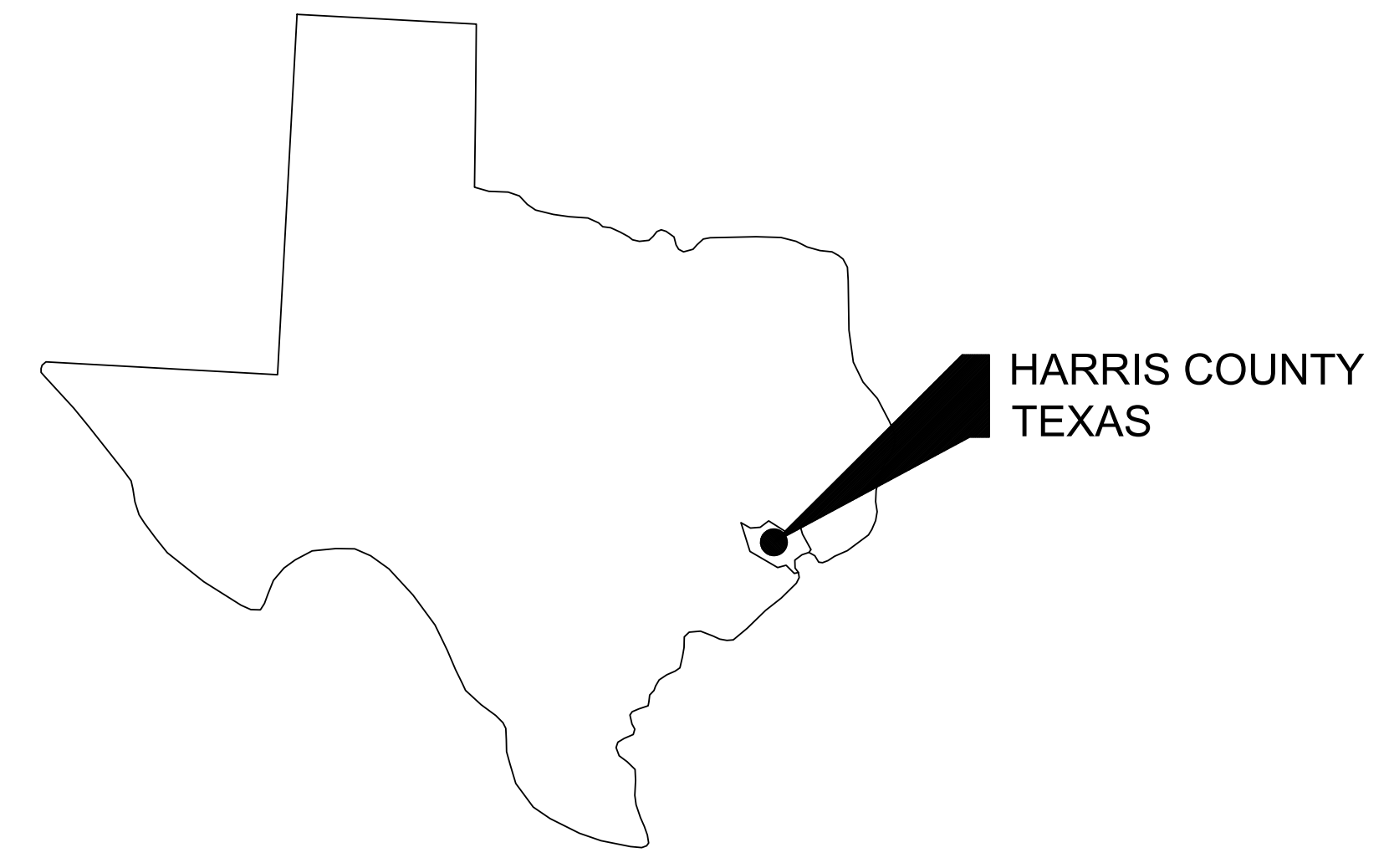


# Appendix D Design Drawings

# SAN JACINTO RIVER WASTE PITS FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS

APRIL 2021  
11215131-02



STATE OF TEXAS  
VICINITY MAP



HARRIS COUNTY  
VICINITY MAP

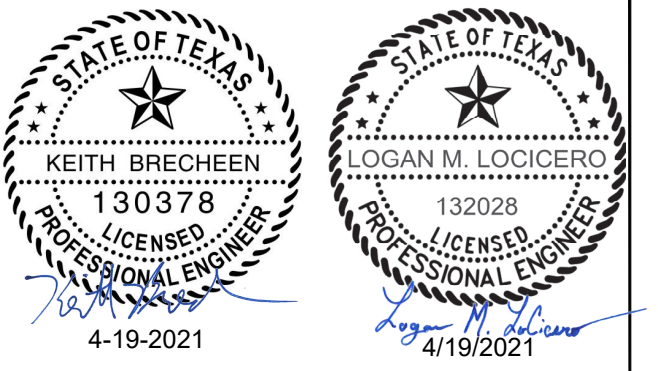


LOCATION MAP

DRAWING NUMBER	DRAWING NAME
<b>GENERAL SERIES</b>	
G-01	COVER SHEET
<b>CIVIL SERIES</b>	
C-01	OVERALL PLAN
C-02	EXISTING CONDITIONS
C-03	SITE WORKS
C-04	SOIL EROSION AND SEDIMENT CONTROL PLAN
C-05	SOIL EROSION AND SEDIMENT CONTROL DETAILS
C-06	PROJECT TRAFFIC CONTROL PLAN
C-07	NORTHEAST EXCAVATION AREA OVERBURDEN SAMPLING PLAN
C-08	NORTHEAST EXCAVATION AREA SIDEWALL SAMPLING PLAN
C-09	NORTHEAST EXCAVATION AREA BOTTOM OF EXCAVATION SAMPLING PLAN
C-10	NORTHEAST EXCAVATION AREA OVERBURDEN EXCAVATION PLAN
C-11	NORTHEAST EXCAVATION AREA FINAL EXCAVATION PLAN
C-12	NORTHEAST EXCAVATION AREA EXCAVATION SECTIONS 1 OF 2
C-13	NORTHEAST EXCAVATION AREA EXCAVATION SECTIONS 2 OF 2
C-14	NORTHEAST EXCAVATION AREA RESTORATION PLAN
C-15	NORTH CENTRAL EXCAVATION AREA OVERBURDEN SAMPLING PLAN
C-16	NORTH CENTRAL EXCAVATION AREA SIDEWALL SAMPLING PLAN
C-17	NORTH CENTRAL EXCAVATION AREA BOTTOM OF EXCAVATION SAMPLING PLAN
C-18	NORTH CENTRAL EXCAVATION AREA OVERBURDEN EXCAVATION PLAN
C-19	NORTH CENTRAL EXCAVATION AREA FINAL EXCAVATION PLAN
C-20	NORTH CENTRAL EXCAVATION AREA EXCAVATION SECTIONS 1 OF 2
C-21	NORTH CENTRAL EXCAVATION AREA EXCAVATION SECTIONS 2 OF 2
C-22	NORTH CENTRAL EXCAVATION AREA RESTORATION PLAN
C-23	SOUTH CENTRAL EXCAVATION AREA OVERBURDEN SAMPLING PLAN
C-24	SOUTH CENTRAL EXCAVATION AREA SIDEWALL SAMPLING PLAN
C-25	SOUTH CENTRAL EXCAVATION AREA BOTTOM OF EXCAVATION SAMPLING PLAN
C-26	SOUTH CENTRAL EXCAVATION AREA OVERBURDEN EXCAVATION PLAN
C-27	SOUTH CENTRAL EXCAVATION AREA FINAL EXCAVATION PLAN
C-28	SOUTH CENTRAL EXCAVATION AREA EXCAVATION SECTIONS 1 OF 2
C-29	SOUTH CENTRAL EXCAVATION AREA EXCAVATION SECTIONS 2 OF 2
C-30	SOUTH CENTRAL EXCAVATION AREA RESTORATION PLAN
C-31	SOUTHWEST EXCAVATION AREA OVERBURDEN SAMPLING PLAN
C-32	SOUTHWEST EXCAVATION AREA SIDEWALL SAMPLING PLAN
C-33	SOUTHWEST EXCAVATION AREA BOTTOM OF EXCAVATION SAMPLING PLAN
C-34	SOUTHWEST EXCAVATION AREA OVERBURDEN EXCAVATION PLAN
C-35	SOUTHWEST EXCAVATION AREA FINAL EXCAVATION PLAN
C-36	SOUTHWEST EXCAVATION AREA SHEET PILE WALL EXCAVATION PLAN
C-37	SOUTHWEST EXCAVATION AREA EXCAVATION SECTIONS 1 OF 2
C-38	SOUTHWEST EXCAVATION AREA EXCAVATION SECTIONS 2 OF 2
C-39	SOUTHWEST EXCAVATION AREA RESTORATION PLAN
C-40	SHEET PILE PLAN AND PROFILE
C-41	SHEET PILE SECTIONS AND DETAILS
C-42	TYPICAL DETAILS 1 OF 3
C-43	TYPICAL DETAILS 2 OF 3
C-44	TYPICAL DETAILS 3 OF 3
<b>PROCESS FLOW AND INSTRUMENTATION SERIES</b>	
P-01	WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM/MASS BALANCE
P-02	WATER TREATMENT SYSTEM PAID (1 OF 2)
P-03	WATER TREATMENT SYSTEM PAID (2 OF 2)
P-04	WATER TREATMENT SYSTEM SITE PLAN



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Client  
**SAN JACINTO RIVER  
WASTE PITS**

Project  
**FINAL (100%) REMEDIAL DESIGN  
SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021)  
HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
7	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
6	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH

Drafting Check BP Design Check LL

Project Coordinator CM Date Apr 15, 2021

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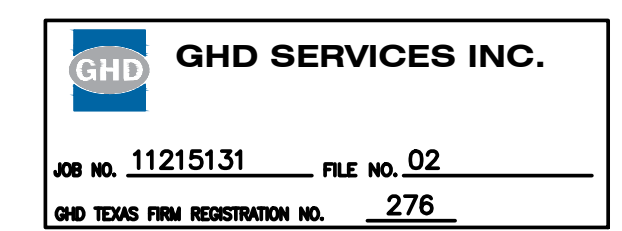
Original Size Arch D Scale N.T.S.

Bar is one inch on original size drawing

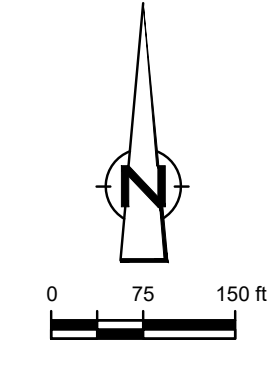
Project No. 11215131

Title  
**COVER SHEET**

Sheet No.  
**G-01**



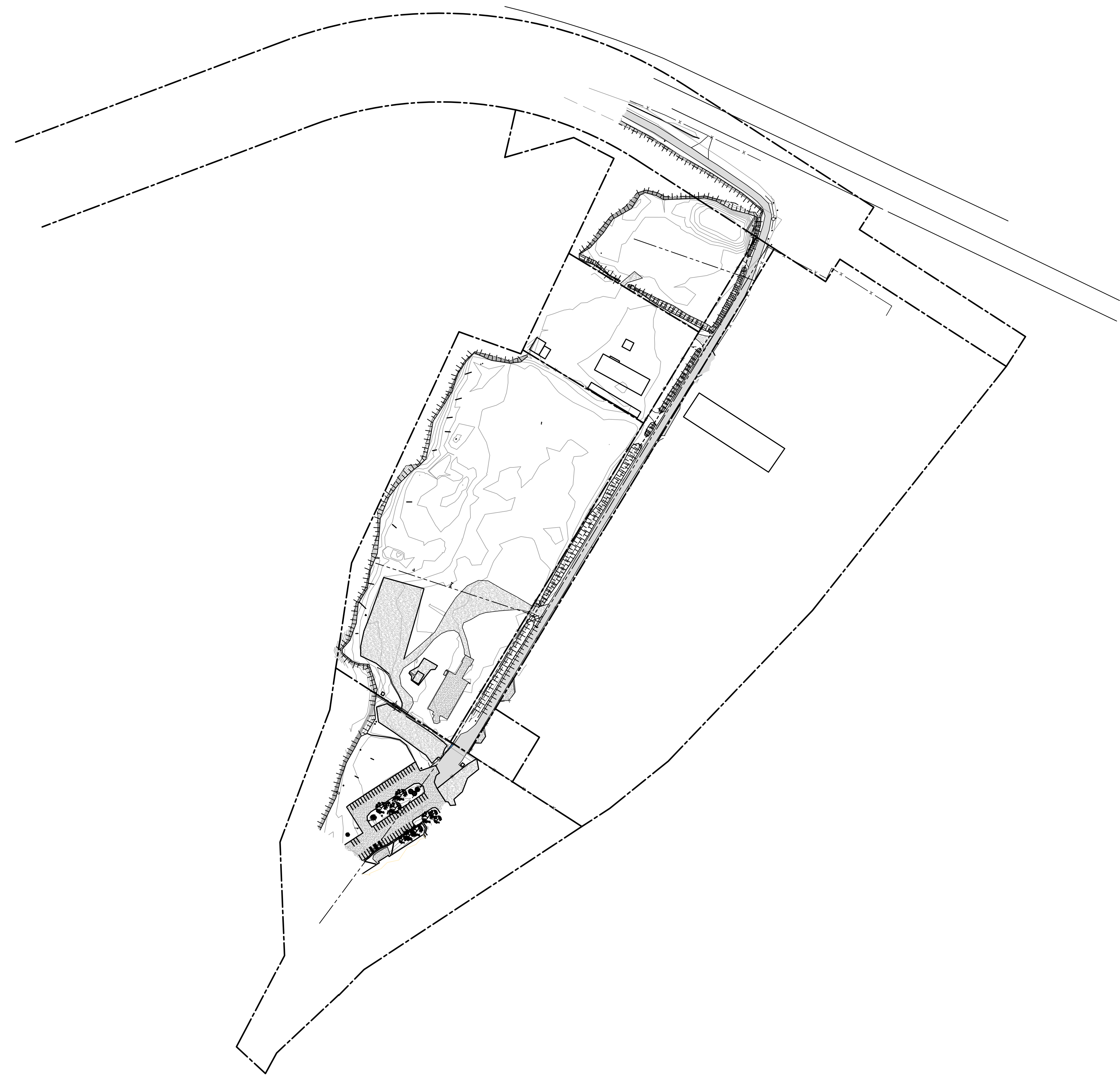
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**LEGEND**

---	PROPERTY BOUNDARY
- - - -	PROPERTY EASEMENT
---620---	EXISTING CONTOUR INTERVAL
-x-x-	FENCELINE
.....	SHORELINE
	TOP OF BANK
--- ---	TOE OF SLOPE
---o---	OVERHEAD ELECTRICAL
---o---	GUARDRAIL
---o---	UNDERGROUND CCTV LINE
---o---	PD/RI BORING LOCATION
■ SJSB002	MONITORING WELL
● MW	POWER POLE
● P.P.	LIGHT POLE
● L.P.	WELL
○ WELL	
▒	ASPHALT
▒	CONCRETE
▒	GRAVEL

Client  
**SAN JACINTO RIVER WASTE PITS**

Project  
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6	100% EPA SUBMITTAL	MW	RH	12/18/2020
No.	Issue	Drawn	Approved	Date

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
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Original Size	Bar is one inch on original size drawing		
<b>Arch D</b>	0 1"		

Project No. 11215131

Title  
**OVERALL PLAN**

Sheet No.  
**C-01**

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019  
 PARCELS 1, 2 & 3 & PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

**GHD SERVICES INC.**

JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

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---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PD/RI BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
○	WELL
---	AREA OF IMPACT
---	AREA OF POTENTIAL VOLUNTARY EXCAVATION
---	ASPHALT
---	CONCRETE
---	GRAVEL

Client  
**SAN JACINTO RIVER WASTE PITS**

Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

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6	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH

Drafting BP Design Check LL

Project Coordinator CM Date Apr 15, 2021

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Scale 1" = 100'

Original Size Arch D Bar is one inch on original size drawing

Project No. 11215131

Title  
**EXISTING CONDITIONS**

Sheet No.

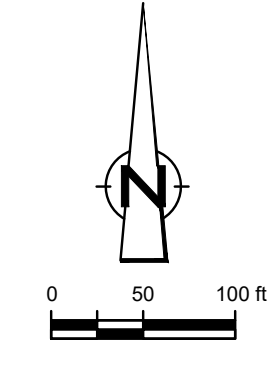
**C-02**

Sheet 3 of 49

- SOURCE:  
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.
- PARCELS 1, 2 & 3 A PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdy - 07-24-2020
- NOTES:
- FOR THE AREAS REQUIRING SOIL REMOVAL NEAR MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY, THE LATERAL LIMITS OF THE EXCAVATION WILL EXTEND IMMEDIATELY UP TO MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY LIMITS; HOWEVER, THE EXCAVATION WILL NOT EXTEND INTO EITHER THE STREET OR ONTO THE GLENDALE BOAT WORKS, INC. PROPERTY.
  - FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.
  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

JOB NO. 11215131 FILE NO. 02  
GHD TEXAS FIRM REGISTRATION NO. 276

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**LEGEND**

	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PDI/R BORING LOCATION
	MONITORING WELL
	PIEZOMETER
	LIGHT POLE
	WELL
	AREA OF IMPACT
	AREA OF POTENTIAL VOLUNTARY EXCAVATION
	ASPHALT
	CONCRETE
	GRAVEL
	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

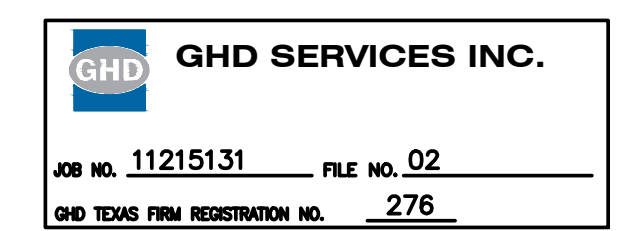
No.	Issue	Drawn	Approved	Date
7	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
6	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
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Original Size	Arch D		
Bar is one inch on original size drawing			

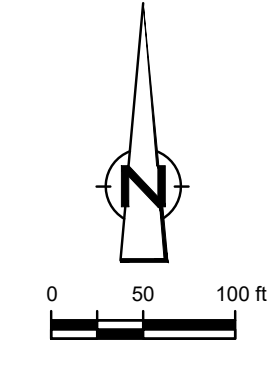
Project No. 11215131  
 Title  
**SITE WORKS**

Sheet No.  
**C-03**

- SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019  
 PARCELS 1, 2 & 3 PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020
- NOTES:  
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 2. FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.  
 3. EXISTING CONCRETE PAD TO BE REMOVED DURING REMEDIAL ACTION AND WILL BE REPLACED BASED ON AGREEMENT BETWEEN THE LANDOWNER AND RESPONSIBLE PARTY.  
 4. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.



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**LEGEND**

---	PROPERTY BOUNDARY
---	PROPERTY EASEMENT
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PD/R1 BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	AREA OF IMPACT
---	AREA OF POTENTIAL VOLUNTARY EXCAVATION
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	SILT FENCE
---	TURBIDITY CURTAIN

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
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6	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
Original Size	Arch D	Scale	1" = 100'
		Bar is one inch on original size drawing	0 1"

Project No. **11215131**  
 Title  
**SOIL EROSION AND SEDIMENT CONTROL PLAN**

Sheet No.  
**C-04**

- SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.  
 PARCELS 1, 2 & 3 A PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020
- NOTES:  
 1. FOR THE AREAS REQUIRING SOIL REMOVAL NEAR MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY, THE LATERAL LIMITS OF THE EXCAVATION WILL EXTEND IMMEDIATELY UP TO MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY LIMITS; HOWEVER, THE EXCAVATION WILL NOT EXTEND INTO EITHER THE STREET OR ONTO THE GLENDALE BOAT WORKS, INC. PROPERTY.  
 2. FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.  
 3. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. **11215131** FILE NO. **02**  
 GHD TEXAS FIRM REGISTRATION NO. **276**

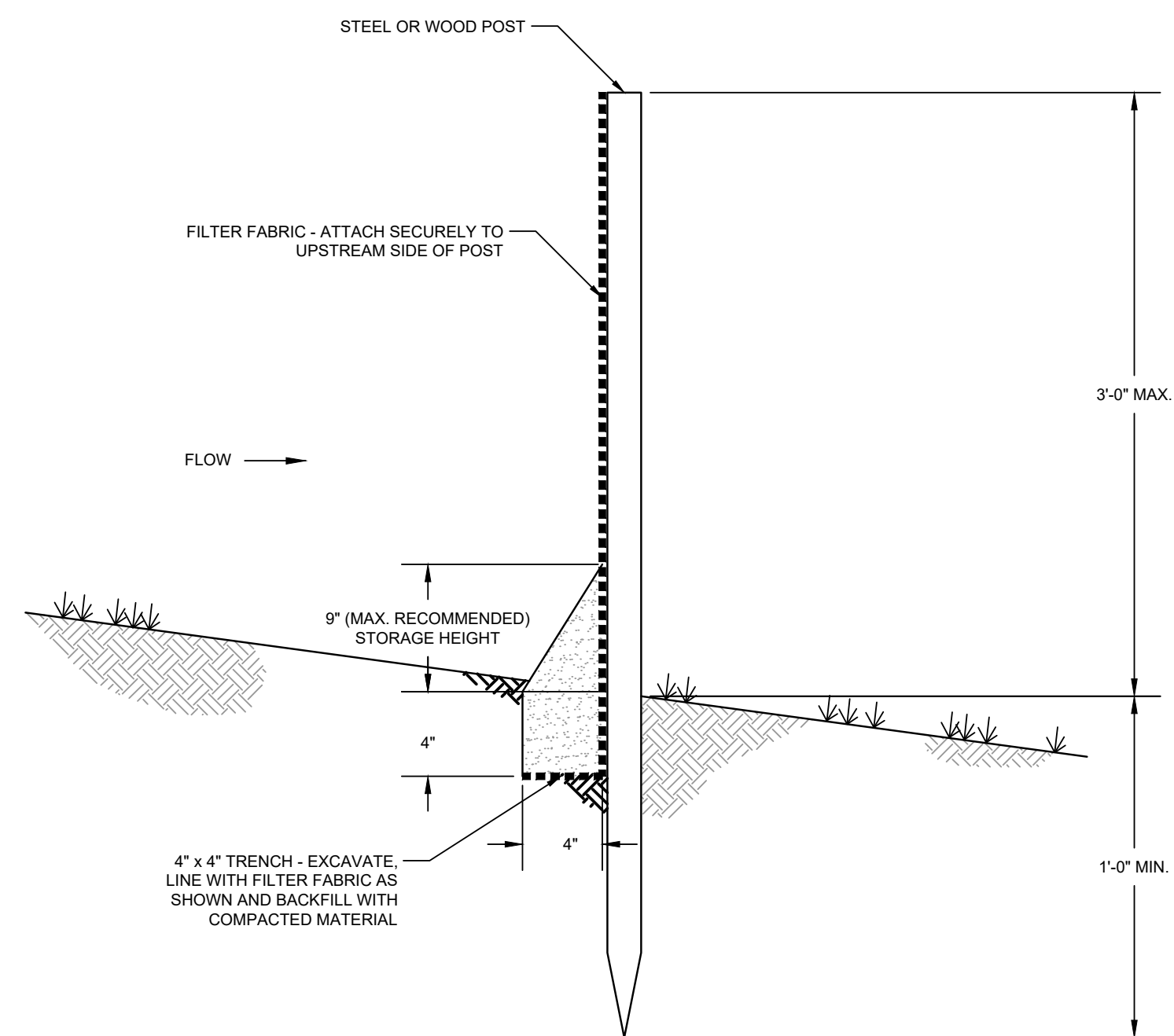
**100% EPA RE-SUBMITTAL**



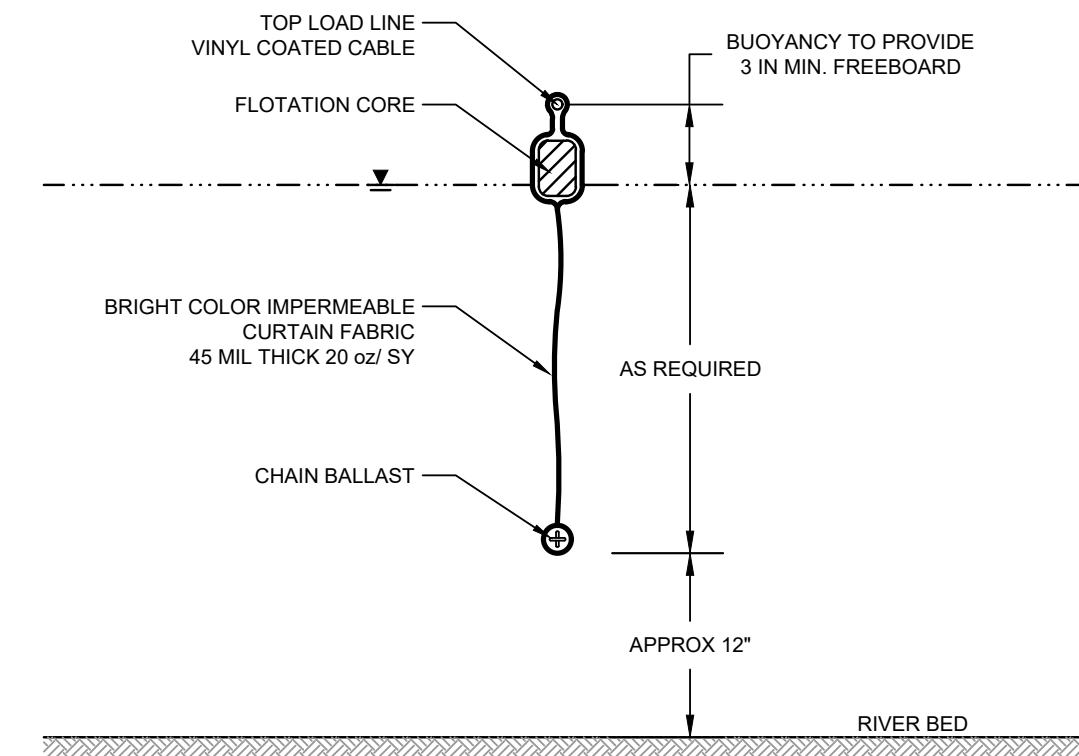
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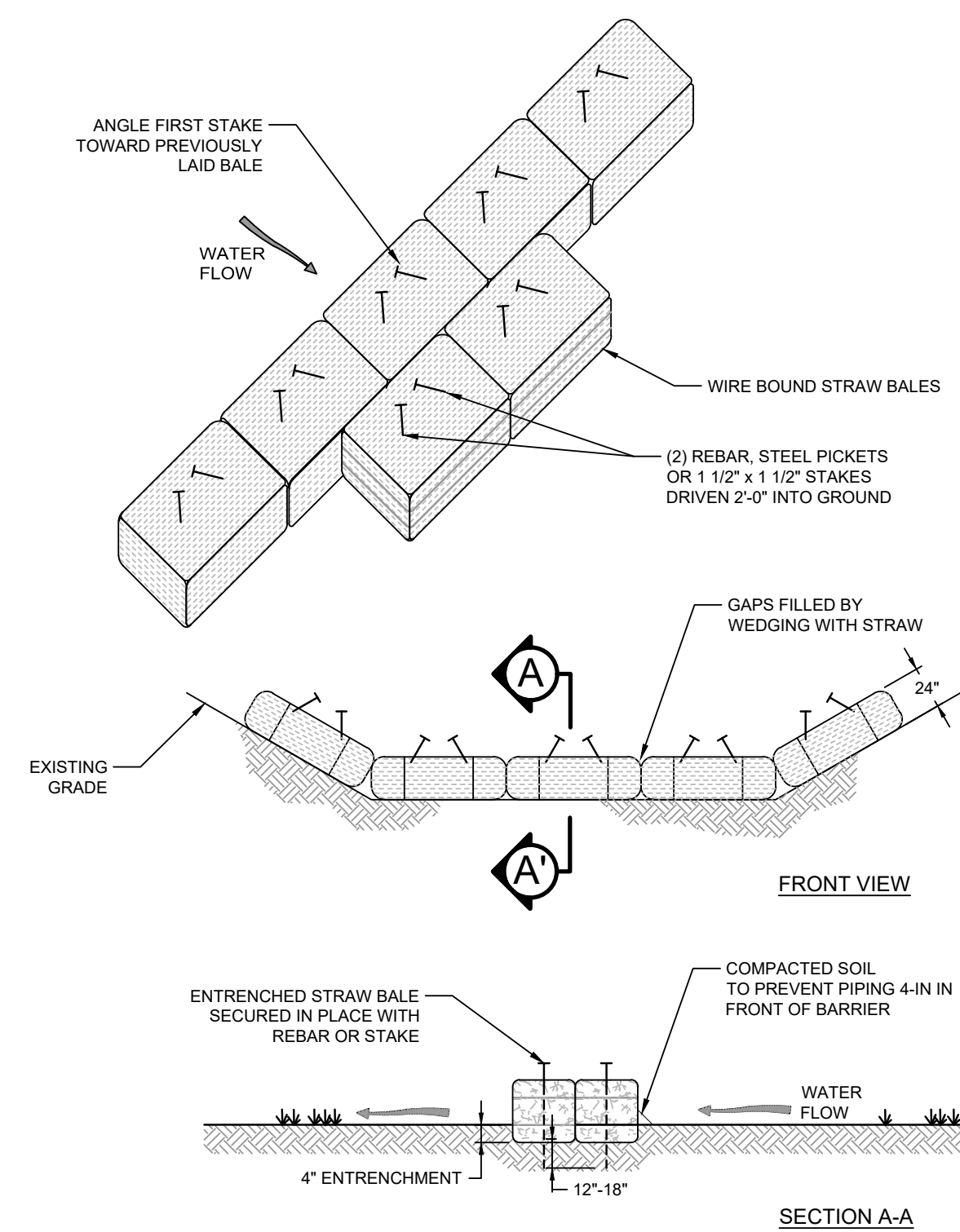


DETAIL 1 TEMPORARY SILT FENCE  
N.T.S. C-04



- NOTES
- TURBIDITY CURTAIN SHALL BE TYPE II ACCORDING TO DEPARTMENT OF THE ARMY, US ARMY CORPS OF ENGINEERS WASHINGTON, DC, ENGINEERING AND DESIGN HANDBOOK FOR THE PREPARATION OF STORM WATER POLLUTION PREVENTION PLANS FOR CONSTRUCTION ACTIVITIES, APPENDIX 'C' BMP 27 TURBIDITY CURTAIN, DOCUMENT EP1110-1-16, 1997.
  - CURTAIN SYSTEM SHALL BE EQUIPPED WITH LOAD TRANSFER TYPE PANEL CONNECTORS, HEAT SEALED FABRIC SEAMS AND TIGHT SKIRT JOINTS.
  - INCLUDE MOORING SYSTEM IF REQUIRED.

DETAIL 2 TURBIDITY CURTAIN  
N.T.S. C-04



NOTE:  
INSTALL SECOND ROW OF STRAW BALES IN BOTTOM OF SWALE ONLY.

DETAIL 3 STRAW BALE BARRIER  
N.T.S. C-04

Client  
**SAN JACINTO RIVER WASTE PITS**  
Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
7	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
6	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH

Drafting Check BP Design Check LL

Project Coordinator CM Date Apr 15, 2021

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Original Size Arch D Bar is one inch on original size drawing 0 1"

Project No. 11215131 Title

**SOIL EROSION AND SEDIMENT CONTROL DETAILS**

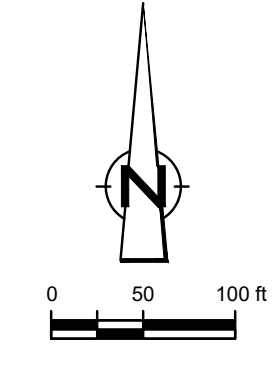
Sheet No.

**C-05**

Sheet 6 of 49



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**LEGEND**

---	PROPERTY BOUNDARY
- - - -	PROPERTY EASEMENT
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PD/R1 BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
○	WELL
---	AREA OF IMPACT
---	AREA OF POTENTIAL VOLUNTARY EXCAVATION
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	TRAFFIC FLOW

**Client**  
**SAN JACINTO RIVER WASTE PITS**

**Project**  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

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Drawn MW Designer RH

Drafting Check BP Design Check LL

Project Coordinator CM Date Apr 15, 2021

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Original Size Arch D Bar is one inch on original size drawing

Project No. 11215131

**PROJECT TRAFFIC CONTROL PLAN**

Sheet No.

**C-06**

**SOURCE:**  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.

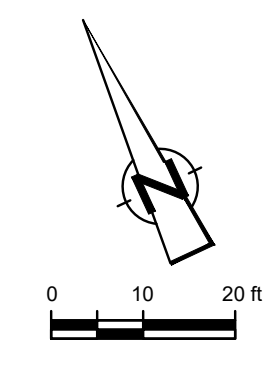
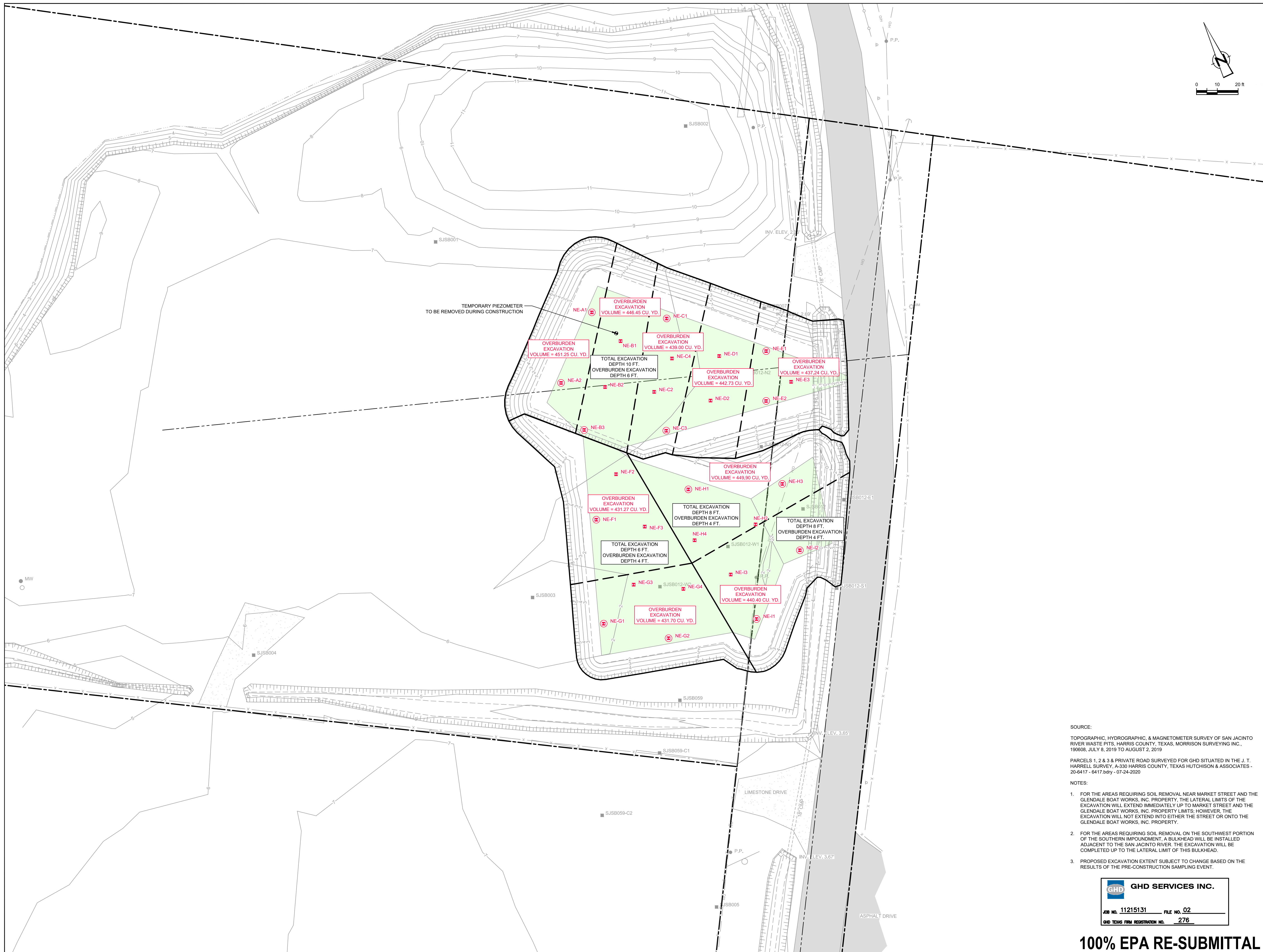
PARCELS 1, 2 & 3 A PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

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**GHD SERVICES INC.**

JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**



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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/RI BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	POLYGON LIMITS (WITH ADDITIONAL SIDE SLOPE AREAS)
	SAMPLING GRIDS (~500 CY) WITHIN POLYGONS
	PRE-CONSTRUCTION SIDEWALL OVERBURDEN CONFIRMATION BORING LOCATIONS
	PRE-CONSTRUCTION OVERBURDEN CONFIRMATION BORING LOCATIONS

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021

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 Scale 1" = 20'

Original Size  
**Arch D**  
 Bar is one inch on original size drawing  
 0 1"

Project No. 11215131  
 Title  
**NORTHEAST EXCAVATION AREA OVERBURDEN SAMPLING PLAN**

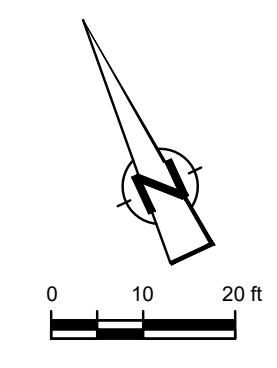
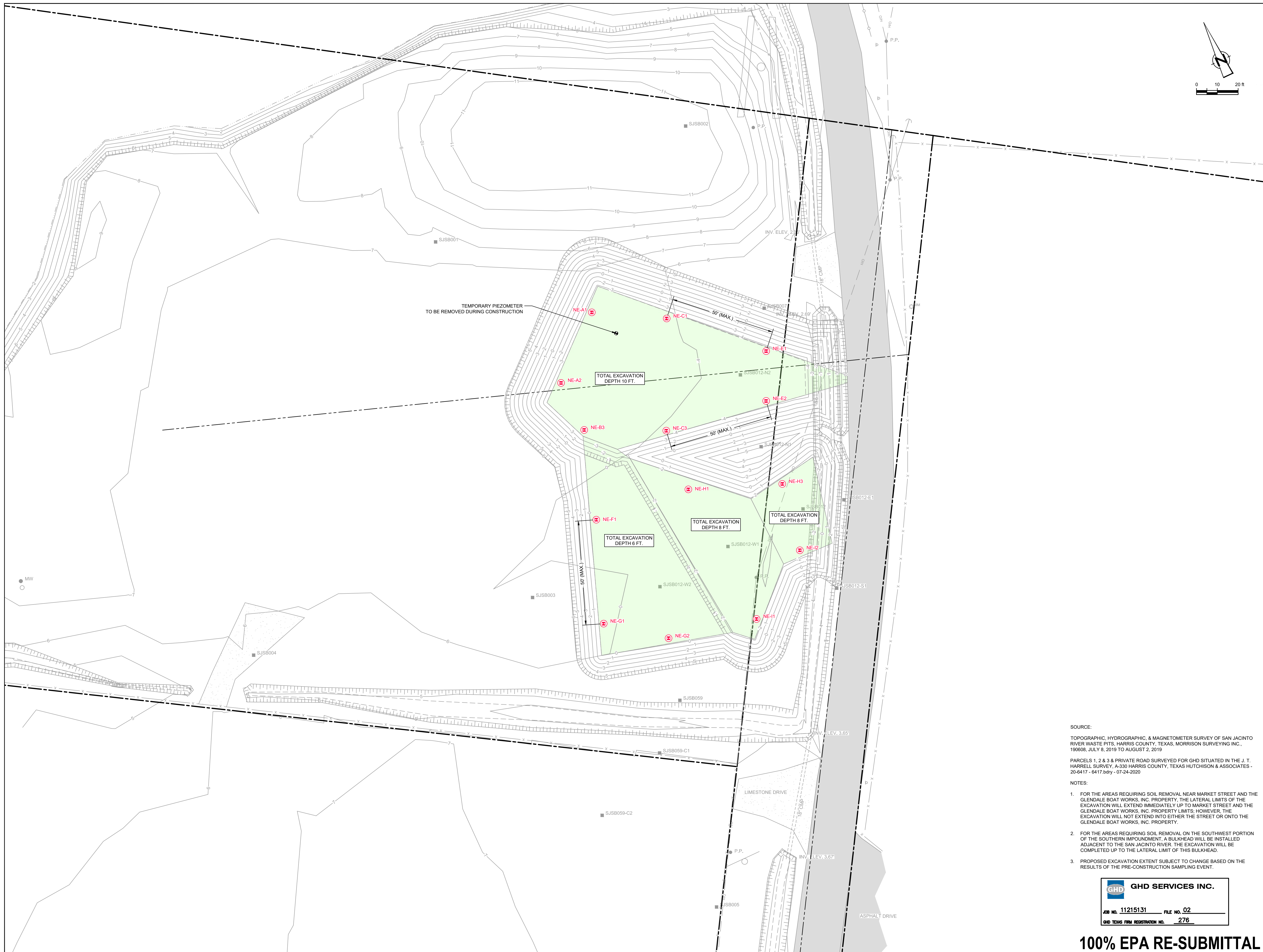
Sheet No.  
**C-07**  
 Sheet 8 of 49

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019  
 PARCELS 1, 2 & 3 A PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

- NOTES:
- FOR THE AREAS REQUIRING SOIL REMOVAL NEAR MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY, THE LATERAL LIMITS OF THE EXCAVATION WILL EXTEND IMMEDIATELY UP TO MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY LIMITS; HOWEVER, THE EXCAVATION WILL NOT EXTEND INTO EITHER THE STREET OR ONTO THE GLENDALE BOAT WORKS, INC. PROPERTY.
  - FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.
  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

GHD SERVICES INC.  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**



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**LEGEND**

---	PROPERTY BOUNDARY
---	PROPERTY EASEMENT
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PD/RI BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	AREA OF IMPACT
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	EXCAVATION CONTOUR INTERVAL
---	EXCAVATION TOP OF BANK
---	EXCAVATION TOE OF SLOPE
---	PRE-CONSTRUCTION SIDEWALL
---	CONFIRMATION BORING LOCATIONS

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH

Drafting Check BP Design Check LL

Project Coordinator CM Date Apr 15, 2021

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Original Size Arch D Bar is one inch on original size drawing 0 1"

Project No. 11215131

Title  
**NORTHEAST EXCAVATION AREA SIDEWALL SAMPLING PLAN**

Sheet No.

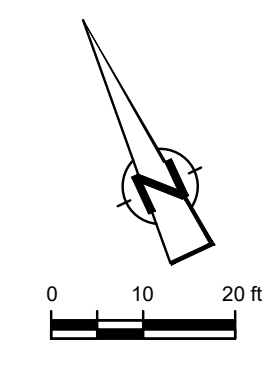
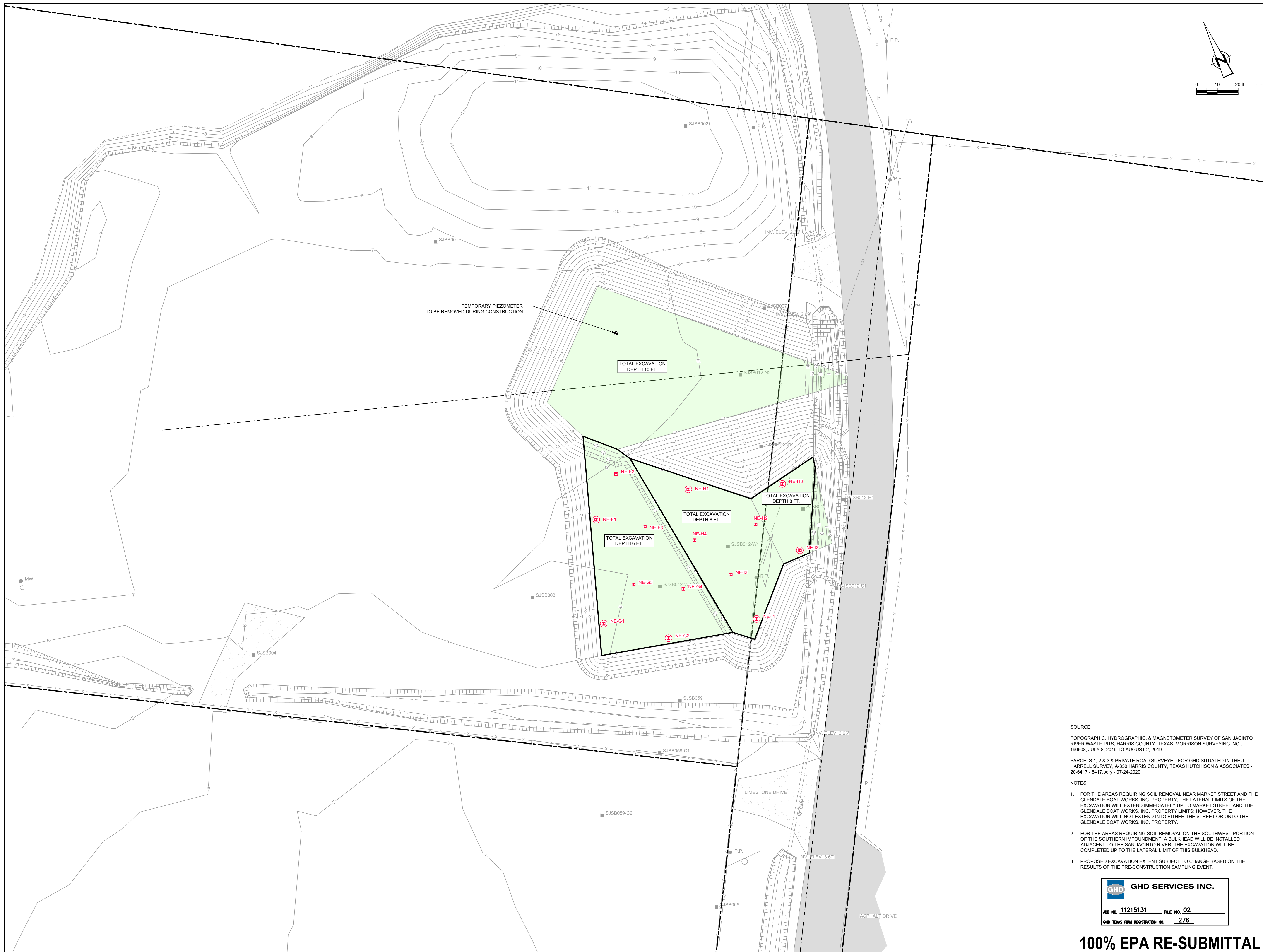
**C-08**

**SOURCE:**  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.  
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- NOTES:**
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  - FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.
  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PDI/RI BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	SAMPLING GRIDS (MAX. 500 CY)
	PRE-CONSTRUCTION SIDEWALL/ BASE OF EXCAVATION CONFIRMATION BORING LOCATIONS
	PRE-CONSTRUCTION BASE OF EXCAVATION CONFIRMATION BORING LOCATIONS

Client  
**SAN JACINTO RIVER  
 WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN  
 SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021)  
 HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
Original Size	Arch D	Scale	1" = 20'
		Bar is one inch on original size drawing	0 1"

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.  
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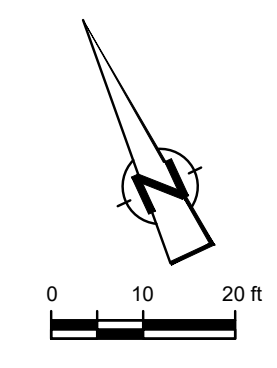
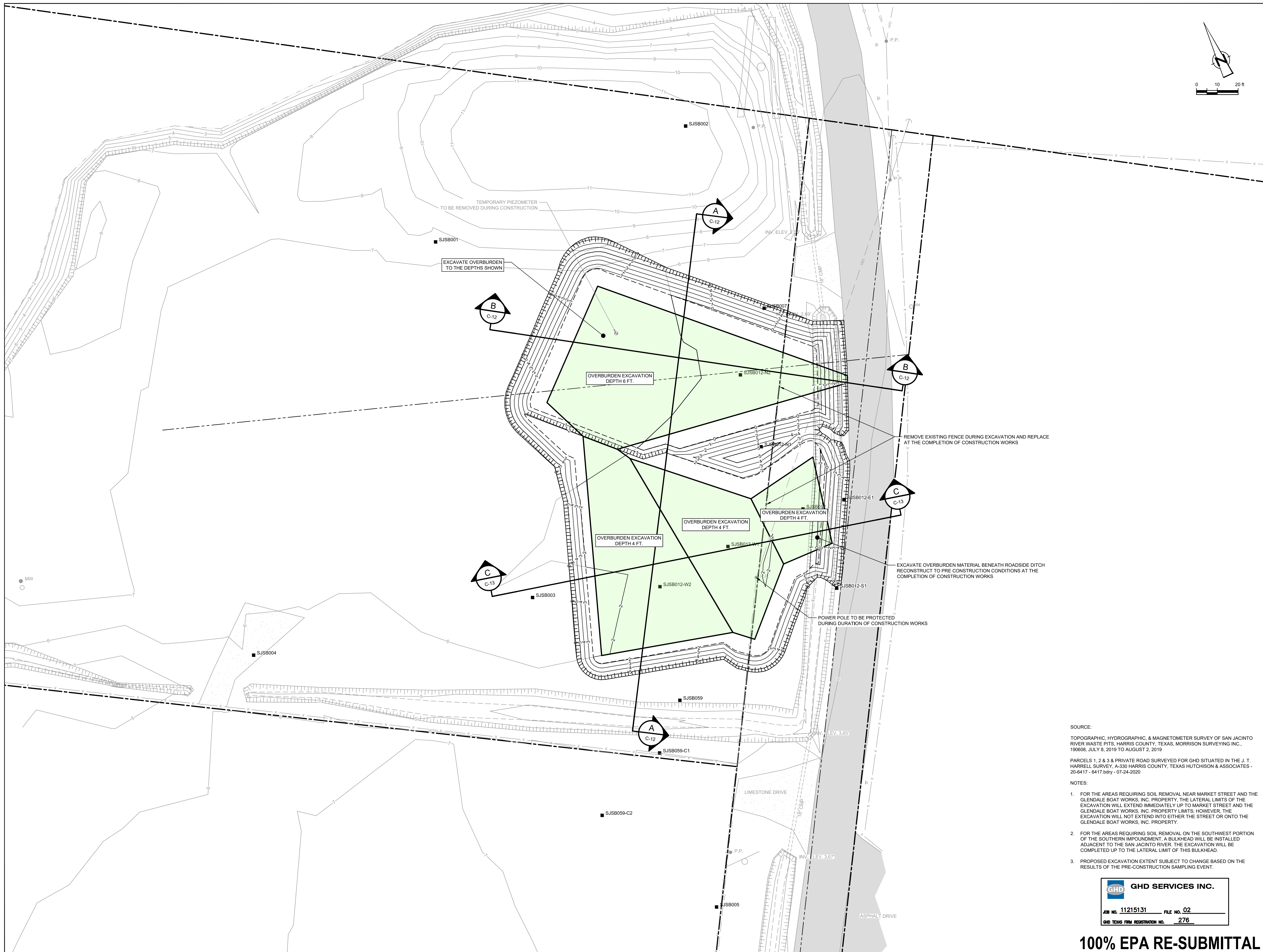
- NOTES:
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  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**

Project No. 11215131  
 Title  
**NORTHEAST EXCAVATION AREA  
 BOTTOM OF EXCAVATION  
 SAMPLING PLAN**

Sheet No.  
**C-09**



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**LEGEND**

---	PROPERTY BOUNDARY
---	PROPERTY EASEMENT
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PD/RI BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	AREA OF IMPACT
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	EXCAVATION CONTOUR INTERVAL
---	EXCAVATION TOP OF BANK
---	EXCAVATION TOE OF SLOPE
---	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH  
 Drafting Check BP Design Check LL  
 Project Coordinator CM Date Apr 15, 2021  
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 Original Size Scale 1" = 20'  
**Arch D** Bar is one inch on original size drawing

Project No. 11215131  
 Title  
**NORTHEAST EXCAVATION AREA OVERBURDEN EXCAVATION PLAN**

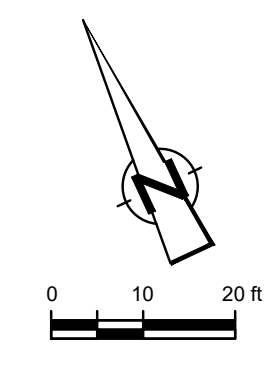
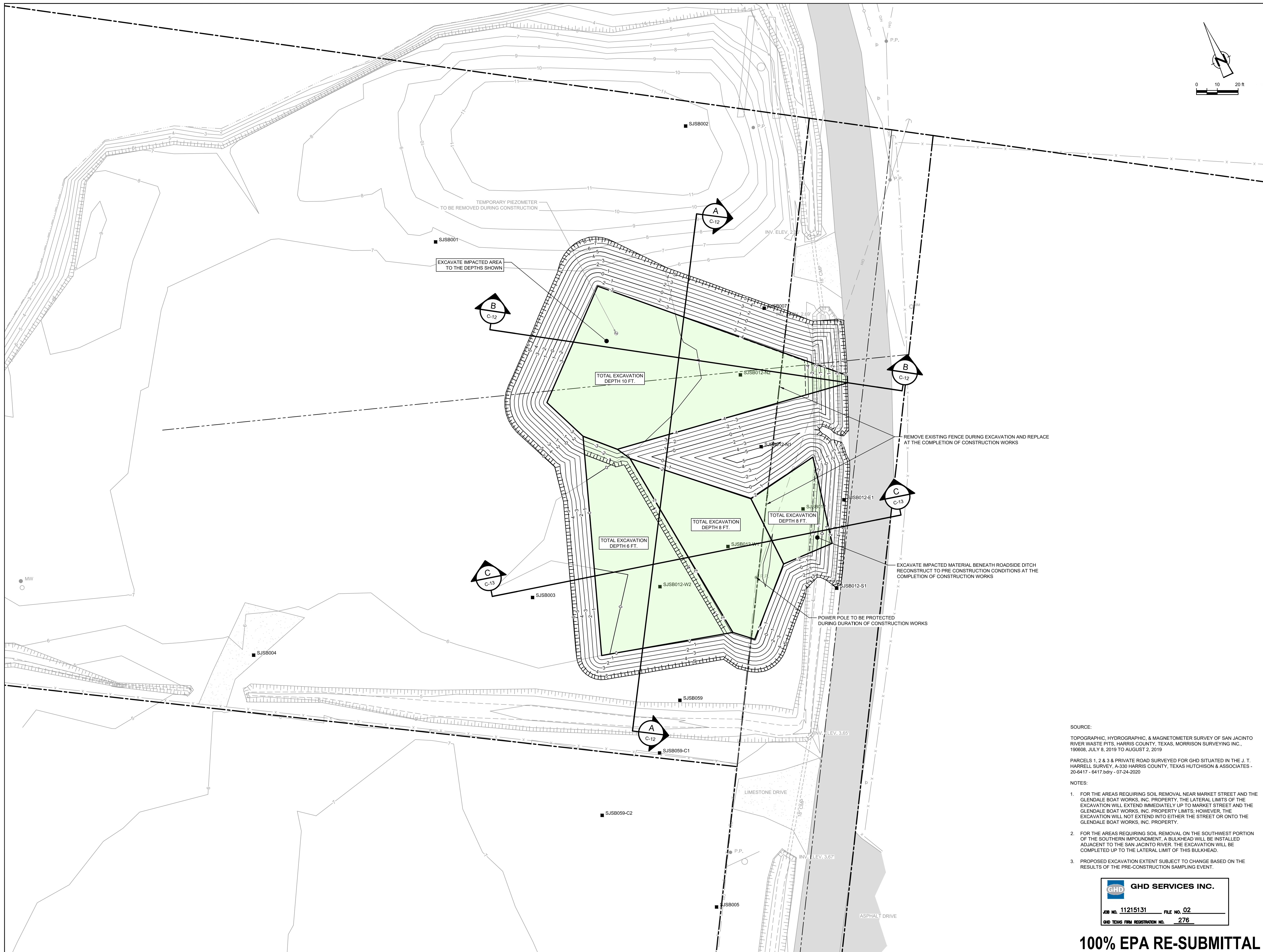
Sheet No.  
**C-10**  
 Sheet 11 of 49

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.  
 PARCELS 1, 2 & 3 A PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

- NOTES:
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  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

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**LEGEND**

---	PROPERTY BOUNDARY
---	PROPERTY EASEMENT
---620---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PDI/R1 BORING LOCATION
● SJSB002	MONITORING WELL
● MW	MONITORING WELL
● P.P.	POWER POLE
● L.P.	LIGHT POLE
○ WELL	WELL
---	AREA OF IMPACT
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	EXCAVATION CONTOUR INTERVAL
---	EXCAVATION TOP OF BANK
---	EXCAVATION TOE OF SLOPE
---	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**

Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
7	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
6	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH

Drafting Check BP Design Check LL

Project Coordinator CM Date Apr 15, 2021

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Original Size Arch D Bar is one inch on original size drawing

Project No. 11215131

Title  
**NORTHEAST EXCAVATION AREA FINAL EXCAVATION PLAN**

Sheet No.

**C-11**

Sheet 12 of 49

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.  
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- NOTES:
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  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

GHD SERVICES INC.  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

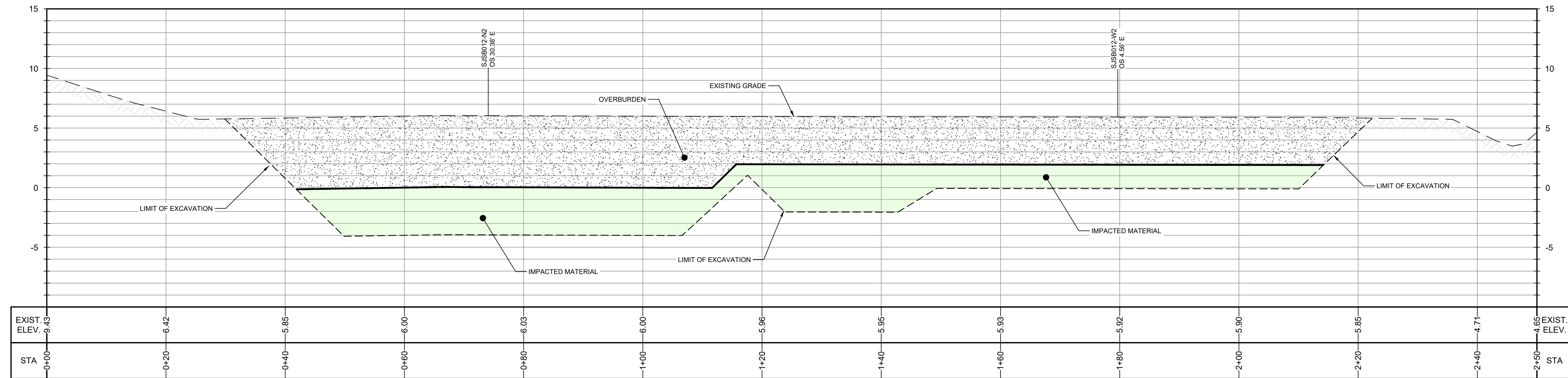
**100% EPA RE-SUBMITTAL**



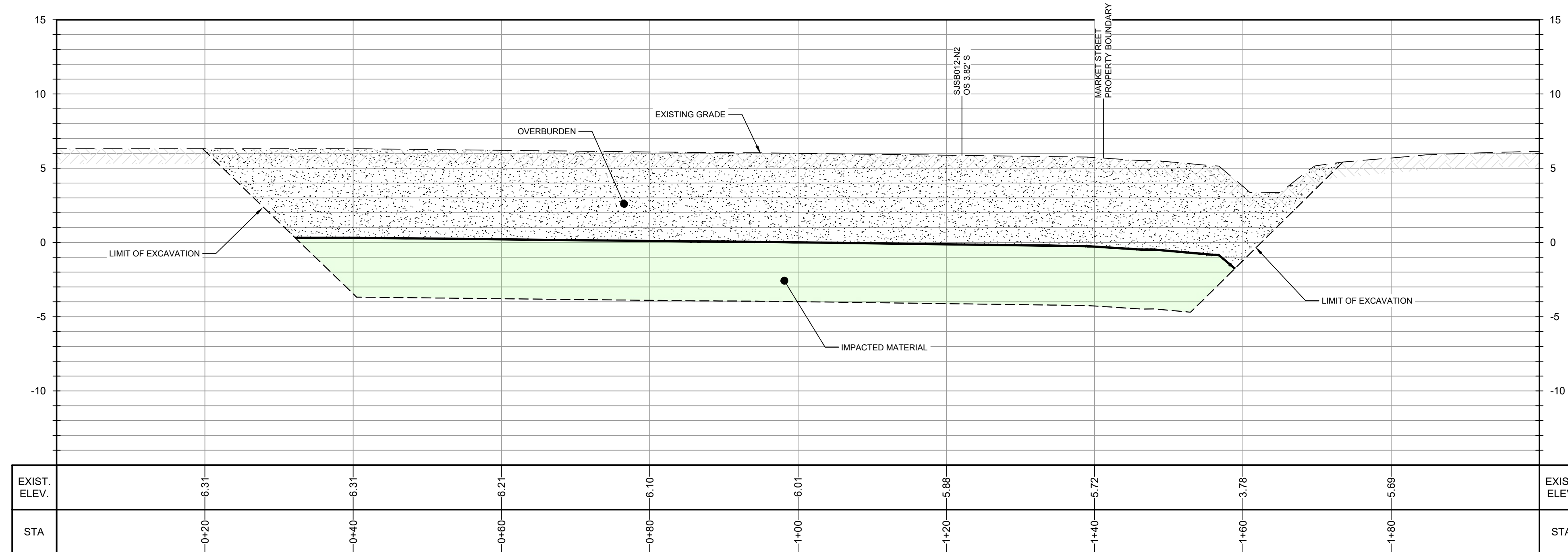
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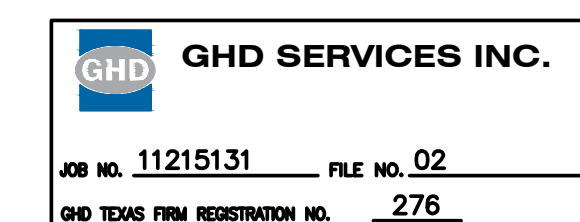


**SECTION A**  
HORIZ: 1"=10'  
VERT: 1"=5'



**SECTION B**  
HORIZ: 1"=10'  
VERT: 1"=5'

- NOTES:  
1. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.



**100% EPA RE-SUBMITTAL**

Client  
**SAN JACINTO RIVER WASTE PITS**  
Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
7	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
6	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn: MW, Designer: RH

Drafting Check: BP, Design Check: LL

Project Coordinator: CM, Date: Apr 15, 2021

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Original Size: Arch D, Bar is one inch on original size drawing

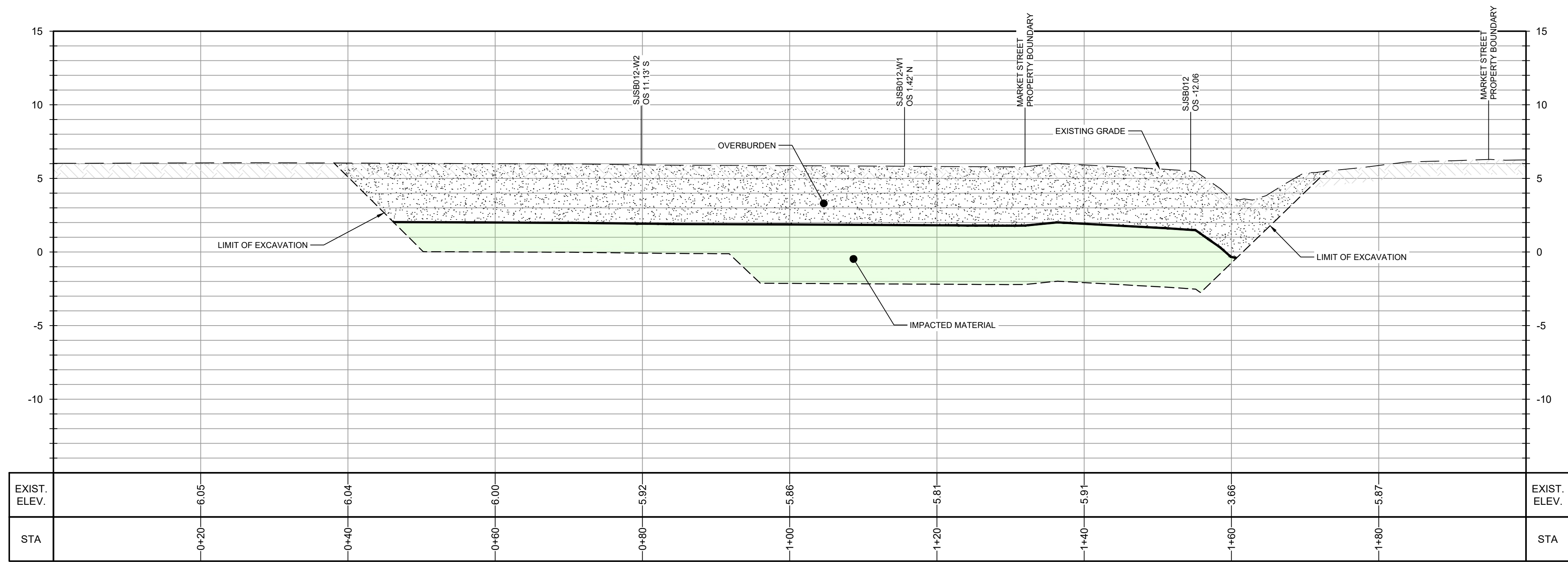
Project No. 11215131

Title  
**NORTHEAST EXCAVATION AREA EXCAVATION SECTIONS 1 OF 2**

Sheet No.

**C-12**

Sheet 13 of 49



SECTION C  
 HORIZ: 1"=10'  
 VERT: 1"=5'

- NOTES:
- PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

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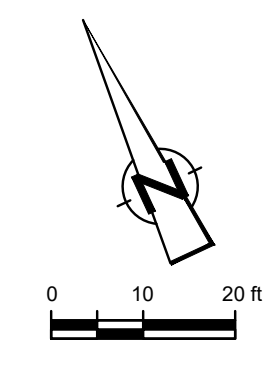
Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer RH		
Drafting Check	BP	Design Check LL		
Project Coordinator	CM	Date	Apr 15, 2021	
This document shall not be used for construction unless signed and sealed for construction.		Scale	AS SHOWN	
Original Size	Bar is one inch on original size drawing			
<b>Arch D</b>		0 1"		

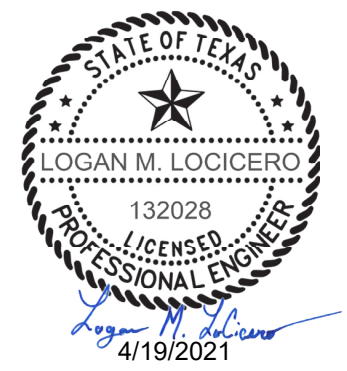
Project No. 11215131  
 Title

**NORTHEAST EXCAVATION AREA EXCAVATION SECTIONS 2 OF 2**

Sheet No.  
**C-13**  
 Sheet 14 of 49



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**LEGEND**

---	PROPERTY BOUNDARY
- - - -	PROPERTY EASEMENT
--- ---	EXISTING CONTOUR INTERVAL
- - - -	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PDI/RI BORING LOCATION
■	SJSB002
●	MW
●	P.P.
●	L.P.
○	WELL
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	RESTORATION CONTOUR INTERVAL
---	RESTORATION LIMIT
---	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**

Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
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4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
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Original Size	Bar is one inch on original size drawing		
<b>Arch D</b>		0 1"	

Project No. **11215131**

Title  
**NORTHEAST EXCAVATION AREA RESTORATION PLAN**

Sheet No.  
**C-14**

Sheet 15 of 49

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 6, 2019 TO AUGUST 2, 2019  
 PARCELS 1, 2 & 3 PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

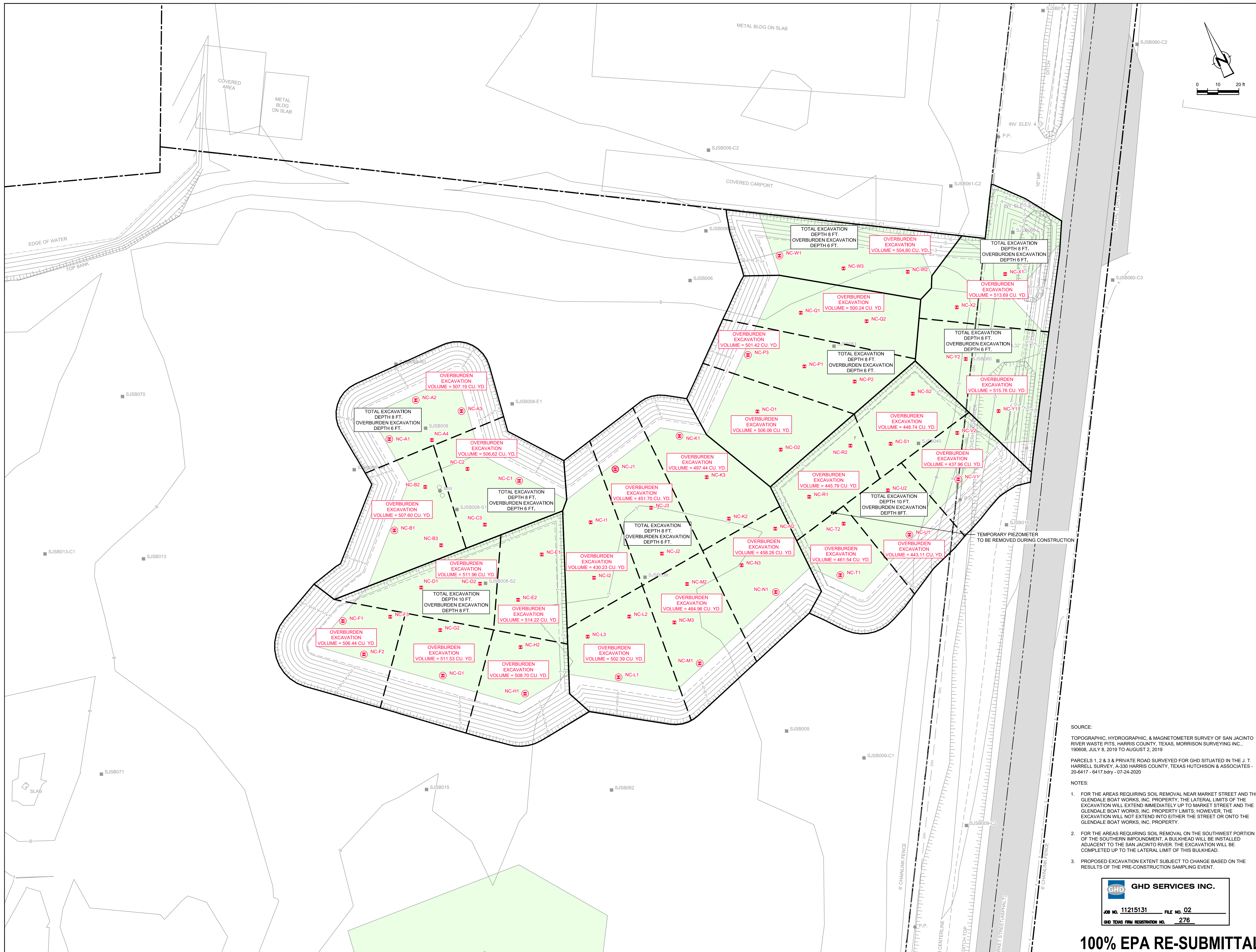
NOTES:  
 1. PROPOSED RESTORATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**

JOB NO. **11215131** FILE NO. **02**

GHD TEXAS FIRM REGISTRATION NO. **276**

**100% EPA RE-SUBMITTAL**



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**LEGEND**

---	PROPERTY BOUNDARY
---	PROPERTY EASEMENT
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PD/RI BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	AREA OF IMPACT
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	EXCAVATION CONTOUR INTERVAL
---	EXCAVATION TOP OF BANK
---	EXCAVATION TOE OF SLOPE
---	POLYGON LIMITS (WITH ADDITIONAL SIDE SLOPE AREAS)
---	SAMPLING GRIDS (~500 CY) WITHIN POLYGONS
---	PRE-CONSTRUCTION SIDEWALL OVERBURDEN CONFIRMATION BORING LOCATIONS
---	PRE-CONSTRUCTION OVERBURDEN CONFIRMATION BORING LOCATIONS

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer RH		
Drafting Check	BP	Design Check LL		
Project Coordinator	CM	Date	Apr 15, 2021	
This document shall not be used for construction unless signed and sealed for construction.				
Original Size	Arch D	Scale	1" = 20'	
Bar is one inch on original size drawing		0 1"		

Project No. 11215131  
 Title  
**NORTH CENTRAL EXCAVATION AREA OVERBURDEN SAMPLING PLAN**

Sheet No.

**C-15**  
 Sheet 16 of 49

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019

PARCELS 1, 2 & 3 A PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

- NOTES:
- FOR THE AREAS REQUIRING SOIL REMOVAL NEAR MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY, THE LATERAL LIMITS OF THE EXCAVATION WILL EXTEND IMMEDIATELY UP TO MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY LIMITS; HOWEVER, THE EXCAVATION WILL NOT EXTEND INTO EITHER THE STREET OR ONTO THE GLENDALE BOAT WORKS, INC. PROPERTY.
  - FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.
  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

GHD SERVICES INC.  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**



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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/RI BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	PRE-CONSTRUCTION SIDEWALL
	CONFIRMATION BORING LOCATIONS

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH  
 Drafting Check BP Design Check LL

Project Coordinator CM Date Apr 15, 2021

This document shall not be used for construction unless signed and sealed for construction. Scale 1" = 20'

Original Size Arch D Bar is one inch on original size drawing 0 1"

Project No. 11215131 Title

**NORTH CENTRAL EXCAVATION AREA SIDEWALL SAMPLING PLAN**

Sheet No.

**C-16**

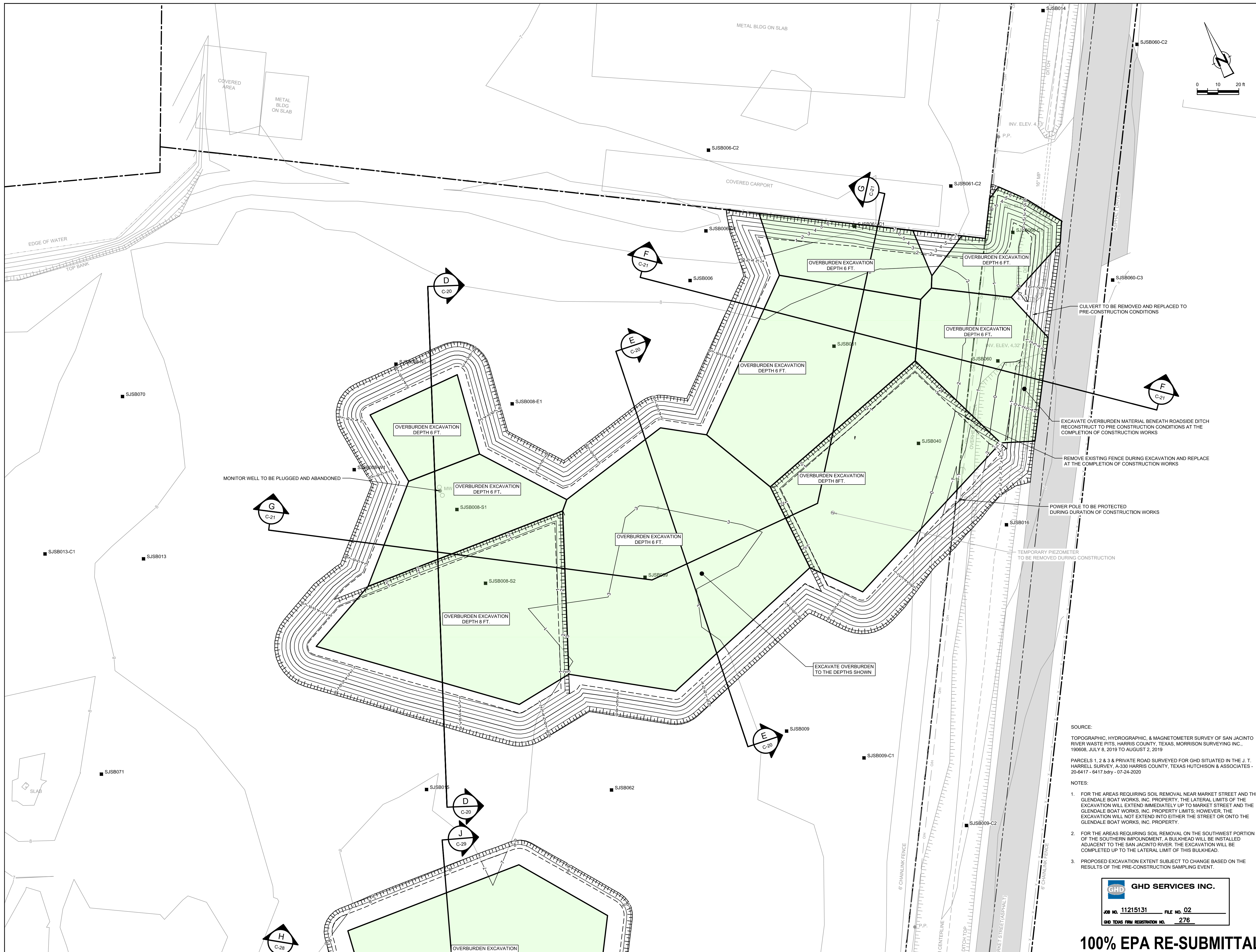
SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019  
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- NOTES:
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  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

GHD SERVICES INC.  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**





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**LEGEND**

---	PROPERTY BOUNDARY
---	PROPERTY EASEMENT
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PD/RI BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
○	WELL
■	AREA OF IMPACT
■	ASPHALT
■	CONCRETE
■	GRAVEL
---	EXCAVATION CONTOUR INTERVAL
---	EXCAVATION TOP OF BANK
---	EXCAVATION TOE OF SLOPE
---	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
Original Size	Arch D	Scale	1" = 20'
		Bar is one inch on original size drawing	0 1"

Project No. 11215131  
 Title  
**NORTH CENTRAL EXCAVATION AREA OVERBURDEN EXCAVATION PLAN**

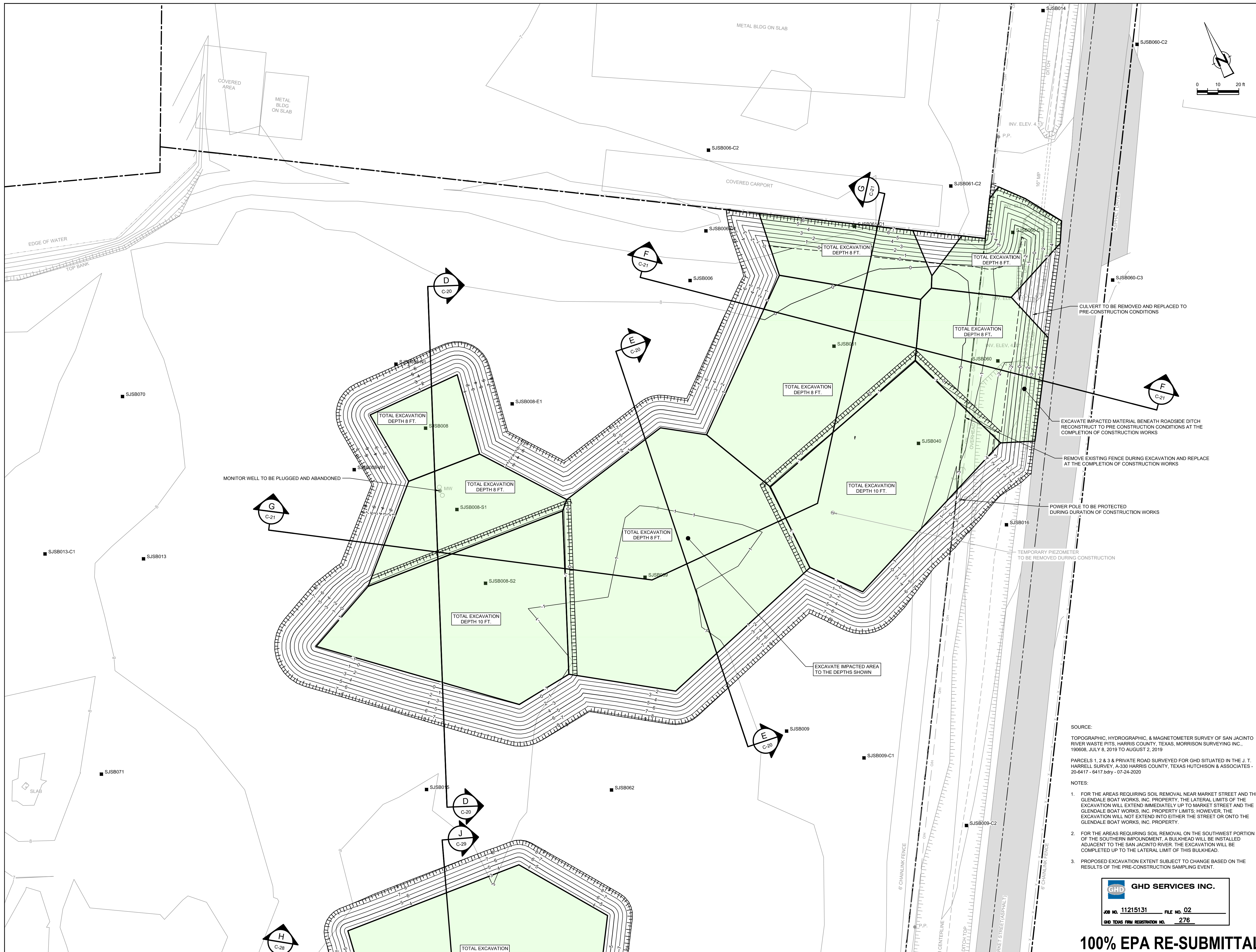
Sheet No.  
**C-18**

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019  
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- NOTES:
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GHD SERVICES INC.  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**



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**LEGEND**

---	PROPERTY BOUNDARY
---	PROPERTY EASEMENT
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PD/RI BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
○	WELL
---	AREA OF IMPACT
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	EXCAVATION CONTOUR INTERVAL
---	EXCAVATION TOP OF BANK
---	EXCAVATION TOE OF SLOPE
---	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
7	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
6	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH  
 Drafting Check BP Design Check LL  
 Project Coordinator CM Date Apr 15, 2021  
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 Original Size Arch D Scale 1" = 20'  
 Bar is one inch on original size drawing

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019  
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NOTES:  
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 3. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

GHD SERVICES INC.  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**

Project No. 11215131  
 Title  
**NORTH CENTRAL EXCAVATION AREA FINAL EXCAVATION PLAN**

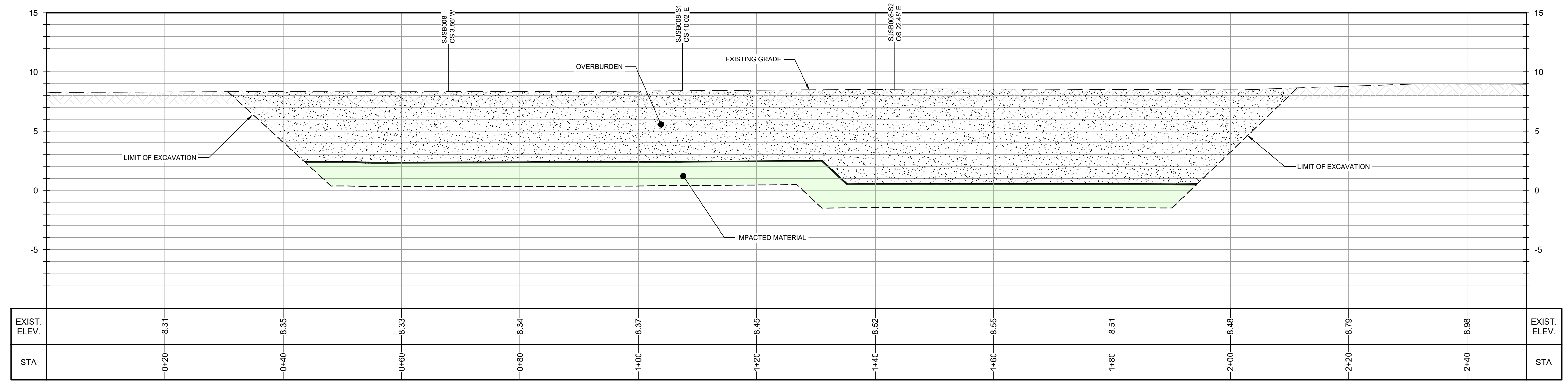
Sheet No.  
**C-19**  
 Sheet 20 of 49



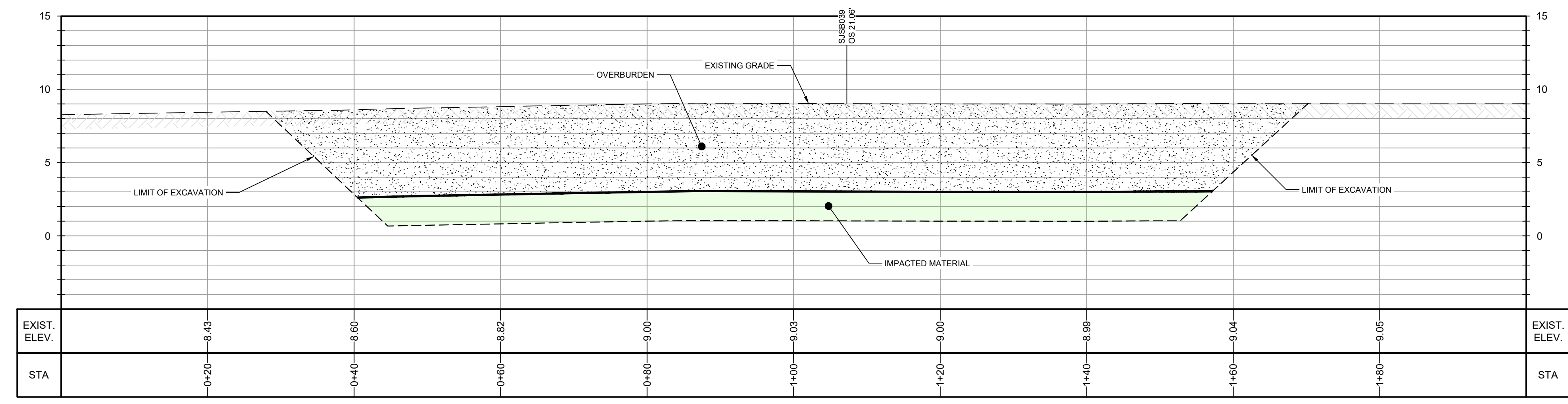
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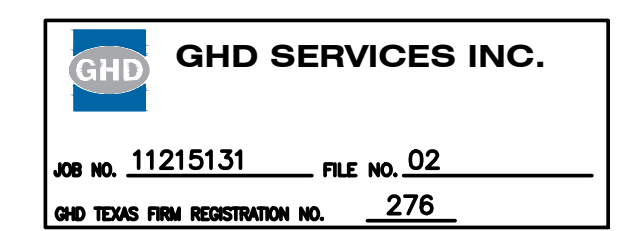


**SECTION D**  
HORIZ: 1"=10'  
VERT: 1"=5'  
C-18,C-19



**SECTION E**  
HORIZ: 1"=10'  
VERT: 1"=5'  
C-18,C-19

NOTES:  
1. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.



**100% EPA RE-SUBMITTAL**

Client  
**SAN JACINTO RIVER WASTE PITS**  
Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020
No.	Issue	Drawn	Approved	Date
Drawn	MW	Designer RH		
Drafting Check	BP	Design Check LL		
Project Coordinator	CM	Date	Apr 15, 2021	
This document shall not be used for construction unless signed and sealed for construction.		Scale	AS SHOWN	
Original Size	Arch D Bar is one inch on original size drawing 0 1"			

Project No. 11215131  
Title

**NORTH CENTRAL EXCAVATION AREA EXCAVATION SECTIONS 1 OF 2**

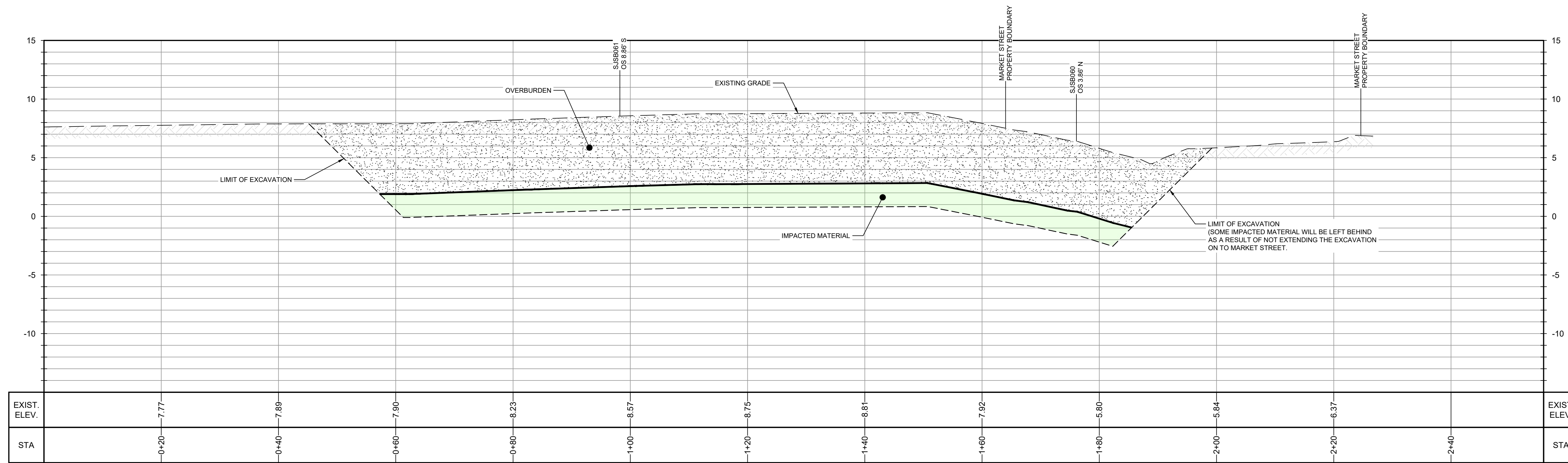
Sheet No.  
**C-20**  
Sheet 21 of 49



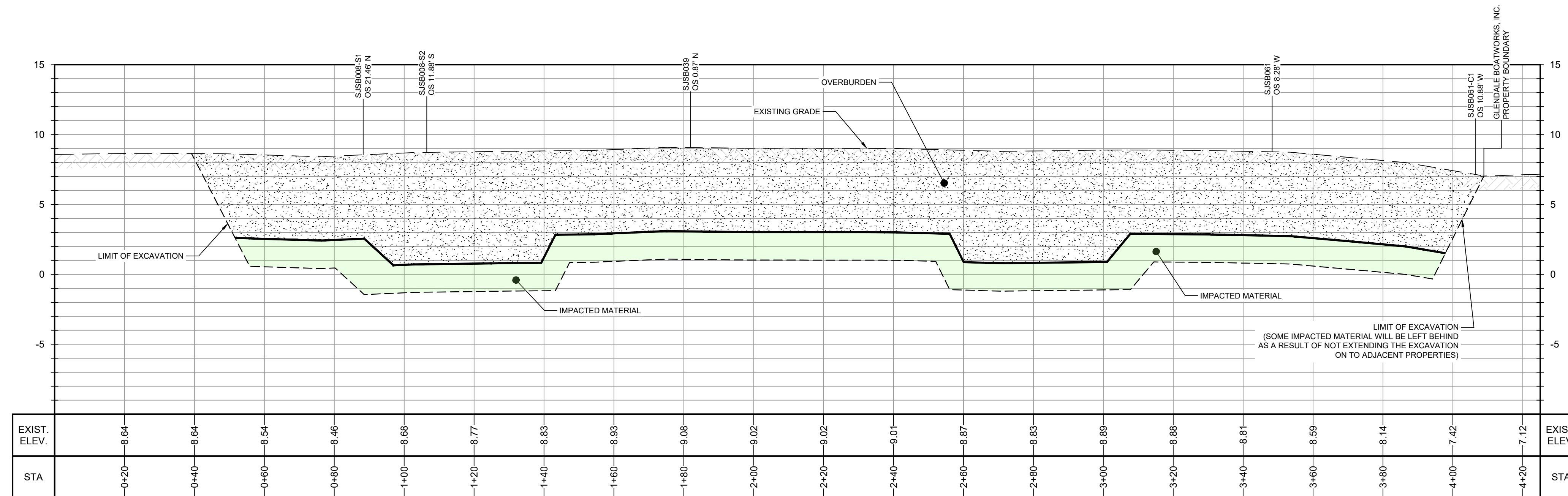
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**SECTION F**  
HORIZ: 1"=10'  
VERT: 1"=5'



**SECTION G**  
HORIZ: 1"=20'  
VERT: 1"=5'

NOTES:  
1. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
JOB NO. 11215131 FILE NO. 02  
GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**

Client  
**SAN JACINTO RIVER WASTE PITS**  
Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH  
Drafting Check BP Design Check LL  
Project Coordinator CM Date Apr 15, 2021

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Scale AS SHOWN  
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Project No. 11215131  
Title

**NORTH CENTRAL EXCAVATION AREA EXCAVATION SECTIONS 2 OF 2**

Sheet No.  
**C-21**



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LEGEND	
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	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
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	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/RI BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	ASPHALT
	CONCRETE
	GRAVEL
	RESTORATION CONTOUR INTERVAL
	RESTORATION LIMIT
	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021

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 Original Size  
**Arch D**  
 Bar is one inch on original size drawing  
 0 1"

Project No. **11215131**  
 Title  
**NORTH CENTRAL EXCAVATION AREA RESTORATION PLAN**

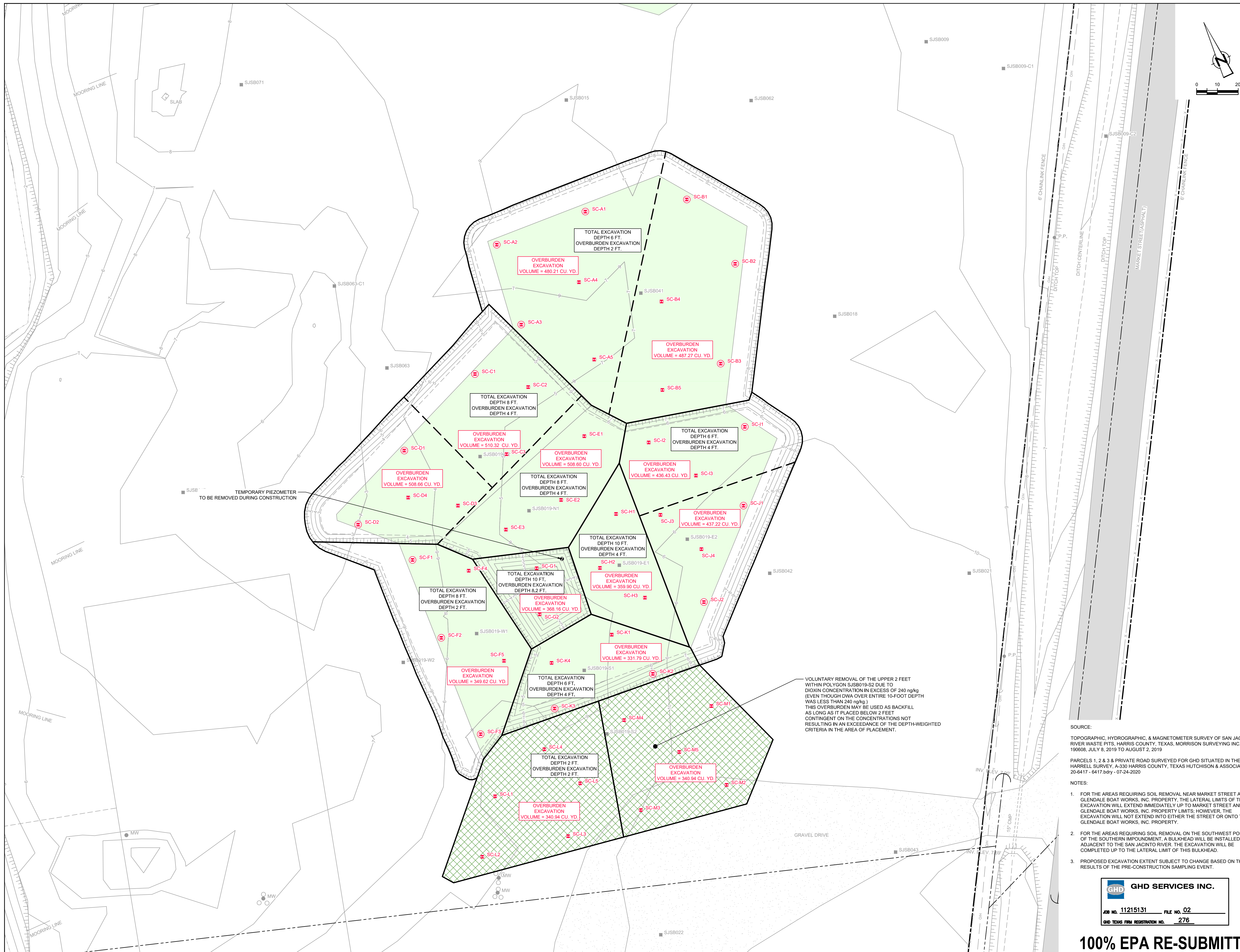
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**C-22**

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 6, 2019 TO AUGUST 2, 2019  
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- NOTES:  
 1. PROPOSED RESTORATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. **11215131** FILE NO. **02**  
 GHD TEXAS FIRM REGISTRATION NO. **276**

**100% EPA RE-SUBMITTAL**



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**LEGEND**

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	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/R1 BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	AREA OF POTENTIAL VOLUNTARY EXCAVATION
	ASPHALT
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	POLYGON LIMITS (WITH ADDITIONAL SIDE SLOPE AREAS)
	SAMPLING GRIDS (~500 CY) WITHIN POLYGONS
	PRE-CONSTRUCTION SIDEWALL OVERBURDEN CONFIRMATION BORING LOCATIONS
	PRE-CONSTRUCTION OVERBURDEN CONFIRMATION BORING LOCATIONS

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH  
 Drafting BP Design Check LL  
 Project Coordinator CM Date Apr 15, 2021  
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 Bar is one inch on original size drawing

Project No. 11215131  
 Title  
**SOUTH CENTRAL EXCAVATION AREA OVERBURDEN SAMPLING PLAN**

Sheet No.  
**C-23**  
 Sheet 24 of 49

**NOTES:**

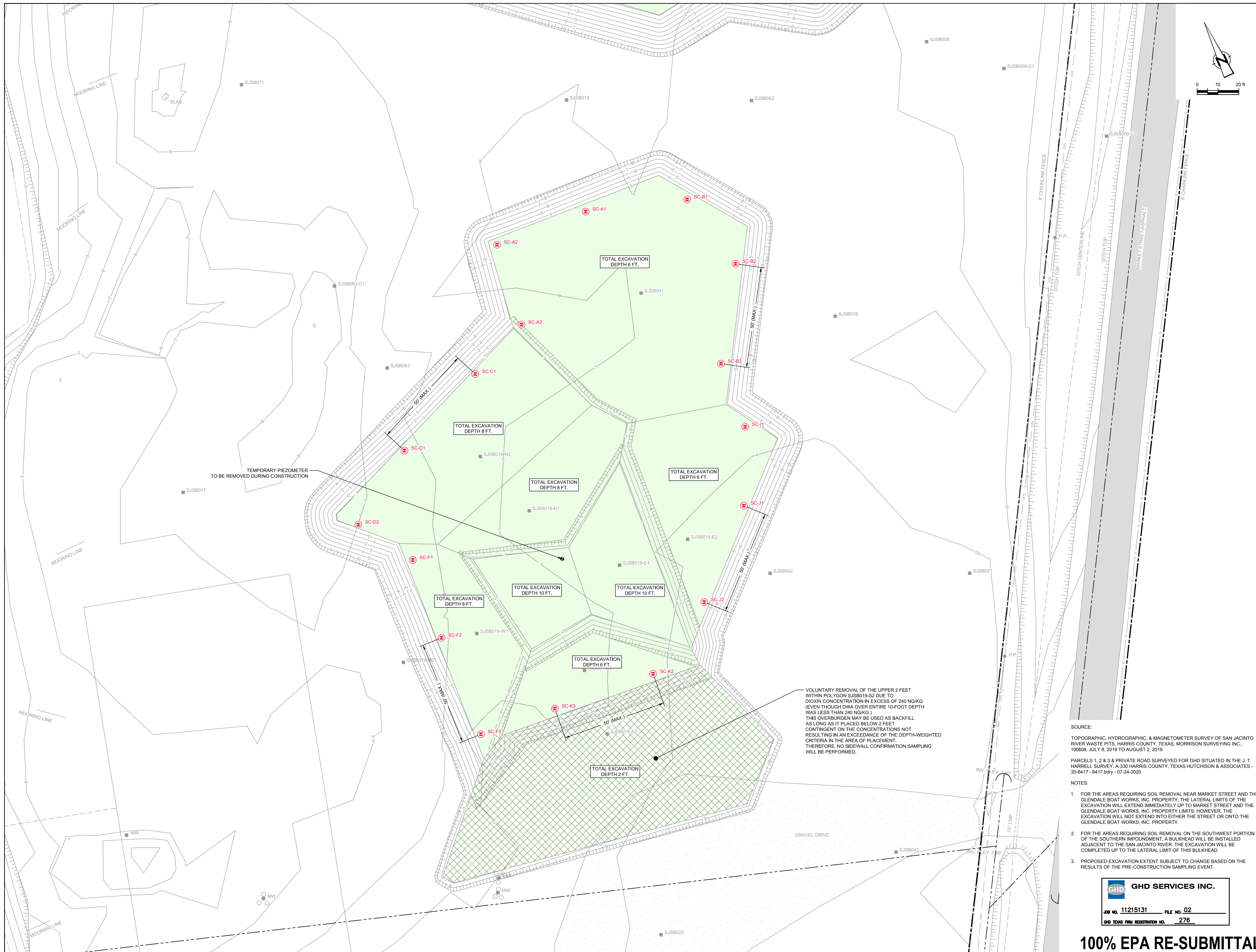
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 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.

**Voluntary Removal Note:**  
 VOLUNTARY REMOVAL OF THE UPPER 2 FEET WITHIN POLYGON SJSB019-S2 DUE TO DIOXIN CONCENTRATION IN EXCESS OF 240 ng/kg (EVEN THOUGH DWA OVER ENTIRE 10-FOOT DEPTH WAS LESS THAN 240 ng/kg). THIS OVERBURDEN MAY BE USED AS BACKFILL AS LONG AS IT PLACED BELOW 2 FEET CONTINGENT ON THE CONCENTRATIONS NOT RESULTING IN AN EXCEEDANCE OF THE DEPTH-WEIGHTED CRITERIA IN THE AREA OF PLACEMENT.

**GHD SERVICES INC.**  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**



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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/R1 BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	AREA OF POTENTIAL VOLUNTARY EXCAVATION
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	PRE-CONSTRUCTION SIDEWALL CONFIRMATION BORING LOCATIONS

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
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Original Size	Bar is one inch on original size drawing		
<b>Arch D</b>			

Project No. 11215131  
 Title  
**SOUTH CENTRAL EXCAVATION AREA SIDEWALL SAMPLING PLAN**

Sheet No.

**C-24**  
 Sheet 25 of 49

VOLUNTARY REMOVAL OF THE UPPER 2 FEET WITHIN POLYGON SJSB019-S2 DUE TO DROWN CONCENTRATION IN EXCESS OF 240 NG/KG (EVEN THOUGH DWA OVER ENTIRE 10-FOOT DEPTH WAS LESS THAN 240 NG/KG.) THIS OVERBURDEN MAY BE USED AS BACKFILL AS LONG AS IT PLACED BELOW 2 FEET CONTINGENT ON THE CONCENTRATIONS NOT RESULTING IN AN EXCEEDANCE OF THE DEPTH-WEIGHTED CRITERIA IN THE AREA OF PLACEMENT. THEREFORE, NO SIDEWALL CONFIRMATION SAMPLING WILL BE PERFORMED.

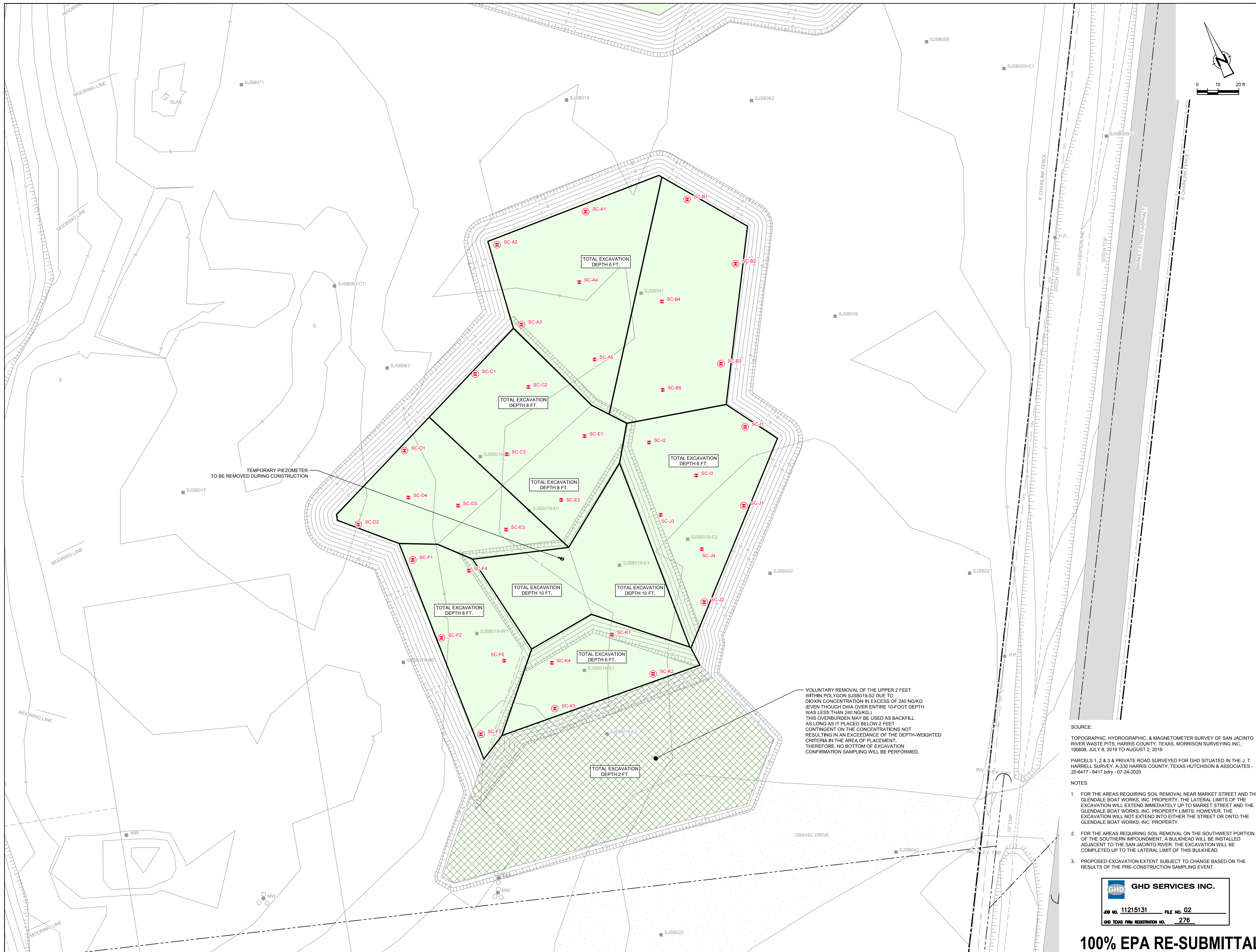
SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.

PARCELS 1, 2 & 3 A PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

- NOTES:
- FOR THE AREAS REQUIRING SOIL REMOVAL NEAR MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY, THE LATERAL LIMITS OF THE EXCAVATION WILL EXTEND IMMEDIATELY UP TO MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY LIMITS; HOWEVER, THE EXCAVATION WILL NOT EXTEND INTO EITHER THE STREET OR ONTO THE GLENDALE BOAT WORKS, INC. PROPERTY.
  - FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.
  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/R/I BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	AREA OF POTENTIAL VOLUNTARY EXCAVATION
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	SAMPLING GRIDS (MAX. 500 CY)
	PRE-CONSTRUCTION SIDEWALL/ CONFIRMATION BORING LOCATIONS
	PRE-CONSTRUCTION BASE OF EXCAVATION CONFIRMATION BORING LOCATIONS

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
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Original Size	Bar is one inch on original size drawing		
<b>Arch D</b>			

Project No. 11215131  
 Title

**SOUTH CENTRAL EXCAVATION AREA BOTTOM OF EXCAVATION SAMPLING PLAN**

Sheet No.

**C-25**

Sheet 26 of 49

VOLUNTARY REMOVAL OF THE UPPER 2 FEET WITHIN POLYGON SJSB019-S2 DUE TO DROWN CONCENTRATION IN EXCESS OF 240 NG/KG (EVEN THOUGH DWA OVER ENTIRE 10-FOOT DEPTH WAS LESS THAN 240 NG/KG.) THIS OVERBURDEN MAY BE USED AS BACKFILL AS LONG AS IT PLACED BELOW 2 FEET CONTINGENT ON THE CONCENTRATIONS NOT RESULTING IN AN EXCEEDANCE OF THE DEPTH-WEIGHTED CRITERIA IN THE AREA OF PLACEMENT. THEREFORE, NO BOTTOM OF EXCAVATION CONFIRMATION SAMPLING WILL BE PERFORMED.

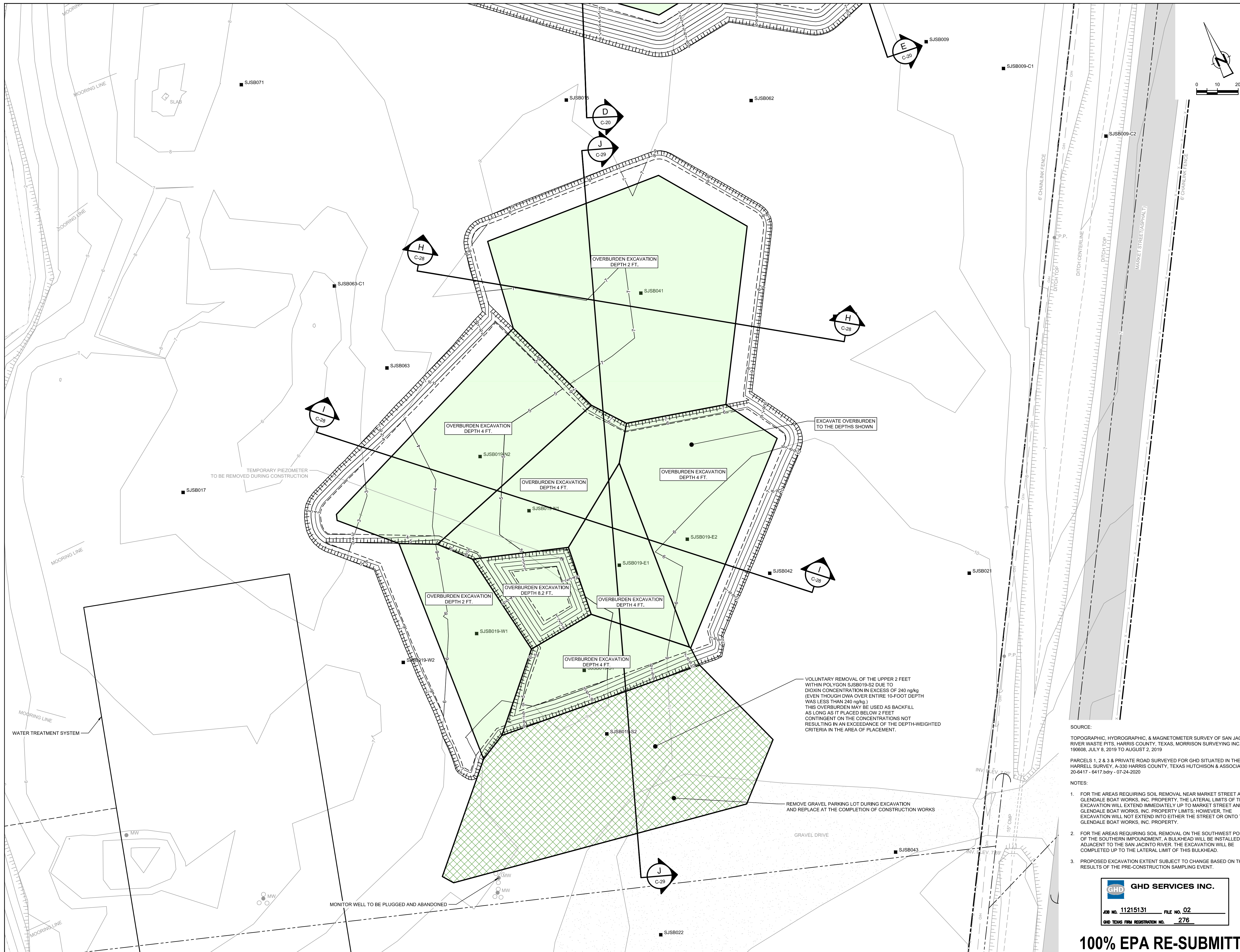
SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.

PARCELS 1, 2 & 3 A PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdy - 07-24-2020

- NOTES:
- FOR THE AREAS REQUIRING SOIL REMOVAL NEAR MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY, THE LATERAL LIMITS OF THE EXCAVATION WILL EXTEND IMMEDIATELY UP TO MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY LIMITS; HOWEVER, THE EXCAVATION WILL NOT EXTEND INTO EITHER THE STREET OR ONTO THE GLENDALE BOAT WORKS, INC. PROPERTY.
  - FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.
  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**



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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/R1 BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	AREA OF POTENTIAL VOLUNTARY EXCAVATION
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting	BP	Design	LL
Check		Check	
Project Coordinator	CM	Date	Apr 15, 2021
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Original Size	Bar is one inch on original size drawing		
<b>Arch D</b>		0 1"	

Project No. 11215131  
 Title  
**SOUTH CENTRAL EXCAVATION AREA OVERBURDEN EXCAVATION PLAN**

Sheet No.  
**C-26**

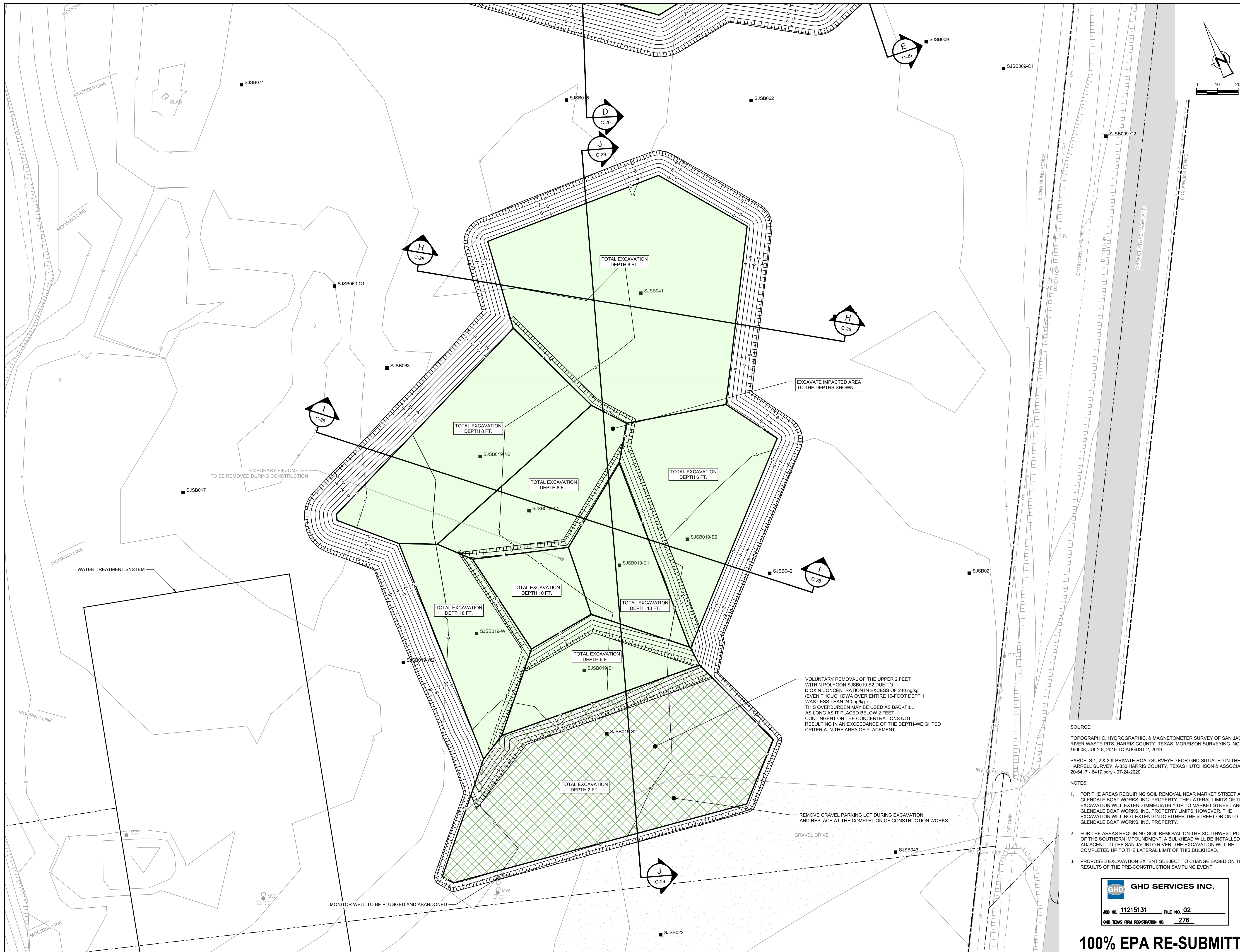
SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019

PARCELS 1, 2 & 3 A PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

- NOTES:
- FOR THE AREAS REQUIRING SOIL REMOVAL NEAR MARKET STREET AND THE RIVER WASTE PITS, HARRIS COUNTY, TEXAS, THE LATERAL LIMITS OF THE EXCAVATION WILL EXTEND IMMEDIATELY UP TO MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY LIMITS; HOWEVER, THE EXCAVATION WILL NOT EXTEND INTO EITHER THE STREET OR ONTO THE GLENDALE BOAT WORKS, INC. PROPERTY.
  - FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.
  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

GHD SERVICES INC.  
 JOB NO. 11215131 FILE NO. 02  
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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/RI BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	AREA OF POTENTIAL VOLUNTARY EXCAVATION
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**

Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting	BP	Design	LL
Check		Check	

Project Coordinator: CM Date: Apr 15, 2021

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Original Size: Arch D Bar is one inch on original size drawing

Project No. 11215131 Title

**SOUTH CENTRAL EXCAVATION AREA FINAL EXCAVATION PLAN**

Sheet No.

**C-27**

- SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.
- PARCELS 1, 2 & 3 PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020
- NOTES:  
 1. FOR THE AREAS REQUIRING SOIL REMOVAL NEAR MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY, THE LATERAL LIMITS OF THE EXCAVATION WILL EXTEND IMMEDIATELY UP TO MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY LIMITS; HOWEVER, THE EXCAVATION WILL NOT EXTEND INTO EITHER THE STREET OR ONTO THE GLENDALE BOAT WORKS, INC. PROPERTY.  
 2. FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.  
 3. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

GHD SERVICES INC.  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

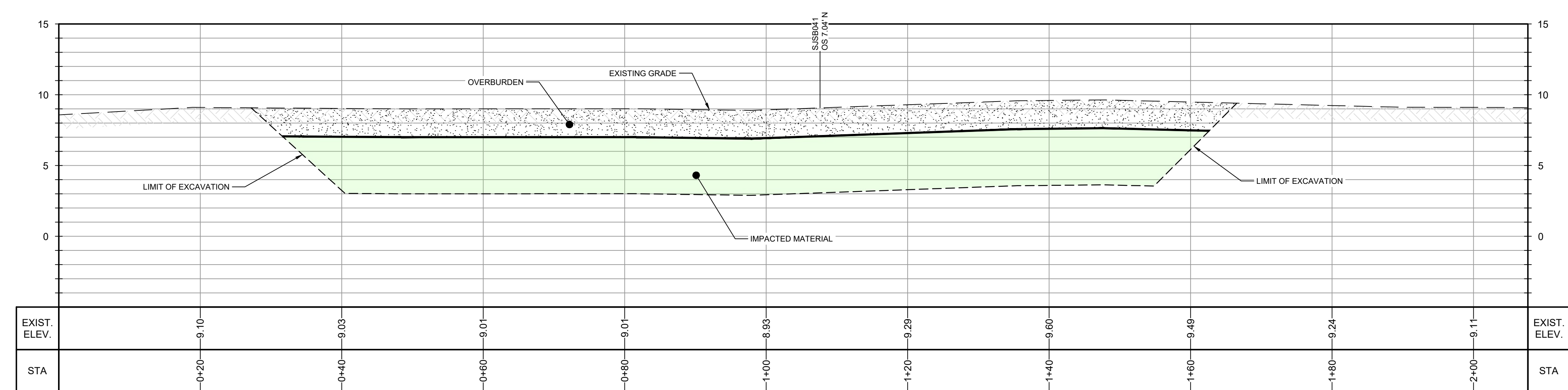
**100% EPA RE-SUBMITTAL**



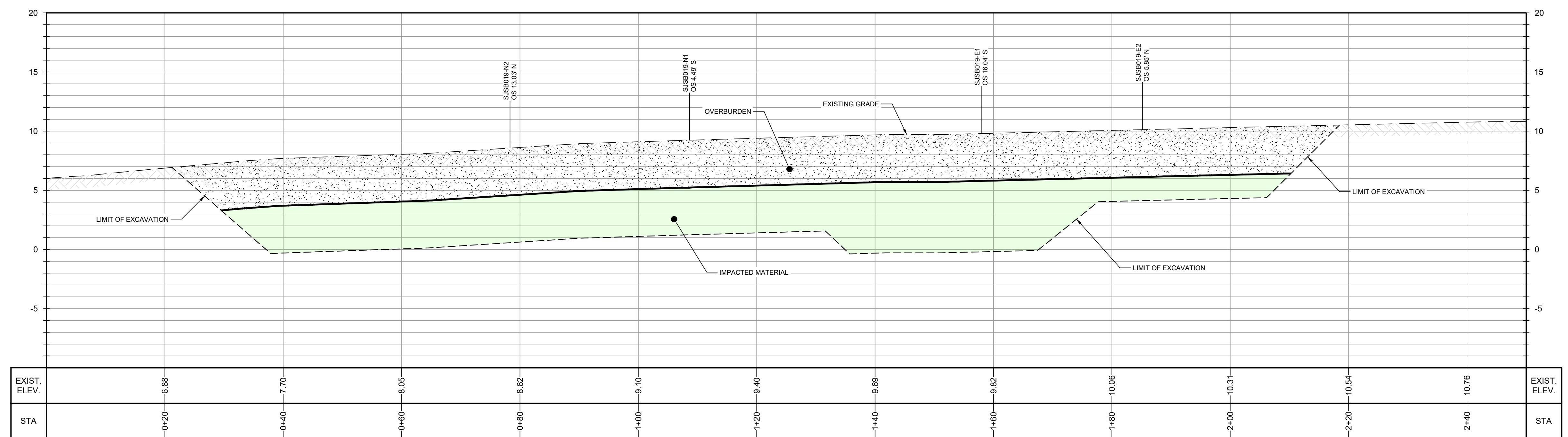
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**SECTION H**  
HORIZ: 1"=10'  
VERT: 1"=5'



**SECTION I**  
HORIZ: 1"=10'  
VERT: 1"=5'

NOTES:  
1. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
JOB NO. 11215131 FILE NO. 02  
GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**

Client  
**SAN JACINTO RIVER WASTE PITS**  
Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

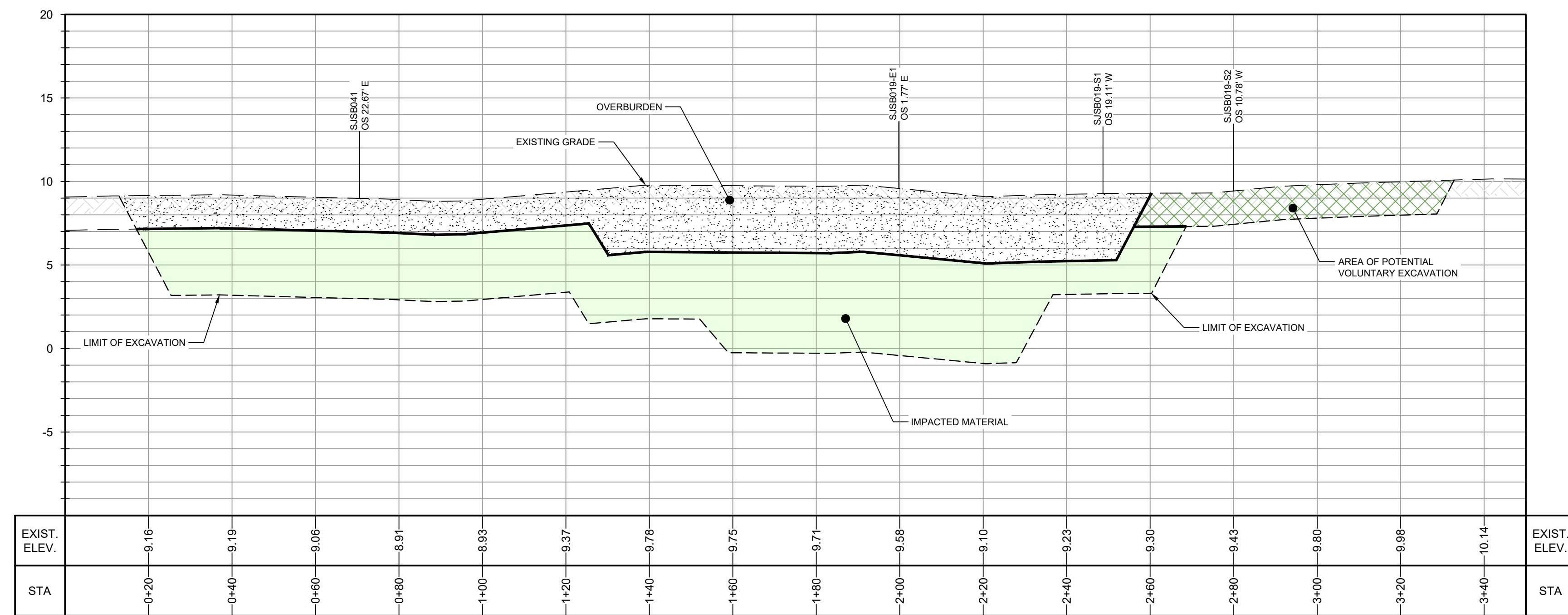
No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn **MW** Designer **RH**  
Drafting Check **BP** Design Check **LL**  
Project Coordinator **CM** Date **Apr 15, 2021**

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Scale **AS SHOWN**  
Original Size  
**Arch D**  
Bar is one inch on original size drawing  
0 1"

Project No. **11215131**  
Title  
**SOUTH CENTRAL EXCAVATION AREA EXCAVATION SECTIONS 1 OF 2**

Sheet No.  
**C-28**  
Sheet 29 of 49



**SECTION J**  
 HORIZ. 1"=20'  
 VERT. 1"=5'



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Client  
**SAN JACINTO RIVER WASTE PITS**

Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
This document shall not be used for construction unless signed and sealed for construction.		Scale	AS SHOWN
Original Size	Bar is one inch on original size drawing		
<b>Arch D</b>		0 1"	

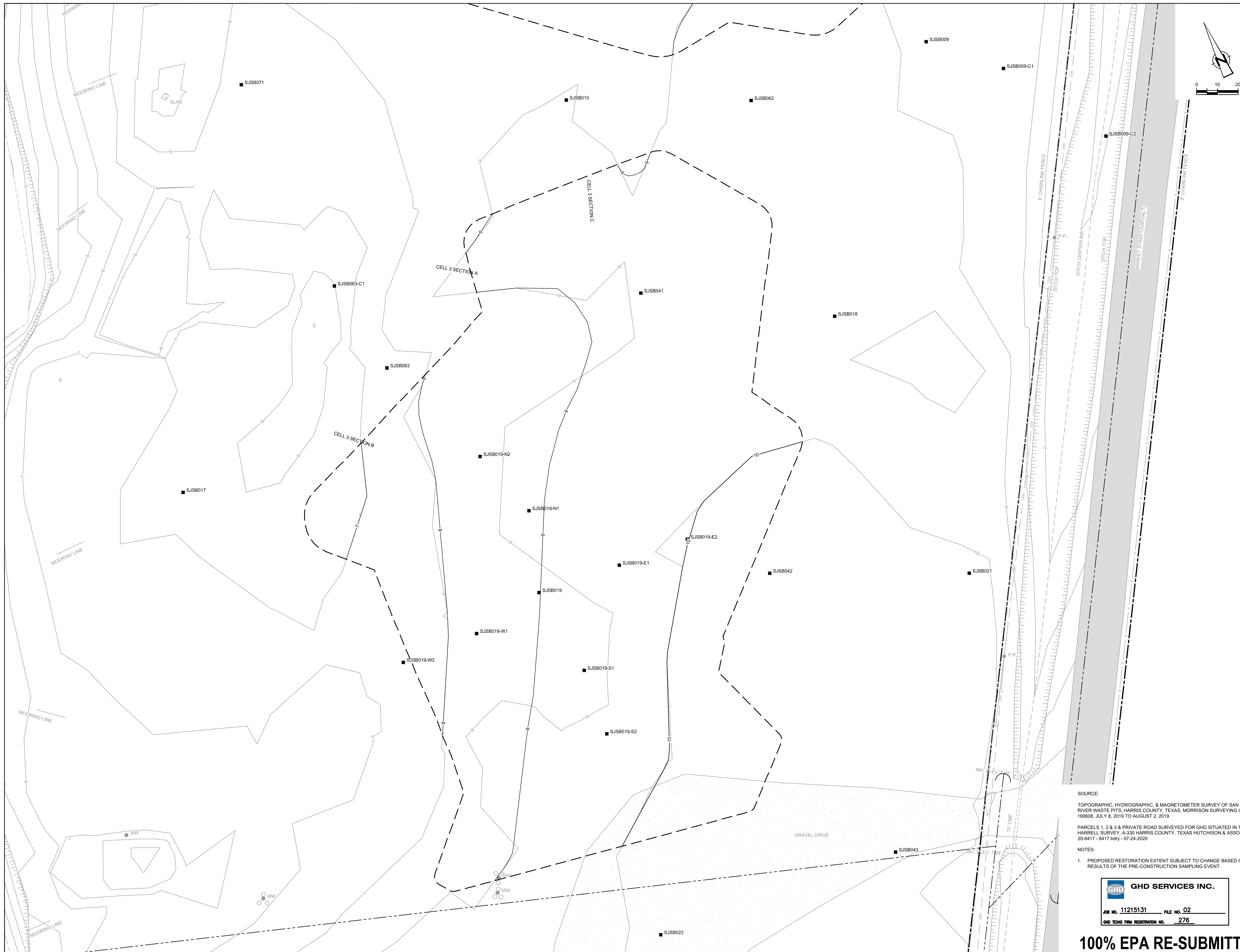
Project No. 11215131  
 Title  
**SOUTH CENTRAL EXCAVATION AREA EXCAVATION SECTIONS 2 OF 2**

Sheet No.  
**C-29**  
 Sheet 30 of 49

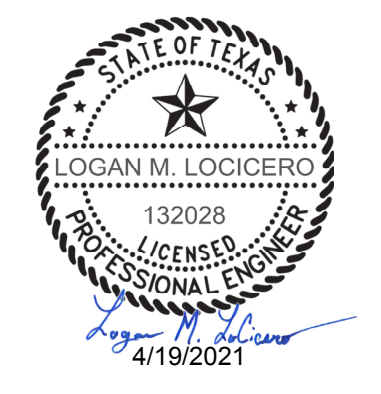
- NOTES:  
 1. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**



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	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/R I BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	ASPHALT
	CONCRETE
	GRAVEL
	RESTORATION CONTOUR INTERVAL
	RESTORATION LIMIT
	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**

Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
This document shall not be used for construction unless signed and sealed for construction.	Scale	1" = 20'	
Original Size	Bar is one inch on original size drawing		
<b>Arch D</b>	0 1"		

Project No. **11215131**

Title  
**SOUTH CENTRAL EXCAVATION AREA RESTORATION PLAN**

Sheet No.

**C-30**

Sheet 31 of 49

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 6, 2019 TO AUGUST 2, 2019  
 PARCELS 1, 2 & 3 & PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

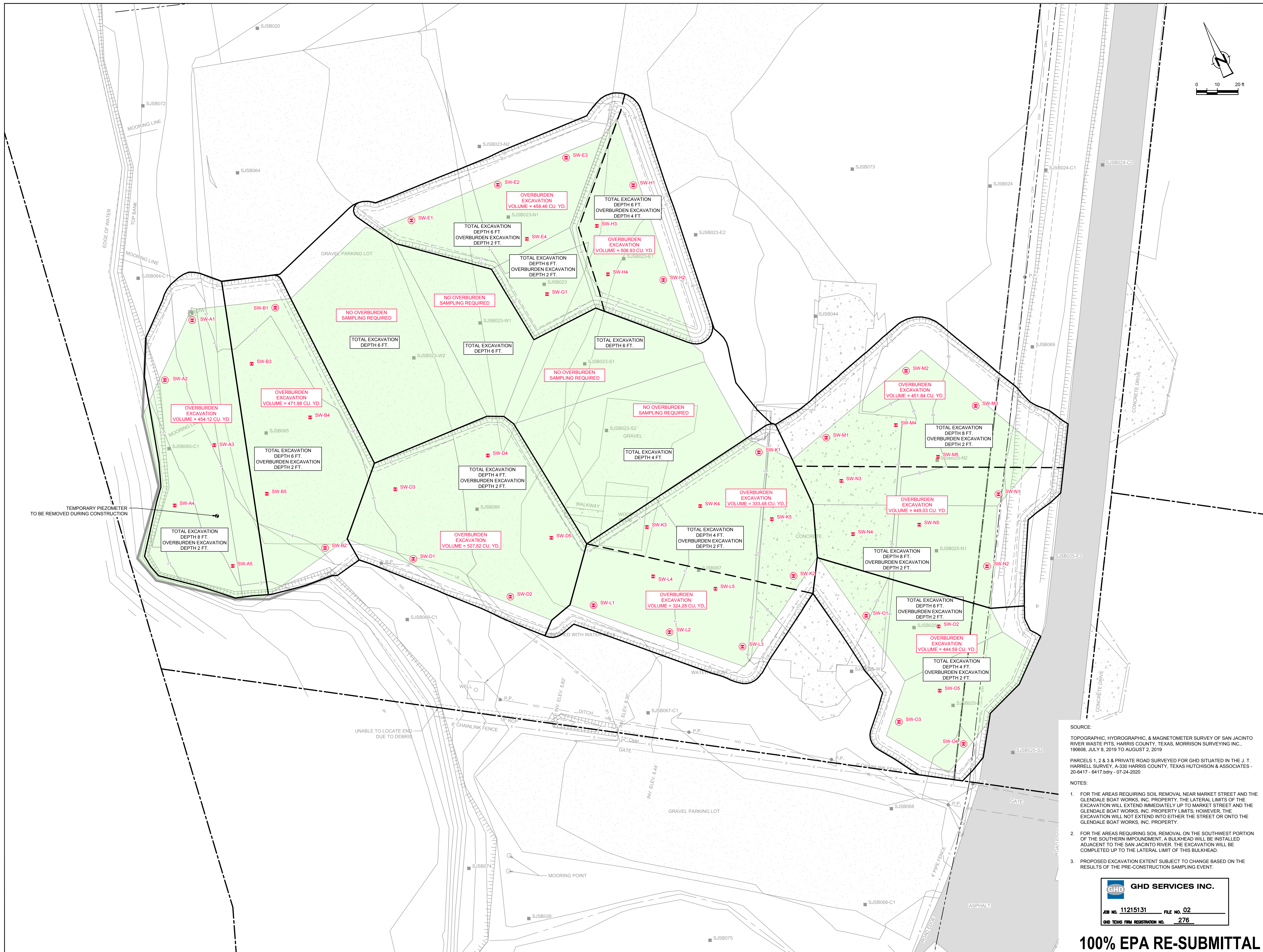
NOTES:  
 1. PROPOSED RESTORATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**

JOB NO. **11215131** FILE NO. **02**

GHD TEXAS FIRM REGISTRATION NO. **276**

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**LEGEND**

---	PROPERTY BOUNDARY
---	PROPERTY EASEMENT
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PD/R1 BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	AREA OF IMPACT
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	EXCAVATION CONTOUR INTERVAL
---	EXCAVATION TOP OF BANK
---	EXCAVATION TOE OF SLOPE
---	POLYGON LIMITS (WITH ADDITIONAL SIDE SLOPE AREAS)
---	SAMPLING GRIDS (±500 CY) WITHIN POLYGONS
---	PRE-CONSTRUCTION SIDEWALL OVERBURDEN CONFIRMATION BORING LOCATIONS
---	PRE-CONSTRUCTION OVERBURDEN CONFIRMATION BORING LOCATIONS

**SAN JACINTO RIVER WASTE PITS**  
 Project: **FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting	BP	Design	LL
Check		Check	
Project Coordinator	CM	Date	Apr 15, 2021
Original Size	Arch D	Scale	1" = 20'
		Bar is one inch on original size drawing	0 1"

Project No. **11215131**  
 Title

**SOUTHWEST EXCAVATION AREA OVERBURDEN SAMPLING PLAN**

Sheet No.

**C-31**

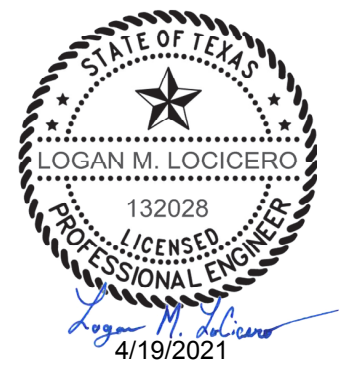
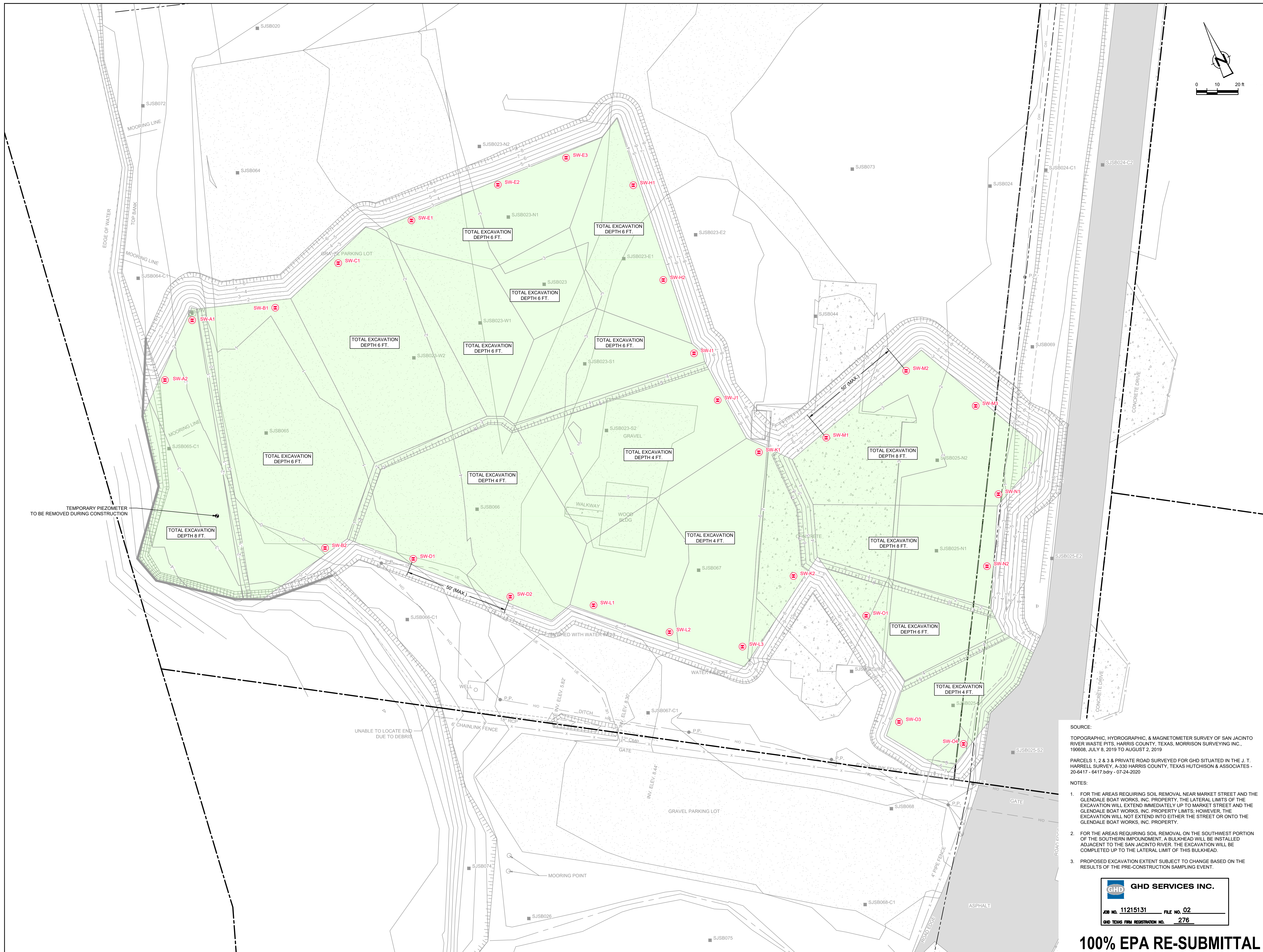
SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.

PARCELS 1, 2 & 3 A PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

- NOTES:
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  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. **11215131** FILE NO. **02**  
 GHD TEXAS FIRM REGISTRATION NO. **276**

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**LEGEND**

---	PROPERTY BOUNDARY
---	PROPERTY EASEMENT
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PDIRI BORING LOCATION
---	MONITORING WELL
---	POWER POLE
---	LIGHT POLE
---	WELL
---	AREA OF IMPACT
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	EXCAVATION CONTOUR INTERVAL
---	EXCAVATION TOP OF BANK
---	EXCAVATION TOE OF SLOPE
---	PRE-CONSTRUCTION SIDEWALL
---	CONFIRMATION BORING LOCATIONS

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH  
 Drafting BP Design Check LL

Project Coordinator CM Date Apr 15, 2021  
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Original Size Arch D Bar is one inch on original size drawing 0 1"

Project No. 11215131  
 Title

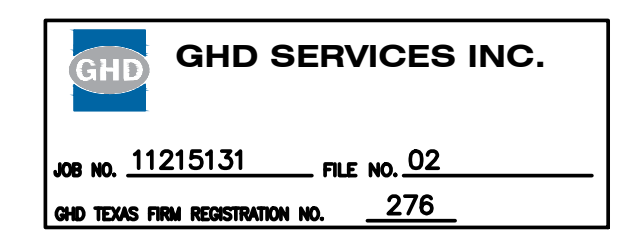
**SOUTHWEST EXCAVATION AREA SIDEWALL SAMPLING PLAN**

Sheet No.

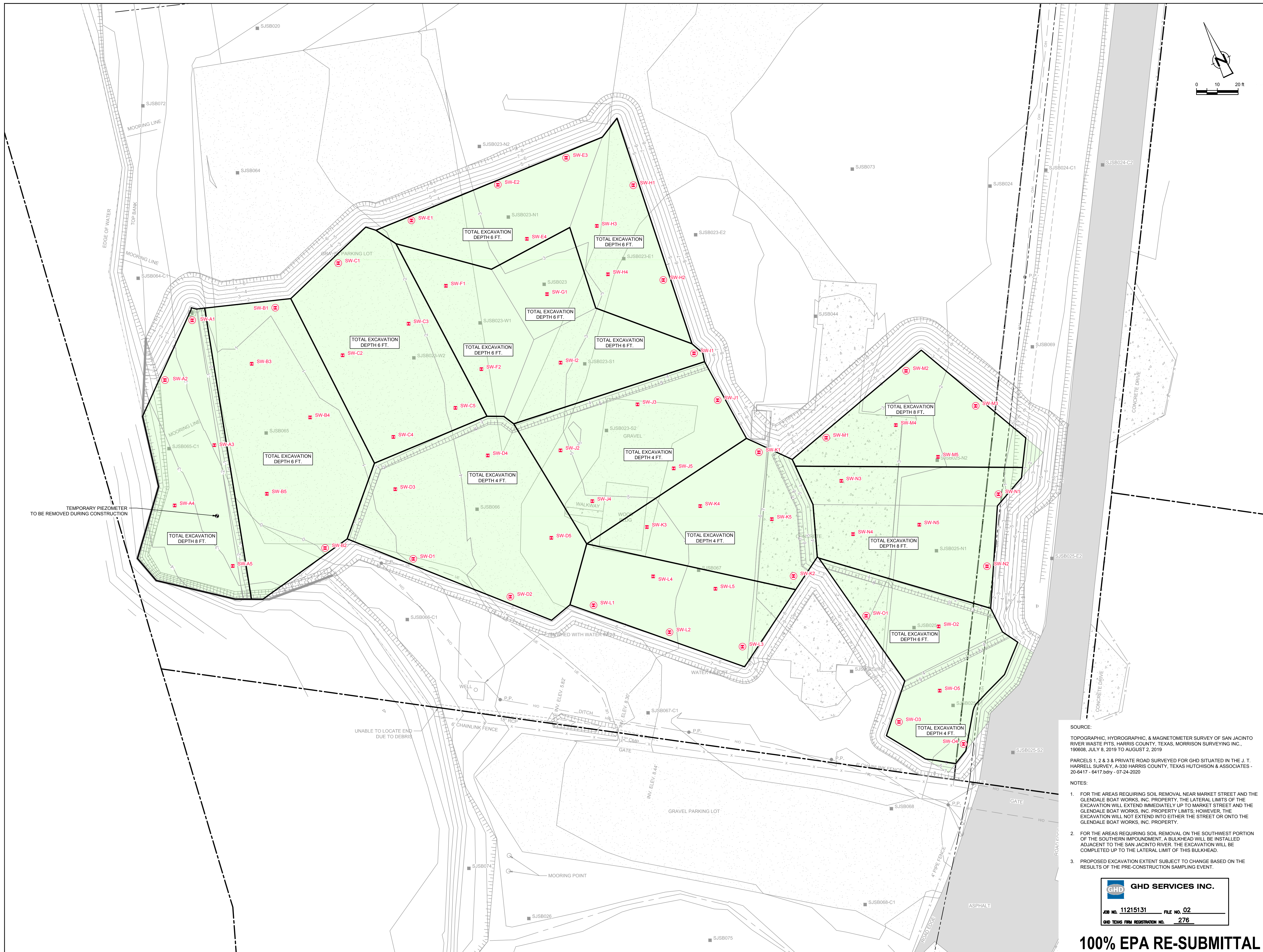
**C-32**

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.  
 PARCELS 1, 2 & 3 A PRIVATE ROAD SURVEY FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

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  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.



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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCE LINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/R1 BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	SAMPLING GRIDS (MAX. 500 CY)
	PRE-CONSTRUCTION SIDEWALL
	BASE OF EXCAVATION
	CONFIRMATION BORING LOCATIONS
	PRE-CONSTRUCTION BASE OF EXCAVATION
	CONFIRMATION BORING LOCATIONS

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
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Original Size	Bar is one inch on original size drawing		
<b>Arch D</b>		0 1"	

Project No. 11215131  
 Title

**SOUTHWEST EXCAVATION AREA BOTTOM OF EXCAVATION SAMPLING PLAN**

Sheet No.

**C-33**

Sheet 34 of 49

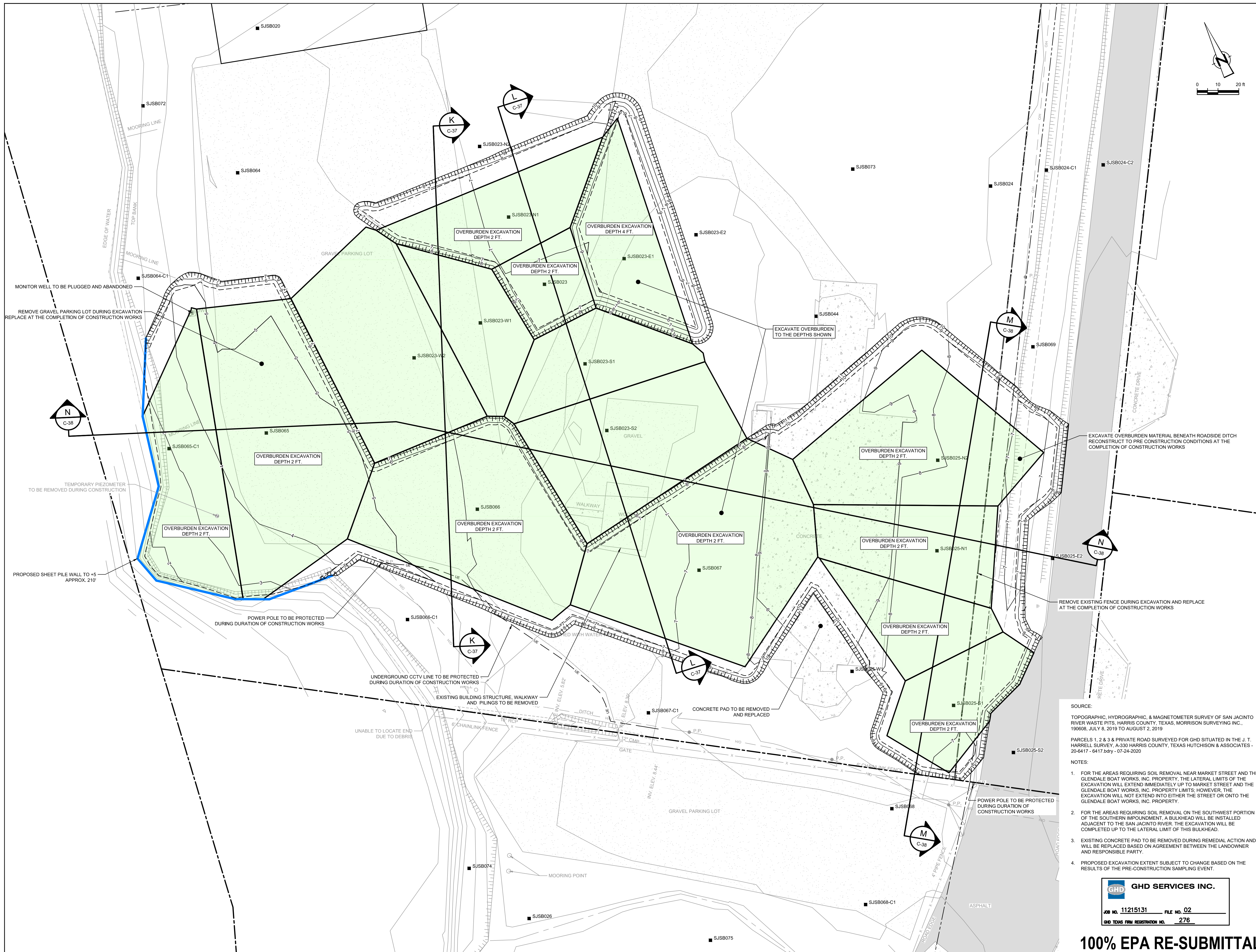
SOURCE:  
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**GHD SERVICES INC.**  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/R1 BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
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Original Size	Arch D		
		Bar is one inch on original size drawing	

Project No. 11215131  
 Title

**SOUTHWEST EXCAVATION AREA OVERBURDEN EXCAVATION PLAN**

Sheet No.

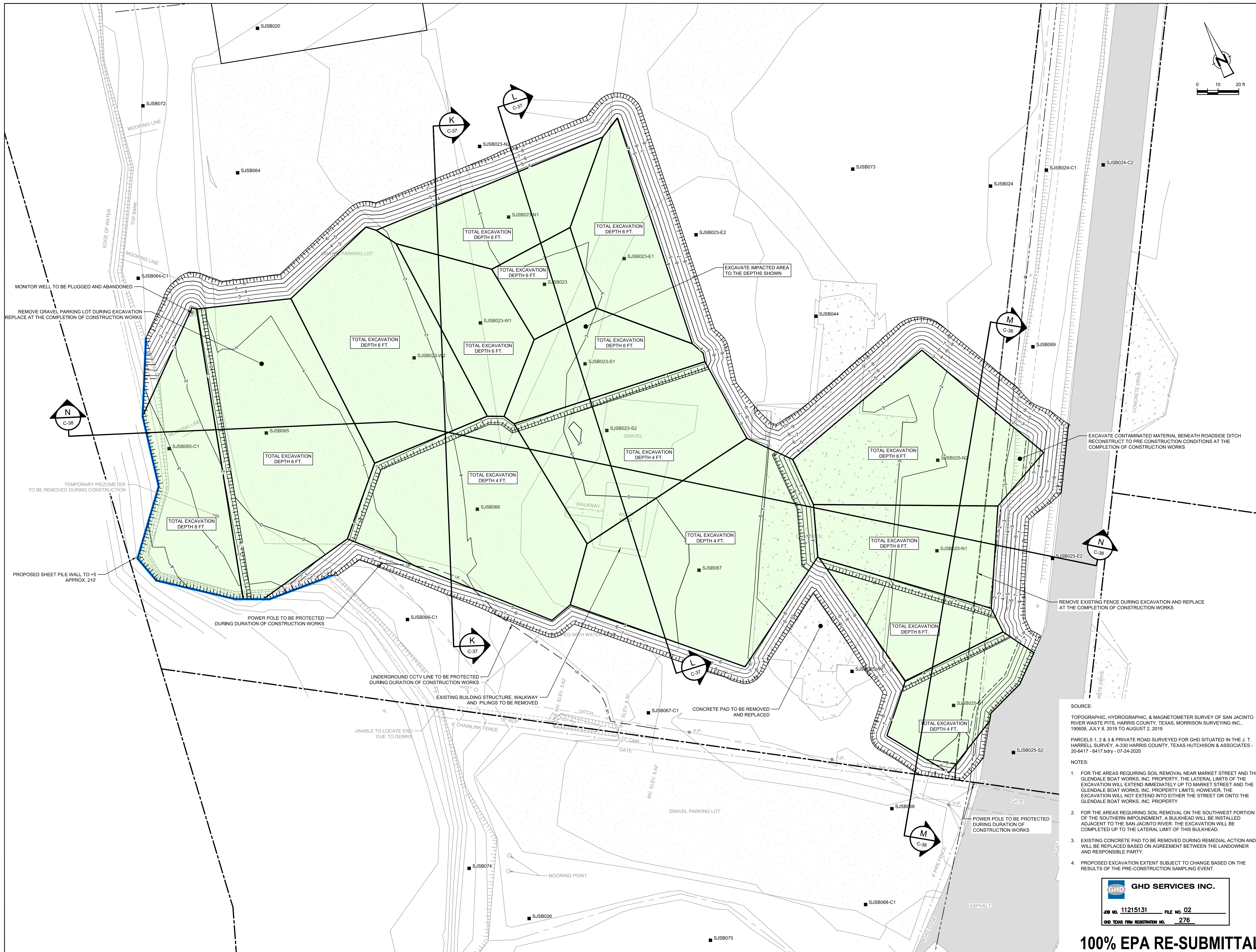
**C-34**

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019  
 PARCELS 1, 2 & 3 PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417-0417-07-24-2020

NOTES:  
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 3. EXISTING CONCRETE PAD TO BE REMOVED DURING REMEDIAL ACTION AND WILL BE REPLACED BASED ON AGREEMENT BETWEEN THE LANDOWNER AND RESPONSIBLE PARTY.  
 4. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. 11215131 FILE NO. 02  
 GHD TEXAS FIRM REGISTRATION NO. 276

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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/RI BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
7	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
6	100% EPA SUBMITTAL	MW	RH	12/18/2020

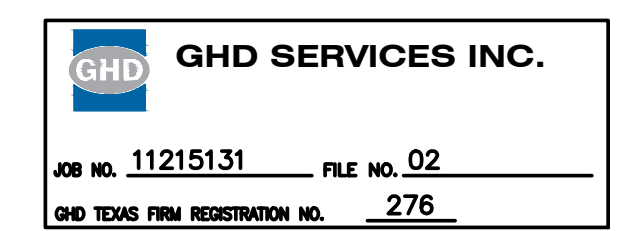
Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
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Original Size	Arch D		
Bar is one inch on original size drawing		0 1"	

Project No. 11215131  
 Title  
**SOUTHWEST EXCAVATION AREA FINAL EXCAVATION PLAN**

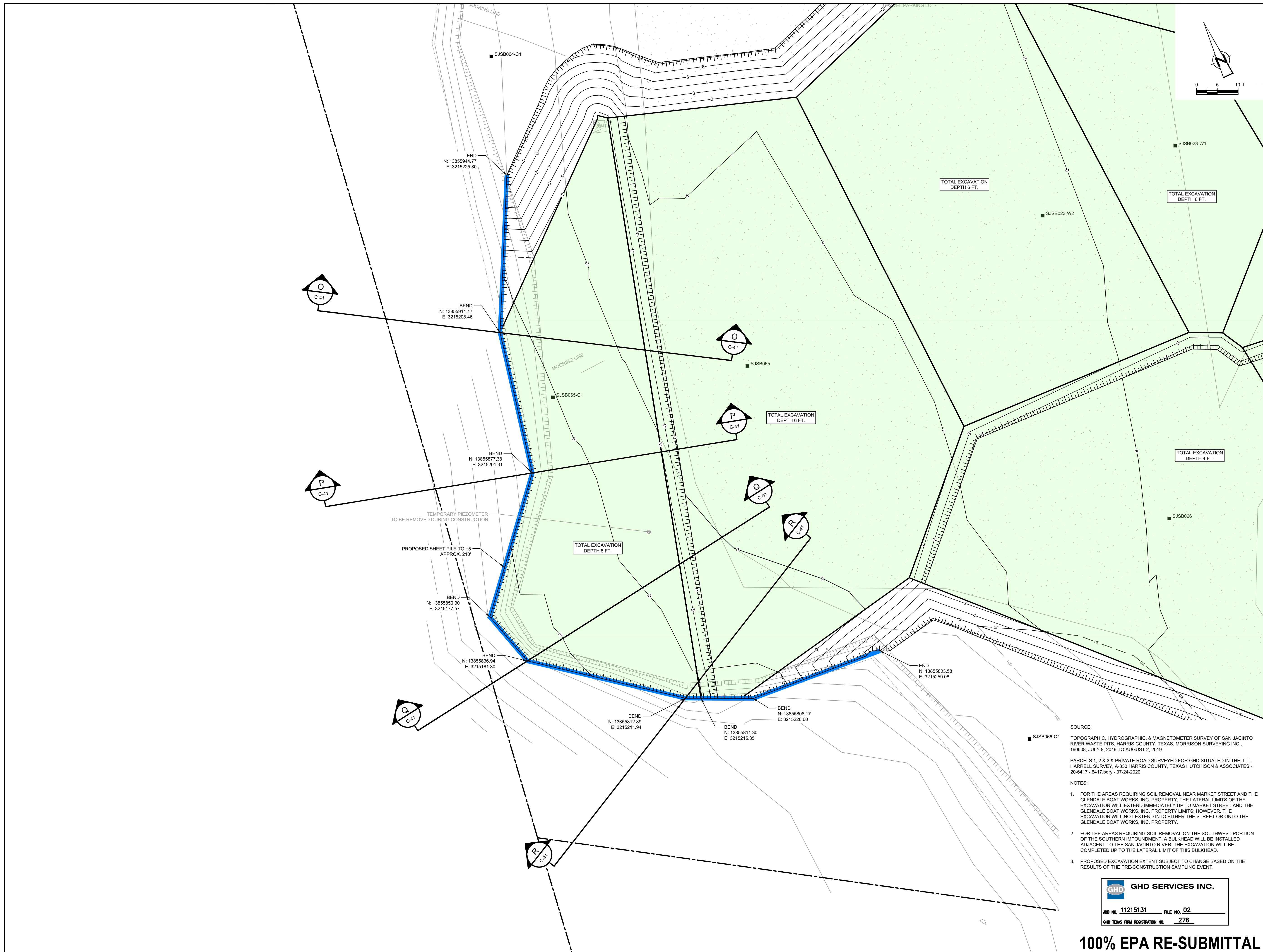
Sheet No.  
**C-35**  
 Sheet 36 of 49

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019  
 PARCELS 1, 2 & 3 PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.sdrwy - 07-24-2020

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 4. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.



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**LEGEND**

---	PROPERTY BOUNDARY
---	PROPERTY EASEMENT
---	EXISTING CONTOUR INTERVAL
---	FENCELINE
---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL
---	GUARDRAIL
---	UNDERGROUND CCTV LINE
---	UNDERGROUND CCTV LINE
● SJSB002	PDIRI BORING LOCATION
● MW	MONITORING WELL
● P.P.	POWER POLE
● L.P.	LIGHT POLE
○ WELL	WELL
---	AREA OF IMPACT
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	EXCAVATION CONTOUR INTERVAL
---	EXCAVATION TOP OF BANK
---	EXCAVATION TOE OF SLOPE
---	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**  
Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
7	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
6	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn MW Designer RH

Drafting Check BP Design Check LL

Project Coordinator CM Date Apr 15, 2021

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Scale 1" = 10'

Original Size  
**Arch D**  
Bar is one inch on original size drawing  
0 1"

Project No. 11215131  
Title  
**SOUTHWEST EXCAVATION AREA SHEET PILE WALL EXCAVATION PLAN**

Sheet No.  
**C-36**

SOURCE:  
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.  
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GHD SERVICES INC.  
JOB NO. 11215131 FILE NO. 02  
GHD TEXAS FIRM REGISTRATION NO. 276

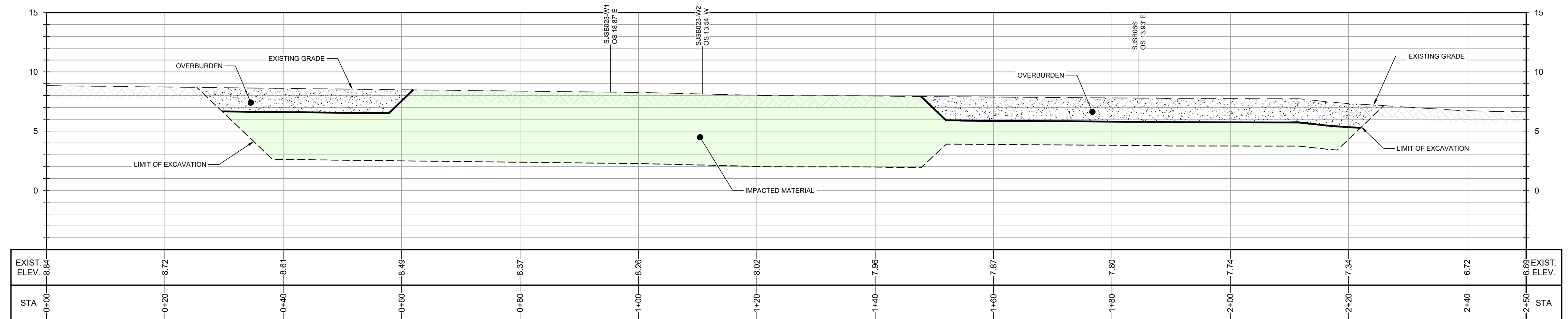
**100% EPA RE-SUBMITTAL**



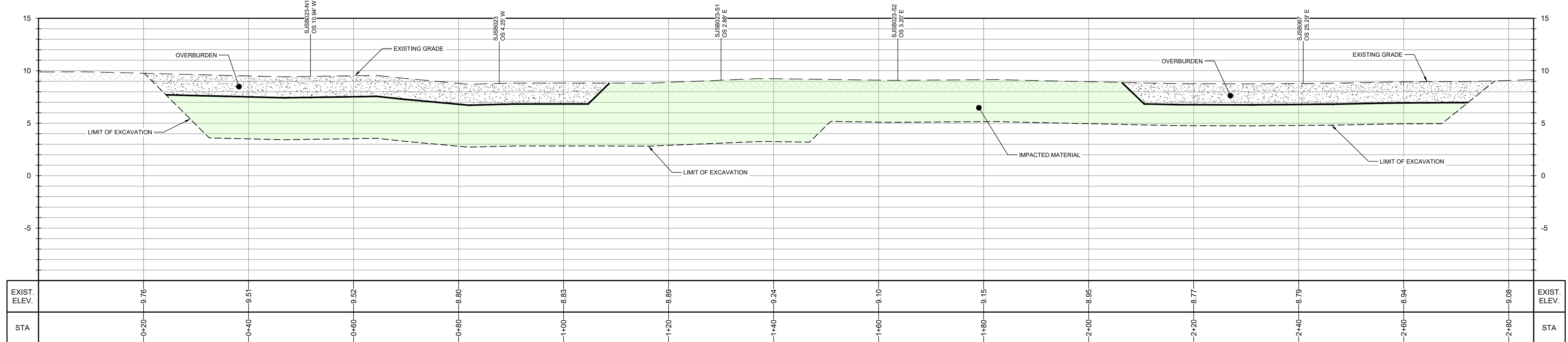
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**SECTION K**  
HORIZ: 1"=10'  
VERT: 1"=5'



**SECTION L**  
HORIZ: 1"=10'  
VERT: 1"=5'

NOTES:  
1. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
JOB NO. 11215131 FILE NO. 02  
GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**

Client  
**SAN JACINTO RIVER WASTE PITS**  
Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
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Original Size	Arch D Bar is one inch on original size drawing 0 1"		

Project No. 11215131  
Title  
**SOUTHWEST EXCAVATION AREA EXCAVATION SECTIONS 1 OF 2**

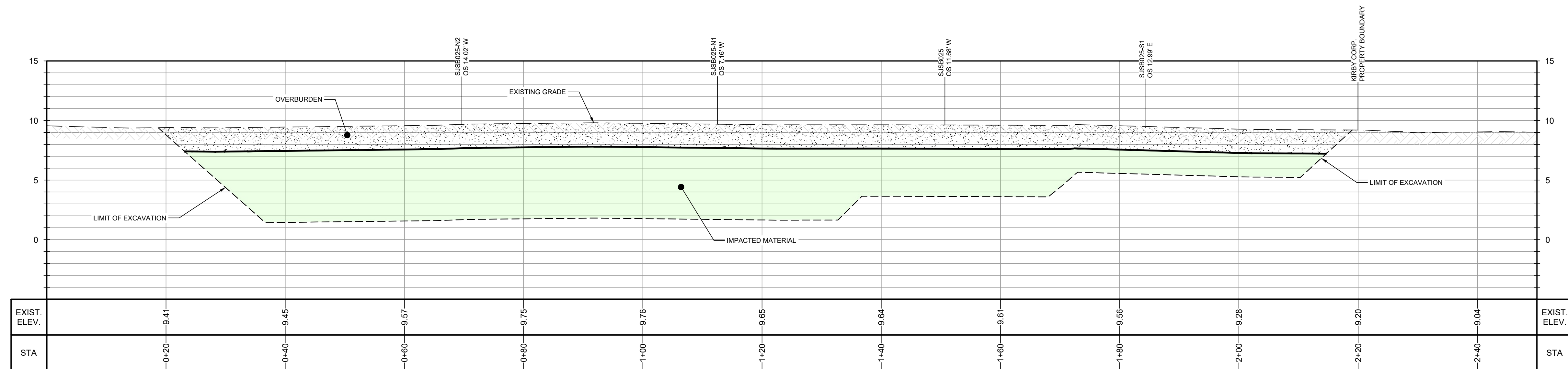
Sheet No.  
**C-37**



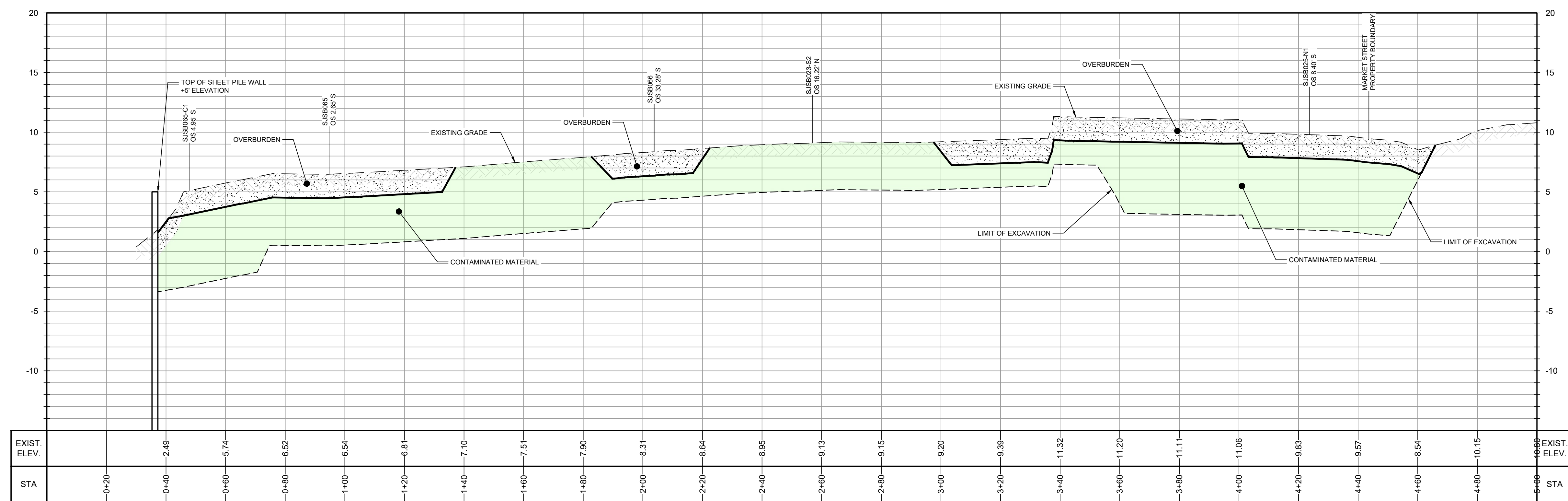
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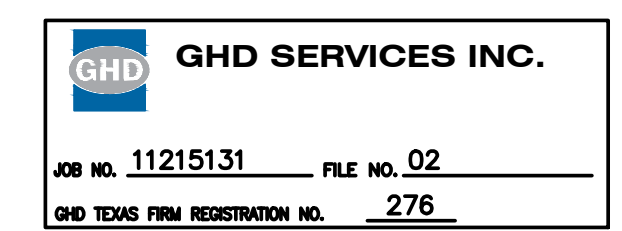


**SECTION M**  
HORIZ: 1"=10'  
VERT: 1"=5'



**SECTION N**  
HORIZ: 1"=20'  
VERT: 1"=5'

NOTES:  
1. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.



**100% EPA RE-SUBMITTAL**

Client  
**SAN JACINTO RIVER WASTE PITS**

Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

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5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

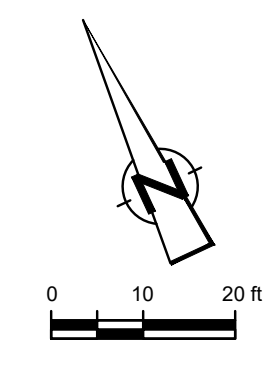
Drawn MW Designer RH  
Drafting Check BP Design Check LL  
Project Coordinator CM Date Apr 15, 2021

This document shall not be used for construction unless signed and sealed for construction.  
Scale AS SHOWN  
Original Size Arch D Bar is one inch on original size drawing

Project No. 11215131  
Title

**SOUTHWEST EXCAVATION AREA EXCAVATION SECTIONS 2 OF 2**

Sheet No.  
**C-38**  
Sheet 39 of 49



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**LEGEND**

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---	PROPERTY EASEMENT
---	EXISTING CONTOUR INTERVAL
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---	SHORELINE
---	TOP OF BANK
---	TOE OF SLOPE
---	OVERHEAD ELECTRICAL GUARDRAIL
---	UNDERGROUND CCTV LINE
---	PD/RI BORING LOCATION
●	MONITORING WELL
●	POWER POLE
●	LIGHT POLE
○	WELL
---	ASPHALT
---	CONCRETE
---	GRAVEL
---	RESTORATION CONTOUR INTERVAL
---	RESTORATION LIMIT
---	SHEET PILE WALL ALIGNMENT

Client  
**SAN JACINTO RIVER WASTE PITS**  
 Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
5	100% EPA RE-SUBMITTAL	MW	RH	04/19/2021
4	100% EPA SUBMITTAL	MW	RH	12/18/2020

Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021

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 0 1"

Project No. **11215131**  
 Title  
**SOUTHWEST EXCAVATION AREA RESTORATION PLAN**

Sheet No.  
**C-39**

SOURCE:  
 TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 6, 2019 TO AUGUST 2, 2019  
 PARCELS 1, 2 & 3 PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

- NOTES:  
 1. PROPOSED RESTORATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
 JOB NO. **11215131** FILE NO. **02**  
 GHD TEXAS FIRM REGISTRATION NO. **276**

**100% EPA RE-SUBMITTAL**

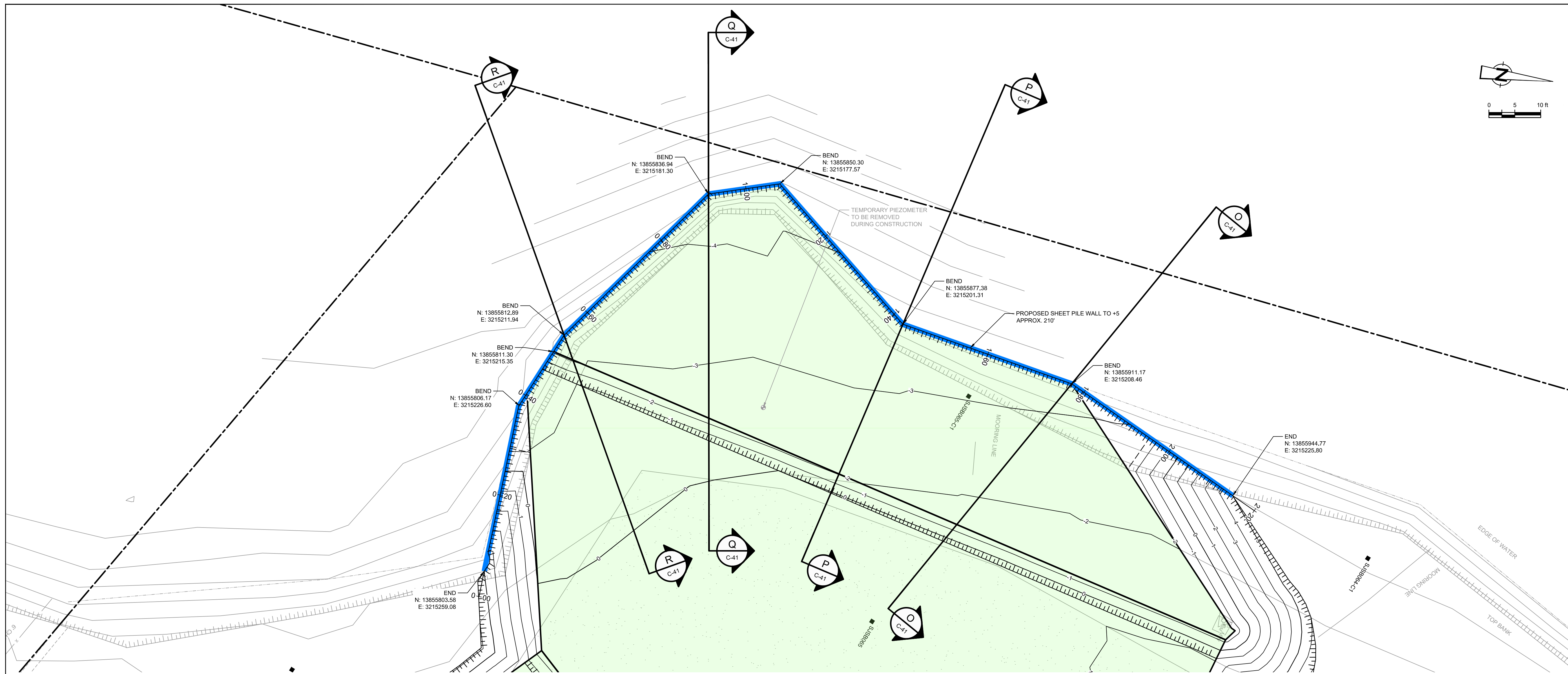


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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PD/R/BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	ASPHALT
	CONCRETE
	GRAVEL
	EXCAVATION CONTOUR INTERVAL
	EXCAVATION TOP OF BANK
	EXCAVATION TOE OF SLOPE
	SHEET PILE WALL ALIGNMENT



PLAN  
1" = 10'

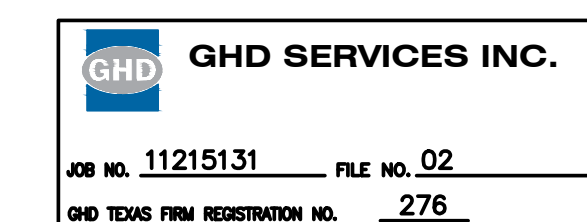
Client  
**SAN JACINTO RIVER WASTE PITS**  
Project  
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6	100% EPA SUBMITTAL	MW	SC	12/18/2020

Drawn MW Designer RH  
Drafting Check BP Design Check LL  
Project Coordinator CM Date Apr 15, 2021  
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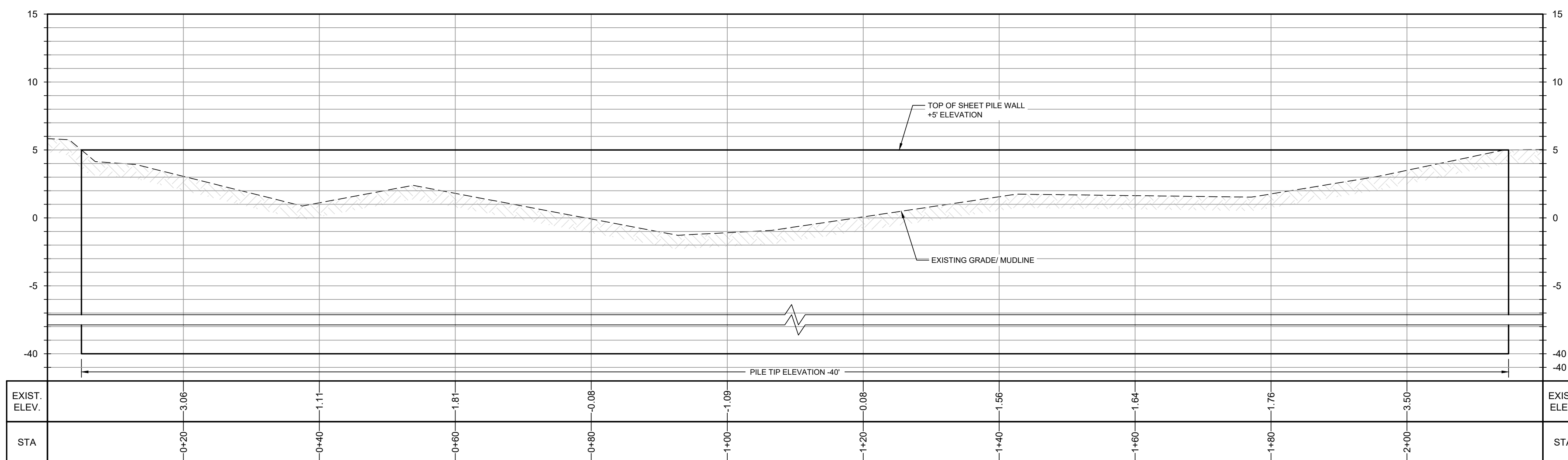
SOURCE:  
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019.  
PARCELS 1, 2 & 3 PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdry - 07-24-2020

- NOTES:
- FOR THE AREAS REQUIRING SOIL REMOVAL NEAR MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY, THE LATERAL LIMITS OF THE EXCAVATION WILL EXTEND IMMEDIATELY UP TO MARKET STREET AND THE GLENDALE BOAT WORKS, INC. PROPERTY LIMITS; HOWEVER, THE EXCAVATION WILL NOT EXTEND INTO EITHER THE STREET OR ONTO THE GLENDALE BOAT WORKS, INC. PROPERTY.
  - FOR THE AREAS REQUIRING SOIL REMOVAL ON THE SOUTHWEST PORTION OF THE SOUTHERN IMPOUNDMENT, A BULKHEAD WILL BE INSTALLED ADJACENT TO THE SAN JACINTO RIVER. THE EXCAVATION WILL BE COMPLETED UP TO THE LATERAL LIMIT OF THIS BULKHEAD.
  - PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.



**100% EPA RE-SUBMITTAL**

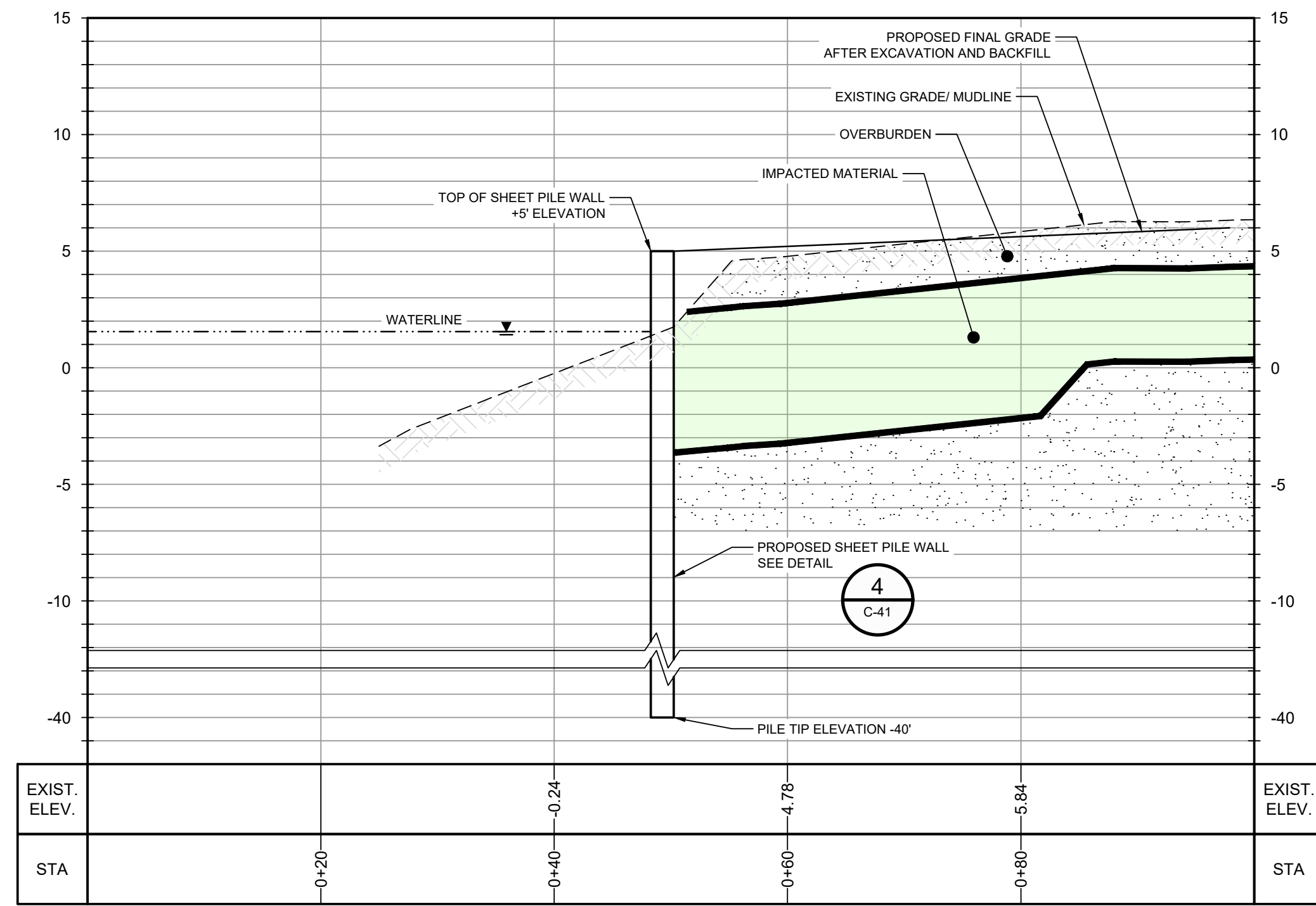
**C-40**



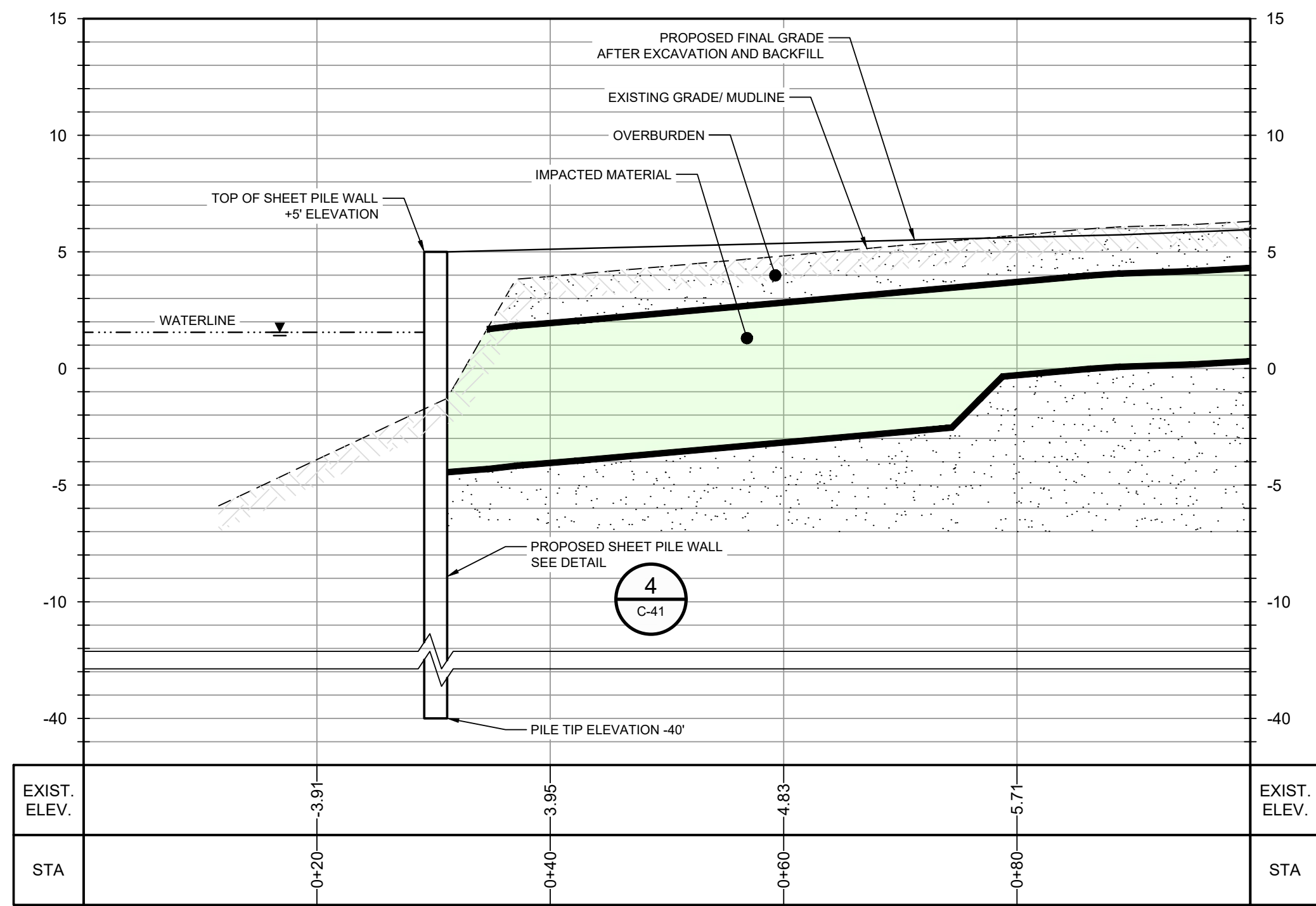
PROFILE  
HORIZ: 1" = 10'  
VERT: 1" = 5'



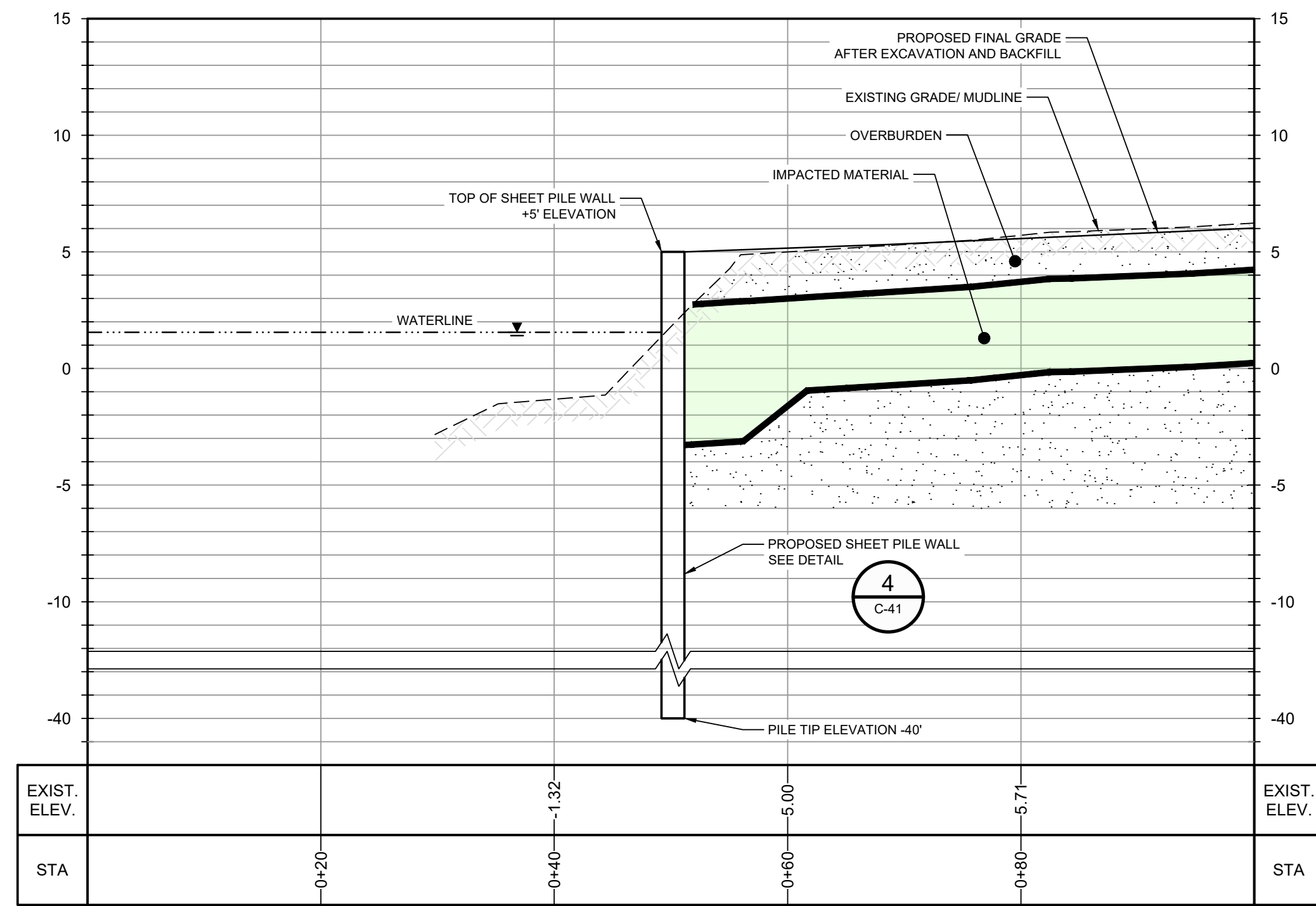
**SECTION O**  
 HORIZ: 1"=10'  
 VERT: 1"=5'



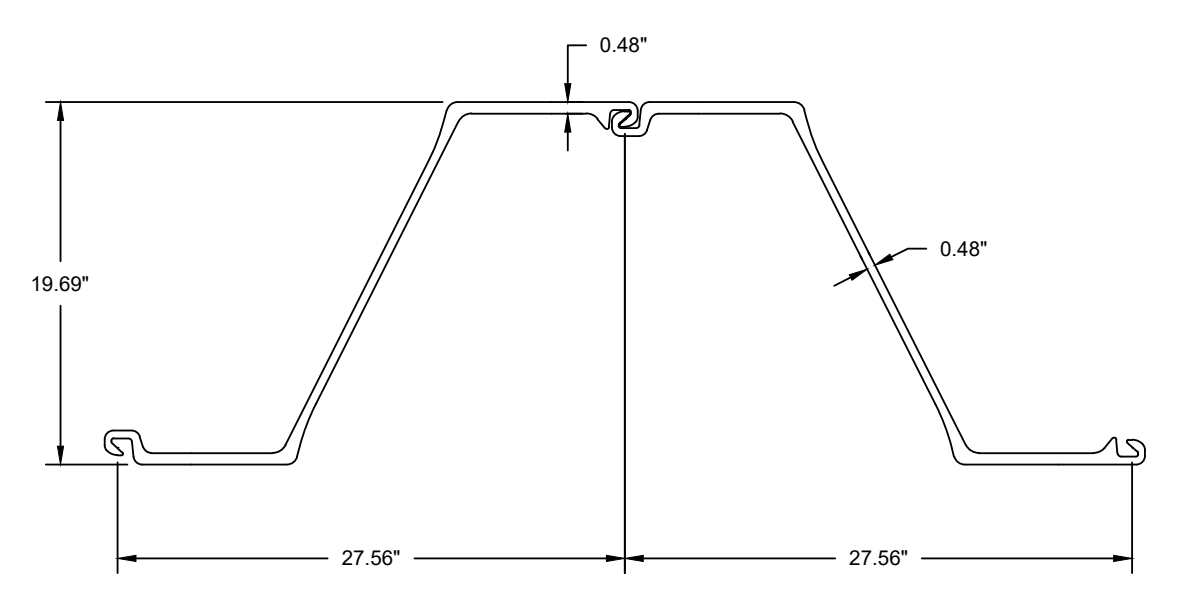
**SECTION P**  
 HORIZ: 1"=10'  
 VERT: 1"=5'



**SECTION Q**  
 HORIZ: 1"=10'  
 VERT: 1"=5'



**SECTION R**  
 HORIZ: 1"=10'  
 VERT: 1"=5'



**DETAIL 4 AZ SHEET PILE**  
 N.T.S.

- SHEET PILE NOTES:**
- USE AZ-26 700 SHEET PILE OR APPROVED EQUAL
  - SHEET PILE SHALL HAVE MINIMUM THICKNESS EQUAL TO OR GREATER THAN SHOWN IN DETAIL.
  - MINIMUM SECTION PROPERTIES SHALL BE:
    - A. SECTION MODULUS: 48.4 IN<sup>3</sup>/FT
    - B. MOMENT OF INERTIA: 437.3 IN<sup>4</sup>/FT

NOTES:  
 1. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

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 Project  
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Drafting Check	BP	Design Check	LL	
Project Coordinator	CM	Date	Apr 15, 2021	
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Project No. 11215131

Title  
**SHEET PILE SECTIONS AND DETAILS**

Sheet No.

**C-41**



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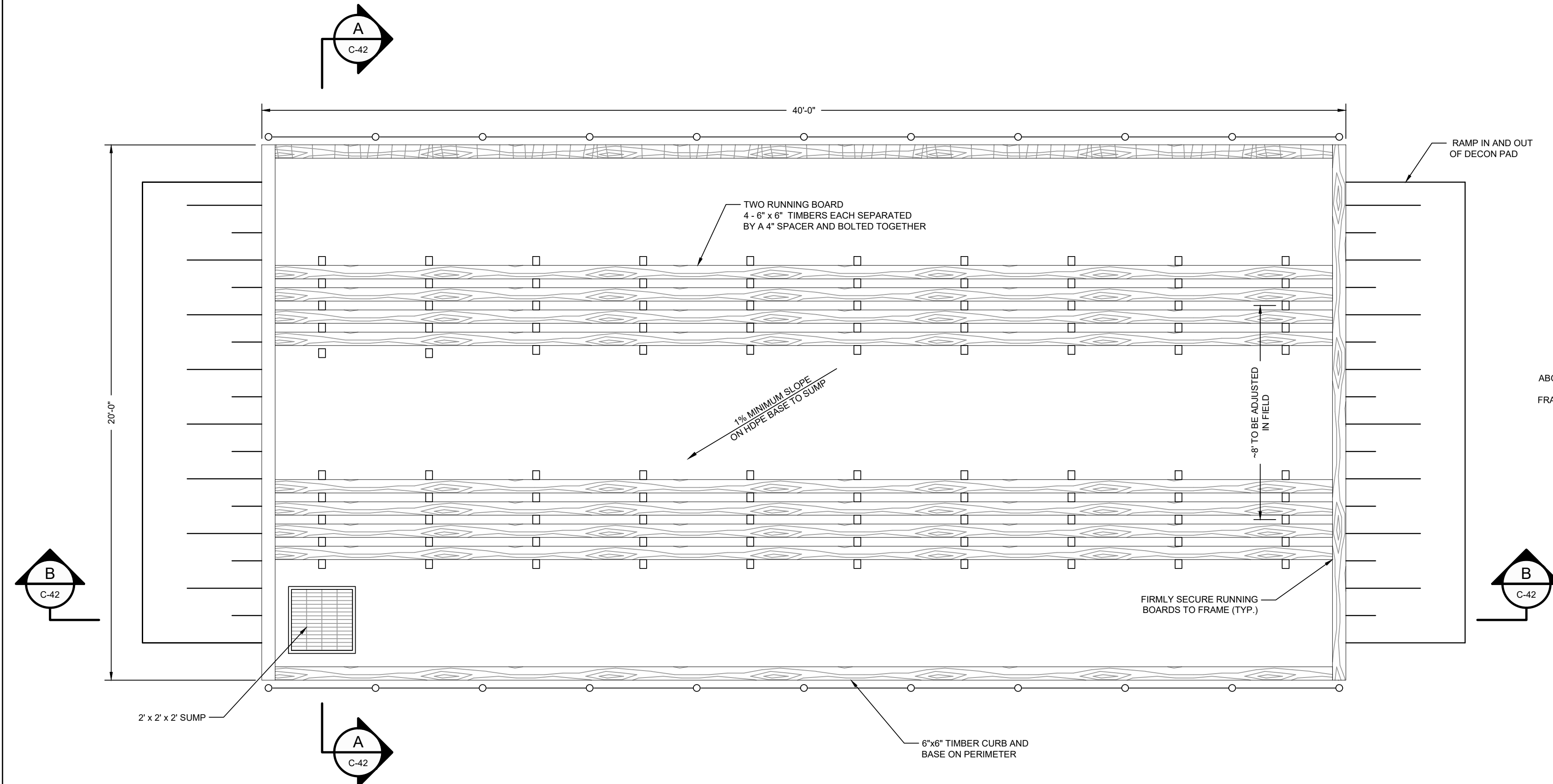
Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021

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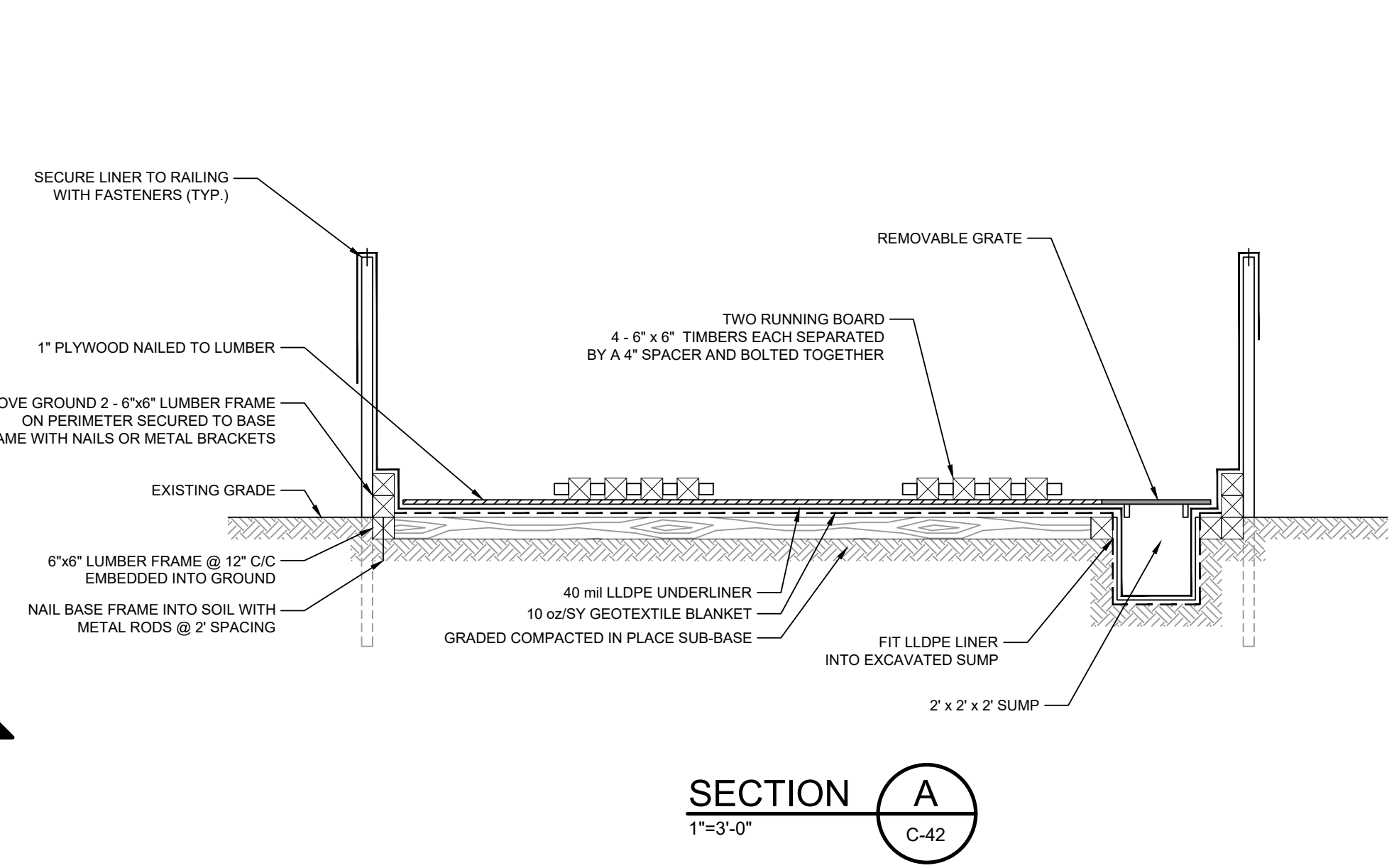
Project No. 11215131  
Title

**TYPICAL DETAILS 1 OF 3**

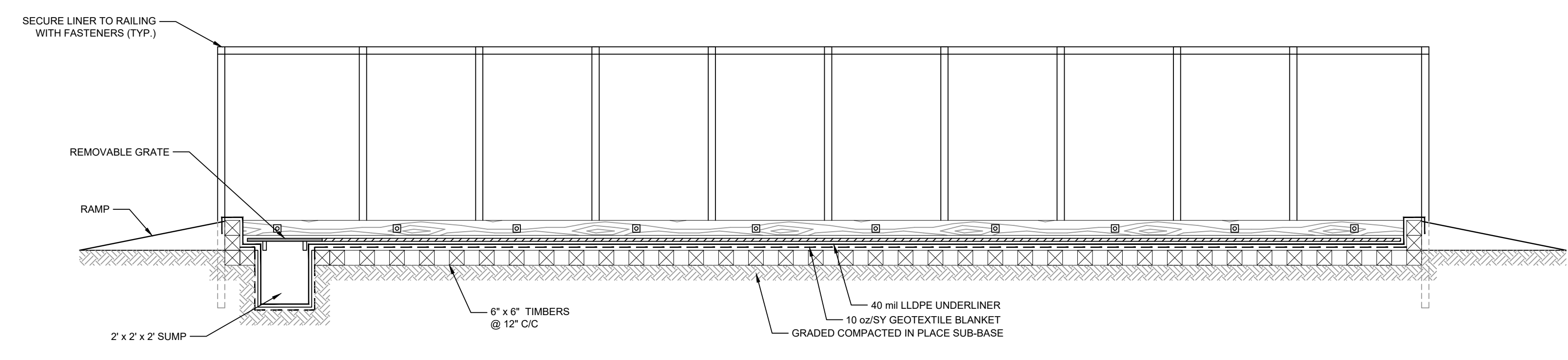
Sheet No.  
**C-42**



**PLAN**  
1"=3'-0"



**SECTION A**  
1"=3'-0"



**SECTION B**  
1"=3'-0"

NOTE:  
TEMPORARY EQUIPMENT DECONTAMINATION PAD SHOWN IS FOR ILLUSTRATION PURPOSES ONLY.  
CONTRACTOR TO PROVIDE SUBMITTAL PRIOR TO CONSTRUCTION THAT SHOULD MEET THE GENERAL INTENT OF THE CONTAINMENT AND COLLECTION OF WASH WATERS THAT SUITS THE NEEDS OF THE CONTRACTOR

**DETAIL 5 TEMPORARY EQUIPMENT DECONTAMINATION PAD**  
1"=3'-0"

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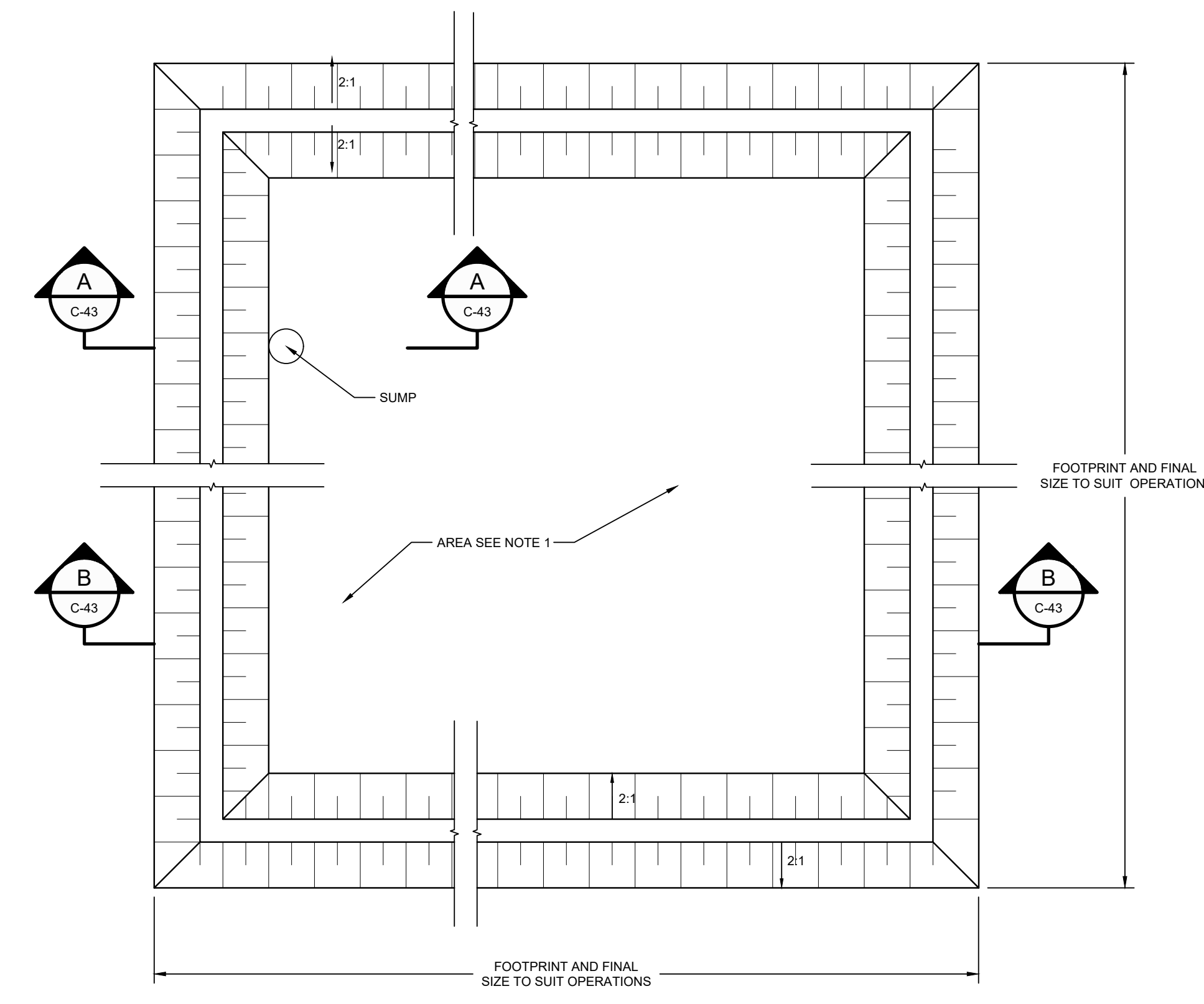
Drawn	MW	Designer	RH
Drafting Check	BP	Design Check	LL
Project Coordinator	CM	Date	Apr 15, 2021
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<b>Arch D</b>	0 1"		

Project No. 11215131

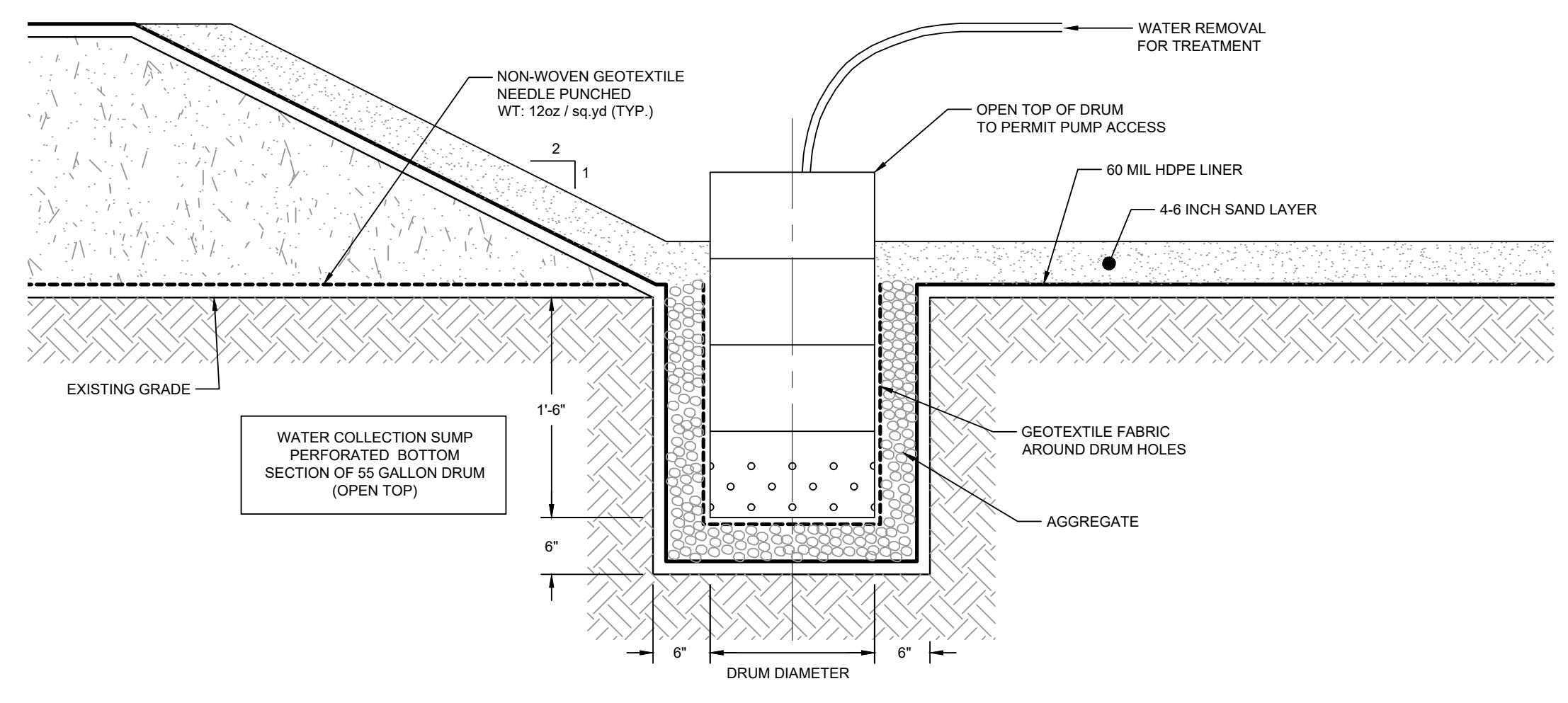
Title  
**TYPICAL DETAILS 2 OF 3**

Sheet No.

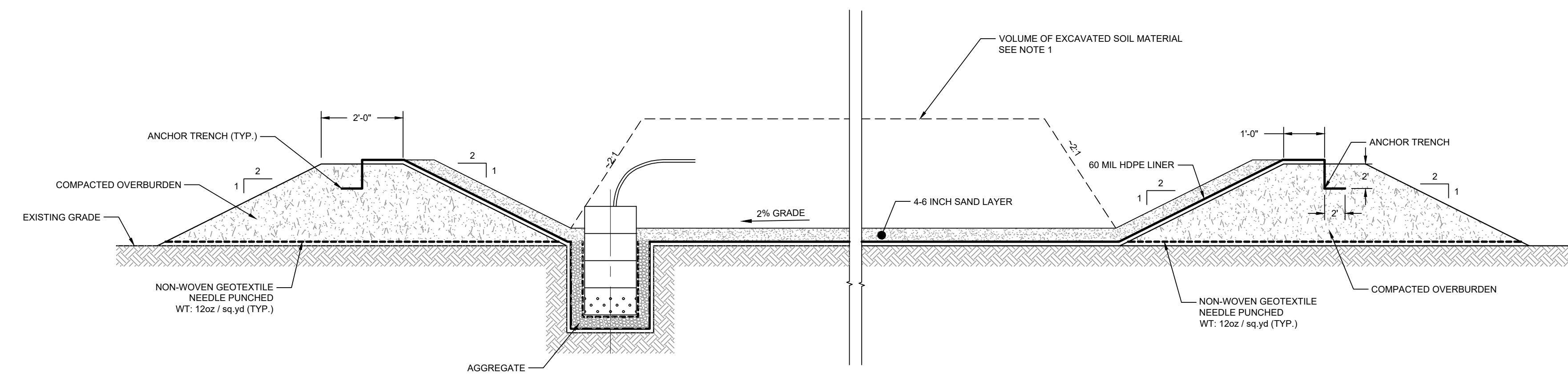
**C-43**  
Sheet 44 of 49



**PLAN**  
N.T.S.



**SECTION A SUMP**  
N.T.S.



**SECTION B**  
N.T.S.

**DETAIL 6 TEMPORARY DEWATERING FACILITY**  
N.T.S.

NOTES:  
1. TYPICAL DETAILS SHOWN AT DEWATERING AND SOLIDIFICATION AREA MAY BE REVISED BY THE CONTRACTOR. CONTRACTOR'S REVISED DETAILS SHALL BE SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION.

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Drawn **MW** Designer **RH**

Drafting **BP** Design Check **LL**

Project Coordinator **CM** Date **Apr 15, 2021**

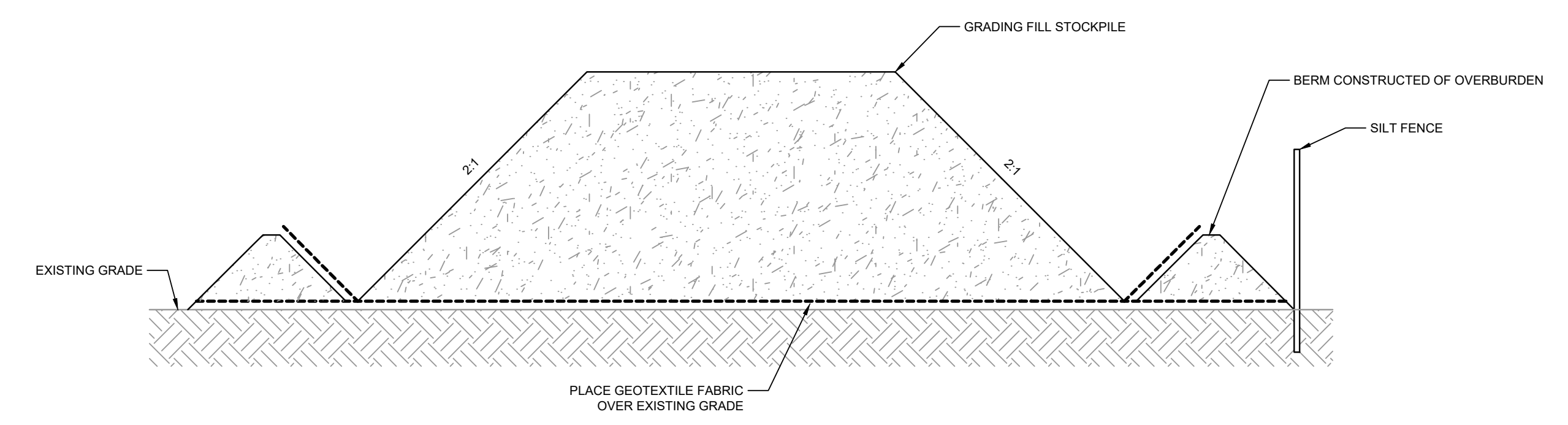
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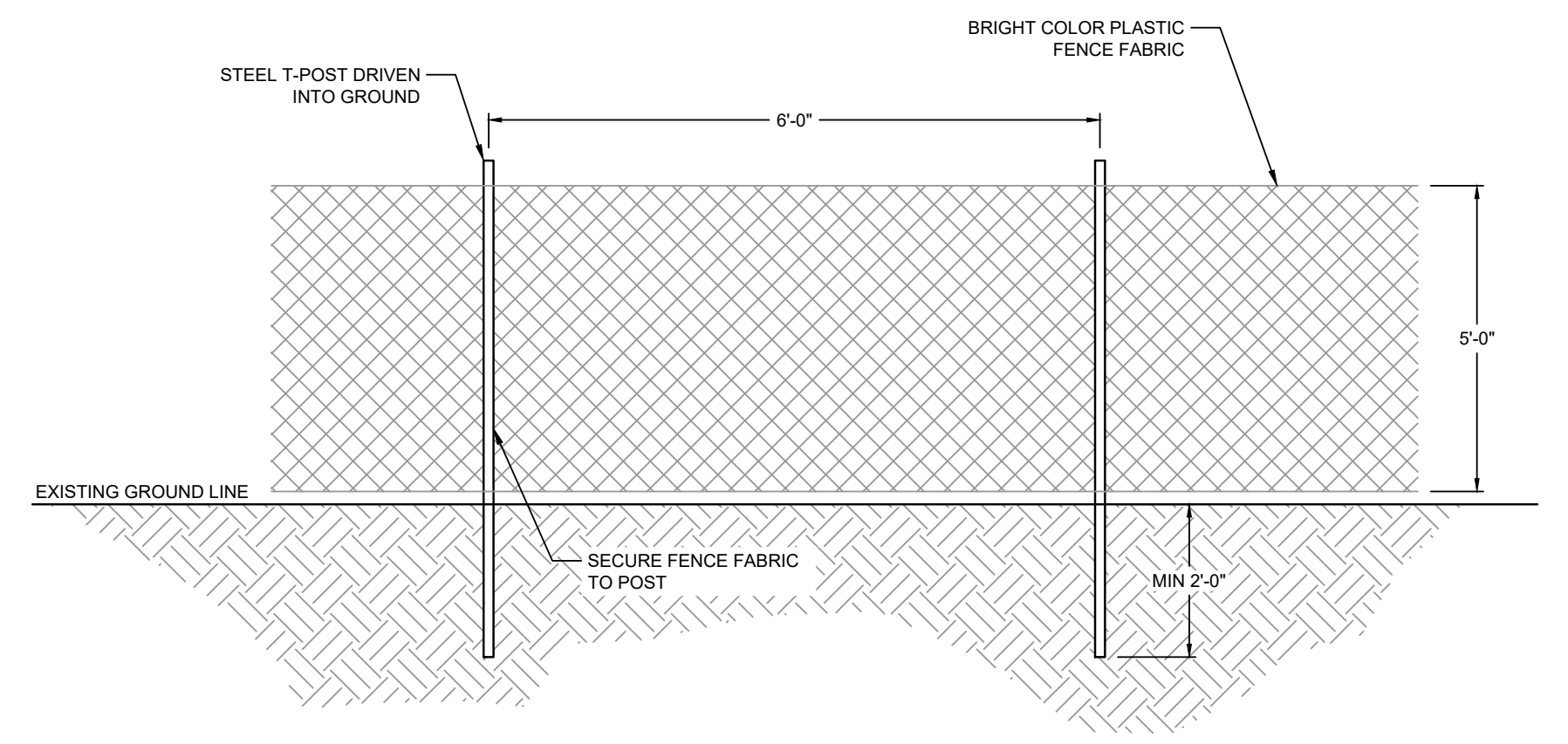
Title  
**TYPICAL DETAILS 3 OF 3**

Sheet No.  
**C-44**  
Sheet 45 of 49

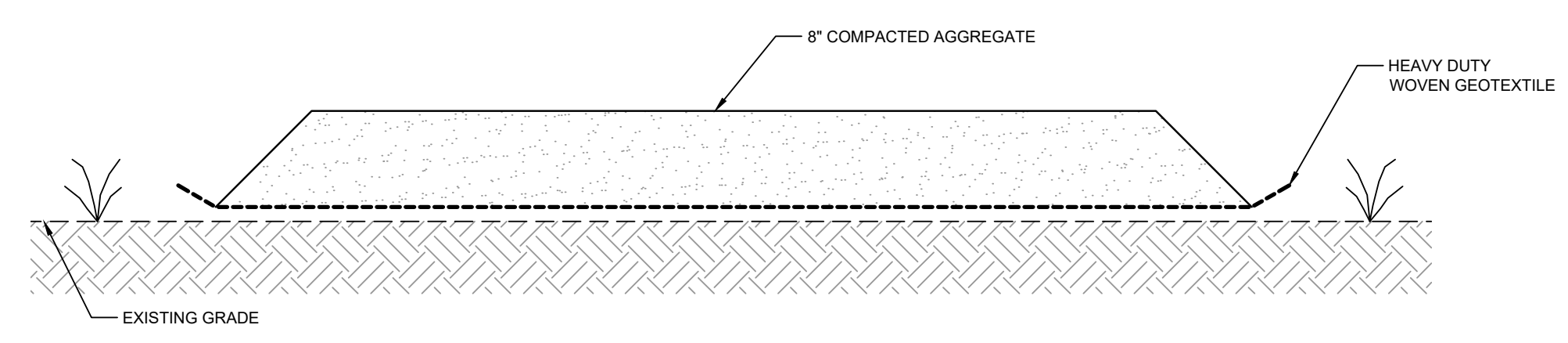


NOTE:  
TEMPORARY OVERBURDEN STOCKPILE SHOWN IS FOR ILLUSTRATION PURPOSES ONLY. CONTRACTOR TO PROVIDE SUBMITTAL PRIOR TO CONSTRUCTION THAT SHOULD MEET THE GENERAL INTENT OF THE CONTAINMENT AND COLLECTION OF WATER THAT SUITS THE NEEDS OF THE CONTRACTOR

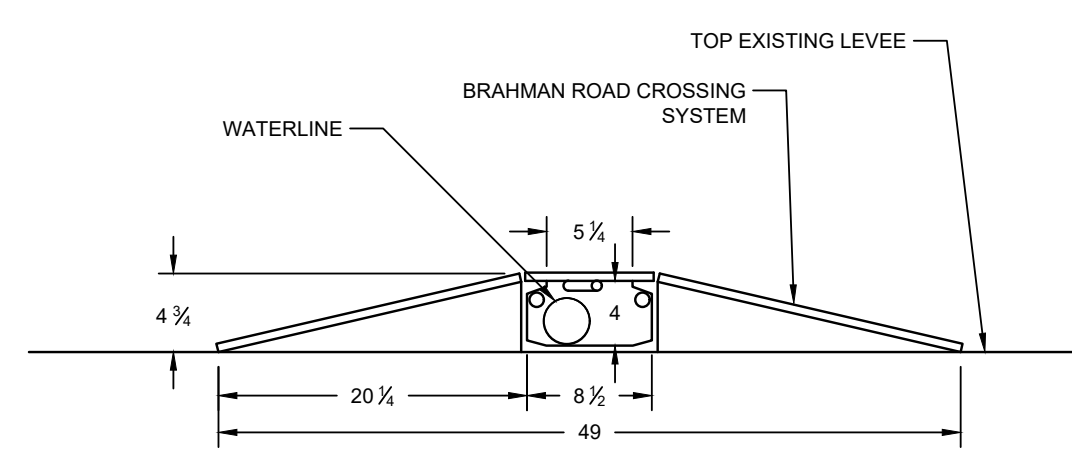
**DETAIL 7 TEMPORARY OVERBURDEN STOCKPILE**  
N.T.S. C-03



**DETAIL 8 TEMPORARY CONSTRUCTION FENCE AROUND EXCAVATIONS (TYP.)**  
N.T.S. C-03



**DETAIL 9 TEMPORARY GRAVEL ACCESS ROAD**  
N.T.S.



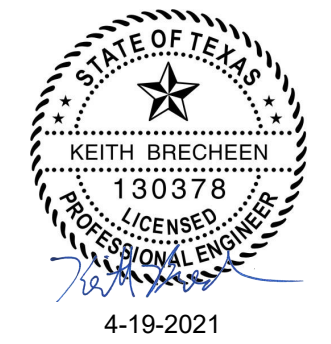
**DETAIL 10 TEMPORARY PIPE CROSSING PROTECTION**  
1"=1'-0"

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Drafting Check	MW	Design Check	NF
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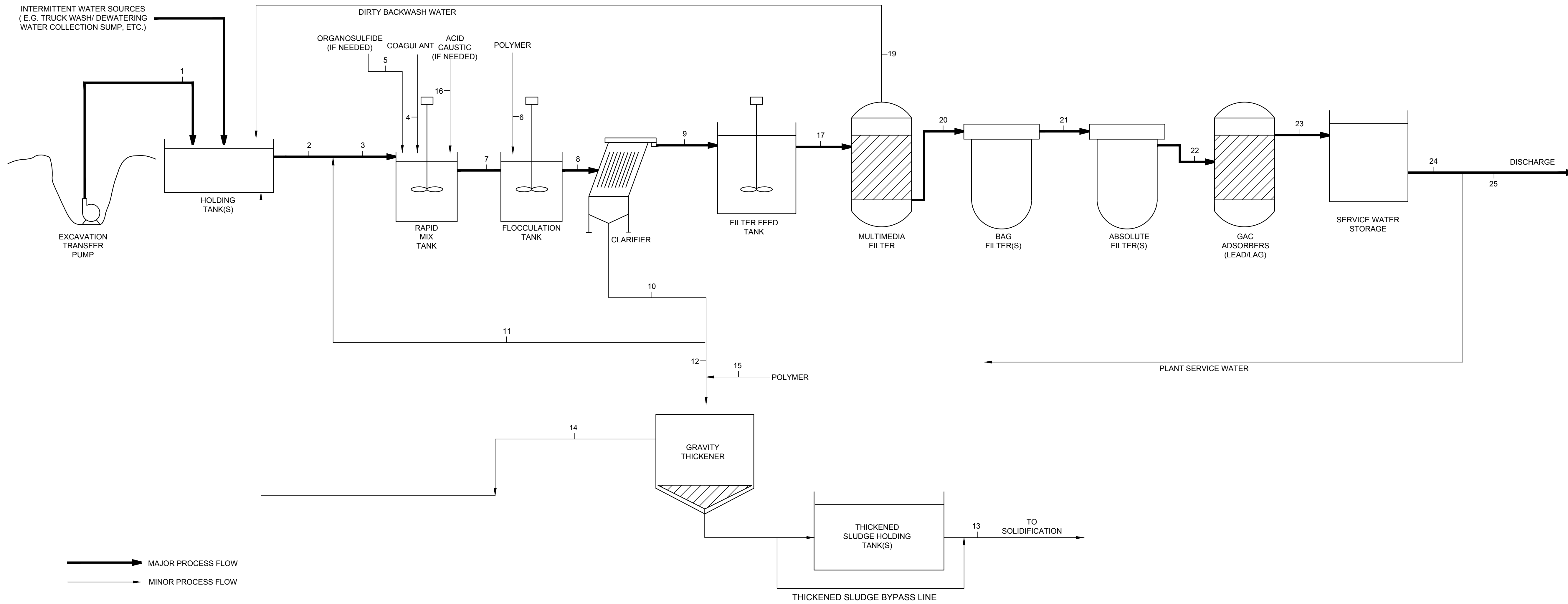
Project No. 11215131

Title  
**WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM/ MASS BALANCE**

Sheet No.

**P-01**

Sheet 46 of 49



WATER TREATMENT PLANT PROCESS STREAMS

Streams	Units	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Contact Water	Equalization Tank Effluent	Mix Tank Influent	Coagulant Feed	Organosulfide Feed	Clarifier Polymer Feed	Flocculation Tank Influent	Flocculation Tank Effluent	Clarifier Effluent	Clarifier Underflow	Sludge Recycle	Sludge to Thickener	Sludge to Stabilization	Decant to Front End	Thickener Polymer Feed	Acid/Caustic Feed	Sand Filter Feed	Clean Backwash	Dirty Backwash	Nominal Bag Filter Feed	Absolute Filter Feed	GAC Absorber Feed	Effluent Storage Tank Feed	Storage Tank Effluent	Discharge
Volumetric Flow	gpm	600	421	772	0.02	0.03	0.2	773	773	304	468	351	117	17	100	0.059	0.015	304	21	21	304	304	304	304	304	284
Maximum Volumetric Flow	gpm	600	421	772	2.50	2.5	2.5	773	773	304	468	351	117	17	100	2.5	2.5	304	760	760	304	304	304	304	304	284
Total Mass Flow	lb/hr	300,240	210,805	386,519	14	14	107	394,369	386,660	152,351	241,313	180,985	60,328	10,013	50,227	30	8	152,351	10,458	10,458	152,351	152,347	152,347	152,347	152,347	141,888
Suspended Solids	%	0.41%	0.29%	0.61%	5.00%	0.50%	1.00%	0.61%	0.61%	0.00%	1.00%	1.00%	1.00%	6.00%	0.01%	1.00%	10.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Chemical Feed	ppm				500.0	50.0	50.0									50.0	50.0									
Chem Solids Generation	lb/lb				0.3	0.3	0.01									0.01	0.1									
Chem Solids Generation	lb/hr				3.2	3.2	1.1									0.0	0.0									
Mass Flow Liquid	lb/hr	299,024	210,193	384,150	11	11	105	391,951	384,290	152,347	238,900	179,175	59,725	9,412	50,225	29	8	152,347	10,458	10,457	152,347	152,347	152,347	152,347	152,347	141,888
Mass Flow Solids	lb/hr	1,216	612	2,369	3.2	3.2	1.1	2,418	2,370	4.6	2,413	1,810	603	601	2.5	0.3	0.8	4.6	0.02	1.5	3.0	0.6	0.3	0.3	0.3	
Specific Gravity		1.0	1.0	1.0	1.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Density	lb/cf	62.4	62.4	62.4	81.1	62.4	62.4	63.6	62.4	62.4	64.3	64.3	64.3	74.9	62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4

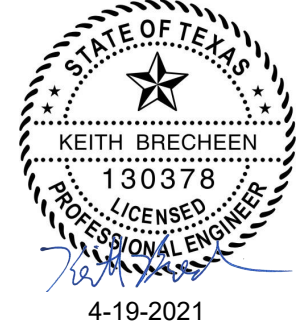
NOTE:  
1. SOME PROCESS FLOWS ARE AVERAGED OVER ESTIMATED TOTAL OPERATING CYCLE. PROCESS FLOW/MASS BALANCE SHOULD NOT BE USED FOR EQUIPMENT SIZING PURPOSES.  
2. TREATMENT IS 300 GPM PLUS RECYCLE FLOWS.  
3. THE TREATMENT SYSTEM DESIGNS ARE PRELIMINARY AND SUBJECT TO CHANGE. FINAL DESIGNS SHALL BE BASED ON CONTACT WATER FLOW RATE SELECTED BY THE CONTRACTOR.  
4. INTERMITTENT FLOWS SUCH AS FILTER BACKWASHES ARE TO BE CONFIRMED BY CONTRACTOR BASED ON FILTER VESSELS SIZING.

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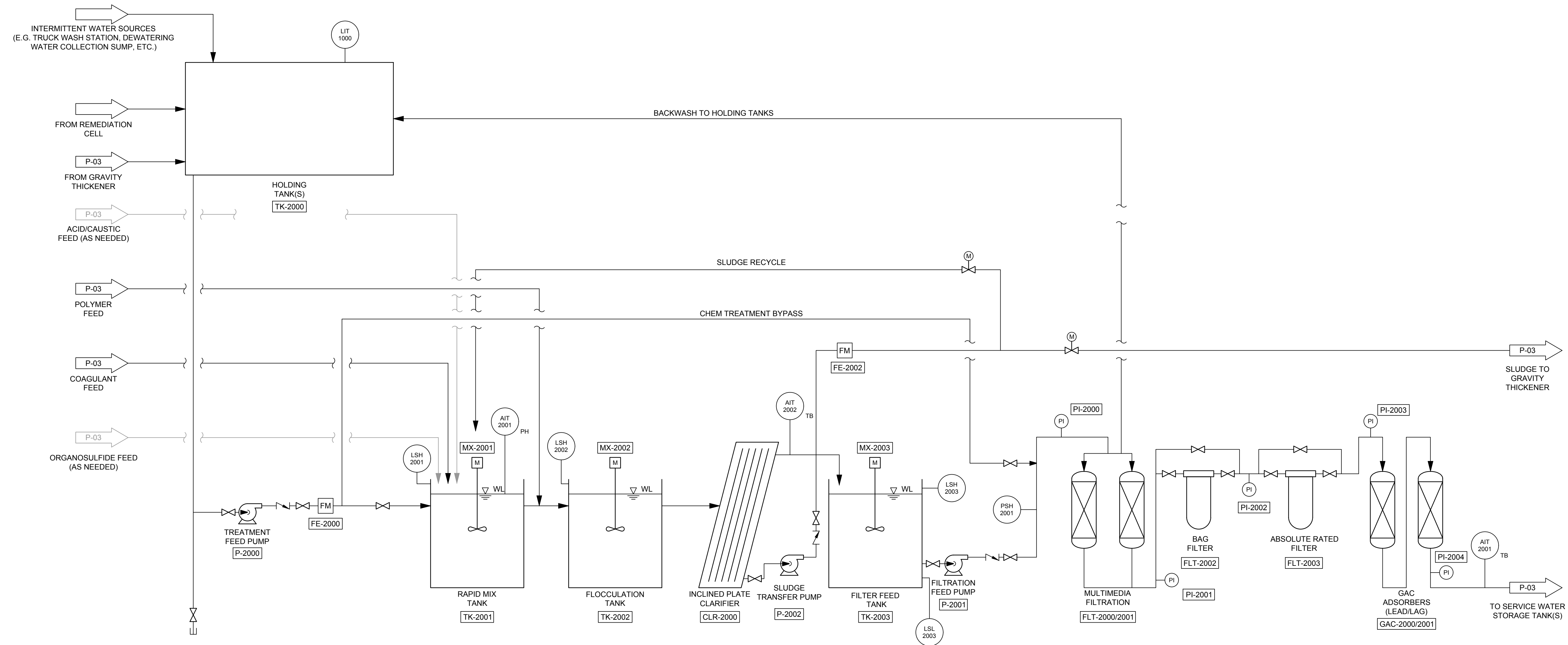
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NOTE:  
1. FOR CLARITY NOT ALL SYSTEM ELEMENTS (E.G. VALVES, PIPE SIZES) HAVE BEEN SHOWN. P&IDs ARE CONCEPTUAL ONLY AND ARE TO BE FINALIZED BY CONTRACTOR.  
2. THE TREATMENT SYSTEM DESIGNS ARE PRELIMINARY AND SUBJECT TO CHANGE.

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100% EPA RE-SUBMITTAL

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Project No. 11215131

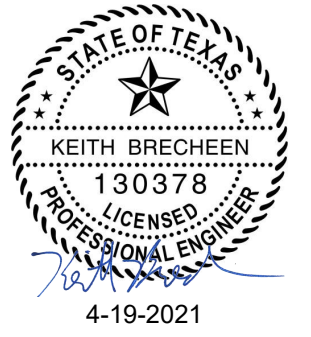
Title  
**WATER TREATMENT SYSTEM P&ID (1 OF 2)**

Sheet No.

**P-02**



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7	100% EPA RE-SUBMITTAL	MW	NF	04/19/2021
6	100% EPA SUBMITTAL	MW	NF	12/18/2020

Drawn	BP	Designer	KJ
Drafting Check	MW	Design Check	NF
Project Coordinator	CM	Date	Apr 15, 2021

Original Size	Arch D	Scale	N.T.S.
		Bar is one inch on original size drawing 0 1"	

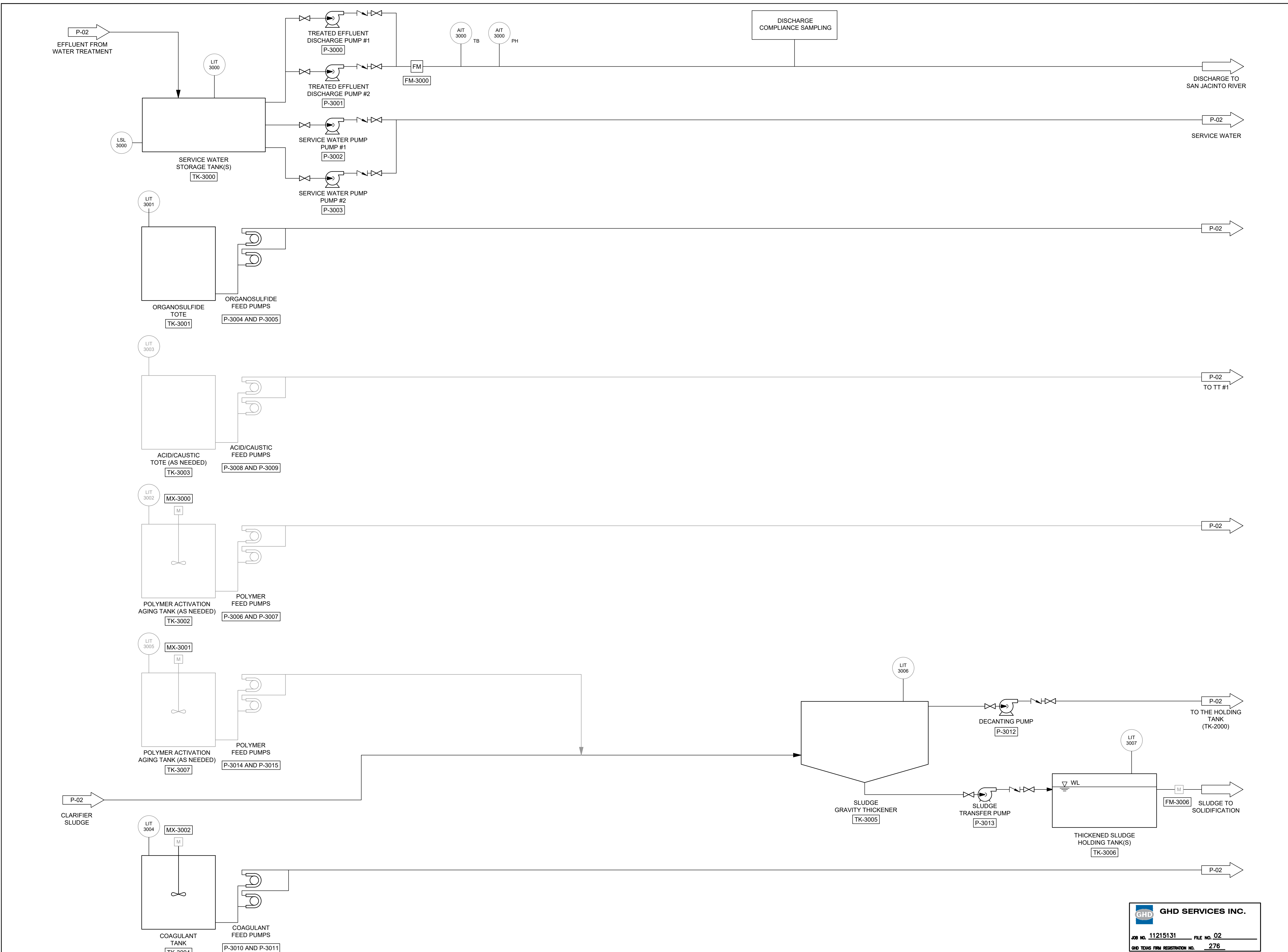
Project No. 11215131  
Title

**WATER TREATMENT SYSTEM P&ID (2 OF 2)**

Sheet No.

**P-03**

Sheet 48 of 49



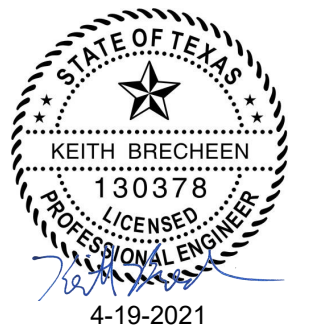
NOTE:  
1. FOR CLARITY NOT ALL SYSTEM ELEMENTS (E.G. VALVES, PIPE SIZES) HAVE BEEN SHOWN. P&IDs ARE CONCEPTUAL ONLY AND ARE TO BE FINALIZED BY CONTRACTOR.

GHD SERVICES INC.  
JOB NO. 11215131 FILE NO. 02  
GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**



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LEGEND	
	PROPERTY BOUNDARY
	PROPERTY EASEMENT
	EXISTING CONTOUR INTERVAL
	FENCELINE
	SHORELINE
	TOP OF BANK
	TOE OF SLOPE
	OVERHEAD ELECTRICAL
	GUARDRAIL
	UNDERGROUND CCTV LINE
	PDIRI BORING LOCATION
	MONITORING WELL
	POWER POLE
	LIGHT POLE
	WELL
	AREA OF IMPACT
	AREA OF POTENTIAL VOLUNTARY EXCAVATION
	ASPHALT
	CONCRETE
	GRAVEL

Client  
**SAN JACINTO RIVER WASTE PITS**  
Project  
**FINAL (100%) REMEDIAL DESIGN SOUTHERN IMPOUNDMENT (AMENDED APRIL 2021) HARRIS COUNTY, TEXAS**

No.	Issue	Drawn	Approved	Date
7	100% EPA RE-SUBMITTAL	MW	NF	04/19/2021
6	100% EPA SUBMITTAL	MW	NF	12/18/2020

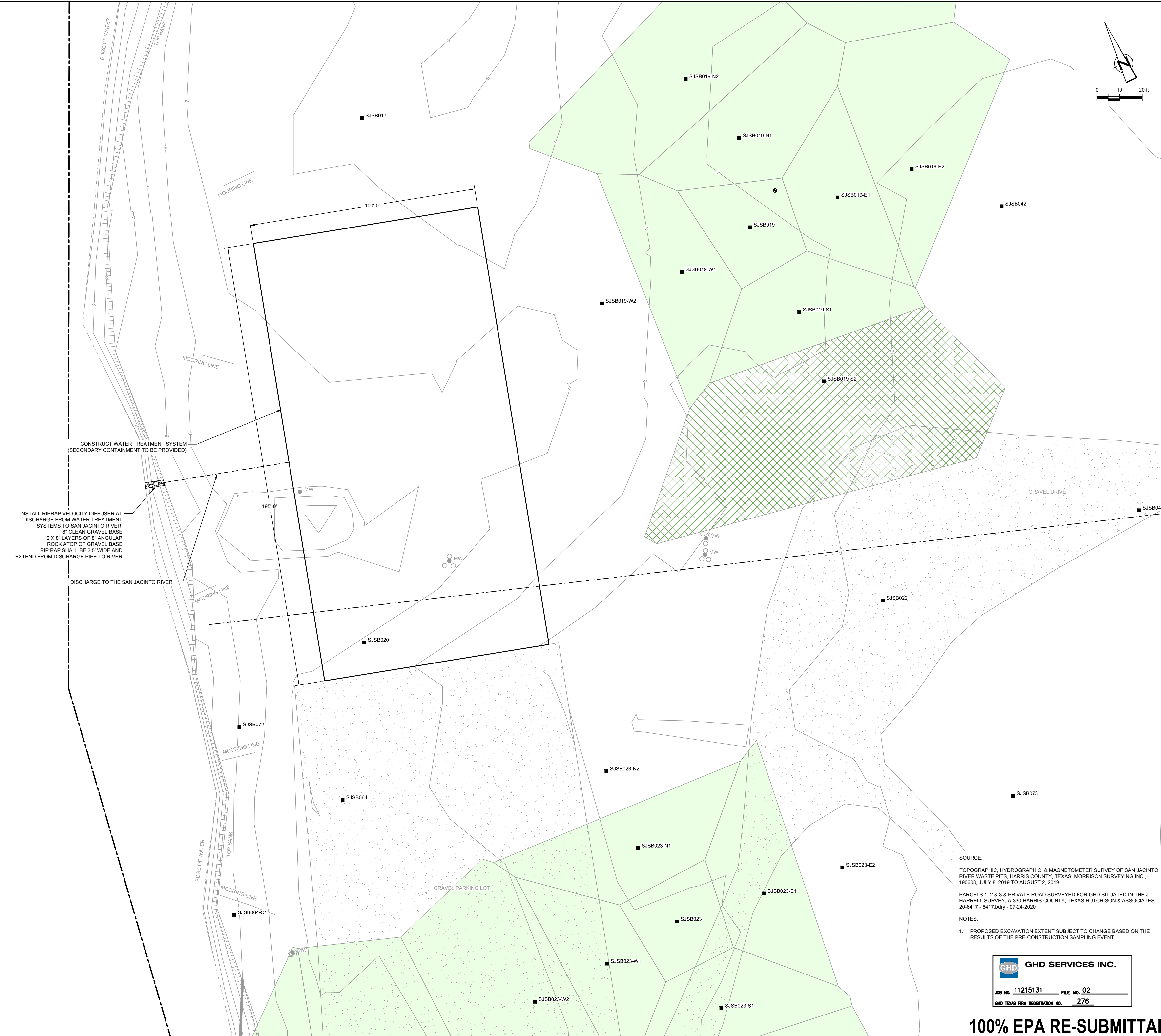
Drawn MW Designer KJ  
Drafting Check BP Design Check NF  
Project Coordinator CM Date Apr 15, 2021  
Scale 1" = 20'

Original Size Arch D Bar is one inch on original size drawing

Project No. 11215131  
Title  
**WATER TREATMENT SYSTEM SITE PLAN**

Sheet No.  
**P-04**

Sheet 49 of 49



SOURCE:  
TOPOGRAPHIC, HYDROGRAPHIC, & MAGNETOMETER SURVEY OF SAN JACINTO RIVER WASTE PITS, HARRIS COUNTY, TEXAS, MORRISON SURVEYING INC., 190608, JULY 8, 2019 TO AUGUST 2, 2019  
PARCELS 1, 2 & 3 & PRIVATE ROAD SURVEYED FOR GHD SITUATED IN THE J. T. HARRELL SURVEY, A-330 HARRIS COUNTY, TEXAS HUTCHISON & ASSOCIATES - 20-6417 - 6417.bdy - 07-24-2020

NOTES:  
1. PROPOSED EXCAVATION EXTENT SUBJECT TO CHANGE BASED ON THE RESULTS OF THE PRE-CONSTRUCTION SAMPLING EVENT.

**GHD SERVICES INC.**  
JOB NO. 11215131 FILE NO. 02  
GHD TEXAS FIRM REGISTRATION NO. 276

**100% EPA RE-SUBMITTAL**