

**Part III
Attachment III-C
Appendix III-C.2**

FACILITY SURFACE WATER DRAINAGE DRAWINGS

**Pescadito Environmental Resource Center
MSW No. 2374
Webb County, Texas**

PESCADITO
ENVIRONMENTAL RESOURCE CENTER

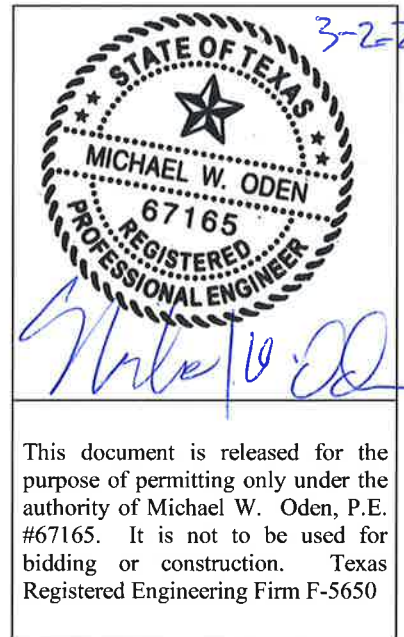
March 2015

**Prepared for:
Rancho Viejo Waste Management, LLC
1116 Calle del Norte
Laredo, TX 78041**

**Prepared by:
CB&I Environmental and
Infrastructure, Inc.**



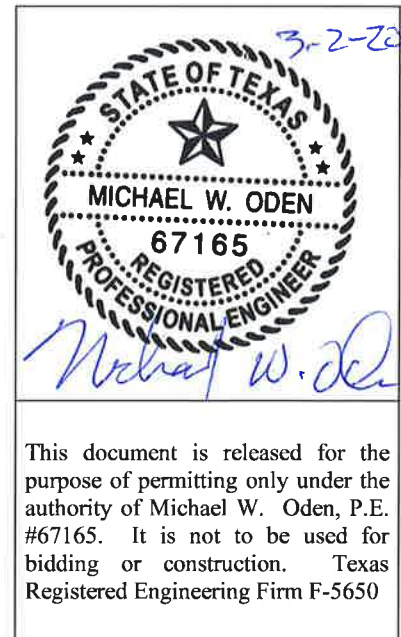
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Dallas, TX 75234**

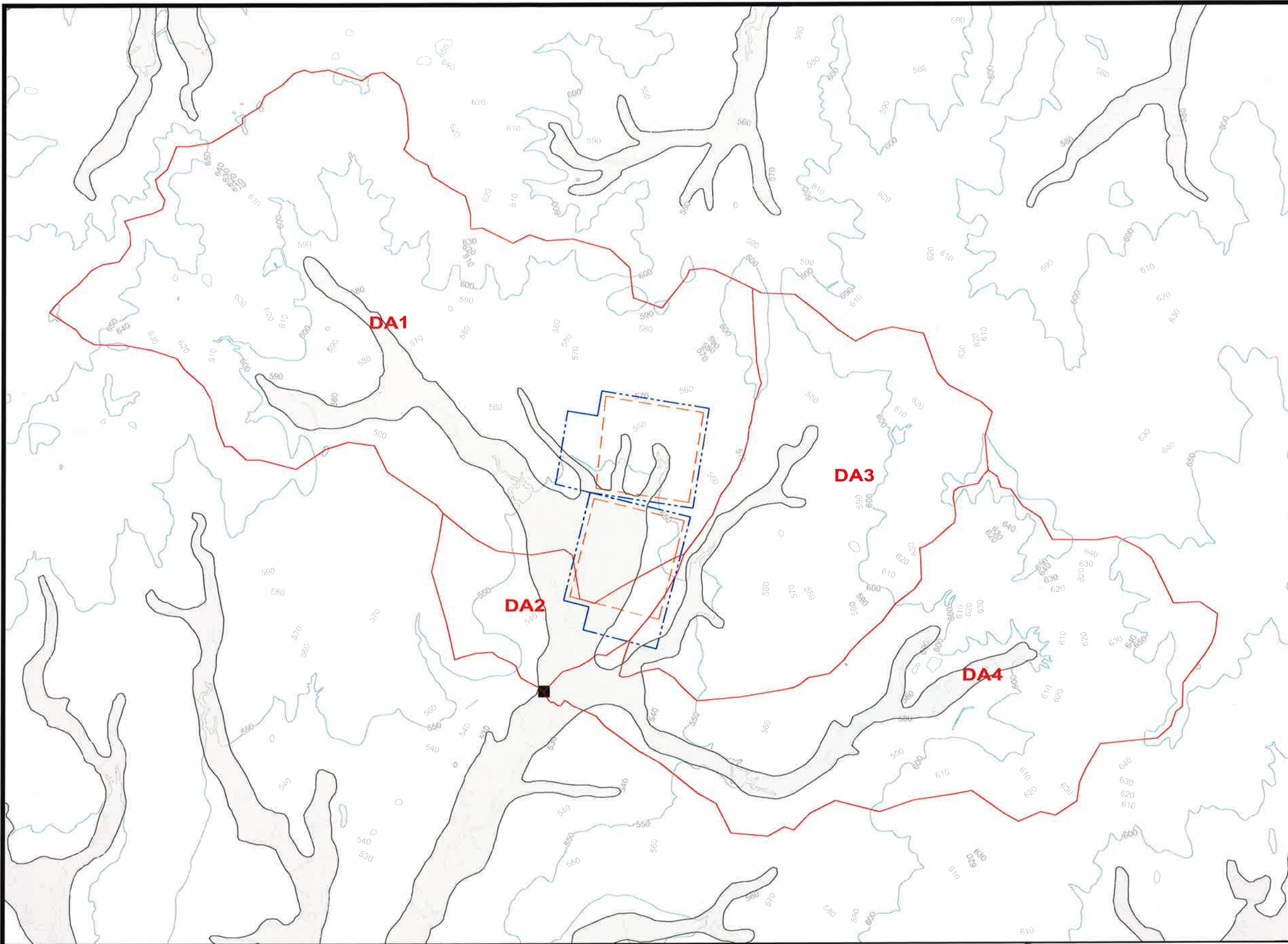


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LEGEND

- PERMIT BOUNDARY
- WASTE UNIT BOUNDARY
- PRE-DEVELOPMENT SUBCATCHMENT BOUNDARIES
- JUNCTION 1 (SEE NOTE 5)
- 100-YEAR FLOODPLAIN (PRE-CLOMR)

NOTES

1. CONTOURS ADAPTED FROM TEXAS NATURAL RESOURCE INFORMATION SYSTEM "TEXAS ELEVATION FRAMEWORK (HYPSOGRAPHY)" QUADRANGLES.
2. BOUNDARY AND IMPROVEMENT SURVEY DEVELOPED BY MEJIA ENGINEERING COMPANY ON AUGUST 15, 2011 AND JUNE 9, 2014.
3. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
4. THE NEED FOR FLEXIBILITY TO ACCOMMODATE ADJUSTMENTS AND MODIFICATIONS IS ANTICIPATED CONSIDERING THE SIZE, COMPLEXITY, AND LIFE OF THE PROJECT.
5. JUNCTION 1 REPRESENTS THE MOST DOWNSTREAM ELEMENT WITHIN THE STORMWATER MODELS AND IS THE MAIN POINT OF COMPARISON BETWEEN MODELS.
6. "DRAINAGE AREAS" (DA) ARE TAKEN FROM THE CONDITIONAL LETTER OF MAP REVISION, PREPARED BY CB&I ENVIRONMENTAL AND INFRASTRUCTURE, INC. DATED NOVEMBER 21, 2014.


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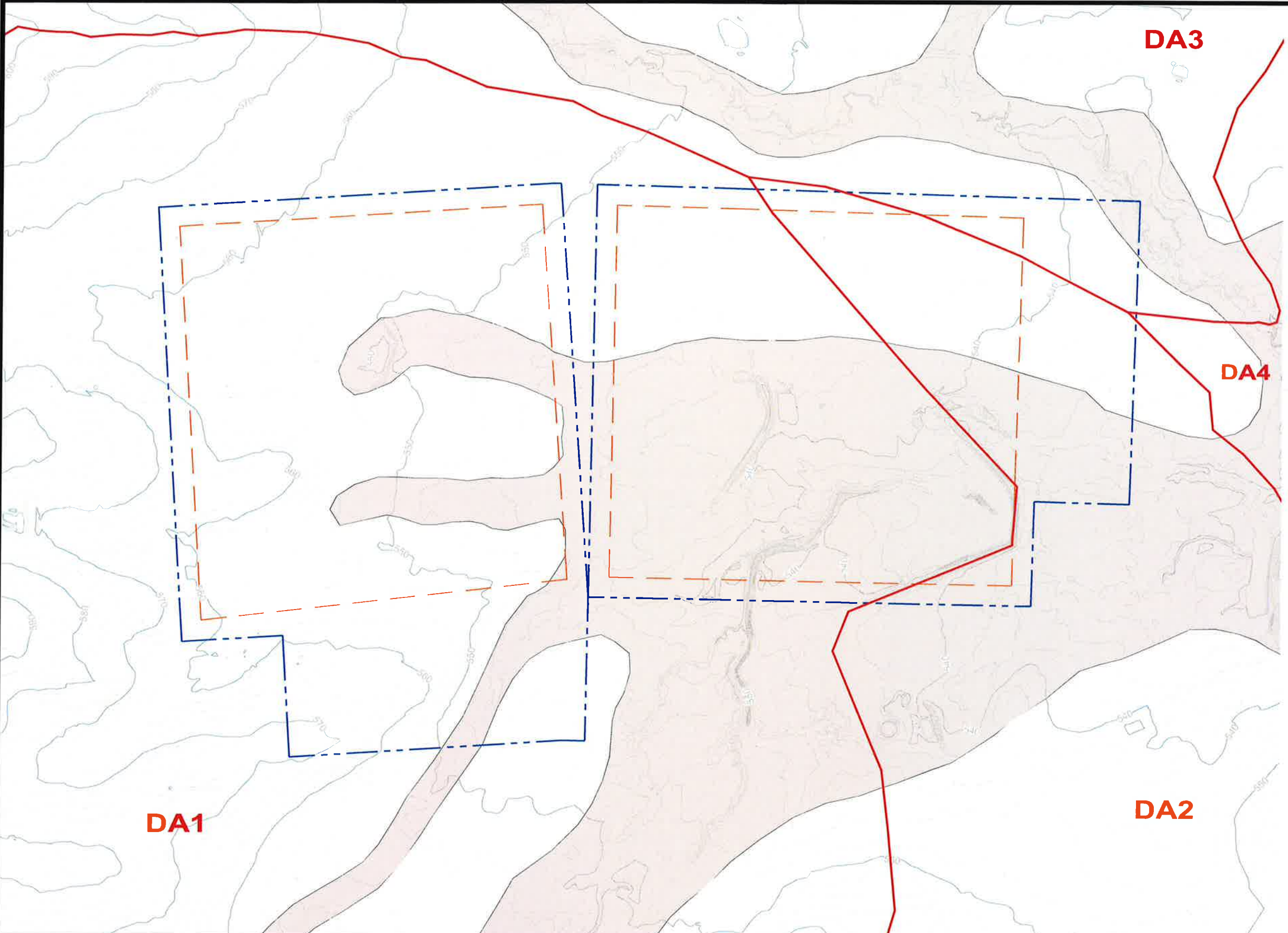
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 WEBB COUNTY, TEXAS
 MSW 2374**

**FACILITY SURFACE WATER DRAINAGE REPORT
 PRE-DEVELOPMENT CONDITIONS - REGIONAL OVERVIEW**

PROJ. NO.:	148866	DATE:	MARCH 2015
DESIGNED BY:	-	DRAWING NO.	III
DRAWN BY:	MTE		C.2-1
CHECKED BY:	RDS		
APPROVED BY:	MWO		1 OF 13 SHEETS



LEGEND

- - - PERMIT BOUNDARY
- - - WASTE UNIT BOUNDARY
- PRE-DEVELOPMENT SUBCATCHMENT BOUNDARIES
- 100-YEAR FLOODPLAIN (PRE-CLOMR)

NOTES

1. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY DALLAS AERIAL SURVEYS ON FEBRUARY 15, 2010.
2. BOUNDARY AND IMPROVEMENT SURVEY DEVELOPED BY MEJIA ENGINEERING COMPANY ON AUGUST 15, 2011 AND JUNE 9, 2014.
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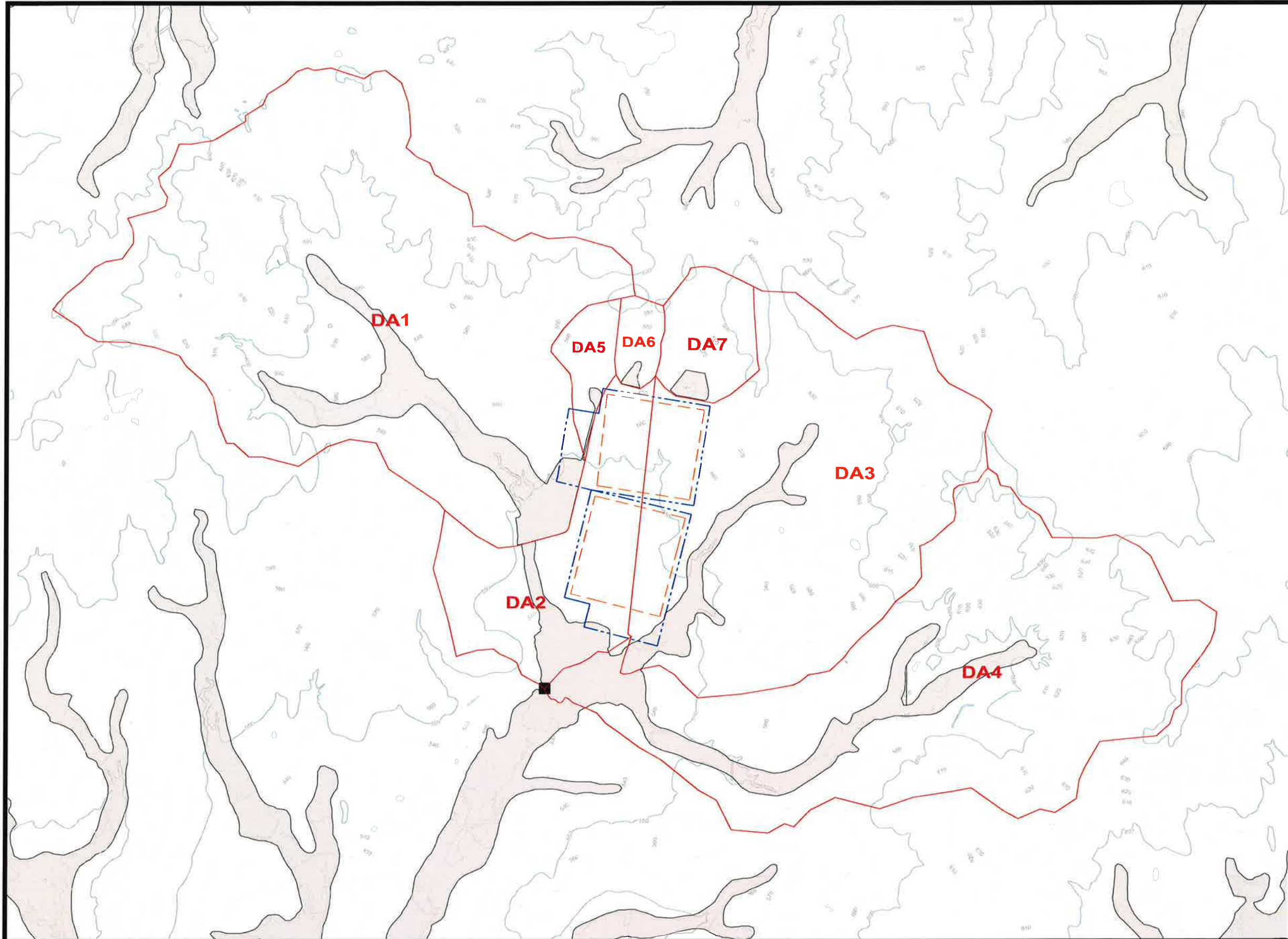


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**FACILITY SURFACE WATER DRAINAGE REPORT
PREDEVELOPMENT CONDITIONS
FACILITY AND IMMEDIATE SURROUNDINGS**

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LEGEND

- PERMIT BOUNDARY
- WASTE UNIT BOUNDARY
- INTERMEDIATE CONDITION SUBCATCHMENT BOUNDARIES
- JUNCTION 1 (SEE NOTE 5)
- CLOMR 100-YEAR FLOODPLAIN

NOTES

1. CONTOURS ADAPTED FROM TEXAS NATURAL RESOURCE INFORMATION SYSTEM "TEXAS ELEVATION FRAMEWORK (HYPSOGRAPHY)" QUADRANGLES.
2. BOUNDARY AND IMPROVEMENT SURVEY DEVELOPED BY MEJIA ENGINEERING COMPANY ON AUGUST 15, 2011 AND JUNE 9, 2014.
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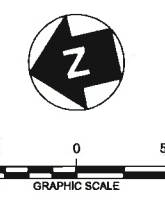
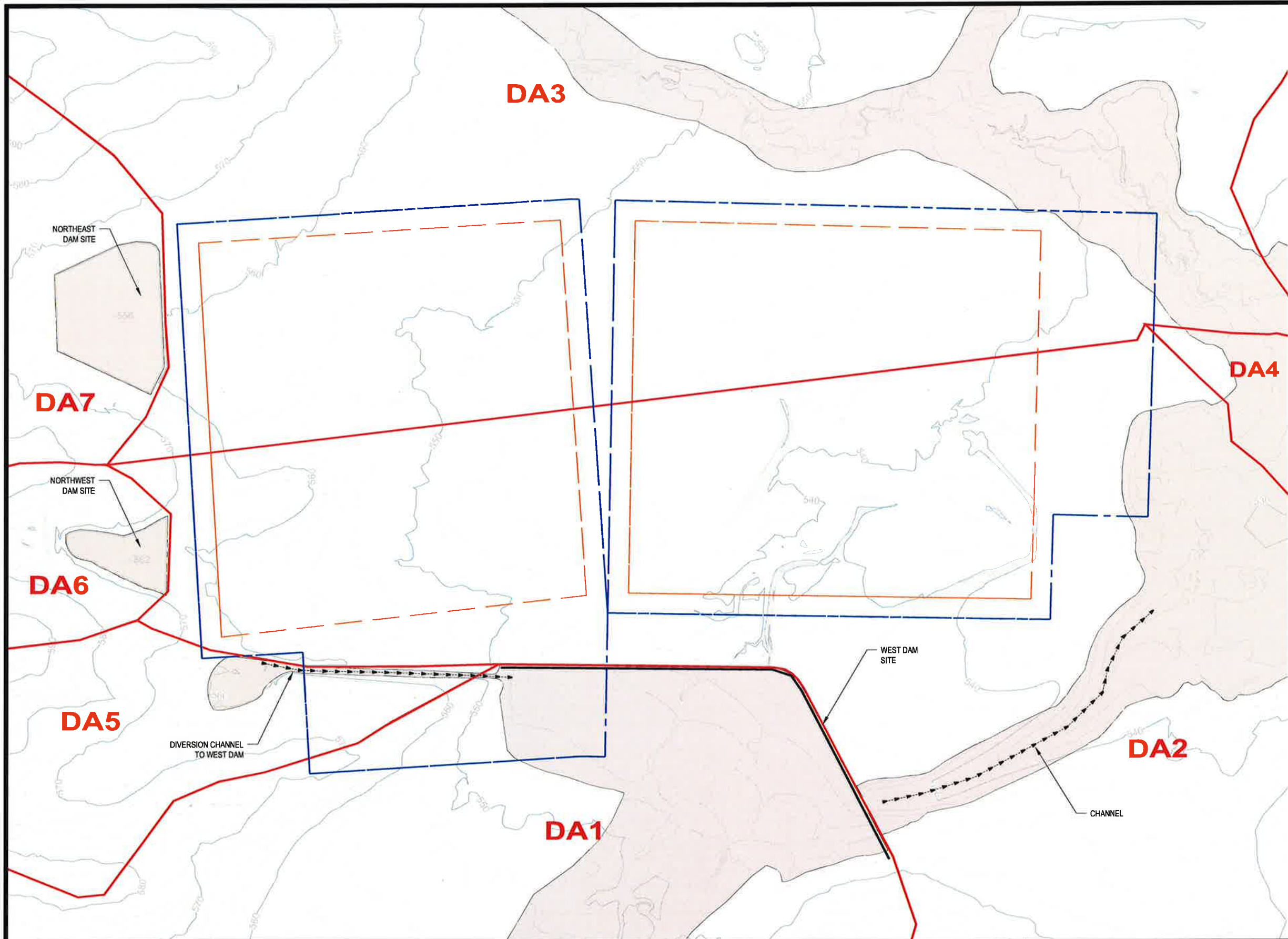


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**FACILITY SURFACE WATER DRAINAGE REPORT
INTERMEDIATE DEVELOPMENT CONDITIONS - REGIONAL OVERVIEW**

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- LEGEND**
- - - PERMIT BOUNDARY
 - - - WASTE UNIT BOUNDARY
 - INTERMEDIATE CONDITIONS SUBCATCHMENT BOUNDARIES
 - CLMR 100-YEAR FLOODPLAIN

- NOTES**
1. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY DALLAS AERIAL SURVEYS ON FEBRUARY 15, 2010.
 2. BOUNDARY AND IMPROVEMENT SURVEY DEVELOPED BY MEJIA ENGINEERING COMPANY ON AUGUST 15, 2011 AND JUNE 9, 2014.
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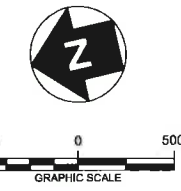
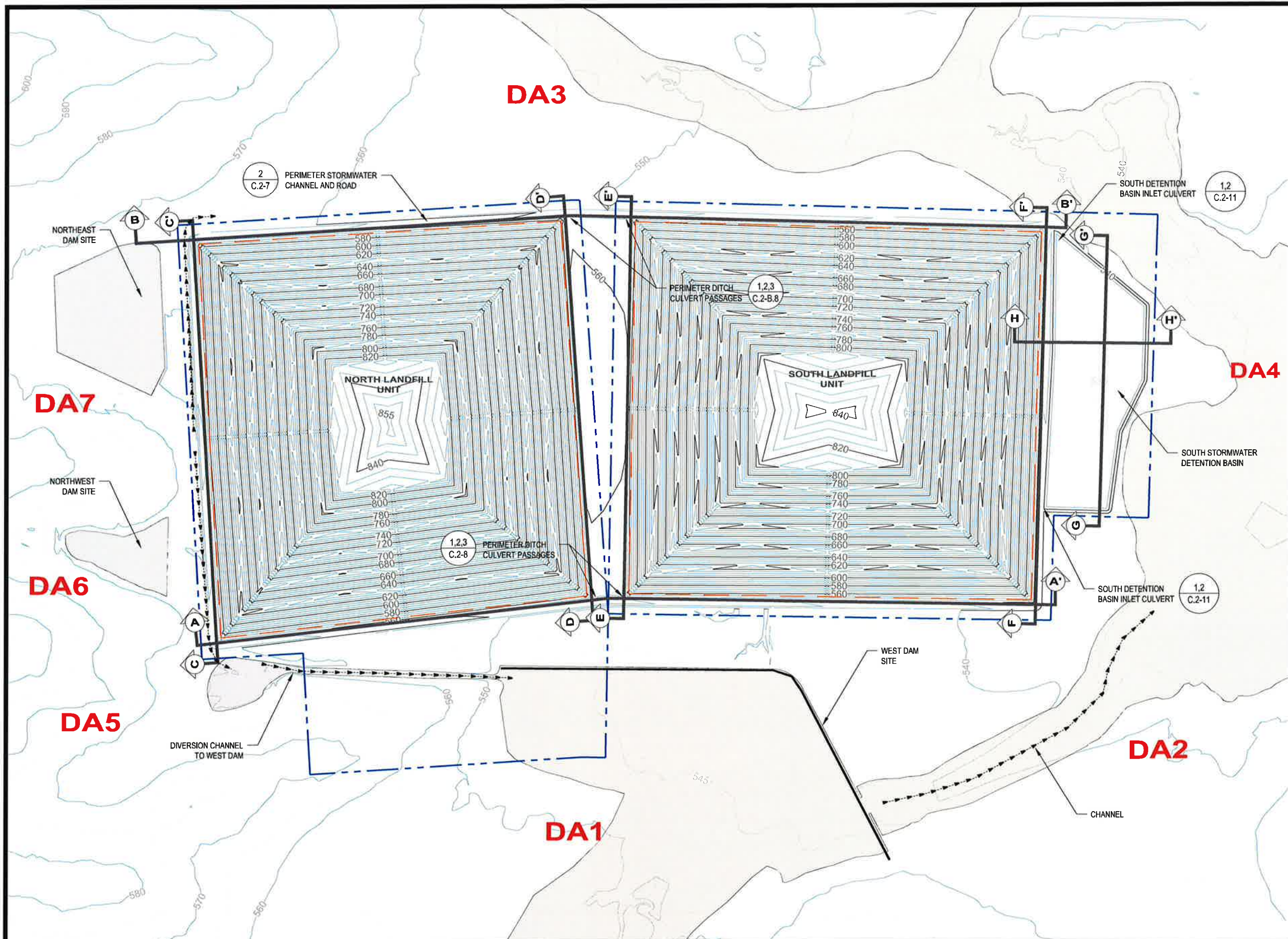
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**FACILITY SURFACE WATER DRAINAGE REPORT
 INTERMEDIATE DEVELOPMENT CONDITIONS
 FACILITY AND IMMEDIATE SURROUNDINGS**

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APPROVED BY:	MWO		4 OF 13 SHEETS



- LEGEND**
- - - PERMIT BOUNDARY
 - - - WASTE UNIT BOUNDARY
 - CLOMR 100-YEAR FLOODPLAIN
 - PERIMETER CHANNEL AND DETENTION BASIN PROFILE LOCATIONS

- NOTES**
1. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY DALLAS AERIAL SURVEYS ON FEBRUARY 15, 2010.
 2. BOUNDARY AND IMPROVEMENT SURVEY DEVELOPED BY MEJIA ENGINEERING COMPANY ON AUGUST 15, 2011 AND JUNE 9, 2014.
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 4. THE NEED FOR FLEXIBILITY TO ACCOMMODATE ADJUSTMENTS AND MODIFICATIONS IS ANTICIPATED CONSIDERING THE SIZE, COMPLEXITY, AND LIFE OF THE PROJECT.
 5. PROFILES A-H ARE LOCATED ON DRAWINGS 8-10 OF APPENDIX III-C.2.

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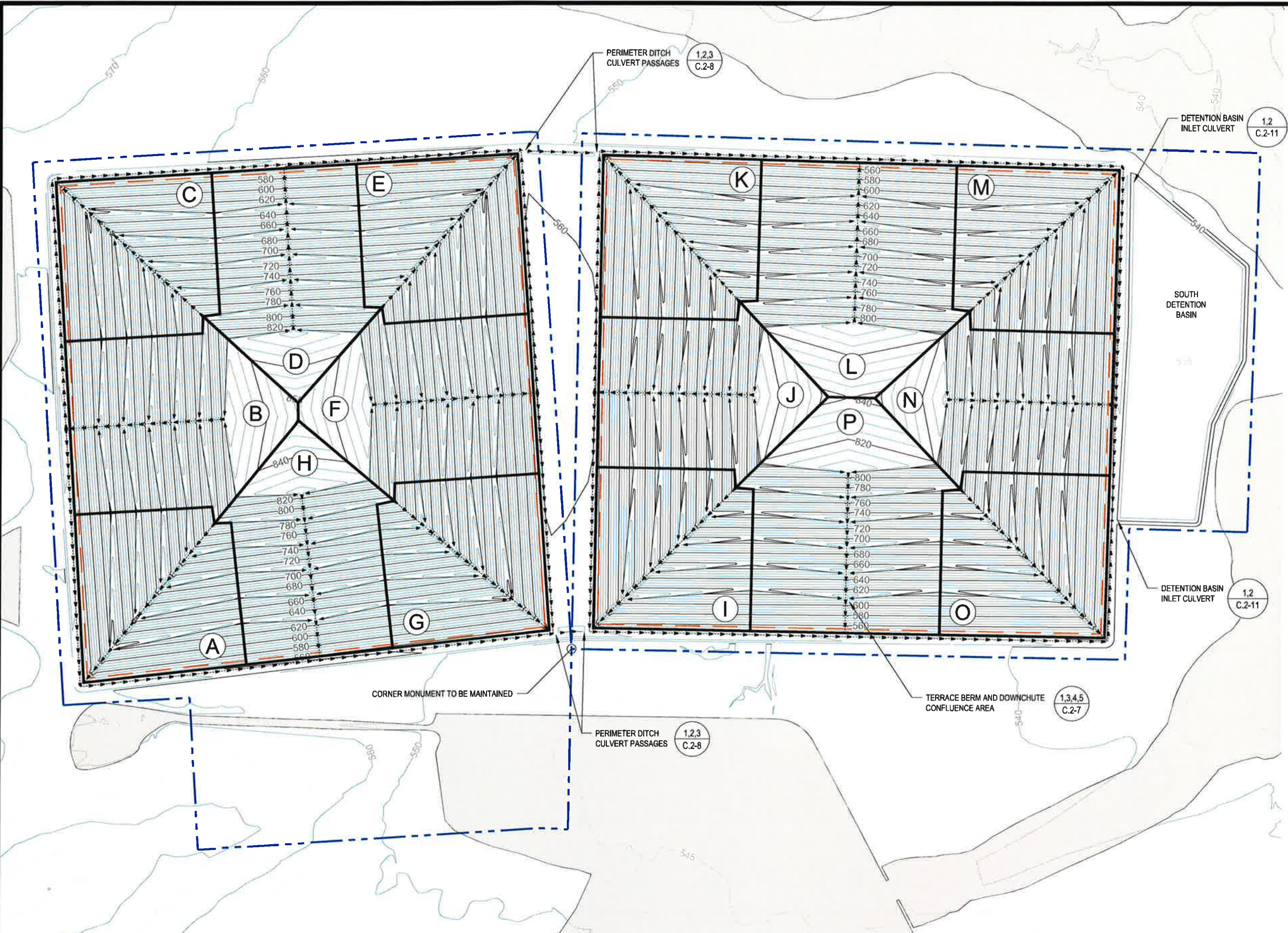
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**FACILITY SURFACE WATER DRAINAGE REPORT
 POST-DEVELOPMENT CONDITIONS
 FACILITY AND IMMEDIATE SURROUNDINGS**

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LEGEND

- PERMIT BOUNDARY
- WASTE UNIT BOUNDARY
- TERRACE BERM (FLOW DIRECTION SHOWN)
- DOWNCHUTE AND PERIMETER DITCH (FLOW DIRECTION SHOWN)
- A CATCHMENT IDENTIFICATION
- CLOMR 100-YEAR FLOODPLAIN

NOTES

1. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY DALLAS AERIAL SURVEYS ON FEBRUARY 15, 2010.
2. BOUNDARY AND IMPROVEMENT SURVEY DEVELOPED BY MEJIA ENGINEERING COMPANY ON AUGUST 15, 2011 AND JUNE 9, 2014.
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5. REFER TO APPENDIX III-C.3-2 FOR DETAILED SUBCATCHMENT DELINEATION FOR EACH CATCHMENT AREA SHOWN ON THIS DRAWING.

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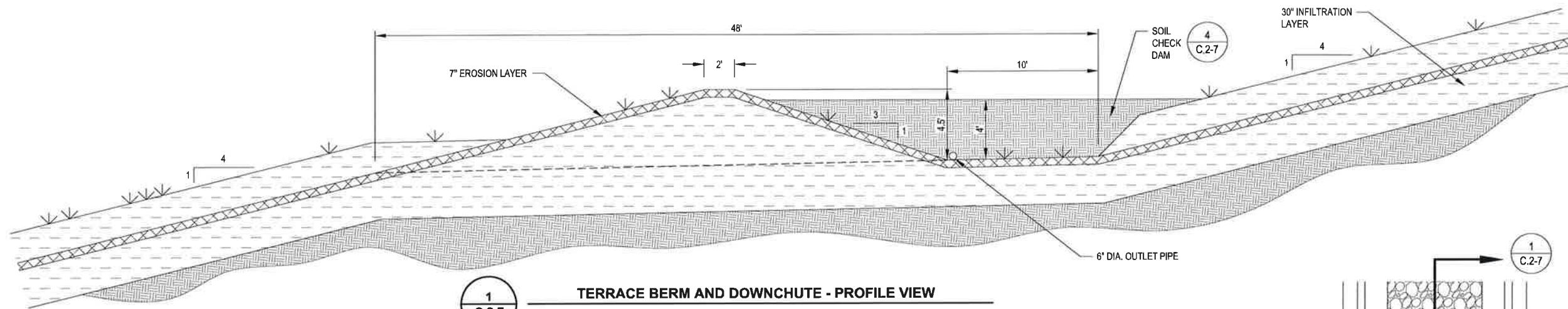


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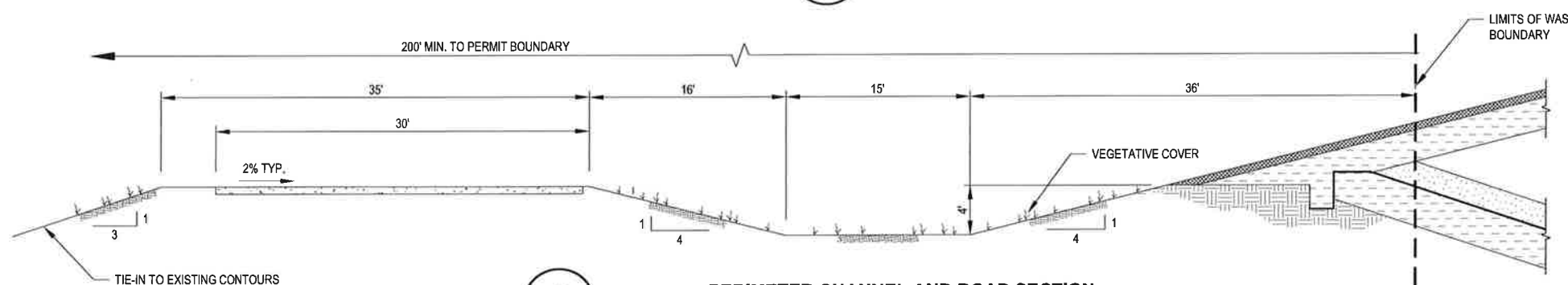
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**FACILITY SURFACE WATER DRAINAGE REPORT
 POST-DEVELOPMENT STORMWATER FEATURE OVERVIEW**

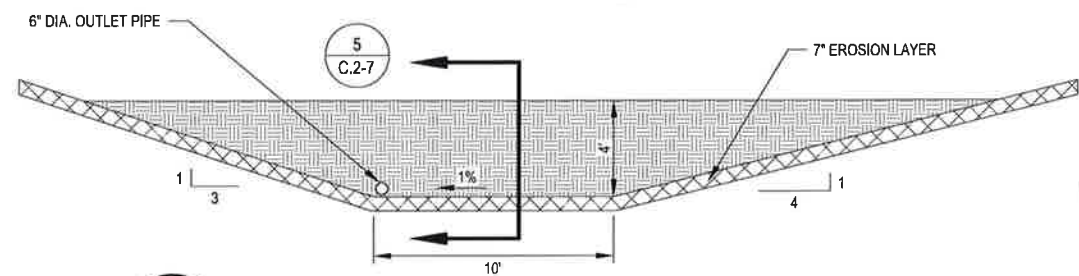
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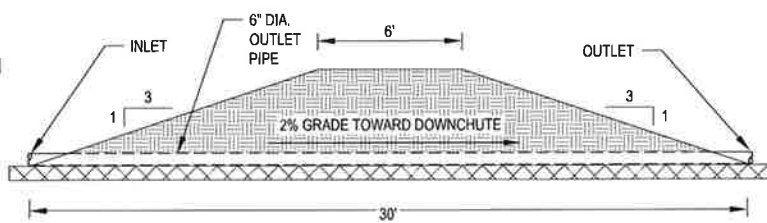
1 C.2-7 TERRACE BERM AND DOWNCHUTE - PROFILE VIEW
NOT TO SCALE



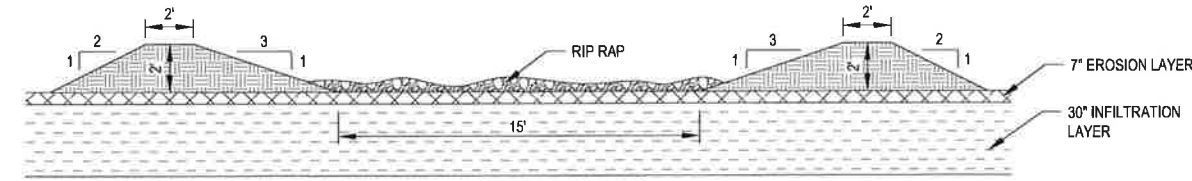
2 C.2-7 PERIMETER CHANNEL AND ROAD SECTION
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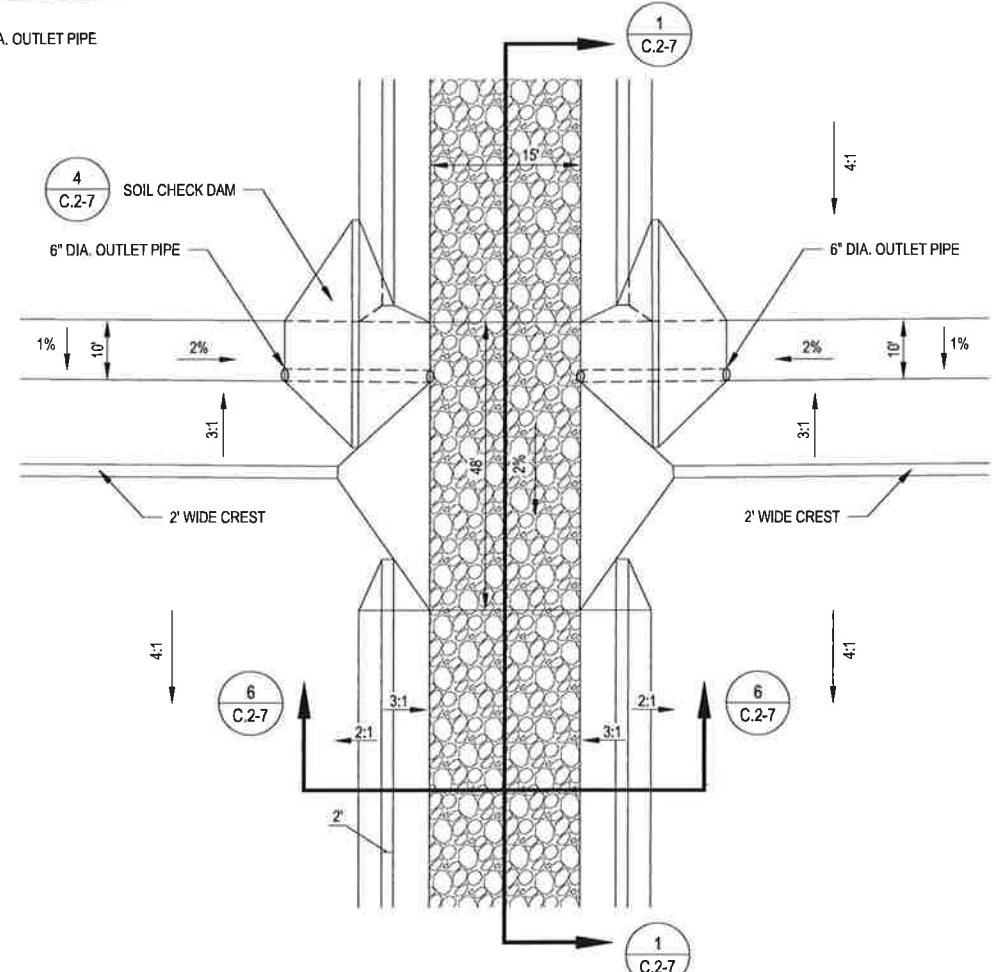
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NOT TO SCALE



5 C.2-7 TYPICAL SOIL CHECK DAM SECTION
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6 C.2-7 TYPICAL DOWNCHUTE SECTION
NOT TO SCALE



3 C.2-7 TERRACE BERM AND DOWNCHUTE - PLAN VIEW
NOT TO SCALE

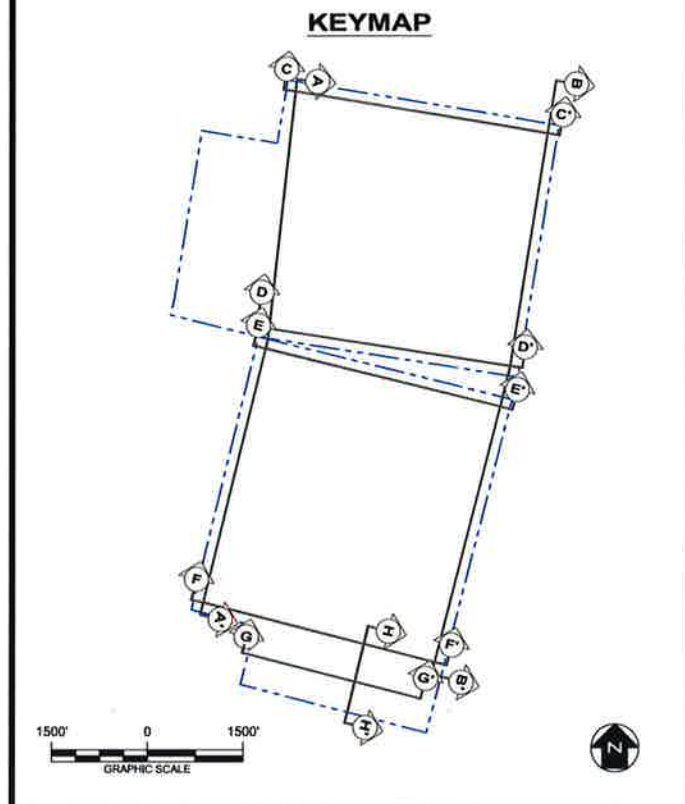
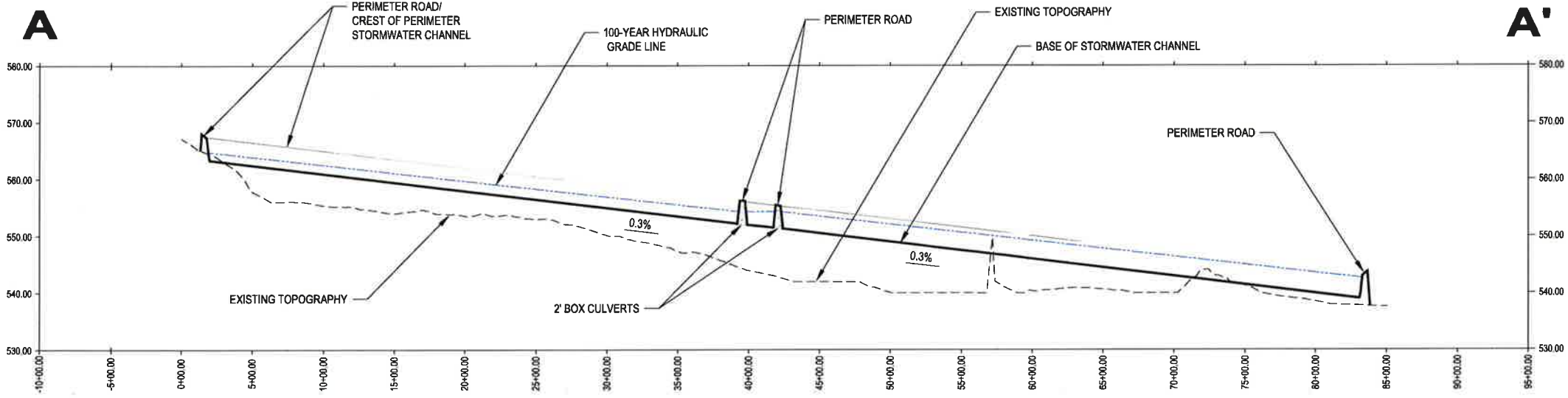
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STATE OF TEXAS
MICHAEL W. ODEN
67165
REGISTERED PROFESSIONAL ENGINEER
Michael W. Oden

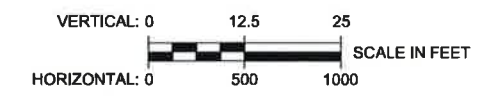
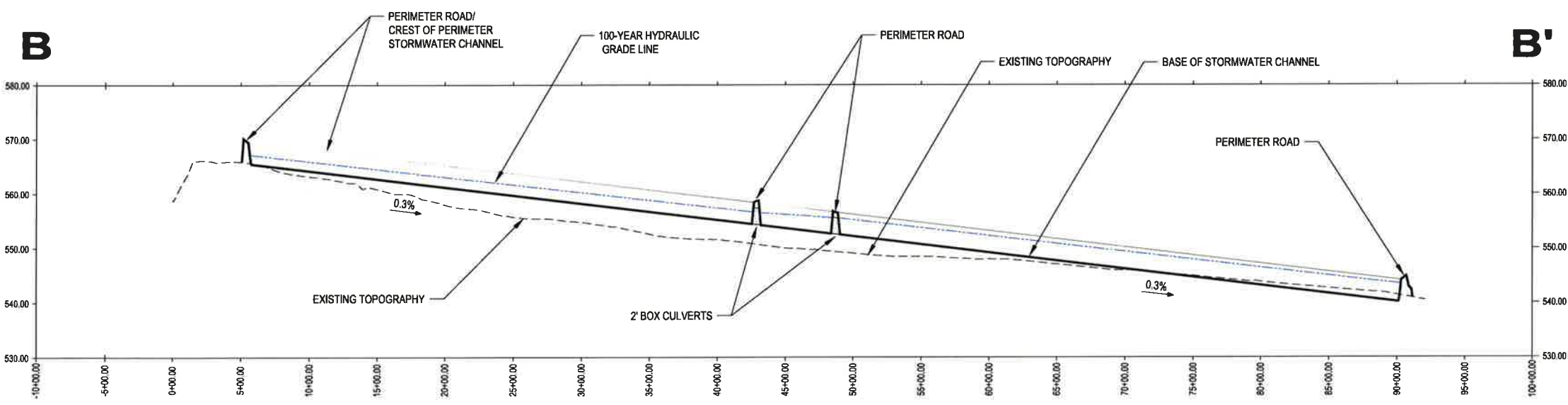
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**FACILITY SURFACE WATER DRAINAGE REPORT
TERRACE BERM, DOWNCHUTE, AND PERIMETER CHANNEL DETAILS**

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KEYMAP LEGEND

--- APPROXIMATE FACILITY BOUNDARY



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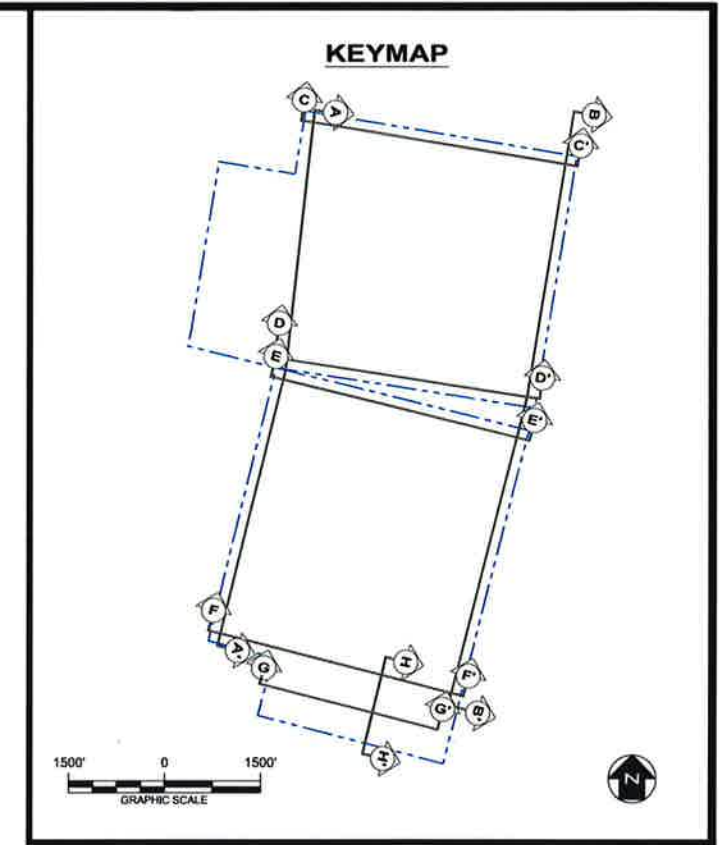
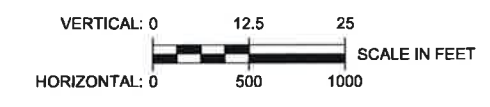
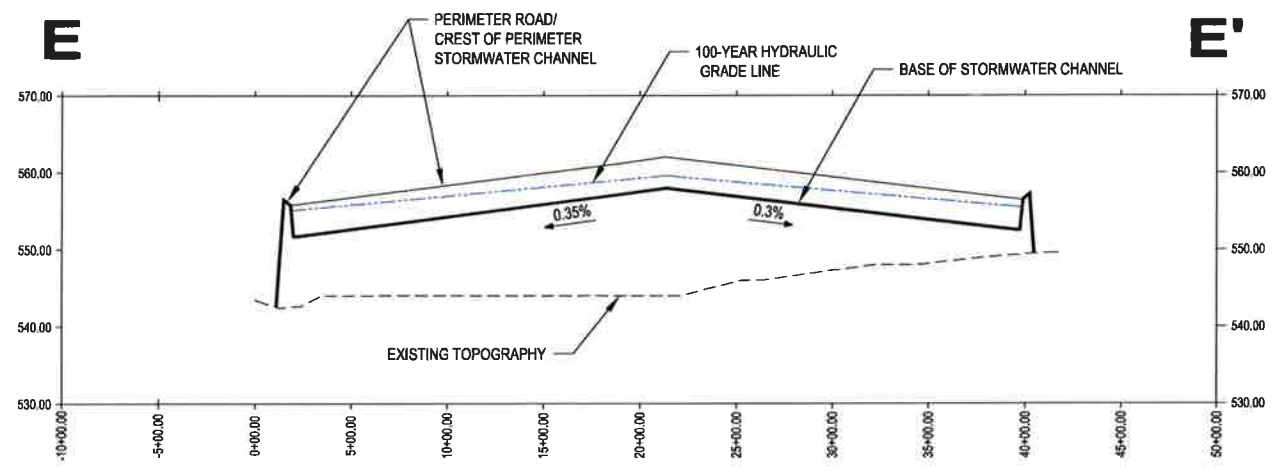
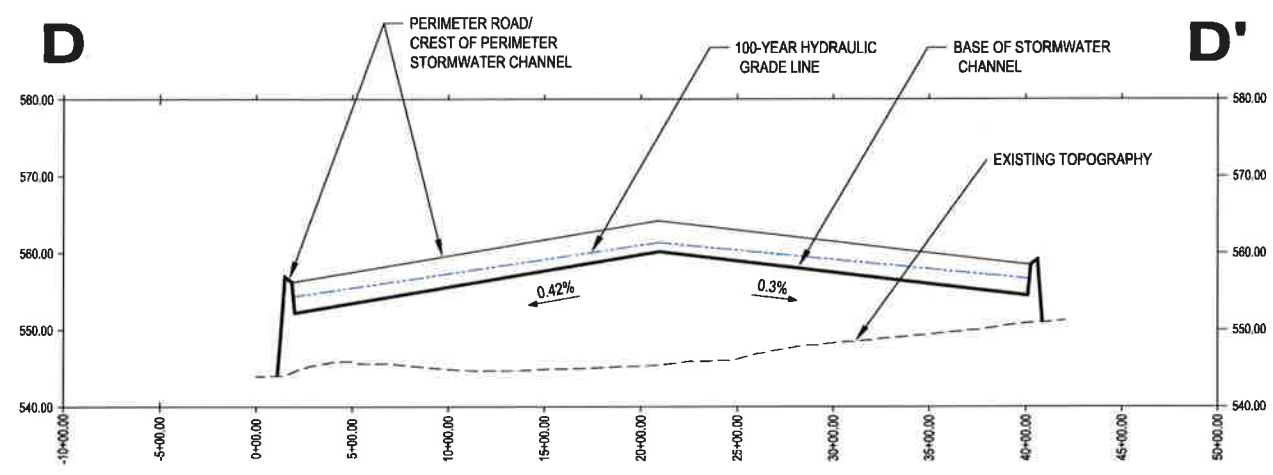
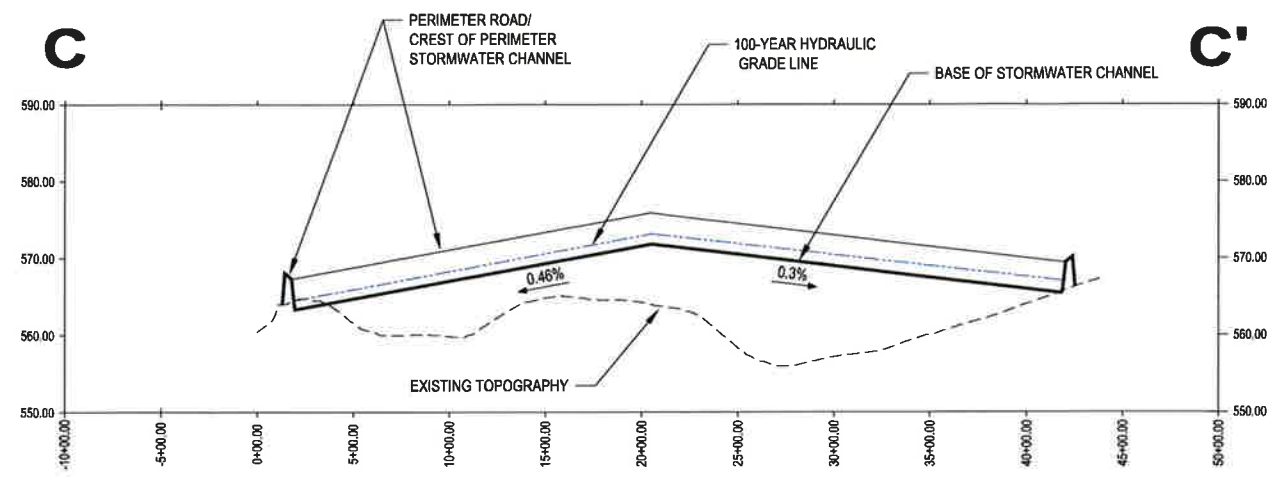
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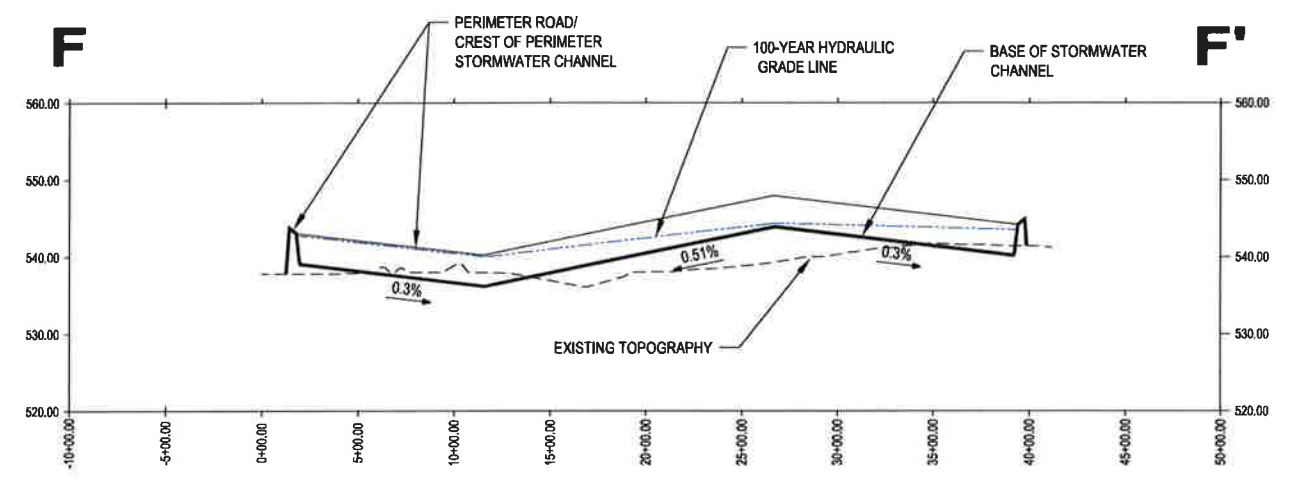
**FACILITY SURFACE WATER DRAINAGE REPORT
PERIMETER CHANNEL PROFILES**

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KEYMAP LEGEND
 --- APPROXIMATE FACILITY BOUNDARY



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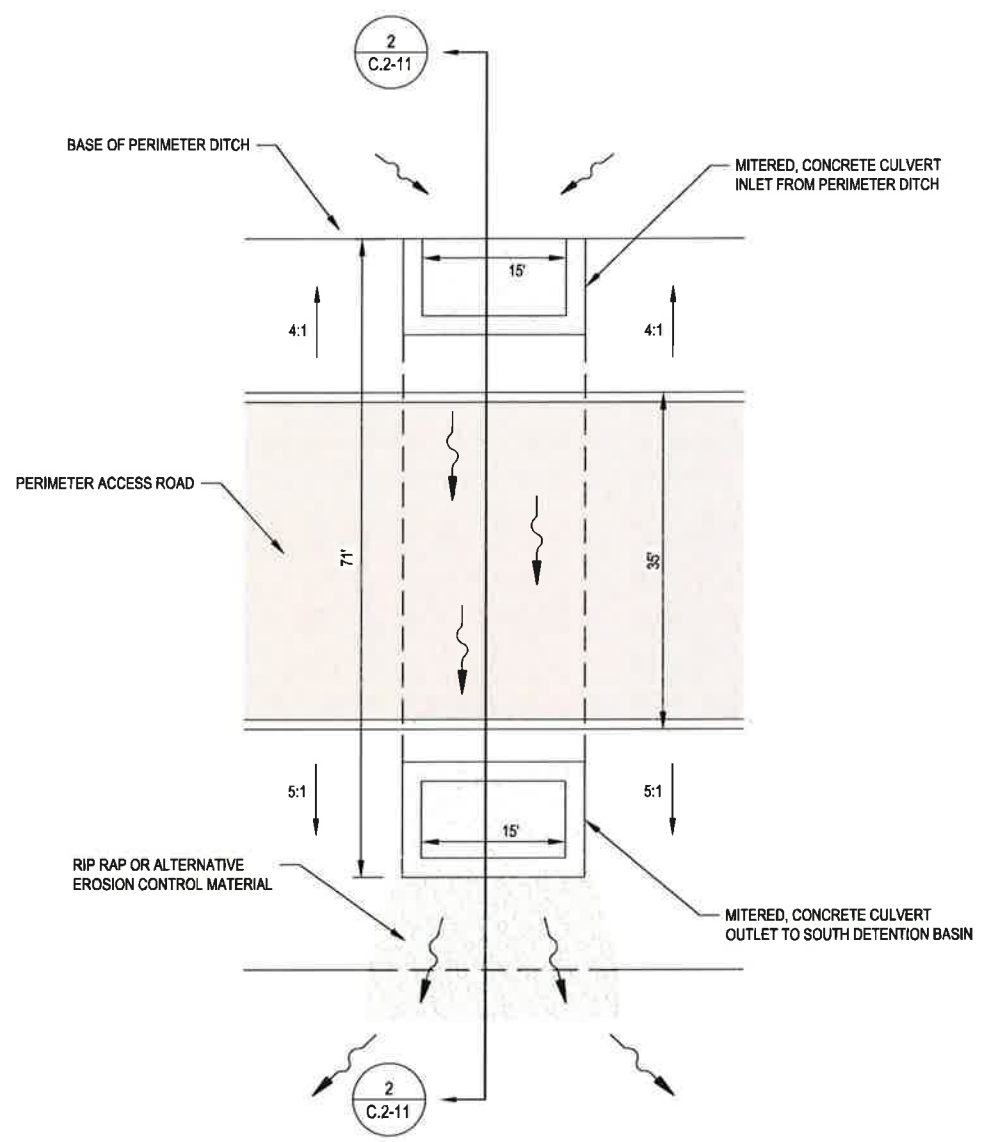
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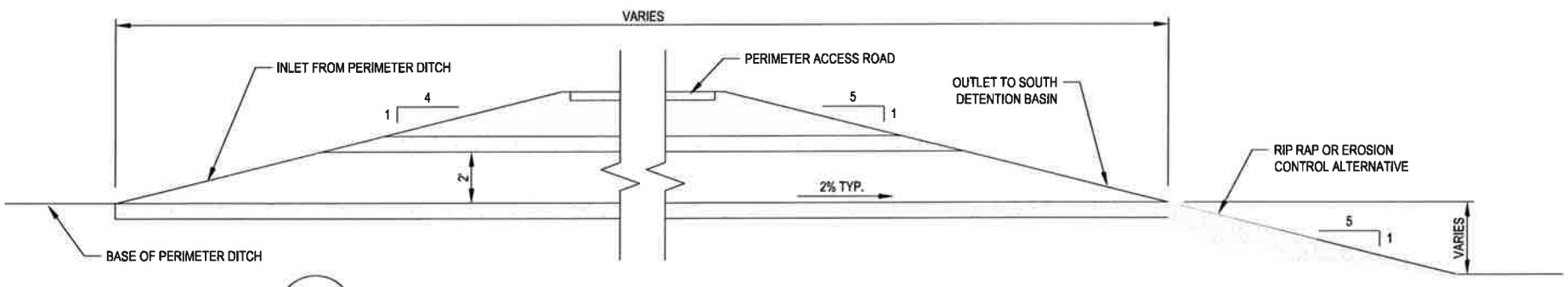
**FACILITY SURFACE WATER DRAINAGE REPORT
 PERIMETER CHANNEL PROFILES**

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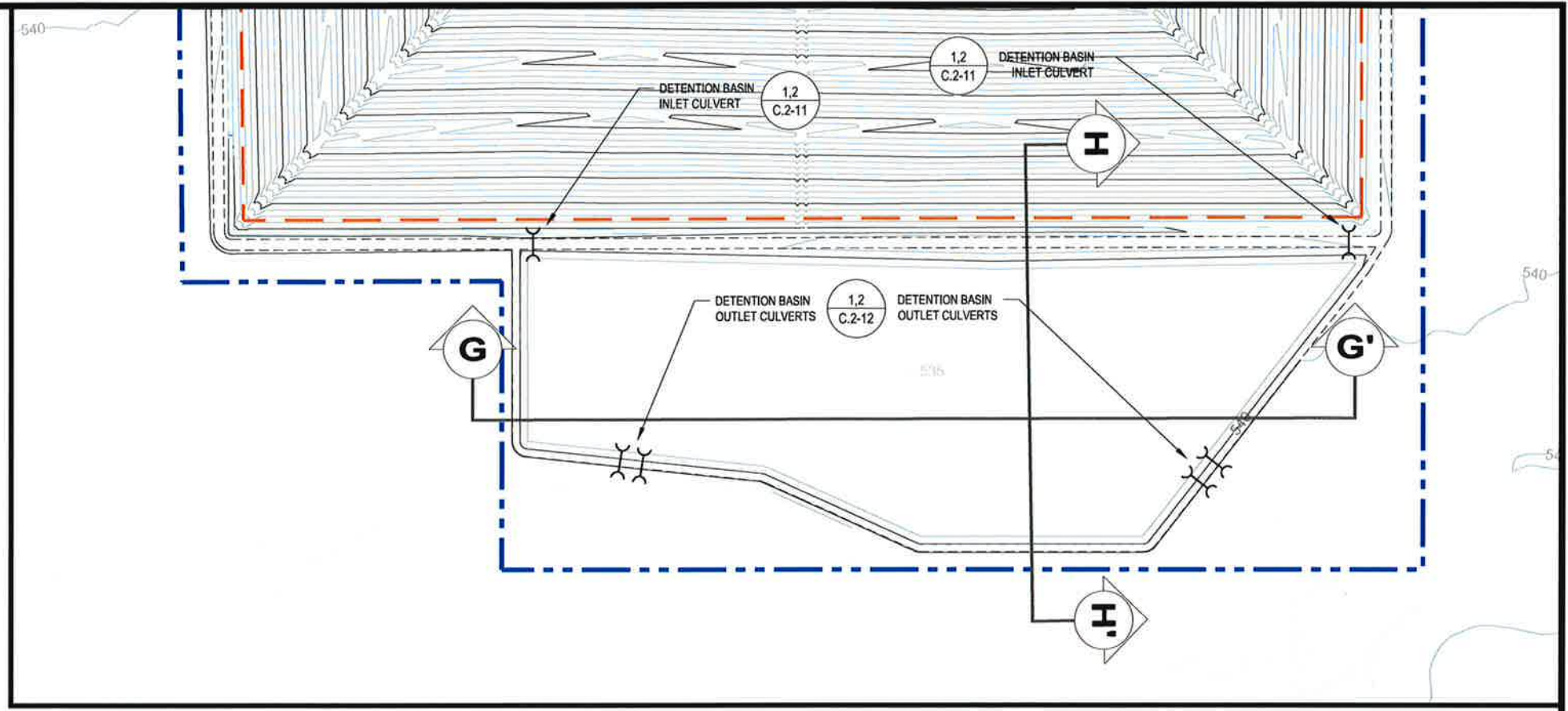
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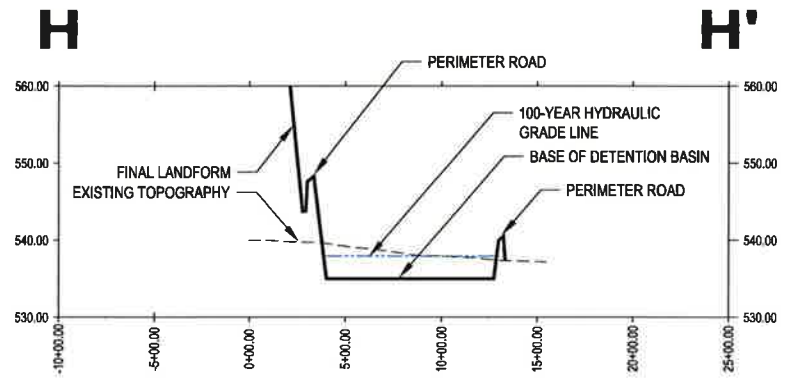
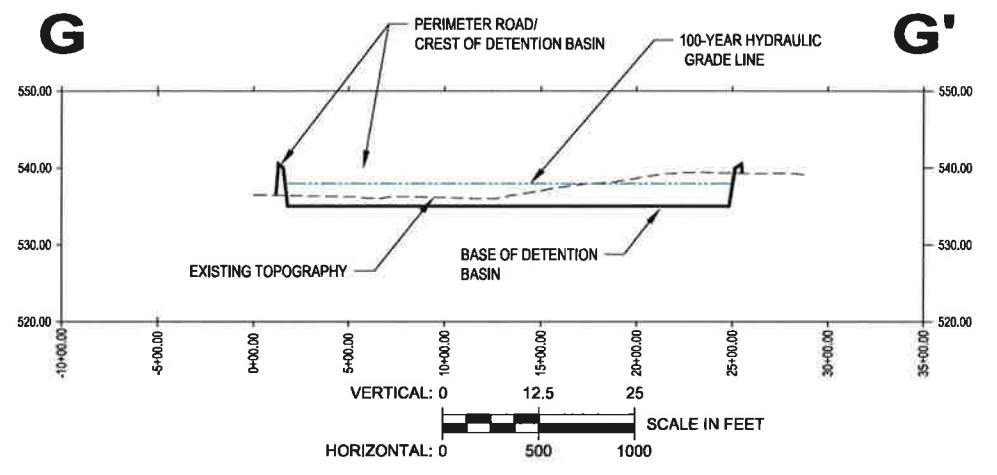
1
C.2-11
DETENTION BASIN CULVERT PASSAGE - PLAN VIEW
NOT TO SCALE



2
C.2-11
DETENTION BASIN INLET CULVERT PASSAGE - SECTION VIEW
NOT TO SCALE



- LEGEND**
- PERMIT BOUNDARY
 - WASTE UNIT BOUNDARY
 - PERIMETER ROAD
 - PERIMETER STORMWATER DITCH
 - MITERED CONCRETE CULVERT



**PESCADITO ENVIRONMENTAL RESOURCE CENTER
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**FACILITY SURFACE WATER DRAINAGE REPORT
DETENTION BASIN PLAN, PROFILE, AND DETAILS**

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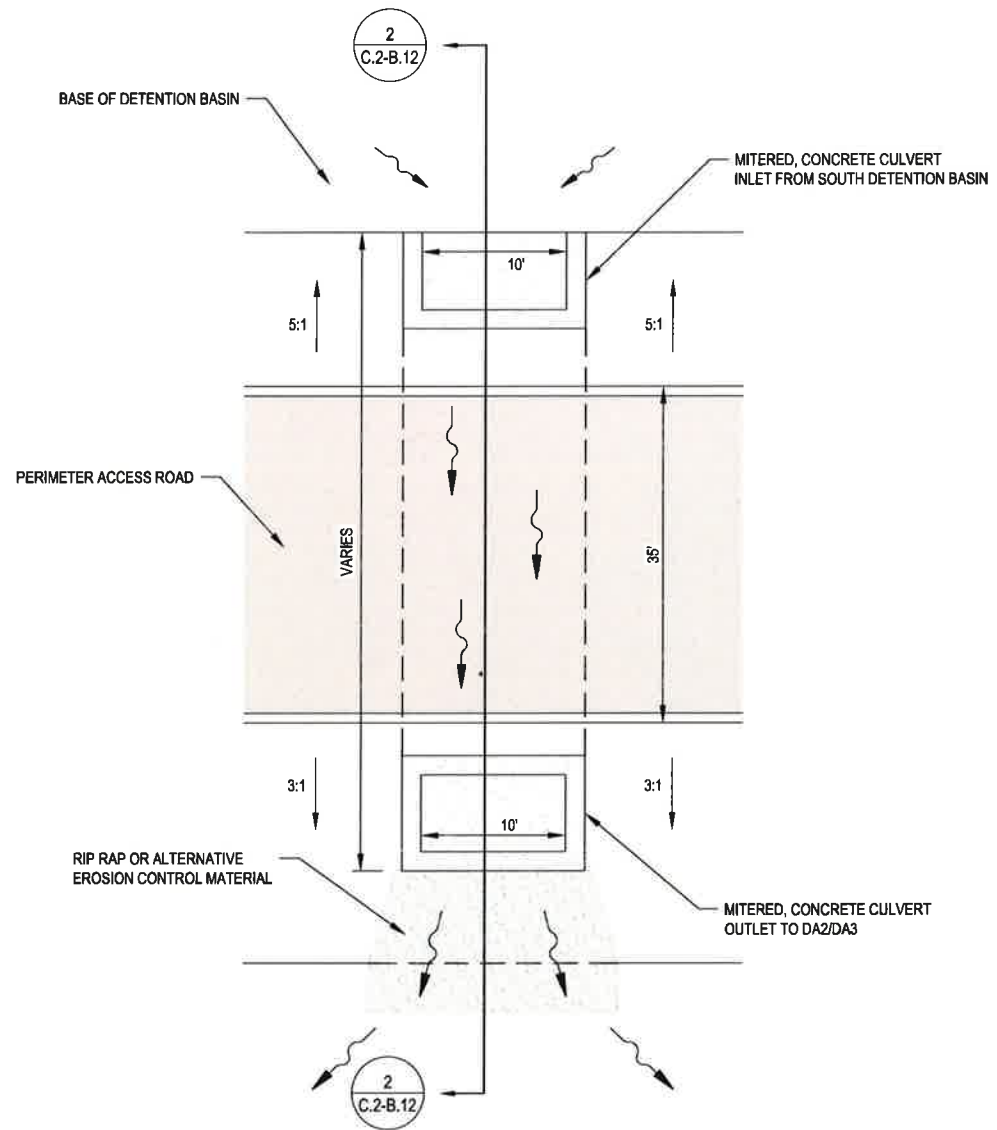
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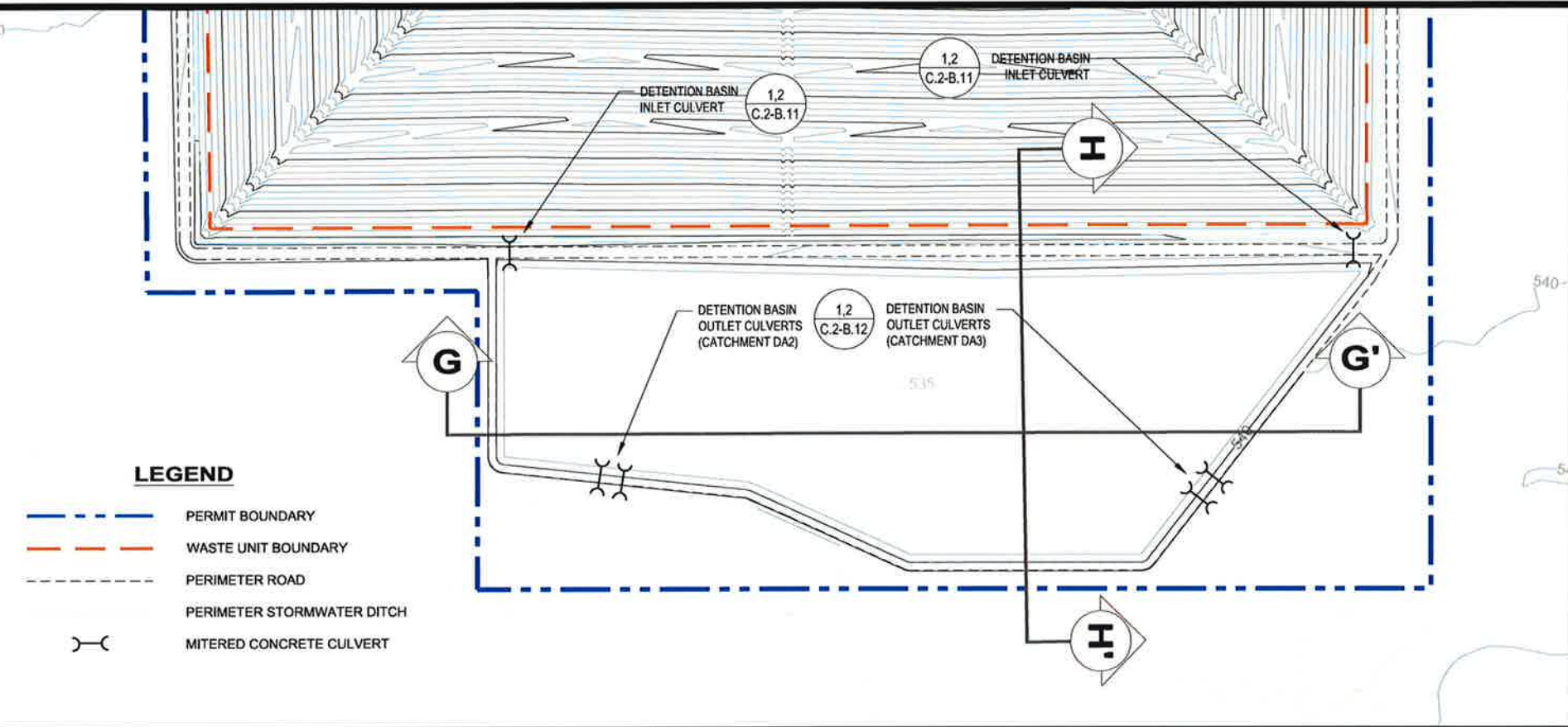
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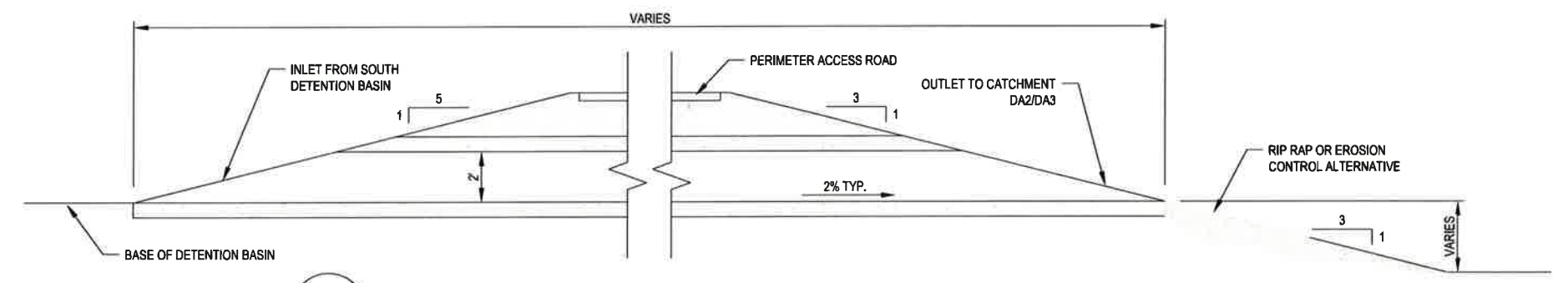


1
C.2-B.12
DETENTION BASIN OUTLET CULVERT PASSAGE - PLAN VIEW
NOT TO SCALE



LEGEND

- PERMIT BOUNDARY
- WASTE UNIT BOUNDARY
- PERIMETER ROAD
- PERIMETER STORMWATER DITCH
- MITERED CONCRETE CULVERT



2
C.2-12
DETENTION BASIN OUTLET CULVERT PASSAGE - SECTION VIEW
NOT TO SCALE

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STATE OF TEXAS
MICHAEL W. ODEN
67185
REGISTERED PROFESSIONAL ENGINEER

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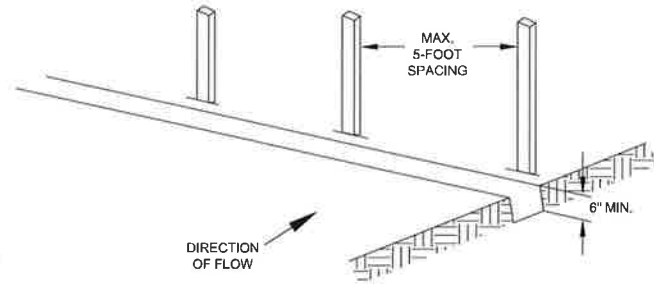
Michael W. Oden

**PESCADITO ENVIRONMENTAL RESOURCE CENTER
WEBB COUNTY, TEXAS
MSW 2374**

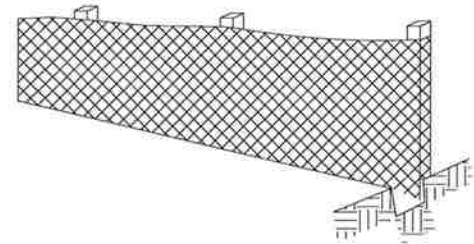
**FACILITY SURFACE WATER DRAINAGE REPORT
DETENTION BASIN PLAN, PROFILE, AND DETAILS**

PROJ. NO.:	148866	DATE:	MARCH 2015
DESIGNED BY:	-	DRAWING NO.:	III
DRAWN BY:	MTE		C.2-12
CHECKED BY:	RDS		12 OF 13 SHEETS
APPROVED BY:	MWO		

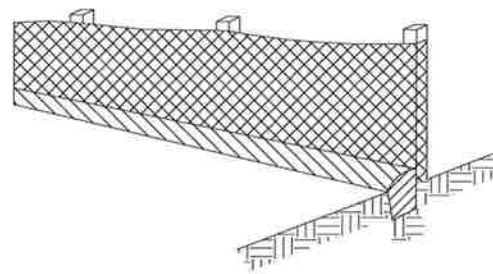
STEP 1
SET POSTS AND EXCAVATE OR SLIT-TRENCH A SIX-INCH DEEP TRENCH UPSLOPE ALONG THE LINE OF THE POST.



STEP 2
ATTACH THE GEOTEXTILE FILTER FABRIC TO EACH POST WITH A MINIMUM OF 3 (THREE) FASTENERS PER POST AND EXTEND TO THE BOTTOM OF THE TRENCH. ACCEPTABLE FASTENERS INCLUDE STAPLES, ZIP TIES, OR WIRE TIES.



STEP 3
BACKFILL AND COMPACT THE EXCAVATED SPOIL MATERIALS.

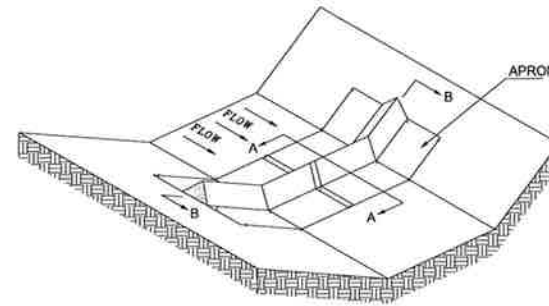


GEOTEXTILE REQUIREMENT	TEST METHOD	MARV
GRAB STRENGTH -MACHINE DIRECTION	ASTM D 4632	500 N 450 N
PERMITTIVITY	ASTM D 4491	0.05 SEC ⁻¹
APPARENT OPENING SIZE*	ASTM D 4751	0.60 mm
ULTRAVIOLET STABILITY (RETAINED STRENGTH)	ASTM D 4355	70% AFTER 500 HOURS

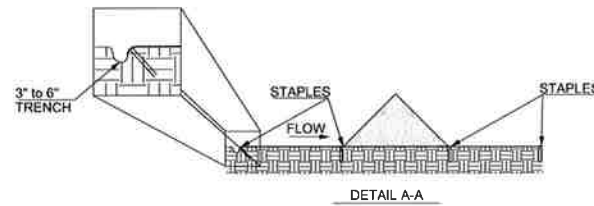
* VALUE FOR APPARENT OPENING SIZE REPRESENTS MAXIMUM AVERAGE ROLL VALUE.

NOTE:
1. EQUIVALENT DESIGN MAY BE USED AT THE DISCRETION OF THE FACILITY OPERATOR OR CONTRACTOR WITH THE APPROVAL OF THE CQA OFFICER.

1
C.2-13 **TYPICAL SILT FENCE DETAIL**
NOT TO SCALE

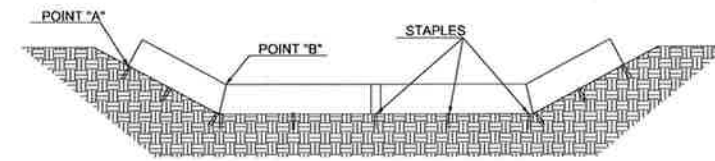


SILT DIKE UNIT CUT SECTION



DETAIL A-A

STAPLES SHALL BE PLACED WHERE THE UNITS OVERLAP

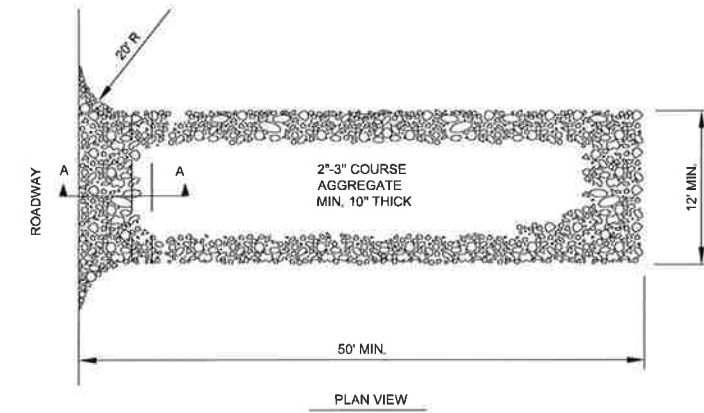


DIKE SECTION
DETAIL B-B

POINT "A" MUST BE HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

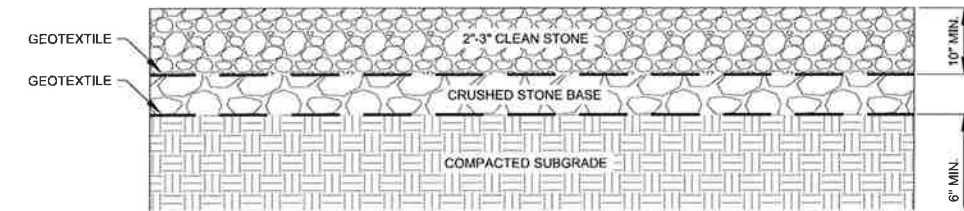
- NOTES:
1. TRIANGULAR SILT DIKES OR A SIMILAR PRODUCT SHALL BE USED AS DITCH CHECKS. EROSION BLANKETS OR SOD MAY ALSO BE USED IN CONCENTRATED FLOW AREAS.
 2. SILT DIKE INSTALLATION AND MATERIAL STANDARDS WILL BE BASED ON MANUFACTURER RECOMMENDATION.
 3. TRIANGULAR SILT DIKES ARE TO BE PLACED MINIMUM 300' ON CENTER IN PERIMETER DITCHES AND SWALES UNTIL SEEDING IS ESTABLISHED.
 4. DETAIL ADAPTED FROM ACF ENVIRONMENTAL CAD DETAILS, WWW.ACFENVIRONMENTAL, INC., ACCESSED OCT 22, 2009.
 5. EQUIVALENT DESIGN MAY BE USED AT THE DISCRETION OF THE FACILITY OPERATOR OR CONTRACTOR WITH THE APPROVAL OF THE CQA OFFICER.

2
C.2-13 **TYPICAL TRIANGULAR SILT DIKE**
NOT TO SCALE



PLAN VIEW

- NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
 3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.



PROFILE VIEW

3
C.2-13 **STABILIZED CONSTRUCTION ENTRANCE**
NOT TO SCALE

SEDIMENTATION AND EROSION CONTROL GENERAL NOTES

1. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. SOIL STABILIZATION MEASURES SHALL CONSIDER THE TIME OF YEAR, SITE CONDITIONS AND THE USE OF TEMPORARY OR PERMANENT MEASURES.
2. SOIL EROSION AND SEDIMENT CONTROL FEATURES SHALL BE CONSTRUCTED PRIOR TO THE COMMENCEMENT OF HYDROLOGIC DISTURBANCE OF UPLAND AREAS.
3. AREAS OR EMBANKMENTS HAVING SLOPES STEEPER THAN 3H:1V, SHALL BE STABILIZED WITH SOD, TURF REINFORCED MAT, HYDROSEEDING, OR DISCED STRAW IN COMBINATION WITH SEEDING.
4. ALL CULVERTS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED, BY AN APPROPRIATE SEDIMENT CONTROL MEASURE.
5. ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES WILL BE MAINTAINED AND REPAIRED AS NEEDED.
6. THE EROSION CONTROL MEASURES INDICATED ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER OR GOVERNING AGENCY.

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MSW 2374**

**FACILITY SURFACE WATER DRAINAGE REPORT
EROSION CONTROL DETAILS**

PROJ. NO.:	148866	DATE:	MARCH 2015
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