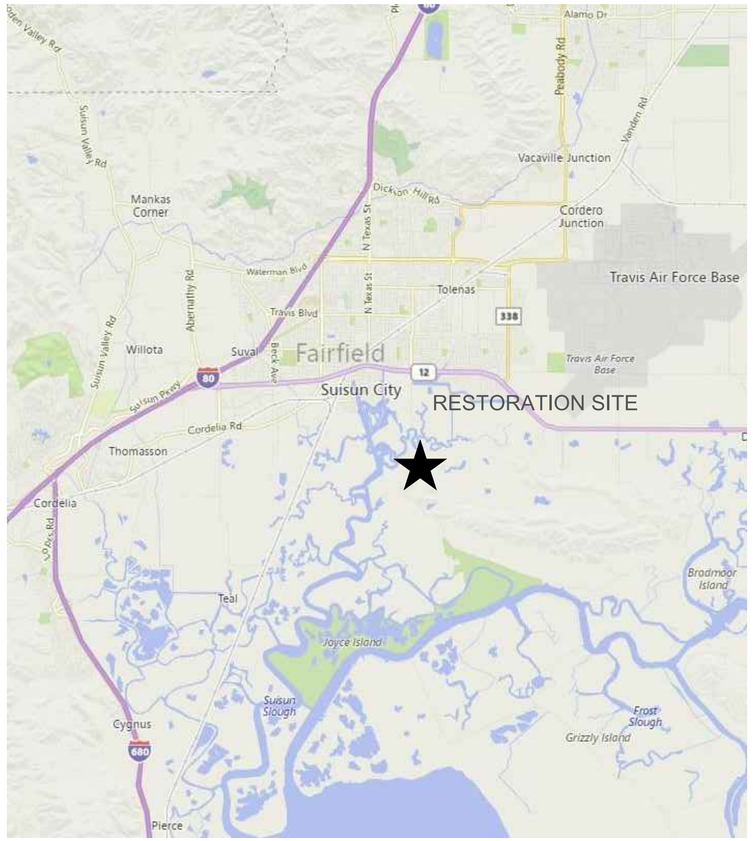
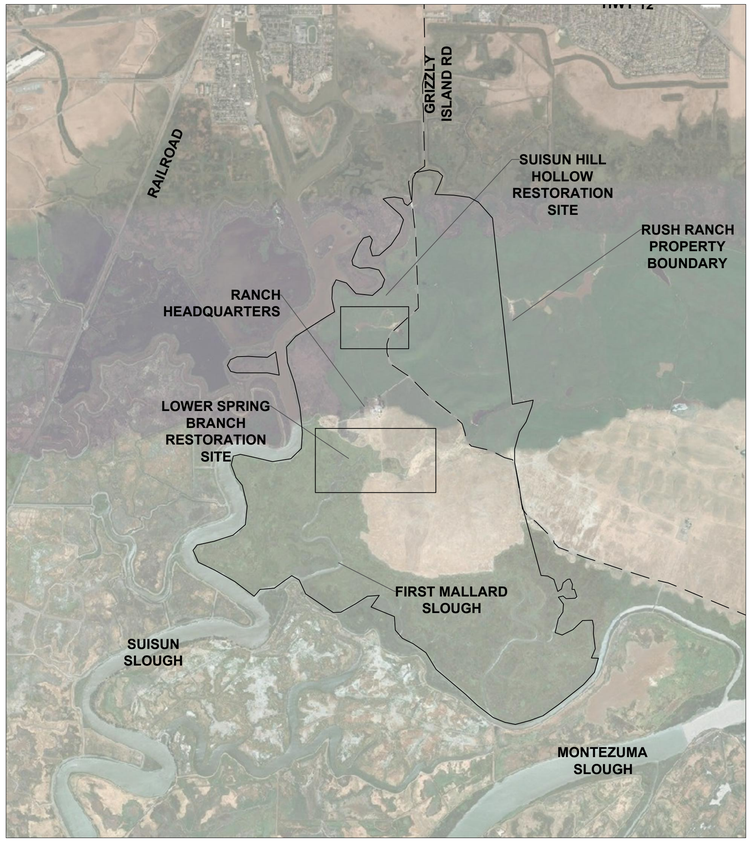
RUSH RANCH OPEN SPACE PRESERVE
RESTORATION PROJECT 1: LOWER SPRING BRANCH CREEK
RESTORATION PROJECT 2: SUISUN HILL HOLLOW
SUISUN MARSH, SOLANO COUNTY, CALIFORNIA
SOLANO LAND TRUST



LOCATION MAP



VICINITY MAP

Project Sponsor/Owner:
Solano Land Trust
Contact: Sue Wickham
(707) 709-9027; sue@solanolandtrust.org

Designer/Owners Representative:
Siegel Environmental, LLC
Contact: Stuart Siegel Ph.D., P.W.S
(415) 823-3746; stuart@siegelenvironmental.com

Engineer:
Northgate Environmental Management, Inc.
Contact: Ted Splitter, P.E.
(510) 435-4609; ted@ngem.com

DRAWING INDEX

REVISIONS

NO.	DESCRIPTION	BY	DATE	APPVD

APPROVED

REGISTERED PROFESSIONAL ENGINEER — No. C 29716 — Exp. 3-31-19 — CIVIL — STATE OF CALIFORNIA

northgate SIEGEL ENVIRONMENTAL — environmental management, inc. — Gillenwater GillenH2O Consulting

DRAWN			
DESIGNED	OLEG SUVYAK/ANDREW MIDDLETON		
CHECKED	DANIEL GILLENWATER		
	AXEL RIEPKE	SCALE	AS SHOWN
DATE	06/4/2018		

RUSH RANCH OPEN SPACE PRESERVE
LOWER SPRING BRANCH CREEK RESTORATION SITE (LSBC) AND
SUISUN HILL HOLLOW (SHH)
DRAFT 100% RESTORATION DESIGN
TITLE SHEET, DRAWING INDEX
DRAFT - NOT FOR CONSTRUCTION

SHEET NO. 1 OF 6

PROJECT NUMBER: 8075.02

C:\Users\andrew.middleton\appdata\local\temp\AcPublish_3604\Sheet_01 - Title Sheet.dwg 6-04-18 11:48:36 AM andrew.middleton

GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ESTIMATING THE QUANTITY OF EXCAVATION, GRADING, FILL, AND DISPOSAL IF REQUIRED ETC. THAT IS NECESSARY TO ACCOMPLISH THE WORK. ENGINEER'S ESTIMATES ARE PROVIDED FOR INFORMATION ONLY AND SHALL NOT BE RELIED UPON BY THE CONTRACTOR FOR THEIR BIDS.
2. FINAL SITE ELEVATIONS FOR NON-STRUCTURAL FILL AREAS ARE BASED UPON ESTIMATES OF CUT AND FILL AND MAY BE MODIFIED DURING CONSTRUCTION AS DIRECTED BY SLT OR ITS REPRESENTATIVE IN THE FIELD.
3. UNFAVORABLE WEATHER OR TIDAL CONDITIONS: EXCAVATING, FILLING, BACKFILLING, AND GRADING WORK SHALL NOT BE PERFORMED DURING WEATHER OR HIGH TIDAL CONDITIONS WHICH MIGHT DAMAGE OR BE DETRIMENTAL TO THE CONDITION OF EXISTING GROUND, IN-PROGRESS WORK, OR COMPLETED WORK. WHEN THE WORK IS INTERRUPTED BY RAIN OR HIGH TIDES, EXCAVATING, FILLING, BACKFILLING, AND GRADING WORK SHALL NOT RESUME UNTIL THE SITE AND SOIL CONDITION (MOISTURE CONTENT) ARE SUITABLE FOR COMPACTION. SOIL MATERIAL WHICH IS TOO WET FOR COMPACTION SHALL BE LEFT TO DRY, TO BE AERATED BY DISKING AND SCARIFYING OR OTHER APPROVED METHOD UNTIL THE MOISTURE CONTENT OF THE AREA IS UNIFORM AND WITHIN THE SPECIFIED LIMITS.
4. NO MATERIALS SHALL BE DISPOSED OF WITHIN THE TIDAL WATERS OF SAN FRANCISCO BAY.

CONSTRUCTION SCHEDULE AND SEQUENCING

5. ALL EARTHWORK AND SITE IMPROVEMENTS COMPLETED NO LATER THAN AS ALLOWED BY PERMITS, UNLESS AN EXTENSION IS GRANTED BY SLT OR THE PERMITTING AGENCIES ESTABLISHING REQUIREMENTS.
6. CONSTRUCTION HOURS ARE FROM 7AM TO 7PM, MONDAY THROUGH SUNDAY. WORK SHALL NOT OCCUR ON HOLIDAYS, EXCEPT WITH SLT'S APPROVAL.
7. GENERAL CONSTRUCTION SEQUENCING
   a. COMPLETE ALL REQUIRED SUBMITTALS (STORMWATER POLLUTION PREVENTION PLAN [SWPPP], DEWATERING PLAN, HEALTH AND SAFETY PLAN);
   b. MOBILIZE AND STAGE EQUIPMENT AT THE SITE;
   c. DELINEATE/FENCE OFF SENSITIVE WETLAND HABITATS AND CULTURAL RESOURCES TO BE AVOIDED DURING CONSTRUCTION. ISOLATE ADJACENT TIDAL WATERS BY DELINEATING THE CONNECTION LOCATIONS AND THE UP-STREAM AND DOWNSTREAM DEWATERING BARRIERS THAT WILL REMAIN IN PLACE DURING CONSTRUCTION;
   d. CONDUCT EXCAVATION, GRADING, CULVERT REPLACEMENT AND ASSOCIATED WORK PER PLANS;
   e. IMPLEMENT POST-CONSTRUCTION EROSION CONTROL MEASURES PER SWPPP;
   f. REMOVE THE TIDAL WATER BARRIERS, AT LOW TIDE IF POSSIBLE;
   g. FINAL SITE CLEAN-UP, DEBRIS REMOVAL, AND DEMOBILIZATION.

GENERAL CONDITIONS

8. ALL EQUIPMENT TO BE STAGED, SERVICED, AND REFUELED IN DESIGNATED STAGING AREA SHOWN ON THE PLANS OR FIELD-DELINEATED BY OWNER OR REPRESENTATIVE. LOCATION OF ALL STAGING AREAS TO BE FIELD-CONFIRMED BY OWNER OR REPRESENTATIVE AND MUST BE AT LEAST 25 FT FROM WETLANDS, DRAINAGES, AND SENSITIVE CULTURAL RESOURCES.
9. LOWER ELEVATION AREAS OF THE SITE ARE BE SUBJECT TO TIDAL INUNDATION DURING HIGH TIDES. TIDAL DATUMS INCLUDE A MEAN HIGHER HIGH WATER (MMHW) DATUM WITH A WATER SURFACE ELEVATION OF 6.5 (FT NAVD88). CONSTRUCT A TEMPORARY TIDAL WATER BARRIER DOWNSTREAM AND UPSTREAM IF REQUIRED OF THE CULVERT. SEE NOTES BELOW ON CONSTRUCTION SITE DEWATERING FOR LOWER SPRING BRANCH CREEK.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO ALL ROADS, EXISTING VEGETATION, EXISTING STRUCTURES, UTILITIES AND OTHER PROPERTY AND IMPROVEMENTS RESULTING FROM ITS USE AND SHALL REPAIR ALL DAMAGE RESULTING FROM SUCH USE AT NO COST TO SLT.
11. CONTRACTOR SHALL IDENTIFY, LOCATE, AND PROTECT ALL EXISTING UTILITIES WITHIN THE LIMITS OF WORK. CALL UNDERGROUND SERVICE ALERT AT 800-642-2444 FOR INFORMATION AT LEAST3 WORKING DAYS IN ADVANCE OF BEGINNING WORK.

SURVEYS AND ELEVATION CONTROL

12. ALL ELEVATIONS SHOWN ON PLANS ARE IN FEET NAVD88. SLT WILL PROVIDE SURVEY BENCHMARK INFORMATION.
13. EXISTING TOPOGRAPHY IS FROM 2005 LIDAR DEM AND LATER GROUND TOPOGRAPHIC SURVEYS IN VEGETATED AND WET AREAS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING SITE TOPOGRAPHY AND SHALL NOTIFY REPRESENTATIVE AND SLT IMMEDIATELY OF ANY MAJOR DISCREPANCIES OBSERVED IN THE FIELD.
14. THE AS-BUILT SURVEY TO DOCUMENT SUCCESSFUL PROJECT COMPLETION SHALL BE PERFORMED BY CONTRACTOR AT THE DIRECTION OF THE SLT REPRESENTATIVE.

ENVIRONMENTAL PROTECTION

15. CONTRACTOR TO PREPARE AND IMPLEMENT SWPPP PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL ASSIST SLT IN REGISTERING ON THE SWRCB SMART SYSTEM AND OBTAINING A WDID FOR THE PROJECT.
16. CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES AS NEEDED TO MITIGATE THE POTENTIAL FOR SEDIMENT MIGRATION AWAY FROM TEMPORARY STAGING AND STOCKPILING AREAS.
17. CONTRACTOR SHALL DESIGNATE ONE (1) FUELING AND WASH AREA WITHIN THE STAGING AREAS. ALL FUELING, MAINTENANCE, WASHING, AND EMERGENCY REPAIR OF VEHICLES AND EQUIPMENT SHALL BE PERFORMED WITHIN THE DESIGNATED FUELING AREA OR OFFSITE. THE FUELING AND WASH AREA SHALL BE CONSTRUCTED TO PROVIDE CONTAINMENT OF ANY SPILLS AND WASH WATER.
18. CONTRACTOR SHALL EMPLOY CONSCIENTIOUS AND EFFECTIVE MEANS OF DUST CONTROL. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ALL DAMAGES, DELAYS, GOVERNMENT-IMPOSED PENALTIES OR FINES, AND CLAIMS THAT RESULT FROM THE CONTRACTOR'S DUST CONTROL PRACTICES. COMPLY WITH BAY AREA AIR QUALITY CONTROL DISTRICT (BAAQCD) PUBLISHED GUIDELINES.
19. CONTRACTOR SHALL COMPLY WITH ALL PERMIT REQUIREMENTS FOR WILDLIFE PROTECTION.
20. SLT WILL CONDUCT EDUCATION PROGRAMS FOR ALL CONSTRUCTION PERSONNEL PRIOR TO INITIATING CONSTRUCTION. ALL CONSTRUCTION PERSONNEL AND SUBCONTRACTORS MUST COMPLETE THE ONETIME HALF HOUR TRAINING BEFORE THEY ARE AUTHORIZED TO WORK IN THE PROJECT AREA.
21. PRIOR TO CONSTRUCTION, SLT SHALL DEMARCATE ALL SENSITIVE HABITAT AND ARCHAEOLOGICAL AREAS (SEASONAL AND TIDAL WETLANDS AND NATIVE AMERICAN ARTIFACTS) TO BE AVOIDED/PRESERVED DURING CONSTRUCTION. THE CONTRACTOR SHALL CAREFULLY ACCOMPLISH ITS OPERATIONS AND EQUIPMENT AND PERSONNEL MOVEMENT TO PROTECT NATIVE VEGETATION AS MUCH AS POSSIBLE AND TO MINIMIZE THE DISTURBANCE AREA(S).
22. ALL WORK WITHIN TIDAL MARSH AND WETLAND AREAS SHALL BE PERFORMED WITH EQUIPMENT APPROPRIATE TO THE SOFT SOILS CONDITONS, OR BY HAND LABORERS. ANY DAMAGE TO TIDAL MARSH AND WETLAND AREAS SHALL BE REPAIRED AND RESTORED TO PRE-CONSTRUCTION CONDITIONS UPON COMPLETION OF WORK.
23. IF PREHISTORIC OR HISTORICAL STRUCTURES, ARCHAEOLOGICAL DEPOSITS, PALEONTOLOGICAL DEPOSITS (FOSSILS), OR HUMAN REMAINS ARE ENCOUNTERED DURING PERFORMANCE OF THE WORK, THE CONTRACTOR SHALL (1) SUSPEND ALL WORK WITHIN 50 FT OF THE DISCOVERY AND (2) NOTIFY SLT IMMEDIATELY.

STAKING AND LAYOUT

24. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL STAKING AND SURVEYING NEEDED TO ACHIEVE ALL LINES, GRADES AND DIMENSIONS SHOWN ON THE PLANS. STAKES AND MARKERS SHALL BE PROVIDED AS NECESSARY TO CONTROL THE WORK AND ASSURE CONSTRUCTION IS IN CONFORMANCE WITH THE CONTRACT DOCUMENTS AND AS OTHERWISE DIRECTED BY THE REPRESENTATIVE AND SLT.
25. CONTRACTOR SHALL USE ESTABLISHED SURVEY BENCHMARK DATA PROVIDED BY OWNER TO LAYOUT THE WORK.
26. STAKING/LAYOUT OF PROJECT ELEMENTS SHALL BE APPROVED BY THE REPRESENTATIVE AND OWNER BEFORE COMMENCEMENT OF EARTHWORK

CLEARING AND GRUBBING

27. CLEARING AND GRUBBING SHALL BE PERFORMED IN ALL AREAS WITHIN THE EARTHWORK FOOTPRINT.
28. CLEAR AREAS TO BE EXCAVATED OR FILLED. SHRUBS AND WOODY VEGETATION GREATER THAN 1 FT IN HEIGHT, INCLUDING ROOT SYSTEMS. ORGANIC MATERIAL AND ORGANIC RICH SOILS GENERATED FROM CLEARING AND GRUBBING SHALL BE BROKEN DOWN AND BURIED ON-SITE IN THE FILL AREAS > 2 FT BELOW THE SURFACE. BURNING OF TREES STUMPS, BRUSH OR OTHER VEGETATION IS NOT PERMITTED.

CONSTRUCTION SITE DEWATERING FOR LOWER SPRING BRANCH CREEK

29. CONTRACTOR SHALL ISOLATE THE ACTIVE WORK AREAS FROM ADJACENT TIDAL AREAS UNTIL ALL OTHER EXCAVATION AND GRADING WORK IS COMPLETE AND ACCEPTED.
30. TIDAL DEWATERING SHALL BE ACCOMPLISHED BY A TIDAL BARRIER TO THE WEST OF THE CULVERT REPLACEMENT LOCATION AND SHALL BE PER THE CONTRACTORS DEWATERING PLAN.
31. UPSTREAM DEWATERING BARRIER SHALL BE INSTALLED ONLY AS NEEDED
32. DEWATERING ACTIVITIES SHALL COMPLY WITH ALL PERMIT REQUIREMENTS. TIDAL GROUNDWATER MAY BE ENCOUNTERED DURING EXCAVATION. CHANNEL EXCAVATION MAY REQUIRE DEWATERING.
33. INSTALL AND OPERATE AS NEEDED TEMPORARY BYPASS SYSTEM FOR CREEK WATER UPSTREAM OF THE CONSTRUCTION SITE.
34. INSTALL AND OPERATE AS NEEDED TEMPORARY GROUNDWATER DEWATERING SYSTEM AT THE EXCAVATION SITE.
35. REMOVE DEWATERING SYSTEM FOLLOWING COMPLETION OF CONSTRUCTION AND ACCEPTANCE OF WORK.

EXCAVATION

36. NO BLASTING IS PERMITTED
37. SOIL CONDITIONS AT BOTTOM OF EXCAVATION AREAS SHALL BE SUBJECT TO ENGINEER AND OWNER'S APPROVAL. SURFACES SHALL BE AS SHOWN ON PLANS.
38. OVER EXCAVATION: IF MATERIALS ARE INADVERTENTLY REMOVED BELOW REQUIRED ELEVATIONS, REPRESENTATIVE AND OWNER WILL CHECK THE DESIGN TO DETERMINE NECESSARY CORRECTIVE MEASURES TO BE PERFORMED AT CONTRACTOR'S EXPENSE.

MATERIAL MANAGEMENT

39. FILL MATERIAL STOCKPILING AND MANAGEMENT SHALL CONFORM TO THE PLANS AND SPECIFICATIONS.
40. STOCKPILE MATERIAL AS NEEDED: IDENTIFY AN AREA OR AREAS ON THE PROJECT SITE WHERE THE VARIOUS CLASSES OF MATERIAL WILL BE STOCKPILED FOR FURTHER USE AS ON-SITE FILL. STOCKPILES MUST BE LOCATED AT LEAST 25 FT AWAY FROM THE EDGE OF EXISTING WETLAND AREAS AND CULTURAL RESOURCES DEMARCATED FOR PRESERVATION/AVOIDANCE.

FILL PLACEMENT AND COMPACTION

41. STOCKPILING, SPREADING, AND COMPACTING OF MATERIAL SHALL CONFORM TO THE PLANS AND SPECIFICATIONS.
42. SELECTED NATIVE MATERIAL AND IMPORTED FILL MATERIALMAY BE STOCKPILED INSIDE THE PROJECT RIGHT-OF-WAY AND STAGING AREAS AS SHOWN ON THE PLANS, AND LATER PLACED IN FINAL POSITION.
43. AREAS TO RECEIVE FILL SHALL BE INSPECTED BY THE ENGINEER AND THE ENGINEER MAY REQUIRE MOISTURE CONDITIONING, AND RECOMPACTION AS DESCRIBED IN THESE PLANS AND SPECIFICATION.
44. CULVERT REPLACEMENT
   a. THE SUBGRADE SHALL BE CLEANED OF ALL LOOSE MATERIAL PRIOR TO FILL PLACEMENT. NO ADDITIONAL SUBGRADE PREPARATION IS REQUIRED.
   b. FILL SHALL BE COMPACTED TO 90% MINIMUM RELATIVE COMPACTION AS DETERMINED BY CALIFORNIA TEST 216 AT A MOISTURE CONTENT OF PLUS OR MINUS WITHIN 2% OF OPTIMUM MOISTURE CONTENT. UNLESS OTHERWISE NOTED IN THE PLANS AND THE SPECIFICATIONS IT IS ANTICAPTED THAT ALL SELECT FILL AND NATIVE BACKFILL WILL BE FOUNDED ON TREATED SOIL AND WILL THEREFORE HAVE FIRM SUPPORT UPON WHICH TO PLACE AND COMPACT THE FILL. THE ENGINEER AND OWNER REPRESENTATIVE SHALL BE CONTACTED IF DIFFERING CONDITIONS ARE ENCOUNTERED.
   c. THE AGGREGATE BASE LAYER SHALL BE COMPACTED TO A MINIMUM OF 90% COMPACTION AT MOISTURE CONTENT OF PLUS OR MINUS 2% OF OPTIMUM.
45. APPROACH RAMPS FROM LOWERED ACCESS ROAD UP TO CULVERT
   a. SUBGRADE PREPARATION AND AGGREGATE BASE COMPACTION FOR THE ACCESS RAMPS SHALL BE SIMILAR TO THE LOWERED ACCESS ROAD PRESENTED BELOW.
46. LOWERED ACCESS ROAD/OVERFLOW BENCH WITH PUBLIC ACCESS PATH
   a. EXCAFVATE ROADWAY AND ACCESS PATH TO DESIGN ELEVATIONS.
   b. PREPARE SUBGRADE BY REMOVING ANY LOOSE MATERIAL AND COMPACTING THE SUBGRADE SURFACE BY PASSING A LIGHT COMPACTOR OVER THE SURFACE FOR A MINIMUM OF FOUR PASSES. IF "PUMPING" OF THE SUBGRADE IS OBSERVED STOP IMMEDIATELY AND NO FURTHER COMPACTION SHALL BE PERFORMED IN THE PUMPING AREA. THE SUBGRADE SHALL BE OVERLAIN WITH SIX INCHES OF CLASS 2 AGGREGATE BASE. THE AGGRAGE BASE SHALL BE COMPACTED TO A MINIMUM OF 90 PERCENT COMPACTION. THE DESIGN TEAM IS AWARE THAT 90 PERCENT COMPACTION IS BELOW NORMAL PRACTICE, HOWEVER 90 PERCENT COMPACTION HAS BEEN SELECTED BECAUSE OF THE SOFT SUBGRADE CONDITIONS.
47. SHH LOWERED IMPOUNDMENT BERM: AFTER BERM LOWERING IS COMPLETED, NEW SURFACE SHALL BE TRACK-WALKED AT LEAST ONE TIME, TO ACHIEVE APPROXIMATELY 80% COMPACTION. NO COMPACTION TESTING REQUIRED.
48. BACKFILL PLACEMENT AREAS: AREAS TO RECEIVE FILL SHALL BE SCARIFIED TO A DEPTH OF SIX (6) INCHES, MOISTURE CONDITIONED, AND RECOMPACTED AS DIRECTED BY THE ENGINEER. AFTER FILL PLACEMENT IS COMPLETE, THESE AREAS SHALL BE TRACK-WALKED TO APPROXIMATELY 85% COMPACTION FOR UP TO 1 FOOT BELOW FINAL SURFACE, AND NO TRACK WALKING FOR UPPER FOOT TO ALLOW REPLANTING.
49. FINISH GRADING OF RESTORATION AREAS SHALL BE CONDUCTED AT THE DIRECTION OF OWNER OR ITS REPRESENTATIVE.
50. ALLOWABLE VERTICAL DEVIATIONS FROM FILL DESIGN GRADE ARE +/- 0.25 FT FOR THE CULVERT REPLACEMENT ELEMENTS ONLY.
51. DESIGN TOPOGRAPHY FOR ALL CONSTRUCTED FEATURES IS SHOWN ON SHEET 4A, 4B AND 5.

EROSION CONTROL

52. INSTALL STRUCTURAL BEST MANAGEMENT PRACTICES INCLUDING STRAW WATTLES, SILT FENCE AS SHOWN ON THE SWPPP
53. INSTALL POST-CONSTRUCTION EROSION CONTROLS AS DESCRIBED ON THE SWPPP FOLLOWING COMPLETION OF EARTHWORK, BUT PRIOR TO SITE BREACHING. MINIMUM POST-CONSTRUCTION WILL INCLUDE STRAW WATTLES AT THE TOE OF THE FILL SLOPES IN THE THREE EXCAVATED SOIL PLACEMENT AREAS. SEED-FREE RICE STRAW WILL BE APPLIED OVER THE NEWLY PLACED SURFACE. NO STRAW WATTLES OR SIMILAR SHALL BE PLACED IN TIDAL ENVIRONMENTS. JUTE MATTING OR SIMILAR SHALL BE PLACED ON THE UPSTREAM SIDE OF THE OVERFLOW BENCH/PUBLIC ACCESS PATH ATOP THE NEWLY GRADED SURFACE BETWEEN THE PLACED GRAVEL AND THE ADJACENT MARSH.

REVISIONS

NO.	DESCRIPTION	BY	DATE	APPVD

APPROVED

REGISTERED PROFESSIONAL ENGINEER — No. C 29716 — Exp. 3/31/19 — STATE OF CALIFORNIA

northgate SIEGEL environmental management

Gillenwater GillenH2O Consulting

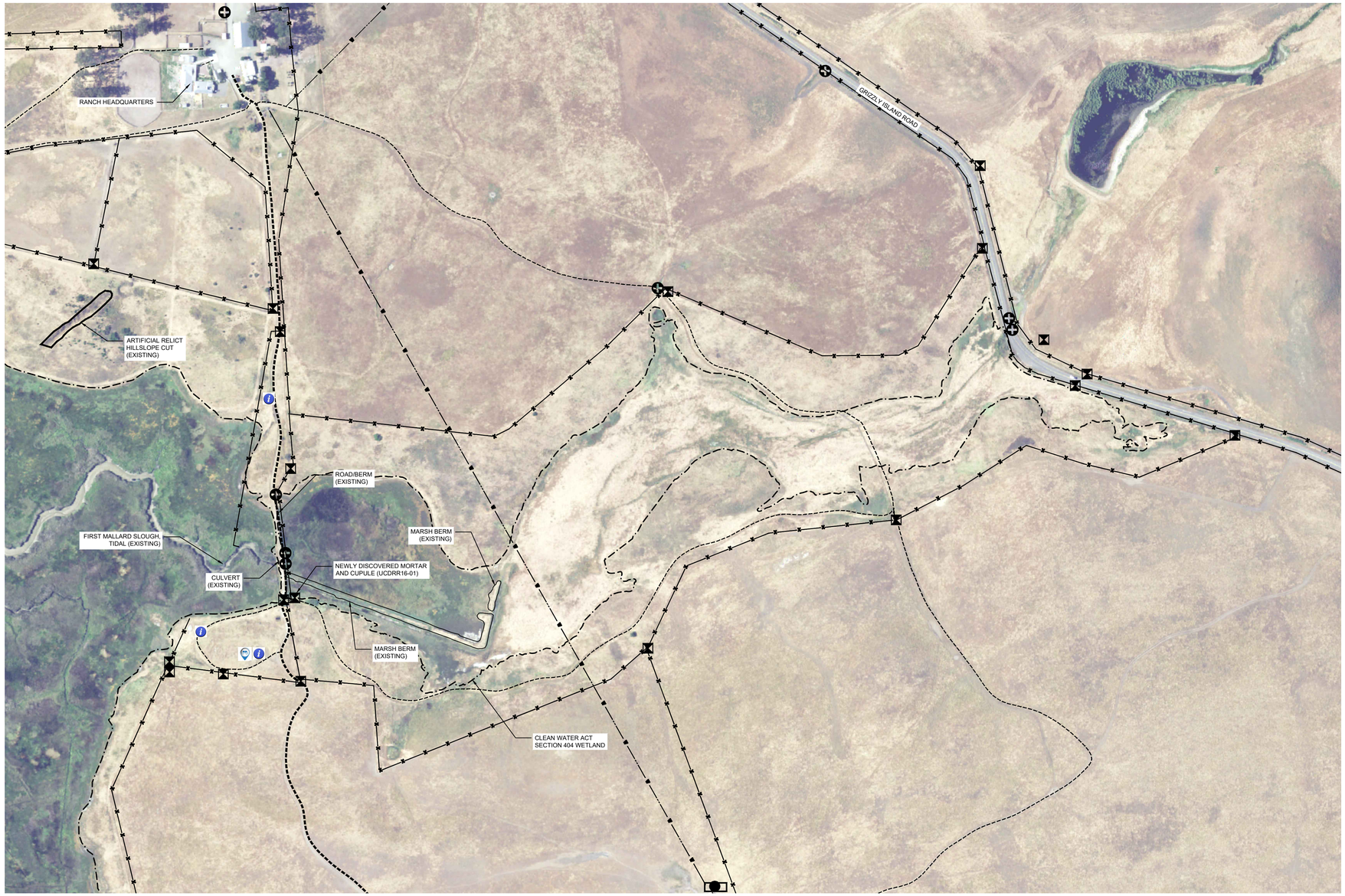
DRAWN	OLEG SUVOVA/ANDREW MIDDLETON
DESIGNED	DANIEL GILLENWATER
CHECKED	
AXEL RIEKE	
DATE	06/4/2018
SCALE	AS SHOWN

RUSH RANCH OPEN SPACE PRESERVE
LOWER SPRING BRANCH CREEK (LSBC) AND
SUISUN HILL HOLLOW (SHH)
DRAFT 100% RESTORATION DESIGN
GENERAL NOTES
DRAFT - NOT FOR CONSTRUCTION

SHEET NO. **2** OF **6**

PROJECT NUMBER: **8075.02**

C:\Users\andrew.middleton\appdata\local\temp\AcPublish_3604\Sheet_02 General Notes.dwg 6-04-18 11:47:09 AM andrew.middleton



EXISTING ACCESS FEATURES AND INFRASTRUCTURE:

- GATE
- TANK
- TROUGH
- CULVERT
- FENCES
- WATERLINE
- TRAIL/RANCH ROAD
- TRAILS
- WETLANDS AND WATERS
- INTERPRETIVE SIGN
- OVERLOOK

NOTE: AERIAL IMAGE FROM 2016 SOLANO COUNTY NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP).

200 0 100 200 400 800

(IN FEET)

N

REVISIONS

NO.	DESCRIPTION	BY	DATE	APPVD

APPROVED

REGISTERED PROFESSIONAL ENGINEER — No. C 29716 — Exp. 3-31-19 — CIVIL — STATE OF CALIFORNIA

northgate ENVIRONMENTAL MANAGEMENT, INC. SIEGEL ENVIRONMENTAL

Gillenwater Gillen H2O Consulting

DRAWN: OLEG SUNYAK/ANDREW MIDDLETON
DESIGNED: DANIEL GILLENWATER
CHECKED: AXEL RIEKE
DATE: 06/04/2018
SCALE: AS SHOWN

RUSH RANCH OPEN SPACE PRESERVE
LOWER SPRING BRANCH CREEK RESTORATION
SITE (LSBC) AND SUISUN HILL HOLLOW (SHH)
DRAFT 100% RESTORATION DESIGN

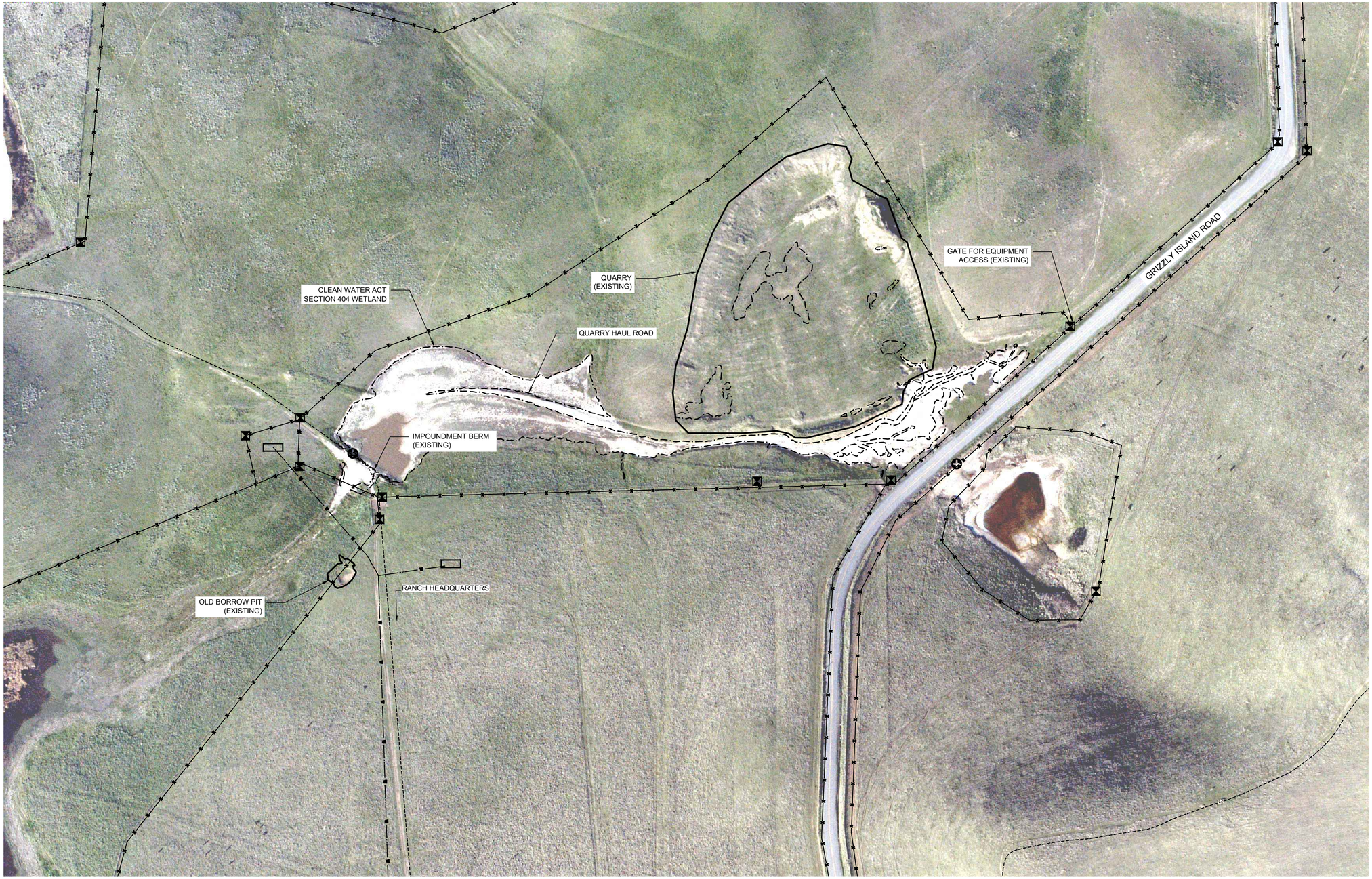
SITE PLAN - LOWER SPRING BRANCH CREEK (LSBC)

DRAFT - NOT FOR CONSTRUCTION

SHEET NO. 3a OF 6

PROJECT NUMBER: 8075.02

D:\Work\NGEM\8075.02 Lower Spring Branch Creek Restoration\Drawings\Sheets\Sheet_03 - Site Plan- LSBC-SHH.dwg 6-04-18 07:49:09 PM oleg



EXISTING ACCESS FEATURES AND INFRASTRUCTURE:

- GATE
- TANK
- TROUGH
- CULVERT
- FENCES
- WATERLINE
- TRAILS
- BERM

NOTE: AERIAL IMAGE FROM 2016 SOLANO COUNTY NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP).

100 0 50 100 200 400

(IN FEET)

N

REVISIONS

NO.	DESCRIPTION	BY	DATE	APPVD

APPROVED

REGISTERED PROFESSIONAL ENGINEER THEODORE SIEGEL No. C 29716 Exp. 3-31-19 CIVIL STATE OF CALIFORNIA

northgate environmental management, inc. SIEGEL ENVIRONMENTAL

Gillenwater GillenH2O Consulting

DRAWN: OLEG SUNYAKA/ANDREW MIDDLETON
DESIGNED: DANIEL GILLENWATER
CHECKED: AXEL RIEKE
DATE: 06/04/2018
SCALE: AS SHOWN

RUSH RANCH OPEN SPACE PRESERVE
LOWER SPRING BRANCH CREEK RESTORATION
SITE (LSBC) AND SUISUN HILL HOLLOW (SHH)
DRAFT 100% RESTORATION DESIGN

SITE PLAN - SUISIN HILL HOLLOW (SHH)
DRAFT - NOT FOR CONSTRUCTION

SHEET NO. 3b OF 6

PROJECT NUMBER: 8075.02

D:\Work\NGEM\8075.02 Lower Spring Branch Creek Restoration\Drawings\Sheets\Sheet_03 - Site Plan- LSBC-SHH.dwg 6-04-18 07:49:35 PM oleg

PROTECT AND MAINTAIN EXISTING ACCESS FEATURES AND INFRASTRUCTURE:

- GATE
- TANK
- TROUGH
- CULVERT
- FENCES
- WATERLINE
- TRAIL/RANCH ROAD
- TRAILS
- INTERPRETIVE SIGN
- OVERLOOK

NOTE: AERIAL IMAGE FROM 2016 SOLANO COUNTY NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP).

N

80 0 40 80 160 320

(IN FEET)

REVISIONS				
NO.	DESCRIPTION	BY	DATE	APPVD

APPROVED

REGISTERED PROFESSIONAL ENGINEER OLEG SILIVANOV No. C 29716 CIVIL STATE OF CALIFORNIA

northgate environmental management, inc. SIEGEL ENVIRONMENTAL

Gillenwater GillenH2O Consulting

DRAWN: OLEG SILIVANOV/ANDREW MIDDLETON
DESIGNED: DANIEL GILLENWATER
CHECKED: ANGEL PIERCE
DATE: 06/04/2018
SCALE: AS SHOWN

RUSH RANCH OPEN SPACE PRESERVE
LOWER SPRING BRANCH CREEK RESTORATION
SITE (LSBC) AND SUISUN HILL HOLLOW (SHH)
DRAFT 100% RESTORATION DESIGN

SITE PREPARATION PLAN - LSBC
DRAFT - NOT FOR CONSTRUCTION

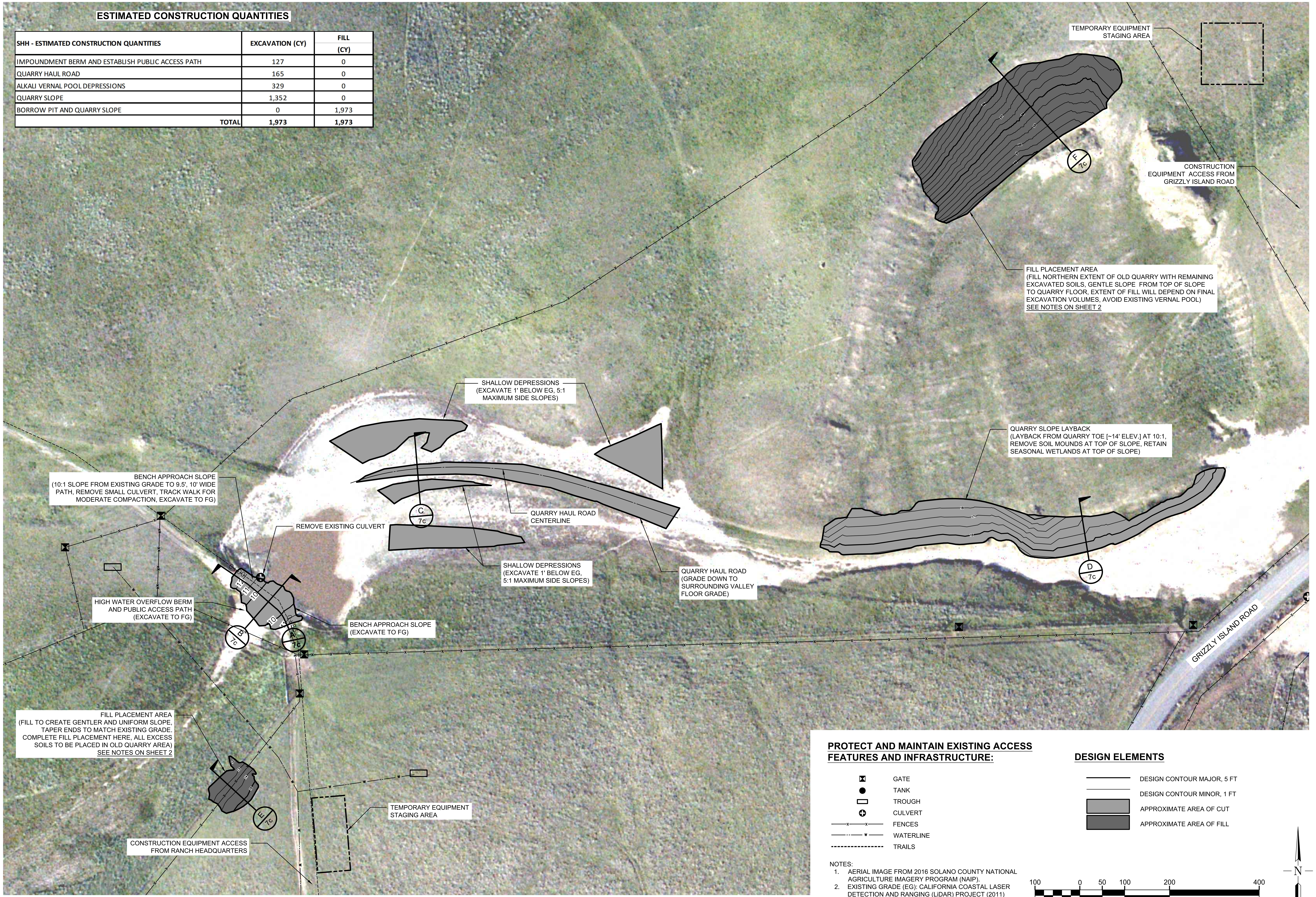
SHEET NO. 4a OF 6

PROJECT NUMBER: 8075.02

D:\Work\NGEM\8075.02 Lower Spring Branch Creek Restoration\Drawings\Sheets\Sheet_04a – Restoration Plan– LSBC.dwg 6-04-18 07:59:45 PM oleg

ESTIMATED CONSTRUCTION QUANTITIES

SHH - ESTIMATED CONSTRUCTION QUANTITIES	EXCAVATION (CY)	FILL (CY)
IMPOUNDMENT BERM AND ESTABLISH PUBLIC ACCESS PATH	127	0
QUARRY HAUL ROAD	165	0
ALKALI VERNAL POOL DEPRESSIONS	329	0
QUARRY SLOPE	1,352	0
BORROW PIT AND QUARRY SLOPE	0	1,973
TOTAL	**1,973**	**1,973**



PROTECT AND MAINTAIN EXISTING ACCESS FEATURES AND INFRASTRUCTURE:

- GATE
- TANK
- TROUGH
- CULVERT
- FENCES
- WATERLINE
- TRAILS

DESIGN ELEMENTS

- DESIGN CONTOUR MAJOR, 5 FT
- DESIGN CONTOUR MINOR, 1 FT
- APPROXIMATE AREA OF CUT
- APPROXIMATE AREA OF FILL

NOTES:
1. AERIAL IMAGE FROM 2016 SOLANO COUNTY NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP).
2. EXISTING GRADE (EG): CALIFORNIA COASTAL LASER DETECTION AND RANGING (LiDAR) PROJECT (2011)
3. EG = EXISTING GRADE.
4. FG = FINISH GRADE.

100 0 50 100 200 400
(IN FEET)

N

NO.	DESCRIPTION	BY	DATE	APPV'D

REVISIONS

APPROVED

northgate environmental management inc. SIEGEL ENVIRONMENTAL Gillenwater GillenH2O Consulting

DRAWN OLEG SLIVNYAK/ANDREW MIDDLETON
DESIGNED DANIEL GILLENWATER
CHECKED AXEL RIEKE
DATE 06/04/2018
SCALE AS SHOWN

RUSH RANCH OPEN SPACE PRESERVE LOWER SPRING BRANCH CREEK RESTORATION SITE (LSBC) AND SUISUN HILL HOLLOW (SHH) DRAFT 100% RESTORATION DESIGN

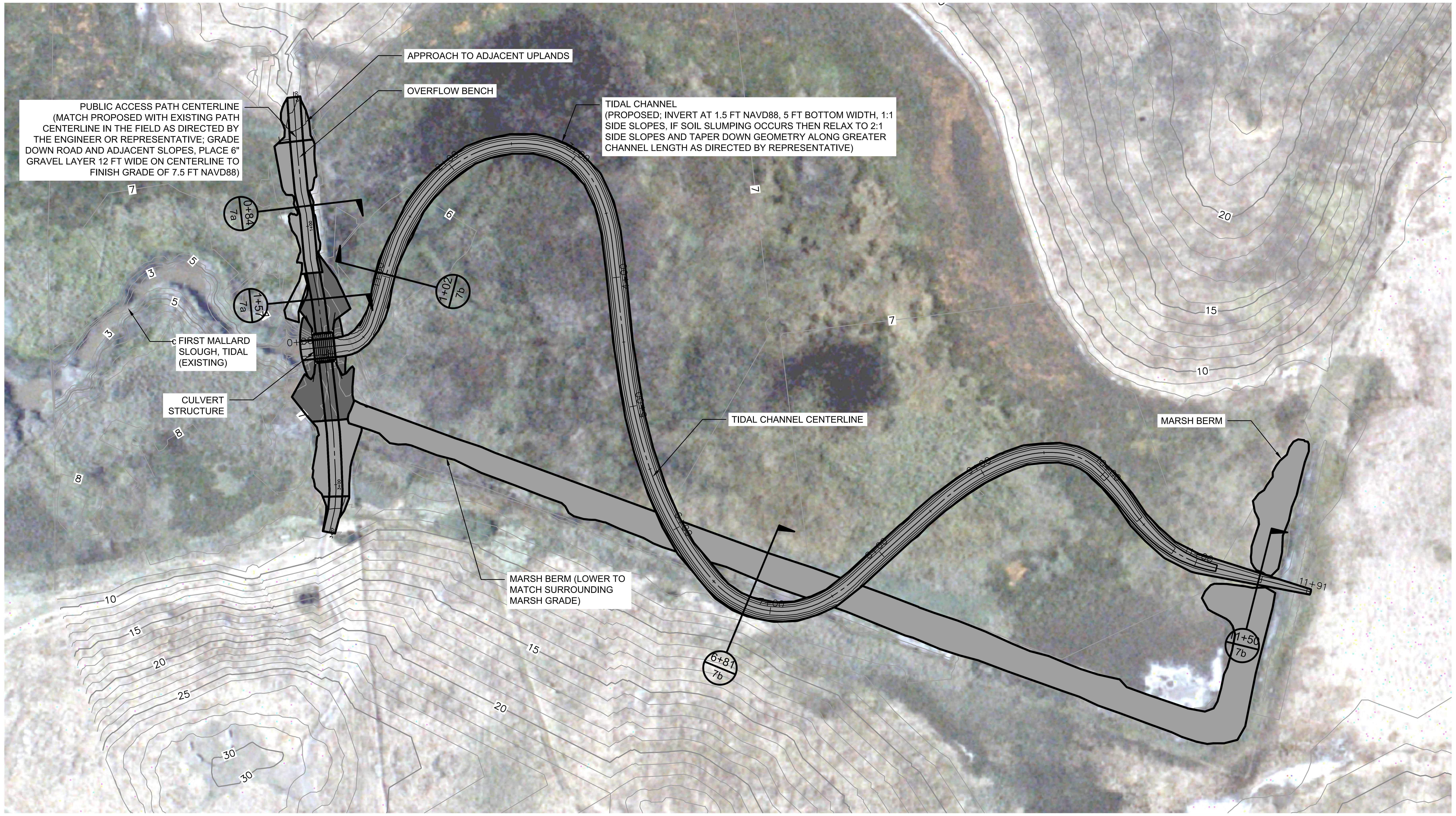
SITE RESTORATION PLAN AND DESIGN CONTOURS - SHH

DRAFT - NOT FOR CONSTRUCTION

SHEET NO. 4b OF 6

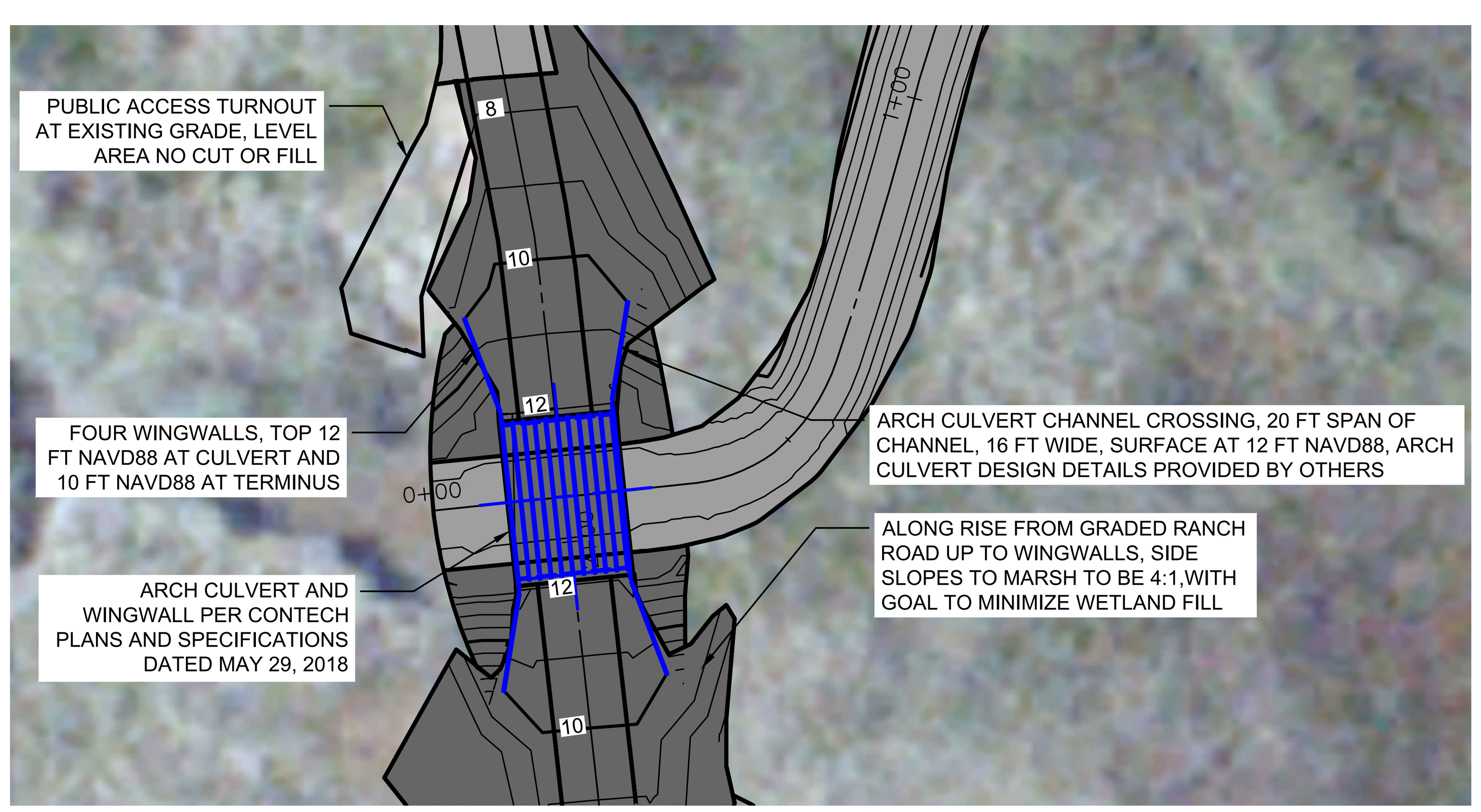
PROJECT NUMBER: 8075.02

D:\Work\NGEM\8075.02 Lower Spring Branch Creek Restoration\Drawings\Sheets\Sheet_04b -- Restoration Plan -- SHH.dwg 6-05-18 07:00:18 AM oleg



PLAN

SCALE: 1"=50'



CULVERT WORK AREA

SCALE: 1"=20'

ESTIMATED CONSTRUCTION QUANTITIES

LBSC - ESTIMATED CONSTRUCTION QUANTITIES	EXCAVATION (CY)	FILL (CY)
CHANNEL CROSSING	137	159
RANCH ROAD/PUBLIC ACCESS PATH	99	35
L-SHAPED BERM	337	0
TIDAL CHANNEL	2,100 to 3,000	0
PUBLIC ACCESS TURNOUT	0	0
RELICT HILLSLOPE CUT (SHOWN ON SHEET 4A)	0	2,570
TOTAL	2,729	2,764

DESIGN ELEMENTS

- DESIGN CONTOUR MAJOR 5 FT
- DESIGN CONTOUR MINOR 1 FT
- ACCESS ROAD CENTER LINE
- APPROXIMATE AREA OF CUT
- APPROXIMATE AREA OF FILL

NOTES:

1. AERIAL IMAGE FROM 2016 SOLANO COUNTY NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP).
2. EXISTING GRADE (EG): BASELINE DIGITAL ELEVATION DATA (DEM) FROM CALIFORNIA COASTAL LASER DETECTION AND RANGING (LiDAR) PROJECT (2011); AUGMENTED BY SIEGEL ENVIRONMENTAL (2017) WITH TOPO DATA COLLECTED WITHIN THE LSBC MARSH BY UC BERKELEY (SCHILE) AND SLT IN 2010; AUGMENTED AGAIN BY NORTHGATE (2017) WITH DATA COLLECTED ALONG THE ROAD/BERM BY SIEGEL ENVIRONMENTAL AND CLE ENGINEERING IN 2017.
3. EG = EXISTING GRADE.
4. FG = FINISH GRADE.

N

50 0 25 50 100 200
(IN FEET)

REVISIONS

NO.	DESCRIPTION	BY	DATE	APPV'D

APPROVED

DRAWN: OLEG SLIVNYY/ANDREW MIDDLETON
DESIGNED: DANIEL GILLENWATER
CHECKED: AXEL RIEKE
DATE: 06/04/2018
SCALE: AS SHOWN

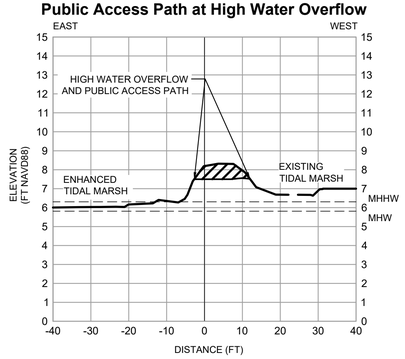
RUSH RANCH OPEN SPACE PRESERVE
LOWER SPRING BRANCH CREEK RESTORATION
SITE (LSBC) AND SUISUN HILL HOLLOW (SHH)
DRAFT 100% RESTORATION DESIGN

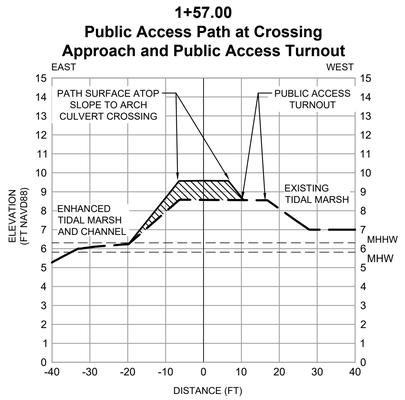
DESIGN CONTOURS - LSBC
DRAFT - NOT FOR CONSTRUCTION

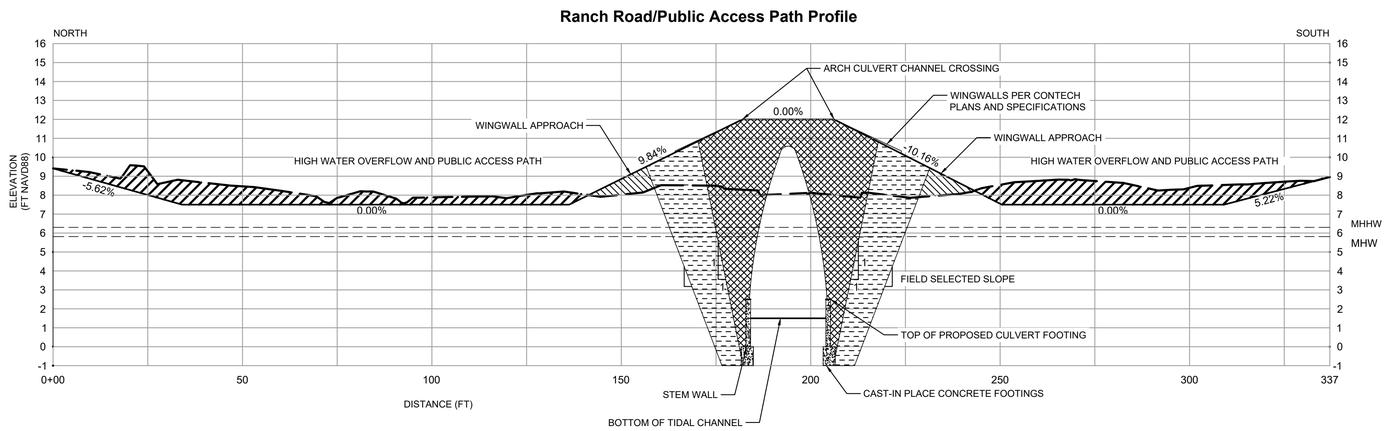
SHEET NO. 5 OF 6

PROJECT NUMBER: 8075.02

D:\Work\NGEM\8075.02 Lower Spring Branch Creek Restoration\Drawings\Sheets\Sheet_05 – Design Contours-Grading – LSBC.dwg 6-05-18 07:02:01 AM oleg







CROSS SECTIONS AND ACCESS ROAD PROFILE

HORZ SCALE: 1"=20'
VERT SCALE: 1"=4'

LEGEND:

- AREA OF EXCAVATION
- AREA OF FILL
- SELECT FILL
- NATIVE SOIL OR NATIVE FILL

NOTES:
1. ELEVATIONS SHOWN IN NAVD88 , FEET.
2. SEE SHEET 5A FOR SECTION LOCATIONS.
3. IF SOIL SLUMPING OCCURS IN TIDAL CHANNEL EXCAVATION FOOTPRINT, THEN RELAX TO 2:1 SIDE SLOPES AND TAPER DOWN GEOMETRY ALONG GREATER CHANNEL LENGTH AS DIRECTED BY REPRESENTATIVE.

REVISIONS

NO.	DESCRIPTION	BY	DATE	APPVD

APPROVED

REGISTERED PROFESSIONAL ENGINEER — OLEG SUHYDA — No. C 29716 — Exp. 3/31/19 — CIVIL — STATE OF CALIFORNIA

northgate environmental management, inc. SIEGEL ENVIRONMENTAL

Gillenwater GilenH2O Consulting

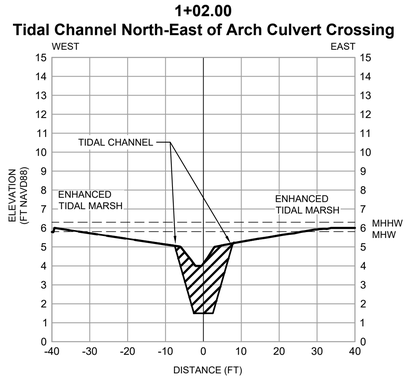
DRAWN	OLEG SUHYDA/ANDREW MIDDLETON
DESIGNED	DANIEL GILLENWATER
CHECKED	AXEL RIEKE
DATE	06/04/2018
SCALE	AS SHOWN

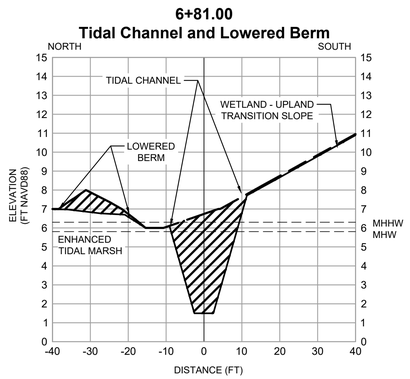
RUSH RANCH OPEN SPACE PRESERVE
LOWER SPRING BRANCH CREEK RESTORATION
SITE (LSBC) AND SUISUN HILL HOLLOW (SHH)
DRAFT 100% RESTORATION DESIGN
CROSS SECTIONS AND
ACCESS ROAD PROFILE - LSBC
DRAFT - NOT FOR CONSTRUCTION

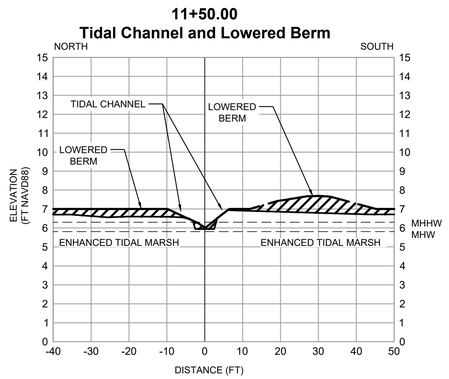
SHEET NO.
6a OF 6

PROJECT NUMBER:
8075.02

D:\Work\NGEM\8075.02 Lower Spring Branch Creek Restoration\Drawings\Sheets\Sheet_06a - Cross Sections - LSBC.dwg 6-04-18 07:53:54 PM oleg



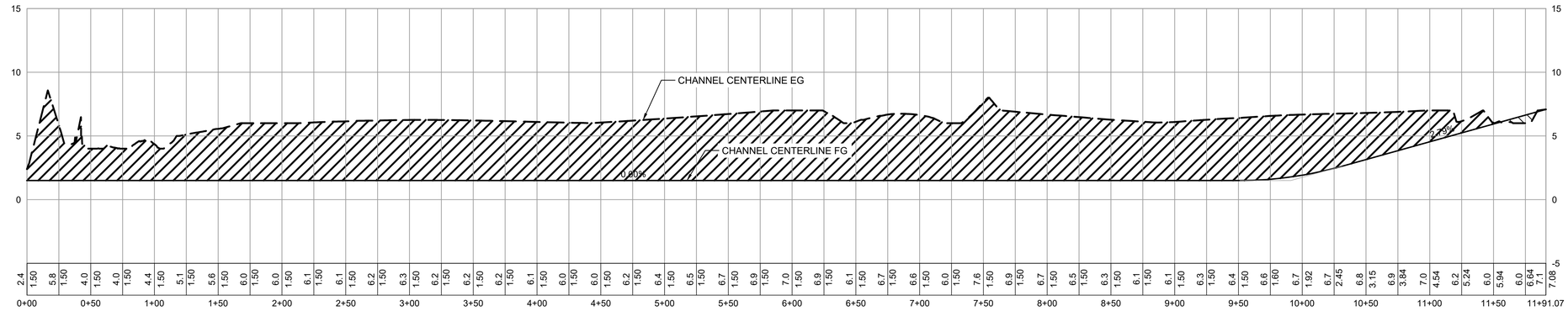




TIDAL CHANNEL CROSS SECTIONS

HORZ SCALE: 1"=20'
VERT SCALE: 1"=4'

20 0 10 20 40 80
(IN FEET)



TIDAL CHANNEL PROFILE

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'

50 0 25 50 100 200
(IN FEET)

LEGEND:

AREA OF EXCAVATION

AREA OF FILL

NOTES:
1. ELEVATIONS SHOWN IN NAVD88 , FEET.
2. SEE SHEET 5A FOR SECTION LOCATIONS.

REVISIONS

NO.	DESCRIPTION	BY	DATE	APPVD

APPROVED

DRAWN: OLEG BUYAKA/ANDREW MIDDLETON
DESIGNED: DANIEL GILLEWATER
CHECKED: AXEL RIEKE
DATE: 06/04/2018
SCALE: AS SHOWN

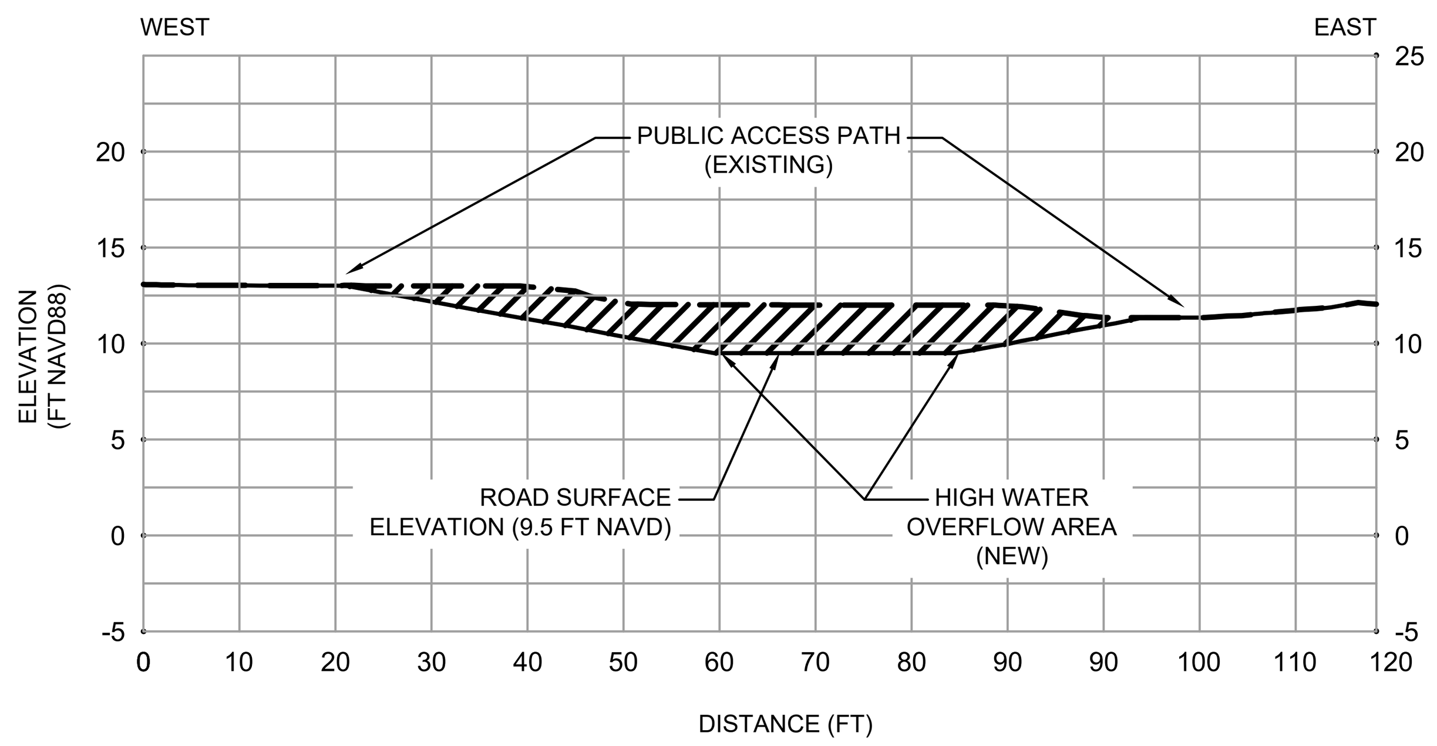
RUSH RANCH OPEN SPACE PRESERVE
LOWER SPRING BRANCH CREEK RESTORATION
SITE (LSBC) AND SUISUN HILL HOLLOW (SHH)
DRAFT 100% RESTORATION DESIGN
CROSS SECTIONS AND
TIDAL CHANNEL PROFILE - LSBC
DRAFT - NOT FOR CONSTRUCTION

SHEET NO. 6b OF 6

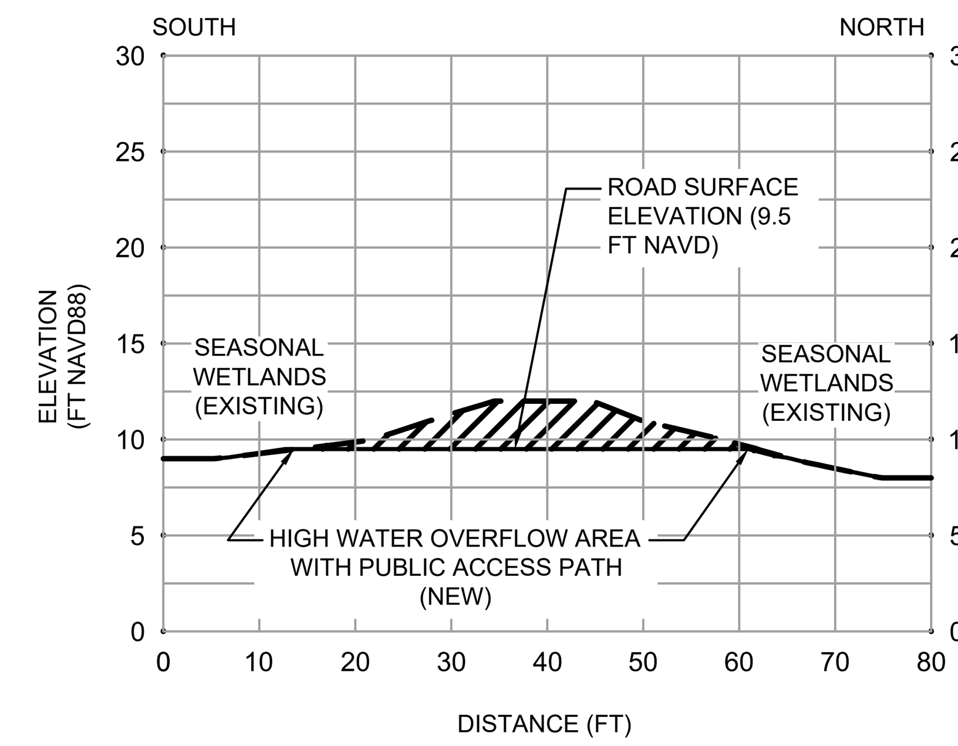
PROJECT NUMBER: 8075.02

D:\Work\NGEM\8075.02 Lower Spring Branch Creek Restoration\Drawings\Sheets\Sheet_06b - Channel Profile - LSBC.dwg 6-04-18 07:54:50 PM oleg

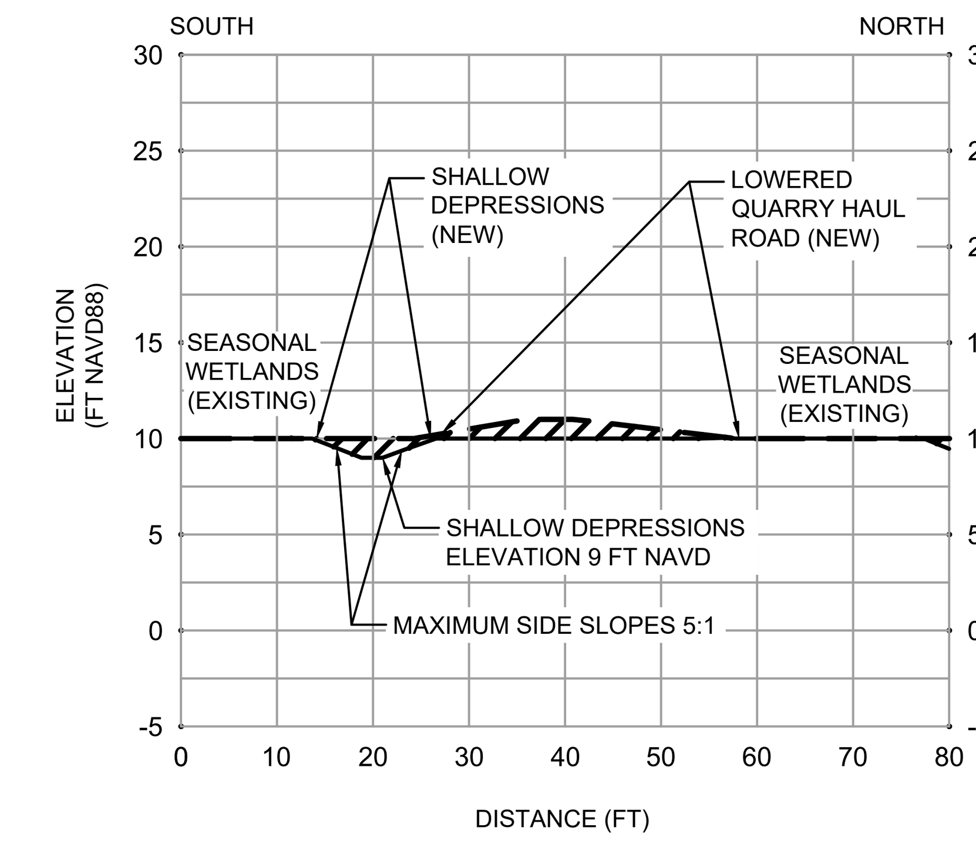
A-A'
High Water Overflow/Public Access Path Profile



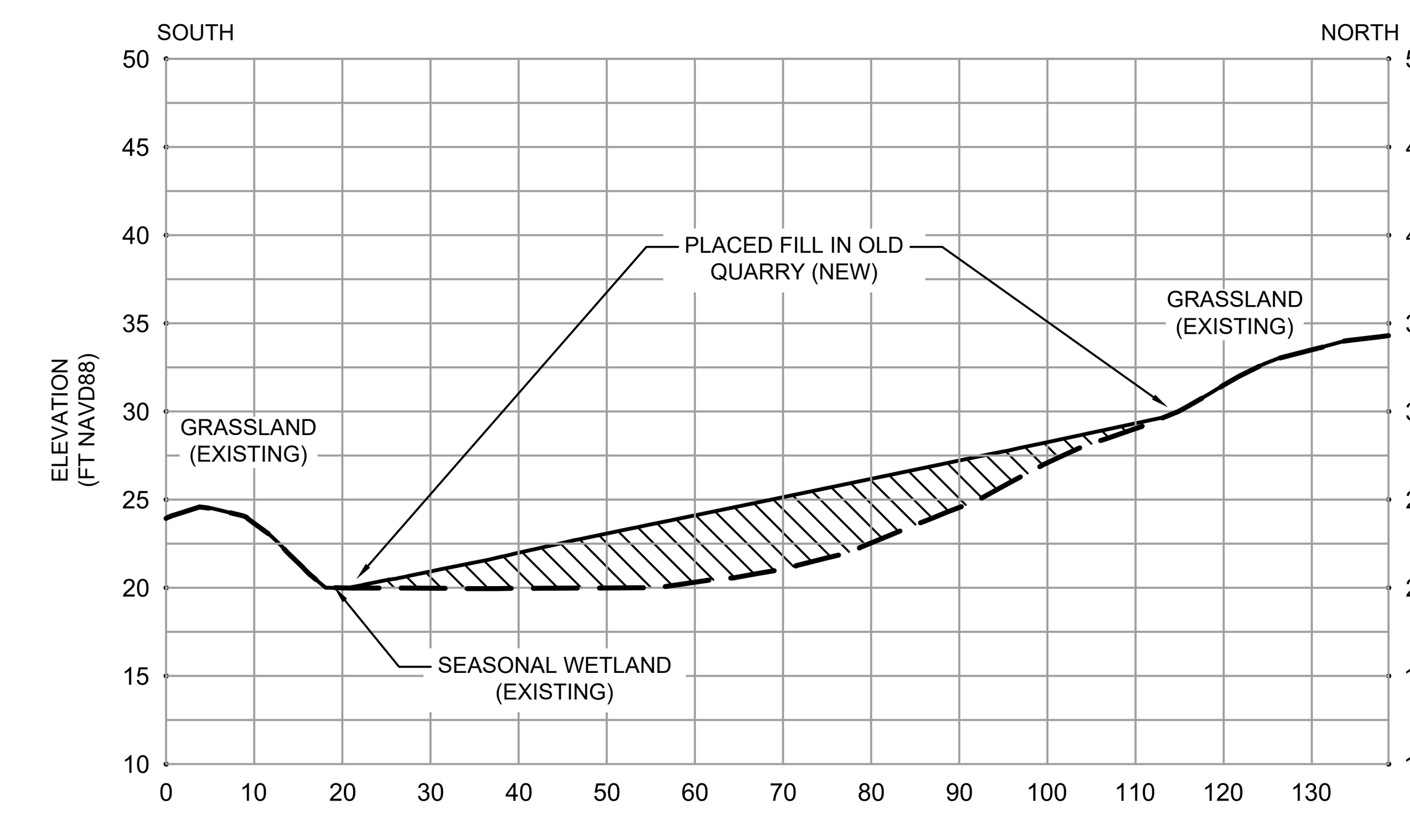
B-B'
High Water Overflow/Public Access Path



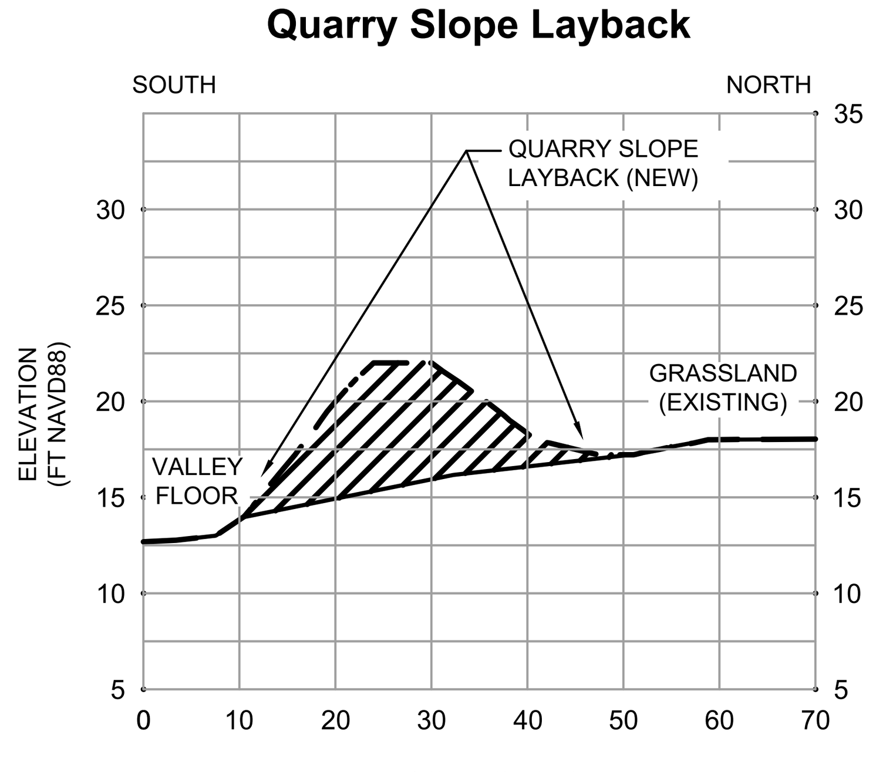
C-C'
Shallow Depressions and Quarry Haul Road Excavation



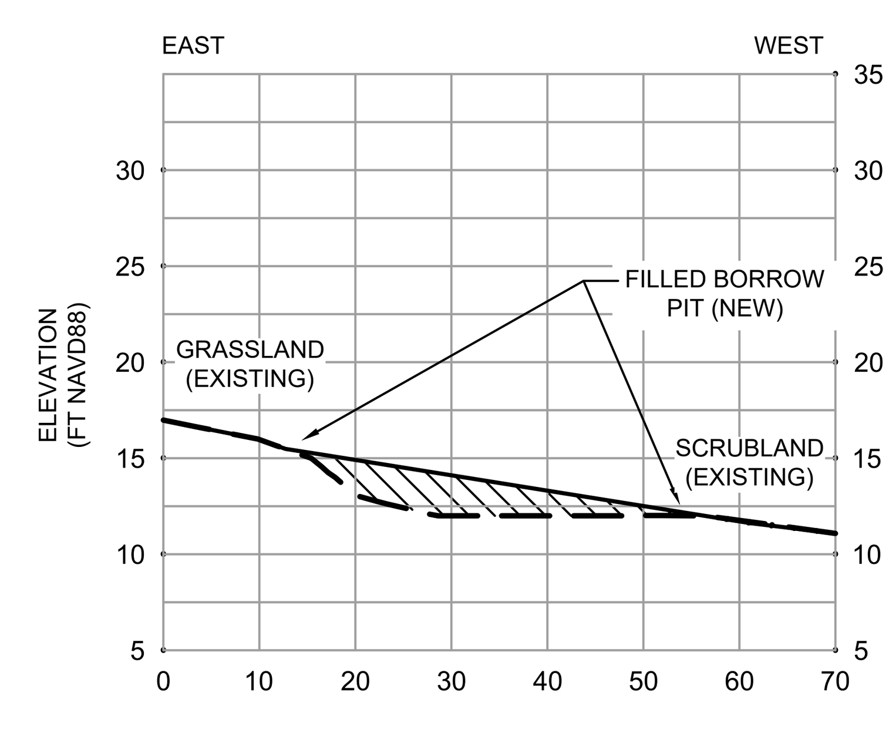
F-F'
Quarry Fill Placement



D-D'
Quarry Slope Layback



E-E'
Borrow Pit Backfill



CROSS SECTIONS

HORZ SCALE: 1"=20'
VERT SCALE: 1"=4'

50 0 25 50 100 200
(IN FEET)

LEGEND:

AREA OF EXCAVATION
AREA OF FILL

NOTES:
1. ELEVATIONS SHOWN IN NAVD88 , FEET.
2. SEE SHEET 5B FOR SECTION LOCATIONS.

NO.	DESCRIPTION	BY	DATE	APPV'D

REVISIONS

APPROVED

northgate environmental management, inc.
SIEGEL ENVIRONMENTAL
Gillenwater GillenH2O Consulting

DRAWN: OLEG SLIVNYAK/ANDREW MIDDLETON
DESIGNED: DANIEL GILLENWATER
CHECKED: AXEL RIEKE
DATE: 06/04/2018
SCALE: AS SHOWN

RUSH RANCH OPEN SPACE PRESERVE
LOWER SPRING BRANCH CREEK RESTORATION SITE (LSBC) AND SUISUN HILL HOLLOW (SHH)
DRAFT 100% RESTORATION DESIGN

CROSS SECTIONS - SHH
DRAFT - NOT FOR CONSTRUCTION

SHEET NO.: 6c OF 6
PROJECT NUMBER: 8075.02