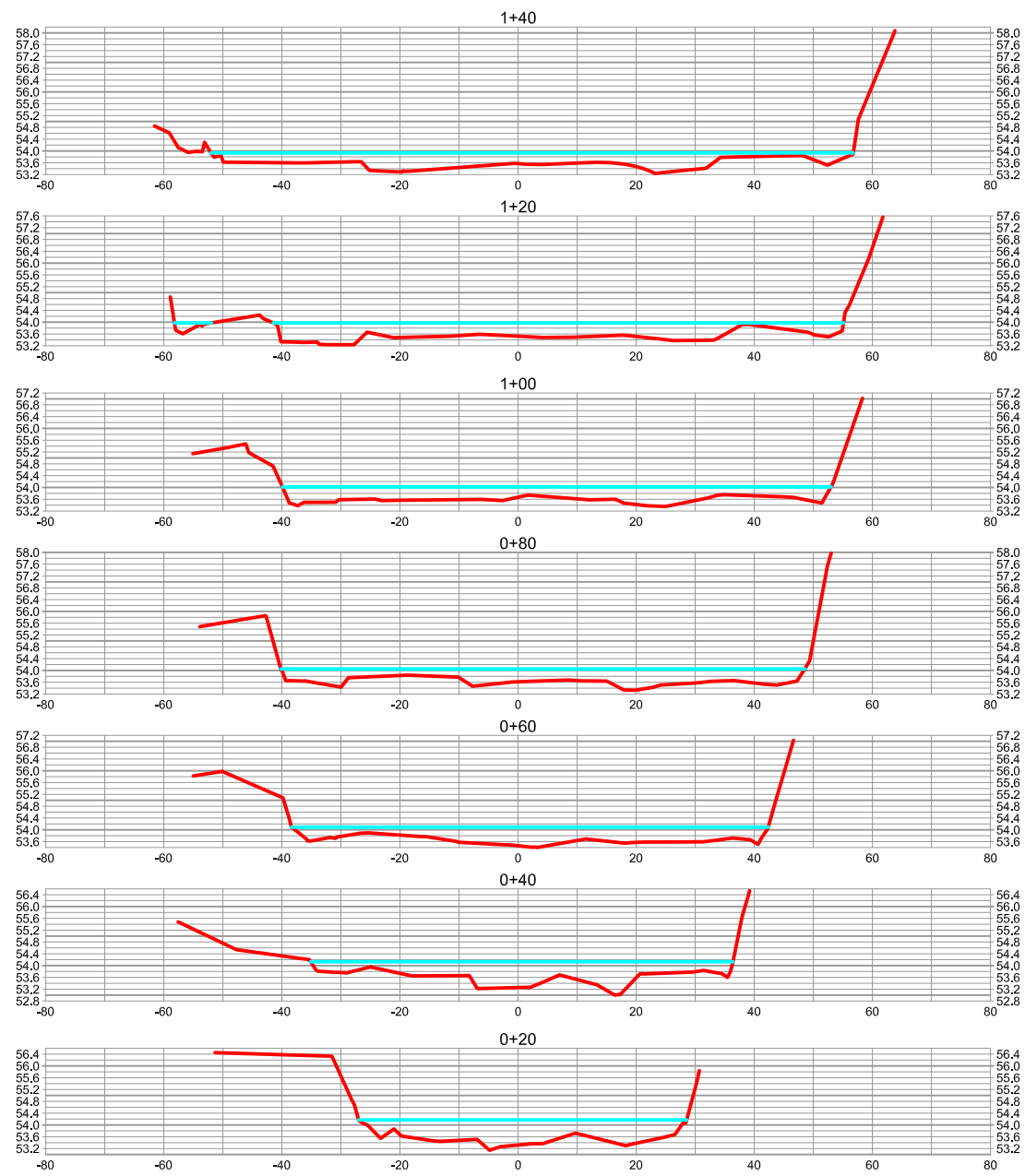


TOPOGRAPHIC SITE SURVEY SANTA MARGARITA RIVER MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA		
DATE: JULY 15, 2011	JN: 2199-5002	JB / GT
SITE 2 - TOPOGRAPHIC MAP AND LONGITUDINAL THALWEG PROFILE		PLATE: 5 of 10

**DRAFT**







**LEGEND**

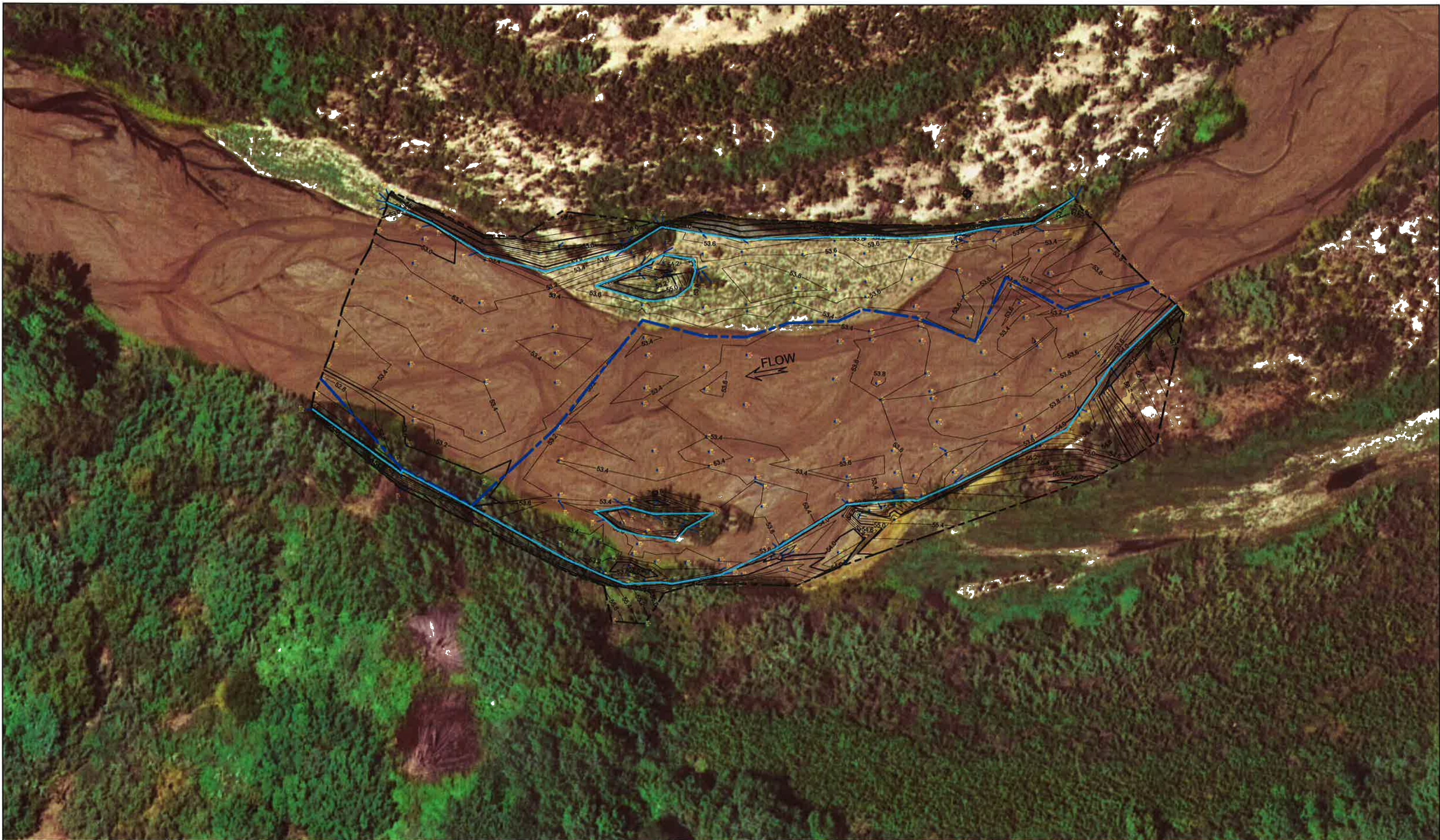
- GROUND SURFACE  
(Surveyed April 12, 2011)
- WATER SURFACE ELEVATION  
(Surveyed April 12, 2011)

- NOTES:**
1. ALL CROSS-SECTIONS ARE LOOKING DOWNSTREAM.
  2. VERTICAL EXAGGERATION IS 5 TIMES.



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<b>TOPOGRAPHIC SITE SURVEY</b> <b>SANTA MARGARITA RIVER</b> MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA		
DATE: JULY 15, 2011	JN: 2199-5002	JB / GT
<b>SITE 2 - CROSS-SECTIONS</b>		<b>PLATE:</b> 6 of 10



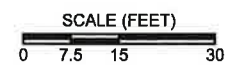


**LEGEND**


-  SURVEY CONTROL POINT
-  SURVEY POINT

-  GROUND SURFACE CONTOURS  
(Surveyed April 13, 2011)
-  THALWEG ALIGNMENT
-  EDGE OF WATER

**NOTE:**  
AERIAL PHOTO SHOWN  
IS DATED 2009.

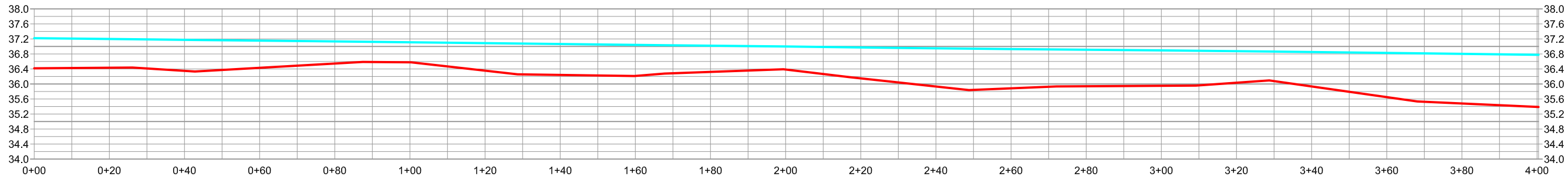


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<b>TOPOGRAPHIC SITE SURVEY</b> <b>SANTA MARGARITA RIVER</b> <small>MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA</small>		
<small>DATE: JULY 15, 2011</small>	<small>JN: 2199-5002</small>	<small>JB / GT</small>
 <b>SITE 2 - TOPOGRAPHIC MAP</b> <small>WITH 2009 AERIAL PHOTO</small>		<b>PLATE:</b> <b>7 of 10</b>

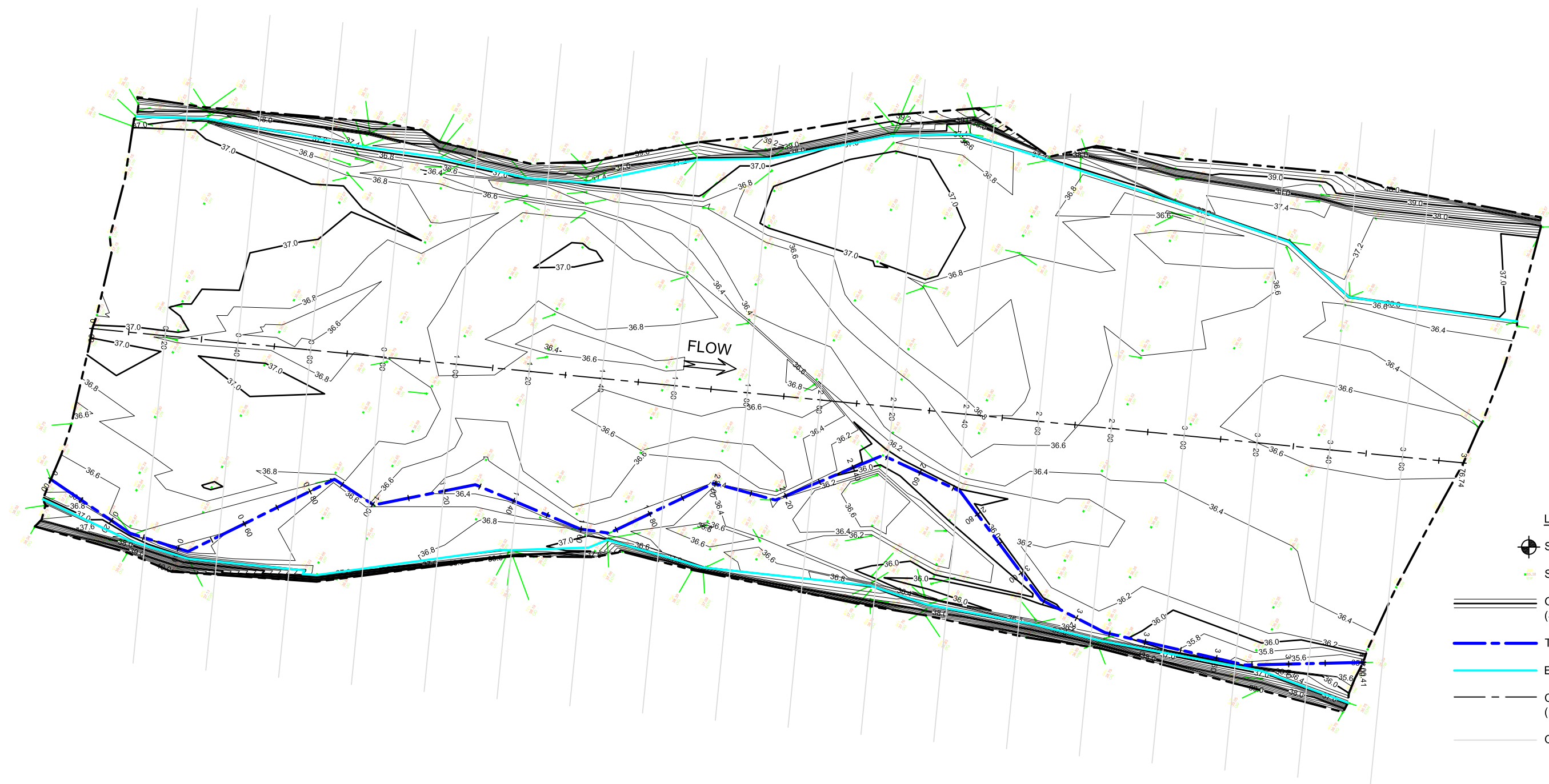
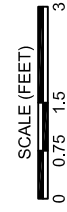
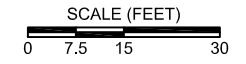


# THALWEG PROFILE



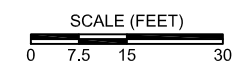
## LEGEND

- THALWEG GROUND SURFACE (Surveyed April 13, 2011)
- WATER SURFACE ELEVATION (Surveyed April 13, 2011)



## LEGEND

- SURVEY CONTROL POINT
- SURVEY POINT
- GROUND SURFACE CONTOURS (Surveyed April 13, 2011)
- THALWEG ALIGNMENT
- EDGE OF WATER
- CREEK CENTER ALIGNMENT (For Cross-Sections See Sheet 7)
- CROSS-SECTION

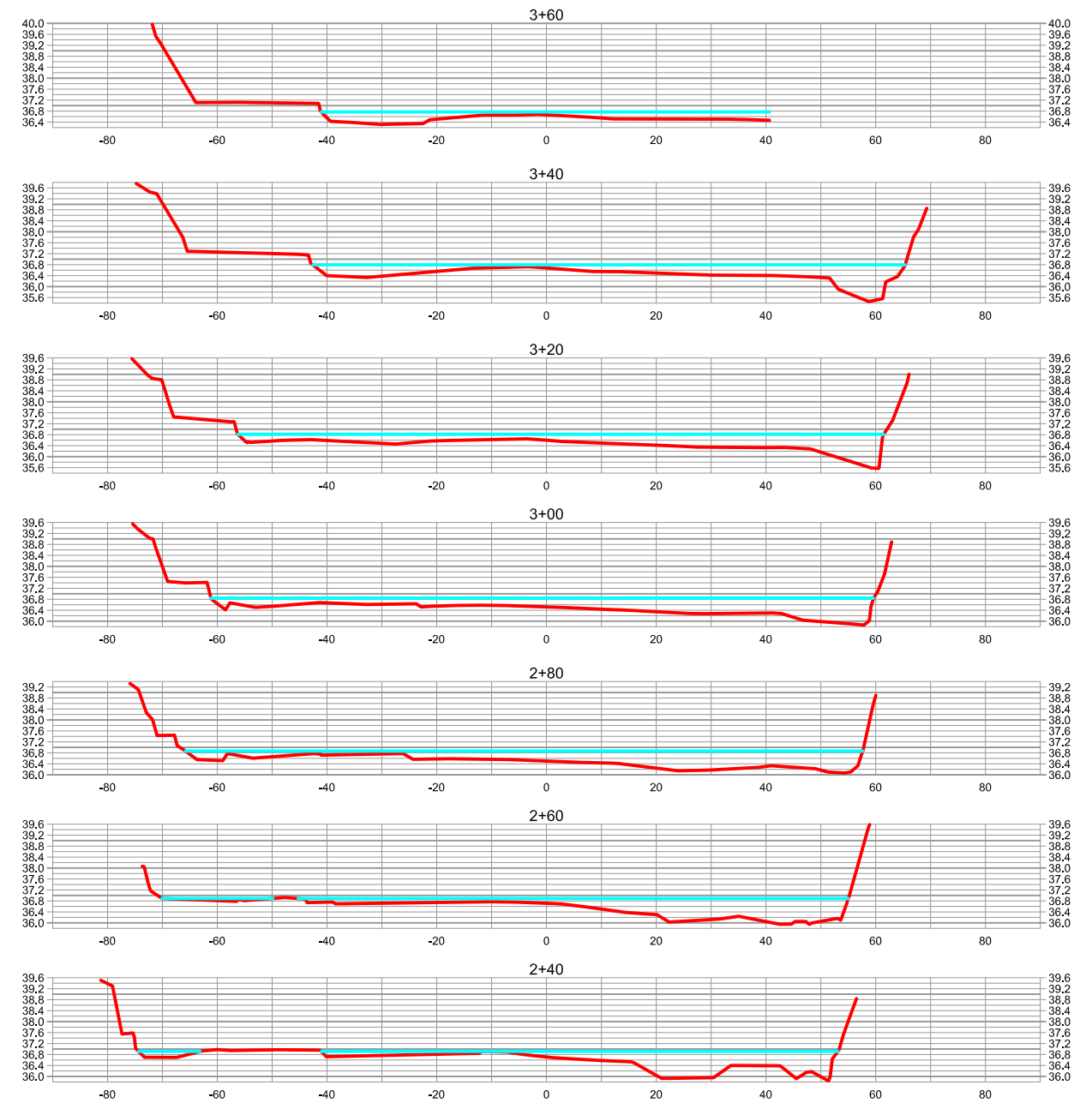
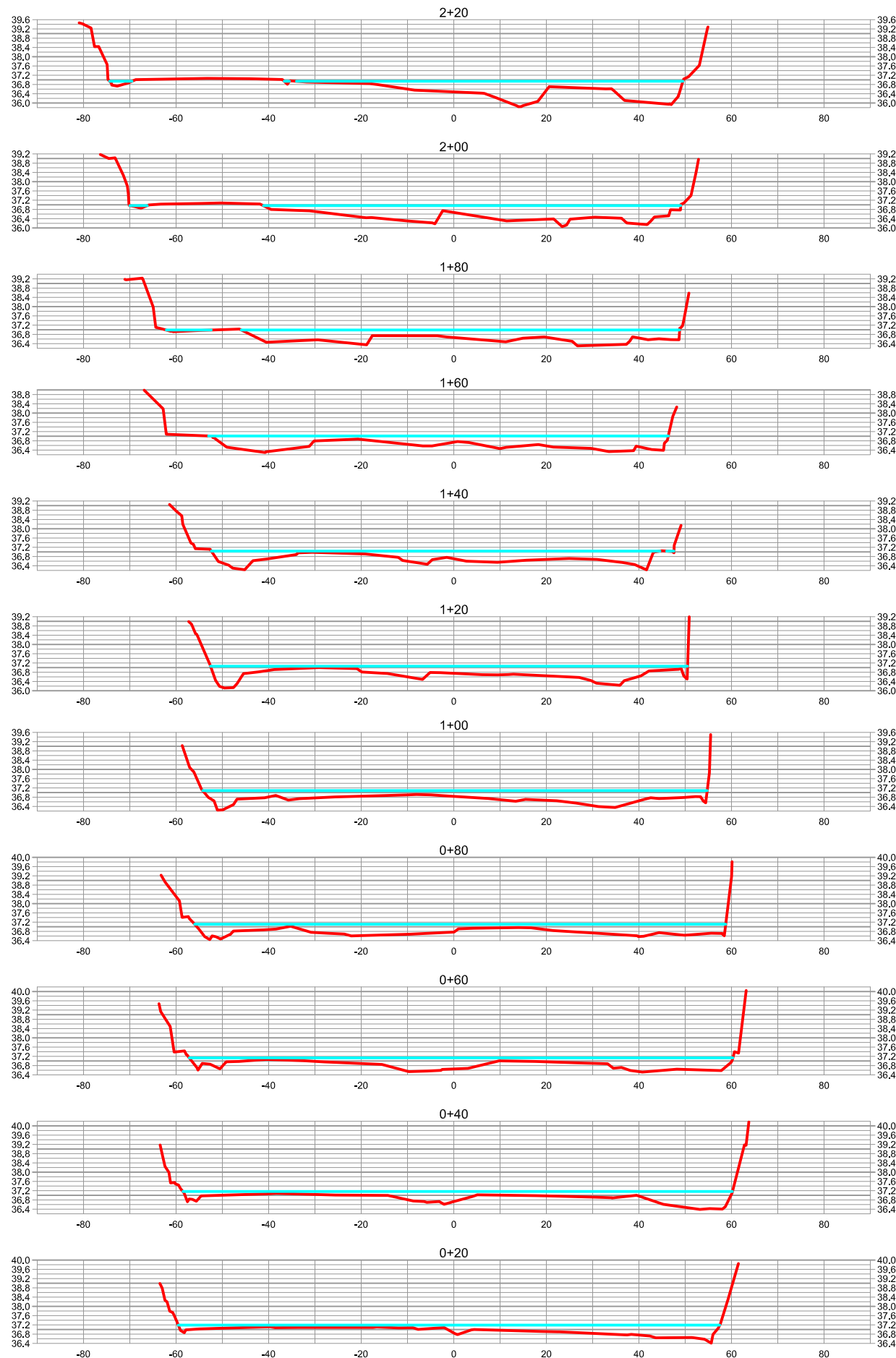


TOPOGRAPHIC SITE SURVEY SANTA MARGARITA RIVER MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA		
DATE: JULY 15, 2011	JN: 2199-5002	JB / GT
SITE 3 - TOPOGRAPHIC MAP AND LONGITUDINAL THALWEG PROFILE		PLATE: 8 of 10

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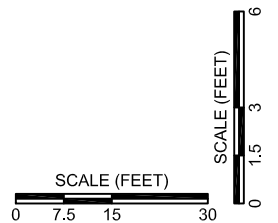




**LEGEND**

- GROUND SURFACE  
(Surveyed April 13, 2011)
- WATER SURFACE ELEVATION  
(Surveyed April 13, 2011)

- NOTES:**
1. ALL CROSS-SECTIONS ARE LOOKING DOWNSTREAM.
  2. VERTICAL EXAGGERATION IS 5 TIMES.

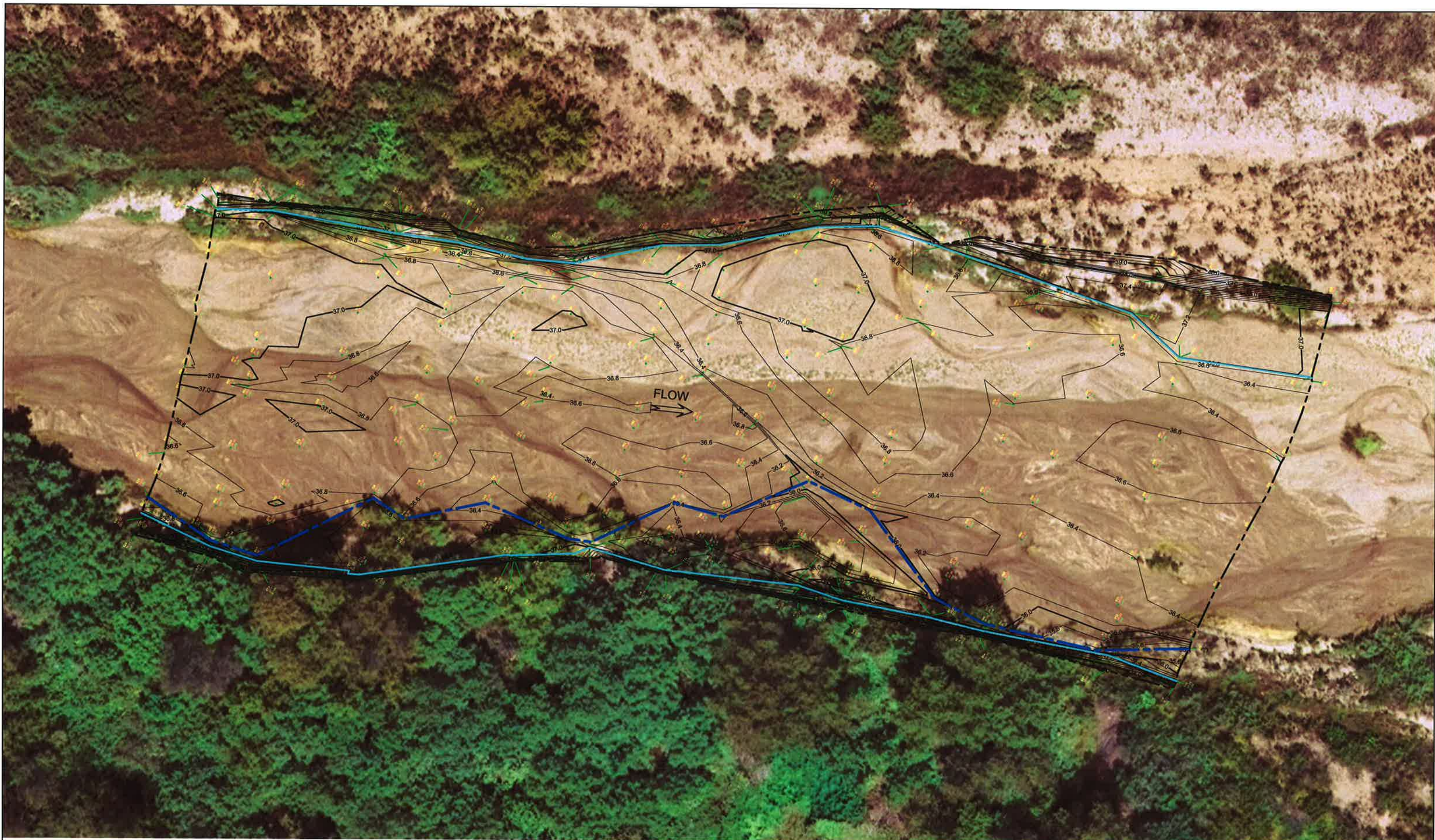


<b>TOPOGRAPHIC SITE SURVEY</b> <b>SANTA MARGARITA RIVER</b> MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA		
DATE: JULY 15, 2011	JN: 2199-5002	JB / GT
<b>SITE 3 - CROSS-SECTIONS</b>		<b>PLATE:</b> 9 of 10



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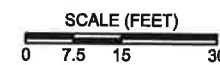


**LEGEND**

-  SURVEY CONTROL POINT
-  SURVEY POINT

-  GROUND SURFACE CONTOURS  
(Surveyed April 13, 2011)
-  THALWEG ALIGNMENT
-  EDGE OF WATER

**NOTE:**  
AERIAL PHOTO SHOWN  
IS DATED 2009.



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<b>TOPOGRAPHIC SITE SURVEY</b> <b>SANTA MARGARITA RIVER</b> MARINE CORPS BASE CAMP PENDLETON - SAN DIEGO, CA		
DATE: JULY 15, 2011	JN: 2199-5002	JB / GT
<b>SITE 3 - TOPOGRAPHIC MAP</b> WITH 2009 AERIAL PHOTO		<b>PLATE:</b> 10 of 10