



ACQUISITION &  
DEVELOPMENT DIVISION  
One Capitol Mall  
Sacramento, CA  
95814-3229



CALIFORNIA STATE FIRE MARSHAL-APPROVED  
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applicable regulations. Final approval is  
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project site at all times.

Reviewed by	Date
DPF ACCESS COMPLIANCE REVIEW	
ACCESSIBILITY SECTION	
CERTIFICATION #	
Reviewed by	Date
ACCESSIBILITY COMPLIANCE AND STATE FIRE MARSHAL-APPROVED THE DEPARTMENT OF PARKS AND RECREATION, NORTHERN SERVICE CENTER	

DRAWN:	CJT/SNG
CHECKED:	CJT/MWC
DATE:	12-03-2019

REVISIONS	DATE

MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS

COVER SHEET

DRAWING NO.	XXXXX.001
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SHEET NO.	G1.0
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CSFM # 01-23-11-0013

50% PLANS

CALIFORNIA DEPARTMENT OF PARKS AND RECREATION  
ACQUISITION AND DEVELOPMENT DIVISION  
MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS

THIS PROJECT INCLUDES THE DESIGN FOR THE FOLLOWING WATER SYSTEM IMPROVEMENTS AT MACKERRICHER STATE PARK:

- UPGRADE THE RAW WATER SOURCE FOR THE WATER SYSTEM BY:
  - INSTALLING A PRIMARY DIVERSION AND INTAKE ON MILL CREEK; AND
  - RELOCATING EXISTING LAKE CLEONE DIVERSION PUMP HOUSE OUT OF THE LAKE
- HIGH-WATER LINE TO PROVIDE A RELIABLE BACK-UP WATER SOURCE.
- REMOVE EXISTING WATER TREATMENT SYSTEM AND REDWOOD STORAGE TANKS.
- INSTALL TWO (2) 10,000 GALLON HDPE RAW WATER STORAGE TANKS ON A CONCRETE SLAB FOUNDATION;
- INSTALL A NEW TRI-MITE WATER TREATMENT SYSTEM CAPABLE OF A TREATMENT FLOW RATE OF UP TO 50 GPM;
- INSTALL TWO (2) 36,000 GALLON WELDED STAINLESS STEEL WATER TANKS ON CONCRETE SLAB FOUNDATIONS.

SCOPE

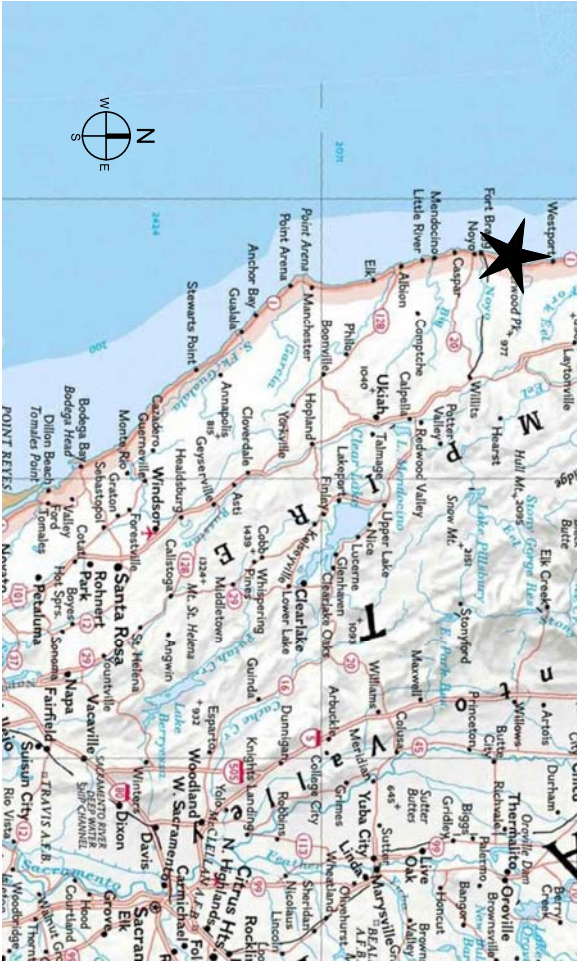
- ALL MATERIALS SHOWN OR NOTED ON THE PLANS ARE NEW UNLESS CALLED OUT OTHERWISE.
- THE CONTRACTOR SHALL NOT SCALE THE DRAWINGS, BUT SHALL RELY ONLY ON THE WRITTEN DIMENSIONS GIVEN. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL EXISTING CONDITIONS SHOWN OR DIMENSIONED HERE. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE STATE REPRESENTATIVE FOR RESOLUTION BEFORE PROCEEDING WITH THAT PORTION OF THE WORK.

- ALL WORK SHALL COMPLY WITH THE CURRENT EDITION AT DATE OF PLAN APPROVAL OF THE FOLLOWING LISTED CODES, AND ALL OTHERS HAVING JURISDICTION OVER THE WORK.
  - 2016 EDITION OF THE CALIFORNIA BUILDING CODE.
  - 2016 EDITION OF THE CALIFORNIA ELECTRICAL CODE.
  - 2016 EDITION OF THE CALIFORNIA PLUMBING CODE.
  - 2016 ADA STANDARDS FOR ACCESSIBLE DESIGN.
- CONDUCT ALL WORK IN ACCORDANCE WITH THE LATEST SAFETY RULES AND REGULATIONS OF ALL AUTHORITIES AND AGENCIES HAVING JURISDICTION OVER THE WORK. ALL WORK SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS. WHERE DETAILED INFORMATION OR CLARIFICATION IS REQUIRED THE MATTER SHALL BE REFERRED TO THE STATES REPRESENTATIVE FOR WRITTEN RESOLUTION.
- TREE PROTECTION MEASURES SHALL BE IMPLEMENTED IN AREAS THAT HAVE THE POTENTIAL TO HARM TREES DURING THE PROCESS OF CONSTRUCTION ACTIVITY.
- THE EXISTING WATER TANKS AND DISTRIBUTION LINES SHALL REMAIN INTACT AND OPERATIONAL DURING CONSTRUCTION.ONCE THE NEW WATER TANKS HAVE BEEN INSTALLED, THE EXISTING TANKS SHALL BE DEMOLISHED AND SALVAGED PER SPECIFICATION 024119 FOR SELECTIVE STRUCTURE DEMOLITION.
- CONSTRUCTION ACTIVITIES ARE LIMITED TO SEPTEMBER 16TH THROUGH MARCH 23RD. PROJECT MAY BE SUBJECT TO OVERSIGHT BY A STATE PARKS ENVIRONMENTAL MONITOR. THE PROJECT WILL BE SUBJECT TO CONSTRUCTION MILESTONES.

- MAPS WERE PREPARED USING THE FOLLOWING:
  - SURVEY PROVIDED TO FCE BY LACO ASSOCIATES ON APRIL 6, 2017
  - THE EXTENT OF THE SURVEY IS SHOWN IN THE PLANS AND THE ASSUMED ELEVATION OF THE SURVEY WAS REDUCED BY 140 FEET TO MATCH THE EXISTING LIDAR SURFACE. LIDAR BASED ON NAD 1983 STATE PLANE CALIFORNIA 2 THAT WAS PROVIDED TO FCE BY LACO ASSOCIATES.

- ALL FEATURES OUTSIDE OF THE EXTENT OF THE SURVEY, INCLUDING: ROADS, BUILDINGS, WATER TANKS, WATER FEATURES AND PARKING AREAS ARE BASED ON AERIAL IMAGERY AND THEREFORE ARE APPROXIMATE.
- LOCATION OF ALL UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF UTILITIES PRIOR TO EARTHWORK.
- THESE PLANS WERE PREPARED BASED ON THE FINDINGS OF THE PRELIMINARY ENGINEERING REPORT COMPLETED BY FALL CREEK ENGINEERING ON 12/12/2016.

GENERAL NOTES



VICINITY MAP  
NOT TO SCALE



LOCATION MAP  
NOT TO SCALE

#	SHEET	SHEET TITLE	ENGINEER
1	G1.0	COVER SHEET	COLEMAN
2	G2.0	EXISTING SITE PLAN	FCE
3	C1.0	OVERALL WATER SYSTEM IMPROVEMENT PLAN	FCE
4	C2.0	LAKE CLEONE INTAKE PLAN AND PROFILE	COLEMAN
5	C2.1	MILL CREEK INTAKE IMPROVEMENT PLAN	COLEMAN
6	C2.2	MILL CREEK INTAKE PLAN AND PROFILE	COLEMAN
7	C3.0	WATER TREATMENT PLANT IMPROVEMENTS PLAN	FCE
8	C4.0	WATER TANK IMPROVEMENTS PLAN	FCE
9	C4.1	TANK MIXING DETAILS	FCE
10	C5.0	WATER SYSTEM DETAILS	FCE
11	C6.0	PROCESS INSTRUMENTATION DIAGRAM AND CONTROL NARRATIVE	FCE
12	E0.1	SYMBOLS, ABBREVIATIONS AND SHEET INDEX	FCE
13	E0.2	CODES, STANDARDS, GENERAL CONSTRUCTION AND DEMOLITION NOTES	FCE
14	E1.0	OVERALL SITE PLAN - WATER SYSTEM IMPROVEMENTS	FCE
15	E2.1	ELECTRICAL PARTIAL SITE PLAN - MILL CREEK INTAKE IMPROVEMENTS	FCE
16	E2.2	ELECTRICAL PLAN - WATER TREATMENT PLANT IMPROVEMENTS	FCE

SHEET INDEX

<b>CIVIL ENGINEER:</b> <b>FALL CREEK ENGINEERING, INC.</b> CONTACT: PETER HAASE 1525 SEABRIGHT AVENUE SANTA CRUZ, CA 95062 PHONE: 831-426-9054	<b>GEOTECHNICAL ENGINEERS AND LAND SURVEYORS:</b> <b>LACO ASSOCIATES</b> CONTACT: CHRISTOPHER WATT P.O. BOX 1023 EUREKA, CA 95502 PHONE: 707-443-5054
<b>CIVIL ENGINEER:</b> <b>COLEMAN ENGINEERING</b> CONTACT: SIMON GRAY 1358 BLUE OAKS BOULEVARD SUITE 200 ROSEVILLE, CA 95678 PHONE: 916-791-1188	<b>ELECTRICAL ENGINEER:</b> <b>AURUM CONSULTING ENGINEERS</b> CONTACT: NAJIB ANWAR, EE 60 GARDEN COURT #20 MONTEREY, CA 93940 PHONE: 831-646-3330
<b>STRUCTURAL ENGINEER:</b> <b>STREETER GROUP, INC.</b> CONTACT: BRAD STREETER 2571 MAIN STREET, SUITE C, SOQUEL, CA 95073 PHONE: 831-477-1781	

CONSULTANT INFORMATION

MACKERRICHER STATE PARK  
24100 MACKERRICHER PARK RD  
FORT BRAGG, CA 95437  
MENDOCINO COUNTY  
LAT: 39.489957 N  
LONG: -123.787387 W

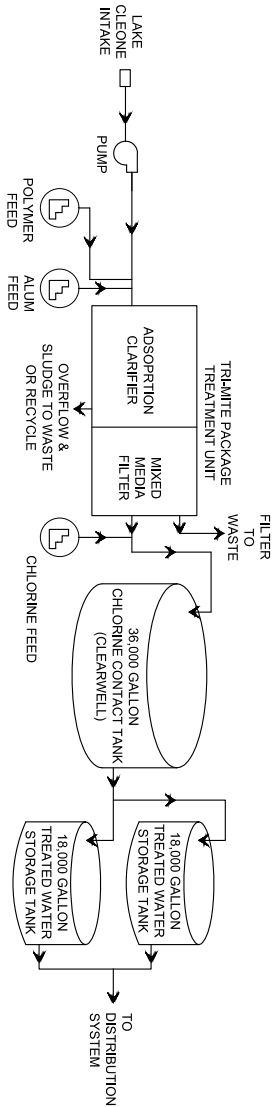
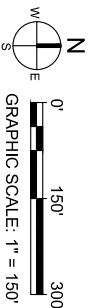
PARK ADDRESS



22"x34" SHEET. IF SHEET SIZE IS SMALLER, THEN DRAWING HAS BEEN REDUCED.



1 EXISTING SITE PLAN  
APPROXIMATE SCALE: 1" = 150'



2 (E) WATER TREATMENT SCHEMATIC  
SCALE: NTS



(E) PUMP HOUSE  
(SEE NOTE 3)

(E) CONCRETE  
SUMP AND INTAKE

3 (E) PUMP HOUSE AND INTAKE  
SCALE: NTS

- NOTES:**
1. THERE ARE TWO (2) EXISTING 10,000 GALLON HDPE WATER TANKS CURRENTLY NOT IN USE. BOTH OF THE TANKS SHALL BE INSTALLED TO IMPROVE THE RAW WATER STORAGE VOLUME FOR THIS PROJECT.
  2. THE (E) 2"Ø PIPELINE (NOT SHOWN) FROM LAKE CLEONE INTAKE TO THE WATER TREATMENT PLANT SHALL REMAIN IN PLACE AND USED ONCE THE NEW TREATMENT PLANT IS OPERATIONAL.
  3. THE HIGH WATER MARK OF LAKE CLEONE OCCASIONALLY REACHES THE TOP OF THE SANDBAG EMBANKMENT PROTECTING THE EXISTING PUMP HOUSE.



(E) 36,000 GALLON  
CLEARWELL WATER  
STORAGE TANK

4 (E) 36,000 GALLON CLEARWELL WATER STORAGE TANK  
SCALE: NTS



5 (E) 18,000 GALLON TREATED WATER STORAGE TANKS  
SCALE: NTS



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MARSHAL-APPROVED  
THE DEPARTMENT OF PARKS AND RECREATION,  
NORTHERN SERVICE CENTER

DESIGNED: ASH/CJC  
DRAWN: ASH/CJC  
CHECKED: PHH  
DATE: 5-12-2017

REVISIONS	DATE

MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS

EXISTING SITE PLAN

DRAWING NO.  
XXXXX.002

SHEET NO.

G2.0



22"x34" SHEET. IF SHEET SIZE IS SMALLER, THEN DRAWING HAS BEEN REDUCED.



NOTE:  
THE EXISTING WATER DISTRIBUTION SYSTEM INFRASTRUCTURE IS TO REMAIN INTACT AND OPERATIONAL. ONCE CONSTRUCTION OF THE PROJECT IS COMPLETE, THE NEW TREATED WATER STORAGE TANK WILL BE CONNECTED TO THE EXISTING INFRASTRUCTURE AND PRE-CONSTRUCTION OPERATIONS SHALL RESUME.

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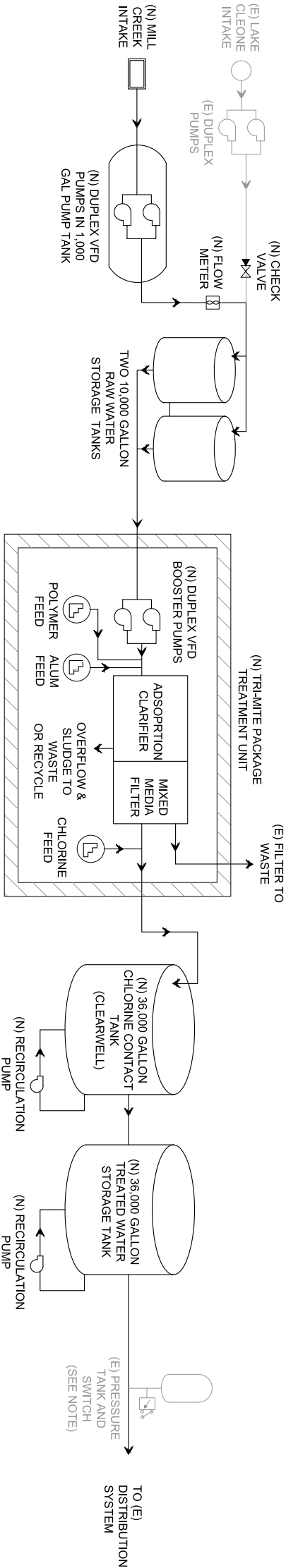
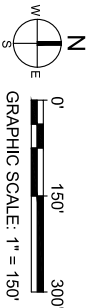
REVISIONS	DATE


MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS  
OVERALL WATER SYSTEM  
IMPROVEMENT PLAN

DRAWING NO.  
XXXXX.003

SHEET NO.  
C1.0

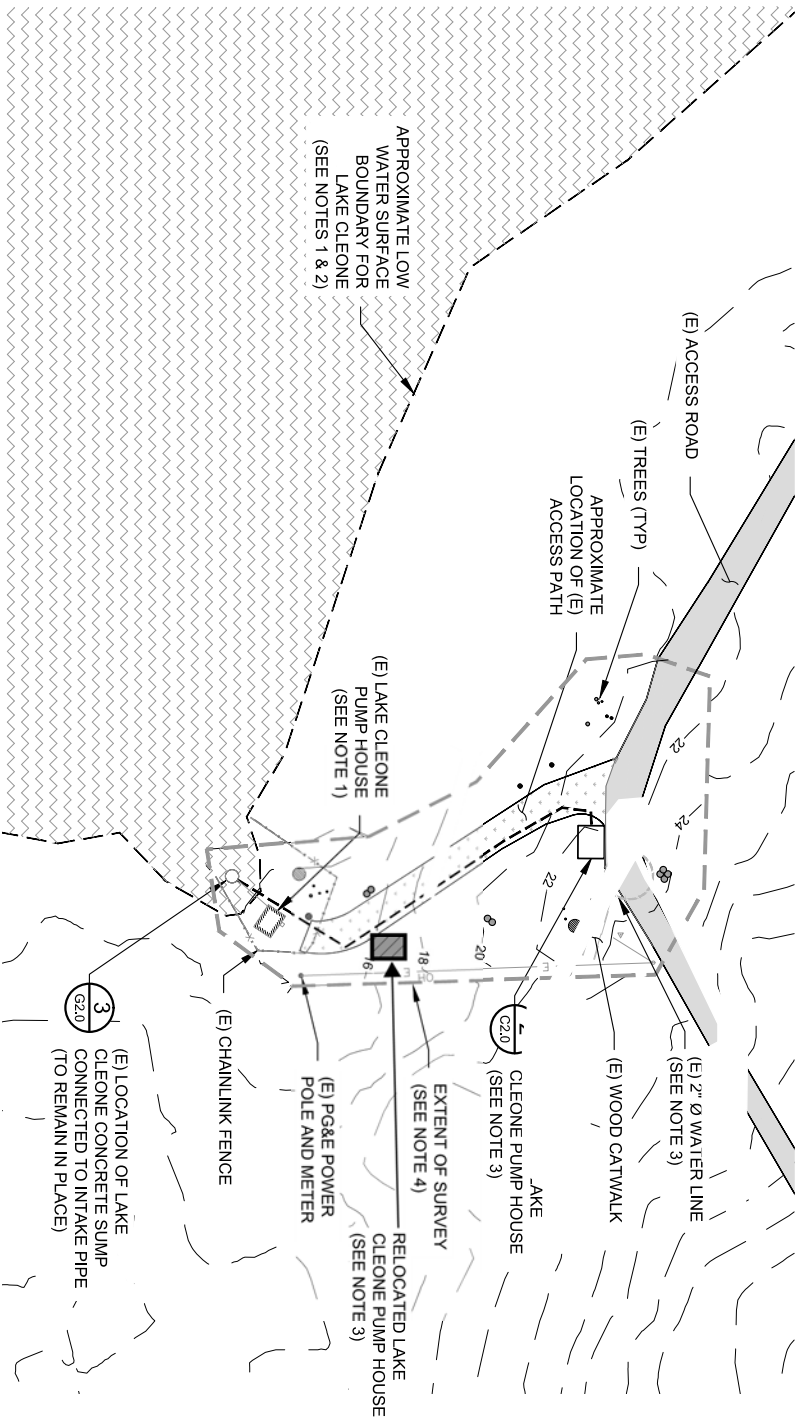
1 OVERALL WATER SYSTEM IMPROVEMENT PLAN  
APPROXIMATE SCALE: 1" = 150'



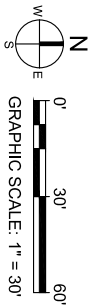
2 WATER SYSTEM IMPROVEMENT PLAN SCHEMATIC  
SCALE: NTS



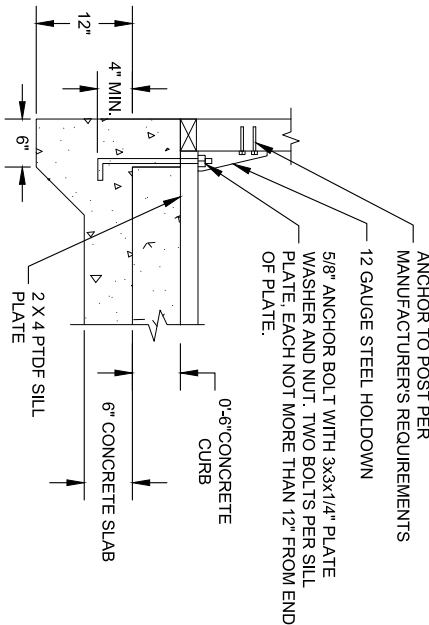
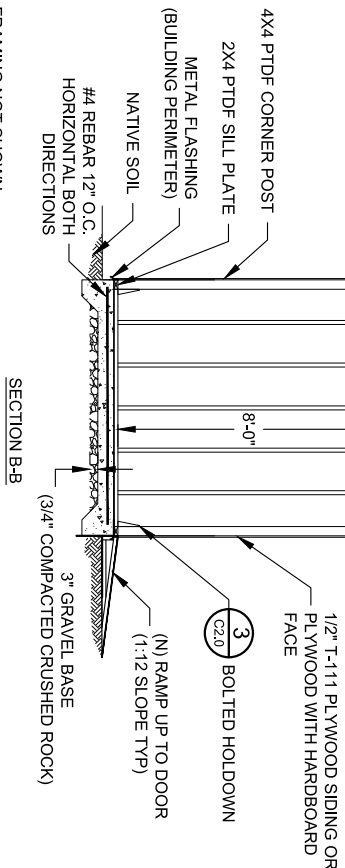
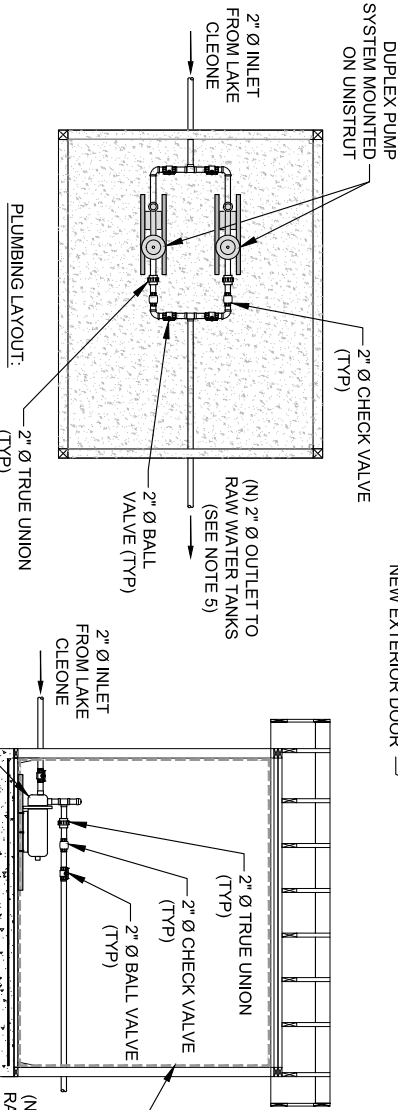
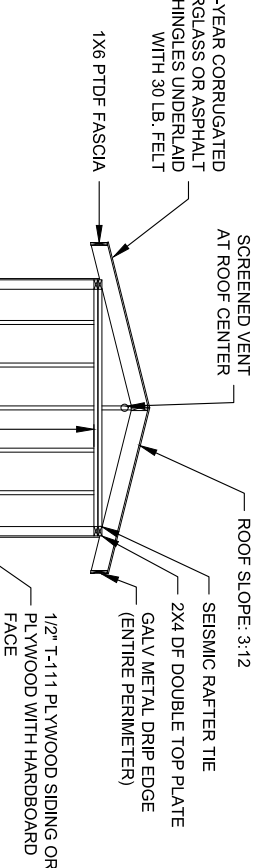
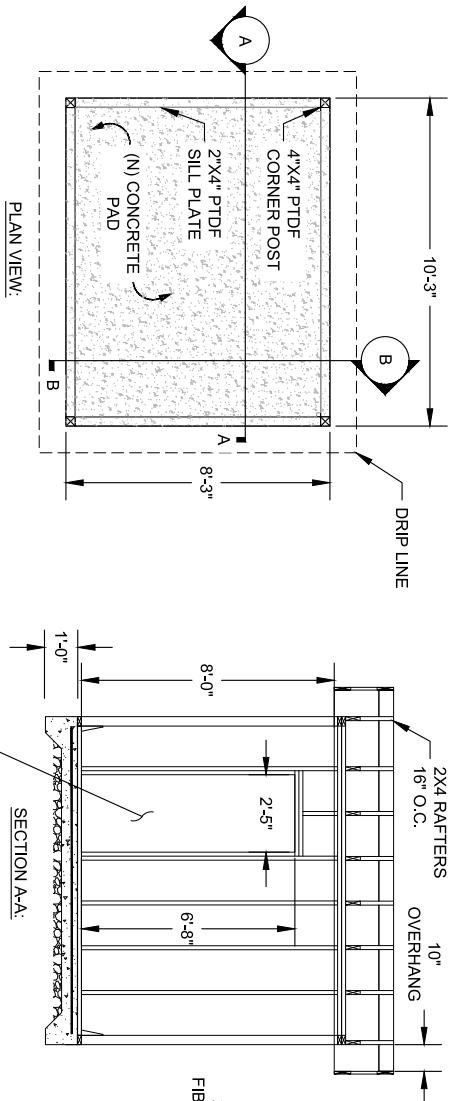
22"x34" SHEET. IF SHEET SIZE IS SMALLER, THEN DRAWING HAS BEEN REDUCED.



1 LAKE CLEONE PUMP HOUSE IMPROVEMENTS  
SCALE: 1" = 30'



- NOTES:**
- THE EXISTING PUMP HOUSE ALONG THE NORTHEASTERN EDGE OF LAKE CLEONE IS TO BE REMOVED AND A NEW BUILDING SHALL BE INSTALLED FURTHER FROM THE HIGH WATER MARK IN ORDER TO MITIGATE FLOODING RISK AND FACILITATE MAINTENANCE ACCESS.
  - THE EXISTING DUPLEX PUMPS, IN THE CURRENT PUMP HOUSE SHALL BE RELOCATED AND RECONNECTED TO THE EXISTING RAW WATER LINE ONCE THEY ARE INSTALLED IN THE NEW PUMP HOUSE. THE CONTRACTOR SHALL PROVIDE PARKS MAINTENANCE STAFF WITH A SPARE PUMP OF THE SAME MODEL AND MAKE FOR REDUNDANT BACKUP. THE MAKE AND MODEL OF PUMP SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
  - THE NEW 2' Ø OUTLET FROM THE RELOCATED PUMP HOUSE SHALL TIE INTO THE EXISTING 2' Ø RAW WATER LINE TO THE TREATMENT SYSTEM. THE LOCATION OF THE EXISTING 2' Ø LINE SHALL BE FIELD VERIFIED AND REPLUMBED TO CONNECT TO THE INLET OF THE TWO 10,000 GALLON RAW WATER STORAGE TANKS.
  - THE EXTENT OF THE SURVEY IS SHOWN BY THE DASHED BOUNDARY LINE. THE CONTOURS SHOWN OUTSIDE OF THE DASHED BOUNDARY ARE DERIVED FROM LIDAR CONTOUR DATA AND ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY.
- LEGEND:**
- WATER SURFACE BOUNDARY
  - (E) CHAINLINK FENCE
  - (E) OVERHEAD ELECTRICAL
  - (E) PUMP LINE
  - EXTENT OF SURVEY
  - AC PAVEMENT
  - ACCESS PATH
  - LAKE CLEONE WATER SURFACE
  - (E) TREES
  - SURVEY CONTROL POINT



2 LAKE CLEONE PUMP HOUSE LAYOUT  
SCALE: AS DIMENSIONED

3 BOLTED HOLDOWN  
SCALE: AS DIMENSIONED



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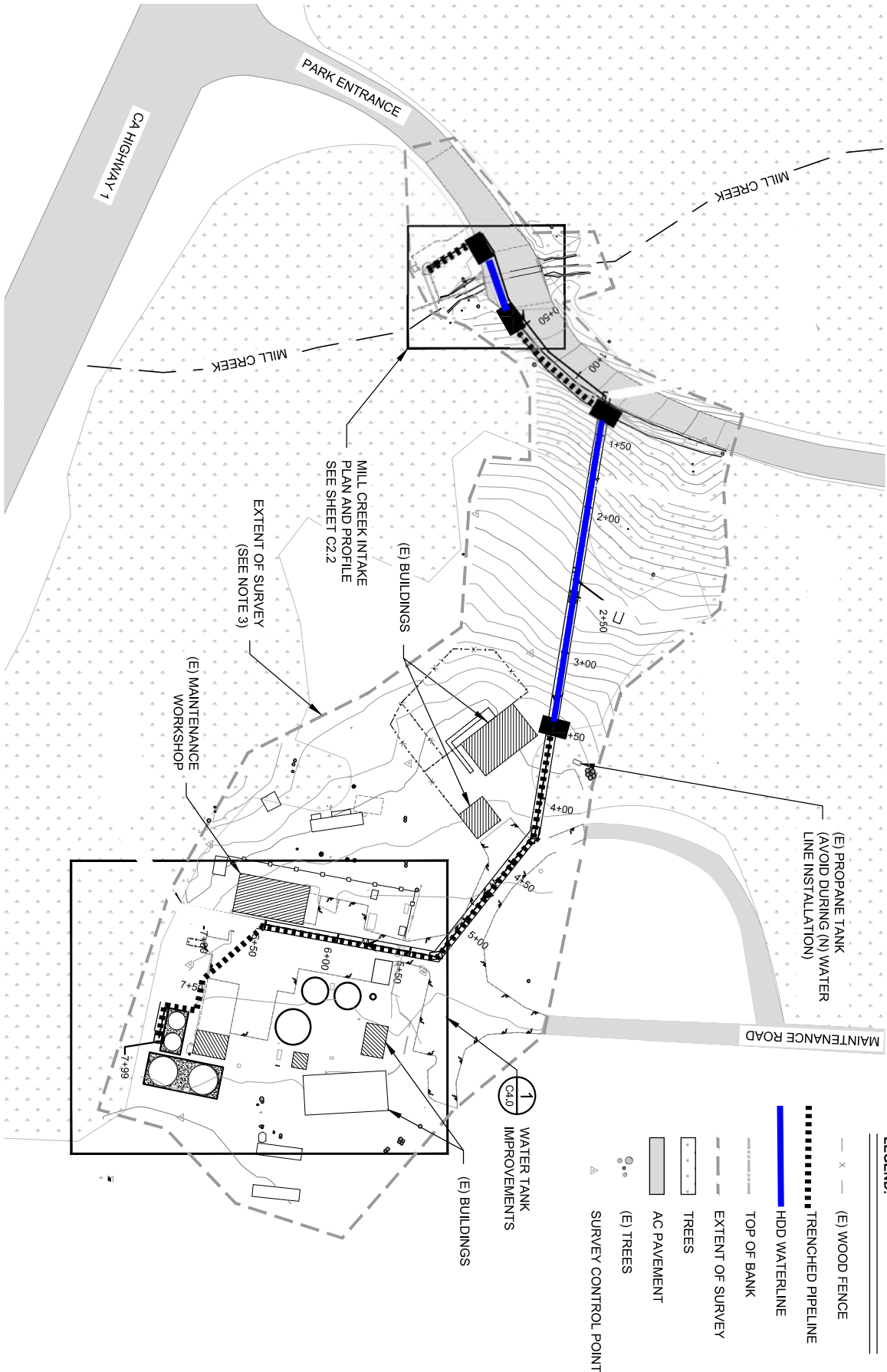
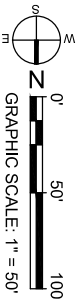
MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS  
**LAKE CLEONE PUMP HOUSE  
IMPROVEMENTS PLAN**

DRAWING NO.  
XXXXX.004

SHEET NO.  
C2.0

1 MILL CREEK INTAKE IMPROVEMENTS PLAN

SCALE: 1" = 50' @ 22" X 34"



LEGEND:

- (E) WOOD FENCE
- TRENCHED PIPELINE
- HDD WATERLINE
- TOP OF BANK
- EXTENT OF SURVEY
- TREES
- AC PAVEMENT
- (E) TREES
- SURVEY CONTROL POINT

NOTES:

- A NEW RAW WATER LINE SHALL BE CONSTRUCTED USING HORIZONTAL DIRECTIONAL DRILLING (HDD) TO CONVEY WATER FROM THE NEW MILL CREEK DIRECTIONAL INTAKE TO THE WATER TREATMENT PLANT. HDD CONSTRUCTION METHODS WILL BE USED IN THE AREAS SHOWN ON THE PLANS TO MINIMIZE IMPACTS TO ECOLOGICALLY SENSITIVE AREAS.
- A NEW ELECTRICAL SERVICE LINE WILL BE PROVIDED TO THE NEW PUMP SYSTEM AT THE MILL CREEK INTAKE. THE ELECTRICAL IMPROVEMENTS ARE INCLUDED IN THE ELECTRICAL SHEET E2.1.
- THE EXTENT OF THE SURVEY IS SHOWN BY THE DASHED BOUNDARY LINE. THE CONTOURS SHOWN OUTSIDE OF THE DASHED BOUNDARY ARE DERIVED FROM LIDAR CONTOUR DATA AND ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY.



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THE DEPARTMENT OF PARKS AND RECREATION,	
NORTHERN SERVICE CENTER	

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DRAWN:	CJT/MCJ
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1	

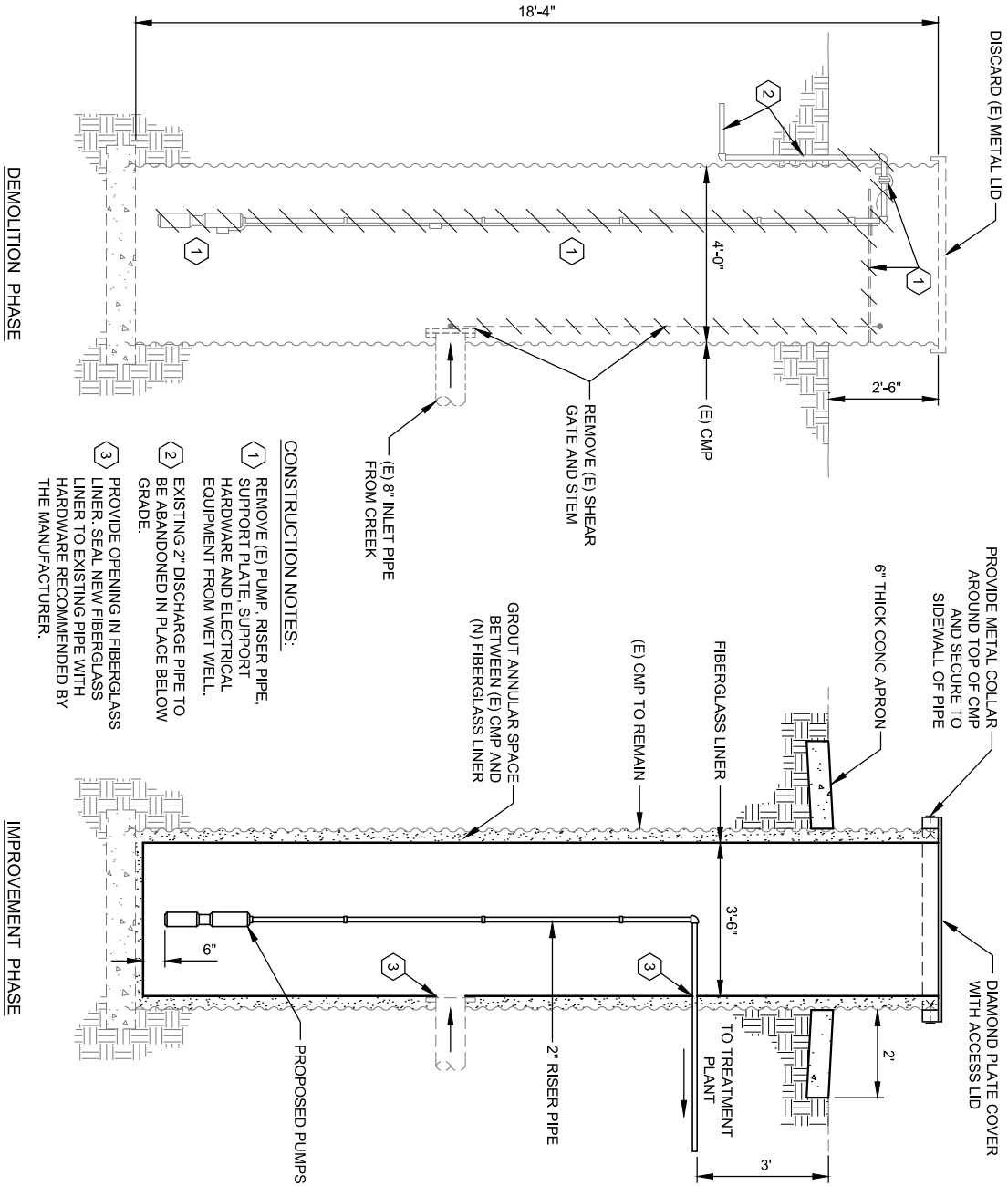
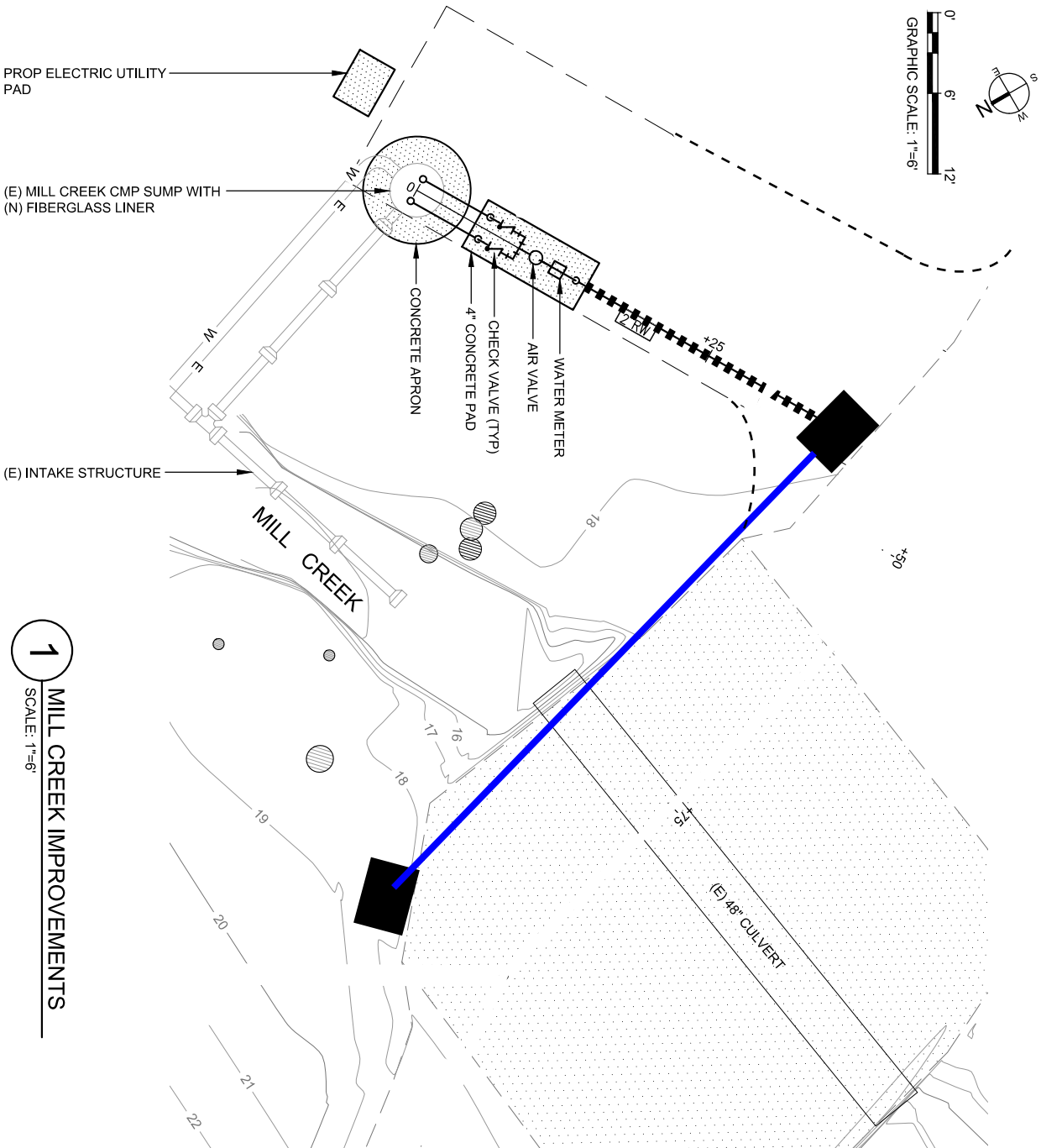
MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS

MILL CREEK INTAKE  
IMPROVEMENT PLAN

DRAWING NO.  
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SHEET NO.

C2.1



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MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS

# MILL CREEK INTAKE PLAN AND PROFILE

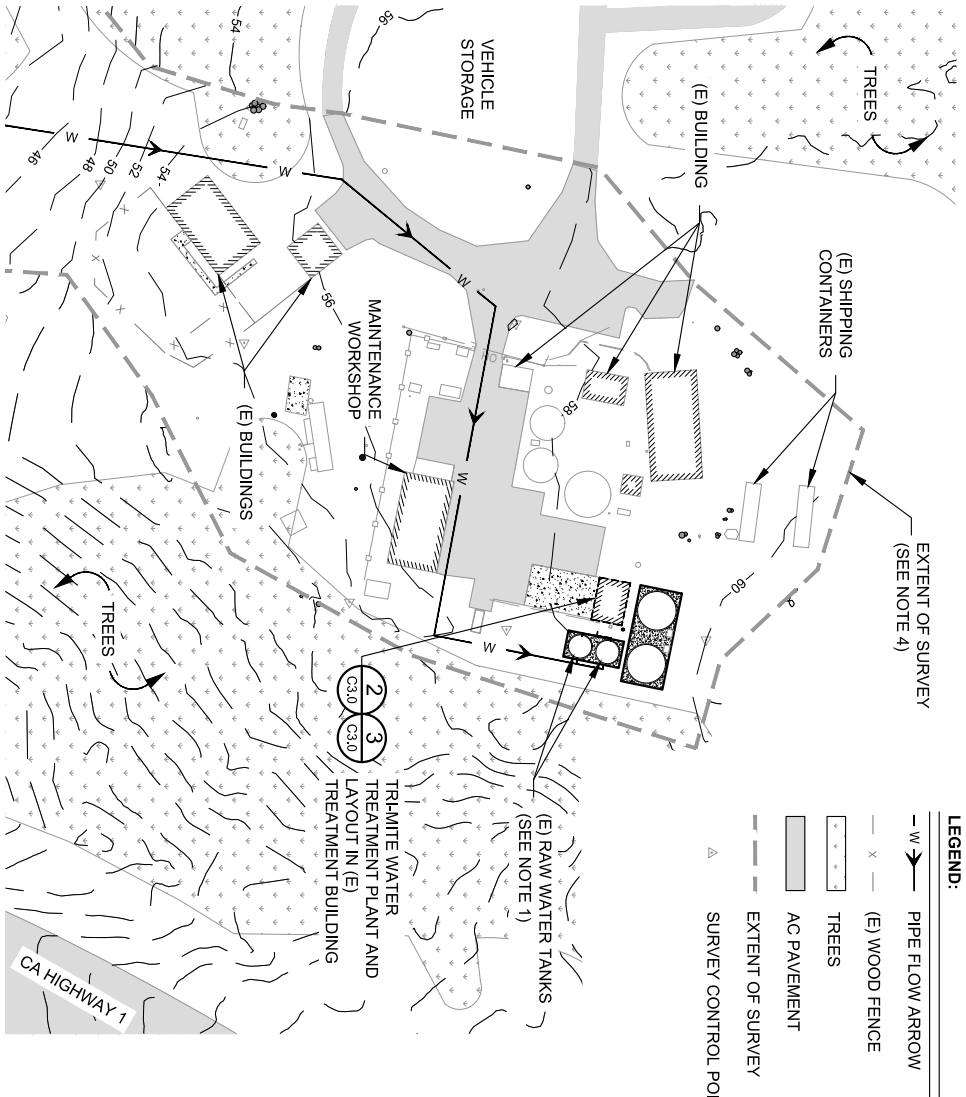
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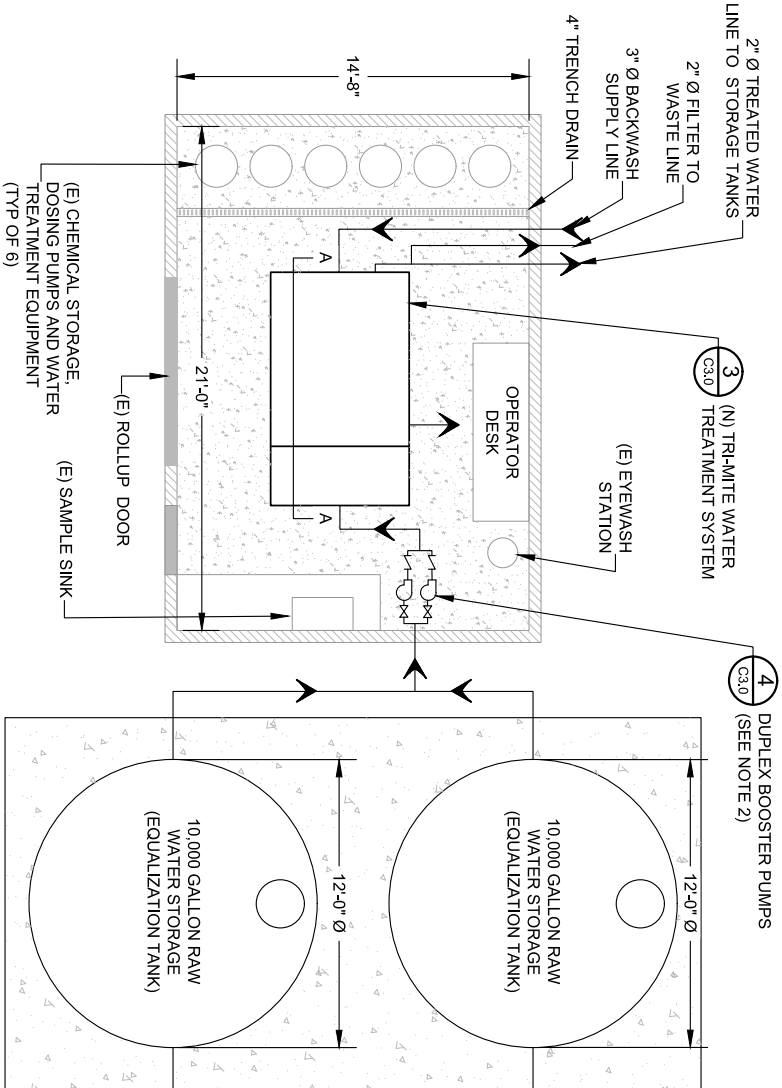
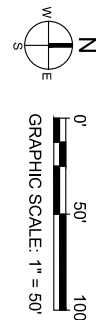
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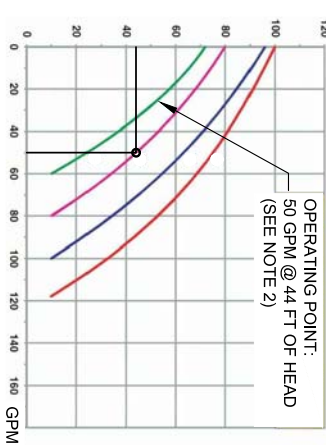
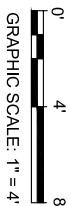
22"x34" SHEET. IF SHEET SIZE IS SMALLER, THEN DRAWING HAS BEEN REDUCED.



**1 WATER TREATMENT PLANT IMPROVEMENT PLAN**  
SCALE: 1" = 50' @ 22" X 34"

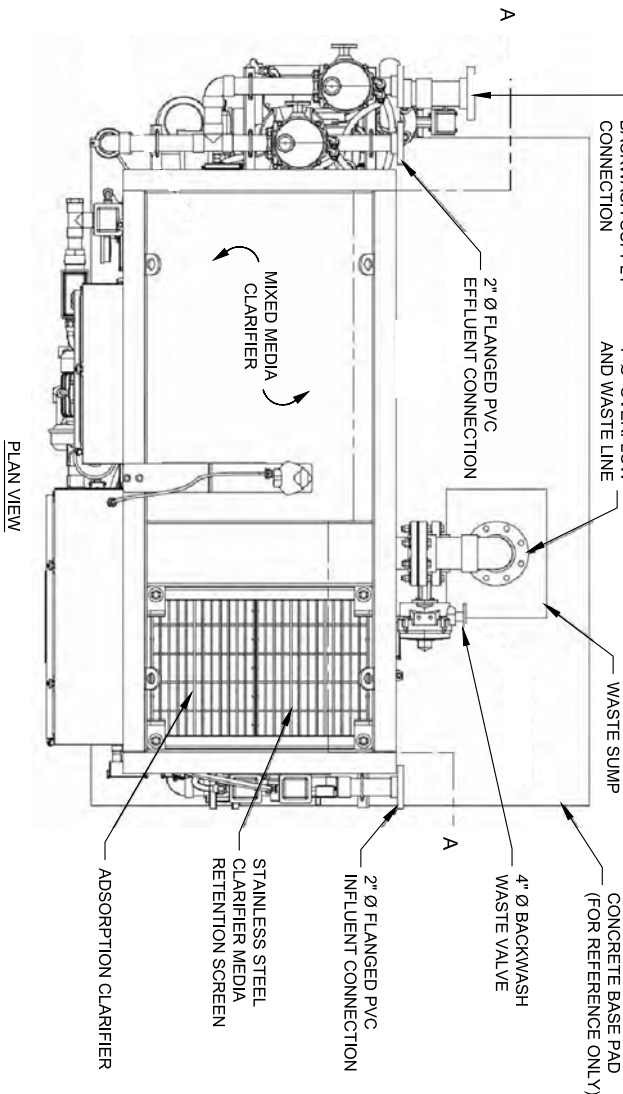


**2 WATER TREATMENT PLANT IMPROVEMENT PLAN**  
SCALE: 1" = 4' @ 22" X 34"

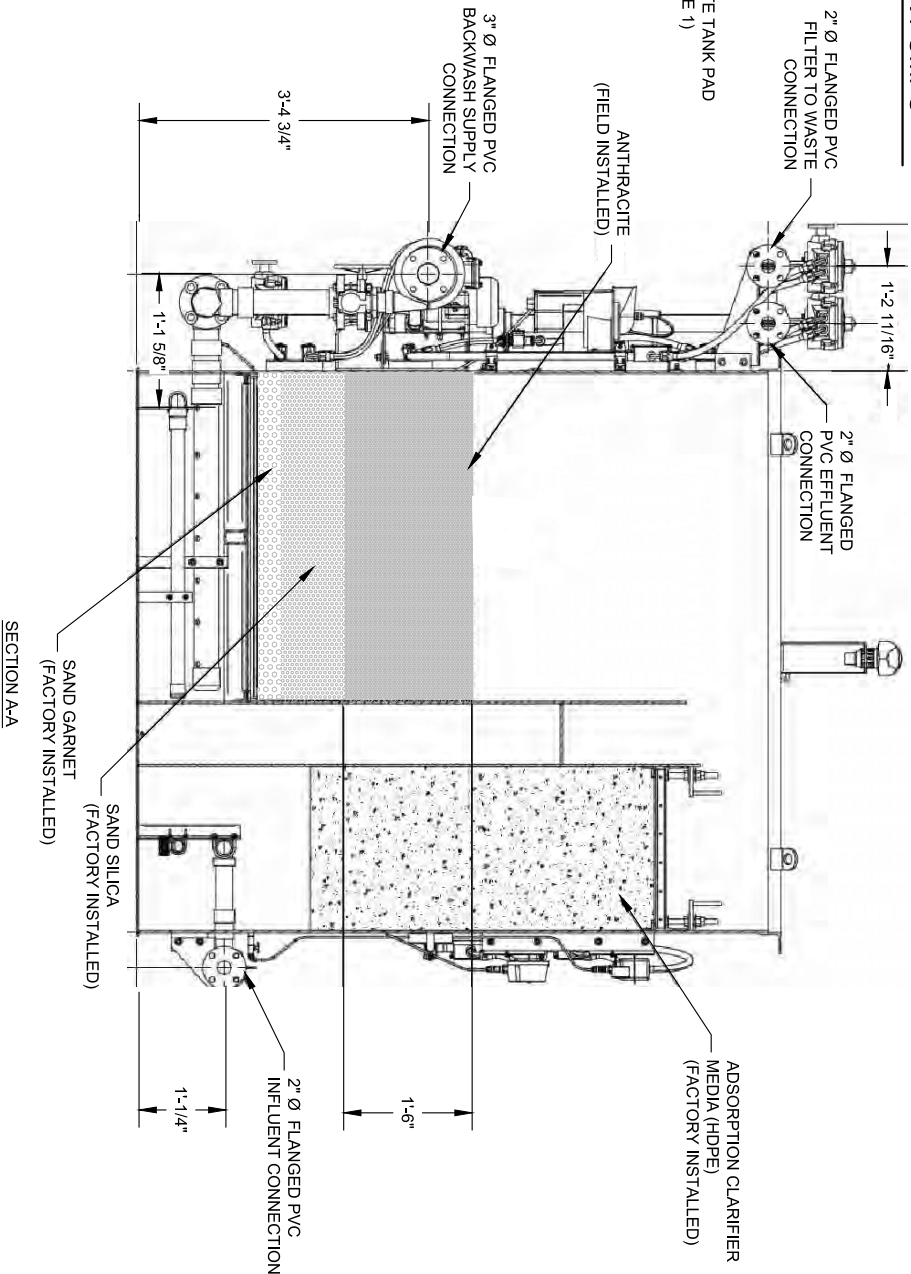


PUMP SYSTEM SPECIFICATIONS	
PARAMETER (EACH PUMP)	VALUE
NUMBER OF PUMPS IN SYSTEM	2
FLOW RATE (GPM)	50
TOTAL DYNAMIC HEAD (FT)	44
PHASE	3
VOLTAGE (V)	230
HORSEPOWER (HP)	1
TOTAL FULL LOAD AMPERAGE (AMPS)	4

**4 DUPLEX BOOSTER PUMPS**  
SCALE: NTS



- NOTES:**
- BOTH OF THE EXISTING RAW WATER TANKS ARE TO BE MOVED AND INSTALLED ON A CONCRETE SLAB FOUNDATION THAT IS DESIGNED IN ACCORDANCE WITH THE RECOMMENDATIONS MADE BY THE GEOTECHNICAL REPORT (LACO 2017) AND SHOWN ON SHEET S1.0 OF THE STRUCTURAL DESIGN PLANS.
  - A DUPLEX BOOSTER PUMP SYSTEM WITH A VARIABLE FREQUENCY DRIVE (VFD) WILL CONVEY WATER FROM THE RAW WATER TANKS TO THE NEW TRI-MITE WATER TREATMENT SYSTEM. THE OPERATOR WILL HAVE THE ABILITY TO ADJUST THE FLOW RATE OF THE PUMPS USING THE VFD. A SAMPLE PUMP CURVE IS SHOWN IN DETAIL 4. THIS SHEET.
  - THE EXISTING 2" Ø RAW WATER LINE FROM THE LAKE CLEONE INTAKE SHALL TIE INTO THE NEW 2" Ø RAW WATER LINE FROM THE MILL CREEK DIVERSION PRIOR TO CONNECTION WITH THE RAW WATER STORAGE TANKS.
  - THE EXTENT OF THE SURVEY IS SHOWN BY THE DASHED BOUNDARY LINE. THE CONTOURS SHOWN OUTSIDE OF THE DASHED BOUNDARY ARE DERIVED FROM LIDAR CONTOUR DATA.



**3 TRI-MITE WATER TREATMENT PLANT UPGRADE**  
SCALE: AS DIMENSIONED



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NO.	DATE

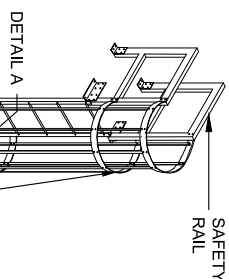
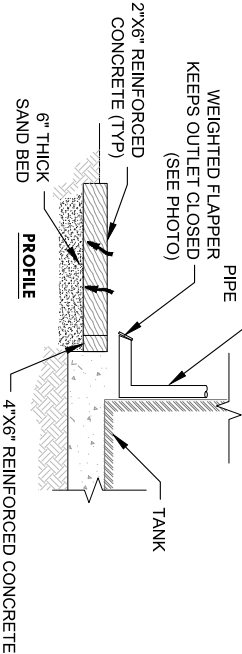
MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS  
**WATER TREATMENT PLANT  
IMPROVEMENTS PLAN**

DRAWING NO.  
XXXXX.007

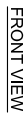
SHEET NO.  
C3.0



- NOTES:**



- NOTES:**



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DPR ACCESS COMPLIANCE REVIEW ACCESSIBILITY SECTION CERTIFICATION #	
Reviewed by	Date
ACCESSIBILITY COMPLIANCE AND STATE FIRE MARSHAL SIGNED ORIGINALS ARE ON FILE AT THE DEPARTMENT OF PARKS AND RECREATION, NORTHERN SERVICE CENTER	

DESIGNED:	ASH/CJC
DRAWN:	ASH/CJC
CHECKED:	PHH
DATE:	5-12-2017

REVISIONS	
	DATE
Δ	

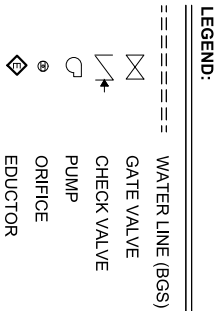
# MACKERRICHER STATE PARK WATER SYSTEM IMPROVEMENTS

# WATER TANK IMPROVEMENTS PLAN

DRAWING NO.  
XXXXXX.008

SHEET NO.  
C4.0

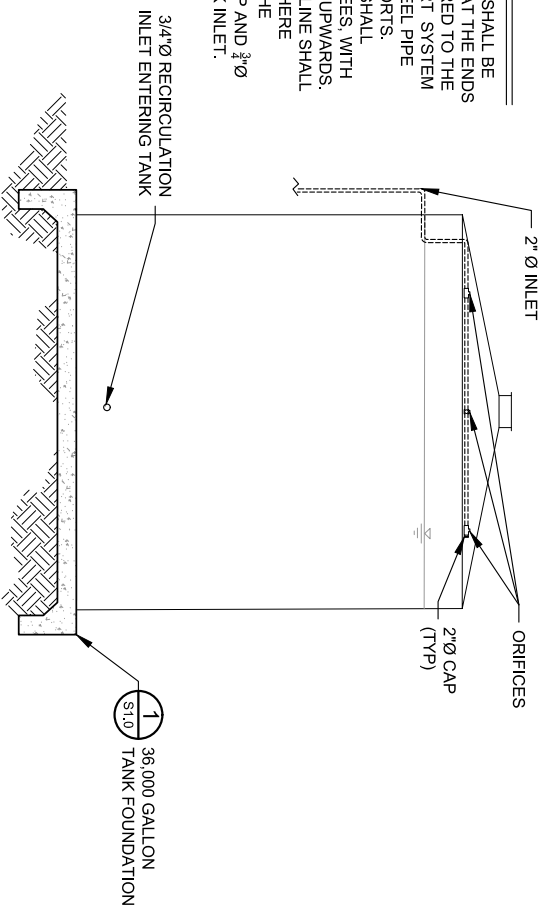




## TANK MIXING IMPROVEMENTS

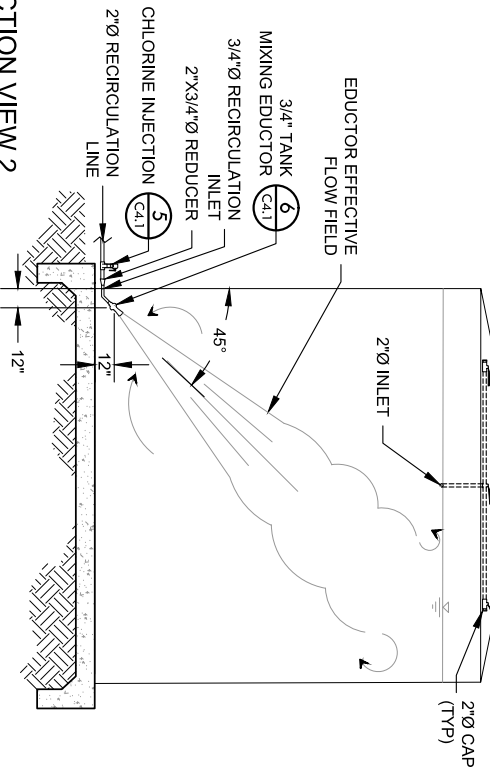
SCALE: NTS - LOCATION OF PLUMBING & ACCESSORIES IS FOR DISPLAY PURPOSES ONLY

- 
- 2' Ø CAP (TYP)



## SECTION VIEW 1

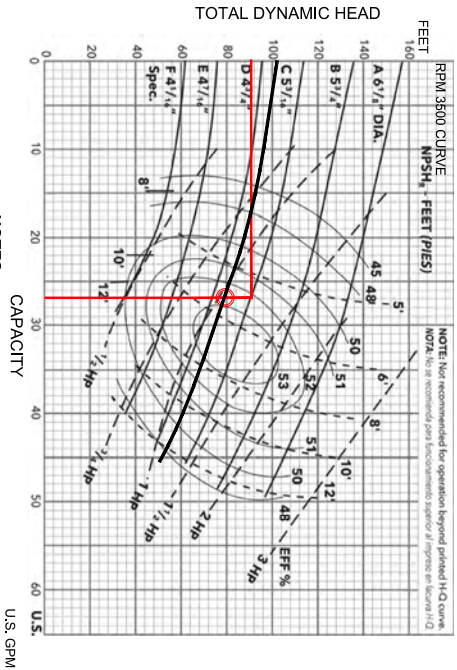
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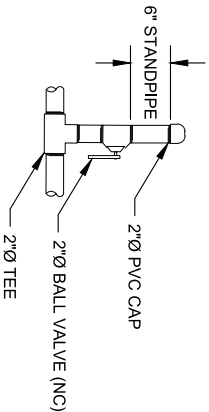
SECTION VIEW 2

SCALE: NTS - LOCATION OF PLUMBING & ACCESSORIES IS FOR DISPLAY PURPOSES ONLY

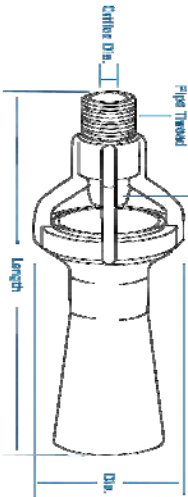
PUMP SYSTEM SPECIFICATIONS	
PARAMETER	VALUE
NUMBER OF PUMPS IN SYSTEM	1
FLOW RATE (GPM)	27
TOTAL DYNAMIC HEAD (FT)	91
PHASE	3
VOLTAGE (V)	230
HORSEPOWER (HP)	1
TOTAL FULL LOAD AMPERAGE (AMPS)	--



## SCALE: NTS

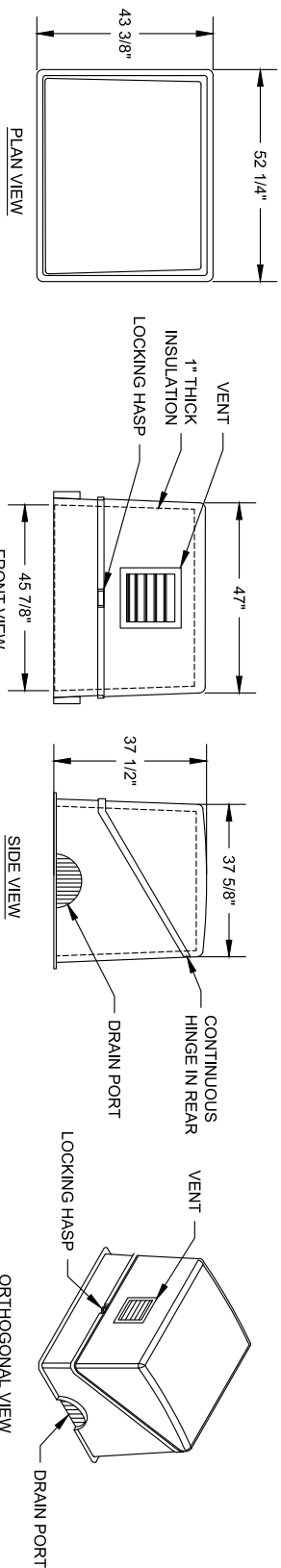


## SCALE: AS DIMENSIONED



Inlet Conn. (in.) NPT or BSPT (M)	Office Dia. in. (mm)	Length in. (mm)	Dia. in. (mm)
3/4"	3/16" (10)	5/16" (12.5)	3/16"

## 3/4" PANK MIXING EDUCIOR



## RECIRCULATION PUMP ENCLOSURE

SCALE: AS DIMENSIONED

**ACQUISITION &  
DEVELOPMENT DIVISION**  
One Capitol Mall  
Sacramento, CA  
95814-3229



**CALIFORNIA STATE FIRE MARSHAL - APPROVED**

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DPR ACCESS COMPLIANCE REVIEW	
ACCESSIBILITY SECTION	
CERTIFICATION #	

Reviewed by	Date
<p>ACCESSIBILITY COMPLIANCE AND STATE FIRE MARSHAL SIGNED ORIGINALS ARE ON FILE AT THE DEPARTMENT OF PARKS AND RECREATION, NORTHERN SERVICE CENTER</p>	

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DATE	

# MACKERRICHER STATE PARK WATER SYSTEM IMPROVEMENTS

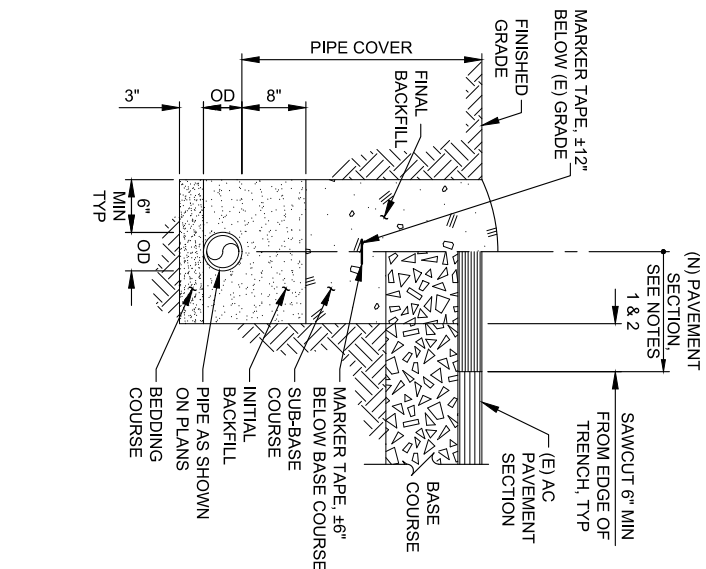
# TANK MIXING DETAILS

DRAWING NO.  
XXXXXX.009

SHEET NO.  
C4.1



22"x34" SHEET. IF SHEET SIZE IS SMALLER, THEN DRAWING HAS BEEN REDUCED.



- NOTES:**
- UNLESS OTHERWISE SPECIFIED, PERMANENT PAVEMENT SHALL CONFORM IN QUALITY AND THICKNESS TO THE TYPE OF PAVEMENT REMOVED. BUT IN NO CASE SHALL BE LESS THAN THREE INCHES (3") OF ASPHALTIC CONCRETE ON SIX INCHES (6") OF BASE.
  - EXISTING PAVEMENT SHALL BE SAWCUT AND REMOVED IN SUCH A MANNER SO AS NOT TO TEAR, BULGE OR DISPLACE ADJACENT PAVEMENT. EDGES SHALL BE CLEAN AND VERTICAL WHEN PRACTICAL. ALL CUTS SHALL BE PARALLEL OR PERPENDICULAR TO STREET EDGE OF PAVEMENT.
  - ALL EXCAVATION BACKFILL AND COMPACTION SHALL CONFORM TO THE REQUIREMENTS OF DIVISION 31, SECTION 312000 - EARTHWORK SPECIFICATIONS.
  - NO SOLID BLOCKING PERMISSIBLE BENEATH PIPE.
  - JETTING BACKFILL IS NOT PERMITTED.
  - TRENCH EXCAVATION SHALL CONFORM TO CAL-OSHA STANDARDS.
  - WATER PIPING CAN BE RAN IN THE SAME TRENCH AS THE ELECTRICAL CONDUIT WITH A TWELVE (12) INCH EARTH SEPARATION.
  - PROTECT TREE ROOTS PER SPECIFICATION SECTION 016639, HAND DIG WHERE NECESSARY. TREE PROTECTION ZONE IS 5 TIMES THE DIAMETER-BREAST-HEIGHT OF THE TREE (TPZ = 5 X DBH).
- | PIPE COVER REQUIREMENTS<br>FOR PIPES SMALLER THAN 12" Ø<br>(UNLESS NOTED OTHERWISE) |                           |
|---|---------------------------|
| UTILITY   | MINIMUM COVER<br>(INCHES) |
| WATER   | 30                        |
| SEWER   | VARIES PER PLAN           |
| SEWER FORCE MAIN  | 28                        |
| ELECTRICAL CONDUIT  | 24                        |
| TELEPHONE CONDUIT   | 20                        |

## 1 TYPICAL TRENCH DETAIL

SCALE: NTS

TABLE I THRUST(T) AT FITTINGS, IN POUNDS AT 100 PSI WATER PRESSURE				
PIPE SIZE	TEE OR DEAD END	90° BEND	45° BEND	22 1/2° BEND
1 1/2"	284	401	217	111
2"	443	627	339	173
2 1/2"	649	918	497	253
3"	962	1361	736	375
4"	1810	2559	1385	706
6"	3739	5288	2862	1459
8"	6433	9097	4923	2510
10"	9677	13685	7406	3776
12"	13685	19353	10474	5340
14"	18385	26001	14072	7174
16"	23779	33628	18199	9278

TABLE II

SAFE BEARING LOADS (B)	
SOIL	SAFE BEARING LOAD, POUNDS PER SQ. FT.
SOUND SHALE	10000
CEMENTED SAND AND GRAVEL	4000
COARSE AND FINE COMPACTED SAND	3000
MEDIUM CLAY (CAN BE SPADED)	2000
SOFT CLAY	1000
MUCK	0

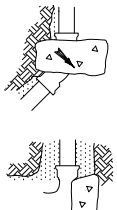
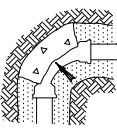
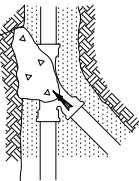
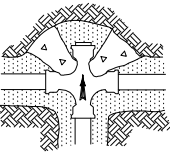
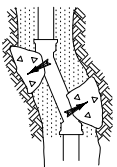
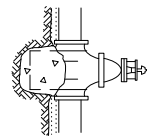
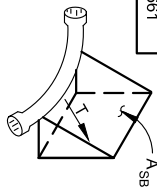
$$A_{sb} = \frac{T \times P_t}{B \times 100}$$

WHERE:  
 $A_{sb}$  = AREA OF BLOCK BEARING  
AGAINST UNDISTURBED  
TRENCH MATERIAL IN SQ. FT.

T = THRUST FACTOR FROM TABLE I  
IN POUNDS AT 100 PSI

B = SAFE BEARING LOAD FROM  
TABLE II IN POUNDS/SQ. FT.

P<sub>t</sub> = PRESSURE USED FOR  
PIPELINE TEST IN PSI

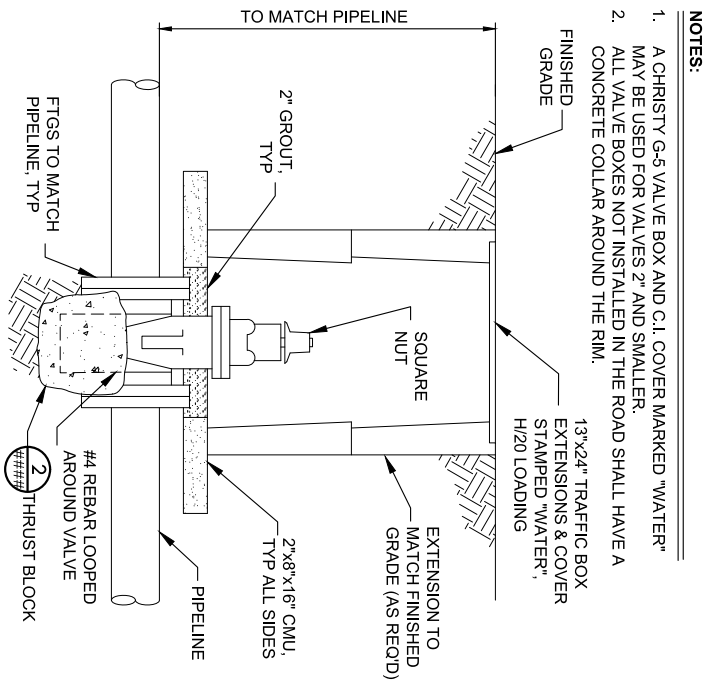


### NOTE:

- MECHANICAL RESTRAINED JOINTS ARE ACCEPTABLE IN LIEU OF CONCRETE THRUST BLOCKS.

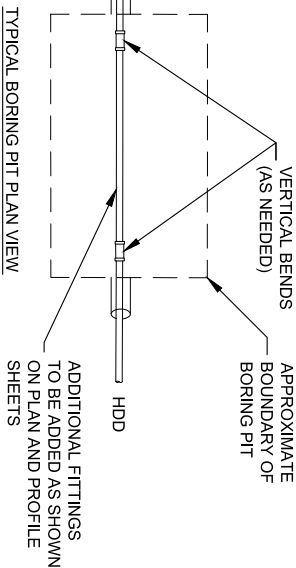
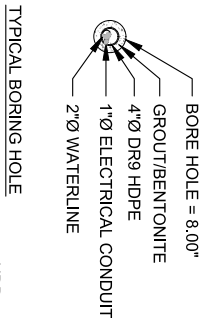
## 2 THRUST BLOCK SIZING AND LOCATIONS

SCALE: NTS



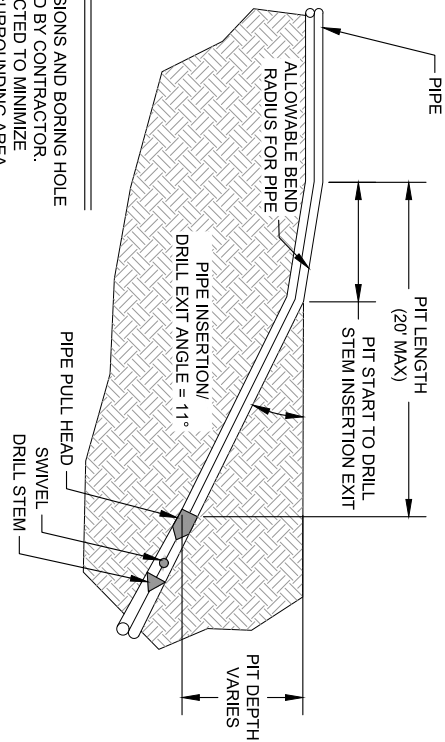
## 3 TYPICAL BURIED VALVE

SCALE: NTS



- NOTES:**
- THE ACTUAL PIT DIMENSIONS AND BORING HOLE SIZE TO BE DETERMINED BY CONTRACTOR.
  - PIT SHALL BE CONSTRUCTED TO MINIMIZE DISTURBANCE TO THE SURROUNDING AREA.

TYPICAL BORING PIT PROFILE VIEW



## 4 HORIZONTAL DIRECTIONAL DRILLING (HDD) DETAILS

SCALE: AS DIMENSIONED



ACQUISITION &  
DEVELOPMENT DIVISION  
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Sacramento, CA  
95814-3223



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DPR ACCESS COMPLIANCE REVIEW ACCESSIBILITY SECTION

CERTIFICATION # \_\_\_\_\_

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DESIGNED: ASH/CJC  
DRAWN: ASH/CJC  
CHECKED: PHH  
DATE: 5-12-2017

REVISIONS	DATE

MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS

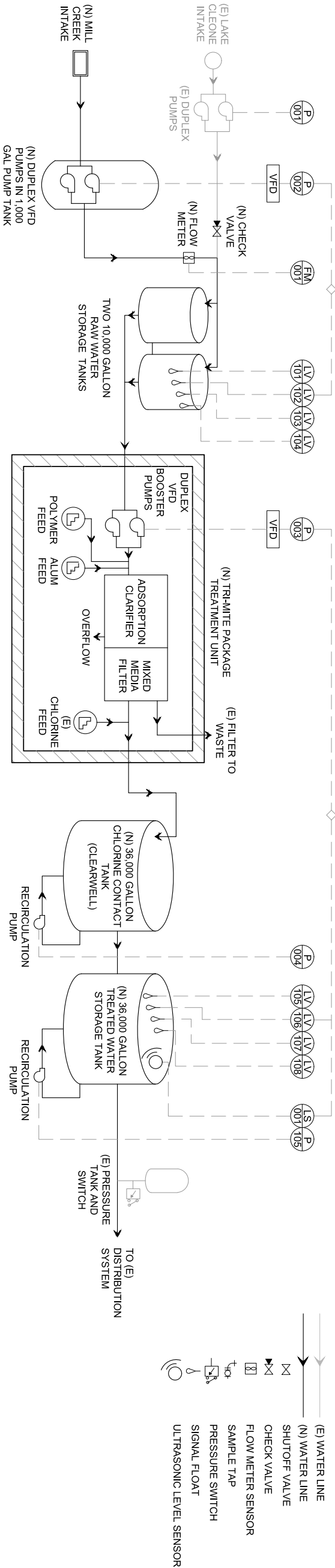
# WATER SYSTEM DETAILS

DRAWING NO.  
XXXXX.010

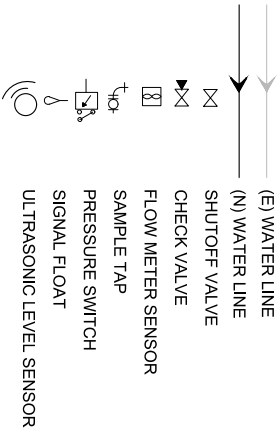
SHEET NO.  
C5.0



22"x34" SHEET. IF SHEET SIZE IS SMALLER, THEN DRAWING HAS BEEN REDUCED.



SYMBOLS LEGEND



BASIC DESCRIPTION OF THE PROJECT:

MACKERRICHER STATE PARK (MSP), CURRENTLY UTILIZES FRESHWATER FROM LAKE CLEONE TO MEET THE POTABLE WATER DEMANDS FOR THE PARK. HOWEVER, DUE TO FLOODING OF THE EXISTING PUMP HOUSE AND THE INCREASING SALINITY OF LAKE CLEONE THE WATER SYSTEM REQUIRES IMPROVEMENTS.

THIS PROJECT WILL CONSIST OF A COMPLETE REPLACEMENT OF THE AGED TRI-MITE TREATMENT SYSTEM, INSTALLATION OF A NEW SURFACE WATER DIVERSION ALONG MILL CREEK, INSTALLATION OF A NEW 2" Ø WATER LINE FROM THE DIVERSION TO THE EXISTING RAW WATER LINE, INSTALLATION OF TWO (2) 10,000 GALLON HDPE RAW WATER TANKS AND A CONCRETE PAD FOUNDATION, INSTALLATION OF A 36,000 GALLON WELDED STAINLESS STEEL CLEARWELL TANK AND CONCRETE PAD FOUNDATION, AND INSTALLATION OF A 36,000 GALLON WELDED STAINLESS STEEL TREATED WATER STORAGE TANK AND CONCRETE PAD FOUNDATION.

THE EXISTING CONCRETE INTAKE ALONG THE BANK OF LAKE CLEONE WILL REMAIN INTACT AND WILL SERVE AS A BACKUP TO THE NEW MILL CREEK INTAKE. THE LAKE CLEONE PUMP HOUSE WILL BE REMOVED AND A PUMP SHED WILL BE CONSTRUCTED AT A HIGHER ELEVATION, FURTHER FROM THE HIGH WATER MARK. THE EXISTING PUMPS AND CONTROLS WILL BE RELOCATED AND REPLUMBED IN THE NEW PUMP SHED.

CONTROL SYSTEM NARRATIVE:

MILL CREEK INTAKE:

THE NEW INCLINED SCREEN INTAKE ALONG MILL CREEK WILL SERVE AS THE PRIMARY POTABLE WATER SOURCE FOR THE PARK. THE STAINLESS STEEL, WEDGE WIRE SCREEN INTAKE WILL BE INSTALLED IN A LOW PROFILE ROCK WEIR THAT SPANS THE WIDTH OF MILL CREEK. THE INCLINED SCREEN IS DESIGNED TO MEET FISH-FRIENDLY REQUIREMENTS AND WILL PASSIVELY COLLECT WATER THAT FLOWS OVER THE WEIR AND INTO THE 6"Ø COLLECTION PIPE. THE COLLECTION PIPE WILL CONVEY WATER BY GRAVITY TO THE ADJACENT 1,000 GALLON PUMP TANK. THE FIBERGLASS PUMP TANK WILL CONTAIN DUPLEX PUMPS THAT WILL BE CONTROLLED BY SIGNAL FLOATS IN THE 10,000 GALLON RAW WATER TANKS. WHEN THE WATER LEVEL IN THE RAW WATER TANK DROPS BELOW THE LOW-LEVEL SET POINT, THE DUPLEX PUMPS (P-002) WILL BEGIN PUMPING WATER. THE FLOW RATE FROM THE 1,000 GALLON PUMP TANK CAN BE ADJUSTED BY THE VARIABLE FREQUENCY DRIVE (VFD) AND THE VOLUME OF WATER THAT IS DRAWN FROM MILL CREEK WILL BE MONITORED AND RECORDED BY FM-001. ONCE THE SIGNAL FLOATS IN THE RAW WATER TANK REACH THE HIGH LEVEL SET POINT, PUMP SYSTEM P-002 WILL TURN OFF AND THE 1,000 GALLON PUMP TANK WILL CONTINUE TO FILL UNTIL THE WATER LEVEL REACHES THE 6" Ø OVERFLOW PIPE WHICH WILL EMPTY BACK INTO MILL CREEK.

WATER TREATMENT:

THE NEW TRI-MITE TREATMENT SYSTEM WILL BEGIN PROCESSING WATER WHEN THE ULTRASONIC LEVEL SENSOR (LS-001) REACHES THE LOW LEVEL SET POINT. PUMP SYSTEM P-003 WILL DRAW WATER FROM THE TWO, 10,000 GALLON RAW WATER TANKS AND DELIVER WATER TO THE TREATMENT SYSTEM AT THE REQUIRED FLOW RATE (TYPICALLY 25GPM). THE FLOW RATE THROUGH THE TREATMENT PLANT IS ADJUSTABLE USING THE VARIABLE FREQUENCY DRIVE CONTROLLER ON PUMP SYSTEM P-003. TREATED WATER WILL BE PUMPED FROM THE TREATMENT PLANT INTO THE NEW 36,000 GALLON CLEARWELL TANK.

CALL FOR WATER:

TREATED WATER WILL BE DELIVERED TO THE DISTRIBUTION SYSTEM USING THE EXISTING INFRASTRUCTURE. WHEN A PRESSURE DROP IS DETECTED BY THE EXISTING PRESSURE SWITCH, THE EXISTING DISTRIBUTION PUMP WILL INITIATE AND BEGIN DELIVERY OF TREATED WATER TO THE DISTRIBUTION SYSTEM.

PUMP SYSTEM #1

PUMP SYSTEM #1 CONSISTS OF THE EXISTING GOULD GS1015 PUMPS LOCATED IN THE PUMP HOUSE. THE PUMPS WILL BE RELOCATED TO THE NEW PUMP HOUSE AND REPLUMBED IN THE SAME MANNER AS THEY ARE CURRENTLY CONFIGURED.

PUMP SYSTEM #2

PUMP SYSTEM #2 CONSISTS OF NEW DUPLEX SUBMERSIBLE PUMPS THAT WILL BE LOCATED IN THE FIBERGLASS PUMP TANK ADJACENT TO THE MILL CREEK INTAKE. BOTH OF THE PUMPS WILL BE CONNECTED TO A NEW VARIABLE FREQUENCY DRIVE (VFD) THAT WILL ADJUST THE PUMP FLOW RATE BASED ON DEMAND AND SEASONAL WATER AVAILABILITY. THE PUMPS WILL BE CONNECTED TO A NEW PANEL THAT WILL HAVE A HAND/OFF/AUTO SWITCH.

PUMP SYSTEM #3

PUMP SYSTEM #3 CONSISTS OF NEW DUPLEX PUMPS THAT WILL DRAW WATER FROM THE RAW WATER TANKS AND DELIVER IT AT THE REQUIRED FLOW AND PRESSURE TO THE NEW TRI-MITE WATER TREATMENT SYSTEM. PUMP SYSTEM #3 WILL ALSO BE CONNECTED TO A VFD THAT WILL ALLOW THE OPERATOR TO ADJUST THE FLOW, AS NECESSARY, TO THE TREATMENT SYSTEM.

PUMP SYSTEM #4 & #5

A RECIRCULATION PUMP WILL MAINTAIN ADEQUATE CIRCULATION TO MINIMIZE DISINFECTION BYPRODUCT FORMATION. PUMP SYSTEM #4 CONSISTS OF A SINGLE RECIRCULATION PUMP THAT IS CONNECTED TO THE 36,000 GALLON CLEARWELL WATER TANK. SIMILARLY, PUMP SYSTEM #5 IS A SINGLE RECIRCULATION PUMP THAT IS CONNECTED TO THE 36,000 GALLON TREATED WATER STORAGE TANK. BOTH PUMPS WILL BE THE SAME MODEL AND MAKE AND THEIR OPERATION WILL BE CONTROLLED BY A HAND/OFF/AUTO SWITCH THAT IS TIED TO THE MAIN CONTROL PANEL. THE AUTO FUNCTION WILL BE CONTROLLED BY A TIMER THAT IS TO BE SET BY THE OPERATOR.

FLOW METER

A NEW FLOW METER SENSOR (FM-001) SHALL PROVIDE CONTINUOUS RECORDING AND DATA LOGGING CAPABILITIES FOR FLOW RATE AND TOTALIZER READINGS. THE FLOW SENSOR SHALL BE INSTALLED ON THE NEW 2" Ø WATER LINE IN A NEW VAULT. BEFORE THE LINE CONVERGES WITH THE EXISTING WATER TREATMENT FEED LINE FROM LAKE CLEONE. THE FLOW SENSOR WILL BE CONNECTED TO THE (N) FLOW TRANSMITTER IN THE TREATMENT SHED. FLOW DATA THAT IS COLLECTED FOR THE NEW INTAKE WILL BE USED FOR MONITORING AND REPORTING TO THE REGIONAL WATERBOARD AND DEPARTMENT OF FISH AND WILDLIFE.

NEW TRI-MITE WATER TREATMENT SYSTEM

THE EXISTING TRI-MITE WATER TREATMENT SYSTEM WILL BE REPLACED WITH A NEW TRI-MITE TM-50A TREATMENT UNIT WITH ALL OF THE ASSOCIATED PLUMBING AND CONTROLS PRE-INSTALLED. INTEGRATION OF THE NEW UNIT SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND WILL REPLACE THE EXISTING UNIT IN KIND.

ITEM	LABEL	DESCRIPTION	CONTROL POINT TYPE
PUMP SYSTEM #1	P-001	LAKE CLEONE INTAKE (EXISTING EQUIPMENT)	DO
PUMP SYSTEM #2	P-002	MILL CREEK INTAKE PUMPS AND VFD	DO
FLOW METER	FM-001	MILL CREEK INTAKE FLOW METER	AI
SIGNAL FLOAT	LV-101	REDUNDANT OFF/Low LEVEL ALARM	DI
SIGNAL FLOAT	LV-102	LEAD PUMP ON/PUMPS OFF	DI
SIGNAL FLOAT	LV-103	LAG PUMP ON	DI
SIGNAL FLOAT	LV-104	HIGH LEVEL ALARM	DI
PUMP SYSTEM #3	P-003	NEW TREATMENT SYSTEM PUMPS AND VFD	DO
PUMP SYSTEM #4	P-004	CLEARWELL WATER TANK RECIRCULATION PUMP	DO
SIGNAL FLOAT	LV-105	REDUNDANT OFF/Low LEVEL ALARM	DI
SIGNAL FLOAT	LV-106	LEAD PUMP ON/PUMPS OFF	DI
SIGNAL FLOAT	LV-107	LAG PUMP ON	DI
SIGNAL FLOAT	LV-108	HIGH LEVEL ALARM	DI
ULTRASONIC LEVEL SENSOR	LS-001	WATER LEVEL AND CONTROL POINT ON TREATED WATER TANK	AI
PUMP SYSTEM #5	P-005	TREATED WATER TANK RECIRCULATION PUMP	DO

2 TREATMENT SYSTEM PLC POINTS LIST

TOTALS: DO: 5+1 SPARE / DI: 8+1 SPARE / AO: 0+2 SPARE / AI: 2+1 SPARE



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95814-4229



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Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_  
DPR ACCESS COMPLIANCE REVIEW  
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CERTIFICATION # \_\_\_\_\_

DESIGNED: ASH/CJC  
DRAWN: ASH/CJC  
CHECKED: PHH  
DATE: 5-12-2017

REVISIONS	DATE

MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS  
PROCESS INSTRUMENTATION  
DIAGRAM AND CONTROL  
NARRATIVE

DRAWING NO.  
XXXXX.011

SHEET NO.  
C6.0





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95814-3229



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ACCESSIBILITY SECTION

CERTIFICATION # \_\_\_\_\_  
Reviewed by \_\_\_\_\_ Date \_\_\_\_\_

DESIGNED: NA  
DRAWN: CADD  
CHECKED: NA  
DATE: 5-12-2017

REVISIONS	DATE

MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS

# SYMBOLS, ABBREVIATIONS & SHEET INDEX

DRAWING NO.  
XXXXX.012

SHEET NO.

E0.1

3 SCHEDULE SYMBOL. SEE ASSOCIATED  
NOTE ON SAME SHEET

1 2 DETAIL OR SECTION REFERENCE  
E3.0 SHEET NUMBER

1 2 INDICATES QUANTITY OF TELEPHONE OUTLETS  
INDICATES QUANTITY OF DATA OUTLETS

2 SHEET NOTE REFERENCE SYMBOL.  
SEE ASSOCIATED NOTE ON SAME SHEET

2 DETAIL NOTE REFERENCE SYMBOL.  
SEE ASSOCIATED NOTE ON SAME DETAIL

F301 FEEDER DESIGNATION;  
SEE ASSOCIATED NOTE ON SAME DETAIL

## ABBREVIATIONS

A	AMPERE	GFI	GROUND FAULT INTERERRUPTING	OAH	OVERALL HEIGHT
AF	ABOVE FINISHED FLOOR	GFI	GROUND	OC	ON CENTER
ALUMAL	ALUMINUM	GND, G	GALVANIZED RIGID	OH	OVERHEAD
ARCH	ARCHITECT	GRS	STEEL	PA	PUBLIC ADDRESS
AWG	AMERICAN WIRE			PB	PULL BOX
BKR	GAUGE	HT	HEIGHT	PF	POWER FACTOR
C	BREAKER	IC	INTERCOM	PH	PHASE
CA/TV	CONDUIT CABLE TV	IDF	INTERMEDIATE DISTRIBUTION FRAME	PIR	PASSIVE INFRARED
CB	CIRCUIT BREAKER			PNL	PANEL
CCTV	CLOSED CIRCUIT TV	INCAND	INCANDESCENT	PV	PHOTOVOLTAIC
CL	CIRCUIT	JB	JUNCTION BOX	PVC	POLYVINYL CHLORIDE
CLG	CENTER LINE	KV	KILOVOLT		
CO	CEILING	KVA	KILOVOLT AMPERES		
CTR	CONDUIT ONLY	KW	KILOWATT	PWR	POWER
D	CENTER	LCP	LIGHTING CONTROL PANEL	(R)	EXISTING TO BE REMOVED
DIM	DIMMER	LTG	LIGHTING	(RP)	REMOVABLE POLE
DIST	DIMENSION	LV	LOW VOLTAGE	RECPTS	RECEPTACLES
(E)	EXISTING	KCM	THOUSAND	REQD	REQUIRED
EC	ELECTRICAL CONTRACTOR	MCA	CIRCULAR MILS	REOMTS	REQUIREMENT(S)
(EL)	EVENING LIGHT	MDF	MINIMUM	SHT	SHEET
EM	EMERGENCY	MDF	CIRCUIT AMPS	SID	SINGLE LINE DIAGRAM
EMT	ELECTRICAL	MECH	MECHANICAL	STC	SYSTEMS TERMINATION
	METALLIC TUBING	MH	MAIN DISTRIBUTION FRAME	SW	SWITCH
EQUIP	EQUIPMENT	MLO	METAL HALIDE	SWB	SWITCHBOARD
FA	FIRE ALARM	MPOE	MAIN LUGS ONLY	TTB	TELEPHONE TERMINAL
FACP	CONTROL PANEL	MTD	MAIN POINT OF ENTRANCE	TYP	TYPICAL
FC	FOOT CANDLE	MTG	MOUNTING	UG	UNDERGROUND
FIN	FINISH	MOCP	MAXIMUM OVER CURRENT PROTECTION	V	VOLT
FL	FLOOR	(N)	NEW	W	WATT
FLA	FULL LOAD AMPS	NIC	NOT IN CONTRACT	WP	WEATHERPROOF
FLUOR	FLUORESCENT	NIEC	NOT IN ELECTRICAL CONTRACT	XFMR	TRANSFORMER
(F)	FUTURE	(NL)	NIGHT LIGHT		
GC	GENERAL CONTRACTOR	NO.	NUMBER		
		NOM	NOMINAL		
		NTS	NOT TO SCALE		

## ELECTRICAL SYMBOLS & ABBREVIATIONS

SYMBOLS & ABBREVIATIONS SHOWN ARE FOR GENERAL USE. DISREGARD THOSE WHICH DO NOT APPEAR ON THE PLANS.

	FLUORESCENT OR LED LUMINAIRE - SEE SCHEDULE		SECURITY DOOR CONTACTS		PANELBOARD - FLUSH MOUNTED
	EMERGENCY OR NIGHT LIGHT		SECURITY MOTION DETECTOR		EQUIPMENT PANEL - FLUSH MOUNTED
	STRIP FLUORESCENT OR LED LUMINAIRE - SEE SCHEDULE		CCTV CAMERA		PANELBOARD - SURFACE MOUNTED
	LUMINAIRE - RECESSED - SEE SCHEDULE		SECURITY SYSTEM KEYPAD		EQUIPMENT PANEL - SURFACE MOUNTED
	RECESSED WALL WASHER		DOOR BELL PUSHBUTTON		METER W/ CURRENT TRANSFORMER
	LUMINAIRE - SURFACE MOUNTED - SEE SCHEDULE		DOOR CHIME WITH LED		JUNCTION BOX - CEILING OR WALL MOUNTED, SIZE PER CODE, TAPE AND TAG WIRES
	LUMINAIRE - POLE OR POST MOUNTED - SEE SCHEDULE		RECEPTACLE - DUPLEX*		MOTOR CONNECTION
	LUMINAIRE - WALL MOUNTED SEE SCHEDULE		RECEPTACLE - DUPLEX*		NON-FUSED DISCONNECT SWITCH
	BOLLARD OR PATH LIGHT - SEE SCHEDULE		DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER - FIELD VERIFY HEIGHT		FUSED DISCONNECT SWITCH, FUSED WITH DUAL-ELEMENT FUSES SIZED PER EQUIPMENT
	EXIT LIGHT - DIRECTIONAL ARROWS AS INDICATED - SEE SCHEDULE		GFCI CONVENIENCE DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER - FIELD VERIFY HEIGHT		MFG'S NAMEPLATE DATA
	TRACK LIGHTING - SEE SCHEDULE		RECEPTACLE DOUBLE DUPLEX *		COMBINATION STARTER/FUSED DISCONNECT SWITCH; FUSED DISCONNECT SWITCH ELEMENT FUSES SIZED PER EQUIPMENT MFG'S NAMEPLATE DATA
	EMERGENCY LIGHT		HALF SWITCHED DUPLEX RECEPTACLE *		MAGNETIC STARTER - NEMA SIZE INDICATED NEMA 3R ENCLOSURE UNLESS OTHERWISE SPECIFIED
	DIGITAL DUAL TECHNOLOGY OCC. SENSOR		CIRCUIT BREAKER		GROUND ROD WITH GROUNDWELL BOX
	LIGHTING CONTROL OCCUPANCY SENSOR		GROUND ELECTRODE		NORMALLY OPEN CONTACT
	DIMMER ROOM CONTROLLER		NORMALLY CLOSED CONTACT		TRANSFORMER - SEE SINGLE LINE FOR SIZE
	PLUG LOAD CONTROLLER		PULLBOX		FLEX CONDUIT WITH CONNECTION
	ROOM LIGHTING CONTROLLER		CONDUIT - UP		CONDUIT - DOWN
	LIGHTING CONTROL PANEL		CONDUIT EMERGENCY SYSTEM		CONDUIT EMERGENCY SYSTEM
	DIGITAL DAYLIGHT SENSOR		LOW VOLTAGE WIRING		CONDUIT - EXISTING
	SINGLE POLE SWITCH**		CONDUIT - BELOW SLAB OR UNDERGROUND: 3/4"MIN.		CONDUIT CONTINUATION
	SINGLE POLE SWITCH CONTROLLED		CONDUIT - HOME RUN TO PANEL, TERMINAL CABINET, ETC. RUNS MARKED WITH CROSSHATCHES INDICATE NUMBER OF #12 AWG WIRES WHEN MORE THAN TWO. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE. CROSS HATCHES WITH NUMBER ADJACENT INDICATES WIRE SIZE OTHER THAN #12 AWG.		
	THREE WAY SWITCH**				
	FOUR WAY SWITCH**				
	MANUAL MOTOR STARTER				
	KEY OPERATED SWITCH**				
	LIGHTING DIMMER**				
	DIGITAL ON/OFF SWITCH **				
	DIGITAL DIMMER SWITCH**				
	DIGITAL MULTI SCENE LIGHTING SWITCH **				
	DIGITAL DUAL TECHNOLOGY WALL OCC. SENSOR**				
	WALL OCCUPANCY SENSOR**				
	DOUBLE SWITCHED WALL OCCUPANCY SENSOR **				
	DIMMING DUAL TECHNOLOGY WALL SWITCH OCCUPANCY SENSOR **				
	2-BUTTON DIMMING DUAL TECHNOLOGY WALL SWITCH OCCUPANCY SENSOR**				

## SHEET INDEX

E0.1	SYMBOLS, ABBREVIATIONS & SHEET INDEX.
E0.2	CODES, STANDARDS, GENERAL CONSTRUCTION & DEMOLITION NOTES.
E1.0	OVERALL SITE PLAN - WATER SYSTEM IMPROVEMENTS.
E2.1	ELECTRICAL PARTIAL SITE PLAN - MILL CREEK INTAKE IMPROVEMENTS.
E2.2	ELECTRICAL PLAN - WATER TREATMENT PLANT IMPROVEMENTS.
E2.3	ELECTRICAL PARTIAL SITE PLAN - LAKE CLEONE PUMP HOUSE IMPROVEMENTS.






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<div>GENERAL CONSTRUCTION NOTES</div> <div><div><div><div>1. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS. MATERIALS AND EQUIPMENT SHALL BE U.L. LISTED AND LABELED FOR THE APPLICATION.</div><div>2. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND INSPECTION FEES REQUIRED BY THIS CONTRACT WORK.</div><div>3. CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO BIDDING AND ALLOW FOR ALL FIELD CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ELECTRICAL WORK NOTED AND CALLED OUT ON ALL CONTRACT DOCUMENTS. THE CONTRACTOR SHALL OBTAIN INFORMATION AND BE FAMILIAR WITH ALL OTHER TRADES WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION BETWEEN OTHER TRADES ON PROJECT.</div><div>4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF PERSONS AND PROPERTY AND SHALL PROVIDE INSURANCE COVERAGE AS NECESSARY FOR LIABILITY AND PERSONAL, PROPERTY DAMAGE, TO FULLY PROTECT THE STATE PARK REPRESENTATIVE AND ENGINEER FROM ANY AND ALL CLAIMS RESULTING FROM THIS WORK.</div><div>5. CONTRACTOR SHALL MAINTAIN RECORD DRAWINGS AT THE PROJECT SITE INDICATING ALL MODIFICATIONS TO ELECTRICAL SYSTEMS. THE CONTRACTOR SHALL AT THE CONCLUSION OF THE PROJECT PROVIDE ACCURATE "AS-BUILT" DRAWINGS ACCEPTABLE TO THE STATE PARK REPRESENTATIVE.</div><div>6. ALL MATERIALS PROVIDED TO THE PROJECT SHALL BE NEW. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL ALL INCIDENTAL MATERIALS REQUIRED FOR A COMPLETE INSTALLATION.</div><div>7. CONTRACTOR SHALL PROVIDE TO THE STATE PARK REPRESENTATIVE A CONSTRUCTION SCHEDULE OF ELECTRICAL WORK. THE CONSTRUCTION SCHEDULE SHALL IDENTIFY ALL SIGNIFICANT MILESTONES WITH COMPLETION DATES.</div><div>8. CONTRACTOR SHALL PROVIDE ALL REQUIRED "CUTTING, PATCHING, EXCAVATION, BACKFILL AND REPAIRS" NECESSARY TO RESTORE DAMAGED SURFACES TO EQUAL OR BETTER THAN ORIGINAL CONDITIONS EXISTING AT START OF WORK.</div><div>9. CONTRACTOR SHALL BE RESPONSIBLE FOR PAINTING ALL EXPOSED CONDUITS AND ELECTRICAL EQUIPMENT.</div><div>10. ALL ELECTRICAL EQUIPMENT INSTALLED OUTDOORS SHALL BE WEATHERPROOF. EXTERIOR CONDUITS RUN INTO BUILDINGS SHALL BE INSTALLED WITH FLASHING, CAULKED AND SEALED. CONDUITS FOR EXTERIOR ELECTRICAL DEVICES SHALL BE RUN INSIDE BUILDING UNLESS OTHERWISE NOTED ON DRAWINGS.</div><div>11. ALL CONDUITS UNLESS OTHERWISE NOTED ON DRAWINGS SHALL HAVE AS A MINIMUM: TWO (2) #12s WITH ONE (1) #12 GROUND. "TICK" MARKS SHOWN ON CIRCUITRY ARE FOR ROUGH ESTIMATING ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WIRES AND WIRE SIZES REQUIRED BY LATEST CODE.</div><div>12. ALL BRANCH CIRCUITS SHALL HAVE INDIVIDUAL NEUTRALS. SHARED NEUTRALS ON MULTIWIRE CIRCUITS IS NOT ALLOWED.</div><div>13. ALL 120/277V LIGHT SWITCHES AND WALL OCCUPANT SENSORS SHALL HAVE A NEUTRAL INSTALLED TO THE DEVICE BOX EXCEPT WHERE A CONDUIT OR SURFACE RACEWAY SYSTEM IS INSTALLED.</div></div><div><div>14. COORDINATE ALL CONDUIT RUNS, ELECTRICAL EQUIPMENT AND PANELS WITH ALL OTHER WORK TO AVOID CONFLICTS.</div><div>15. CONTRACTOR SHALL, PRIOR TO BID, FIELD VERIFY ALL REQUIREMENTS FOR MODIFYING THE EXISTING DATATO ACCOMMODATE ADDITIONS NOTED. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS NEEDED TO MAKE A FULLY OPERATIONAL SYSTEM AT THE CONCLUSION OF PROJECT WORK.</div><div>16. CONTRACTOR SHALL PROVIDE IN EVERY EMPTY CONDUIT A DRAW STRING FOR USE IN FUTURE CONSTRUCTION.</div><div>17. ALL CONDUIT SHALL BE CONCEALED WHERE POSSIBLE. CUT AND PATCH EXISTING WALLS WHERE NECESSARY. WHERE IT IS NECESSARY TO CUT OR BORE EXISTING STRUCTURAL WALLS FOR NEW ELECTRICAL WORK OBTAIN PERMISSION FROM THE STATE PARK REPRESENTATIVE PRIOR TO STARTING WORK. REUSE (E) CONDUIT WHERE POSSIBLE.</div><div>18. WHERE IT IS NOT POSSIBLE TO REUSE (E) CONDUIT OR RUN (N) CONCEALED CONDUIT USE NON-METALLIC SURFACE RACEWAY AND BOXES. ROUTING OF ALL NON-METALLIC RACEWAYS SHALL BE APPROVED BY THE STATE PARK REPRESENTATIVE PRIOR TO ROUGH-IN. WALL THICKNESS.</div><div>19. EXTENSION RINGS OR RESET BOXES TO BE FLUSH WITH NEW WALL THICKNESS.</div><div>20. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO (E) UNDERGROUND SYSTEMS (GAS, WATER, TELEPHONE, ELECTRICAL, SEWER, ETC.). THE CONTRACTOR SHALL REPAIR &amp; PAY ALL EXPENSES FOR DAMAGE TO (E) UNDERGROUND SYSTEMS AS A RESULT OF (N) WORK. REPAIR TO DAMAGED UNDERGROUND SYSTEMS SHALL BE TO THE OWNERS SATISFACTION WITHOUT EXTRA EXPENSE TO THE OWNER.</div><div>21. EXISTING WIRING SHOWN HAS BEEN TAKEN FROM OLD PLANS AND IS ASSUMED TO BE CORRECT. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY ACTUAL CONDITIONS AND MAKE ADJUSTMENTS TO SUIT ACTUAL CONDITIONS AND TO MEET THE INTENT OF THE CONTRACT DOCUMENTS.</div><div>22. ALL INSTALLATION OF EXPOSED SURFACE MOUNTED RACEWAY IN PUBLIC AREAS SHALL BE REVIEWED BY ELECTRICAL ENGINEER BEFORE ROUGH-IN. CONTRACTOR IS TO DETERMINE THE ACCESSIBILITY OF ATTIC, FURRED SPACE, HOLLOW MULLIONS, ETC. IN EACH AREA AND REVIEW WITH ENGINEER. IF SYSTEM CAN BE ROUTED CONCEALED EITHER BY FISHING OR ACCESSIBILITY, CONTRACTOR IS TO DO SO. IF INACCESSIBILITY IS DETERMINED, CONTRACTOR SHALL INSTALL SURFACE MOUNTED RACEWAY IN THE MOST AESTHETICALLY PLEASING MEANS AS DETERMINED BY THE ENGINEER. NO ALLOWANCE FOR ADDITIONAL COMPENSATION DUE TO ROUTING AS DIRECTED BY THE ENGINEER WILL BE MADE.</div><div>23. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES AND OBTAIN UTILITY COMPANY CONSTRUCTION DOCUMENTS. UTILITY COMPANY CHARGES SHALL BE PAID BY STATE PARK REPRESENTATIVE.</div><div>24. CONTRACTOR SHALL COORDINATE WITH PG&amp;E FOR DISCONNECT/RE-CONNECT OF EXISTING METERED SERVICES.</div></div></div></div>		<div>GENERAL DEMOLITION NOTES</div> <div><div>A. CONTRACTOR SHALL FIELD VERIFY EXTENT OF ELECTRICAL DEMOLITION AND QUANTITIES OF ELECTRICAL TO BE REMOVED AS DICTATED BY THE REQUIREMENTS OF THE PROJECT</div><div>B. REMOVAL SHALL INCLUDE WIRING, RACEWAY, BOXES, SWITCHES, LIGHT FIXTURES, ETC. AS INDICATED ON THE PLANS AND AS REQUIRED BY THESE DEMOLITION NOTES.</div><div>C. RACEWAYS ASSOCIATED WITH ELECTRICAL BEING DEMOLISHED WHICH ARE CONCEALED IN EXISTING REMAINING WALLS MAY BE ABANDONED IN PLACE. REMOVE WIRING FROM CONDUIT.</div><div>D. RACEWAYS ASSOCIATED WITH ELECTRICAL BEING DEMOLISHED WHICH ARE EXPOSED SHALL BE REMOVED.</div><div>E. WHERE REMOVAL OF EQUIPMENT OR WIRING IS INDICATED, IT SHALL INCLUDE ALL ASSOCIATED WIRING BACK TO LAST ACTIVE REMAINING OUTLET, DEVICE, FIXTURE OR PANEL.</div><div>F. ELECTRICAL CONTRACTOR SHALL INSURE THAT ALL REMAINING ACTIVE CIRCUITS, DEVICES, OUTLETS, LIGHT FIXTURES, ETC. HAVE NOT BEEN DISCONNECTED OR MADE INOPERATIVE DURING DEMOLITION. ELECTRICAL CONTRACTOR SHALL RESTORE ALL INTERRUPTED OR DISCONNECTED CIRCUITS TO OPERATION.</div><div>G. ELECTRICAL CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL REMOVED ELECTRICAL EQUIPMENT AND MATERIAL.</div><div>H. NO REMOVED EQUIPMENT OR MATERIAL SHALL BE REUSED AS PART OF NEW WORK. U.O.N.</div><div>I. EXISTING REMAINING CONCEALED RACEWAYS MAY BE REUSED FOR NEW WORK PROVIDED THEY MEET ALL REQUIREMENTS OF THE SPECIFICATION FOR NEW WORK.</div><div>J. EXISTING FLUSH OUTLETS MAY BE REUSED FOR NEW WORK PROVIDED THEY MEET ALL REQUIREMENTS OF THE SPECIFICATION FOR NEW WORK. MEET THE REQUIREMENTS OF THE CURRENT C.E.C. FOR VOLUME AND COINCIDE WITH LOCATION SHOWN FOR THE NEW WORK.</div><div>K. FLUSH OUTLET BOXES IN EXISTING WALLS TO REMAIN MAY BE ABANDONED IN PLACE. REMOVE DEVICES AND WIRING. PLUG OPENING AND PROVIDE AND INSTALL A BLANK DEVICE PLATE.</div><div>L. EXISTING WIRING SHOWN HAS BEEN TAKEN FROM OLD PLANS AND IS ASSUMED TO BE CORRECT. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY ACTUAL CONDITIONS AND MAKE ADJUSTMENTS TO SUIT ACTUAL CONDITIONS AND TO MEET THE INTENT OF THE CONTRACT DOCUMENTS.</div><div>M. WHERE TELEPHONE, COMPUTER DATA, FIBER OPTICS, FIRE ALARM OR OTHER COMMUNICATIONS OUTLETS OR WIRING IS TO BE DEMOLISHED IT SHALL BE REMOVED BACK TO THE NEXT TERMINAL POINT. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE STATE PARK REPRESENTATIVE TO HAVE EQUIPMENT AND WIRING DESIGNATED FOR REMOVAL OR PRESERVATION PRIOR TO REMOVAL OF OUTLET BOXES, CONDUIT OR WIRING BY ELECTRICAL CONTRACTOR.</div><div>N. COORDINATE WITH OWNER PRIOR TO START OF DEMOLITION TO MINIMIZE POWER INTERRUPTIONS. WORK MAY HAVE TO OCCUR DURING NON-REGULAR BUSINESS HOURS. COORDINATE IN WRITING WITH THE STATE PARK REPRESENTATIVE ONE WEEK PRIOR TO PLANNED POWER INTERRUPTIONS.</div></div>		<div>APPLICABLE CODES &amp; STANDARDS</div> <div><div><div>CODES:</div><div><div>1. 2016 CALIFORNIA ADMINISTRATIVE CODE C.C.R., TITLE 24, PART 1.</div><div>2. 2016 CALIFORNIA BUILDING CODE (CBC) C.C.R., TITLE 24, VOL. 1 &amp; 2 BASED ON THE 2015 INTERNATIONAL BUILDING CODE (IBC) WITH CALIFORNIA AMENDMENTS.</div><div>3. 2016 CALIFORNIA RESIDENTIAL CODE C.C.R., TITLE 24, PART 2.5 BASED ON THE 2015 INTERNATIONAL RESIDENTIAL CODE WITH CALIFORNIA AMENDMENTS.</div><div>4. 2016 CALIFORNIA ELECTRICAL CODE (CEC) C.C.R., TITLE 24, PART 3 BASED ON THE 2014 NATIONAL ELECTRICAL CODE (NEC) WITH CALIFORNIA AMENDMENTS.</div><div>5. 2016 CALIFORNIA MECHANICAL CODE (CMC) C.C.R., TITLE 24, PART 4 BASED ON THE 2015 UNIFORM MECHANICAL CODE (UMC) WITH CALIFORNIA AMENDMENTS.</div><div>6. 2016 CALIFORNIA PLUMBING CODE (CPC) C.C.R., TITLE 24, PART 5 BASED ON THE 2015 UNIFORM PLUMBING CODE (UPC) WITH CALIFORNIA AMENDMENTS.</div><div>7. 2016 CALIFORNIA ENERGY CODE C.C.R., TITLE 24, PART 6.</div><div>8. 2016 CALIFORNIA FIRE CODE (CFC) C.C.R., TITLE 24, PART 9 BASED ON THE 2015 INTERNATIONAL FIRE CODE (IFC) WITH CALIFORNIA AMENDMENTS.</div><div>9. 2016 CALIFORNIA GREEN BUILDING STANDARDS CODE C.C.R., TITLE 24, PART 11.</div><div>10. 2016 CALIFORNIA REFERENCED STANDARDS CODE C.C.R., TITLE 24, PART 12.</div><div>11. TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.</div><div>12. NATIONAL FIRE ALARM CODE (NFPA 72) 2016.</div></div></div><div><div>STANDARDS:</div><div><div>1. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)</div><div>2. ELECTRONICS INDUSTRIES ASSOCIATION (EIA)</div><div>3. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)</div><div>4. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)</div><div>5. NATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)</div><div>6. UNDERWRITER LABORATORIES (UL)</div><div>7. CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ACT STANDARDS (CAL/OSHA)</div></div></div></div>	
<div>22"x34" SHEET. IF SHEET SIZE IS SMALLER, THEN DRAWING HAS BEEN REDUCED.</div>		<div>ACQUISITION &amp; DEVELOPMENT DIVISION One Capitol Mall Sacramento, CA 95814-3229</div> <div><div>CALIFORNIA STATE FIRE MARSHAL-APPROVED Approval of this plan does not authorize or approve any omission of deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.</div><div>Reviewed by _____ Date _____ DPR ACCESS COMPLIANCE REVIEW ACCESSIBILITY SECTION CERTIFICATION # _____ DESIGNED: _____ NA DRAWN: _____ CADD CHECKED: _____ NA DATE: 5-12-2017</div><div>REVISIONS DATE</div></div>			
<div>MACKERRICHER STATE PARK WATER SYSTEM IMPROVEMENTS CODES, STANDARDS, GENERAL CONTRUCTION &amp; DEMOLITION NOTES</div>		<div>ACQUISITION &amp; DEVELOPMENT DIVISION One Capitol Mall Sacramento, CA 95814-3229</div> <div><div>CALIFORNIA STATE FIRE MARSHAL-APPROVED Approval of this plan does not authorize or approve any omission of deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.</div><div>Reviewed by _____ Date _____ DPR ACCESS COMPLIANCE REVIEW ACCESSIBILITY SECTION CERTIFICATION # _____ DESIGNED: _____ NA DRAWN: _____ CADD CHECKED: _____ NA DATE: 5-12-2017</div><div>REVISIONS DATE</div></div>			
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PACIFIC OCEAN

1(E) PUMP HOUSE  
E2.3 AND INTAKE

1(E) WATER TREATMENT  
E2.1 PLANT IMPROVEMENTS

1(E) MILL CREEK INTAKE  
E2.2 IMPROVEMENTS

CA HIGHWAY 1

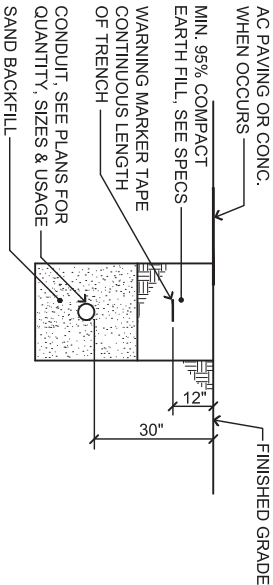
LAKE CLEONE

## 1 OVERALL SITE PLAN - WATER SYSTEM IMPROVEMENTS

APPROXIMATE SCALE: 1"=150'-0"

### GENERAL NOTES:

1. SAW CUT, TRENCH & BACKFILL FOR (N) CONDUITS. PATCH WALKWAY TO MATCH (E) SURROUNDING SURFACES. CARE SHALL BE TAKEN TO PROTECT EXISTING TREES. RESEED OR RESOD (E) DISTURBED PLANTED AREAS TO STATE PARK REPRESENTATIVES SATISFACTION.
2. EXISTING A.C. SHALL BE CUT AND REMOVED IN SUCH A MANNER SO AS NOT TO TEAR BULGE OR DISPLACE ADJACENT PAVEMENT. EDGES SHALL BE CLEAN AND VERTICAL. ALL CUTS SHALL BE PARALLEL OR PERPENDICULAR TO STREET CENTERLINE, WHEN PRACTICAL.
3. BASE MATERIAL TO BE REPLACED TO THE DEPTH OF EXISTING BASE AND COMPACTED TO A MIN. 95% RELATIVE COMPACTION. A.C. MAY BE SUBSTITUTED FOR BASE MATERIAL, WHEN USED AS BACKFILL. CLASS 100-E-100 P.C.C. MAY BE SUBSTITUTED FOR BASE MATERIAL.
5. A TACK COAT OF ASPHALTIC EMULSION OR PAVING ASPHALT SHALL BE APPLIED TO EXISTING A.C. AT ALL CONTACT SURFACES, PRIOR TO RESURFACING.
6. ASPHALTIC CONCRETE RESURFACING:
  - A. MINIMUM TOTAL THICKNESS SHALL BE ONE INCH GREATER THAN EXISTING A.C.
  - B. A.C. SHALL BE HOT PLANT MIX.
7. ALL A.C. RESURFACING SHALL BE SEAL COATED WITH AN EMULSIFIED ASPHALT AND COVERED WITH CLEAN SAND.



## 2 TYPICAL TRENCH SECTION

NO SCALE

### GENERAL NOTES:

CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO TRENCHING AND TAKE CAUTION TO AVOID DAMAGE DURING TRENCHING. HAND TRENCH IF NECESSARY. CONTRACTOR SHALL MAKE ALL REPAIRS TO DAMAGED UTILITIES AT NO CHARGE TO STATE PARKS. SEE CIVIL DRAWINGS FOR FURTHER DIRECTION. AVOID TREE & DAMAGE TO TREE ROOTS.



ACQUISITION &  
DEVELOPMENT DIVISION  
One Capitol Mall  
Sacramento, CA  
95814-3229



CALIFORNIA STATE FIRE MARSHAL--APPROVED  
Approval of this plan does not authorize or approve any omission of deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.

Reviewed by \_\_\_\_\_ Date \_\_\_\_\_

DFR ACCESS COMPLIANCE REVIEW

CERTIFICATION # \_\_\_\_\_

Accessed by \_\_\_\_\_ Date \_\_\_\_\_

DESIGNED: \_\_\_\_\_ NA  
DRAWN: \_\_\_\_\_ CADD  
CHECKED: \_\_\_\_\_ NA  
DATE: 5-12-2017

REVISIONS	DATE

MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS  
OVERALL SITE PLAN -  
WATER SYSTEM  
IMPROVEMENTS



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DRAWING NO.  
XXXXX.014

SHEET NO.

E1.0



22"x34" SHEET. IF SHEET SIZE IS SMALLER, THEN DRAWING HAS BEEN REDUCED.

○ DETAIL NOTES:

1. SIZES(S) & MFG.R. AS NOTED ON DRAWINGS.

◇ SHEET NOTES

1. PROVIDE & INSTALL FEEDER FROM EXISTING SERVICE PANEL TO NEW PANEL, "WT" IN WATER TREATMENT BUILDING. SEE 3/E2.1 FOR SIZE AND REQUIREMENTS.

2. PROVIDE & INSTALL FEEDER FROM EXISTING SERVICE PANEL TO NEW MILL CREEK DUPLEX PUMP PANEL, "DP". SEE 3/E2.1 FOR FEEDER SIZE REQUIREMENTS.

3. PROVIDE & INSTALL CHRISTY #N30 PULLBOX. LID LABELED "ELECTRICAL". WHERE SUBJECT TO VEHICULAR TRAFFIC, INSTALL TRAFFIC RATED LID.

4. PROVIDE & INSTALL CHRISTY #N16 PULLBOX WITH 1" C. AND CONTROL CABLES BETWEEN TANK AND PUMP CONTROL PANEL AT WATER TREATMENT BUILDING.

5. PROVIDE & INSTALL DUPLEX PUMPS WITH VDF DRIVES. 2HP, 208V, 3Ø.

6. PROVIDE & INSTALL 1" C. WITH CONTROL CABLES FROM WATER TREATMENT BUILDING TO MILL CREEK CONTROLS. COORDINATE WITH CIVIL FOR EXACT LOCATIONS AT EACH END.

4 TYPICAL PULLBOX DETAIL  
NO SCALE

3 ELECTRICAL SINGLE LINE DIAGRAM - MILL CREEK INTAKE  
NO SCALE

GENERAL NOTES:  
CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO TRENCHING AND TAKE CAUTION TO AVOID DAMAGE DURING TRENCHING. HAND TRENCH IF NECESSARY. CONTRACTOR SHALL MAKE ALL REPAIRS TO DAMAGED UTILITIES AT NO CHARGE TO STATE PARKS. SEE CIVIL DRAWINGS FOR FURTHER DIRECTION. AVOID TREE & DAMAGE TO TREE ROOTS.

1 ELECTRICAL PARTIAL SITE PLAN -  
MILL CREEK INTAKE IMPROVEMENTS  
SCALE: 1"=50'-0"

2 NO SCALE

2 PANEL 'DP' & PUMP CONTROL PANEL MOUNTING  
NO SCALE

DESIGN SET


REGISTERED PROFESSIONAL ENGINEER  
CALIFORNIA  
No. 008605  
Exp. 12/31/19  
PETER R. MACKERRICHER  
ENGINEER  
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Project No. 17007.00

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ACQUISITION & DEVELOPMENT DIVISION  
One Capitol Mall  
Sacramento, CA  
95814-3229

CALIFORNIA STATE FIRE MARSHAL - APPROVED

Approval of this plan does not authorize or approve any omission of deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.

Reviewed by \_\_\_\_\_ Date \_\_\_\_\_

DFR ACCESS COMPLIANCE REVIEW

CERTIFICATION # \_\_\_\_\_

DESIGNED BY: NA  
DRAWN: CAD  
CHECKED: NA  
DATE: 5-12-2017

REVISIONS

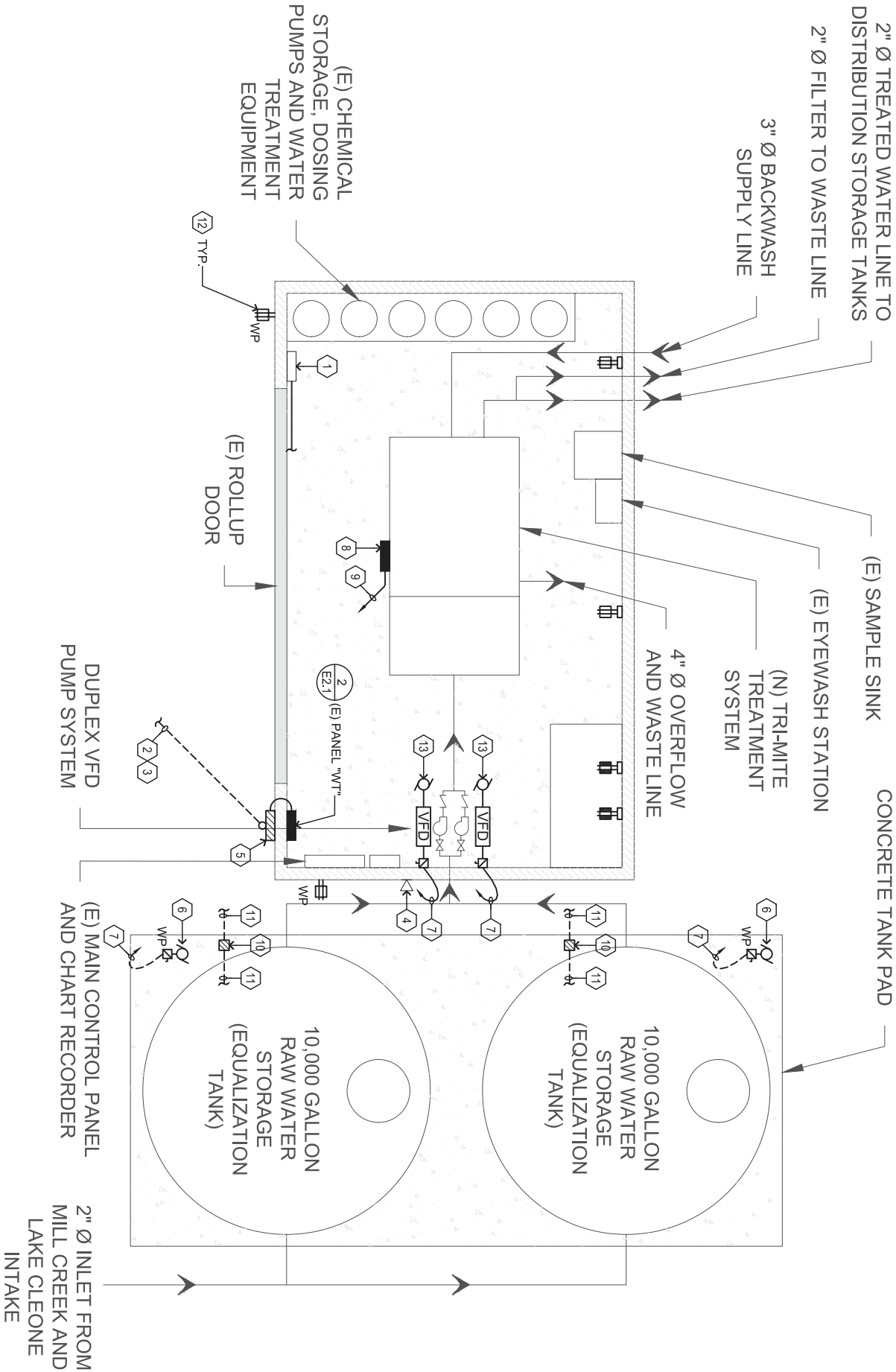
REVISIONS	DATE

MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS  
ELECTRICAL PARTIAL SITE PLAN -  
MILL CREEK INTAKE  
IMPROVEMENTS

DRAWING NO.  
XXXXX-015

SHEET NO.  
E2.1

22"x34" SHEET. IF SHEET SIZE IS SMALLER, THEN DRAWING HAS BEEN REDUCED.



1

ELECTRICAL PLAN - WATER TREATMENT PLANT IMPROVEMENTS

NO SCALE : REFERENCE NOTE #3 ON SHEET C3.0

SHEET NOTES

- PER GENERAL DEMOLITION NOTES ON E0.1: DEMOLISH EXISTING PANEL GUTS AND PRESERVE EXISTING PANEL ENCLOSURE. SPLICE EXISTING CIRCUITS FOR EXISTING EQUIPMENT NOT IMPACTED BY DEMOLITION. EXTEND CIRCUIT VIA (2) 1" C.. EACH WITH 2 #6 & 1 #10 GND FOR 50A BREAKERS AND (4) ¾" C.. EACH WITH 6 #10 & 1 #10 GND FOR ALL 20A & 30A 1-POLE BREAKER LOAD CONNECTIONS. CONNECT TO NEW BREAKERS AT NEW PANEL "WT".
- PROVIDE & INSTALL FEEDER FROM EXISTING SERVICE PANEL TO NEW PANEL "WT" IN WATER TREATMENT BUILDING. SEE 2/E2.1 FOR SIZE AND REQUIREMENTS.
- SEE 1/E2.1 FOR CONTINUATION.
- PER GENERAL DEMOLITION NOTES ON E0.1: CONTRACTOR SHALL RELOCATE RADIO TOWER/ANTENNA AS NECESSARY. REINSTALL AT NEW LOCATION ON SAME BUILDING PER STATE PARK REPRESENTATIVE DIRECTION.
- PROVIDE & INSTALL 12" SQ. x 8" DEEP NEMA 3R PULLCAN WITH LOCKABLE COVER. ROUTE NEW FEEDER VIA PULLCAN. SEAL ALL BUILDING PENETRATIONS WATERPROOF.
- RECIRCULATION PUMP: 1 HP, 240V, 3Ø.
- 1" C.. 3 #6 & 1 #10 GND TO PANEL "WT".
- TR-MITE SYSTEM PANEL: 60A, 208V, 3Ø.
- 1½" C. 4 #4 & 1 #8 GND TO PANEL "WT".
- PROVIDE & INSTALL CHRISTY #N30 PULLBOX LID LABELED "CONTROLS".
- PROVIDE & INSTALL (2) 1" C. WITH (4) FLOAT SENSOR DEVICE CONTROL CABLES AND (1) ULTRA SONIC SENSOR DEVICE CONTROL CABLES. COORDINATE WITH CIVIL DRAWINGS FOR EXACT REQUIREMENTS.
- PROVIDE & INSTALL IN-USE WEATHERPROOF COVER, TAYMAC OR EQUAL. INSTALL LOCKABLE COVER.
- PROVIDE & INSTALL DUPLEX PUMPS WITH VDF DRIVES. 2HP, 208V, 3Ø.

BRANCH CIRCUIT CONDUCTOR SIZING TABLE

CIRCUIT AMPACITY/VOLTAGE	CIRCUIT LENGTH	REQUIREMENT
20/120	56'-90'	½" C., 2 #10 & 1 #10 GND.
20/120	91'-140'	½" C., 2 #8 & 1 #10 GND.
20/277	131'-206'	½" C., 2 #10 & 1 #10 GND.
20/277	206'-330'	½" C., 2 #8 & 1 #10 GND.

NOTE:  
CONTRACTOR SHALL SIZE BRANCH CIRCUIT CONDUCTORS PER THE TABLE ABOVE AS DETERMINED BY THE CIRCUIT CONDUCTOR LENGTH. U.O.N. CONTRACTOR SHALL SPLICE TO #12 AWG WITHIN TERMINATION BOX FOR DEVICE CONNECTION IF NECESSARY.



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Date:  
Reviewed by:  
DPR ACCESS COMPLIANCE REVIEW  
ACCESSIBILITY SECTION  
CERTIFICATION #

DESIGNED: NA  
DRAWN: CADD  
CHECKED: NA  
DATE: 5-12-2017

REVISIONS  
DATE

MACKERRICHER STATE PARK  
WATER SYSTEM IMPROVEMENTS  
ELECTRICAL PLAN -  
WATER TREATMENT PLANT  
IMPROVEMENTS

DRAWING NO.  
XXXXX.016  
SHEET NO.  
E2.2