DOCKETED	
Docket Number:	01-AFC-17C
Project Title:	Inland Empire Energy Center Project Compliance
TN #:	231972
Document Title:	Stormwater Pollution Prevention Plan, Appendices Volume 2
Description:	N/A
Filer:	Paul Kihm
Organization:	Latham & Watkins LLP
Submitter Role:	Applicant Representative
Submission Date:	2/6/2020 5:19:14 PM
Docketed Date:	2/7/2020

STORMWATER POLLUTION PREVENTION PLAN
APPENDICES VOLUME 2

Inland Empire Energy Center
Decommissioning and Demolition

RISK LEVEL ***1***

Legally Responsible Person [LRP]:

Frank Escobedo
Inland Empire Energy Center, LLC
26226 Antelope Road, Menifee, CA 92585
951-928-5941

Approved Signatory:

Not Applicable

Prepared for:

Inland Empire Energy Center, LLC
26226 Antelope Road, Menifee, CA 92585

Project Address:

26226 Antelope Road
Menifee, CA 92585

SWPPP Prepared by:

ATC Group Services
25 Cupania Circle
Monterey Park, CA 91755
Jay Schneider

SWPPP Preparation Date

01/09/2020

Estimated Project Dates:

Start of Construction	**February 10, 2020**	Completion of Construction	**December 31, 2020**

PLANT NORTH

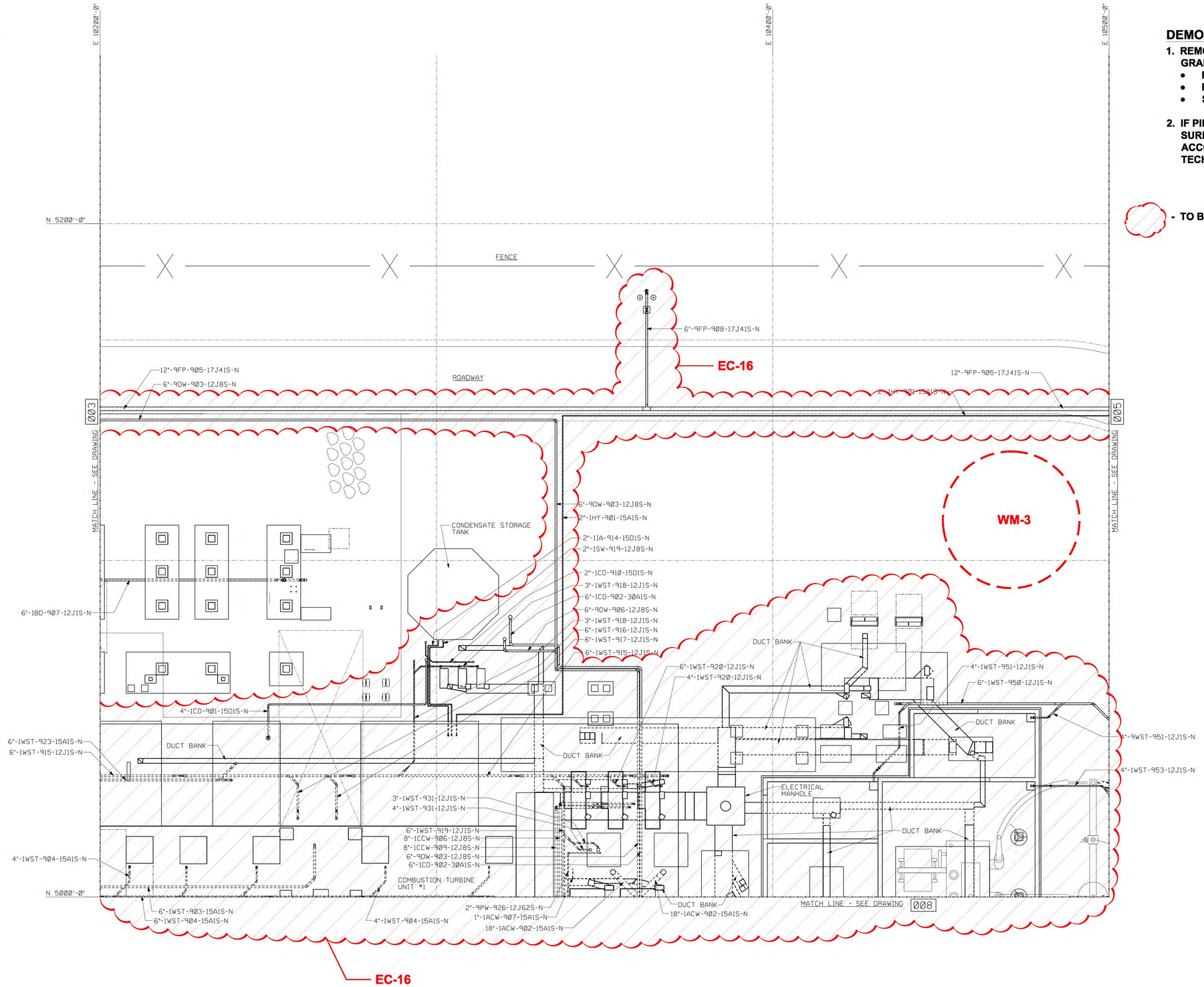
NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.

DEMOLITION NOTES:

1. **REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:**
   - **POTABLE WATER (PW)**
   - **FIRE PROTECTION (FP)**
   - **STORM SEWER**
2. **IF PIPING IS PRESENT BELOW 12' FROM GRADE SURFACE CUT, PLUG AND CAP AT 12' BGS IN ACCORDANCE WITH REQUIREMENTS DETAILED IN TECHNICAL SPECIFICATIONS.**

- TO BE REMOVED



10 0 10 20 30 40 50

GRAPHIC SCALE IN FEET

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECH SPECIALIST	PROJECT ENGINEER	PROJECT MANAGER
E	05-26-05	GE DRAWING REISSUE REQUEST	JKG		DSW		SAB	02 DRE
D	02-11-05	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG		DSW		SAB	11A DRE
C	11-03-05	ISSUED FOR CBO REVIEW	JKG		DSW		SAB	11A DRE
B	09-16-05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG		DSW		SAB	DRE
A	07-22-05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	RGK		DSW		SAB	DRE
-	06-15-05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG		DSW		SAB	DRE

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE S.A. BOLLES 06/15/05

APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: JKG	
CHECKED BY:	
LEAD DESIGNER: D.S. WEAVER	
ENGINEER/TECH SPECIALIST:	
PROJECT ENGINEERING MANAGER: K.R. GABEL	
PROJECT MANAGER: D.R. ERALI	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF PE, STATE, LIC. NO., DATED

Scott Alan Bolles — REGISTERED PROFESSIONAL ENGINEER — SCOTT ALAN BOLLES — M31889 — 12-31-07 — MECHANICAL — STATE OF CALIFORNIA

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-9780 ** atcgroupservices.com

PROJECT NUMBER: NPGEP19001
PHASE: 2 — DATE: 12-9-19
REVIEWED BY: J. NUCCIO
CHECKED BY: J. SCHNEIDER — DRAWN BY: DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE
UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE 3/32"=1'

DRAWING NO. M301-9UGC-004 — REV E

PLOTTED: 8/8/05 7:16:56 AM

NOTE: PROVIDED FOR REFERENCE ONLY.

FAC | PIPING | I & C | ELECT | MECH | CIVIL | STRUC

VHL: Wed May 17 08:53:26 2006

FILE NAME= m301ugc004.dgn
PATH= d:\7\mlandrea\ugd\
SERVER= reapds07

PLANT NORTH

NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.

E 105Ø0'-Ø"

E 106Ø0'-Ø"

E 1Ø8ØØ'-Ø"

N 52ØØ'-Ø"

FENCE

2"-1HY-901-15A1S-N

12"-9FP-905-17J41S-N

ØØ4

MATCH LINE - SEE DRAWING ØØ4

18" STORM PIPE

6"-1WST-952-12J1S-N

ROADWAY

EC-16

24" STORM PIPE

2"-1HY-901-15A1S-N

12"-9FP-905-17J41S-N

N 5ØØØ'-Ø"

MATCH LINE - SEE DRAWING ØØ9

DEMOLITION NOTES:

1. **REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:**
   - **POTABLE WATER (PW)**
   - **FIRE PROTECTION (FP)**
   - **STORM SEWER**
2. **IF PIPING IS PRESENT BELOW 12' FROM GRADE SURFACE CUT, PLUG AND CAP AT 12' BGS IN ACCORDANCE WITH REQUIREMENTS DETAILED IN TECHNICAL SPECIFICATIONS.**

- TO REMAIN

- TO BE REMOVED

10 0 10 20 30 40 50

GRAPHIC SCALE IN FEET

NOTE: PROVIDED FOR REFERENCE ONLY.

Scott Alan Bolles

REGISTERED PROFESSIONAL ENGINEER SCOTT ALAN BOLLES M31689 MECHANICAL STATE OF CALIFORNIA

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECH SPECIALIST	LEAD DISCIPLINE ENGINEER	PDE	PROJECT MANAGER
E	05-26-06	GE DRAWING REISSUE REQUEST	JKG		DSW		SAB	02	ORE
D	02-13-06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG		DSW		SAB	11A	ORE
C	11-03-05	ISSUED FOR CBO REVIEW	JKG		DSW		SAB	11A	ORE
B	09-16-05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG		DSW		SAB		ORE
A	07-29-05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	RGK		DSW		SAB		ORE
-	06-15-05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG		DSW		SAB		ORE

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE S.A. BOLLES 06/15/05

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: JKG	
CHECKED BY:	
LEAD DESIGNER: D.S. WEAVER	
ENGINEER/TECH SPECIALIST:	
PROJECT ENGINEERING MANAGER: K.R. GABEL	
PROJECT MANAGER: D.R. ERALI	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF PE: STATE: LIC.NO.: DATE:

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL, INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-9780 ** atcgroupservices.com

PROJECT NUMBER: NPGEP19001
PHASE: 2 DATE: 12-9-19
REVIEWED BY: J. NUCCIO
CHECKED BY: J. SCHNEIDER DRAWN BY: DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE 3/32"=1'

DRAWING NO. M301-9UGC-005 REV E

FAC | PIPING | I & C | ELECT | MECH | CIVIL | STRUC

VHL: Wed May 17 08:55:36 2006

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SERVER= reapds07

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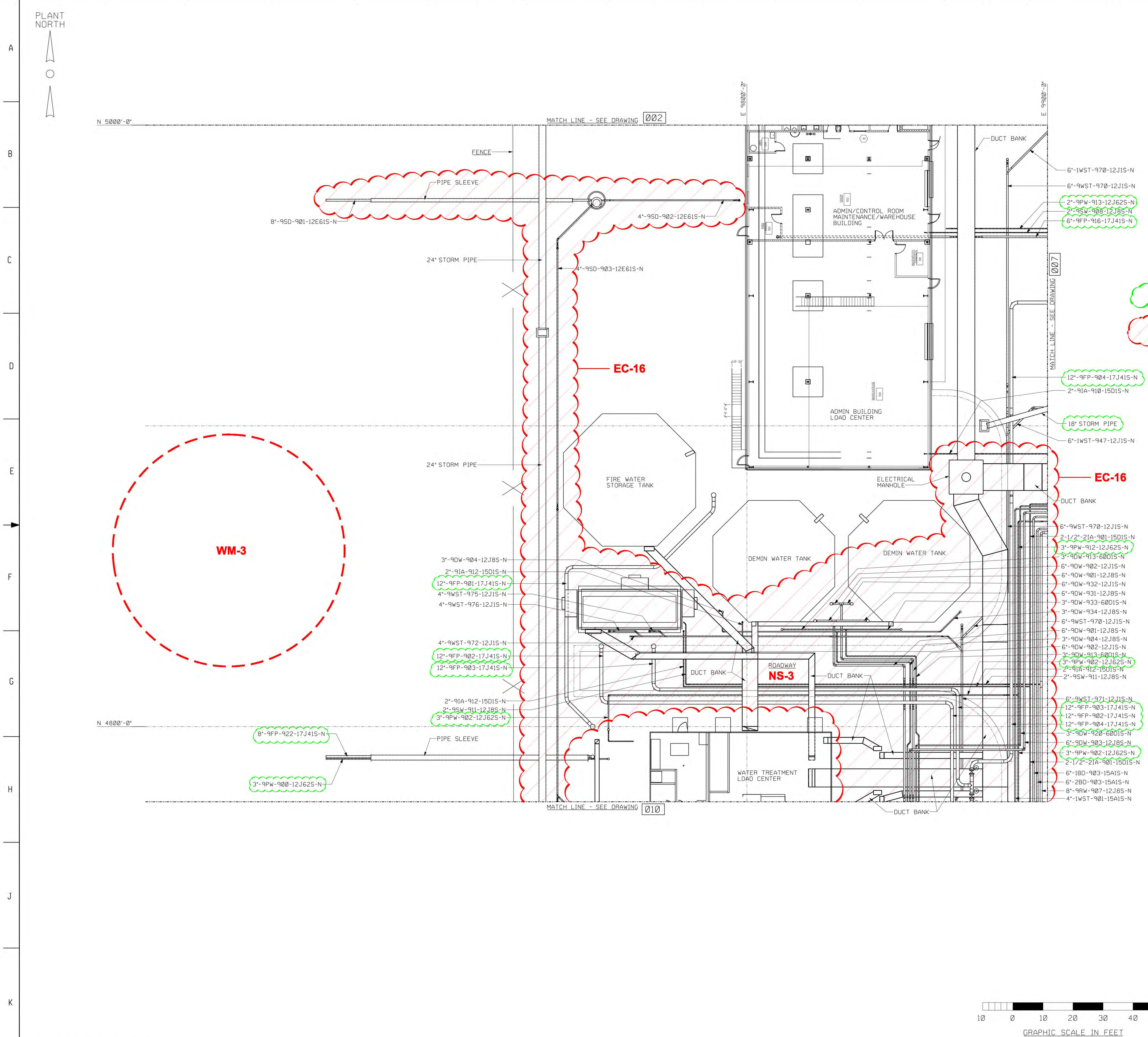

NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.

DEMOLITION NOTES:

1. REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:
   - POTABLE WATER (PW)
   - FIRE PROTECTION (FP)
   - STORM SEWER
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- TO REMAIN

- TO BE REMOVED

Scott Alan Bolles

REV	DATE	DESCRIPTION					
E	06/26/06	GE DRAWING REISSUE REQUEST	JKG	DSW	SAB02	DRE
D	03/10/06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG	DSW	SAB11A	DRE
C	11/03/05	ISSUED FOR CBO REVIEW	JKG	DSW	SAB11A	DRE
B	09/16/05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG	DSW	SAB	DRE
A	07/29/05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	RGK	DSW	SAB	DRE
-	06/15/05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG	DSW	SAB	DRE

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS, REVIEWED NOT CHECKED.
LDE S.A. BOLLES 06/15/05
APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN, ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL — PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: JKG
CHECKED BY:
LEAD DESIGNER: D.S. WEAVER
ENGINEER/TECH SPECIALIST:
PROJECT ENGINEERING MANAGER: K.R. GABEL
PROJECT MANAGER: D.R. ERALI

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL, INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC
ENVIRONMENTAL • GEOTECHNICAL BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE, MONTEREY PARK, CA 91755
Ph: (323) 517-9780 atcgroupservices.com

PROJECT NUMBER: NPGEP19001
PHASE: 2 — DATE: 12-9-19
REVIEWED BY: J. NUCCIO
CHECKED BY: J. SCHNEIDER — DRAWN BY: DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE
UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE: 3/32"=1'
DRAWING NO.: M301-9UGC-006 — REV: E

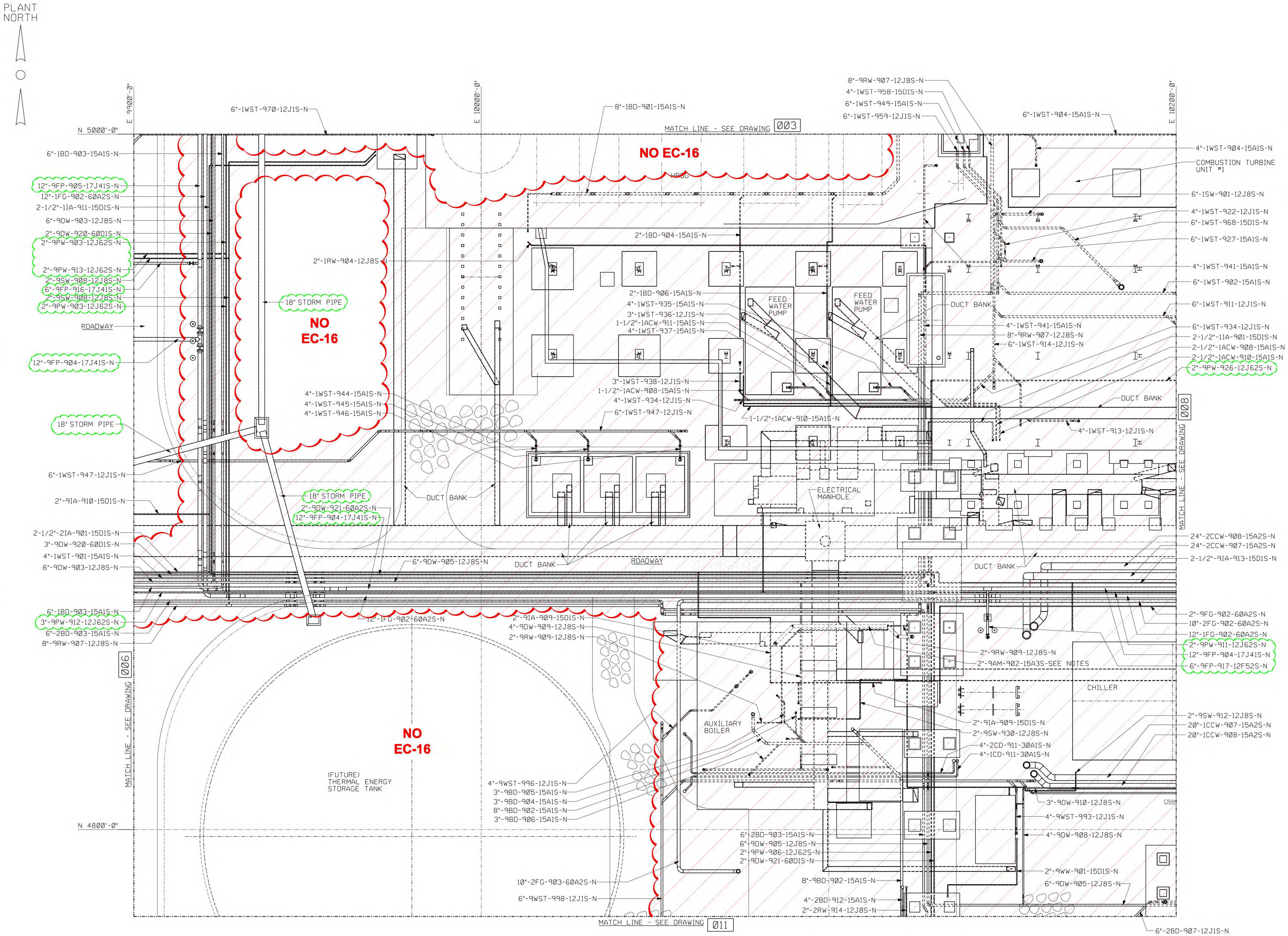
10 0 10 20 30 40 50
GRAPHIC SCALE IN FEET

NOTE: PROVIDED FOR REFERENCE ONLY.

VHL: Wed May 24 15:02:14 2006

FILE NAME: m301ugc006.dgn

NOTES:
1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.



DEMOLITION NOTES:

1. REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:
   - POTABLE WATER (PW)
   - FIRE PROTECTION (FP)
   - STORM SEWER
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- TO REMAIN
- TO BE REMOVED

NOTE:
EC-16 EXCEPT WHERE INDICATED.

Scott Alan Bolles

REV	DATE	DESCRIPTION
E	05/26/06	GE DRAWING REISSUE REQUEST
D	04/13/06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW
C	11/03/05	ISSUED FOR CBO REVIEW
B	09/16/05	UPDATED FOR UNDERGROUND BID PACKAGE
A	07/29/05	PRELIMINARY - ISSUED FOR INFORMATION ONLY
-	06/15/05	PRELIMINARY - FOR BIDDING PURPOSE ONLY

PRELIMINARY STATUS: S.A. BOLLES 06/15/05 — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL
DRAWN BY: JKG
CHECKED BY:
LEAD DESIGNER: D.S. WEAVER
ENGINEER/TECH SPECIALIST:
PROJECT ENGINEERING MANAGER: K.R. GABEL
PROJECT MANAGER: D.R. ERALI

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL, INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC — ENVIRONMENTAL • GEOTECHNICAL, BUILDING SCIENCES • MATERIALS TESTING, 25 CUPANIA CIRCLE, MONTEREY PARK, CA 91755, Ph: (323) 517-9780 atcgroupservices.com

PROJECT NUMBER: NPGEP19001
PHASE: 2 DATE: 12-9-19
REVIEWED BY: J. NUCCIO
CHECKED BY: J. SCHNEIDER DRAWN BY: DAW

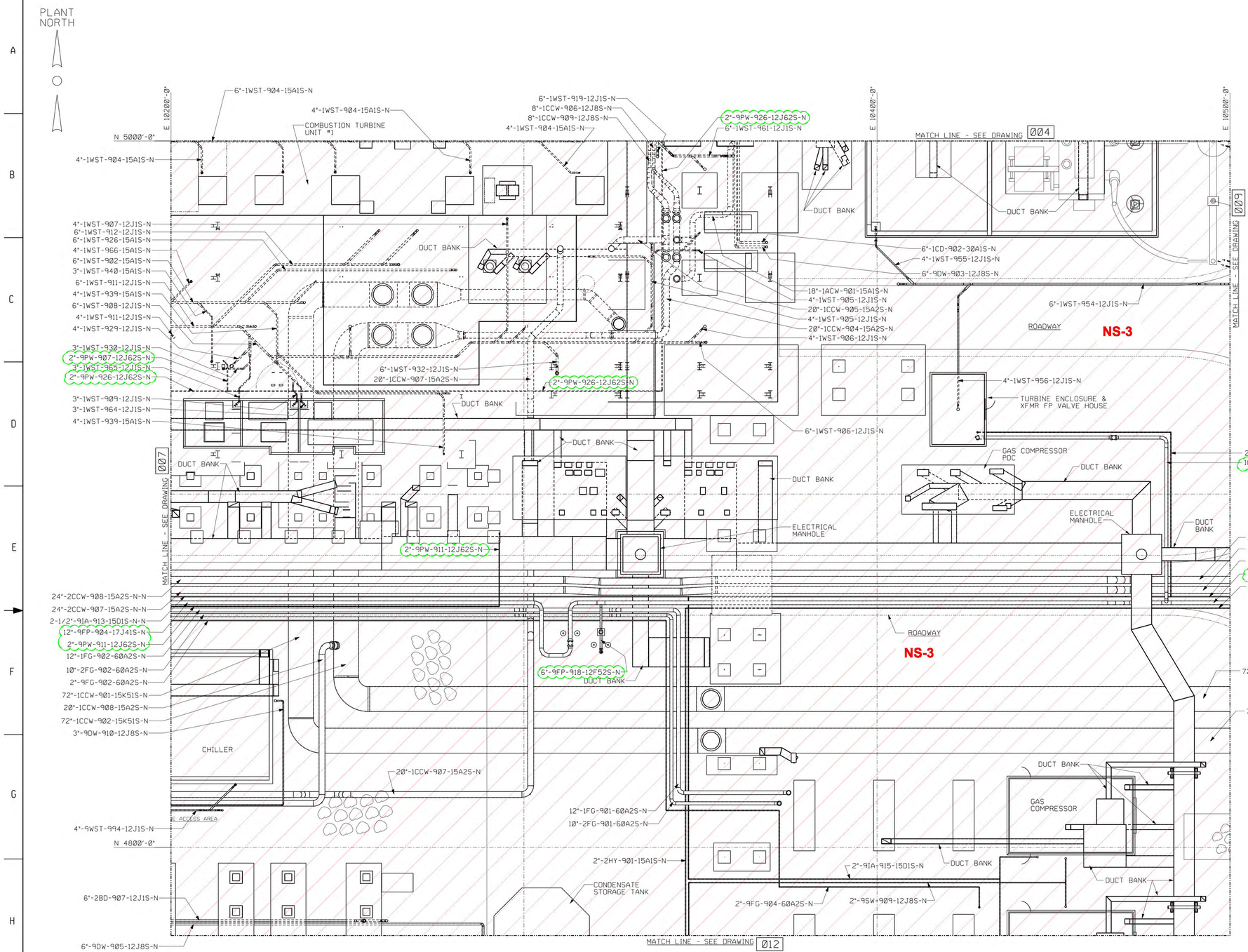
SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE: 3/32"=1'
DRAWING NO. M301-9UGC-007 REV E

GRAPHIC SCALE IN FEET

NOTE: PROVIDED FOR REFERENCE ONLY.

VHL: Wed May 17 09:30:31 2006



NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.

DEMOLITION NOTES:

1. **REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:**
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   - **FIRE PROTECTION (FP)**
   - **STORM SEWER**
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- TO REMAIN

- TO BE REMOVED

NOTE:

EC-16 ENTIRE AREA

NOTE: PROVIDED FOR REFERENCE ONLY.

Scott Alan Bolles — Digitally signed by Scott Alan Bolles DN: CN = Scott Alan Bolles, C = US, O = Parsons E&C, OU = Mechanical Engineering Reason: I am approving this document Date: 2006.09.25 10:22:43 -04'00'

REGISTERED PROFESSIONAL ENGINEER SCOTT ALAN BOLLES M 31889 EXP 12-31-07 MECHANICAL STATE OF CALIFORNIA

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECH SPECIALIST	LEAD SITE ENGINEER	PROJECT ENGINEERING MANAGER	PROJECT MANAGER
E	05-26-06	GE DRAWING REISSUE REQUEST	JKG		DSW		SAB	02	DRE
D	02-15-06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG		DSW		SAB	11A	DRE
C	11-01-05	ISSUED FOR CBO REVIEW	JKG		DSW		SAB	11A	DRE
B	09-16-05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG		DSW		SAB		DRE
A	07-25-05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	MFP		DSW		SAB		DRE
-	06-15-05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG		DSW		SAB		DRE

PRELIMINARY STATUS	DATE	REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE S.A. BOLLES	06/15/05	
APPROVED STATUS	DATE	REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE		

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: JKG	
CHECKED BY:	
LEAD DESIGNER: D.S. WEAVER	
ENGINEER/TECH SPECIALIST:	
PROJECT ENGINEERING MANAGER: K.R. GABEL	
PROJECT MANAGER: D.R. ERALI	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF: PE: _____ STATE: _____ LIC. NO.: _____ DATE: _____

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-6780 ** atcgroupservices.com

PROJECT NUMBER	NPGEP19001
PHASE 2	DATE 12-9-19
REVIEWED BY:	J. NUCCIO
CHECKED BY: J. SCHNEIDER	DRAWN BY: DAW

SHEET CONTENTS:

IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE 3/32"=1'

DRAWING NO. M301-9UGC-008 REV E

PLOTTED: 06/23/2006 08:08:38

FAC | PIPING | I & C | ELECT | MECH | CIVIL | STRUC

VHL: Tue May 23 08:08:38 2006

FILE NAME: m301ugc008.dgn
PATH: d:\7\inland\drew\ugd\
SERVER: reapds07

PLANT NORTH

NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.

DEMOLITION NOTES:

1. **REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:**
   - **POTABLE WATER (PW)**
   - **FIRE PROTECTION (FP)**
   - **STORM SEWER**
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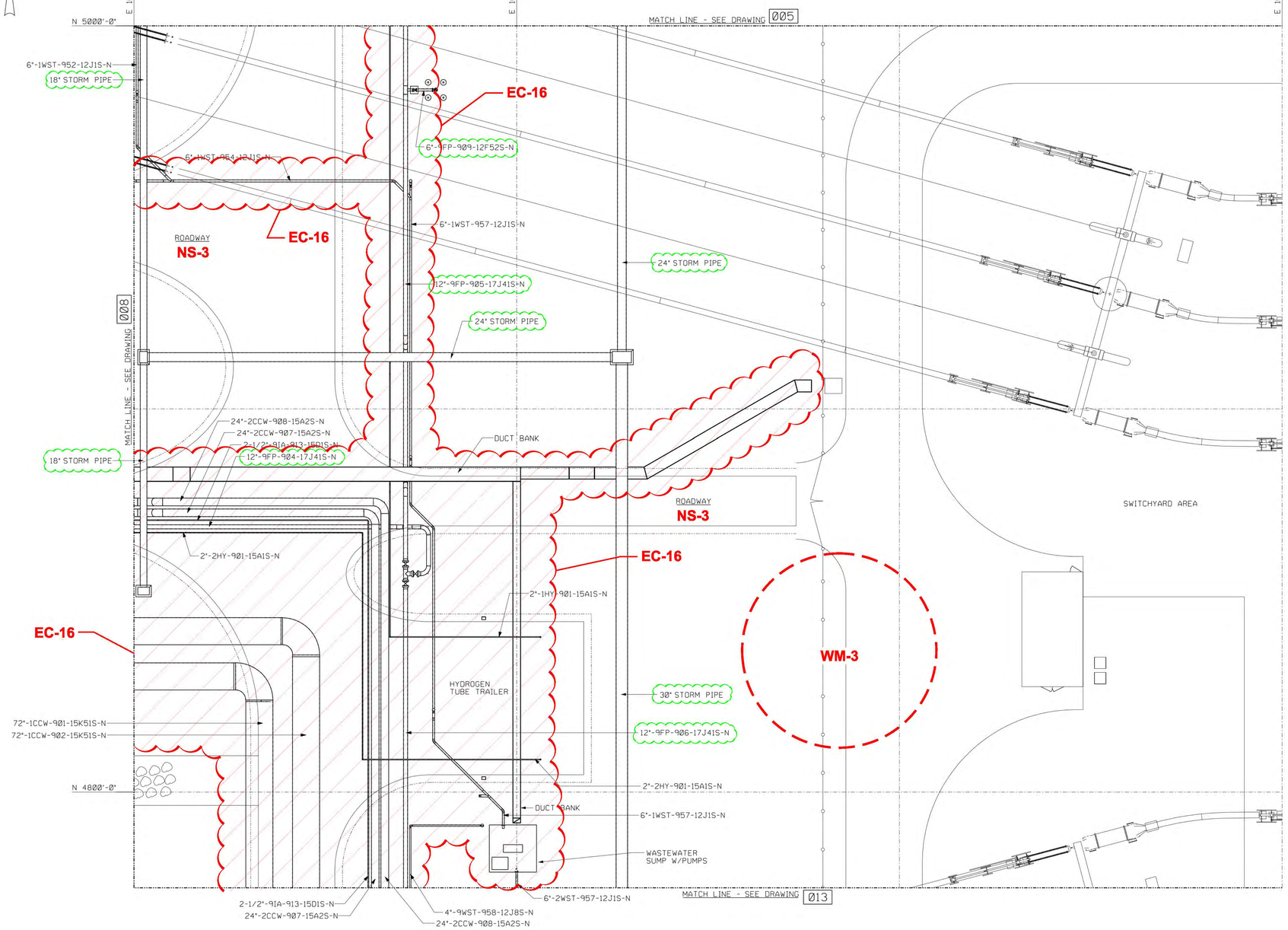
- TO REMAIN

- TO BE REMOVED



10 0 10 20 30 40 50

GRAPHIC SCALE IN FEET

NOTE: PROVIDED FOR REFERENCE ONLY.

Scott Alan Bolles — Digitally signed by Scott Alan Bolles. DN: CN = Scott Alan Bolles, C = US, O = Parsons EC, OU = Mechanical Engineering. Reason: I am approving this document. Date: 2006.05.25 10:23:20 -04'00'

REGISTERED PROFESSIONAL ENGINEER — SCOTT ALAN BOLLES — M 31889 — DP 12-31-07 — MECHANICAL — STATE OF CALIFORNIA

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD ENGINEER/ TECH SPECIALIST	LEAD DISCIPLINE ENGINEER	PROJECT ENGINEERING MANAGER	PROJECT MANAGER
E	05-26-06	GE DRAWING REISSUE REQUEST	JKG	DSW		SAB	02	DRE
D	02-13-06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG	DSW		SAB	11A	DRE
C	11-03-05	ISSUED FOR CBO REVIEW	JKG	DSW		SAB	11A	DRE
B	09-16-05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG	DSW		SAB		DRE
A	07-29-05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	MFP	DSW		SAB		DRE
-	06-15-05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG	DSW		SAB		DRE

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE S.A. BOLLES 06/15/05

APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN, ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: JKG	
CHECKED BY:	
LEAD DESIGNER: D.S. WEAVER	
ENGINEER/TECH SPECIALIST:	
PROJECT ENGINEERING MANAGER: K.R. GABEL	
PROJECT MANAGER: D.R. ERALI	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF: PE, STATE, DATE, LIC. NO.

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL, INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-9780 ** atcgroupservices.com

PROJECT NUMBER: NPGEP19001
PHASE: 2 — DATE: 12-9-19
REVIEWED BY: J. NUCCIO
CHECKED BY: J. SCHNEIDER — DRAWN BY: DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

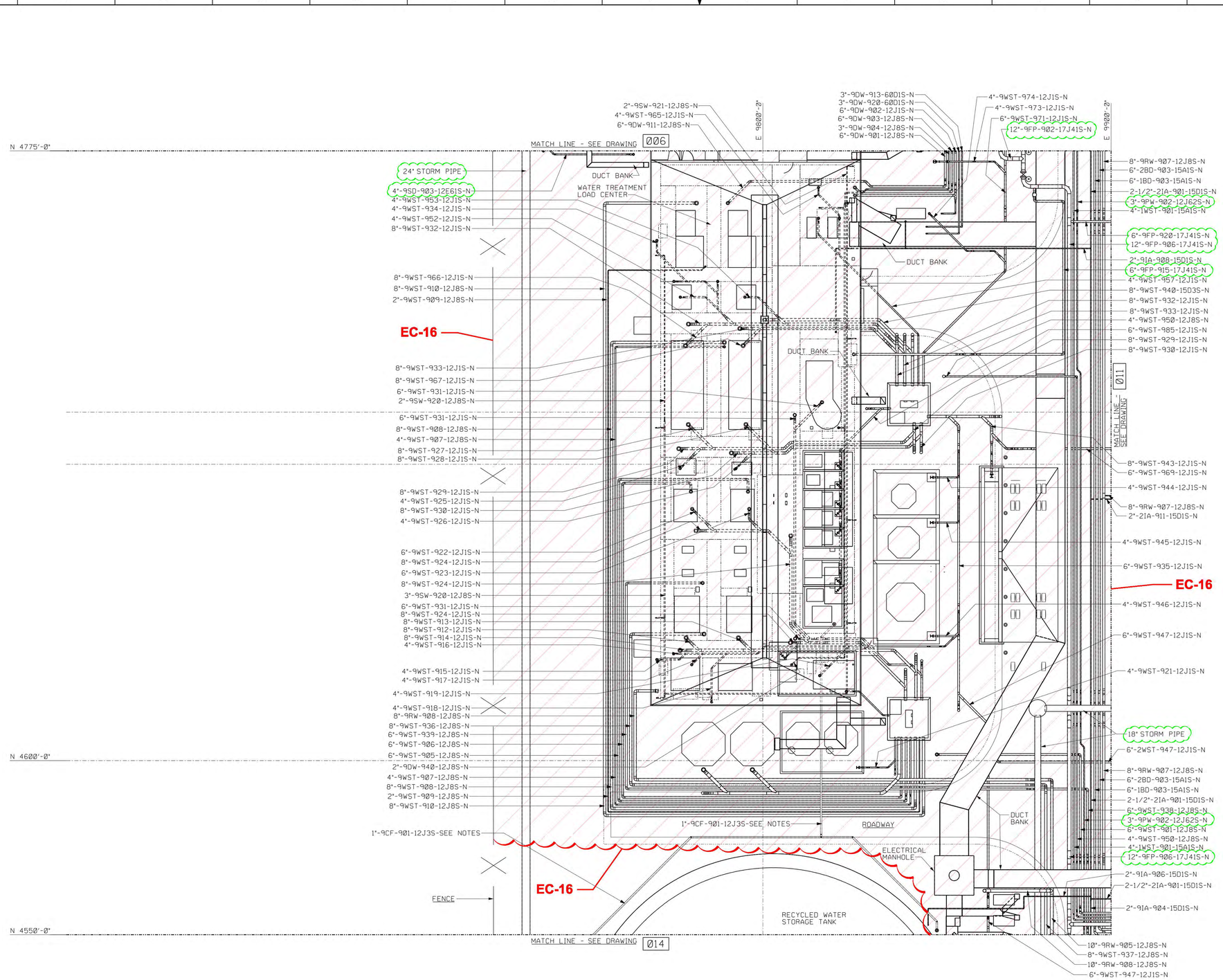
SCALE: 3/32"=1'

DRAWING NO. M301-9UGC-009 — REV E

PLOTTED: 8/8/2006 7:16:56 AM

FILE NAME: m301ugc009.dgn
PATH: d:\7\mlend\draw\ugd\
SERVER: reepds07

VHL: Wed May 17 09:40:07 2006



NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.

DEMOLITION NOTES:

1. **REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:**
   - **POTABLE WATER (PW)**
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   - **STORM SEWER**
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- TO REMAIN

- TO BE REMOVED

10 0 10 20 30 40 50

GRAPHIC SCALE IN FEET

NOTE: PROVIDED FOR REFERENCE ONLY.

Scott Alan Bolles — Digitally signed by Scott Alan Bolles. DN: CN = Scott Alan Bolles, C = US, O = Parsons EC, OU = Mechanical Engineering. Reason: I am approving this document. Date: 2006.05.25 10:24:52 -04'00'

REGISTERED PROFESSIONAL ENGINEER — SCOTT ALAN BOLES — M 31889 — MECHANICAL — STATE OF CALIFORNIA

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	TECHNOLOGY LEAD DISCIPLINE	ENGINEER	PROJECT MANAGER
E	05-26-06	GE DRAWING REISSUE REQUEST	JKG	DSW	SAB	02	ORE	
D	02-13-06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG	DSW	SAB	11A	ORE	
C	11-03-05	ISSUED FOR CBO REVIEW	JKG	DSW	SAB	11A	ORE	
B	09-16-05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG	DSW	SAB		ORE	
A	07-27-05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	MFP	DSW	SAB		ORE	
-	06-15-05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG	DSW	SAB		ORE	

PRELIMINARY STATUS	DATE	REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE S.A. BOLLES	06/15/05	
APPROVED STATUS	DATE	REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE		

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: JKG	
CHECKED BY:	
LEAD DESIGNER: D.S. WEAVER	
ENGINEER/TECH SPECIALIST:	
PROJECT ENGINEERING MANAGER: K.R. GABEL	
PROJECT MANAGER: D.R. ERALI	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF PE, _____ STATE, _____ LIC. NO., _____ DATED, _____

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL, INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-9780 ** atcgroupservices.com

PROJECT NUMBER	NPGEP19001
PHASE 2	DATE 12-10-19
REVIEWED BY:	J. NUCCIO
CHECKED BY: J. SCHNEIDER	DRAWN BY: DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE 3/32"=1'

DRAWING NO. M301-9UGC-010 REV E

FAC | PIPING | I & C | ELECT | MECH | CIVIL | STRUC

VHL: Tue May 23 12:01:42 2006

FILE NAME: m301ugc010.dgn
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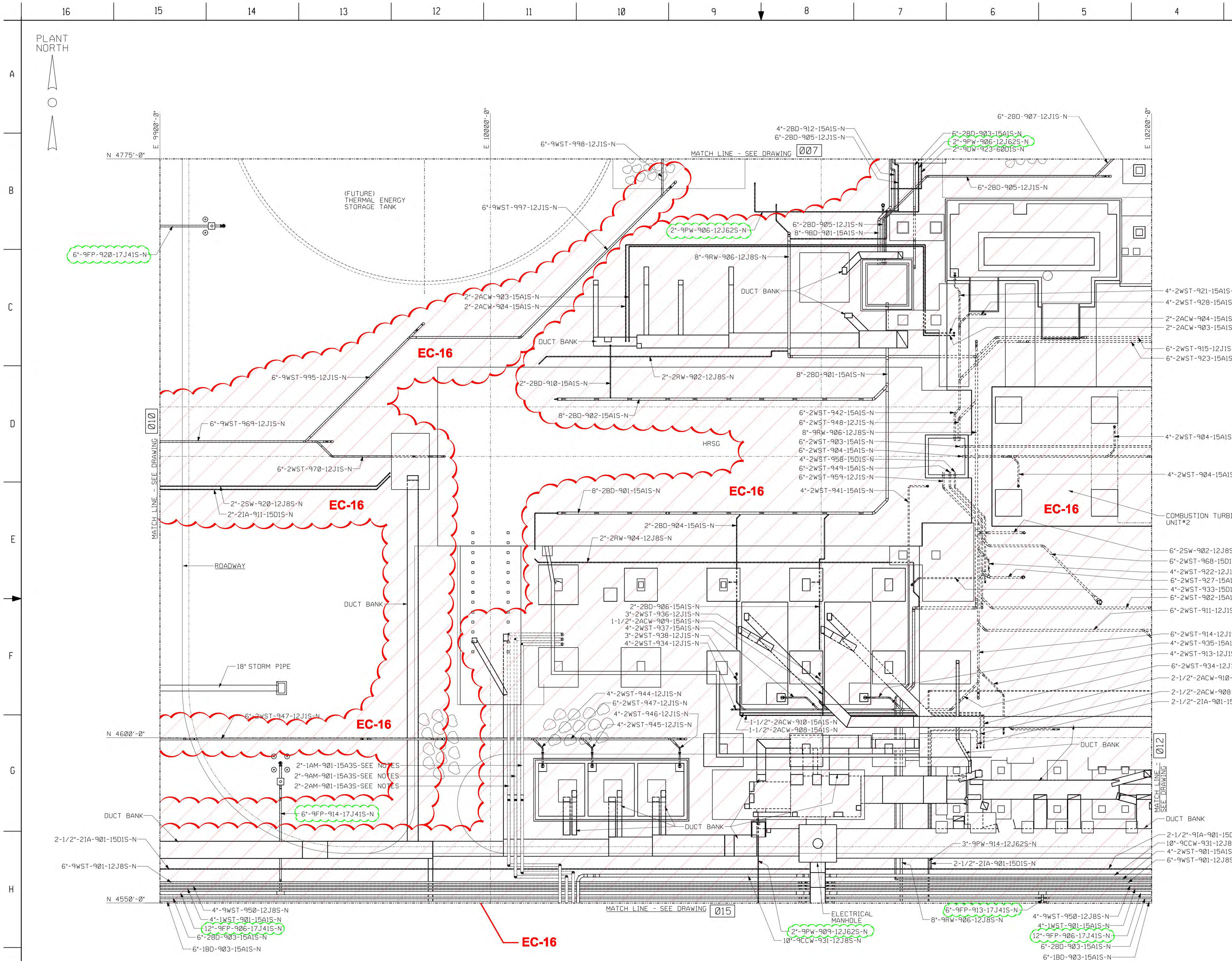
SERVER: reapds07

PLOTTED: 5/23/2006 12:01:42 PM



NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.

DEMOLITION NOTES:

1. **REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:**
   - **POTABLE WATER (PW)**
   - **FIRE PROTECTION (FP)**
   - **STORM SEWER**
2. **IF PIPING IS PRESENT BELOW 12' FROM GRADE SURFACE CUT, PLUG AND CAP AT 12' BGS IN ACCORDANCE WITH REQUIREMENTS DETAILED IN TECHNICAL SPECIFICATIONS.**

- **TO REMAIN**
- **TO BE REMOVED**

Scott Alan Bolles

REV	DATE	DESCRIPTION
E		GE DRAWING REISSUE REQUEST
D		GENERAL UPDATE AND ISSUE FOR CBO REVIEW
C		ISSUED FOR CBO REVIEW
B		UPDATED FOR UNDERGROUND BID PACKAGE
A		PRELIMINARY - ISSUED FOR INFORMATION ONLY
-		PRELIMINARY - FOR BIDDING PURPOSE ONLY

PRELIMINARY STATUS — S.A. BOLLES 06/15/05 — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL / PROFESSIONAL ENGINEER'S SEAL

DRAWN BY: JKG
CHECKED BY:
LEAD DESIGNER: D.S. WEAVER
ENGINEER/TECH SPECIALIST:
PROJECT ENGINEERING MANAGER: K.R. GABEL
PROJECT MANAGER: D.R. ERALI

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL, INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC — ENVIRONMENTAL • GEOTECHNICAL BUILDING SCIENCES • MATERIALS TESTING, 25 CUPANIA CIRCLE, MONTEREY PARK, CA 91755, Ph: (323) 517-9780 atcgroupservices.com

PROJECT NUMBER	NPGEP19001
PHASE	2
DATE	12-10-19
REVIEWED BY:	J. NUCCIO
CHECKED BY:	J. SCHNEIDER
DRAWN BY:	DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE: 3/32"=1'
DRAWING NO. M301-9UGC-011 REV E

NOTE: PROVIDED FOR REFERENCE ONLY.

VHL: Wed May 17 09:58:36 2006

PLANT NORTH

NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.

DEMOLITION NOTES:

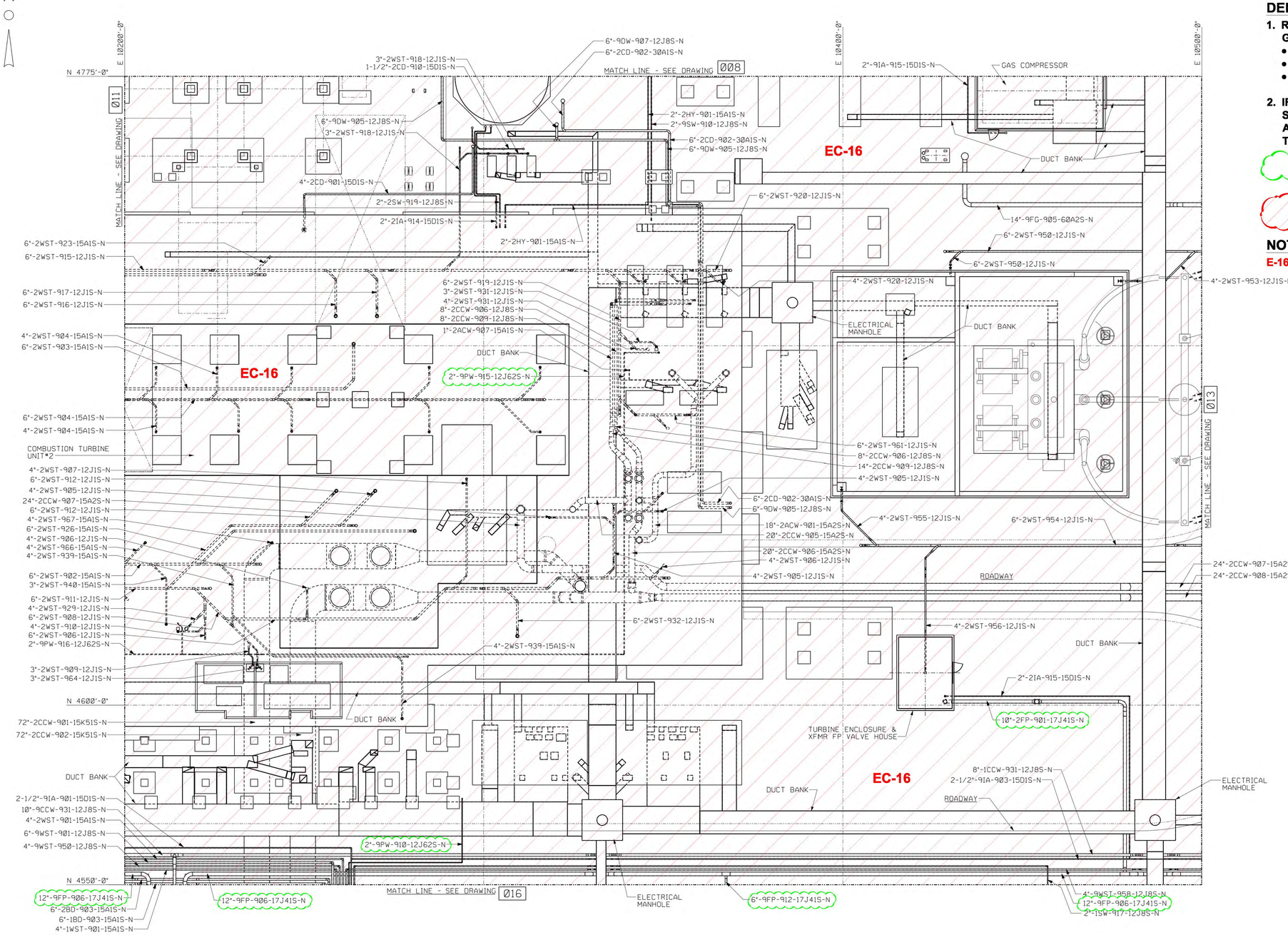
1. **REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:**
   - **POTABLE WATER (PW)**
   - **FIRE PROTECTION (FP)**
   - **STORM SEWER**
2. **IF PIPING IS PRESENT BELOW 12' FROM GRADE SURFACE CUT, PLUG AND CAP AT 12' BGS IN ACCORDANCE WITH REQUIREMENTS DETAILED IN TECHNICAL SPECIFICATIONS.**

- TO REMAIN

- TO BE REMOVED

NOTE:

E-16 - ENTIRE SHEET.



NOTE: PROVIDED FOR REFERENCE ONLY.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD ENGINEER	ENGINEERING TECHNOLOGY MANAGER	LEAD DISCIPLINE ENGINEER	PDE	PROJECT MANAGER
E	05-26-06	GE DRAWING REISSUE REQUEST	JKG		DSW		SAB	02	DRE
D	02-13-06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG		DSW		SAB	11A	DRE
C	11-03-05	ISSUED FOR CBO REVIEW	JKG		DSW		SAB	11A	DRE
B	09-16-05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG		DSW		SAB		DRE
A	07-25-05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	PAH		DSW		SAB		DRE
-	06-15-05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG		DSW		SAB		DRE

Scott Alan Bolles — Digitally signed by Scott Alan Bolles. DN: cn=Scott Alan Bolles, o=Parsons E&C, ou=Mechanical Engineering, c=US. Reason: I am approving this document. Date: 2006.05.26 10:27:03 -04'00'

REGISTERED PROFESSIONAL ENGINEER — SCOTT ALAN BOLLES — M 31809 — EXP 12-31-07 — MECHANICAL — STATE OF CALIFORNIA

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE S.A. BOLLES 06/15/05
APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: JKG	
CHECKED BY:	
LEAD DESIGNER: D.S. WEAVER	
ENGINEER/TECH SPECIALIST:	
PROJECT ENGINEERING MANAGER: K.R. GABEL	
PROJECT MANAGER: D.R. ERALI	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF PE:_____ STATE:_____ LIC. NO.:_____ DATE:_____

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL, INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-6780 ** atlgroupservices.com

PROJECT NUMBER: NPGEP19001
PHASE: 2 — DATE: 12-10-19
REVIEWED BY: J. NUCCIO
CHECKED BY: J. SCHNEIDER — DRAWN BY: DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE
UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE: 3/32"=1'
DRAWING NO.: M301-9UGC-012
REV: E

PLOTTED: 8/8/2006 7:17:16 AM

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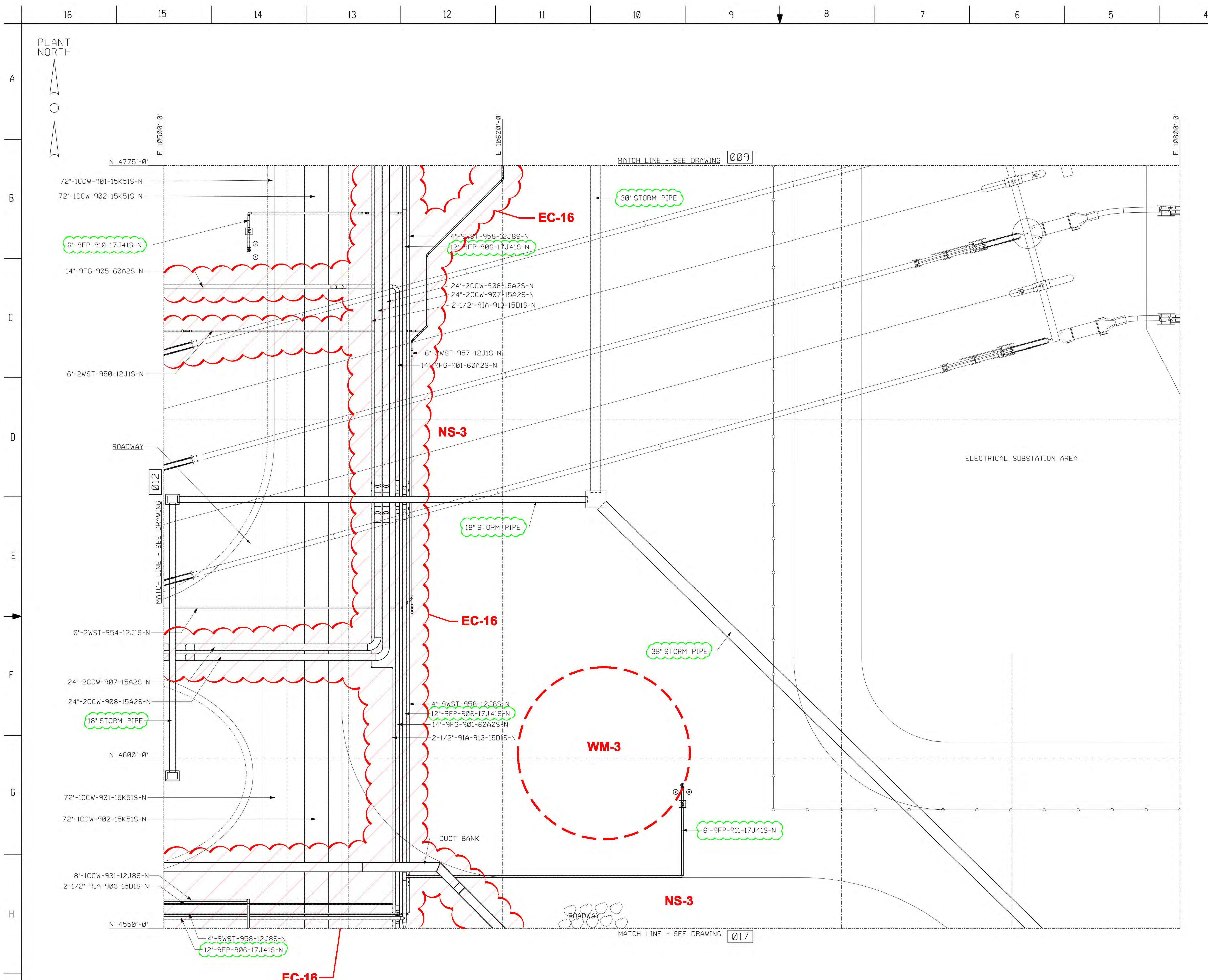
SERVER= reapda07
VHL: Wed May 17 10:02:30 2006



NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.

DEMOLITION NOTES:

1. REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:
   - POTABLE WATER (PW)
   - FIRE PROTECTION (FP)
   - STORM SEWER
2. IF PIPING IS PRESENT BELOW 12' FROM GRADE SURFACE CUT, PLUG AND CAP AT 12' BGS IN ACCORDANCE WITH REQUIREMENTS DETAILED IN TECHNICAL SPECIFICATIONS.

- TO REMAIN

- TO BE REMOVED

NOTE: PROVIDED FOR REFERENCE ONLY.

10 0 10 20 30 40 50

GRAPHIC SCALE IN FEET

Scott Alan Bolles

Digitally signed by Scott Alan Bolles
DN: CN = Scott Alan Bolles, C = US, O = Parsons EC, OU = Mechanical Engineering
Reason: I am approving this document
Date: 2006.05.25 10:27:57 -04'00'

REGISTERED PROFESSIONAL ENGINEER SCOTT ALAN BOLLES M31889 EXP. 12-31-07 MECHANICAL STATE OF CALIFORNIA

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECH. SPEC.	LEAD DISC ENGINEER	RFC CODE	PROJECT MANAGER
E	05 26 06	GE DRAWING REISSUE REQUEST	JKG		DSW		SAB	02	DRE
D	02 13 06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG		DSW		SAB	11A	DRE
C	11 03 05	ISSUED FOR CBO REVIEW	JKG		DSW		SAB	11A	DRE
B	09 16 05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG		DSW		SAB		DRE
A	07 29 05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	PAH		DSW		SAB		DRE
-	06 15 05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG		DSW		SAB		DRE

PRELIMINARY STATUS DATE — LDE S.A. BOLLES 06/15/05 — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS DATE — LDE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL

DRAWN BY: JKG
CHECKED BY:
LEAD DESIGNER: D.S. WEAVER
ENGINEER/TECH SPECIALIST:
PROJECT ENGINEERING MANAGER: K.R. GABEL
PROJECT MANAGER: D.R. ERALI

PROFESSIONAL ENGINEER'S SEAL

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: ______ STATE: ______
LIC. NO.: ______ DATE: ______

PARSONS E&C

GE ENERGY

GENERAL ELECTRIC COMPANY
GENERAL ELECTRIC INTERNATIONAL, INC.
GLOBAL POWER PLANT SYSTEMS DEPARTMENT

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ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-9780 ** atcgroupservices.com

PROJECT NUMBER: NPGEP19001
PHASE: 2
DATE: 12-10-19
REVIEWED BY: J. NUCCIO
CHECKED BY: J. SCHNEIDER
DRAWN BY: DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE
UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE: 3/32"=1'
DRAWING NO.: M301-9UGC-013
REV: E

PLOTTED: $$$$$SYTIME$$$$$$

FAC PIPING I & C ELECT MECH CIVIL STRUC

FILE NAME: m301ugc013.dgn
PATH: d:\7\inland\draw\ugd\
SERVER: reapds07

VHL: Wed May 17 10:04:46 2006

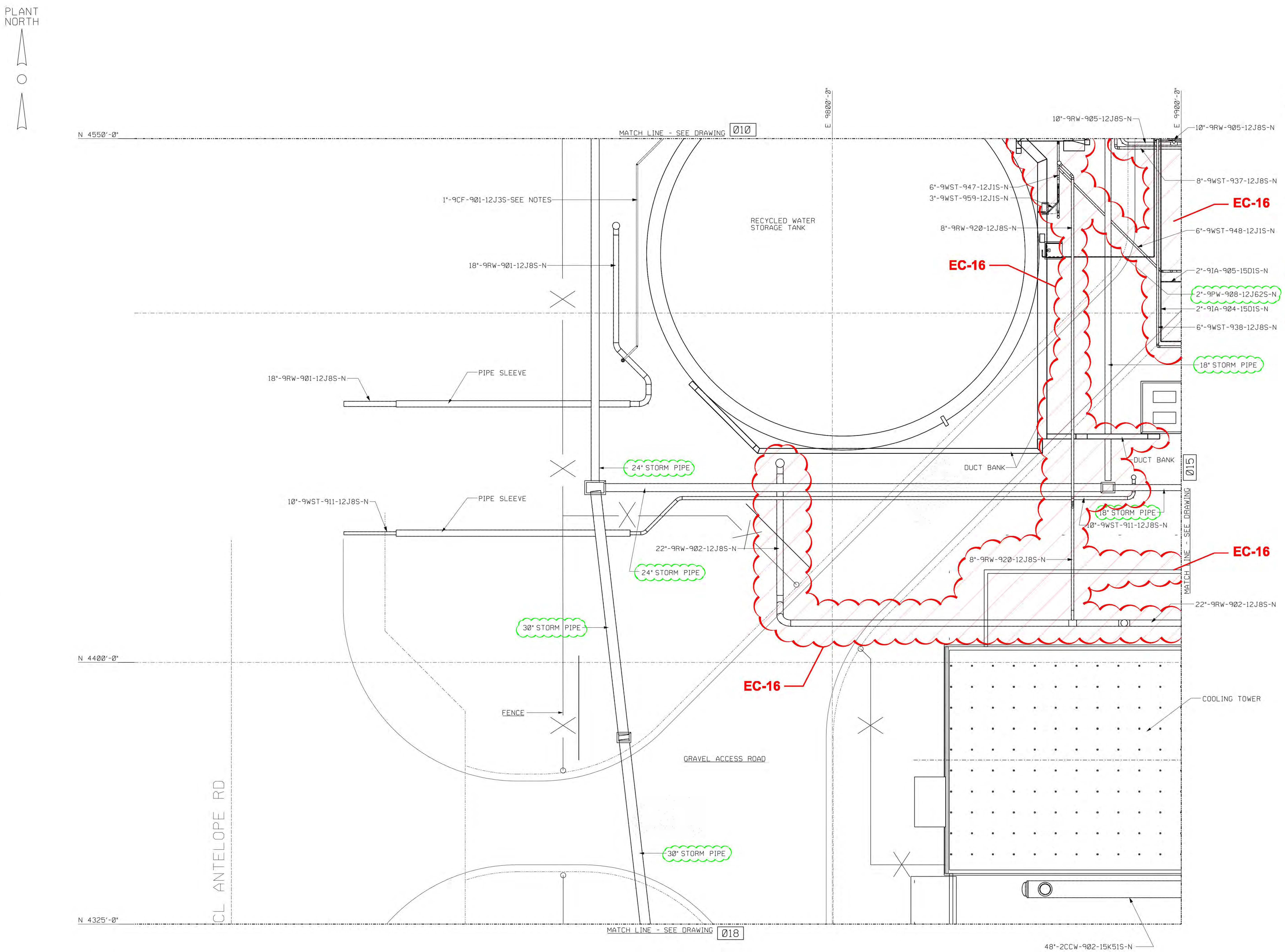
NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.

DEMOLITION NOTES:

1. REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:
   - POTABLE WATER (PW)
   - FIRE PROTECTION (FP)
   - STORM SEWER
2. IF PIPING IS PRESENT BELOW 12' FROM GRADE SURFACE CUT, PLUG AND CAP AT 12' BGS IN ACCORDANCE WITH REQUIREMENTS DETAILED IN TECHNICAL SPECIFICATIONS.

- TO REMAIN
- TO BE REMOVED



Scott Alan Bolles

Digitally signed by Scott Alan Bolles DN: CN = Scott Alan Bolles, C = US, O = Parsons EC, OU = Mechanical Engineering Reason: I am approving this document Date: 2006.05.25 10:28:39 -04'00'

REGISTERED PROFESSIONAL ENGINEER SCOTT ALAN BOLLES M31889 EXP. 12-31-07 MECHANICAL STATE OF CALIFORNIA

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LEAD DISC ENGINEER	RFC CODE	PROJECT MANAGER
E	05 26 06	GE DRAWING REISSUE REQUEST	JKG		DSW		SAB	02	DRE
D	02 13 06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG		DSW		SAB	11A	DRE
C	11 03 05	ISSUED FOR CBO REVIEW	JKG		DSW		SAB	11A	DRE
B	09 16 05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG		DSW		SAB		DRE
A	07 29 05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	PAH		DSW		SAB		DRE
-	06 15 05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG		DSW		SAB		DRE

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE S.A. BOLLES 06/15/05

APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL — PROFESSIONAL ENGINEER'S SEAL

DRAWN BY: JKG
CHECKED BY:
LEAD DESIGNER: D.S. WEAVER
ENGINEER/TECH SPECIALIST:
PROJECT ENGINEERING MANAGER: K.R. GABEL
PROJECT MANAGER: D.R. ERALI

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF PE: ____ STATE: ____ LIC. NO.: ____ DATE: ____

PARSONS E&C

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GENERAL ELECTRIC INTERNATIONAL, INC.
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BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-9780 ** atcgroupservices.com

PROJECT NUMBER: NPGEP19001
PHASE: 2
DATE: 9-16-19
REVIEWED BY: J. NUCCIO
CHECKED BY: J. SCHNEIDER
DRAWN BY: DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE $3/32"=1'$

GRAPHIC SCALE IN FEET: 10 0 10 20 30 40 50

DRAWING NO. M301-9UGC-014 REV E

NOTE: PROVIDED FOR REFERENCE ONLY.

FILE NAME: m301ugc014.dgn
PATH: d:\7\inland\draw\ugd\
SERVER: reapds07

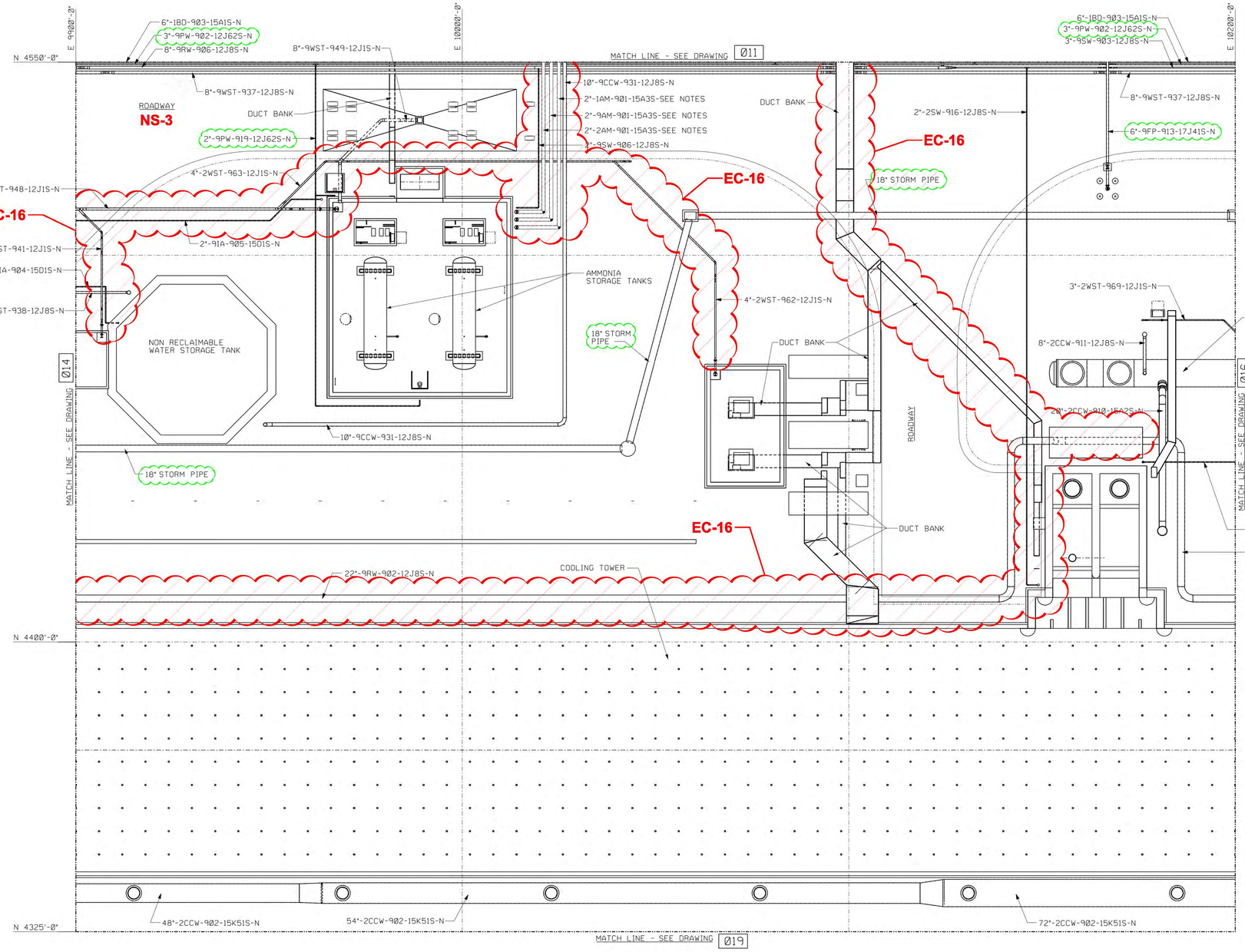
VHL: Thu May 18 10:15:47 2006

PLOTTED: $$$$$SYTIME$$$$$

PLANT NORTH

NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.



DEMOLITION NOTES:

1. **REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:**
   - **POTABLE WATER (PW)**
   - **FIRE PROTECTION (FP)**
   - **STORM SEWER**
2. **IF PIPING IS PRESENT BELOW 12' FROM GRADE SURFACE CUT, PLUG AND CAP AT 12' BGS IN ACCORDANCE WITH REQUIREMENTS DETAILED IN TECHNICAL SPECIFICATIONS.**

- TO REMAIN

- TO BE REMOVED

10 0 10 20 30 40 50

GRAPHIC SCALE IN FEET

NOTE: PROVIDED FOR REFERENCE ONLY.

Scott Alan Bolles — Digitally signed by Scott Alan Bolles. DN: CN = Scott Alan Bolles, C = US, O = Parsons E/C, OU = Mechanical Engineering. Reason: I am approving this document. Date: 2006.05.25 10:29:30 -04'00'

REGISTERED PROFESSIONAL ENGINEER — SCOTT ALAN BOLLES — M 31889 — MECHANICAL — STATE OF CALIFORNIA

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECHNOLOGY SPECIALIST	LEAD DISCIPLINE ENGINEER	PEM	PROJECT MANAGER
E	05 26 06	GE DRAWING REISSUE REQUEST	JKG		DSW		SAB	02	DRE
D	02 13 06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG		DSW		SAB	11A	DRE
C	11 03 05	ISSUED FOR CBO REVIEW	JKG		DSW		SAB	11A	DRE
B	09 16 05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG		DSW		SAB		DRE
A	07 21 05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	PAH		DSW		SAB		DRE
-	06 15 05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG		DSW		SAB		DRE

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE S.A. BOLLES 06/15/05
APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: JKG	
CHECKED BY:	
LEAD DESIGNER: D.S. WEAVER	
ENGINEER/TECH SPECIALIST:	
PROJECT ENGINEERING MANAGER: K.R. GABEL	
PROJECT MANAGER: D.R. ERALI	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF PE:_____ STATE:_____ LIC. NO.:_____ DATE:_____

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL INC. GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-6780 ** atlgroupservices.com

PROJECT NUMBER	NPGEP19001
PHASE / DATE	2 / 12-10-19
REVIEWED BY:	J. NUCCIO
CHECKED BY: / DRAWN BY:	J. SCHNEIDER / DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE
UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE 3/32"=1'

DRAWING NO. M301-9UGC-015 REV E

FAC | PIPING | I & C | ELECT | MECH | CIVIL | STRUC

VHL: Fri May 19 09:46:56 2006

FILE NAME: m30lugc015.dgn
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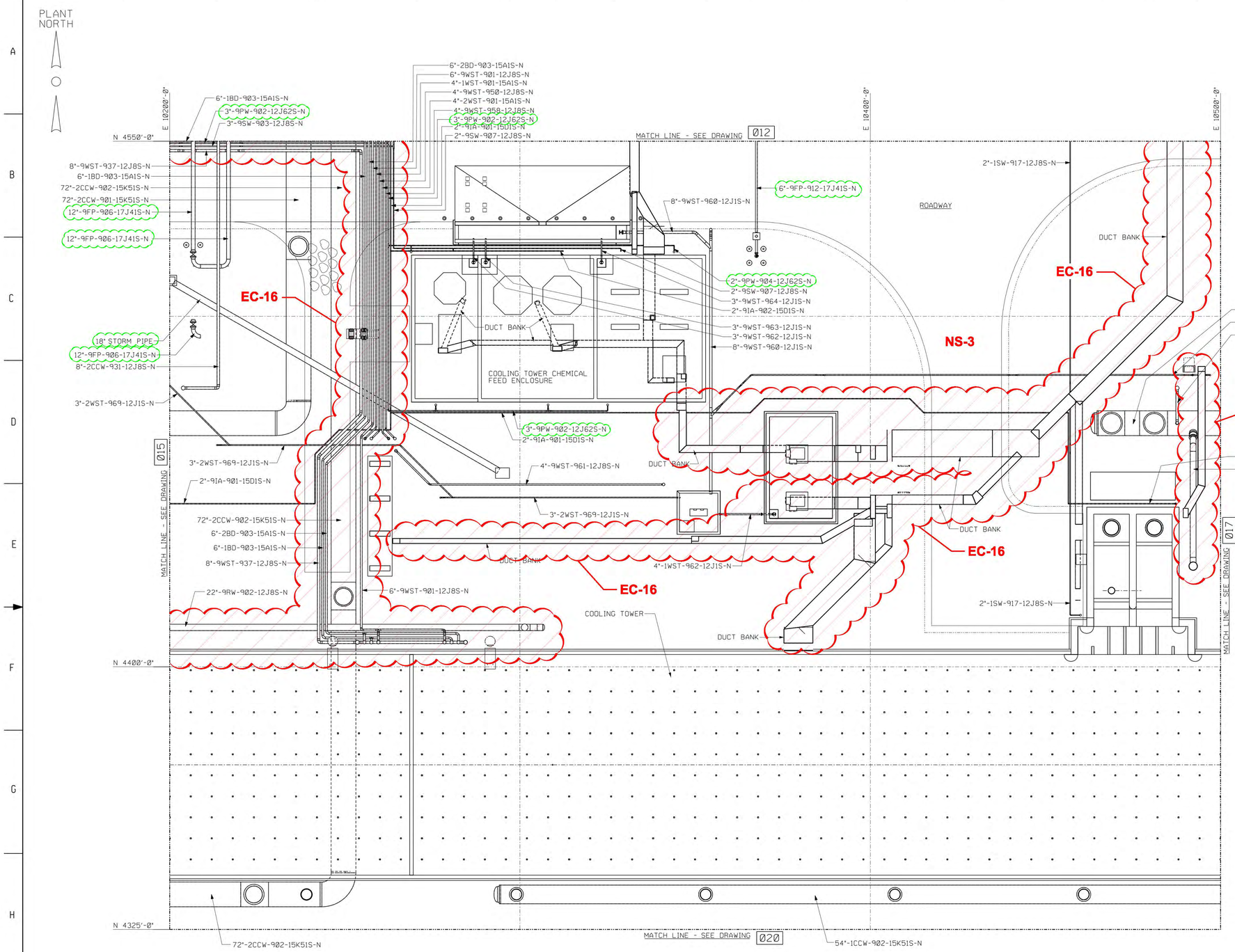
SERVER: reapds07

PLOTTED: 5/19/2006 9:46:56 AM



NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.

DEMOLITION NOTES:

1. REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:
   - POTABLE WATER (PW)
   - FIRE PROTECTION (FP)
   - STORM SEWER
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- TO REMAIN
- TO BE REMOVED

10 0 10 20 30 40 50
GRAPHIC SCALE IN FEET

NOTE: PROVIDED FOR REFERENCE ONLY.

Scott Alan Bolles — Digitally signed by Scott Alan Bolles. DN: CN = Scott Alan Bolles, C = US, O = Parsons E/C, OU = Mechanical Engineering. Reason: I am approving this document. Date: 2006.09.26 10:30:12 -04'00'

REGISTERED PROFESSIONAL ENGINEER — SCOTT ALAN BOLLES — M31889 — EXP 12-31-07 — MECHANICAL — STATE OF CALIFORNIA

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER/ ENGINEER/ TECH SPEC	LEAD DISC ENGINEER	PROJECT MANAGER
E	05-26-06	GE DRAWING REISSUE REQUEST	JKG	DSW	SAB	02	DRE
D	02-15-06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG	DSW	SAB	11A	DRE
C	11-03-05	ISSUED FOR CBO REVIEW	JKG	DSW	SAB	11A	DRE
B	09-16-05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG	DSW	SAB		DRE
A	07-21-05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	PAH	DSW	SAB		DRE
-	06-15-05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG	DSW	SAB		DRE

PRELIMINARY STATUS — LDE S.A. BOLLES — DATE 06/15/05 — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — LDE — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: JKG	
CHECKED BY:	
LEAD DESIGNER: DSW	
ENGINEER/TECH SPECIALIST:	
PROJECT ENGINEERING MANAGER: K.R. GABEL	
PROJECT MANAGER: D.R. ERALI	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF: PE:_____ STATE:_____ LIC. NO.:_____ DATED:_____

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL, INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-9780 ** atcgroupservices.com

PROJECT NUMBER: NPGEP19001
PHASE: 2 — DATE: 12-10-19
REVIEWED BY: J. NUCCIO
CHECKED BY: J. SCHNEIDER — DRAWN BY: DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE 3/32"=1'

DRAWING NO. M301-9UGC-016 — REV E

PLOTTED: 8/8/05 7:16:56 AM

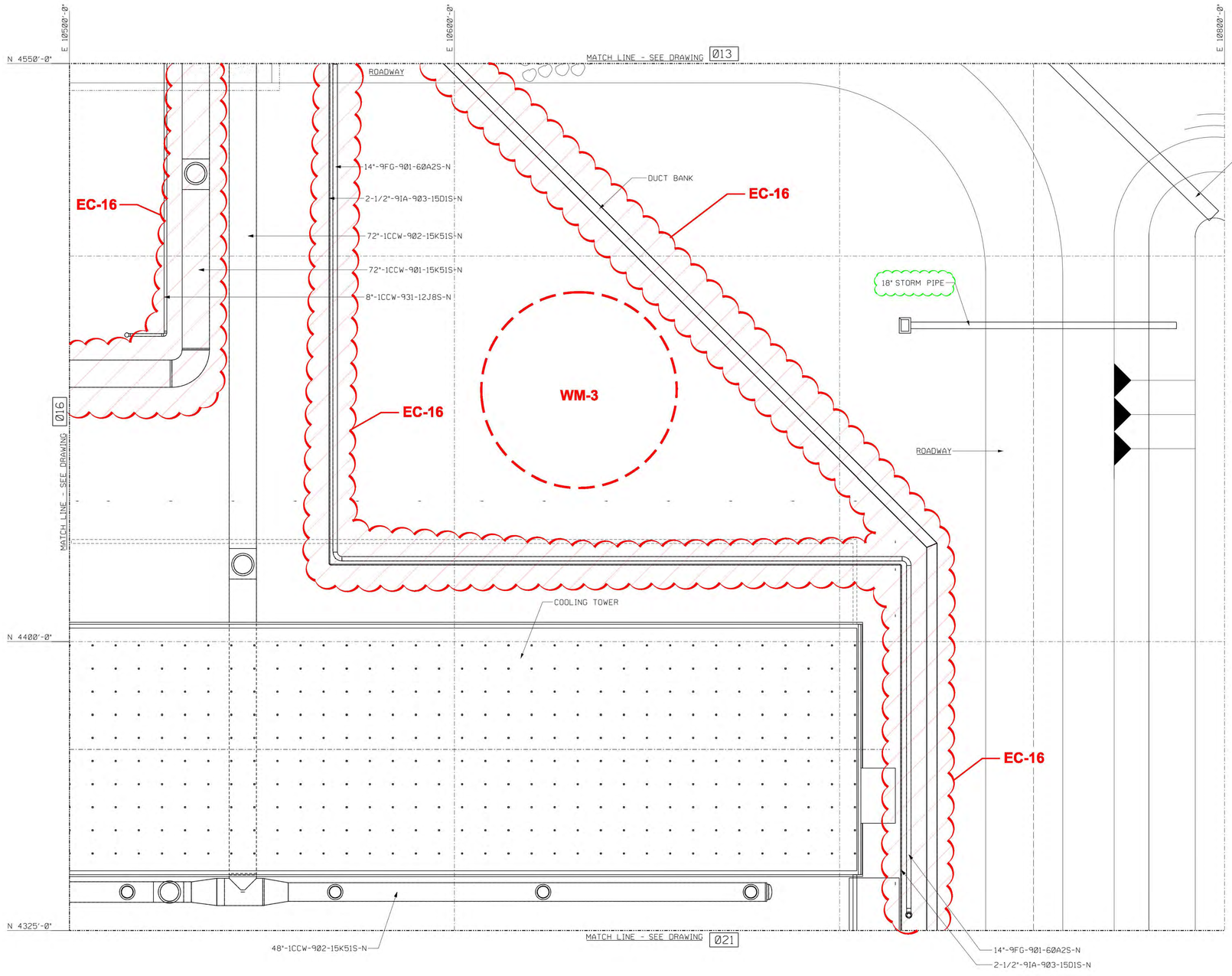
FILE NAME: m301ugc016.dgn
PATH: d:\7\ulend\draw\ugd\
SERVER: reapds07

VHL: Wed May 17 10:12:26 2006

PLANT NORTH

NOTES:

1. FOR GENERAL NOTES SEE DRAWING NUMBER M301-9UGC-001.



DEMOLITION NOTES:

1. **REMOVE ALL UNDERGROUND PIPING WITHIN 12' OF GRADE SURFACE WITH THE EXCEPTION OF:**
   - **POTABLE WATER (PW)**
   - **FIRE PROTECTION (FP)**
   - **STORM SEWER**
2. **IF PIPING IS PRESENT BELOW 12' FROM GRADE SURFACE CUT, PLUG AND CAP AT 12' BGS IN ACCORDANCE WITH REQUIREMENTS DETAILED IN TECHNICAL SPECIFICATIONS.**

- TO REMAIN

- TO BE REMOVED

10 0 10 20 30 40 50

GRAPHIC SCALE IN FEET

NOTE: PROVIDED FOR REFERENCE ONLY.

Scott Alan Bolles — Digitally signed by Scott Alan Bolles. DN: CN = Scott Alan Bolles, C = US, O = Parsons EC, OU = Mechanical Engineering. Reason: I am approving this document. Date: 2006.08.25 10:37:01 -04'00'

REGISTERED PROFESSIONAL ENGINEER SCOTT ALAN BOLLES M 31889 DATE 12-31-07 MECHANICAL STATE OF CALIFORNIA

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER/ ENGINEER/ TECH. SPEC.	ENGINEERING MANAGER	PROJECT MANAGER
E	05-26-06	GE DRAWING REISSUE REQUEST	JKG		DSW		SAB 02 ORE
D	02-13-06	GENERAL UPDATE AND ISSUE FOR CBO REVIEW	JKG		DSW		SAB 11A ORE
C	11-03-05	ISSUED FOR CBO REVIEW	JKG		DSW		SAB 11A ORE
B	09-16-05	UPDATED FOR UNDERGROUND BID PACKAGE	JKG		DSW		SAB ORE
A	07-29-05	PRELIMINARY - ISSUED FOR INFORMATION ONLY	PAH		DSW		SAB ORE
-	06-15-05	PRELIMINARY - FOR BIDDING PURPOSE ONLY	JKG		DSW		SAB ORE

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE S.A. BOLLES 06/15/05

APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN, ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: JKG	
CHECKED BY:	
LEAD DESIGNER: D.S. WEAVER	
ENGINEER/TECH SPECIALIST:	
PROJECT ENGINEERING MANAGER: K.R. GABEL	
PROJECT MANAGER: D.R. ERALI	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF PE, STATE, LIC. NO., DATE

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL, INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-9780 ** atcgroupservices.com

PROJECT NUMBER	NPGEP19001
PHASE 2	DATE 12-10-19
REVIEWED BY:	J. NUCCIO
CHECKED BY: J. SCHNEIDER	DRAWN BY: DAW

SHEET CONTENTS:
IEEC DEMOLITION TECHNICAL SPECIFICATION DRAWING PACKAGE UNDERGROUND PIPING COMPOSITE ENLARGED PLAN

SCALE: 3/32"=1'

DRAWING NO. M301-9UGC-017 REV E

FAC PIPING I & C ELECT MECH CIVIL STRUC

VHL: Wed May 17 10:14:26 2006

FILE NAME: m301ugc017.dgn
PATH: d:\7\inland\draw\ugd\
SERVER: reapds07

PLOTTED: 5/17/2006 10:14:26 AM

DEMOLITION NOTES:

1. **FINAL GRADE ON SITE DRAINAGE TO BE COMPLETED BY DEMOLITION CONTRACTORS IN ACCORDANCE WITH SURFACE ELEVATIONS ON DRAINAGE STRUCTURES NOTED ON THIS DRAWING.**

LEGEND:

- SE-10
- SE-1
- SE-5
- WM-9

ADDITIONAL BMPs THROUGHOUT LIFE OF PROJECT:

- EC-1
- WE-1
- NS-1
- NS-6

MONUMENT SCHEDULE			
No.	PLANT GRID		ELEVATION USGS MSL
BM1	N 5245.5418	E 9717.0302	1440.71
BM2	N 5255.4429	E 10876.0560	1447.87
BM3	N 4208.1658	E 10882.2046	1443.88
BM4	N 4199.8906	E 9726.3623	1439.91

LEGEND:
- EXISTING CONTOURS
- PROPOSED CONTOURS
- CB CATCH BASIN
- MH MANHOLE

REFERENCES:

C101-9GA-001	GENERAL ARRANGEMENT - SITE PLAN
C101-9SPI-002	FINAL PLANT SURFACING PLAN
C101-9SPI-003	ROADWAY LOCATION PLAN
C101-9SPI-004	PERMANENT FENCING LOCATION PLAN
C101-9SPI-005	PLANT ACCESS DRIVEWAY - PLAN, SECTION & DETAILS
C101-9SPI-006	INTERIM STORM WATER RETENTION BASINS PLAN
C101-9SPI-007	FINAL GRADING & DRAINAGE PLAN WITH FLOOD CONTROL CHANNEL AVAILABLE
C101-9SPI-020	CATCH BASIN, MANHOLE DETAILS AND SCHEDULES
C101-9SPI-021	CONSTRUCTION DETAILS - DRAINAGE
C101-9SPI-022	PAVING AND SURFACING DETAILS
C101-9SPI-026	INTERIM STORM WATER RETENTION BASINS OUTLET WORKS DETAILS AND SECTIONS

Robert L. Dunn, P.E.
Digitally signed by Robert L. Dunn, P.E. DN: cn=Robert L. Dunn, P.E., o=US, o=Bureau Veritas, ou=MCO, email=robert.dunn@us.bureauveritas.com, Reason: I am approving this document Date: 2008.08.16 11:28:08 -07'00'

Pradip Khan
Digitally signed by Pradip Khan DN: cn=Pradip Khan, o=US, o=Parsons Energy and Chemicals, ou=Reading Office Reason: I am approving this document Date: 2008.08.09 09:43:46 -04'00'

1"=50' SCALE IN FEET

REV	DATE	DESCRIPTION	DRWN	CHKD	LEAD DESIGNER	TECHNICAL LEAD DISC.	PROJECT MANAGER
E	08/ 01/ 08	FOR CONSTRUCTION	MS	KJF	KJF	DM/PK	DRE
D	03/ 12/ 08	FOR BID	KJF	AL	MK	JF DM/PK	DRE
C	02/ 29/ 08	FOR BID	MS	RES	KJF	WMY/PK	DRE
B	05/ 09/ 08	FOR CONSTRUCTION AND FINAL CBO APPROVAL	11B	SSC	AL	MK	JF KEM/PK	DRE
A	04/ 01/ 08	ISSUED FOR CBO REVIEW		KJF	WMY	KJF	WMY/PK	DRE
~	04/ 01/ 08	FOR REVIEW		GJU	AL	MK	JF WMY/PK	DRE

PRELIMINARY STATUS — DATE / / — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS, REVIEWED NOT CHECKED.
LDE
APPROVED STATUS — DATE 06/06/08 — REPRESENTS REVIEWED AND APPROVED DESIGN, ANY PORTION MARKED "HOLD" REMAINS PRELIMINARY STATUS.
LDE P KHAN

ORIGINATING PERSONNEL
DRAWN BY: GJU
CHECKED BY: AL MERKEL
LEAD DESIGNER: KJ FRITZ
ENGINEER/TECH SPECIALIST: KE MIRANDA
PROJECT ENGINEERING MANAGER: KR GABLE
PROJECT MANAGER: DR ERALI

PROFESSIONAL ENGINEER'S SEAL
No. 42532 Exp. 12-31-09 CIVIL STATE OF CALIFORNIA
See Electronic Signature for Date & Time

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF PR: PRADIP KHAN STATE: CA LIC NO.: 54252 DATE: 06/06/08

PARSONS E&C

GE ENERGY
GENERAL ELECTRIC COMPANY
GENERAL ELECTRIC INTERNATIONAL, INC.
GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
26 CUPANIA CIRCLE
MONTEREY PARK, CA 91755
Ph: (323) 517-9750 ** stlcgroupservices.com

PROJECT NUMBER: NPGEP19001
PHASE: 2 — DATE: 12-31-19
REVIEWED BY: J. NUCCIO
CHECKED BY: J. SCHNEIDER — DRAWN BY: DAW

SHEET CONTENTS:
IEEC PHASE 2 BMPs DEMOLITION

SCALE: 1"=50'
DRAWING NO.: C101-9SPI-001B
REV: E

NOTE: PROVIDED FOR REFERENCE ONLY.

MONUMENT SCHEDULE			
No.	PLANT GRID		ELEVATION USGS MSL
BM1	N 5245.5418	E 9717.0300	1440.71
BM2	N 5255.4429	E 10876.0560	1447.87
BM3	N 4208.1658	E 10882.2046	1443.88
BM4	N 4199.8906	E 9726.3623	1439.91

DEMOLITION NOTES:

1. **FINAL GRADE ON SITE DRAINAGE TO BE COMPLETED BY DEMOLITION CONTRACTORS IN ACCORDANCE WITH SURFACE ELEVATIONS ON DRAINAGE STRUCTURES NOTED ON THIS DRAWING.**

LEGEND:

- □ - SE-10
- × - SE-1
- ○ - SE-5
- ▲ - WM-9

ADDITIONAL BMPs THROUGHOUT LIFE OF PROJECT:

- **EC-1**
- **WE-1**
- **NS-1**
- **NS-6**

LEGEND:
- EXISTING CONTOURS
- PROPOSED CONTOURS
- CB CATCH BASIN
- MH MANHOLE

REFERENCES:

C101-9GA-001	GENERAL ARRANGEMENT - SITE PLAN
C101-9SPI-002	FINAL PLANT SURFACING PLAN
C101-9SPI-003	ROADWAY LOCATION PLAN
C101-9SPI-004	PERMANENT FENCING LOCATION PLAN
C101-9SPI-005	PLANT ACCESS DRIVEWAY - PLAN, SECTION & DETAILS
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C101-9SPI-021	CONSTRUCTION DETAILS - DRAINAGE
C101-9SPI-022	PAVING AND SURFACING DETAILS
C101-9SPI-026	INTERIM STORM WATER RETENTION BASINS OUTLET WORKS DETAILS AND SECTIONS

Robert L. Dunn, P.E. — Digitally signed by Robert L. Dunn, P.E. DN: cn=Robert L. Dunn, P.E., o=US, o=Bureau Veritas, ou=NCO, email=robert.dunn@us.bureauveritas.com Reason: I am approving this document Date: 2008.08.18 11:28:01 -07'00'

Pradip Khan — Digitally signed by Pradip Khan DN: cn=Pradip Khan, o=US, o=Parsons Energy and Chemicals, ou=Reading Office Reason: I am approving this document Date: 2008.08.09 09:43:46 -04'00'

0 50 100 150
1"=50'
SCALE IN FEET

REV	DATE	DESCRIPTION	DES	DRAWN	CHECKED	LEAD DESIGNER / TECH SPEC	LEAD DISC / PROJECT ENGINEER	PROJECT MANAGER
E	06 Aug 08	FOR CONSTRUCTION			01	MS	KJF	KJF	DMW	PK	DRE
D	02 Jul 08	FOR BID			01	KJF	AL	MKJF	DMW	PK	DRE
C	02 Jun 08	FOR BID			01	MS	RES	KJF	WMY	PK	DRE
B	06 May 08	FOR CONSTRUCTION AND FINAL CBO APPROVAL			11B	SSC	AL	MKJF	KEM	PK	DRE
A	06 May 08	ISSUED FOR CBO REVIEW				KJF	WMY	KJF	WMY	PK	DRE
-	04 Apr 08	FOR REVIEW				GJU	AL	MKJF	WMY	PK	DRE

PRELIMINARY STATUS	DATE	REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE	/ /	
APPROVED STATUS	DATE	REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE P KHAN	06/06/08	

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: GJU	
CHECKED BY: AL MERKEL	
LEAD DESIGNER: KJ FRITZ	
ENGINEER/TECH SPECIALIST: KE MIRANDA	
PROJECT ENGINEERING MANAGER: KR GABLE	
PROJECT MANAGER: DR ERALI	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF PE: PRADIP KHAN, STATE: CA, LIC. NO.: 54262, DATE: 06/06/08

See Electronic Signature for Date & Time

PARSONS E&C

GE ENERGY — GENERAL ELECTRIC COMPANY, GENERAL ELECTRIC INTERNATIONAL, INC., GLOBAL POWER PLANT SYSTEMS DEPARTMENT

ATC — ENVIRONMENTAL • GEOTECHNICAL • BUILDING SCIENCES • MATERIALS TESTING
25 CUPANIA CIRCLE, MONTEREY PARK, CA 91755
Ph: (323) 517-6750 ** atlgroupservices.com

PROJECT NUMBER	NPGEP19001
PHASE	2
DATE	12-31-19
REVIEWED BY:	J. NUCCIO
CHECKED BY:	J. SCHNEIDER
DRAWN BY:	DAW

SHEET CONTENTS:

IEEC
PHASE 3 BMPs
COOLING TOWER BASIN BACKFILL

SCALE 1"=50'

DRAWING NO. C101-9SPI-001C REV E

NOTE: PROVIDED FOR REFERENCE ONLY.

Appendix C: Permit Registration Documents

Permit Registration Documents included in this Appendix

Y/N	Permit Registration Document
Y	Notice of Intent
Y	Risk Assessment
Y	Certification
N	Post Construction Water Balance
N	Copy of Annual Fee Receipt
N	ATS Design Documents
Y	Site Map, see Appendix B

State Water Resources Control Board

NOTICE OF INTENT

GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY
(WQ ORDER No. 2009-0009-DWQ)

WDID: Risk Level: Level1

Property Owner Information

Type: Private Business

Name: Inland Empire Energy Center LLC
Address: 26226 Antelope Road
Address 2:
City/State/Zip: Menifee CA 92585
Contact Name: Francisco Escobedo
Title: Director Asset Management
Phone Number: 951-928-5941
Email Address: frank.escobedo@ge.com

Contractor/Developer Information

Name: Silverado Contractors Inc
Address: 13804 Oaks Avenue
Address 2:
City/State/Zip: Chino CA 91710
Contact Name: Jimmy Saldivar
Title: Project Manager
Phone Number: 909-949-6025
Email Address: jimmy@silveradocontractors.com

Construction Site Information

Contact Name: Francisco Escobedo
Title: Director Asset Management
Site Name: Inland Empire Energy Center LLC
Address: 26226 Antelope Road
City/State/Zip: Menifee CA 92585
Site Phone #: 951-928-5941
County: Riverside
Email Address: frank.escobedo@ge.com
Latitude: 33.739305
Longitude: -117.168611
Construction Start: February 10, 2020
Total Size of Construction Area: 45.8 Acres
Complete Grading: December 31, 2020
Total Area to be Disturbed: 6.45 Acres
Final Stabilization: December 31, 2020

Risk Values

R: 21.17
K: 0.2
LS: 1.05
Beneficial Uses/303(d): No

Type of Construction: *Industrial
Receiving Water: Canyon Lake
Qualified SWPPP Developer: Jay Schneider
Certification #: 20608

RWQCB Jurisdiction: Region 8 - Santa Ana
Phone: 951-782-4130
Email: r8_stormwater@waterboards.ca.gov

Certification

Name: Francisco Escobedo
Date: January 10, 2020
Title: Director Asset Management

State Water Resources Control Board

NOTICE OF INTENT

GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY
(WQ ORDER No. 2009-0009-DWQ)

WDID:

Post Construction Information

Is the project located within a permitted Phase I or Phase II Municipal Separate Storm Sewer System?: _____

_____

_____

_____

Attachments Meta Data Information:

Attachment ID	File Name	File Description	File Hash	File Size	Date Attached	Attachment Type
2571360	MS4 Map of Riverside and San Bernardino counties		31cd78c1f7f844b6ce112a6bd471ea13696b81274efe8d05bda574e5f19fb58	2571871	2020-01-10 15:57:50.0	Supporting Documentation
2571369	Inland Empire Energy Center SWPPP		bcb915697ba7cca198cbaeb874cba085f3176f4d8b6d2d2ca29f07393be	1628517	2020-01-10 16:06:36.0	SWPPP

January 10, 2020

Fee Statement
Application Id # 516233

Facility/Site

Inland Empire Energy Center LL
26226 Antelope Road
Menifee CA 92585

Thank you for submitting the Permit Registration Documents (PRDs) for the facility/site referenced above. The application fee for this submittal is: $652.00

The application is considered incomplete until all PRDs, including the application fee, are received. Only after all PRDs are received, will the WDID Number be assigned. Permit coverage begins once the WDID Number is assigned to the facility/site.

Note: The submitted application will be automatically returned as incomplete if all PRDs, including the application fee and the original signed electronic authorization form, are not received within 60 days from the date of submission.

Please make checks payable to: SWRCB

Mail this Fee Statement and $652.00 to:

Regular Mailing Address:
SWRCB
Storm Water Section
PO Box 1977
Sacramento, CA 95812-1977

Overnight Mailing Address:
SWRCB
Storm Water Section
1001 I Street – 15th Floor
Sacramento, CA 95814

If you have questions or want to check on the status of the application, email us at stormwater@waterboards.ca.gov or call 1-866-563-3107.

Thank You,
Storm Water Help Desk

National Pollutant Discharge Elimination System (NPDES)

Rainfall Erosivity Factor Calculator for Small Construction Sites

EPA's stormwater regulations allow NPDES permitting authorities to waive NPDES permitting requirements for stormwater discharges from small construction sites if:

- the construction site disturbs less than five acres, and
- the rainfall erosivity factor ("R" in the revised universal soil loss equation, or RUSLE) value is less than five during the period of construction activity.

If your small construction project is located in an area where EPA is the permitting authority and your R factor is less than five, you qualify for a low erosivity waiver (LEW) from NPDES stormwater permitting. If your small construction project does not qualify for a waiver, then NPDES stormwater permit coverage is required. Follow the steps below to calculate your R-Factor.

LEW certifications are submitted through the NPDES eReporting Tool or "CGP-NeT". Several states that are authorized to implement the NPDES permitting program also accept LEWs. Check with your state NPDES permitting authority for more information.

- Submit your LEW through EPA's eReporting Tool
- List of states, Indian country, and territories where EPA is the permitting authority
- Construction Rainfall Erosivity Waiver Fact Sheet
- Appendix C of the 2017 CGP – Small Construction Waivers and Instructions

The R-factor calculation can also be integrated directly into custom applications using the R-Factor web service.

For questions or comments, email EPA's CGP staff at cgp@epa.gov.

● Select the estimated start and end dates of construction by clicking the boxes and using the dropdown calendar.

The period of construction activity begins at initial earth disturbance and ends with final stabilization.

Start Date: 02/10/2020 **End Date:** 12/31/2020

● Locate your small construction project using the search box below or by clicking on the map.

Location: 26226 antelope road, menifee, california **Search**

Click the "Calculate R Factor" button below to calculate an R Factor for your small construction project.

Calculate R Factor

Facility Information

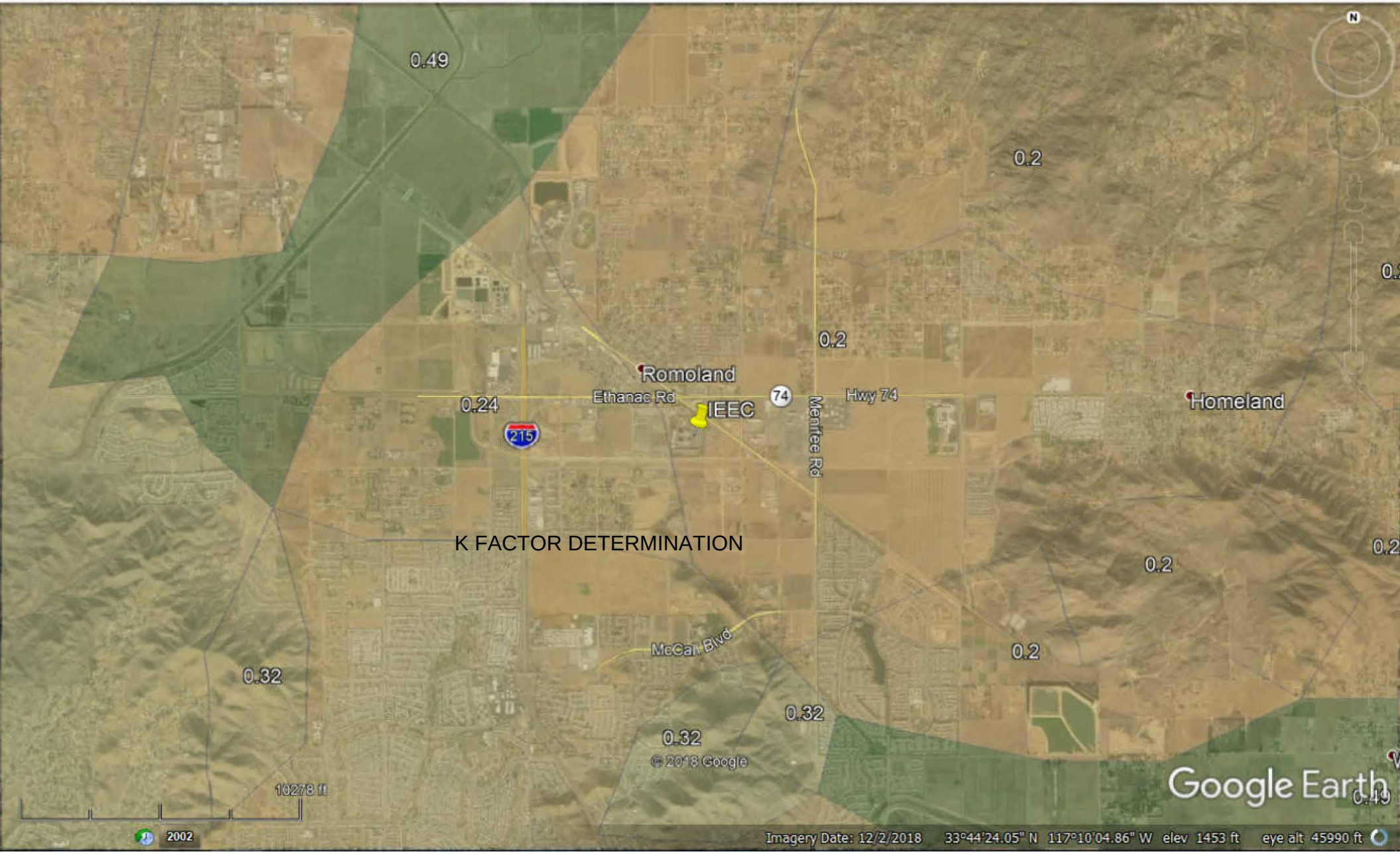
Start Date: 02/10/2020	**Latitude:** 33.7415
End Date: 12/31/2020	**Longitude:** -117.1717

Calculation Results

Rainfall erosivity factor (R Factor) = **21.17**

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority, you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.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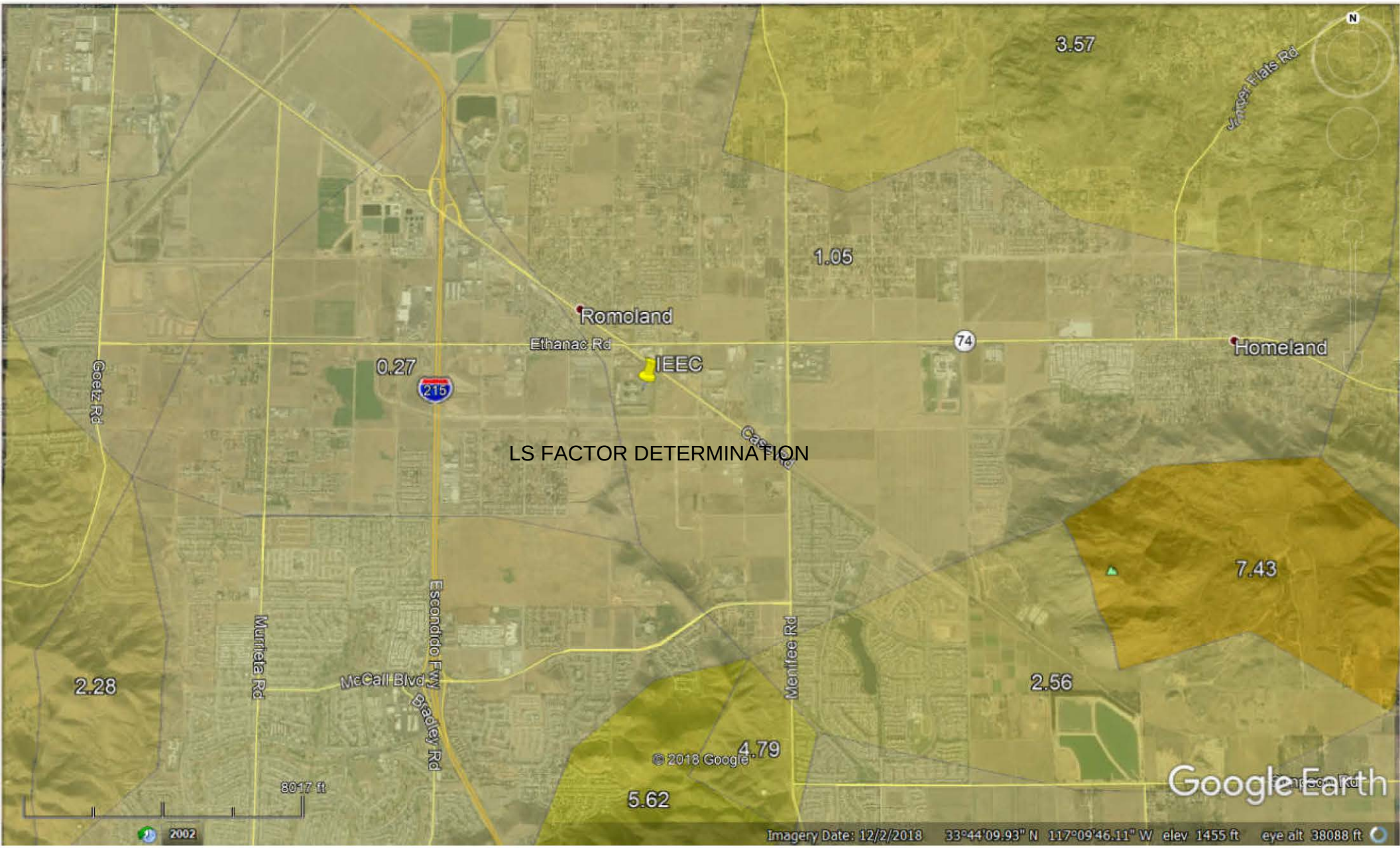
0.2
0.24
Romoland
Ethanac Rd
IEEC
74
Hwy 74
Menifee Rd
Homeland
215
K FACTOR DETERMINATION
0.2
0.2
McCall Blvd
0.32
0.32
0.32
© 2018 Google
10278 ft
Google Earth
2002
Imagery Date: 12/2/2018 33°44'24.05" N 117°10'04.86" W elev 1453 ft eye alt 45990 ft


LS FACTOR DETERMINATION
3.57
1.05
0.27
7.43
2.28
2.56
4.79
5.62
Romoland
Homeland
IEEC
Ethanac Rd
Goetz Rd
Murrieta Rd
McCall Blvd
Escondido Fwy
Bradley Rd
Menifee Rd
Juniper Flats Rd
215
74
8017 ft
© 2018 Google
Google Earth
Imagery Date: 12/2/2018 33°44'09.93" N 117°09'46.11" W elev 1455 ft eye alt 38088 ft

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	https://lew.epa.gov/		
5	**R Factor Value**		21.17
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.24
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		1.05
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		5.33484
16	**Site Sediment Risk Factor**		**Low**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

2014 and 2016 Integrated Report | Map | 303(d) List | References | Data Download | Contact Us

2014 AND 2016 INTEGRATED REPORT — ALL ASSESSED WATERS

Zoom to county: All

Show county

Zoom to Regional Board: All

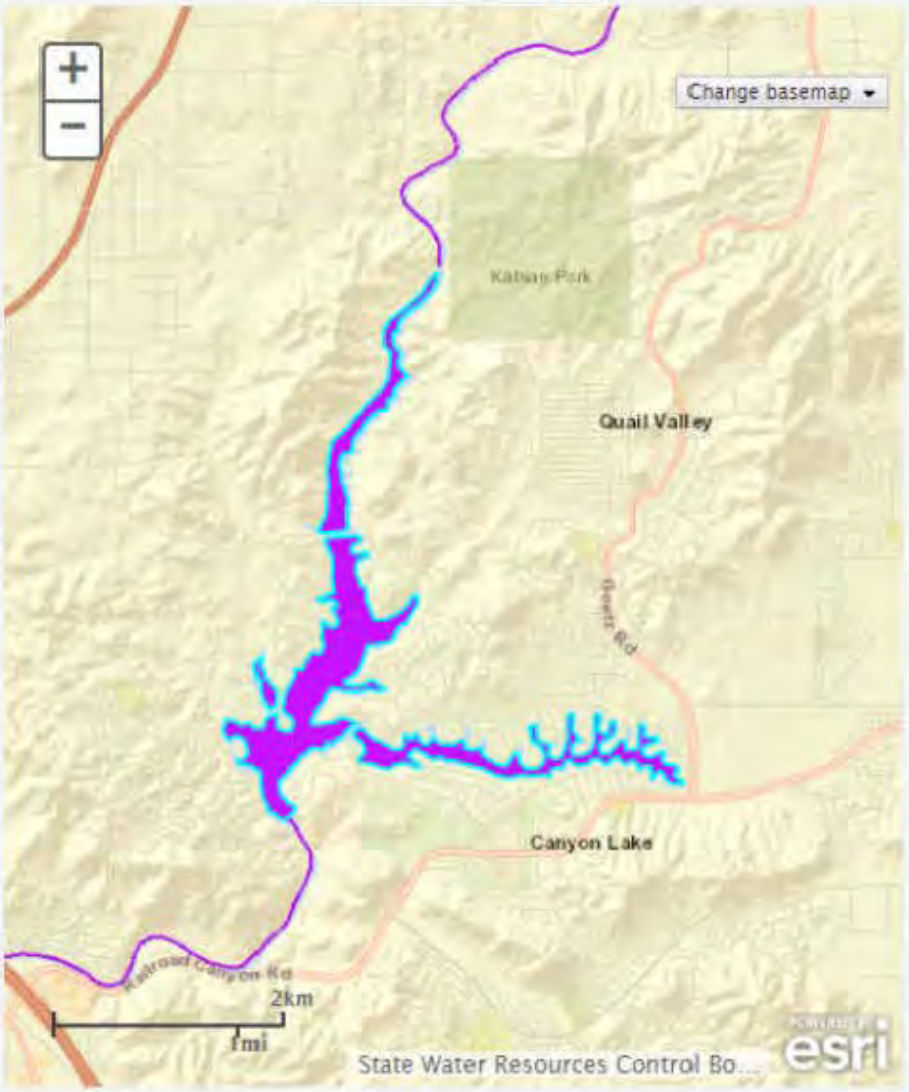
Show Regional Board

Map Help

Zoom to water body: *(Filter: All)*

Filter list by:

Reset list



Canyon Lake (Railroad Canyon Reservoir) Close

Pollutant assessments

Pollutants	Listing Decision Report Link Potential Sources Schedule *Comments*
Fish Kills	Do Not List on 303(d) list (TMDL required list) 67314 n/a
Indicator Bacteria	Delist from 303(d) list (TMDL required list) 34408 n/a
Nutrients	List on 303(d) list (being addressed by USEPA approved TMDL) 34148 n/a USEPA TMDL approval: 2005

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Reach 6 – Elsinore Groundwater Subbasin Boundary to Lake Elsinore Outlet	+				I			I	I		I				I				801.35	
Coldwater Canyon Creek	X	X			X			X	X		X				X		X		801.32	
Bedford Canyon Creek	+				I			I	I		I				I	X			801.32	
Dawson Canyon Creek	I				I			I	I		I				I				801.32	
Other Tributaries to these Creeks	I				I			I	I		I				I				801.32	
SAN JACINTO RIVER BASIN																				
San Jacinto River																				
Reach 1 – Lake Elsinore to Canyon Lake	I	I			I			I	I		I				I	X			801.32	802.31
Reach 2 – Canyon Lake (see Lakes Pg. 3-45)																				
Reach 3 – Canyon Lake to Nuevo Road	+	I			I			I	I		I				I	X			802.11	
Reach 4 – Nuevo Road to North-South Mid-Section Line, T4S/R1W-S8	+	I			I			I	I		I				I	X			802.21	802.21

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml **OR** A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan) http://www.waterboards.ca.gov/waterboards_map.shtml	**no**	**Low**

Region 1 Basin Plan

Region 2 Basin Plan

Region 3 Basin Plan

Region 4 Basin Plan

Region 5 Basin Plan

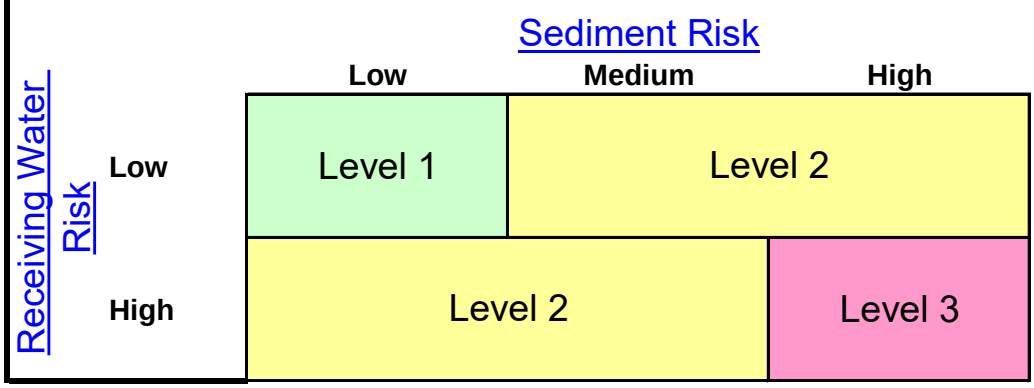
Region 6 Basin Plan

Region 7 Basin Plan

Region 8 Basin Plan

Region 9 Basin Plan

Combined Risk Level Matrix



Project Sediment Risk:	**Low**
Project RW Risk:	**Low**
Project Combined Risk:	**Level 1**

Appendix D: SWPPP Amendment Certifications

SWPPP Amendment No. _____

Project Name: _____

Project Number: _____

Qualified SWPPP Developer's Certification of the
Stormwater Pollution Prevention Plan Amendment

"This Stormwater Pollution Prevention Plan and attachments were prepared under my direction to meet the requirements of the California Construction General Permit (SWRCB Order No. 2009-009-DWQ as amended by 2010-0014-DWQ and 2012-0006-DWQ). I certify that I am a Qualified SWPPP Developer in good standing as of the date signed below."

QSD's Signature	Date
QSD Name	QSD Certificate Number
Title and Affiliation	Telephone
Address	Email

Appendix E: Submitted Changes to PRDs

Log of Updated PRDs

The General Permit allows for the reduction or increase of the total acreage covered under the General Permit when a portion of the project is complete and/or conditions for termination of coverage have been met; when ownership of a portion of the project is purchased by a different entity; or when new acreage is added to the project.

Modified PRDs shall be filed electronically within 30 days of a reduction or increase in total disturbed area if a change in permit covered acreage is to be sought. The SWPPP shall be modified appropriately, with revisions and amendments recorded in Appendix C. Updated PRDs submitted electronically via SMARTS can be found in this Appendix.

This appendix includes all of the following updated PRDs (check all that apply):

☐ Revised Notice of Intent (NOI);

☐ Revised Site Map;

☐ Revised Risk Assessment;

☐ New landowner's information (name, address, phone number, email address); and

☐ New signed certification statement.

Legally Responsible Person [if organization]

Signature of [Authorized Representative of] Legally Responsible Person or Approved Signatory

Date

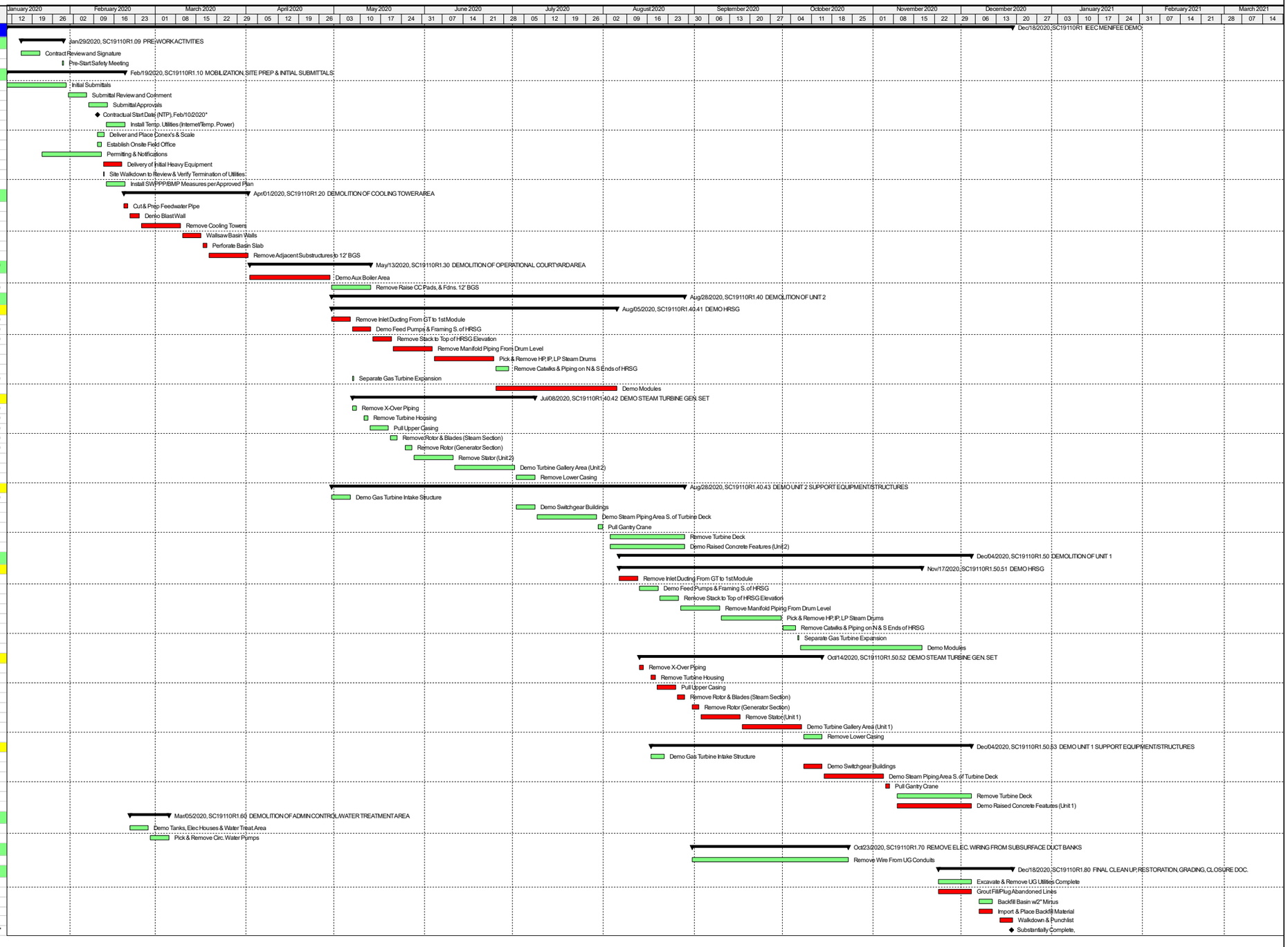
Name of [Authorized Representative of] Legally Responsible Person or Approved Signatory

Telephone Number

Appendix F: Construction Schedule

IEEC - Inland Empire Energy Center Demolition
Initial Tentative Baseline Schedule

Activity ID	Activity Name	Original Duration	Start	Finish
SC19110R1	IEEC MENIFEE DEMO	246	Jan/10/2020	Dec/18/2020
SC19110R1.09	PRE-WORK ACTIVITIES	11	Jan/15/2020	Jan/29/2020
PRE0900	Contract Review and Signature	5	Jan/15/2020*	Jan/21/2020
PRE1000	Pre-Start Safety Meeting	1	Jan/29/2020*	Jan/29/2020
SC19110R1.10	MOBILIZATION, SITE PREP & INITIAL SUBMITTALS	29	Jan/10/2020	Feb/19/2020
MOB0900	Initial Submittals	15	Jan/10/2020	Jan/30/2020
MOB1000	Submittal Review and Comment	5	Jan/31/2020*	Feb/06/2020
MOB1010	Submittal Approvals	5	Feb/07/2020	Feb/13/2020
MOB1011	Contractual Start Date (NTP)	0	Feb/10/2020*	
MOB1020	Install Temp. Utilities (Internet/Temp. Power)	5	Feb/13/2020	Feb/19/2020
MOB1030	Deliver and Place Conex's & Scale	3	Feb/10/2020*	Feb/12/2020
MOB1031	Establish Onsite Field Office	2	Feb/10/2020*	Feb/11/2020
MOB1032	Permitting & Notifications	15	Jan/22/2020	Feb/11/2020
MOB1040	Delivery of Initial Heavy Equipment	5	Feb/12/2020*	Feb/18/2020
MOB1050	Site Walkdown to Review & Verify Termination of Utilities	1	Feb/12/2020	Feb/12/2020
MOB1060	Install SWPPP/BMP Measures per Approved Plan	5	Feb/13/2020	Feb/19/2020
SC19110R1.20	DEMOLITION OF COOLING TOWER AREA	31	Feb/19/2020	Apr/01/2020
CT100	Cut & Prep Feedwater Pipe	2	Feb/19/2020	Feb/20/2020
CT110	Demo Blast Wall	2	Feb/21/2020*	Feb/24/2020
CT120	Remove Cooling Towers	10	Feb/25/2020	Mar/09/2020
CT130	Wallsaw Basin Walls	5	Mar/10/2020	Mar/16/2020
CT140	Perforate Basin Slab	2	Mar/17/2020	Mar/18/2020
CT150	Remove Adjacent Substructures to 12' BGS	10	Mar/19/2020	Apr/01/2020
SC19110R1.30	DEMOLITION OF OPERATIONAL COURTYARD AREA	30	Apr/02/2020	May/13/2020
COURT100	Demo Aux Boiler Area	20	Apr/02/2020	Apr/29/2020
COURT110	Remove Raise CC Pads, & Fdns. 12' BGS	10	Apr/30/2020	May/13/2020
SC19110R1.40	DEMOLITION OF UNIT 2	87	Apr/30/2020	Aug/28/2020
SC19110R1.40.41	DEMO HRSG	70	Apr/30/2020	Aug/05/2020
2HRSG100	Remove Inlet Ducting From GT to 1st Module	5	Apr/30/2020	May/06/2020
2HRSG110	Demo Feed Pumps & Framing S. of HRSG	5	May/07/2020	May/13/2020
2HRSG120	Remove Stack to Top of HRSG Elevation	5	May/14/2020	May/20/2020
2HRSG130	Remove Manifold Piping From Drum Level	10	May/21/2020	Jun/03/2020
2HRSG140	Pick & Remove HP,IP, LP Steam Drums	15	Jun/04/2020	Jun/24/2020
2HRSG150	Remove Catwlks & Piping on N.& S Ends of HRSG	3	Jun/25/2020	Jun/29/2020
2HRSG160	Separate Gas Turbine Expansion	1	May/07/2020	May/07/2020
2HRSG170	Demo Modules	30	Jun/25/2020	Aug/05/2020
SC19110R1.40.42	DEMO STEAM TURBINE GEN. SET	45	May/07/2020	Jul/08/2020
2TURBINE100	Remove X-Over Piping	2	May/07/2020	May/08/2020
2TURBINE110	Remove Turbine Housing	2	May/11/2020	May/12/2020
2TURBINE120	Pull Upper Casing	5	May/13/2020	May/19/2020
2TURBINE130	Remove Rotor & Blades (Steam Section)	3	May/20/2020	May/22/2020
2TURBINE140	Remove Rotor (Generator Section)	3	May/25/2020	May/27/2020
2TURBINE150	Remove Stator (Unit 2)	10	May/28/2020	Jun/10/2020
2TURBINE160	Demo Turbine Gallery Area (Unit 2)	15	Jun/11/2020	Jul/01/2020
2TURBINE170	Remove Lower Casing	5	Jul/02/2020	Jul/08/2020
SC19110R1.40.43	DEMO UNIT 2 SUPPORT EQUIPMENT/STRUCTURES	87	Apr/30/2020	Aug/28/2020
2SUPPORT100	Demo Gas Turbine Intake Structure	5	Apr/30/2020	May/06/2020
2SUPPORT110	Demo Switchgear Buildings	5	Jul/02/2020	Jul/08/2020
2SUPPORT120	Demo Steam Piping Area S. of Turbine Deck	15	Jul/09/2020	Jul/29/2020
2SUPPORT130	Pull Gantry Crane	2	Jul/30/2020	Jul/31/2020
2SUPPORT140	Remove Turbine Deck	20	Aug/03/2020	Aug/28/2020
2SUPPORT150	Demo Raised Concrete Features (Unit 2)	20	Aug/03/2020	Aug/28/2020
SC19110R1.50	DEMOLITION OF UNIT 1	87	Aug/06/2020	Dec/04/2020
SC19110R1.50.51	DEMO HRSG	74	Aug/06/2020	Nov/17/2020
1HRSG100	Remove Inlet Ducting From GT to 1st Module	5	Aug/06/2020	Aug/12/2020
1HRSG110	Demo Feed Pumps & Framing S. of HRSG	5	Aug/13/2020	Aug/19/2020
1HRSG120	Remove Stack to Top of HRSG Elevation	5	Aug/20/2020	Aug/26/2020
1HRSG130	Remove Manifold Piping From Drum Level	10	Aug/27/2020	Sep/09/2020
1HRSG140	Pick & Remove HP,IP, LP Steam Drums	15	Sep/10/2020	Sep/30/2020
1HRSG150	Remove Catwlks & Piping on N.& S Ends of HRSG	3	Oct/01/2020	Oct/05/2020
1HRSG160	Separate Gas Turbine Expansion	1	Oct/06/2020	Oct/06/2020
1HRSG170	Demo Modules	30	Oct/07/2020	Nov/17/2020
SC19110R1.50.52	DEMO STEAM TURBINE GEN. SET	45	Aug/13/2020	Oct/14/2020
1TURBINE100	Remove X-Over Piping	2	Aug/13/2020	Aug/14/2020
1TURBINE110	Remove Turbine Housing	2	Aug/17/2020	Aug/18/2020
1TURBINE120	Pull Upper Casing	5	Aug/19/2020	Aug/25/2020
1TURBINE130	Remove Rotor & Blades (Steam Section)	3	Aug/26/2020	Aug/28/2020
1TURBINE140	Remove Rotor (Generator Section)	3	Aug/31/2020	Sep/02/2020
1TURBINE150	Remove Stator (Unit 1)	10	Sep/03/2020	Sep/16/2020
1TURBINE160	Demo Turbine Gallery Area (Unit 1)	15	Sep/17/2020	Oct/07/2020
1TURBINE170	Remove Lower Casing	5	Oct/08/2020	Oct/14/2020
SC19110R1.50.53	DEMO UNIT 1 SUPPORT EQUIPMENT/STRUCTURES	80	Aug/17/2020	Dec/04/2020
1SUPPORT100	Demo Gas Turbine Intake Structure	5	Aug/17/2020	Aug/21/2020
1SUPPORT110	Demo Switchgear Buildings	5	Oct/08/2020	Oct/14/2020
1SUPPORT120	Demo Steam Piping Area S. of Turbine Deck	15	Oct/15/2020	Nov/04/2020
1SUPPORT130	Pull Gantry Crane	2	Nov/05/2020	Nov/06/2020
1SUPPORT140	Remove Turbine Deck	20	Nov/09/2020	Dec/04/2020
1SUPPORT150	Demo Raised Concrete Features (Unit 1)	20	Nov/09/2020	Dec/04/2020
SC19110R1.60	DEMOLITION OF ADMIN CONTROL/WATER TREATMENT AREA	10	Feb/21/2020	Mar/05/2020
ADMIN1000	Demo Tanks, Elec Houses & Water Treat Area	5	Feb/21/2020	Feb/27/2020
ADMIN1010	Pick & Remove Circ. Water Pumps	5	Feb/28/2020	Mar/05/2020
SC19110R1.70	REMOVE ELEC. WIRING FROM SUBSURFACE DUCT BANKS	40	Aug/31/2020	Oct/23/2020
UG1000	Remove Wire From UG Conduits	40	Aug/31/2020	Oct/23/2020
SC19110R1.80	FINAL CLEAN UP, RESTORATION, GRADING, CLOSURE DOC.	20	Nov/23/2020	Dec/18/2020
RESTO1010	Excavate & Remove UG Utilities Complete	10	Nov/23/2020	Dec/04/2020
RESTO1020	Grout Fill/Plug Abandoned Lines	10	Nov/23/2020	Dec/04/2020
RESTO1040	Backfill Basin w/2" Minus	5	Dec/07/2020	Dec/11/2020
RESTO1060	Import & Place Backfill Material	5	Dec/07/2020	Dec/11/2020
RESTO1070	Walkdown & Punchlist	5	Dec/14/2020	Dec/18/2020
RESTO1080	Substantially Complete	0		Dec/18/2020*



Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
summary

SILVERADO CONTRACTORS

Appendix G: Construction Activities, Materials Used, and Associated Pollutants

Table G.1 Construction Activities and Associated Pollutants

Phase	Activity	Associated Materials or Pollutants	Pollutant Category[(1)]
Decommissioning /Trenching	Trenching and backfill	Soil	Sediment
	Equipment	Oil, diesel, grease, anti-freeze, Pb	Oil & Grease, Metals
	Vehicles entering & exiting site	Soil	Sediment
Demolition	Demolition and stockpiling of ferrous material	Fe	Metals
	Demolition and stockpiling of non-ferrous material	Concrete, gross pollutants	Gross Pollutants
	Equipment	Oil, diesel, grease, anti-freeze, Pb	Oil & Grease, Metals
	Vehicles entering & exiting site	Soil	Sediment
Cooling Tower Basin Soil Emplacement/ Site Stabilization	Concrete backfill	concrete	Gross Pollutants
	Soil backfill	Soil	Sediment
	Equipment	Oil, diesel, grease, anti-freeze, Pb	Oil & Grease, Metals
	Vehicles entering & exiting site	Soil	Sediment

(1) Categories per CASQA BMP Handbook (i.e., Sediment, Nutrients, Bacteria and Viruses, Oil and Grease, Metals, Synthetic Organics, Pesticides, Gross Pollutants, and Vector Production)

Appendix H: BMP Inspection Form

BMP INSPECTION REPORT

Date and Time of Inspection:			Date Report Written:	
Inspection Type: (Circle one)	Weekly *Complete Parts I,II,III and VII*	Pre-Storm *Complete Parts I,II,III,IV and VII*	During Rain Event *Complete Parts I, II, III, V, and VII*	Post-Storm *Complete Parts I,II,III,VI and VII*

Part I. General Information

Site Information

Construction Site Name:	
Construction stage and completed activities:	Approximate area of site that is exposed:

Photos Taken: (Circle one)	Yes	No	Photo Reference IDs:

Weather

Estimate storm beginning: (date and time)	Estimate storm duration: (hours)
Estimate time since last storm: (days or hours)	Rain gauge reading and location: (in)

Is a "Qualifying Event" predicted or did one occur (i.e., 0.5" rain with 48-hrs or greater between events)? (Y/N)
If yes, summarize forecast:

Exemption Documentation (explanation required if inspection could not be conducted). Visual inspections are not required outside of business hours or during dangerous weather conditions such as flooding or electrical storms.

Inspector Information

Inspector Name:	Inspector Title:
Signature:	Date:

Part II. BMP Observations. Describe deficiencies in Part III.

Minimum BMPs for Risk Level _____ Sites	Failures or other short comings (yes, no, N/A)	Action Required (yes/no)	Action Implemented (Date)
Good Housekeeping for Construction Materials			
Inventory of products (excluding materials designed to be outdoors)			
Stockpiled construction materials not actively in use are covered and bermed			
All chemicals are stored in watertight containers with appropriate secondary containment, or in a completely enclosed storage shed			
Construction materials are minimally exposed to precipitation			
BMPs preventing the off-site tracking of materials are implemented and properly effective			
Good Housekeeping for Waste Management			
Wash/rinse water and materials are prevented from being disposed into the storm drain system			
Portable toilets are contained to prevent discharges of waste			
Sanitation facilities are clean and with no apparent for leaks and spills			
Equipment is in place to cover waste disposal containers at the end of business day and during rain events			
Discharges from waste disposal containers are prevented from discharging to the storm drain system / receiving water			
Stockpiled waste material is securely protected from wind and rain if not actively in use			
Procedures are in place for addressing hazardous and non-hazardous spills			
Appropriate spill response personnel are assigned and trained			
Equipment and materials for cleanup of spills is available onsite			
Washout areas (e.g., concrete) are contained appropriately to prevent discharge or infiltration into the underlying soil			
Good Housekeeping for Vehicle Storage and Maintenance			
Measures are in place to prevent oil, grease, or fuel from leaking into the ground, storm drains, or surface waters			
All equipment or vehicles are fueled, maintained, and stored in a designated area with appropriate BMPs			
Vehicle and equipment leaks are cleaned immediately and disposed of properly			

Part II. BMP Observations Continued. Describe deficiencies in Part III.			
Minimum BMPs for Risk Level _____ Sites	Adequately designed, implemented and effective	Action Required (yes/no)	Action Implemented (Date)

	(yes, no, N/A)		
Good Housekeeping for Landscape Materials			
Stockpiled landscape materials such as mulches and topsoil are contained and covered when not actively in use			
Erodible landscape material has not been applied 2 days before a forecasted rain event or during an event			
Erodible landscape materials are applied at quantities and rates in accordance with manufacturer recommendations			
Bagged erodible landscape materials are stored on pallets and covered			
Good Housekeeping for Air Deposition of Site Materials			
Good housekeeping measures are implemented onsite to control the air deposition of site materials and from site operations			
Non-Stormwater Management			
Non-Stormwater discharges are properly controlled			
Vehicles are washed in a manner to prevent non-stormwater discharges to surface waters or drainage systems			
Streets are cleaned in a manner to prevent unauthorized non-stormwater discharges to surface waters or drainage systems.			
Erosion Controls			
Wind erosion controls are effectively implemented			
Effective soil cover is provided for disturbed areas inactive (i.e., not scheduled to be disturbed for 14 days) as well as finished slopes, open space, utility backfill, and completed lots			
The use of plastic materials is limited in cases when a more sustainable, environmentally friendly alternative exists.			
Sediment Controls			
Perimeter controls are established and effective at controlling erosion and sediment discharges from the site			
Entrances and exits are stabilized to control erosion and sediment discharges from the site			
Sediment basins are properly maintained			
Linear sediment control along toe of slope, face of slope an at grade breaks (Risk Level 2 & 3 Only)			
Limit construction activity to and from site to entrances and exits that employ effective controls to prevent offsite tracking (Risk Level 2 & 3 Only)			
Ensure all storm, drain inlets and perimeter controls, runoff control BMPs and pollutants controls at entrances and exits are maintained and protected from activities the reduce their effectiveness (Risk Level 2 & 3 Only)			
Inspect all immediate access roads daily (Risk Level 2 & 3 Only)			
Run-On and Run-Off Controls			

Run-on to the site is effectively managed and directed away from all disturbed areas.			
Other			
Are the project SWPPP and BMP plan up to date, available on-site and being properly implemented?			

Part III. Descriptions of BMP Deficiencies		
Deficiency	**Repairs Implemented: Note - Repairs must begin within 72 hours of identification and, complete repairs as soon as possible.**	
	Start Date	**Action**
1.		
2.		
3.		
4.		

Part IV. Additional Pre-Storm Observations. **Note the presence or absence of floating and suspended materials, sheen, discoloration, turbidity, odors, and source(s) of pollutants(s).**	
	Yes, No, N/A
Do stormwater storage and containment areas have adequate freeboard? If no, complete Part III.	
Are drainage areas free of spills, leaks, or uncontrolled pollutant sources? If no, complete Part VII and describe below.	
Notes:	
Are stormwater storage and containment areas free of leaks? If no, complete Parts III and/or VII and describe below.	
Notes:	

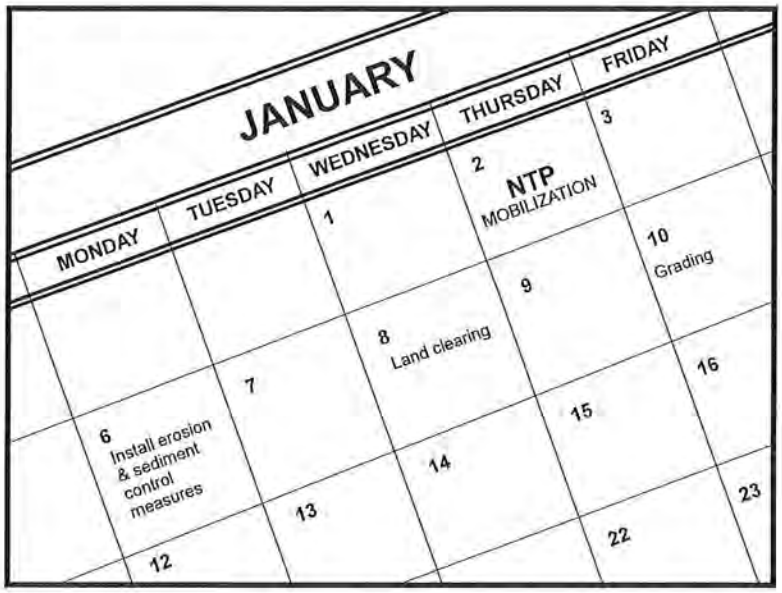
Part V. Additional During Storm Observations. **If BMPs cannot be inspected during inclement weather, list the results of visual inspections at all relevant outfalls, discharge points, and downstream locations. Note odors or visible sheen on the surface of discharges. Complete Part VII (Corrective Actions) as needed.**	
Outfall, Discharge Point, or Other Downstream Location	
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description

Part VI. Additional Post-Storm Observations. **Visually observe (inspect) stormwater discharges at all discharge locations within two business days (48 hours) after each qualifying rain event, and observe (inspect) the discharge of stored or contained stormwater that is derived from and discharged subsequent to a qualifying rain event producing precipitation of ½ inch or more at the time of discharge. Complete Part VII (Corrective Actions) as needed.**	
Discharge Location, Storage or Containment Area	**Visual Observation**

Part VII. Additional Corrective Actions Required. **Identify additional corrective actions not included with BMP Deficiencies (Part III) above. Note if SWPPP change is required.**	
Required Actions	**Implementation Date**

Appendix I: CASQA Stormwater BMP Handbook Portal: Construction Fact Sheets

Scheduling EC-1



Categories

EC	Erosion Control	☑
SE	Sediment Control	☒
TC	Tracking Control	☒
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

If User/Subscriber modifies this fact sheet in any way, the CASQA name/logo and footer below must be removed from each page and not appear on the modified version.

Description and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Implementation

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.
- Plan the project and develop a schedule showing each phase of construction. Clearly show how the rainy season relates

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to soil disturbing and re-stabilization activities. Incorporate the construction schedule into the SWPPP.

- Include on the schedule, details on the rainy season implementation and deployment of:
  - Erosion control BMPs
  - Sediment control BMPs
  - Tracking control BMPs
  - Wind erosion control BMPs
  - Non-stormwater BMPs
  - Waste management and materials pollution control BMPs
- Include dates for activities that may require non-stormwater discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.
- Work out the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, foundation pouring utilities installation, etc., to minimize the active construction area during the rainy season.
  - Sequence trenching activities so that most open portions are closed before new trenching begins.
  - Incorporate staged seeding and re-vegetation of graded slopes as work progresses.
  - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.
- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.
- Monitor the weather forecast for rainfall.
- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.
- Be prepared year round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year round, and retain and maintain rainy season sediment trapping devices in operational condition.
- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.

Costs

Construction scheduling to reduce erosion may increase other construction costs due to reduced economies of scale in performing site grading. The cost effectiveness of scheduling techniques should be compared with the other less effective erosion and sedimentation controls to achieve a cost effective balance.

Inspection and Maintenance

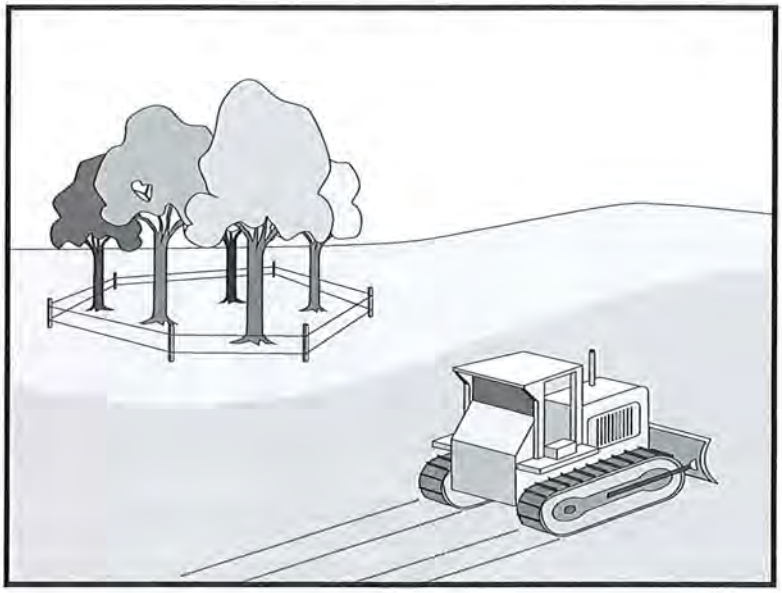
- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted.
- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

References

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities Developing Pollution Prevention Plans and Best Management Practices (EPA 832-R-92-005), U.S. Environmental Protection Agency, Office of Water, September 1992.

Preservation Of Existing Vegetation EC-2



Description and Purpose

Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

Suitable Applications

Preservation of existing vegetation is suitable for use on most projects. Large project sites often provide the greatest opportunity for use of this BMP. Suitable applications include the following:

- Areas within the site where no construction activity occurs, or occurs at a later date. This BMP is especially suitable to multi year projects where grading can be phased.
- Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes, watercourse, and building sites in wooded areas.
- Areas where local, state, and federal government require preservation, such as vernal pools, wetlands, marshes, certain oak trees, etc. These areas are usually designated on the plans, or in the specifications, permits, or environmental documents.
- Where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.

Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Preservation Of Existing Vegetation EC-2

Limitations

- Requires forward planning by the owner/developer, contractor, and design staff.
- Limited opportunities for use when project plans do not incorporate existing vegetation into the site design.
- For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactory for the planned development.

Implementation

The best way to prevent erosion is to not disturb the land. In order to reduce the impacts of new development and redevelopment, projects may be designed to avoid disturbing land in sensitive areas of the site (e.g., natural watercourses, steep slopes), and to incorporate unique or desirable existing vegetation into the site's landscaping plan. Clearly marking and leaving a buffer area around these unique areas during construction will help to preserve these areas as well as take advantage of natural erosion prevention and sediment trapping.

Existing vegetation to be preserved on the site must be protected from mechanical and other injury while the land is being developed. The purpose of protecting existing vegetation is to ensure the survival of desirable vegetation for shade, beautification, and erosion control. Mature vegetation has extensive root systems that help to hold soil in place, thus reducing erosion. In addition, vegetation helps keep soil from drying rapidly and becoming susceptible to erosion. To effectively save existing vegetation, no disturbances of any kind should be allowed within a defined area around the vegetation. For trees, no construction activity should occur within the drip line of the tree.

Timing

- Provide for preservation of existing vegetation prior to the commencement of clearing and grubbing operations or other soil disturbing activities in areas where no construction activity is planned or will occur at a later date.

Design and Layout

- Mark areas to be preserved with temporary fencing. Include sufficient setback to protect roots.
  - Orange colored plastic mesh fencing works well.
  - Use appropriate fence posts and adequate post spacing and depth to completely support the fence in an upright position.
- Locate temporary roadways, stockpiles, and layout areas to avoid stands of trees, shrubs, and grass.
- Consider the impact of grade changes to existing vegetation and the root zone.
- Maintain existing irrigation systems where feasible. Temporary irrigation may be required.
- Instruct employees and subcontractors to honor protective devices. Prohibit heavy equipment, vehicular traffic, or storage of construction materials within the protected area.

Preservation Of Existing Vegetation EC-2

Costs

There is little cost associated with preserving existing vegetation if properly planned during the project design, and these costs may be offset by aesthetic benefits that enhance property values. During construction, the cost for preserving existing vegetation will likely be less than the cost of applying erosion and sediment controls to the disturbed area. Replacing vegetation inadvertently destroyed during construction can be extremely expensive, sometimes in excess of $10,000 per tree.

Inspection and Maintenance

During construction, the limits of disturbance should remain clearly marked at all times. Irrigation or maintenance of existing vegetation should be described in the landscaping plan. If damage to protected trees still occurs, maintenance guidelines described below should be followed:

- Verify that protective measures remain in place. Restore damaged protection measures immediately.
- Serious tree injuries shall be attended to by an arborist.
- Damage to the crown, trunk, or root system of a retained tree shall be repaired immediately.
- Trench as far from tree trunks as possible, usually outside of the tree drip line or canopy. Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching or tunneling near or under trees to be retained, place tunnels at least 18 in. below the ground surface, and not below the tree center to minimize impact on the roots.
- Do not leave tree roots exposed to air. Cover exposed roots with soil as soon as possible. If soil covering is not practical, protect exposed roots with wet burlap or peat moss until the tunnel or trench is ready for backfill.
- Cleanly remove the ends of damaged roots with a smooth cut.
- Fill trenches and tunnels as soon as possible. Careful filling and tamping will eliminate air spaces in the soil, which can damage roots.
- If bark damage occurs, cut back all loosened bark into the undamaged area, with the cut tapered at the top and bottom and drainage provided at the base of the wood. Limit cutting the undamaged area as much as possible.
- Aerate soil that has been compacted over a trees root zone by punching holes 12 in. deep with an iron bar, and moving the bar back and forth until the soil is loosened. Place holes 18 in. apart throughout the area of compacted soil under the tree crown.
- Fertilization
  - Fertilize stressed or damaged broadleaf trees to aid recovery.
  - Fertilize trees in the late fall or early spring.

- Apply fertilizer to the soil over the feeder roots and in accordance with label instructions, but never closer than 3 ft to the trunk. Increase the fertilized area by one-fourth of the crown area for conifers that have extended root systems.

- Retain protective measures until all other construction activity is complete to avoid damage during site cleanup and stabilization.

References

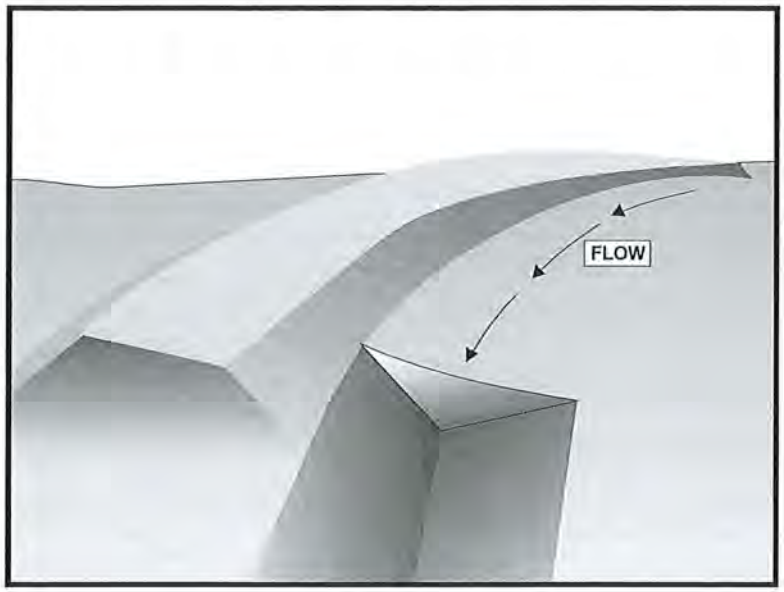
County of Sacramento Tree Preservation Ordinance, September 1981.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Water Quality Management Plan for The Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Earth Dikes and Drainage Swales EC-9



Description and Purpose

An earth dike is a temporary berm or ridge of compacted soil used to divert runoff or channel water to a desired location. A drainage swale is a shaped and sloped depression in the soil surface used to convey runoff to a desired location. Earth dikes and drainage swales are used to divert off site runoff around the construction site, divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps.

Suitable Applications

Earth dikes and drainage swales are suitable for use, individually or together, where runoff needs to be diverted from one area and conveyed to another.

- Earth dikes and drainage swales may be used:
  - To convey surface runoff down sloping land
  - To intercept and divert runoff to avoid sheet flow over sloped surfaces
  - To divert and direct runoff towards a stabilized watercourse, drainage pipe or channel
  - To intercept runoff from paved surfaces
  - Below steep grades where runoff begins to concentrate
  - Along roadways and facility improvements subject to flood drainage

Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

- At the top of slopes to divert runon from adjacent or undisturbed slopes
- At bottom and mid slope locations to intercept sheet flow and convey concentrated flows
- Divert sediment laden runoff into sediment basins or traps

Limitations

Dikes should not be used for drainage areas greater than 10 acres or along slopes greater than 10 percent. For larger areas more permanent drainage structures should be built. All drainage structures should be built in compliance with local municipal requirements.

- Earth dikes may create more disturbed area on site and become barriers to construction equipment.
- Earth dikes must be stabilized immediately, which adds cost and maintenance concerns.
- Diverted stormwater may cause downstream flood damage.
- Dikes should not be constructed of soils that may be easily eroded.
- Regrading the site to remove the dike may add additional cost.
- Temporary drains and swales or any other diversion of runoff should not adversely impact upstream or downstream properties.
- Temporary drains and swales must conform to local floodplain management requirements.
- Earth dikes/drainage swales are not suitable as sediment trapping devices.
- It may be necessary to use other soil stabilization and sediment controls such as check dams, plastics, and blankets, to prevent scour and erosion in newly graded dikes, swales, and ditches.
- Sediment accumulation, scour depressions, and/or persistent non-stormwater discharges can result in areas of standing water suitable for mosquito production in drainage swales.

Implementation

The temporary earth dike is a berm or ridge of compacted soil, located in such a manner as to divert stormwater to a sediment trapping device or a stabilized outlet, thereby reducing the potential for erosion and offsite sedimentation. Earth dikes can also be used to divert runoff from off site and from undisturbed areas away from disturbed areas and to divert sheet flows away from unprotected slopes.

An earth dike does not itself control erosion or remove sediment from runoff. A dike prevents erosion by directing runoff to an erosion control device such as a sediment trap or directing runoff away from an erodible area. Temporary diversion dikes should not adversely impact adjacent properties and must conform to local floodplain management regulations, and should not be used in areas with slopes steeper than 10%.

Slopes that are formed during cut and fill operations should be protected from erosion by runoff. A combination of a temporary drainage swale and an earth dike at the top of a slope can divert

runoff to a location where it can be brought to the bottom of the slope (see EC-11, Slope Drains). A combination dike and swale is easily constructed by a single pass of a bulldozer or grader and compacted by a second pass of the tracks or wheels over the ridge. Diversion structures should be installed when the site is initially graded and remain in place until post construction BMPs are installed and the slopes are stabilized.

Diversion practices concentrate surface runoff, increasing its velocity and erosive force. Thus, the flow out of the drain or swale must be directed onto a stabilized area or into a grade stabilization structure. If significant erosion will occur, a swale should be stabilized using vegetation, chemical treatment, rock rip-rap, matting, or other physical means of stabilization. Any drain or swale that conveys sediment laden runoff must be diverted into a sediment basin or trap before it is discharged from the site.

General

- Care must be applied to correctly size and locate earth dikes, drainage swales. Excessively steep, unlined dikes, and swales are subject to erosion and gully formation.
- Conveyances should be stabilized.
- Use a lined ditch for high flow velocities.
- Select flow velocity based on careful evaluation of the risks due to erosion of the measure, soil types, overtopping, flow backups, washout, and drainage flow patterns for each project site.
- Compact any fills to prevent unequal settlement.
- Do not divert runoff onto other property without securing written authorization from the property owner.
- When possible, install and utilize permanent dikes, swales, and ditches early in the construction process.
- Provide stabilized outlets.

Earth Dikes

Temporary earth dikes are a practical, inexpensive BMP used to divert stormwater runoff. Temporary diversion dikes should be installed in the following manner:

- All dikes should be compacted by earth moving equipment.
- All dikes should have positive drainage to an outlet.
- All dikes should have 2:1 or flatter side slopes, 18 in. minimum height, and a minimum top width of 24 in. Wide top widths and flat slopes are usually needed at crossings for construction traffic.
- The outlet from the earth dike must function with a minimum of erosion. Runoff should be conveyed to a sediment trapping device such as a Sediment Trap (SE-3) or Sediment Basin

(SE-2) when either the dike channel or the drainage area above the dike are not adequately stabilized.

- Temporary stabilization may be achieved using seed and mulching for slopes less than 5% and either rip-rap or sod for slopes in excess of 5%. In either case, stabilization of the earth dike should be completed immediately after construction or prior to the first rain.
- If riprap is used to stabilize the channel formed along the toe of the dike, the following typical specifications apply:

Channel Grade	Riprap Stabilization
0.5-1.0%	4 in. Rock
1.1-2.0%	6 in. Rock
2.1-4.0%	8 in. Rock
4.1-5.0%	8 in. -12 in. Riprap

- The stone riprap, recycled concrete, etc. used for stabilization should be pressed into the soil with construction equipment.
- Filter cloth may be used to cover dikes in use for long periods.
- Construction activity on the earth dike should be kept to a minimum.

Drainage Swales

Drainage swales are only effective if they are properly installed. Swales are more effective than dikes because they tend to be more stable. The combination of a swale with a dike on the downhill side is the most cost effective diversion.

Standard engineering design criteria for small open channel and closed conveyance systems should be used (see the local drainage design manual). Unless local drainage design criteria state otherwise, drainage swales should be designed as follows:

- No more than 5 acres may drain to a temporary drainage swale.
- Place drainage swales above or below, not on, a cut or fill slope.
- Swale bottom width should be at least 2 ft
- Depth of the swale should be at least 18 in.
- Side slopes should be 2:1 or flatter.
- Drainage or swales should be laid at a grade of at least 1 percent, but not more than 15 percent.
- The swale must not be overtopped by the peak discharge from a 10-year storm, irrespective of the design criteria stated above.

- Remove all trees, stumps, obstructions, and other objectionable material from the swale when it is built.
- Compact any fill material along the path of the swale.
- Stabilize all swales immediately. Seed and mulch swales at a slope of less than 5 percent, and use rip-rap or sod for swales with a slope between 5 and 15 percent. For temporary swales, geotextiles and mats (EC-7) may provide immediate stabilization.
- Irrigation may be required to establish sufficient vegetation to prevent erosion.
- Do not operate construction vehicles across a swale unless a stabilized crossing is provided.
- Permanent drainage facilities must be designed by a professional engineer (see the local drainage design criteria for proper design).
- At a minimum, the drainage swale should conform to predevelopment drainage patterns and capacities.
- Construct the drainage swale with a positive grade to a stabilized outlet.
- Provide erosion protection or energy dissipation measures if the flow out of the drainage swale can reach an erosive velocity.

Costs

- Cost ranges from $15 to $55 per ft for both earthwork and stabilization and depends on availability of material, site location, and access.
- Small dikes: $2.50 - $6.50/linear ft; Large dikes: $2.50/yd^3.
- The cost of a drainage swale increases with drainage area and slope. Typical swales for controlling internal erosion are inexpensive, as they are quickly formed during routine earthwork.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Inspect ditches and berms for washouts. Replace lost riprap, damaged linings or soil stabilizers as needed.
- Inspect channel linings, embankments, and beds of ditches and berms for erosion and accumulation of debris and sediment. Remove debris and sediment and repair linings and embankments as needed.
- Temporary conveyances should be completely removed as soon as the surrounding drainage area has been stabilized or at the completion of construction

References

Erosion and Sediment Control Handbook, S.J. Goldman, K. Jackson, T.A. Bursetynsky, P.E., McGraw Hill Book Company, 1986.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

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National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

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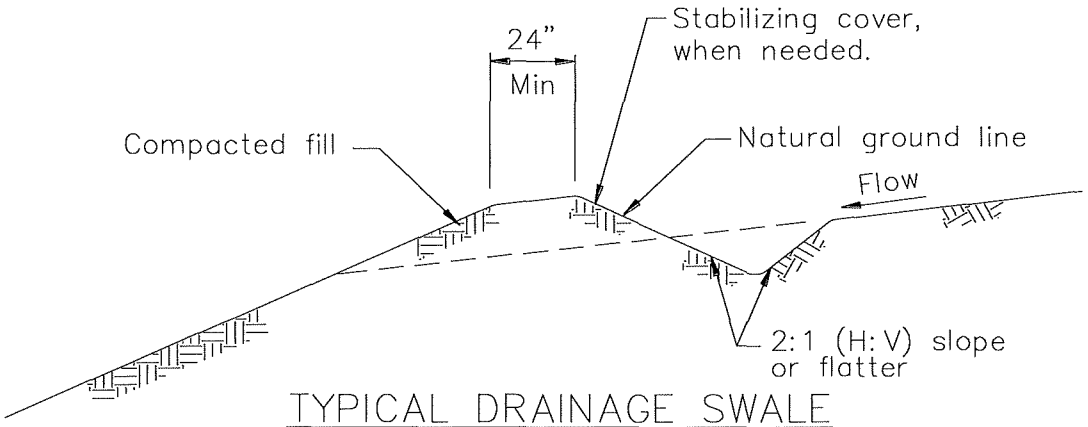
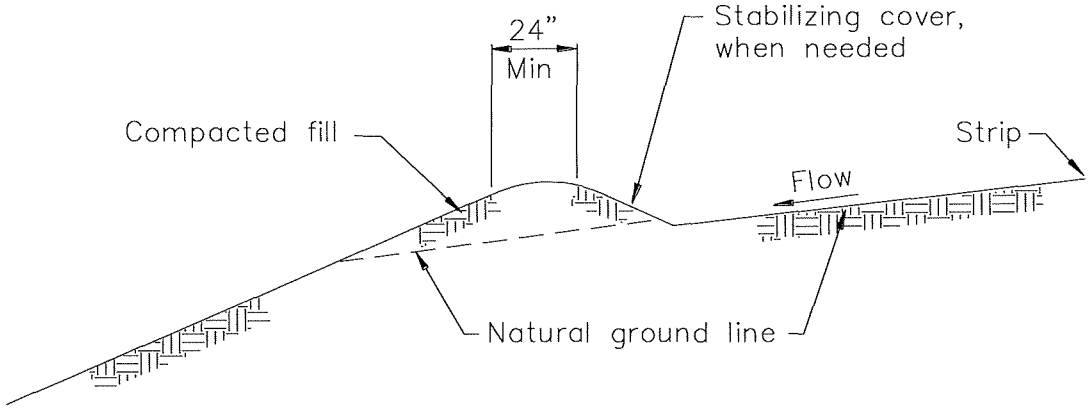


TYPICAL DRAINAGE SWALE
NOT TO SCALE

NOTES:

1. Stabilize inlet, outlets and slopes.
2. Properly compact the subgrade.



TYPICAL EARTH DIKE
NOT TO SCALE

Non-Vegetative Stabilization EC-16

Description and Purpose

Non-vegetative stabilization methods are used for temporary or permanent stabilization of areas prone to erosion and should be used only where vegetative options are not feasible; examples include:

- Areas of vehicular or pedestrian traffic such as roads or paths;
- Arid environments where vegetation would not provide timely ground coverage, or would require excessive irrigation;
- Rocky substrate, infertile or droughty soils where vegetation would be difficult to establish; and
- Areas where vegetation will not grow adequately within the construction time frame.

There are several non-vegetative stabilization methods and selection should be based on site-specific conditions.

Decomposed Granite (DG) is a permanent erosion protection method that consists of a layer of stabilized decomposed granite placed over an erodible surface.

Degradable Mulches of various types (see EC-3, EC-6, EC-8) can be used for temporary non-vegetative stabilization; examples include straw mulch, compost, wood chips or hydraulic mulch.

Geotextiles and Mats can be used for temporary non-vegetative stabilization (see EC-7). These BMPs are typically manufactured from degradable or synthetic materials and are

Categories

EC	Erosion Control	☑
SE	Sediment Control	☒
TR	Tracking Control	
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

designed and specified based on their functional longevity, i.e., how long they will persist and provide erosion protection. All geotextiles and mats should be replaced when they exceed their functional longevity or when permanent stabilization methods are instituted.

Gravel Mulch is a non-degradable erosion control product that is composed of washed and screened coarse to very coarse gravel, 16 mm to 64 mm (0.6" - 2.5"), similar to an AASHTO No. 3 coarse aggregate.

Rock Slope Protection consists of utilizing large rock or rip-rap (4"- 24") to stabilize slopes with a high erosion potential and those subject to scour along waterways.

Soil Binders can be used for temporary non-vegetative stabilization (see EC-5). The key to their use is functional longevity. In most cases, the soil binder will need to be routinely monitored and re-applied to maintain an erosion-resistant coverage.

Suitable Applications

Non-vegetated stabilization methods are suitable for use on disturbed soil areas and on material stockpiles that need to be temporarily or permanently protected from erosion by water and wind. Non-vegetated stabilization should only be utilized when vegetation cannot be established in the required timeframe, due to soil or climactic conditions, or where vegetation may be a potential fire hazard.

Decomposed Granite (DG) and Gravel Mulch are suitable for use in areas where vegetation establishment is difficult, on flat surfaces, trails and pathways, and when used in conjunction with a stabilizer or tackifier, on shallow slopes (i.e., 10:1 [H:V]). DG and gravel can also be used on shallow rocky slopes where vegetation cannot be established for permanent erosion control.

Degradable Mulches can be used to cover and protect soil surfaces from erosion both in temporary and permanent applications. In many cases, the use of mulches by themselves requires routine inspection and re-application. See EC-3 Hydraulic Mulch, EC-6 Straw Mulch, EC-8 Wood Mulch, or EC-14 Compost Blankets for more information.

Geotextiles and Mats can be used as a temporary stand-alone soil stabilization method. Depending on material selection, geotextiles and mats can be a short-term (3 mos – 1 year) or long-term (1-2 years) temporary stabilization method. For more information on geotextiles and mats see EC-7 Geotextiles and Mats.

Rock Slope Protection can be used when the slopes are subject to scour or have a high erosion potential, such as slopes adjacent to flowing waterways or slopes subject to overflow from detention facilities (spillways).

Soil Binders can be used for temporary stabilization of stockpiles and disturbed areas not subject to heavy traffic. See EC-5 Soil Binders for more information.

Limitations

General

- Refer to EC-3, EC-6, EC-8, and EC-14 for limitations on use of mulches. Refer to EC-7 for limitations on use of geotextiles and mats. Refer to EC-5 for limitations on use of Soil Binders.

Decomposed Granite

- Not available in some geographic regions.
- If not tackified, material may be susceptible to erosion even on slight slopes (e.g., 30:1 [H:V]).
- Installed costs may be more expensive than vegetative stabilization methods.

Gravel Mulch

- Availability is limited in some geographic regions.
- If not properly screened and washed, can contain fine material that can erode and/or create dust problems.
- If inadequately sized, material may be susceptible to erosion on sloped areas.
- Pore spaces fill with dirt and debris over time; may provide a growing medium for weeds.

Rock Slope Protection

- Installation is labor intensive.
- Installed costs can be significantly higher than vegetative stabilization methods.
- Rounded stones may not be used on slopes greater than 2:1 [H:V].

Implementation

General

Non-vegetated stabilization should be used in accordance with the following general guidance:

- Should be used in conjunction with other BMPs, including drainage, erosion controls and sediment controls.
- Refer to EC-3, EC-6, EC-8, and EC-14 for implementation details for mulches. Refer to EC-7 for implementation details for geotextiles and mats. Refer to EC-5 for implementation details for soil binders.
- Non-vegetated stabilization measures should be implemented as soon as the disturbance in the areas they are intended to protect has ceased.
- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix F of the Handbook.

Decomposed Granite Stabilization

- If used for a road or path should be installed on a prepared base.
- Should be mixed with a stabilizer if used for roads or pathways, or on slope applications.
- Though porous it is recommended to prevent standing water on or next to a decomposed granite road or pathway.

Gravel Mulch

- Should be sized based on slope, rainfall, and upgradient run-on conditions. Stone size should be increased as potential for erosion increases (steeper slopes, high intensity rainfall).
- If permanent, a weed control fabric should be placed prior to installation.
- Should be installed at a minimum 2" depth.
- Should completely cover all exposed surfaces.

Rock Slope Protection

- Rock slope protection installation should follow Caltrans Standard Specification 72-2: Rock Slope Protection. Refer to the specification for rock conformity requirements and installation methods.
- When using rock slope protection, rock size and installation method should be specified by an Engineer.
- A geotextile fabric should be placed prior to installation.

Costs

- Costs are highly variable depending not only on technique chosen, but also on materials chosen within specific techniques. In addition, availability of certain materials will vary by region/location, which will also affect the cost. Costs of mulches, geotextiles and mats, and soil binders are presented in their respective fact sheets. Costs for decomposed granite, gravel mulch stabilization and rock slope protection may be higher depending on location and availability of materials. Caltrans has provided an estimate for gravel mulch of \$10 - \$15/yd^2 in flat areas and \$11 - \$23/yd^2 on side slopes.

Inspection and Maintenance

General

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- For permanent installation, require inspection periodically and after major storm events to look for signs of erosion or damage to the stabilization.
- All damage should be repaired immediately.
- Refer to EC-3, EC-6, EC-8, and EC-14 for inspection and maintenance requirements for mulches. Refer to EC-7 for inspection and maintenance requirements for geotextiles and mats. Refer to EC-5 for inspection and maintenance requirements for soil binders.

Decomposed Granite and Gravel Mulch Stabilization

- Rake out and add decomposed granite or gravel as needed to areas subject to rill erosion. Inspect upgradient drainage controls and repair/modify as necessary.

- Should remain stable under loose surface material. Any significant problem areas should be repaired to restore uniformity to the installation.

References

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Erosion and Sediment Control Handbook: A Guide for Protection of State Waters through the use of Best Management Practices during Land Disturbing Activities, Tennessee Department of Environment and Conservation, 2002.

Gravel Mulch, Landscape Architecture Non-Standard Specification 10-2, California Department of Transportation (Caltrans), http://www.dot.ca.gov/hq/LandArch/roadside/detail-gm.htm

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Standard Specification 72-2: Rock Slope Protection. California Department of Transportation, 2006.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Water Conservation Practices NS-1

Categories

EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Water conservation practices are activities that use water during the construction of a project in a manner that avoids causing erosion and the transport of pollutants offsite. These practices can reduce or eliminate non-stormwater discharges.

Suitable Applications

Water conservation practices are suitable for all construction sites where water is used, including piped water, metered water, trucked water, and water from a reservoir.

Limitations

- None identified.

Implementation

- Keep water equipment in good working condition.
- Stabilize water truck filling area.
- Repair water leaks promptly.
- Washing of vehicles and equipment on the construction site is discouraged.
- Avoid using water to clean construction areas. If water must be used for cleaning or surface preparation, surface should be swept and vacuumed first to remove dirt. This will minimize amount of water required.

- Direct construction water runoff to areas where it can soak into the ground or be collected and reused.
- Authorized non-stormwater discharges to the storm drain system, channels, or receiving waters are acceptable with the implementation of appropriate BMPs.
- Lock water tank valves to prevent unauthorized use.

Costs

The cost is small to none compared to the benefits of conserving water.

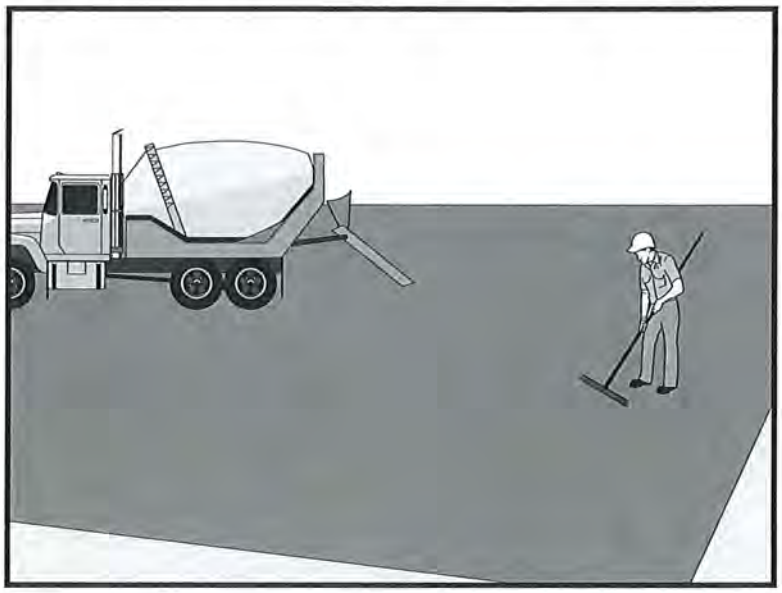
Inspection and Maintenance

- Inspect and verify that activity based BMPs are in place prior to the commencement of authorized non-stormwater discharges.
- Inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges are occuring.
- Repair water equipment as needed to prevent unintended discharges.
  - Water trucks
  - Water reservoirs (water buffalos)
  - Irrigation systems
  - Hydrant connections

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Paving and Grinding Operations NS-3



Categories		
EC	Erosion Control	
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WE	Wind Erosion Control	
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Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent runon and runoff pollution, properly disposing of wastes, and training employees and subcontractors.

The General Permit incorporates Numeric Action Levels (NAL) for pH and turbidity (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Many types of construction materials associated with paving and grinding operations, including mortar, concrete, and cement and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows, which could lead to exceedances of the General Permit requirements.

Suitable Applications

These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

Limitations

- Paving opportunities may be limited during wet weather.

  Discharges of freshly paved surfaces may raise pH to environmentally harmful levels and trigger permit violations.

CASQA
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Implementation

General

- Avoid paving during the wet season when feasible.
- Reschedule paving and grinding activities if rain is forecasted.
- Train employees and sub-contractors in pollution prevention and reduction.
- Store materials away from drainage courses to prevent stormwater runon (see WM-1, Material Delivery and Storage).
- Protect drainage courses, particularly in areas with a grade, by employing BMPs to divert runoff or to trap and filter sediment.
- Stockpile material removed from roadways away from drain inlets, drainage ditches, and watercourses. These materials should be stored consistent with WM-3, Stockpile Management.
- Disposal of PCC (Portland cement concrete) and AC (asphalt concrete) waste should be in conformance with WM-8, Concrete Waste Management.

Saw Cutting, Grinding, and Pavement Removal

- Shovel or vacuum saw-cut slurry and remove from site. Cover or barricade storm drains during saw cutting to contain slurry.
- When paving involves AC, the following steps should be implemented to prevent the discharge of grinding residue, uncompacted or loose AC, tack coats, equipment cleaners, or unrelated paving materials:
  - AC grindings, pieces, or chunks used in embankments or shoulder backing should not be allowed to enter any storm drains or watercourses. Install inlet protection and perimeter controls until area is stabilized (i.e. cutting, grinding or other removal activities are complete and loose material has been properly removed and disposed of)or permanent controls are in place. Examples of temporary perimeter controls can be found in EC-9, Earth Dikes and Drainage Swales; SE-1, Silt Fence; SE-5, Fiber Rolls, or SE-13 Compost Socks and Berms
  - Collect and remove all broken asphalt and recycle when practical. Old or spilled asphalt should be recycled or disposed of properly.
- Do not allow saw-cut slurry to enter storm drains or watercourses. Residue from grinding operations should be picked up by a vacuum attachment to the grinding machine, or by sweeping, should not be allowed to flow across the pavement, and should not be left on the surface of the pavement. See also WM-8, Concrete Waste Management, and WM-10, Liquid Waste Management.
- Pavement removal activities should not be conducted in the rain.
- Collect removed pavement material by mechanical or manual methods. This material may be recycled for use as shoulder backing or base material.

- If removed pavement material cannot be recycled, transport the material back to an approved storage site.

Asphaltic Concrete Paving

- If paving involves asphaltic cement concrete, follow these steps:
  - Do not allow sand or gravel placed over new asphalt to wash into storm drains, streets, or creeks. Vacuum or sweep loose sand and gravel and properly dispose of this waste by referring to WM-5, Solid Waste Management.
  - Old asphalt should be disposed of properly. Collect and remove all broken asphalt from the site and recycle whenever possible.

Portland Cement Concrete Paving

- Do not wash sweepings from exposed aggregate concrete into a storm drain system. Collect waste materials by dry methods, such as sweeping or shoveling, and return to aggregate base stockpile or dispose of properly. Allow aggregate rinse to settle. Then, either allow rinse water to dry in a temporary pit as described in WM-8, Concrete Waste Management, or pump the water to the sanitary sewer if authorized by the local wastewater authority.

Sealing Operations

- During chip seal application and sweeping operations, petroleum or petroleum covered aggregate should not be allowed to enter any storm drain or water courses. Apply temporary perimeter controls until structure is stabilized (i.e. all sealing operations are complete and cured and loose materials have been properly removed and disposed).
- Inlet protection (SE-10, Storm Drain Inlet Protection) should be used during application of seal coat, tack coat, slurry seal, and fog seal.
- Seal coat, tack coat, slurry seal, or fog seal should not be applied if rainfall is predicted to occur during the application or curing period.

Paving Equipment

- Leaks and spills from paving equipment can contain toxic levels of heavy metals and oil and grease. Place drip pans or absorbent materials under paving equipment when not in use. Clean up spills with absorbent materials and dispose of in accordance with the applicable regulations. See NS-10, Vehicle and Equipment Maintenance, WM-4, Spill Prevention and Control, and WM-10, Liquid Waste Management.
- Substances used to coat asphalt transport trucks and asphalt spreading equipment should not contain soap and should be non-foaming and non-toxic.
- Paving equipment parked onsite should be parked over plastic to prevent soil contamination.
- Clean asphalt coated equipment offsite whenever possible. When cleaning dry, hardened asphalt from equipment, manage hardened asphalt debris as described in WM-5, Solid Waste Management. Any cleaning onsite should follow NS-8, Vehicle and Equipment Cleaning.

Thermoplastic Striping

- Thermoplastic striper and pre-heater equipment shutoff valves should be inspected to ensure that they are working properly to prevent leaking thermoplastic from entering drain inlets, the stormwater drainage system, or watercourses.
- Pre-heaters should be filled carefully to prevent splashing or spilling of hot thermoplastic. Leave six inches of space at the top of the pre-heater container when filling thermoplastic to allow room for material to move.
- Do not pre-heat, transfer, or load thermoplastic near drain inlets or watercourses.
- Clean truck beds daily of loose debris and melted thermoplastic. When possible, recycle thermoplastic material.

Raised/Recessed Pavement Marker Application and Removal

- Do not transfer or load bituminous material near drain inlets, the stormwater drainage system, or watercourses.
- Melting tanks should be loaded with care and not filled to beyond six inches from the top to leave room for splashing.
- When servicing or filling melting tanks, ensure all pressure is released before removing lids to avoid spills.
- On large-scale projects, use mechanical or manual methods to collect excess bituminous material from the roadway after removal of markers.

Costs

- All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of paving and grinding operations.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Sample stormwater runoff required by the General Permit.
- Keep ample supplies of drip pans or absorbent materials onsite.
- Inspect and maintain machinery regularly to minimize leaks and drips.

References

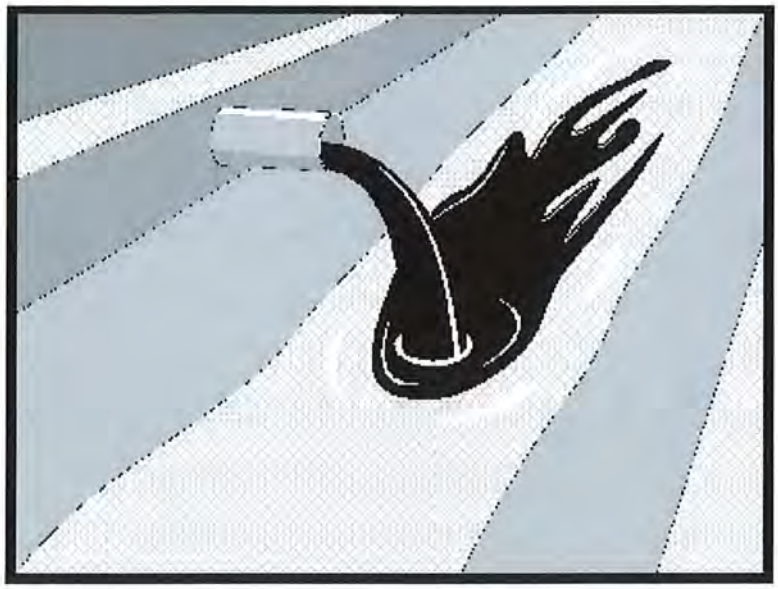
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Hot Mix Asphalt-Paving Handbook AC 150/5370-14, Appendix I, U.S. Army Corps of Engineers, July 1991.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Illicit Connection/Discharge NS-6



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Procedures and practices designed for construction contractors to recognize illicit connections or illegally dumped or discharged materials on a construction site and report incidents.

Suitable Applications

This best management practice (BMP) applies to all construction projects. Illicit connection/discharge and reporting is applicable anytime an illicit connection or discharge is discovered or illegally dumped material is found on the construction site.

Limitations

Illicit connections and illegal discharges or dumping, for the purposes of this BMP, refer to discharges and dumping caused by parties other than the contractor. If pre-existing hazardous materials or wastes are known to exist onsite, they should be identified in the SWPPP and handled as set forth in the SWPPP.

Implementation

Planning

- Review the SWPPP. Pre-existing areas of contamination should be identified and documented in the SWPPP.
- Inspect site before beginning the job for evidence of illicit connections, illegal dumping or discharges. Document any pre-existing conditions and notify the owner.

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- Inspect site regularly during project execution for evidence of illicit connections, illegal dumping or discharges.
- Observe site perimeter for evidence for potential of illicitly discharged or illegally dumped material, which may enter the job site.

Identification of Illicit Connections and Illegal Dumping or Discharges

- **General** – unlabeled and unidentifiable material should be treated as hazardous.
- **Solids** - Look for debris, or rubbish piles. Solid waste dumping often occurs on roadways with light traffic loads or in areas not easily visible from the traveled way.
- **Liquids** - signs of illegal liquid dumping or discharge can include:
  - Visible signs of staining or unusual colors to the pavement or surrounding adjacent soils
  - Pungent odors coming from the drainage systems
  - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
  - Abnormal water flow during the dry weather season
- **Urban Areas** - Evidence of illicit connections or illegal discharges is typically detected at storm drain outfall locations or at manholes. Signs of an illicit connection or illegal discharge can include:
  - Abnormal water flow during the dry weather season
  - Unusual flows in sub drain systems used for dewatering
  - Pungent odors coming from the drainage systems
  - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
  - Excessive sediment deposits, particularly adjacent to or near active offsite construction projects
- **Rural Areas** - Illicit connections or illegal discharges involving irrigation drainage ditches are detected by visual inspections. Signs of an illicit discharge can include:
  - Abnormal water flow during the non-irrigation season
  - Non-standard junction structures
  - Broken concrete or other disturbances at or near junction structures

Reporting

Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery. For illicit connections or discharges to the storm drain system, notify the local stormwater management agency. For illegal dumping, notify the local law enforcement agency.

Cleanup and Removal

The responsibility for cleanup and removal of illicit or illegal dumping or discharges will vary by location. Contact the local stormwater management agency for further information.

Costs

Costs to look for and report illicit connections and illegal discharges and dumping are low. The best way to avoid costs associated with illicit connections and illegal discharges and dumping is to keep the project perimeters secure to prevent access to the site, to observe the site for vehicles that should not be there, and to document any waste or hazardous materials that exist onsite before taking possession of the site.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect the site regularly to check for any illegal dumping or discharge.
- Prohibit employees and subcontractors from disposing of non-job related debris or materials at the construction site.
- Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery.

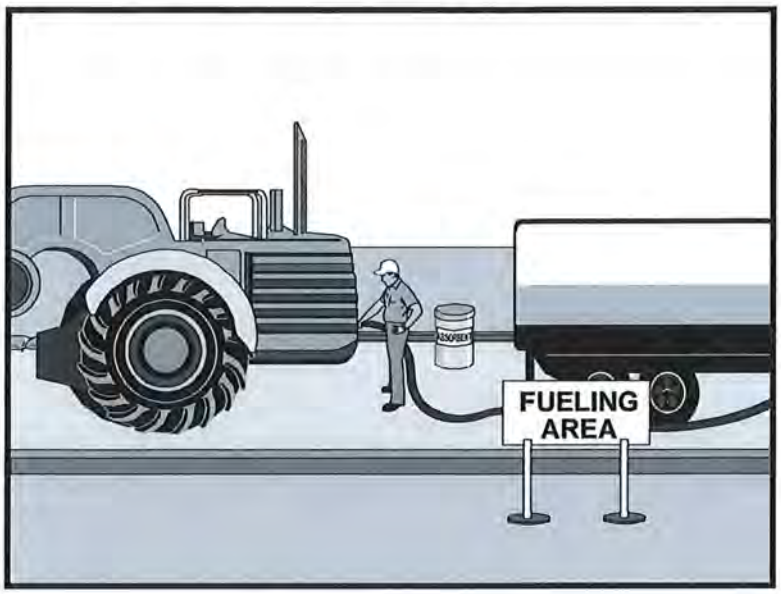
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Vehicle and Equipment Fueling NS-9



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

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Description and Purpose

Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment fueling takes place.

Limitations

Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling. Sending vehicles and equipment offsite should be done in conjunction with TC-1, Stabilized Construction Entrance/ Exit.

Implementation

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- Discourage "topping-off" of fuel tanks.

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- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should be disposed of properly after use.
- Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles should be able to travel to a designated area with little lost time.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- When fueling must take place onsite, designate an area away from drainage courses to be used. Fueling areas should be identified in the SWPPP.
- Dedicated fueling areas should be protected from stormwater runon and runoff, and should be located at least 50 ft away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent runon, runoff, and to contain spills.
- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts (AQMD).
- Federal, state, and local requirements should be observed for any stationary above ground storage tanks.

Costs

- All of the above measures are low cost except for the capital costs of above ground tanks that meet all local environmental, zoning, and fire codes.

Inspection and Maintenance

- Inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the project site.
- Keep ample supplies of spill cleanup materials onsite.

- Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

References

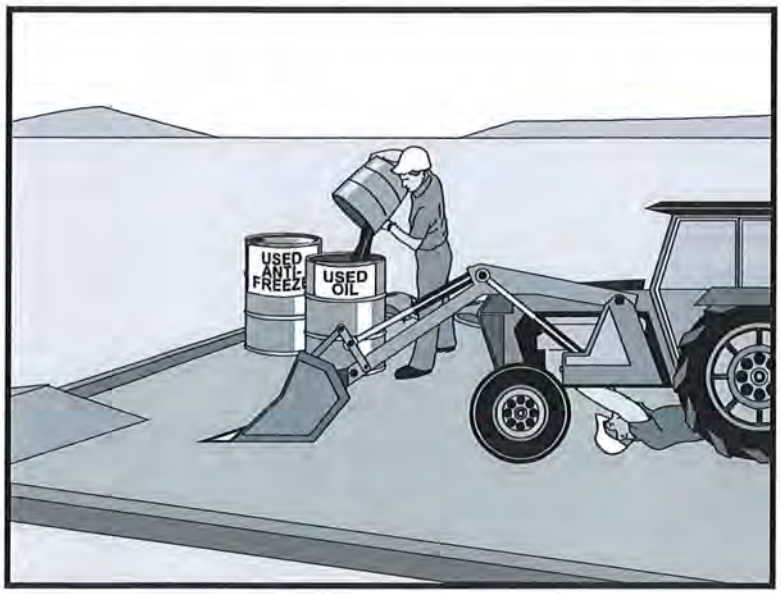
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Vehicle & Equipment Maintenance NS-10



Categories

EC	Erosion Control	
SE	Sediment Control	
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Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent or reduce the contamination of stormwater resulting from vehicle and equipment maintenance by running a "dry and clean site". The best option would be to perform maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. Employees and subcontractors must be trained in proper procedures.

Suitable Applications

These procedures are suitable on all construction projects where an onsite yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations

Onsite vehicle and equipment maintenance should only be used where it is impractical to send vehicles and equipment offsite for maintenance and repair. Sending vehicles/equipment offsite should be done in conjunction with TC-1, Stabilized Construction Entrance/Exit.

Outdoor vehicle or equipment maintenance is a potentially significant source of stormwater pollution. Activities that can contaminate stormwater include engine repair and service, changing or replacement of fluids, and outdoor equipment storage and parking (engine fluid leaks). For further information on vehicle or equipment servicing, see NS-8,

Vehicle and Equipment Cleaning, and NS-9, Vehicle and Equipment Fueling.

Implementation

- Use offsite repair shops as much as possible. These businesses are better equipped to handle vehicle fluids and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate maintenance area.
- If maintenance must occur onsite, use designated areas, located away from drainage courses. Dedicated maintenance areas should be protected from stormwater runon and runoff, and should be located at least 50 ft from downstream drainage facilities and watercourses.
- Drip pans or absorbent pads should be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.
- Use adsorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.
- Inspect onsite vehicles and equipment daily at startup for leaks, and repair immediately.
- Keep vehicles and equipment clean; do not allow excessive build-up of oil and grease.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.
- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- Drip pans or plastic sheeting should be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than 1 hour.
- For long-term projects, consider using portable tents or covers over maintenance areas if maintenance cannot be performed offsite.
- Consider use of new, alternative greases and lubricants, such as adhesive greases, for chassis lubrication and fifth-wheel lubrication.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose of or recycle used batteries.
- Do not bury used tires.

- Repair leaks of fluids and oil immediately.

Listed below is further information if you must perform vehicle or equipment maintenance onsite.

Safer Alternative Products

- Consider products that are less toxic or hazardous than regular products. These products are often sold under an "environmentally friendly" label.
- Consider use of grease substitutes for lubrication of truck fifth-wheels. Follow manufacturers label for details on specific uses.
- Consider use of plastic friction plates on truck fifth-wheels in lieu of grease. Follow manufacturers label for details on specific uses.

Waste Reduction

Parts are often cleaned using solvents such as trichloroethylene, trichloroethane, or methylene chloride. Many of these cleaners are listed in California Toxic Rule as priority pollutants. These materials are harmful and must not contaminate stormwater. They must be disposed of as a hazardous waste. Reducing the number of solvents makes recycling easier and reduces hazardous waste management costs. Often, one solvent can perform a job as well as two different solvents. Also, if possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials. For example, replace chlorinated organic solvents with non-chlorinated solvents. Non-chlorinated solvents like kerosene or mineral spirits are less toxic and less expensive to dispose of properly. Check the list of active ingredients to see whether it contains chlorinated solvents. The "chlor" term indicates that the solvent is chlorinated. Also, try substituting a wire brush for solvents to clean parts.

Recycling and Disposal

Separating wastes allows for easier recycling and may reduce disposal costs. Keep hazardous wastes separate, do not mix used oil solvents, and keep chlorinated solvents (like,-trichloroethane) separate from non-chlorinated solvents (like kerosene and mineral spirits). Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around. Provide cover and secondary containment until these materials can be removed from the site.

Oil filters can be recycled. Ask your oil supplier or recycler about recycling oil filters.

Do not dispose of extra paints and coatings by dumping liquid onto the ground or throwing it into dumpsters. Allow coatings to dry or harden before disposal into covered dumpsters.

Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Costs

All of the above are low cost measures. Higher costs are incurred to setup and maintain onsite maintenance areas.

Vehicle & Equipment Maintenance NS-10

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Keep ample supplies of spill cleanup materials onsite.
- Maintain waste fluid containers in leak proof condition.
- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately or the problem vehicle(s) or equipment should be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

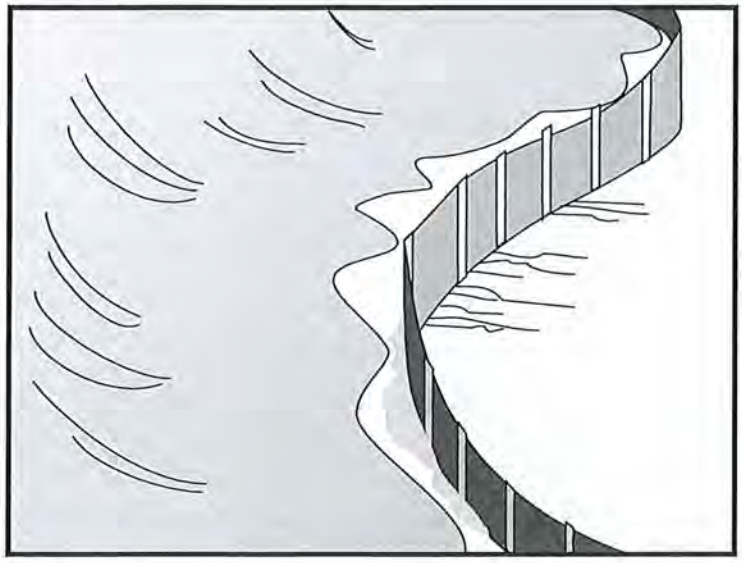
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Silt Fence SE-1



Description and Purpose

A silt fence is made of a woven geotextile that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains water, promoting sedimentation of coarse sediment behind the fence. Silt fence does not retain soil fine particles like clays or silts.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They could also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion and around inlets within disturbed areas (SE-10). Silt fences should not be used in locations where the flow is concentrated. Silt fences should always be used in combination with erosion controls. Suitable applications include:

- At perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Around inlets.
- Below other small cleared areas.

Categories

EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment (coarse sediment)	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm SE-12 Manufactured Linear Sediment Controls

SE-13 Compost Socks and Berms

SE-14 Biofilter Bags

Limitations

- Do not use in streams, channels, drain inlets, or anywhere flow is concentrated.
- Do not use in locations where ponded water may cause a flooding hazard.
- Do not use silt fence to divert water flows or place across any contour line.
- Improperly installed fences are subject to failure from undercutting, overtopping, or collapsing.
- Must be trenched and keyed in.
- Not intended for use as a substitute for Fiber Rolls (SE-5), when fiber rolls are being used as a slope interruption device.
- Do not use on slopes subject to creeping, slumping, or landslides.

Implementation

General

A silt fence is a temporary sediment barrier consisting of woven geotextile stretched across and attached to supporting posts, trenched-in, and, depending upon the strength of fabric used, supported with plastic or wire mesh fence. Silt fences trap coarse sediment by intercepting and detaining sediment-laden runoff from disturbed areas in order to promote sedimentation behind the fence.

The following layout and installation guidance can improve performance and should be followed:

- Silt fence should be used in combination with erosion controls up-slope in order to provide the most effective sediment control.
- Silt fence alone is not effective at reducing turbidity. (Barrett and Malina, 2004)
- Designers should consider diverting sediment laden water to a temporary sediment basin or trap. (EPA, 2012)
- Use principally in areas where sheet flow occurs.
- Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.
- Provide sufficient room for runoff to pond behind the fence and to allow sediment removal equipment to pass between the silt fence and toes of slopes or other obstructions. About 1200 ft^2 of ponding area should be provided for every acre draining to the fence.
- Efficiency of silt fences is primarily dependent on the detention time of the runoff behind the control. (Barrett and Malina, 2004)
- The drainage area above any fence should not exceed a quarter of an acre. (Rule of Thumb-100-feet of silt fence per 10,000 square feet of disturbed area.) (EPA 2012)

- The maximum length of slope draining to any point along the silt fence should be 100 ft per foot of silt fence.
- Turn the ends of the filter fence uphill to prevent stormwater from flowing around the fence.
- Leave an undisturbed or stabilized area immediately down slope from the fence where feasible.
- Silt fences should remain in place until the disturbed area draining to the silt fence is permanently stabilized, after which, the silt fence fabric and posts should be removed and properly disposed.
- J-Hooks, which have ends turning up the slope to break up long runs of fence and provide multiple storage areas that work like mini-retention areas, may be used to increase the effectiveness of silt fence.
- Be aware of local regulations regarding the type and installation requirements of silt fence, which may differ from those presented in this fact sheet.

Design and Layout

In areas where high winds are anticipated the fence should be supported by a plastic or wire mesh. The geotextile fabric of the silt fence should contain ultraviolet inhibitors and stabilizers to provide longevity equivalent to the project life or replacement schedule.

- Layout in accordance with the attached figures.
- For slopes that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to protect silt fence from rocks (e.g., rockfall netting) ensure the integrity of the silt fence installation.

Standard vs. Heavy Duty Silt Fence

Standard Silt Fence

- Generally applicable in cases where the area draining to fence produces moderate sediment loads.

Heavy Duty Silt Fence

- Heavy duty silt fence usually has 1 or more of the following characteristics, not possessed by standard silt fence.
  - Fabric is reinforced with wire backing or additional support.
  - Posts are spaced closer than pre-manufactured, standard silt fence products.
- Use is generally limited to areas affected by high winds.
- Area draining to fence produces moderate sediment loads.

Materials

Standard Silt Fence

- Silt fence material should be woven geotextile with a minimum width of 36 in. The fabric should conform to the requirements in ASTM designation D6461.
- Wooden stakes should be commercial quality lumber of the size and shape shown on the plans. Each stake should be free from decay, splits or cracks longer than the