PERMIT DRAWINGS
GULF COAST AMMONIA TERMINAL DOCK
GULF COAST AMMONIA (GCA)
GALVESTON COUNTY, TEXAS
DECEMBER 2018

LIST OF DRAWINGS

<table>
<thead>
<tr>
<th>DRAWING NO.</th>
<th>DRAWING TITLE</th>
<th>LATEST REVISION</th>
<th>DATE</th>
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<tr>
<td>1</td>
<td>TITLE SHEET</td>
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<td>2</td>
<td>OVERALL PROPOSED SITE PLAN</td>
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<td>PROPOSED SITE PLAN</td>
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<td>PROPOSED PIPE BRIDGE CROSSING PLAN</td>
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<td>DREDGED CHANNEL CROSS SECTIONS</td>
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<td>OFF SHORE DOCK PLAN AND SECTION</td>
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<td>7</td>
<td>OFF SHORE DOCK MOORING PLAN</td>
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SOURCE: BING MAPS ONLINE
DETAIL IDENTIFICATION LEGEND

SHEET ON WHICH ABOVE DETAIL IS PRESENTED
LOCATION MAP
SOURCE: BING MAP ONLINE
APPROXIMATE SCALE
5 MILES
APPROXIMATE SCALE
0 2000'

PREPARED FOR:
GULF COAST AMMONIA

PREPARED BY:
Geosyntec consultants
8217 SHOAL CREEK BLVD. SUITE 200
AUSTIN, TEXAS 78746
TELEPHONE: 512.451.4003

PERMIT DRAWING
GULF COAST AMMONIA TERMINAL DOCK
GULF COAST AMMONIA
CITY
TEXAS
CITY
TEXAS
SITE LOCATION
LOCATION MAP
0 2007
APPROXIMATE SCALE

DETAIL NUMBER
DETAIL TITLE OF DETAIL
DETAIL NUMBER
DETAIL ON WHICH ABOVE DETAIL IS PRESENTED
DETAIL NUMBER
DETAIL NUMBER \(\#\) PRESENTED ON SHEET \(\#\)紀X SHEET IS REFERENCED FOR THE FIRST TIME ON SHEET \(\#\)
DETAIL NUMBER
DETAIL NUMBERALSO APPLIES TO SECTION IDENTIFICATIONS.

DETAIL IDENTIFICATION LEGEND

TXE0919.01
DRAWING: Austin P:\CADD\Projects\G\GULF COAST AMMONIA\PERMIT\USCAE PERIMT (TXE0919)\DRAWINGS - 11X8.5\TXE0919P01.dwg   PLOTTED: Dec 19, 2018 - 3:56pm
LEGEND

EXISTING GROUND ELEVATION
(FT, MSL) (NOTE 1)

STATE PLANE COORDINATES (NOTE 1)

PROPOSED FINISHED GRADE
ELEVATION CONTOUR (FT, MSL)

LIGHT

CHANNEL CENTER LINE STATIONING

UTILITIES TO BE LOCATED IN THE PIPE BUNDLE INCLUDE:
(1) 12" Ø LIQUID AMMONIA
(2) 6" Ø VAPOR RETURN LINE
(1) 4" Ø RE Circulation Line
(1) 2" Ø NITROGEN LINE
(2) 2" Ø INSTRUMENT AIR LINE
(2) 4" Ø COMMUNICATION LINE DUCTS
(1) 480V ELECTRICAL LINE
(1) 4" Ø WATER LINE
(1) 12" Ø STORMWATER DRAIN LINE TO OUTFALL

SITE NOTES:
1. BATHYMETRIC SURVEY CONDUCTED IN THE TEXAS COORDINATE SYSTEM NAD 83, TEXAS SOUTH CENTRAL ZONE.
2. VERTICAL DATUM FOR SURVEY IS MEAN LOWER LOW WATER (MLLW).
3. BASE FILES USED TO COMPILE THIS DRAWING SET PROVIDED BY ARCADIS U.S., INC.
1. BATHYMETRIC SURVEY CONDUCTED IN THE TEXAS COORDINATE SYSTEM NAD 83, TEXAS SOUTH CENTRAL ZONE.
2. VERTICAL DATUM FOR SURVEY IS MEAN LOWER LOW WATER (MLLW).
3. DREDGING DIMENSIONS ARE PRELIMINARY AND BASED ON GUIDANCE FROM UNITED STATES ARMY CORPS OF ENGINEERS (USACE) EM-1110-2-1613, HYDRAULIC DESIGN OF DEEP-DRAFT NAVIGATIONAL PROJECTS AND THE VESSELS LISTED IN DESIGN VESSEL TABLE THIS SHEET.
4. INITIAL PHASE DREDGING DEPTH SET TO ELEVATION -43.0 FT MLLW IN THE SHIP SIDE OF THE DOCK.
5. DREDGING DEPTHS INCLUDES 2.0 FT CLEARANCE + 1.0 FT FOR DREDGE TOLERANCE.
6. BASE FILES USED TO COMPILE THIS DRAWING SET PROVIDED BY ARCADIS U.S., INC.
KEY NOTES:

1. PILES DESIGNED TO ACCOUNT FOR SCOUR AROUND PILES DUE TO PROPELLER WASH.
2. ALUMINUM MOORING DOLPHIN ACCESS PLATFORM/CATWALKS, TRUSS STYLE PRE-FABRICATED BRIDGE STRUCTURE WITH INTERMEDIATE PILE SUPPORT WHERE SHOWN. ESTIMATED SIZE 4'-0" WIDE WITH 3'-6" IN HIGH SIDES.
3. TELESCOPING GANWAY SHIPS LADDER.
4. FLOATING DOCK AND ACCESS STAIRS FOR 30'-0" TO 36'-0" VESSEL.

NOTES:

1. STRUCTURAL DETAILS ARE PROVIDED IN ATTACHED REPORT AND SHEETS.
2. DOLPHIN SHEET 1 TO 3.
AMMONIA PIPING AND UTILITIES CONDUIT 4 TO 6 FEET BELOW SEA FLOOR

APPROXIMATE TOE OF DREDGE SLOPE

APPROXIMATE TOP OF DREDGE SLOPE

AMMONIA PIPING AND UTILITIES CONDUIT 4 TO 6 FEET BELOW SEA FLOOR

APPROXIMATE TOE OF DREDGE SLOPE

674’ TO 500’ LOA RANGE OF LHG VESSELS

(2) 2500t AMMONIA BARGES AND 120’ LONG INLAND TUGBOAT

MOORING PLAN

MOORING PLAN

DESIGN VESSEL TABLE

<table>
<thead>
<tr>
<th>VESSEL NAME</th>
<th>LOA (m)</th>
<th>LOA (ft)</th>
<th>BEAM WIDTH (m)</th>
<th>BEAM WIDTH (ft)</th>
<th>MAX DRAFT (m)</th>
<th>MAX DRAFT (ft)</th>
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<td>BAKKEN LADY</td>
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<td>93.31</td>
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<td>NAVIGATOR</td>
<td>179.97</td>
<td>590.45</td>
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<td>96.46</td>
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<td>NORDIC GAS</td>
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<td>83.99</td>
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<tr>
<td>JS INEOS</td>
<td>180.30</td>
<td>591.53</td>
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<td>87.27</td>
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<tr>
<td>HERMES GAS</td>
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<td>74.47</td>
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<tr>
<td>HANDYSIZES</td>
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<td>524.83</td>
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<td>83.99</td>
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CLIPPER MARS 204.98 672.50 32.20 105.64 12.12 39.76
NOTE
1. LEVEE STATIONING, GENERAL LIMITS OF COMPACTED FILL AND EXISTING MATERIALS OF THE LEVEE SHOWN ARE BASED ON U.S. ARMY CORPS OF ENGINEERS TEXAS CITY, TEXAS LEVEE STA. 4464+10 TO STA. 4774+27 AS-BUILT DRAWINGS DATED JANUARY 1997.

SCALE: 1" = 20'

* UTILITIES TO BE LOCATED ON THE PIPE BRIDGE INCLUDE:
1. 12" LIQUID AMMONIA
2. 8" VAPOR RETURN LINE
3. 4" RECYCLATION LINE
4. 2" NITROGEN LINE
5. 2" INSTRUMENT AIR LINE
6. 4" COMMUNICATION LINE DUCTS
7. 480V ELECTRICAL LINE
8. 4" WATER LINE
9. 12" STORMWATER DRAIN LINE TO OUTFALL

GEOSYNTEC CONSULTANTS, INC.
TEXAS ENG. FIRM REGISTRATION NUMBER 1182
8217 SHOAL CREEK BLVD, SUITE 200
AUSTIN, TEXAS 78757
PHONE: 512.451.4003
Dredge Placement Areas
All Options

Galveston Bay, Texas City, TX

Geosyntec consultants

Dock
Dredge Placement Areas
Texas City Channel

Figure 3