PSC-Fernley Hazardous Waste Treatment and Storage Facility

RCRA Part B Permit Renewal Application

Submitted to Nevada Division of Environmental Protection

21st Century Environmental Management of Nevada, LLC (PSC)
2095 Newlands Drive East
Fernley, NV 89408

Volume I

July 2012

July 18, 2012 **Hand Delivered**

Maureen Godbout, P.E.
Staff Engineer, RCRA Facilities Branch
Bureau of Waste Management
Nevada Division of Environmental Protection
901 S. Stewart St., Suite 4001
Carson City, NV 89701-5249

Re: PSC-Fernley Facility RCRA Permit Renewal Application

Dear Ms. Godbout:

Enclosed is the RCRA permit renewal application for the 21st Century Environmental Management of Nevada, LLC (PSC) Fernley Facility. This final submittal incorporates all revisions resulting from the review, comment and re-submittal process that has occurred since the initial draft submittal in April 2009.

If you have any questions, please feel free to contact me at 425-227-6120. Thank you very much for your assistance in this permit renewal process.

Sincerely,

Keith Lund
Director of Permitting, EHS West Region

Enclosure (PSC- Fernley RCRA permit renewal application)

PSC - Fernley Facility Part B Permit Renewal Application
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SECTION A. PART A OF THE RCRA PERMIT APPLICATION

40 CFR 270.10(d), 270.11(a) and (d), 270.13

A1.0 BACKGROUND INFORMATION

A1.1 Revisions Included in Part A Application for Part B Permit

21st Century Environmental Management of Nevada, LLC, is the legal owner and operator of the facility. However, the facility will be referred to throughout this permit renewal application as “the Fernley facility”, “the PSC Fernley facility”, or “PSC Fernley”.

The Fernley facility’s RCRA Part B permit was issued on October 14, 2004. This permit renewal application submittal includes a completely updated RCRA Hazardous Waste Part A Permit Application form [EPA Form 8700-23] on the following pages.

In Appendix A-1 at the back of this section can be found parcel maps and a copy of the deed for the property. Photographs of the facility are found in Appendix A-2.

OMB# 2050-0024; Expires 12/31/2014

SEND COMPLETED FORM TO: The Appropriate State or Regional Office.	United States Environmental Protection Agency **RCRA SUBTITLE C SITE IDENTIFICATION FORM**

1. Reason for Submittal

MARK ALL BOX(ES) THAT APPLY

Reason for Submittal:

- ☐ To provide an Initial Notification (first time submitting site identification information / to obtain an EPA ID number for this location)
- ☐ To provide a Subsequent Notification (to update site identification information for this location)
- ☐ As a component of a First RCRA Hazardous Waste Part A Permit Application
- ☒ As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment #_____)
- ☐ As a component of the Hazardous Waste Report (If marked, see sub-bullet below)
  - ☐ Site was a TSD facility and/or generator of ≥1,000 kg of hazardous waste, >1 kg of acute hazardous waste, or >100 kg of acute hazardous waste spill cleanup in one or more months of the report year (or State equivalent LQG regulations)

2. Site EPA ID Number

EPA ID Number N V D 9 8 0 8 9 5 3 3 8

3. Site Name

Name: 21st Century Environmental Management of Nevada, LLC (21 EMN) Fernley Facility

4. Site Location Information

Street Address: 2095 Newlands Drive East

City, Town, or Village: Fernley | **County:** Lyon

State: NV | **Country:** USA | **Zip Code:** 89408

5. Site Land Type

☑ Private ☐ County ☐ District ☐ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

6. NAICS Code(s) for the Site (at least 5-digit codes)

A. 5 6 2 2 1 1 | C. | B. | D.

7. Site Mailing Address

Street or P.O. Box: 2095 Newlands Drive East

City, Town, or Village: Fernley

State: NV | **Country:** USA | **Zip Code:** 89408

8. Site Contact Person

First Name: Tracy | **MI:** | **Last:** Buono

Title: General Manager

Street or P.O. Box: same as above

City, Town or Village:

State: | **Country:** | **Zip Code:**

Email: tracy.buono@pscnow.com

Phone: 775-575-2760 | **Ext.:** | **Fax:** 775-575-2803

9. Legal Owner and Operator of the Site

A. Name of Site's Legal Owner: 21 EMN | **Date Became Owner:** 04/01/2008

Owner Type: ☑ Private ☐ County ☐ District ☐ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

Street or P.O. Box: same as above

City, Town, or Village: | **Phone:** same as above

State: | **Country:** | **Zip Code:**

B. Name of Site's Operator: 21 EMN | **Date Became Operator:** 04/01/2008

Operator Type: ☑ Private ☐ County ☐ District ☐ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

10. Type of Regulated Waste Activity (at your site)
Mark "Yes" or "No" for all current activities (as of the date submitting the form); complete any additional boxes as instructed.

A. Hazardous Waste Activities; Complete all parts 1-10.

Y [✓] N [ ] **1. Generator of Hazardous Waste**
If "Yes", mark only one of the following – a, b, or c.

- [✓] a. LQG: Generates, in any calendar month, 1,000 kg/mo (2,200 lbs./mo.) or more of hazardous waste; **or** Generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lbs./mo) of acute hazardous waste; **or** Generates, in any calendar month, **or** accumulates at any time, more than 100 kg/mo (220 lbs./mo) of acute hazardous spill cleanup material.
- [ ] b. SQG: 100 to 1,000 kg/mo (220 – 2,200 lbs./mo) of non-acute hazardous waste.
- [ ] c. CESQG: Less than 100 kg/mo (220 lbs./mo) of non-acute hazardous waste.

If "Yes" above, indicate other generator activities in 2-4.

Y [ ] N [✓] **2. Short-Term Generator** (generate from a short-term or one-time event and not from on-going processes). If "Yes", provide an explanation in the Comments section.

[ ] N [✓] **3. United States Importer of Hazardous Waste**

Y [ ] N [✓] **4. Mixed Waste (hazardous and radioactive) Generator**

Y [✓] N [ ] **5. Transporter of Hazardous Waste**
If "Yes", mark all that apply.
- [✓] a. Transporter
- [ ] b. Transfer Facility (at your site)

Y [✓] N [ ] **6. Treater, Storer, or Disposer of Hazardous Waste** Note: A hazardous waste Part B permit is required for these activities.

Y [✓] N [ ] **7. Recycler of Hazardous Waste**

Y [ ] N [✓] **8. Exempt Boiler and/or Industrial Furnace**
If "Yes", mark all that apply.
- [ ] a. Small Quantity On-site Burner Exemption
- [ ] b. Smelting, Melting, and Refining Furnace Exemption

Y [ ] N [✓] **9. Underground Injection Control**

Y [✓] N [ ] **10. Receives Hazardous Waste from Off-site**

B. Universal Waste Activities; Complete all parts 1-2.

Y [✓] N [ ] **1. Large Quantity Handler of Universal Waste (you accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste managed at your site. If "Yes", mark all that apply.**

- a. Batteries [✓]
- b. Pesticides [✓]
- c. Mercury containing equipment [✓]
- d. Lamps [✓]
- e. Other (specify) _____ [ ]
- f. Other (specify) _____ [ ]
- g. Other (specify) _____ [ ]

Y [ ] N [✓] **2. Destination Facility for Universal Waste**
Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities; Complete all parts 1-4.

Y [✓] N [ ] **1. Used Oil Transporter**
If "Yes", mark all that apply.
- [✓] a. Transporter
- [ ] b. Transfer Facility (at your site)

Y [ ] N [✓] **2. Used Oil Processor and/or Re-refiner**
If "Yes", mark all that apply.
- [ ] a. Processor
- [ ] b. Re-refiner

Y [ ] N [✓] **3. Off-Specification Used Oil Burner**

Y [ ] N [✓] **4. Used Oil Fuel Marketer**
If "Yes", mark all that apply.
- [ ] a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
- [ ] b. Marketer Who First Claims the Used Oil Meets the Specifications

Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR Part 262 Subpart K

❖ You can **ONLY** Opt into Subpart K if:

- you are at least one of the following: a college or university; a teaching hospital that is owned by or has a formal affiliation agreement with a college or university; or a non-profit research institute that is owned by or has a formal affiliation agreement with a college or university; AND
- you have checked with your State to determine if 40 CFR Part 262 Subpart K is effective in your state

Y☐ N☐ 1. Opting into or currently operating under 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories **See the item-by-item instructions for definitions of types of eligible academic entities. Mark all that apply:**

☐ a. College or University

☐ b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university

☐ c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

Y☐ N☐ 2. Withdrawing from 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories

11. Description of Hazardous Waste

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

see attached						

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-Regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed.

see attached						

EPA ID Number N V D 9 8 0 8 9 5 3 3 8 OMB#: 2050-0024; Expires 12/31/2014

12. Notification of Hazardous Secondary Material (HSM) Activity

Y ☐ N ☑ Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?

If "Yes", you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

13. Comments

Section 11, Box A and B presented on the following page

14. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

Signature of legal owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Mo Azose, Regional Vice President	8/7/13

11.A. Waste Codes for Federally Regulated Hazardous Wastes

EPA HAZARDOUS WASTE CODES

A list of all the hazardous waste codes is shown below. See the regulations for details.

CHARACTERISTICS OF HAZARDOUS WASTE *(SEE 40 CFR 261.24)* – **DXXX**

HAZARDOUS WASTE FROM NON-SPECIFIC SOURCES *(SEE 40 CFR 261.31)* – **FXXX**

HAZARDOUS WASTE FROM SPECIFIC SOURCES *(SEE 40 CFR 261.32)* - **KXXX**

DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUALS, AND SPILL RESIDUES THEREOF – ACUTE HAZARDOUS WASTE *(SEE 40 CFR 261.33)* – **PXXX**

DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF – TOXIC WASTES *(SEE 40 CFR 261.33)* - **UXXX**

D001	F001	K001	K047	K123	P001	P050	P106	U001	U048	U095	U143	U189	U247
D002	F002	K002	K048	K124	P002	P051	P108	U002	U049	U096	U144	U190	U248
D003	F003	K003	K049	K125	P003	P054	P109	U003	U050	U097	U145	U191	U249
D004	F004	K004	K050	K126	P004	P056	P110	U004	U051	U098	U146	U192	U271
D005	F005	K005	K051	K131	P005	P057	P111	U005	U052	U099	U147	U193	U278
D006	F006	K006	K052	K132	P006	P058	P112	U006	U053	U101	U148	U194	U279
D007	F007	K007	K060	K136	P007	P059	P113	U007	U055	U102	U149	U196	U280
D008	F008	K008	K061	K141	P008	P060	P114	U008	U056	U103	U150	U197	U328
D009	F009	K009	K062	K142	P009	P062	P115	U009	U057	U105	U151	U200	U353
D010	F010	K010	K069	K143	P010	P063	P116	U010	U058	U106	U152	U201	U359
D011	F011	K011	K071	K144	P011	P064	P118	U011	U059	U107	U153	U202	U364
D012	F012	K013	K073	K145	P012	P065	P119	U012	U060	U108	U154	U203	U367
D013	F019	K014	K083	K147	P013	P066	P120	U014	U061	U109	U155	U204	U372
D014	F020	K015	K084	K148	P014	P067	P121	U015	U062	U110	U156	U205	U373
D015	F021	K016	K085	K149	P015	P068	P122	U016	U063	U111	U157	U206	U387
D016	F022	K017	K086	K150	P016	P069	P123	U017	U064	U112	U158	U207	U389
D017	F023	K018	K087	K151	P017	P070	P127	U018	U066	U113	U159	U208	U394
D018	F024	K019	K088	K156	P018	P071	P128	U019	U067	U114	U160	U209	U395
D019	F025	K020	K093	K157	P020	P072	P185	U020	U068	U115	U161	U210	U404
D020	F026	K021	K094	K158	P021	P073	P188	U021	U069	U116	U162	U211	U409
D021	F027	K022	K095	K159	P022	P074	P189	U022	U070	U117	U163	U213	U410
D022	F028	K023	K096	K161	P023	P075	P190	U023	U071	U118	U164	U214	U411
D023	F032	K024	K097	K169	P024	P076	P191	U024	U072	U119	U165	U215	
D024	F034	K025	K098	K170	P026	P077	P192	U025	U073	U120	U166	U216	
D025	F035	K026	K099	K171	P027	P078	P194	U026	U074	U121	U167	U217	
D026	F037	K027	K100	K172	P028	P081	P196	U027	U075	U122	U168	U218	
D027	F038	K028	K100	K174	P029	P082	P197	U028	U076	U123	U169	U219	
D028	F039	K029	K101	K175	P030	P084	P198	U029	U077	U124	U170	U220	
D029		K030	K102	K176	P031	P085	P199	U030	U078	U125	U171	U221	
D030		K031	K103	K177	P033	P087	P201	U031	U079	U126	U172	U222	
D031		K032	K104	K178	P034	P088	P202	U032	U080	U127	U173	U223	
D032		K033	K105	K181	P036	P089	P203	U033	U081	U128	U174	U225	
D033		K034	K106		P037	P092	P204	U034	U082	U129	U176	U226	
D034		K035	K107		P038	P093	P205	U035	U083	U130	U177	U227	
D035		K036	K108		P039	P094		U036	U084	U131	U178	U228	
D036		K037	K109		P040	P095		U037	U085	U132	U179	U234	
D037		K038	K110		P041	P096		U038	U086	U133	U180	U235	
D038		K039	K111		P042	P097		U039	U087	U134	U181	U236	
D039		K040	K112		P043	P098		U041	U088	U135	U182	U237	
D040		K041	K113		P044	P099		U042	U089	U136	U183	U238	
D041		K042	K114		P045	P101		U043	U090	U137	U184	U239	
D042		K043	K115		P046	P102		U044	U091	U138	U185	U240	
D043		K044	K116		P047	P103		U045	U092	U140	U186	U243	
		K045	K117		P048	P104		U046	U093	U141	U187	U244	
		K046	K118		P049	P105		U047	U094	U142	U188	U246	

11.B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes

CA	CA (cont.)	RI	MI (cont.)	MI (cont.)	MI (cont.)
121	491	R001	024U	075U	137U
122	511	R002	025U	076U	138U
123	512	R003	027U	077U	139U
131	513	R004	028U	078U	140U
132	521	R005	152U	079U	141U
133	531	R006	029U	082U	142U
134	541	**VT**	030U	083U	146U
135	551	VT02	031U	086U	153U
141	561	VT03	032U	088U	154U
161	571	VT06	033U	089U	155U
162	581	VT08	034U	090U	158U
171	591	VT20	150U	092U	165U
172	611	VT99	162U	093U	167U
181	612	**MI**	036U	094U	168U
211	613	001S	037U	095U	170U
212	711	002S	038U	096U	171U
213	721	003S	163U	097U	172U
214	722	004S	151U	098U	173U
221	723	005S	040U	099U	174U
222	724	006S	041U	100U	175U
223	725	007S	042U	101U	**TX**
231	726	001K	043U	102U	Class 1
232	727	002K	044U	103U	Class 2
241	728	001U	046U	104U	Class 3
251	741	002U	164U	106U	
252	751	003U	048U	108U	
271	791	004U	049U	110U	
272	792	005U	050U	111U	
281	801	006U	051U	112U	
291	**WA**	007U	052U	113U	
311	WSC2	008U	054U	115U	
321	WT01	009U	055U	116U	
322	WT02	011U	056U	117U	
331	WP01	012U	057U	118U	
341	WP02	013U	058U	119U	
342	WP03	014U	059U	120U	
343	**OR**	147U	166U	121U	
351	X001	148U	061U	122U	
352	X007	159U	063U	124U	
411	**MO**	015U	064U	127U	
421	MH02	016U	065U	128U	
431	D098	017U	068U	129U	
441		020U	070U	131U	
451	**SC**	160U	071U	132U	
461	K900	161U	072U	134U	
471	5555	022U	073U	135U	
481	7777	023U	074U	136U	

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 |

OMB#: 2050-0024; Expires 12/31/2014

United States Environmental Protection Agency

HARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact	**First Name:** Tracy	**MI:**	**Last Name:** Buono
	Contact Title: General Manager		
	Phone: 775-575-2760	**Ext.:**	**Email:** tracy.buono@pscnow.com
2. Facility Permit Contact Mailing Address	**Street or P.O. Box:** 2095 Newlands Drive East		
	City, Town, or Village: Fernley		
	State: NV		
	Country: USA	**Zip Code:** 89408	
3. Operator Mailing Address and Telephone Number	**Street or P.O. Box:** same as above		
	City, Town, or Village:		
	State:	**Phone:**	
	Country:	**Zip Code:**	
4. Facility Existence Date	**Facility Existence Date (mm/dd/yyyy):** 12/24/1984		

5. Other Environmental Permits

A. Facility Type *(Enter code)*	B. Permit Number													C. Description
P	A	P	4	9	5	3	-	2	2	3	5			Air Quality Operating Permit
E	7	7	3											Lyon County Special Use Permit
N	2	0	1	8	1									Stormwater Discharge Permit
E	6	1	5	4	4	3								USDOT Registration
E	1	2	8	6	2	5								Hazardous Materials Storage Permit

6. Nature of Business: Commercial facility for the storage and treatment of RCRA characteristic, RCRA listed, and state-regulated hazardous wastes.

7. Process Codes and Design Capacities – Enter information in the Section on Form Page 3

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item 8.

B. PROCESS DESIGN CAPACITY – For each code entered in Item 7.A; enter the capacity of the process.

1. **AMOUNT – Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.**
2. **UNIT OF MEASURE – For each amount entered in Item 7.B(1), enter the code in Item 7.B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.**

C. PROCESS TOTAL NUMBER OF UNITS – Enter the total number of units for each corresponding process code.

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity
	Disposal	
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet; Hectares-meter; Acres; Cubic Meters; Hectares; Cubic Yards
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards
D99	Other Disposal	Any Unit of Measure Listed Below
	Storage	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment	Gallons; Liters; Cubic Meters; or Cubic Yards
S05	Drip Pad	Gallons; Liters; Cubic Meters; Hectares; or Cubic Yards
S06	Containment Building Storage	Cubic Yards or Cubic Meters
S99	Other Storage	Any Unit of Measure Listed Below
	Treatment	
T01	Tank Treatment	Gallons Per Day; Liters Per Day
T02	Surface Impoundment	Gallons Per Day; Liters Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Metric Tons Per Hour; or Million BTU Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Short Tons Per Day; BTUs Per Hour; Gallons Per Day; Liters Per Hour; or Million BTU Per Hour
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; or Million BTU Per Hour

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity
	Treatment (Continued)	**(for T81 – T94)**
T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; Liters Per Hour; Kilograms Per Hour; or Million BTU Per Hour
T82	Lime Kiln	
T83	Aggregate Kiln	
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
T87	Smelting, Melting, or Refining Furnace	
T88	Titanium Dioxide Chloride Oxidation Reactor	
T89	Methane Reforming Furnace	
T90	Pulping Liquor Recovery Furnace	
T91	Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid	
T92	Halogen Acid Furnaces	
T93	Other Industrial Furnaces Listed in 40 CFR 260.10	
T94	Containment Building Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTU Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million BTU Per Hour
	Miscellaneous (Subpart X)	
X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Hour; Liters Per Hour; or Gallons Per Day
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; or Million BTU Per Hour
X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
X99	Other Subpart X	Any Unit of Measure Listed Below

Unit of Measure	Unit of Measure Code
Gallons	G
Gallons Per Hour	E
Gallons Per Day	U
Liters	L
Liters Per Hour	H
Liters Per Day	V
Short Tons Per Hour	D
Short Tons Per Day	N
Metric Tons Per Hour	W
Metric Tons Per Day	S
Pounds Per Hour	J
Kilograms Per Hour	X
Million BTU Per Hour	X
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
BTU Per Hour	I

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	1	S	0	2	533.788	G	001						
	1	s	0	1	314 (West Pad CSA)	Y	001						
	2	s	0	1	145 (Truck Bay)	Y	001						
	3	S	0	1	14 (Lab Pack Room)	Y	001						
	4	S	0	1	896 (East CSA)	Y	001						
	5	S	0	1	1,200 (East Pad CSA)	Y	001						
	6	S	0	2	185,300 (101-111, 201-208, 301-307)	G	026						
	7	T	0	1	25,000 (T1-T7)	U	007						
	8												
	9												
1	0												
1	1												
1	2												
1	3												

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the line sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04, and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04, and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only					
X	2	T	0	4	100.00	U	001						
1	0	X	9	9	1,500 (Filter Press)	J	002						
1	1	X	9	9	25,000 (Crystallizer)	U	001						

9. Description of Hazardous Wastes - Enter Information in the Sections on Form Page 5

A. EPA HAZARDOUS WASTE NUMBER – Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY – For each listed waste entered in Item 9.A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Item 9.A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE – For each quantity entered in Item 9.B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all listed hazardous wastes.

For non-listed waste: For each characteristic or toxic contaminant entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. **Enter the first two as described above.**
2. **Enter "000" in the extreme right box of Item 9.D(1).**
3. **Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 9.E.**

2. PROCESS DESCRIPTION: If code is not listed for a process that will be used, describe the process in Item 9.D(2) or in Item 9.E(2).

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. **Select one of the EPA Hazardous Waste Numbers and enter it in Item 9.A. On the same line complete Items 9.B, 9.C, and 9.D by estimating the total annual quantity of the waste and describing all the processes to be used to store, treat, and/or dispose of the waste.**
2. **In Item 9.A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Item 9.D.2 on that line enter "included with above" and make no other entries on that line.**
3. **Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.**

EXAMPLE FOR COMPLETING Item 9 (shown in line numbers X-1, X-2, X-3, and X-4 below) – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))
X	1	K	0	5	4	900	P	T	0	3	D	8	0				
X	2	D	0	0	2	400	P	T	0	3	D	8	0				
X	3	D	0	0	1	100	P	T	0	3	D	8	0				
X	4	D	0	0	2												Included With Above

Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))
	1					230,000	T										See Item 13 - p. 6 of 6
	2	D	0	0	1			S	0	1	S	0	2	T	0	1	
	3	D	0	0	2			S	0	1	S	0	2	T	0	1	
	4	D	0	0	3			S	0	1	S	0	2	T	0	1	
	5	D	0	0	4			S	0	1	S	0	2	T	0	1	
	6	D	0	0	5			S	0	1	S	0	2	T	0	1	
	7	D	0	0	6			S	0	1	S	0	2	T	0	1	
	8	D	0	0	7			S	0	1	S	0	2	T	0	1	
	9	D	0	0	8			S	0	1	S	0	2	T	0	1	
1	0	D	0	0	9			S	0	1	S	0	2	T	0	1	
1	1	D	0	1	0			S	0	1	S	0	2	T	0	1	
1	2	D	0	1	1			S	0	1	S	0	2	T	0	1	
1	3	D	0	1	2			S	0	1							
1	4	D	0	1	3			S	0	1							
1	5	D	0	1	4			S	0	1							
1	6	D	0	1	5			S	0	1							
	7	D	0	1	6			S	0	1							
1	8	D	0	1	7			S	0	1							
1	9	D	0	1	8			S	0	1							
2	0	D	0	1	9			S	0	1							
2	1	D	0	2	0			S	0	1							
2	2	D	0	2	1			S	0	1							
2	3	D	0	2	2			S	0	1							
2	4	D	0	2	3			S	0	1							
2	5	D	0	2	4			S	0	1							
2	6	D	0	2	5			S	0	1							
2	7	D	0	2	6			S	0	1							
2	8	D	0	2	7			S	0	1							
2	9	D	0	2	8			S	0	1							
3	0	D	0	2	9			S	0	1							
3	1	D	0	3	0			S	0	1							
3	2	D	0	3	1			S	0	1							
3	3	D	0	3	2			S	0	1							
3	4	D	0	3	3			S	0	1							
3	5	D	0	3	4			S	0	1							
	6	D	0	3	5			S	0	1							

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 |

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9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTIO... (If code is not entered in 9.D.1)
3	7	D	0	3	6			S	0	1							
3	8	D	0	3	7			S	0	1							
3	9	D	0	3	8			S	0	1							
4	0	D	0	3	9			S	0	1							
4	1	D	0	4	0			S	0	1							
4	2	D	0	4	1			S	0	1							
4	3	D	0	4	2			S	0	1							
4	4	D	0	4	3			S	0	1							

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
	1	F	0	0	1			S	0	1							
	2	F	0	0	2			S	0	1							
	3	F	0	0	3			S	0	1							
	4	F	0	0	4			S	0	1							
	5	F	0	0	5			S	0	1							
	6	F	0	0	6			S	0	1	S	0	2	T	0	1	
	7	F	0	0	7			S	0	1	S	0	2	T	0	1	
	8	F	0	0	8			S	0	1	S	0	2	T	0	1	
	9	F	0	0	9			S	0	1	S	0	2	T	0	1	
1	0	F	0	1	0			S	0	1	S	0	2	T	0	1	
1	1	F	0	1	1			S	0	1	S	0	2	T	0	1	
1	2	F	0	1	2			S	0	1	S	0	2	T	0	1	
1	3	F	0	1	9			S	0	1	S	0	2	T	0	1	
1	4	F	0	2	0			S	0	1							
1	5	F	0	2	1			S	0	1							
1	6	F	0	2	2			S	0	1							
1	7	F	0	2	3			S	0	1							
1	8	F	0	2	4			S	0	1							
1	9	F	0	2	5			S	0	1							
2	0	F	0	2	6			S	0	1							
2	1	F	0	2	7			S	0	1							
2	2	F	0	2	8			S	0	1							
2	3	F	0	3	2			S	0	1							
2	4	F	0	3	4			S	0	1							
2	5	F	0	3	5			S	0	1							
2	6	F	0	3	7			S	0	1							
2	7	F	0	3	8			S	0	1							
2	8	F	0	3	9			S	0	1							CONT. ON NEXT PAGE
2	9																
3	0																
3	1																
3	2																
3	3																
3	4																
3	5																
3	6																

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									D. PROCESSES (2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
	1	K	0	0	1			S	0	1							
	2	K	0	0	2			S	0	1	S	0	2	T	0	1	
	3	K	0	0	3			S	0	1	S	0	2	T	0	1	
	4	K	0	0	4			S	0	1	S	0	2	T	0	1	
	5	K	0	0	5			S	0	1	S	0	2	T	0	1	
	6	K	0	0	6			S	0	1	S	0	2	T	0	1	
	7	K	0	0	7			S	0	1	S	0	2	T	0	1	
	8	K	0	0	8			S	0	1	S	0	2	T	0	1	
	9	K	0	0	9			S	0	1							
1	0	K	0	1	0			S	0	1							
1	1	K	0	1	1			S	0	1							
1	2	K	0	1	3			S	0	1							
1	3	K	0	1	4			S	0	1							
1	4	K	0	1	5			S	0	1							
1	5	K	0	1	6			S	0	1							
1	6	K	0	1	7			S	0	1							
1	7	K	0	1	8			S	0	1							
1	8	K	0	1	9			S	0	1							
1	9	K	0	2	0			S	0	1							
2	0	K	0	2	1			S	0	1							
2	1	K	0	2	2			S	0	1							
2	2	K	0	2	3			S	0	1							
2	3	K	0	2	4			S	0	1							
2	4	K	0	2	5			S	0	1							
2	5	K	0	2	6			S	0	1							
2	6	K	0	2	7			S	0	1							
2	7	K	0	2	8			S	0	1							
2	8	K	0	2	9			S	0	1							
2	9	K	0	3	0			S	0	1							
3	0	K	0	3	1			S	0	1							
3	1	K	0	3	2			S	0	1							
3	2	K	0	3	3			S	0	1							
3	3	K	0	3	4			S	0	1							
3	4	K	0	3	5			S	0	1							
3	5	K	0	3	6			S	0	1							
3	6	K	0	3	7			S	0	1							CONT. ON NEXT PAGE

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
3	7	K	0	3	8			S	0	1							
3	8	K	0	3	9			S	0	1							
3	9	K	0	4	0			S	0	1							
4	0	K	0	4	1			S	0	1							
4	1	K	0	4	2			S	0	1							
4	2	K	0	4	3			S	0	1							
4	3	K	0	4	4			S	0	1							
4	4	K	0	4	5			S	0	1							
4	5	K	0	4	6			S	0	1							
4	6	K	0	4	7			S	0	1							
4	7	K	0	4	8			S	0	1							
4	8	K	0	4	9			S	0	1							
4	9	K	0	5	0			S	0	1							
5	0	K	0	5	1			S	0	1							
5	1	K	0	5	2			S	0	1							
5	2	K	0	6	0			S	0	1							
5	3	K	0	6	1			S	0	1							
5	4	K	0	6	2			S	0	1							
5	5	K	0	6	9			S	0	1							
5	6	K	0	7	1			S	0	1							
5	7	K	0	7	3			S	0	1							
5	8	K	0	8	3			S	0	1							
5	9	K	0	8	4			S	0	1							
6	0	K	0	8	5			S	0	1							
6	1	K	0	8	6			S	0	1							
6	2	K	0	8	7			S	0	1							
6	3	K	0	8	8			S	0	1							
6	4	K	0	9	3			S	0	1							
6	5	K	0	9	4			S	0	1							
6	6	K	0	9	5			S	0	1							
6	7	K	0	9	6			S	0	1							
6	8	K	0	9	7			S	0	1							
6	9	K	0	9	8			S	0	1							
7	0	K	0	9	9			S	0	1							
7	1	K	1	0	0			S	0	1							
7	2	K	1	0	1			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 |

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9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
7	3	K	1	0	2			S	0	1							
7	4	K	1	0	3			S	0	1							
7	5	K	1	0	4			S	0	1							
7	6	K	1	0	5			S	0	1							
7	7	K	1	0	6			S	0	1							
7	8	K	1	0	7			S	0	1							
7	9	K	1	0	8			S	0	1							
8	0	K	1	0	9			S	0	1							
8	9	K	1	1	0			S	0	1							
9	0	K	1	1	1			S	0	1							
9	1	K	1	1	2			S	0	1							
9	2	K	1	1	3			S	0	1							
9	3	K	1	1	4			S	0	1							
9	4	K	1	1	5			S	0	1							
9	5	K	1	1	6			S	0	1							
9	6	K	1	1	7			S	0	1							
9	7	K	1	1	8			S	0	1							
9	8	K	1	2	3			S	0	1							
9	9	K	1	2	4			S	0	1							
100		K	1	2	5			S	0	1							
101		K	1	2	6			S	0	1							
102		K	1	3	1			S	0	1							
103		K	1	3	2			S	0	1							
104		K	1	3	6			S	0	1							
105		K	1	4	1			S	0	1							
106		K	1	4	2			S	0	1							
107		K	1	4	3			S	0	1							
108		K	1	4	4			S	0	1							
109		K	1	4	5			S	0	1							
110		K	1	4	7			S	0	1							
111		K	1	4	8			S	0	1							
112		K	1	4	9			S	0	1							
113		K	1	5	0			S	0	1							
114		K	1	5	1			S	0	1							
115		K	1	5	6			S	0	1							
116		K	1	5	7			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number	A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
117	K	1	5	8			S	0	1							
118	K	1	5	9			S	0	1							
119	K	1	6	1			S	0	1							
120	K	1	6	9			S	0	1							
121	K	1	7	0			S	0	1							
122	K	1	7	1			S	0	1							
123	K	1	7	2			S	0	1							
124	K	1	7	4			S	0	1							
125	K	1	7	5			S	0	1							
126	K	1	7	6			S	0	1							
127	K	1	7	7			S	0	1							
128	K	1	7	8			S	0	1							
129	K	1	8	1			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									D. PROCESSES (2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
	1	P	0	0	1			S	0	1							
	2	P	0	0	2			S	0	1							
	3	P	0	0	3			S	0	1							
	4	P	0	0	4			S	0	1							
	5	P	0	0	5			S	0	1							
	6	P	0	0	6			S	0	1							
	7	P	0	0	7			S	0	1							
	8	P	0	0	8			S	0	1							
	9	P	0	0	9			S	0	1							
1	0	P	0	1	0			S	0	1							
1	1	P	0	1	1			S	0	1							
1	2	P	0	1	2			S	0	1							
1	3	P	0	1	3			S	0	1							
1	4	P	0	1	4			S	0	1							
1	5	P	0	1	5			S	0	1							
1	6	P	0	1	6			S	0	1							
1	7	P	0	1	7			S	0	1							
1	8	P	0	1	8			S	0	1							
1	9	P	0	2	0			S	0	1							
2	0	P	0	2	1			S	0	1	S	0	2	T	0	1	
2	1	P	0	2	2			S	0	1							
2	2	P	0	2	3			S	0	1							
2	3	P	0	2	4			S	0	1							
2	4	P	0	2	6			S	0	1							
2	5	P	0	2	7			S	0	1							
2	6	P	0	2	8			S	0	1							
2	7	P	0	2	9			S	0	1	S	0	2	T	0	1	
2	8	P	0	3	0			S	0	1	S	0	2	T	0	1	
2	9	P	0	3	1			S	0	1							
3	0	P	0	3	3			S	0	1							
3	1	P	0	3	4			S	0	1							
3	2	P	0	3	6			S	0	1							
3	3	P	0	3	7			S	0	1							
3	4	P	0	3	8			S	0	1							
3	5	P	0	3	9			S	0	1							
3	6	P	0	4	0			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
3	7	P	0	4	1			S	0	1							
3	8	P	0	4	2			S	0	1							
3	9	P	0	4	3			S	0	1							
4	0	P	0	4	4			S	0	1							
4	1	P	0	4	5			S	0	1							
4	2	P	0	4	6			S	0	1							
4	3	P	0	4	7			S	0	1							
4	4	P	0	4	8			S	0	1							
4	5	P	0	4	9			S	0	1							
4	6	P	0	5	0			S	0	1							
4	7	P	0	5	1			S	0	1							
4	8	P	0	5	4			S	0	1							
4	9	P	0	5	6			S	0	1							
5	0	P	0	5	7			S	0	1							
5	1	P	0	5	8			S	0	1							
5	2	P	0	5	9			S	0	1							
5	3	P	0	6	0			S	0	1							
5	4	P	0	6	2			S	0	1							
5	5	P	0	6	3			S	0	1							
5	6	P	0	6	4			S	0	1							
5	7	P	0	6	5			S	0	1							
5	8	P	0	6	6			S	0	1							
5	9	P	0	6	7			S	0	1							
6	0	P	0	6	8			S	0	1							
6	1	P	0	6	9			S	0	1							
6	2	P	0	7	0			S	0	1							
6	3	P	0	7	1			S	0	1							
6	4	P	0	7	2			S	0	1							
6	5	P	0	7	3			S	0	1							
6	6	P	0	7	4			S	0	1	S	0	2	T	0	1	
6	7	P	0	7	5			S	0	1							
6	8	P	0	7	6			S	0	1							
6	9	P	0	7	7			S	0	1							
7	0	P	0	7	8			S	0	1							
7	1	P	0	8	1			S	0	1							
7	2	P	0	8	2			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
7	3	P	0	8	4			S	0	1							
7	4	P	0	8	5			S	0	1							
7	5	P	0	8	7			S	0	1							
7	6	P	0	8	8			S	0	1							
7	7	P	0	8	9			S	0	1							
7	8	P	0	9	2			S	0	1							
7	9	P	0	9	3			S	0	1							
8	0	P	0	9	4			S	0	1							
8	1	P	0	9	5			S	0	1							
8	2	P	0	9	6			S	0	1							
8	3	P	0	9	7			S	0	1							
8	4	P	0	9	8			S	0	1	S	0	2	T	0	1	
8	5	P	0	9	9			S	0	1	S	0	2	T	0	1	
8	6	P	1	0	1			S	0	1							
8	7	P	1	0	2			S	0	1							
8	8	P	1	0	3			S	0	1							
8	9	P	1	0	4			S	0	1	S	0	2	T	0	1	
9	0	P	1	0	5			S	0	1							
9	1	P	1	0	6			S	0	1	S	0	2	T	0	1	
9	2	P	1	0	8			S	0	1							
9	3	P	1	0	9			S	0	1							
9	4	P	1	1	0			S	0	1							
9	5	P	1	1	1			S	0	1							
9	6	P	1	1	2			S	0	1							
9	7	P	1	1	3			S	0	1							
9	8	P	1	1	4			S	0	1							
9	9	P	1	1	5			S	0	1							
100		P	1	1	6			S	0	1							
101		P	1	1	8			S	0	1							
102		P	1	1	9			S	0	1							
103		P	1	2	0			S	0	1							
104		P	1	2	1			S	0	1							
105		P	1	2	2			S	0	1							
106		P	1	2	3			S	0	1							
107		P	1	2	7			S	0	1							
108		P	1	2	8			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number	A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
109	P	1	8	5			S	0	1							
110	P	1	8	8			S	0	1							
111	P	1	8	9			S	0	1							
112	P	1	9	0			S	0	1							
113	P	1	9	1			S	0	1							
114	P	1	9	2			S	0	1							
115	P	1	9	4			S	0	1							
116	P	1	9	6			S	0	1							
117	P	1	9	7			S	0	1							
118	P	1	9	8			S	0	1							
119	P	1	9	9			S	0	1							
120	P	2	0	1			S	0	1							
121	P	2	0	2			S	0	1							
122	P	2	0	3			S	0	1							
123	P	2	0	4			S	0	1							
124	P	2	0	5			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 |

OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
	1	U	0	0	1			S	0	1							
	2	U	0	0	2			S	0	1							
	3	U	0	0	3			S	0	1							
	4	U	0	0	4			S	0	1							
	5	U	0	0	5			S	0	1							
	6	U	0	0	6			S	0	1							
	7	U	0	0	7			S	0	1							
	8	U	0	0	8			S	0	1							
	9	U	0	0	9			S	0	1							
1	0	U	0	1	0			S	0	1							
1	1	U	0	1	1			S	0	1							
1	2	U	0	1	2			S	0	1							
1	3	U	0	1	4			S	0	1							
1	4	U	0	1	5			S	0	1							
1	5	U	0	1	6			S	0	1							
1	6	U	0	1	7			S	0	1							
1	7	U	0	1	8			S	0	1							
1	8	U	0	1	9			S	0	1							
1	9	U	0	2	0			S	0	1							
2	0	U	0	2	1			S	0	1							
2	1	U	0	2	2			S	0	1							
2	2	U	0	2	3			S	0	1							
2	3	U	0	2	4			S	0	1							
2	4	U	0	2	5			S	0	1							
2	5	U	0	2	6			S	0	1							
2	6	U	0	2	7			S	0	1							
2	7	U	0	2	8			S	0	1							
2	8	U	0	2	9			S	0	1							
2	9	U	0	3	0			S	0	1							
3	0	U	0	3	1			S	0	1							
3	1	U	0	3	2			S	0	1	S	0	2	T	0	1	
3	2	U	0	3	3			S	0	1							
3	3	U	0	3	4			S	0	1							
3	4	U	0	3	5			S	0	1							
3	5	U	0	3	6			S	0	1							
3	6	U	0	3	7			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
3	7	U	0	3	8			S	0	1							
3	8	U	0	3	9			S	0	1							
3	9	U	0	4	1			S	0	1							
4	0	U	0	4	2			S	0	1							
4	1	U	0	4	3			S	0	1							
4	2	U	0	4	4			S	0	1							
4	3	U	0	4	5			S	0	1							
4	4	U	0	4	6			S	0	1							
4	5	U	0	4	7			S	0	1							
4	6	U	0	4	8			S	0	1							
4	7	U	0	4	9			S	0	1							
4	8	U	0	5	0			S	0	1							
4	9	U	0	5	1			S	0	1							
5	0	U	0	5	2			S	0	1							
5	1	U	0	5	3			S	0	1							
5	2	U	0	5	5			S	0	1							
5	3	U	0	5	6			S	0	1							
5	4	U	0	5	7			S	0	1							
5	5	U	0	5	8			S	0	1							
5	6	U	0	5	9			S	0	1							
5	7	U	0	6	0			S	0	1							
5	8	U	0	6	1			S	0	1							
5	9	U	0	6	2			S	0	1							
6	0	U	0	6	3			S	0	1							
6	1	U	0	6	4			S	0	1							
6	2	U	0	6	6			S	0	1							
6	3	U	0	6	7			S	0	1							
6	4	U	0	6	8			S	0	1							
6	5	U	0	6	9			S	0	1							
6	6	U	0	7	0			S	0	1							
6	7	U	0	7	1			S	0	1							
6	8	U	0	7	2			S	0	1							
6	9	U	0	7	3			S	0	1							
7	0	U	0	7	4			S	0	1							
7	1	U	0	7	5			S	0	1							
7	2	U	0	7	6			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									D. PROCESSES (2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
7	3	U	0	7	7			S	0	1							
7	4	U	0	7	8			S	0	1							
7	5	U	0	7	9			S	0	1							
7	6	U	0	8	0			S	0	1							
7	7	U	0	8	1			S	0	1							
7	8	U	0	8	2			S	0	1							
7	9	U	0	8	3			S	0	1							
8	0	U	0	8	4			S	0	1							
8	1	U	0	8	5			S	0	1							
8	2	U	0	8	6			S	0	1							
8	3	U	0	8	7			S	0	1							
8	4	U	0	8	8			S	0	1							
8	5	U	0	8	9			S	0	1							
8	6	U	0	9	0			S	0	1							
8	7	U	0	9	1			S	0	1							
8	8	U	0	9	2			S	0	1							
8	9	U	0	9	3			S	0	1							
9	0	U	0	9	4			S	0	1							
9	1	U	0	9	5			S	0	1							
9	2	U	0	9	6			S	0	1							
9	3	U	0	9	7			S	0	1							
9	4	U	0	9	8			S	0	1							
9	5	U	0	9	9			S	0	1							
9	6	U	1	0	1			S	0	1							
9	7	U	1	0	2			S	0	1							
9	8	U	1	0	3			S	0	1							
9	9	U	1	0	5			S	0	1							
100		U	1	0	6			S	0	1							
101		U	1	0	7			S	0	1							
102		U	1	0	8			S	0	1							
103		U	1	0	9			S	0	1							
104		U	1	1	0			S	0	1							
105		U	1	1	1			S	0	1							
106		U	1	1	2			S	0	1							
107		U	1	1	3			S	0	1							
108		U	1	1	4			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number	A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
109	U	1	1	5			S	0	1							
110	U	1	1	6			S	0	1							
111	U	1	1	7			S	0	1							
112	U	1	1	8			S	0	1							
113	U	1	1	9			S	0	1							
114	U	1	2	0			S	0	1							
115	U	1	2	1			S	0	1							
116	U	1	2	2			S	0	1							
117	U	1	2	3			S	0	1							
118	U	1	2	4			S	0	1							
119	U	1	2	5			S	0	1							
120	U	1	2	6			S	0	1							
121	U	1	2	7			S	0	1							
122	U	1	2	8			S	0	1							
123	U	1	2	9			S	0	1							
124	U	1	3	0			S	0	1							
125	U	1	3	1			S	0	1							
126	U	1	3	2			S	0	1							
127	U	1	3	3			S	0	1							
128	U	1	3	4			S	0	1	S	0	2	T	0	1	
129	U	1	3	5			S	0	1							
130	U	1	3	6			S	0	1							
131	U	1	3	7			S	0	1							
132	U	1	3	8			S	0	1							
133	U	1	4	0			S	0	1							
134	U	1	4	1			S	0	1							
135	U	1	4	2			S	0	1							
136	U	1	4	3			S	0	1							
137	U	1	4	4			S	0	1							
138	U	1	4	5			S	0	1							
139	U	1	4	6			S	0	1							
140	U	1	4	7			S	0	1							
141	U	1	4	8			S	0	1							
142	U	1	4	9			S	0	1							
143	U	1	5	0			S	0	1							
144	U	1	5	1			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number	A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
145	U	1	5	2			S	0	1							
146	U	1	5	3			S	0	1							
147	U	1	5	4			S	0	1							
148	U	1	5	5			S	0	1							
149	U	1	5	6			S	0	1							
150	U	1	5	7			S	0	1							
151	U	1	5	8			S	0	1							
152	U	1	5	9			S	0	1							
153	U	1	6	0			S	0	1							
154	U	1	6	1			S	0	1							
155	U	1	6	2			S	0	1							
156	U	1	6	3			S	0	1							
157	U	1	6	4			S	0	1							
158	U	1	6	5			S	0	1							
159	U	1	6	6			S	0	1							
160	U	1	6	7			S	0	1							
161	U	1	6	8			S	0	1							
162	U	1	6	9			S	0	1							
163	U	1	7	0			S	0	1							
164	U	1	7	1			S	0	1							
165	U	1	7	2			S	0	1							
166	U	1	7	3			S	0	1							
167	U	1	7	4			S	0	1							
168	U	1	7	6			S	0	1							
169	U	1	7	7			S	0	1							
170	U	1	7	8			S	0	1							
171	U	1	7	9			S	0	1							
172	U	1	8	0			S	0	1							
173	U	1	8	1			S	0	1							
174	U	1	8	2			S	0	1							
175	U	1	8	3			S	0	1							
176	U	1	8	4			S	0	1							
177	U	1	8	5			S	0	1							
178	U	1	8	6			S	0	1							
179	U	1	8	7			S	0	1							
180	U	1	8	8			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number	A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
							(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
181	U	1	8	9			S	0	1							
182	U	1	9	0			S	0	1							
183	U	1	9	1			S	0	1							
184	U	1	9	2			S	0	1							
185	U	1	9	3			S	0	1							
186	U	1	9	4			S	0	1							
187	U	1	9	6			S	0	1							
188	U	1	9	7			S	0	1							
189	U	2	0	0			S	0	1							
190	U	2	0	1			S	0	1							
191	U	2	0	2			S	0	1							
192	U	2	0	3			S	0	1							
193	U	2	0	4			S	0	1							
194	U	2	0	5			S	0	1							
195	U	2	0	6			S	0	1							
196	U	2	0	7			S	0	1							
197	U	2	0	8			S	0	1							
198	U	2	0	9			S	0	1							
199	U	2	1	0			S	0	1							
200	U	2	1	1			S	0	1							
201	U	2	1	3			S	0	1							
202	U	2	1	4			S	0	1							
203	U	2	1	5			S	0	1							
204	U	2	1	6			S	0	1							
205	U	2	1	7			S	0	1							
206	U	2	1	8			S	0	1							
207	U	2	1	9			S	0	1							
208	U	2	2	0			S	0	1							
209	U	2	2	1			S	0	1							
210	U	2	2	2			S	0	1							
211	U	2	2	3			S	0	1							
212	U	2	2	5			S	0	1							
213	U	2	2	6			S	0	1							
214	U	2	2	7			S	0	1							
215	U	2	2	8			S	0	1							
216	U	2	3	4			S	0	1							CONT. ON NEXT PAGE

EPA ID Number | N | V | D | 9 | 8 | 0 | 8 | 9 | 5 | 3 | 3 | 8 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number	A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									D. PROCESSES (2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
217	U	2	3	5			S	0	1							
218	U	2	3	6			S	0	1							
219	U	2	3	7			S	0	1							
220	U	2	3	8			S	0	1							
221	U	2	3	9			S	0	1							
222	U	2	4	0			S	0	1							
223	U	2	4	3			S	0	1							
224	U	2	4	4			S	0	1							
225	U	2	4	6			S	0	1							
226	U	2	4	7			S	0	1							
227	U	2	4	8			S	0	1							
228	U	2	4	9			S	0	1							
229	U	2	7	1			S	0	1							
230	U	2	7	8			S	0	1							
231	U	2	7	9			S	0	1							
232	U	2	8	0			S	0	1							
233	U	3	2	8			S	0	1							
234	U	3	5	3			S	0	1							
235	U	3	5	9			S	0	1							
236	U	3	6	4			S	0	1							
237	U	3	6	7			S	0	1							
238	U	3	7	2			S	0	1							
239	U	3	7	3			S	0	1							
240	U	3	8	7			S	0	1							
241	U	3	8	9			S	0	1							
242	U	3	9	4			S	0	1							
243	U	3	9	5			S	0	1							
244	U	4	0	4			S	0	1							
245	U	4	0	9			S	0	1							
246	U	4	1	0			S	0	1							
247	U	4	1	1			S	0	1							

10. Map

Attach to this application a topographical map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all spring, rivers, and other surface water bodies in this map area. See instructions for precise requirements.

11. Facility Drawing

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

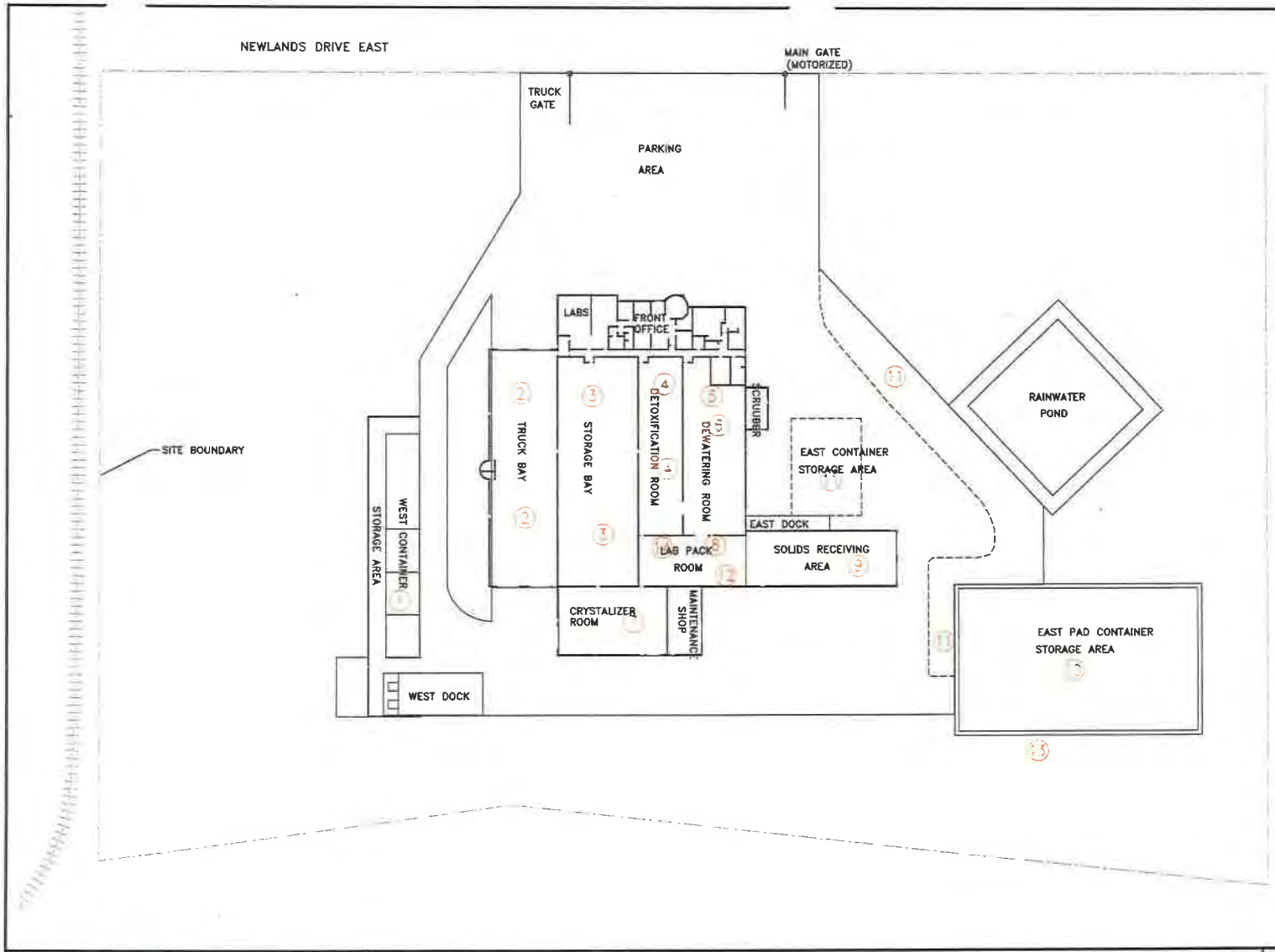
12. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, and disposal areas; and sites of future storage, treatment, or disposal areas (see instructions for more detail).

13. Comments

The facility receives a broad variety of wastes from off-site generators which may described by any combination of the waste numbers shown in Item 9. The estimated annual quantity of waste is based on historical records and on conservative estimates of future waste receipts at the facility. This estimate is intended to reflect all regulated hazardous wastes received, regardless of which waste numbers or treatment processes apply.

Incoming wastes are sorted by the appropriate on-site treatment process, which are described in Sections B, C and D of the Part B permit application. Wastes may also be sent off-site for additional management options, including solvent recycling, wastewater treatment/discharge, fuel blending, incineration, stabilization/solidification, and land disposal.



CURRENT SWMU's

1. WEST PAD CSA
2. TRUCK BAY CSA
3. TANK STORAGE BAY
4. DETOX AREA TANKS
5. DEWATERING AREA TANKS
6. DEWATERING FILTER PRESSES
7. CRYSTALLIZER
8. LAB PACK ROOM
9. SOLIDS RECEIVING AREA
10. EAST PAD CSA
11. EAST CSA

FORMER SWMU's

12. DRYERS, BALER
13. RAIN WATER POND
14. SHREDDER

Note:
1. Constructed in 1999
2. Constructed in 1986
3. Acid Const. in 2009, other in 1986
4. Constructed in 1986
5. Constructed in 1986
6. Const. date unknown
7. Current crystalizer const. 2005
8. Constructed in 2009
9. Const. date unkown.
10. Const. date unkown.
11. Const. date unkown.
12. Baler removed from service 2009. Dryer removed ~2000
13. Removed 2008
14. Shedder removed in 2009

0 36 72
FEET

PSC

TITLE:
PSC Fernley Facility
Facility Site Plan and Solid Waste Managment Units
Fernley, Nevada

DWN: dtb	DES.:	PROJECT NO.:
CHKD:	APPD:	FIGURE NO.: A1-1
DATE: 7/10/12	REV.:	

ALLEN BIAGGI, *Administrator*

(775) 687-4670

ninistration
acsimile 687-5856

Water Pollution Control
Facsimile 687-4684

Mining Regulation and
Reclamation
Facsimile 684-5259

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Waste Management
Corrective Actions
Federal Facilities

Air Pollution Control
Air Quality Planning
Water Quality Planning

Facsimile 687-6396

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

333 W. Nye Lane, Room 138
Carson City, Nevada 89706

Mr. John Wolf
Philips Services Corp. (dba 21 EMI)
2095 E. Newlands Drive
Fernley, Nevada 89408

November 25, 2002

Subject: Division approval of Written Determination for Silver Recycling Operation

Reference: Written Determination applications of 6/14/2002, revised 9/10/2002 and public notice of 9/17/2002

Dear Mr. Wolf:

The Division has reviewed your application for a written determination of recycling activity. The Division requested public input to the application on September 17, 2002. No comments were received. Based on the Division's evaluation of the application, the silver recycling process you propose qualifies as recycling under NAC 444.8437 and is herein granted a written determination of recycling.

This written determination is provided in accordance with NAC 444.8455 and NAC 444.84555 and is limited to the recycling of silver in spent fixer from x-ray film and photograph processing as described in the information submitted with your application. Any inaccuracies in this information may be grounds for termination or modification of this determination and potential enforcement action.

This determination shall remain in effect until such time that it is suspended, revoked and/or reissued, or terminated by the Division. The Division reserves the authority to review and modify this determination at any time.

The Division has accrued 11.5 hours in the process and review of your application. Based on a review fee of $50 per hour, 21 EMI owes $575^{00} to the NDEP. Please pay this amount to "Nevada Division of Environmental Protection" within 30 days of receipt of this letter. Please include a cover letter with your check stating that payment is for "hazardous waste application review fee."

Please contact Jon Taylor at (775) 687-9477 or jtaylor@ndep.nv.gov with any questions regarding this determination.

Sincerely,

David Emme
Chief, Bureau of Waste Management

JT:DE:nap

Figure A1-5
Silver Recovery Determination

West Pad Container Storage Area

Truck Bay

Storage Bay (facing South)

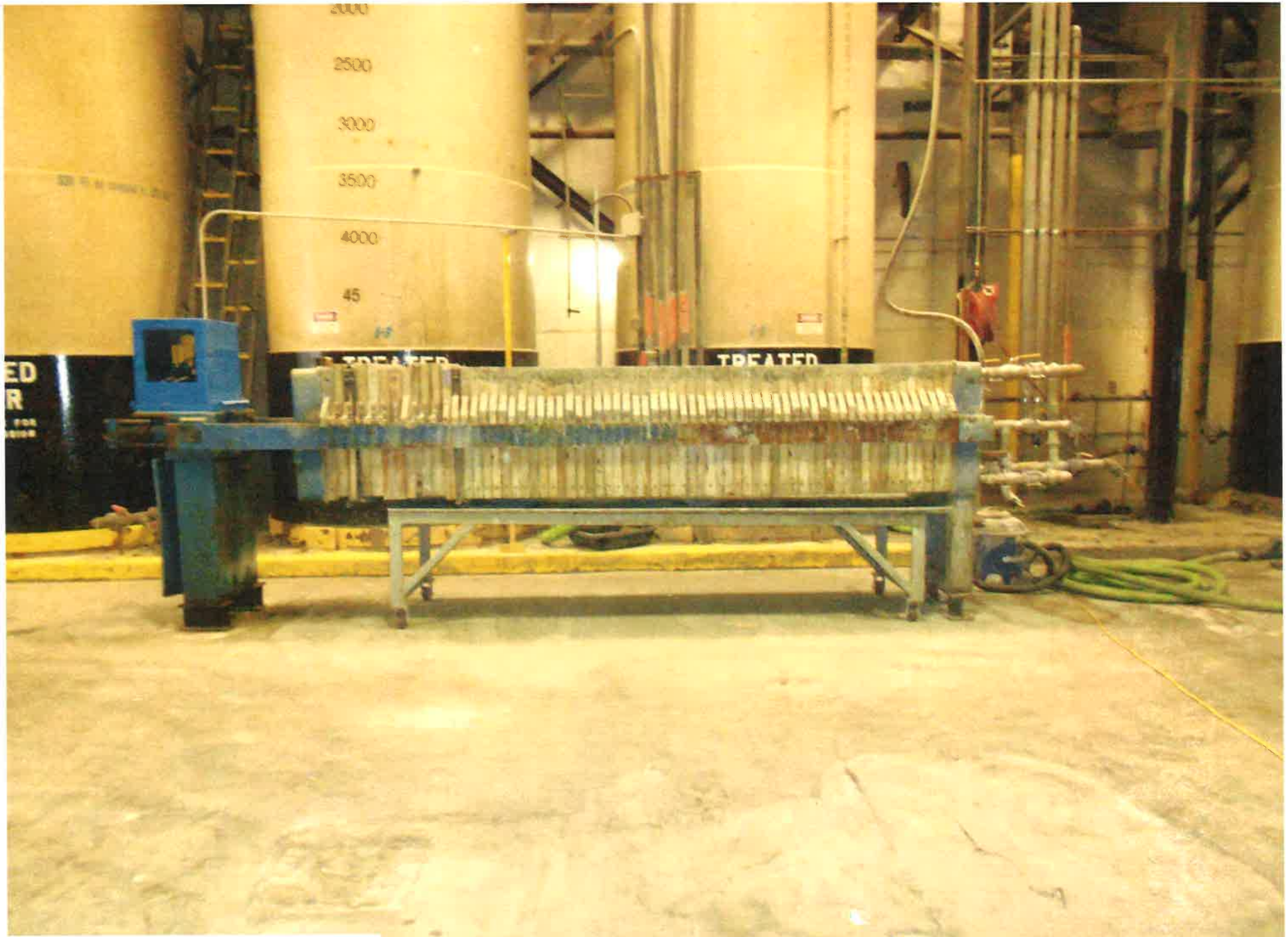
Storage Bay (facing North)

Detox Room (facing North)

Detox Room (facing South)

Dewatering Room (facing North)

Filter Press (Dewatering Room)



Filter Press (Dewatering Room)

Lab Pack Room

Crystallizer

Solids Receiving Area

East Pad Container Storage Area

East Container Storage Area

East Container Storage Area (facing West)

SECTION B
FACILITY DESCRIPTION AND GENERAL PROVISIONS

SECTION B FACILITY DESCRIPTION AND GENERAL PROVISIONS

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B1.0 GENERAL FACILITY DESCRIPTION

40 CFR 270.14(b)(1)

Facility Name	Facility Operator
PSC Fernley Facility	21st Century Environmental
2095 Newlands Drive East	Management of Nevada, LLC
Fernley, Nevada 89408	2095 Newlands Drive East
Phone (775) 575-2760	Fernley, Nevada 89408
EPA ID No. NVD980895338	Phone (775) 575-2760

The PSC Fernley facility is located at 2095 Newlands Drive East, in the city of Fernley, Lyon County, Nevada, Section 8, Township 20N, Range 25E (Latitude 39 36'34", Longitude -119 12'10"). The plant is approximately 35 miles east of Reno in the town of Fernley, NV. Refer to Figure B1-1, Fernley Facility Location Map. The facility consists of approximately 10 acres. Hazardous waste operations occur on approximately 7 acres. Land use for the facility is permitted and zoned by the City of Fernley as M1, Heavy Industrial.

The PSC Fernley facility is a commercial hazardous waste treatment, storage and recycling facility. Typical wastes managed at the facility include acids, alkalines, metal-bearing aqueous liquids and sludges, cyanides, batteries, and household hazardous wastes. The facility can receive store and process wastes in either bulk loads or containers. Wastestreams with greater than 500 ppm Volatile Organic Compounds (VOC) or 100,000 ppm Total Organic Compounds (TOC) will be accepted for container storage only and will not be treated or stored in the tank systems with the exception of trichloroisocyanuric and dichloroisocyanuric acid in Tanks T-4 through T-7. Detailed information regarding incoming wastestreams is presented in Section C, Waste Characteristics. Treatment processes are summarized in Section B1.6, Detailed Process/Activity Descriptions. Refer to Section B1.5, Facility Operations, and Section D, Process Information, for detailed descriptions of hazardous waste operations.

B1.1 Facility Owner/Operator

The facility operates as the PSC Fernley facility. The site was constructed and was originally operated by ETICAM, which was purchased by 21st Century EMI in 1994. In 1997 Philip Services Corp. purchased 21st Century EMI, which remained the facility's

legal entity. Philip Services Corporation underwent corporate restructuring between 2000 and 2008 and the parent company is now named PSC Environmental Services, LLC (PSC). The Fernley facility's legal entity, as a result of the restructuring, is 21st Century Environmental Management of Nevada, LLC. The facility will be referred to throughout this renewal application as the PSC Fernley facility, or the Fernley facility.

B1.2 Fernley Facility History

The area used for PSC Fernley facility's operations was naturally vegetated prior to 1986. In 1984 ETICAM initiated construction of the facility. Construction was completed in 1986 and included an industrial building of approximately 100,000 square feet and paving for storage and parking areas. The building includes administrative offices, an on-site laboratory, process areas, container storage areas and treatment and storage tanks. The facility has operated as a treatment, storage and recycling facility since 1986. More detailed descriptions of the facility and waste management areas are incorporated in Section D, Process Information.

B1.3 Plant Management

The Operations Manager is responsible for day-to-day operations at the Fernley Facility. The Operations Manager's duties include: managing personnel requirements, scheduling and coordinating plant production and material flow, developing job safety practices, ensuring day-to-day compliance with all applicable regulations and permits, maintaining all required documents and records, and implementing and coordinating Contingency Plan procedures. The Operations Manager reports to the Facility Manager, who in turn reports directly to the Regional Vice President. Refer to Section H, Personnel Training, for detailed job descriptions of all positions involved in hazardous waste management operations at the facility.

B1.4 Summary of Waste Types Listed in the Part A

Waste types accepted at the Fernley Facility are listed in the Part A Permit Application (Section A) and are discussed in detail in Section C, Waste Characteristics. The estimated annual quantity of wastes received is indicated in the Part A form.

B1.5 Facility Operations

Current hazardous waste operations at the facility occur on approximately 7 of the 10 acres. Facility Site Plan is provided in Figure B1-2. Hazardous waste container storage operations are conducted with segregated storage for incompatible wastes. Liquid container storage areas have adequate secondary containment. Containers with free liquids (and EPA waste codes F020, F021, F022, F023, F026, and F027) are prohibited in container storage areas without secondary containment, except for the East Pad Container Storage Area and the East Container Storage Area when secondary containment pallets are used. Prior to storage in areas without secondary containment, containers are visually inspected for the presence of free liquids. If free liquids are not detected in the visual inspection, a paint filter test is conducted. All tank storage and treatment operations at the facility are conducted on concrete secondary containment pads. A more detailed description of operations is found in Section D, Process Information.

B1.5.1 Container Storage Operations

Container storage operations are conducted both indoors and outdoors with segregated storage for incompatibles. The outdoor storage areas for solids (East Container Storage Area and East Storage Pad Container Storage) consist of paved segregated storage cells. The outdoor storage area for liquids (West Pad Container Storage Area) consists of bermed concrete containment systems with segregated storage cells. The concrete cells are sloped to sumps to collect spills. Containers holding EPA waste codes F020, F021, F022, F023, F026, and F027 will not be placed in the East Pad Container Storage Area and the East Container Storage Area.

Indoor storage area for liquids (Truck Bay Container Storage Area) consists of segregated storage areas with bermed concrete containment systems. Concrete floors are sloped to sumps to collect spills. Waste material is staged in process areas prior to treatment or blending.

A more detailed description of structure of the storage areas and container management operations is in Section D, Process Information. Wastes in containers are processed and consolidated as described in Section B1.6, Detailed Process/Activity Descriptions.

Unloading/Loading operations occur in the Truck Bay, on the East Pad and West Container Storage Pad. Wastes received at the facility are confirmed for container contents and are segregated in storage according to compatibility (see Section C2.0 Waste Analysis Plan). Wastes in containers are processed and consolidated as described in Section B1.6, Detailed Process/Activity Descriptions.

B1.5.2 Tank Storage and Treatment Operations

Bulk wastes intended for tank storage and/or treatment enter the facility in tanker trucks and dump trucks. Wastes received in containers also may be consolidated for tank storage and/or treatment, including compatible solids, liquids and sludges generated from depacking/consolidation activities in the Lab Pack Area. An initial material screening is performed to verify the accuracy of the shipment manifest and the waste generator profile. This screening also may be used to determine the appropriate storage vessel or container storage area for the waste (refer to Section C2.0, Waste Analysis Plan). Once it has been determined that the waste is acceptable and into which tank or storage area the material is to be stored, bulk trucks are unloaded in the Truck Bay. Uses and capacities for hazardous waste storage and treatment tanks are shown in Tables D2-1, Tank Uses and Material of Construction and D2-2, Tank Design Information. For a description of all tanks located at the facility, refer to Section D2.0, Tank System.

Roll-off staging occurs in the East Container Storage Area. For the location refer to Figure B1-2.

B1.6 Detailed Process/Activity Descriptions

This section describes the processes and activities used to manage wastes at the facility. Treatment of wastes includes chemical and physical treatment. Refer to Appendix C-1 for waste characterization data that is representative of the waste streams handled at the facility. Specific processes used to manage wastes at the facility include:

- Chemical Oxidation, Reduction, and Precipitation
- Cyanide Destruction
- Dewatering
- Evaporation

- Filtration
- Lab Packing and Loose Packing
- Neutralization

B1.6.1 Process Descriptions

For each of the processes described below, wastes for tank treatment are analyzed to ensure compatibility and the appropriate volume of treatment chemicals to prevent any uncontrolled reactions (See Section C2.4, Incoming Waste Procedures). Transfer of wastes into the tanks occurs only after sampling and acceptance procedures in the Waste Analysis Plan are completed. All storage tanks at the facility are dedicated to a specific waste type service (acid, alkaline, cyanide, etc.). Wastes are tested for compatibility with wastes already in a tank prior to being introduced to the same tank.

Chemical Oxidation

Chemical Oxidation refers to a reaction is which a substance loses electrons (is oxidized) by action of an oxidizing agent which gains electrons (is reduced). Oxidation and reduction reactions always occur simultaneously. Oxidation is useful in breaking down chelating agents, phenolic compounds and emulsions. The facility uses a variety or agents to carry out chemical oxidation.

Chemical Precipitation

Chemical precipitation is applied to metal-containing wastes to chemically convert metal compounds from a soluble to an insoluble form and then to remove the precipitate by settling and decanting. This process is aided by flocculation. The term chemical precipitation refers to both the primary step of forming chemical precipitates as well as follow-up operations that separate the solid precipitate from the liquid.

The general process chemistry for hydroxide precipitation used at the facility for metal precipitation is as follows:

$$M^{n+}\ nOH^{-} \Rightarrow M(OH)_n \text{ (precipitate)}$$

Some of the precipitating agents that could be used include: sodium hydroxide, calcium hydroxide, magnesium hydroxide, and magnesium oxide. For example:

$Cu^{2+} + 2NaOH \Rightarrow 2Na^{+} + Cu(OH)_2$ (precipitate)
$Cu^{2+} + Ca(OH)_2 \Rightarrow Ca^{2+} + Cu(OH)_2$ (precipitate)
$Cu^{2+} + Mg(OH)_2 \Rightarrow Mg^{2+} + Cu(OH)_2$ (precipitate)
$Cu^{2+} + MgO + H_2O \Rightarrow Mg^{2+} + Cu(OH)_2$ (precipitate)

Other chemicals may be used based on the particular constituents of the wastestream being treated.

Chemical Reduction

Chemical reduction is a process which is used at the facility for converting hexavalent chromium (Cr^{+6}) to trivalent chromium (Cr^{+3}) by addition of a reducing agent. The primary reducing agents used are sodium bisulfite ($NaHSO_3$) or sodium metabilsulfite ($Na_3S_2\ O_5$). Other reducing agents, such as sodium borohydride, hydrazine, ferrous sulfate, and sodium thisosulfate may also be used.

Chemical reduction is also used to destroy strong oxidizing materials such as chlorates, perchlorates, persulfates, inorganic peroxides, nitrates and hypochlorites.

Sodium bisulfite reacts with water to form sulfurous acid (H_2SO_3):

$NaHSO_3 + H_2O \Rightarrow H_2SO_3 + NaOH$

The sulfurous acid reduces chromium (Cr^{+6}):

$2H_2CrO_4 + 3H_2SO_3 \Rightarrow CR_2(SO_4)_3 + 5H_2O$

The theoretical amount of sulfurous acid required to reduce a given amount of chromium can be calculated from this equation. The optimum efficiency of chromium reduction occurs at pH 2 to 3 with agitation of the mixtures. Chromium (CR^{+3}) has a low solubility at a high pH, and can be precipitated as chromic hydroxide by the addition of sodium hydroxide or calcium hydroxide (lime).

Cyanide Destruction

Cyanide destruction through alkaline chlorination is a well-established technology for the destruction of simple cyanide compounds. In wastewater, cyanide usually exists as CN and HCN, or in the form of metal cyanate complexes, most commonly ferrocyanide, Fe of HCN, is pH dependent. For instance, at pH 7.0 and below, all of the cyanide reduces to $[Fe(CN)_6]^{-4}$ or ferricyanide $[Fe(CN)_6]^{-3}$.

The ionization exists as HCN. At pH 11.5 and above, all of the cyanide exists as CN. Cyanide removal is achieved by raising the pH of the wastewater and dosing with chlorine or an oxidizing agent. In an alkaline environment (pH >10), cyanide is oxidized to cyanate according to the following reaction:

$$NaCN + OCl \Rightarrow CNO + NaCl$$
$$NaCN + OCl + H_2O \Rightarrow Na^+ + 2OH^- + CNCl$$
$$Na^+ + 2OH + CNCl \Rightarrow CNO = H_2O + NaCl$$

The oxidation of cyanides to cyanogen chloride (CNCl) occurs instantaneously at all pH levels. The hydrolysis of CNCl to cyanate occurs slowly at pH levels near 7.0, but increases rapidly at pH values near 9.0. Because cyanogen chloride is a highly toxic gas, it is important to hydrolyze it quickly to avoid large concentrations in solution. Therefore, first stage chlorination is done at pH levels of 11.5 or above to immediately hydrolyze cyanogen chloride and prevent release of hydrogen cyanide gas.

Cyanate undergoes further oxidation with excess alkali in the presence of free chlorine:

$$2CNO + 3OCl + H_2O \Rightarrow 2CO2 + 3Cl^- + N_2 + 2OH^-$$

The cyanide destruction process is also referred to as the Detoxification (Detox) process at the PSC Fernley facility. Due to the highly toxic nature of cyanide, special care must be taken when handling cyanide-bearing wastestreams. A summary of the hazards associated with cyanide is provided in Table G1-2, and cyanide-specific PPE requirements are provided in Table F3-2.

<u>Dewatering</u>

Dewatering is a filtration process wherein suspended and/or precipitated solids are separated from the liquid phase (filtrate). Filtration is the separation of a heterogeneous

mixture of fluids and suspended solids by a filter medium that permits the flow of the fluid through the medium, but retains the particles. This process is used to dewater and reduce the volume of sludges formed in the metals precipitation and settling processes. Refer to sections D for details on the existing filter presses.

Evaporation

Evaporation is the process to precipitate dissolved solids from water. This is accomplished by concentrating the salts above their solubility limits by water removal through evaporation. Materials for evaporation include filtrate from dewatering, collected stormwater and qualifying wastestreams.

Lab Packing and Loose Packing

Lab packing is used to manage an accumulation of small container quantities of wastes through inventory, identification, classification, segregation, packaging, documentation, transport, and disposal. A lab pack is an overpack container of smaller DOT-compatible containers subject to the shipping requirements of 49 CFR 173.12(b). The packaging is done in a manner to ensure no breakage or leaking occurs during transportation or disposal. Lab packs are shipped with an inventory packing list that identifies each individual container by trade name or chemical composition, physical state, EPA waste code(s), and quantity of material. Lab packs are depacked, repacked, and/or consolidated at the facility for shipment to a final facility or treatment onsite. The facility lab packs a variety of wastes typically including laboratory wastes and household hazardous wastes (HHW) that require special handling.

Loose packs are managed in similar manner to lab packs, but are not subject to the same DOT shipping and packaging requirements. Loose packs differ from lab packs in that the smaller inner containers are all of the same type (e.g. oil-based paint cans, aerosol cans, latex paint cans, etc.) and are sorted for final disposal option by DOT hazard class at the collection site. Since the individual containers are all of the same type in loose packs, the outer hazardous waste marker provides the necessary content information to manage the waste. This information typically includes the proper DOT shipping name and applicable EPA waste code(s). Loose packs are typically assembled at a household hazardous waste collection event or a large retail store.

Compatible solids, liquids and sludges generated from depacking/consolidation activities in the Lab Pack Area may be consolidated for tank storage and/or treatment.

Neutralization

Neutralization occurs at the equivalence point of an acid-base reaction. The equivalence point is not necessarily attained at pH 7.0. A strong acid reacting with a weak base will result in a pH less than 7.0. The acid-base reaction is carried out by the addition of alkaline wastes, lime (calcium hydroxide), sodium carbonate, sodium bicarbonate, calcium carbonate, sodium hydroxide, sodium bisulfate, or magnesium hydroxide (for acids) and acidic wastes, sulfuric acid, or hydrochloric acid (for bases).

B2.0 TOPOGRAPHIC MAPS

40 CFR 270.14(b)(19)

A topographic map of the facility and surrounding areas is found in Figure B2-1. This map depicts the boundaries of the facility, which includes all structures and activities involved with the management of hazardous waste and support functions required by the hazardous waste regulations. The indicated contour intervals are two feet, as required in 40 CFR 270.14(b)(19) for facilities in relatively flat terrain. Map scale is 200' per inch, and all elevations shown are referenced to the North American Vertical Datum of 1988 (NAVD).

The required scale and contour intervals make it impractical to legibly show all of the facility features and information required in the regulations for this map. So some information required for this map has been split out and shown more clearly on separate maps. Each figure listed in this section highlights certain features, including adjacent land use, local wind patterns, stormwater drainage patterns, hazardous waste treatment and storage units, and fire control facilities. The location of the facility in relation to the greater Fernley area was previously depicted in Figure B1-1, Fernley Facility Location Map.

Land use in the vicinity of the facility, which was obtained through a visual survey of the surrounding properties and a review of the city zoning code, is shown in Figure B2-2. Almost all land immediately adjacent to the facility is used for industrial purposes, with the exception of two commercial properties located to the north.

Figure B2-3, Local Wind Patterns and Vicinity Map, includes a wind rose depicting local wind patterns and a map depicting the facility's location in relation to the closest weather station in the Fallon Area. Prevailing winds are from the north and northwest during the majority of the year. During November, December and January prevailing winds are from the south.

Stormwater drainage patterns and the on-site storm water system are shown in Figure B2-4 (also see Appendix D-3). The West Container Storage Area is equipped with sumps to contain precipitation from a 25 year 24 hour storm. Collected run-off from all other active areas of the facility drains to a solar evaporation pond. Run-on from non-process areas to hazardous waste management areas is prevented by secondary containment system curbs and the elevation (above grade level) of the concrete pads beneath each hazardous waste handling area. Stormwater in waste management areas is prevented from run-off to non-process areas (as described in Sections D1.3.3 and D2.3.2, Containment System Capacity and Drainage Control).

Figures B1-2 and A1-1 depict the location of existing hazardous waste management units. These units include tank systems, treatment areas, container storage pads, and load/unload pads.

Figure B2-5 depicts the location of the existing fire control facilities, such as hydrants and extinguishers on site. The Fernley facility does not discharge any stormwater to the sewer system, all collected stormwater drains to an evaporation pond. The locations of sanitary and stormwater sewers are not shown on the topographic map and supplemental figures.

No surface waters or intermittent streams are found on-site or within 1,000 feet of the facility boundary; therefore features of this type are not included on the figures referenced in this section. The closest waterway is approximately 1.5 miles away. Groundwater monitoring wells are shown in Figures 2 and 6 in Section E.

The facility is also not located within a 100-year floodplain. The location of the nearest 100-year floodplain is shown on Figure A1-4 Flood Plain Designation Map for Lyon County. As such, there are no flood control barriers located within or in the immediate vicinity of the facility.

B3.0 LOCATION INFORMATION

B3.1 Seismic Considerations

40 CFR 264.18(a), 270.14(b)(11)(i), (ii)

There are no faults, nor is there evidence of Holocene displacement within 200 feet of the facility. Figure A1-3 shows the location of Holocene displacements in Lyon and Storey Counties and the PSC Fernley facility.

B3.2 Flood Plain Standard

40 CFR 264.18(a), 270.14(b)(11)(iii)

The facility is located in Zone X, outside both 100 and 500-year floodplains, as indicated in the Flood Insurance Rate Map of the Federal Emergency Management Agency, County Panel No. 3200290055C dated 11/20/98 (see Figure A1-4 Flood Plain Designation Map for Lyon County).

B4.0 TRAFFIC INFORMATION

40 CFR 270.14(b)(10)

Traffic in the operational facility area, is restricted to waste transportation vehicles, intra-facility operational equipment such as forklifts, and service vehicles as needed. All other vehicles (e.g., employee and visitor) are required to remain outside of the active facility (see Section F1.1, Barriers and Means to Control Entry).

Wastes are transported to and from the existing facility in tank trucks, trucks (e.g., roll-off boxes, intermodals, end dumps), flat beds, and vans. Tank trucks carry bulk liquids and sludges and have approximate capacities of 2,000 to 8,200 gallons, bulk solids are transported in trucks (e.g., roll-off boxes, intermodals, end dumps) with approximate capacities of 10 to 30 tons. Liquid and solid containerized material is transported by flat beds and vans with approximate capacities of 20 to 96 drums or 2 to 20 totes.

Waste shipments are pre-scheduled when possible to avoid back-ups and delays. All incoming and outgoing hazardous waste loads are recorded by the internal waste

tracking system and are manifested per Nevada Division of Environmental Protection (NDEP) and Department of Transportation (DOT) regulations.

Personnel and drivers are familiarized with the general facility site plan and traffic patterns. Waste transportation drivers are directed and guided by facility personnel into the designated load/unload area. Forklift operators are trained and certified (see Section H, Personnel Training).

B4.1 On-Site Traffic Volumes and Patterns

B4.1.1 Traffic Volumes

The average weekly traffic volumes on-site are summarized in Table B4-1. The data presented in the table was calculated from historical records (waste receipts and manifests), the capacities of the hazardous waste management units, and the anticipated volume of waste coming into the facility. Peak periods of incoming and outgoing transportation activity currently occur during the hours of 10:00 to 11:00 am and 3:00 to 5:00 pm.

B4.1.2 Traffic Patterns

The traffic patterns for waste transportation vehicles and intra-facility operational equipment are described in the following paragraphs and depicted in Figure B4-1, Facility Traffic and Access Controls. The figure also clearly identifies the paved portions of the facility and differentiates between concrete and asphalt.

Waste transportation vehicles enter the facility through the main gate on the north side of the facility, and the truck gate on the northwest side of the facility, both of which are accessed from Newlands Drive. Vehicles will follow the directions of facility personnel and adhere to traffic control signs at all times. If the vehicle's load/unload destination is occupied the vehicle will pull up next to the load/unload area and wait for the next available opportunity to be loaded/unloaded. Vehicles leaving load/unload pads will exit the facility through the nearest exit gate, or as directed.

Vehicles accessing the East Container Storage Area Unload/Load Area enter through the main gate. Trucks back alongside the east side of the offices to the loading dock

using a spotter. Once off-loaded trucks can pull straight forward and exit the facility through the main gate.

Vehicles accessing the West Container Storage Pad Unload/Load Area enter through the truck gate and proceed on the west driveway. Trucks can then back into the West Pad Container Storage Area Receiving Dock. Off-loaded trucks can then pull straight forward and proceed around the south and east sides of the building, exiting through he main gate.

Vehicles accessing the Solids Receiving Area enter through truck gate proceed along the west and south portions of the facility. The trucks then back into the Solids Receiving Area and pull out and exit through the main gate.

B4.2 On-Site Traffic Control

On-site traffic is controlled by scheduling waste shipments, controlling access to waste management areas, using established traffic routes, and traffic control signs. These measures and procedures are described in the following paragraphs.

To avoid backups and delays, waste transportation vehicles are pre-scheduled for arrival or pick-up when possible, and the vehicles are directed to the proper loading/unloading or operational area by facility personnel. If a back-up in waste transport vehicles does occur, they can be staged in the north lot of the facility.

Access to the facility is regulated at the main gate for waste transporters and at the office building for visitors. Visitors are required to sign-in at the office before entering the waste management area of the facility and are either escorted or under observation by PSC Fernley facility personnel while in these areas.

Traffic control signs are posted throughout the facility. These signs include “Stop”, “No Parking”, “Approach with Caution”, “Speed Limit 10 MPH”. Additional signs are used to designate employee, visitor, and truck entrances and parking areas (see Figure B4-1, Facility Traffic).

B4.3 Transportation Routes To/From the Facility

Vehicles transporting waste to and from the facility primarily utilize Interstate 80 (I-80). Eastbound and westbound traffic use Exit 48 from I-80 to turn south onto state Hwy 95A. Approximately .3 miles from I-80, vehicles turn east onto Newlands Drive. The facility is located approximately 1 mile east of the 95A intersection on the south side of Newlands Drive.

B4.4 Roadway Surfaces

The roadways and parking areas within the facility are composed of asphalt. The roadways are constructed (with subgrade and compacted base) to handle the maximum load limits of waste transportation vehicles (80,000 lbs gross). These roadways have sustained heavy truck traffic since construction in approximately mid-1980s. Significant roadway failure has not occurred since the Fernley facility began operations on the site in 1986. The term “significant failure” is defined as any major failure of the subgrade, base, or surface courses which would impede the flow of traffic. This may occur as a result of water saturation of the base or subgrade. The design of these roadways has been demonstrated to be sufficient to withstand expected loads. The PSC Fernley facility maintains the asphalt roadways and surfaces ensure adequate access for emergency equipment. Maintenance, including grading and filling holes, is performed on an as-needed basis. The speed limit on facility roads is 10 miles per hour. Design specifications of the load/unload pads are described in Appendix D-1, Engineering Designs.

Surrounding public roadways are constructed of asphalt and are under the jurisdiction of Lyon County, the City of Fernley, and the Nevada Department of Transportation. Load limits are established by the Nevada State Department of Transportation. The maximum gross vehicle weight of all loaded vehicles leaving the facility does not exceed the 80,000 lb limit.

B5.0 PERFORMANCE STANDARDS

B5.1 Prevention of Degradation to Groundwater and Surface Water Quality

All waste management areas of the facility are conducted on paved or concrete containment areas designed to contain any spills and to prevent run-on and run-off of stormwater. Contact and non-contact stormwater falling on impervious surfaces drains

to solar evaporation ponds. Residual sludges from the evaporation pond are treated as hazardous waste.

B5.2 Prevention of Degradation of Air Quality

Degradation to air quality is prevented through the use of air pollution control equipment as described in Section D, Process Information. Emissions are modeled and annual reports are submitted to the Bureau of Air Quality, Nevada Division of Environmental Protection. All outdoor storage activities will be conducted to minimize dust. Organic containers stored on the West Container Storage Pad will remain closed except when sampling in accordance with 40 CFR 264.173 and to minimize the volatilization of organics.

B5.3 Prevention of Destruction or Impairment of Flora and Fauna

Destruction or impairment to flora and fauna is prevented through safe handling of hazardous materials. A six foot chain link fence surrounds the facility and creates a barrier to wildlife. All waste management activities are conducted on paved or concrete portions of the facility and run-on and run-off from the facility is prevented by berms. Contact stormwater drains to solar evaporation ponds or is collected in blind sumps. In the event of a release of hazardous materials to the environment, the contingency plan will be implemented to control and mitigate any release.

B5.4 Prevention of Excessive Noise

The generation of excessive noise is not anticipated at the Fernley facility. Operation of the facility generates routine noise associated with equipment operation (primarily during regular working hours) and truck traffic (primarily during peak traffic periods on weekdays, approximately 7:00 a.m. to 10:00 a.m. and 2:30 p.m. to 4:30 p.m.). Short-term noise may also be created by the activation of emergency alarms. These impacts will be confined largely to on-site areas, and are not expected to be excessive relative to existing background noise levels.

B5.5 Prevention of Negative Aesthetic Impacts

The scale and appearance of the facilities are in keeping with the nature of surrounding conditions. Structures are warehouse-style prefabricated metal buildings, manufactured in neutral colors to reduce glare.

B5.6 Prevention of Soil Instability

The relatively flat topography of the site and existence of paved surfaces on site contribute to erosion control methods. Waste management areas are designed to prevent run-on or run-off.

B5.7 Prevention of Endangerment of the Health of Employees or the Public Near the Facility.

Endangerment to public health is avoided through safe working practices to prevent releases of hazardous material to the environment. In the event of a reportable release of hazardous materials to the environment, the contingency plan will be implemented. The contingency plan details notification, mitigation, evacuation, control and clean-up procedures. The contingency plan is discussed in greater detail in section G, Contingency Plan.

Endangerment to the health of employees is avoided by safe working practices to prevent exposure to hazardous materials. Employees are trained safe working practices and proper personal protective equipment for job duties. The PSC Fernley facility training program is included in Section H, Personnel Training.

B6.0 BUFFER MONITORING ZONE REQUIREMENTS

B6.1 Ignitable or Reactive Wastes in Tanks

40 CFR 264.198(3)(b)

All tank systems in the facility meet the requirements for National Fire Protection Association (NFPA) Maintenance of protective distances between waste management areas and public ways, streets, alleys and adjoining property.

B6.2 Ignitable or Reactive Wastes in Containers

40 CFR 264.176

All container storage areas are located at least 50 feet from the facility's property line.

B7.0 SPILLS AND DISCHARGES INTO THE ENVIRONMENT

In the event of an unplanned, sudden or non-sudden release of hazardous wastes or hazardous waste constituents to air, soil or surface water, the PSC Fernley facility will implement the Contingency Plan. The objective of the contingency plan is to minimize and prevent hazards to public health or the environment from spills, leaks, fires, and explosions.

B7.1 Notification

Notification procedures are found in the Contingency Plan, Section G of this application. The PSC Fernley facility will report any reportable spill or leak from the tank system or secondary containment to the Director of the Nevada Division of Environmental Protection. A leak of material weighing less than one pound that is immediately cleaned up need not be reported. Reporting is not required for releases that are contained within a secondary containment system.

B7.2 Migration and Control

In the event of a release to the environment, the Fernley facility will initiate measures to control and prevent the migration of hazardous materials. All operations personnel receive training in the containment and control procedures described in the contingency plan (see section H, Personnel Training). Procedures to contain releases of hazardous materials are described in the Contingency Plan, section G.

B7.3 Clean up and Management of Released Waste and Contaminated Materials

Clean-up of the released hazardous waste and associated contaminated materials will be initiated once containment and control of the substance have been achieved. Released wastes and containment and control of the substance have been achieved. Released wastes and contaminated media will be treated as hazardous waste.

Contaminated Personal Protective Equipment and other equipment will be disposed of as hazardous wastes, or decontaminated and reused.

B7.4 Restoration of Impacted Areas

Impacted areas will be monitored or sampled after a release. Response activities will be determined based on the level of contamination in the impacted area.

B8.0 MANIFEST SYSTEM

Manifesting will be required and completed for all incoming and outgoing hazardous materials and waste as specified in the 40 CFR 264.71, 264.72 and 264.76.

A hazardous waste manifest is a document used to identify hazardous wastes that are being transported and to track hazardous wastes from point of generation to disposal/reuse – “cradle to grave”.

B8.1 Procedures for Receiving Shipments

Upon receipt of a shipment, the manifest is reviewed for container count accuracy, completeness, legibility, multiple line item waste compatibility and proper DOT and RCRA description in compliance with the generator’s profile. Upon completion of the manifest review, the Waste Acceptance Certification section of the manifest (Section #20) will be signed, dated and distributed in compliance with Federal and State manifest requirements.

Once the manifest is signed off, waste Check-In procedures are initiated. Waste Check-in includes visual inspection, sampling and placement of container tracking labels. A copy of the manifest, sample and Waste Receipt Preview Form are given to the lab for analysis and tracking procedures. The laboratory reviews the manifest against the profile and analytical results to ensure adequate waste code designation.

Once the shipment contents are confirmed to match the manifest, profile and facility receiving criteria, shipments are released for storage and treatment. Incoming waste shipment procedures are further detailed in Section C, Waste Characteristics.

B8.2 Response to Significant Discrepancies

If a significant manifest discrepancy is detected during the manifest review or check-in procedures, the generator or transporter will be contacted to reconcile the discrepancy. Significant are discrepancies found in 40 CFR 264.72.

1. Variations greater than 10 percent in weight for bulk loads
2. Any variation in piece count for batch waste
3. Obvious differences in waste type (such as waste solvent substituted for acid)

Resolved discrepancies will be noted in Discrepancy Indication Space (section #18) of the manifest. If the facility is unable to resolve a significant discrepancy within 15 days, a report will be filed with the Regional Administrator describing the discrepancy and attempts to resolve it in accordance with 40 CFR 264.72.

B8.3 Non-Acceptance of Undamaged Shipments

If a shipment or line item must be rejected due to being deemed unacceptable per this facility's permit; the generator or customer will be notified immediately by phone and in writing. The generator or customer may elect to have the rejected material returned to the generator's site or sent to an alternate facility permitted for the specific material.

This will be noted in the Discrepancy Indication Space (section #18) or the manifest and the manifest copy will accompany the material to the indicated destination.

B8.4 Activation of Contingency Plan for Damaged Shipments

A damaged shipment may cause implementation of the Contingency Plan. If this is the case, the generator/customer will be notified immediately as well as all appropriate authorities in compliance with Federal, State, County, City and Permit regulations.

If the damaged shipment is determined to be a manifest discrepancy; in addition to implementing then Contingency Plan, the procedures listed in B8.2 will also then be followed.

LIST OF TABLES

Table B4-1 Average Weekly Traffic Volumes

Table B4-2 Traffic Volumes and Road Classifications for Transportation Routes.

Table B4-1 Average Weekly Traffic Volumes

Vehicle Type	Loading/Unloading Area and Total Number of Loads							
	Truck Bay Load/Unload Area		East Pad Load/Unload Area		West Container Storage Pad Unload Area		Solids Receiving Area Unload/Load Area	
	In	Out	In	Out	In	Out	In	Out
Vans/Flat Beds			2	4[1]	8	2[1]		
Tank Trucks	5	0[1]						
Bulk Solids Trucks				5			3	5[1]

[1] = Denotes figure does not include empty vehicles.

NA = Not Applicable

Note: Number of incoming and outgoing loads may differ because intra-facility transfer of waste is not reflected, only full loads are counted, and load sizes among trucks may differ.

Table B4-2 Volumes and Road Classification for Access Routes and Adjacent Roadways

Road	Segment	Estimated Volume (vehicles/day)	Classification
Interstate 80	Lyon County Milepost 3	14,400[a]	Principal Arterial
Highway 95A	North end of guardrail near Interstate 80	15,600[a]	Rural Arterial
Newlands Drive	N/A	N/A[b]	Rural Collector

(a) Data from 2000 City of Fernley traffic survey. Information obtained through PSC Fernley/Nevada Department of Transportation phone communication, September 2001.
(b) Data unavailable

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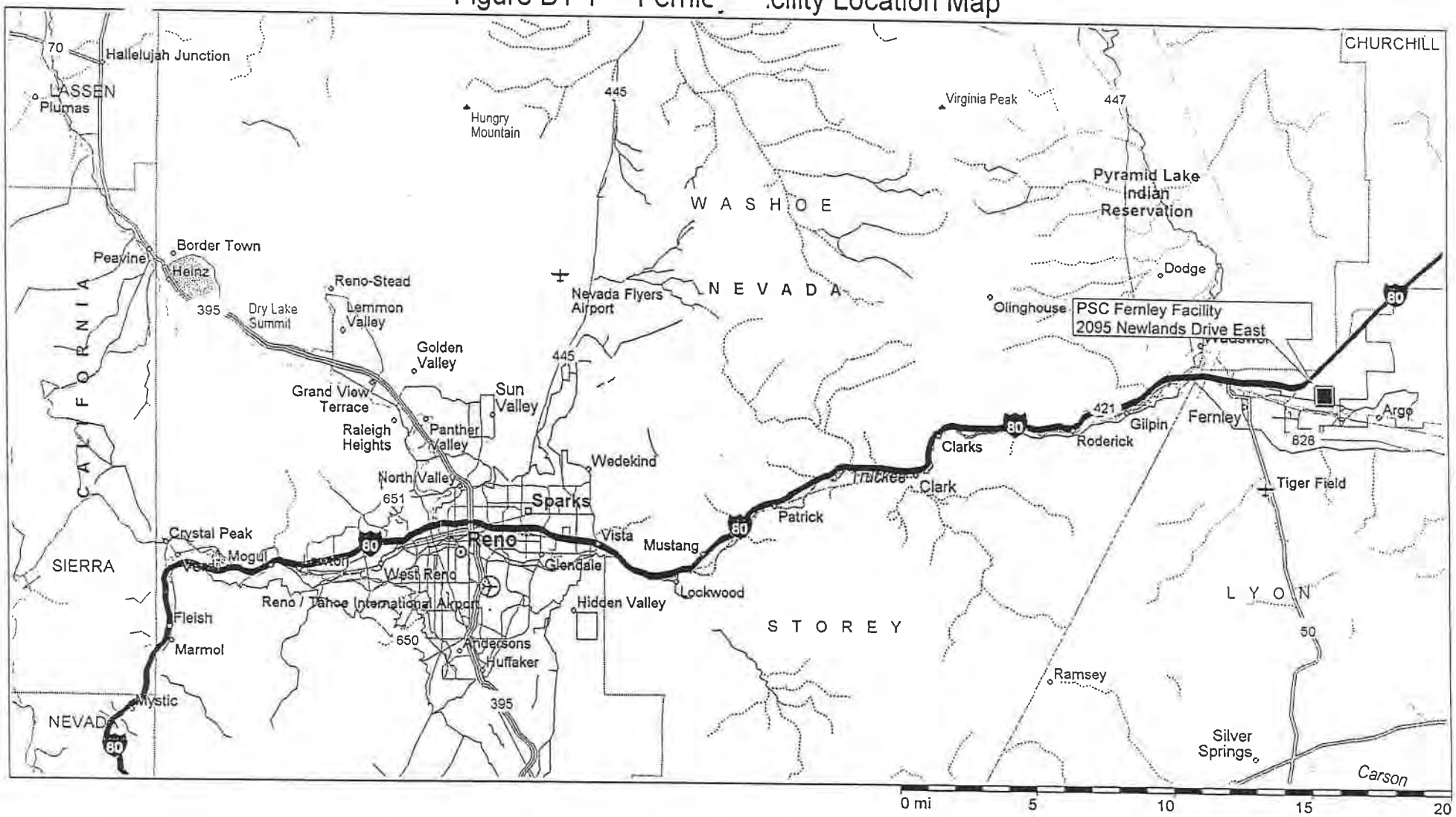
Figure B1-2	Fernley Facility Site Plan
Figure B2-1	Topographic Map
Figure B2-2	Adjacent Land Use
Figure B2-3	Local Wind Patterns
Figure B2-4	Stormwater Drainage Patterns
Figure B2-5	Fire Detection and Prevention Equipment
Figure B4-1	Facility Traffic and Access Controls
Figure B4-2	Fernley Facility Access Routes

Figure B1-1 Fernl. .cility Location Map



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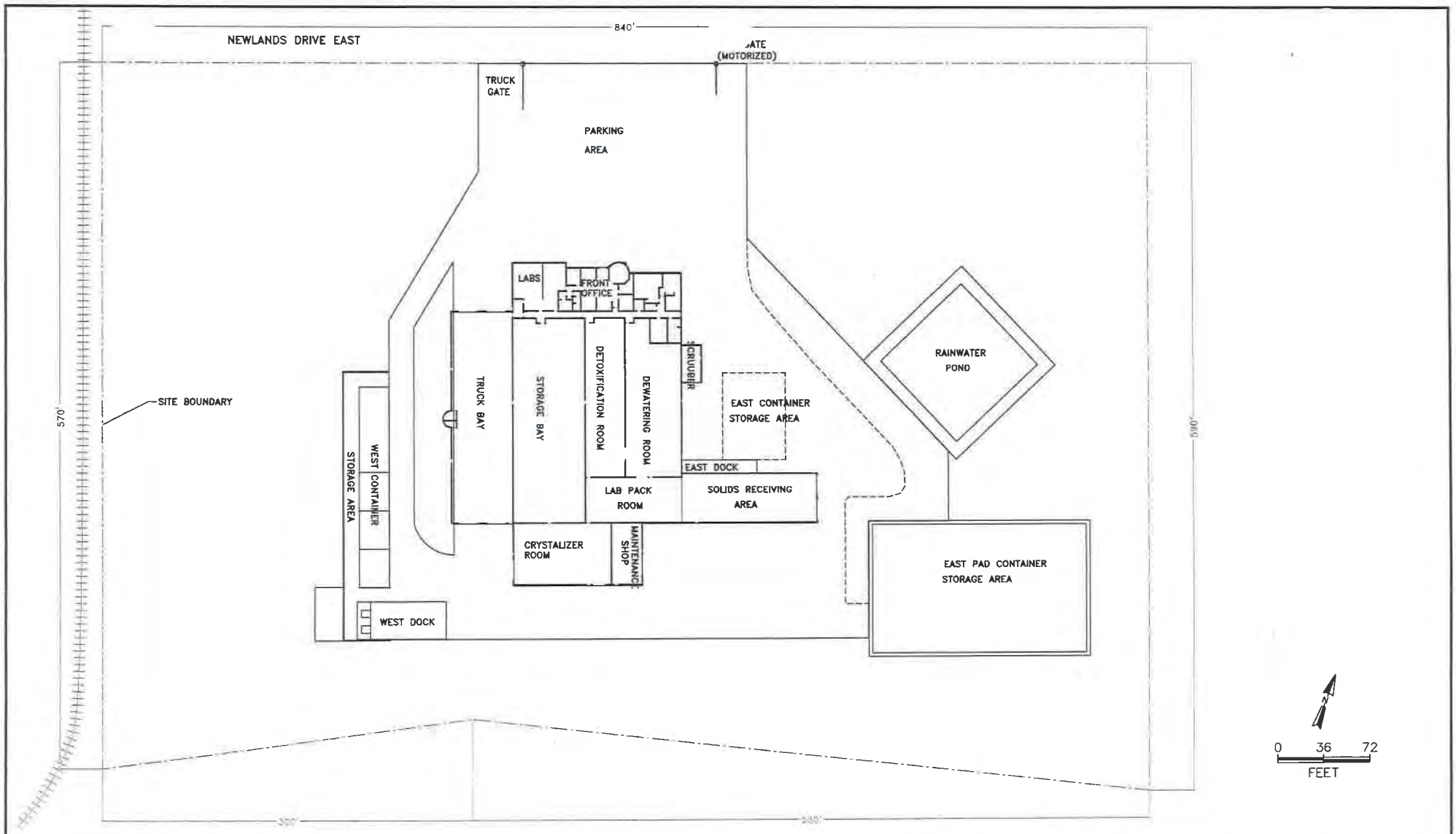
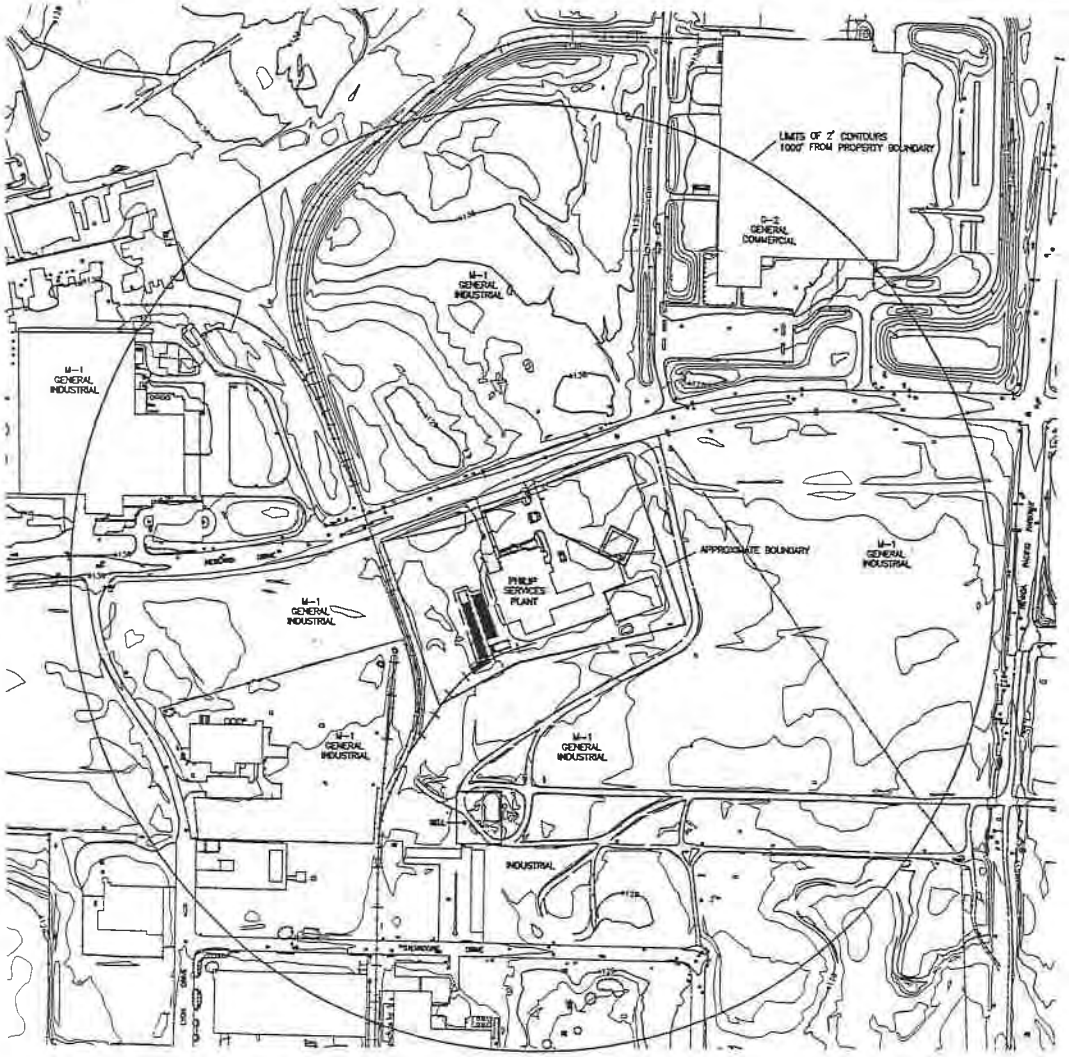


PSC

TITLE:
Facility Site Plan
PSC Fernley Facility
Fernley, Nevada

DWN: dtb	DES.:	PROJECT NO.:
CHKD:	APPD:	FIGURE NO.: B1–2
DATE: 7/10/12	REV.:	



SCALE: 1" = 400'

CONTOUR INTERVAL = 2'

BASIS OF ELEVATIONS

NAVD 1988 – USC&GS BM C 340

NOTE:

DATE OF PHOTOGRAPHY: 10-15-01

Stantec Consulting Inc.
950 Industrial Way
Sparks, Nevada 89431 USA
Tel: (775) 358-4921
Fax: (775) 358-4454
www.stantec.com

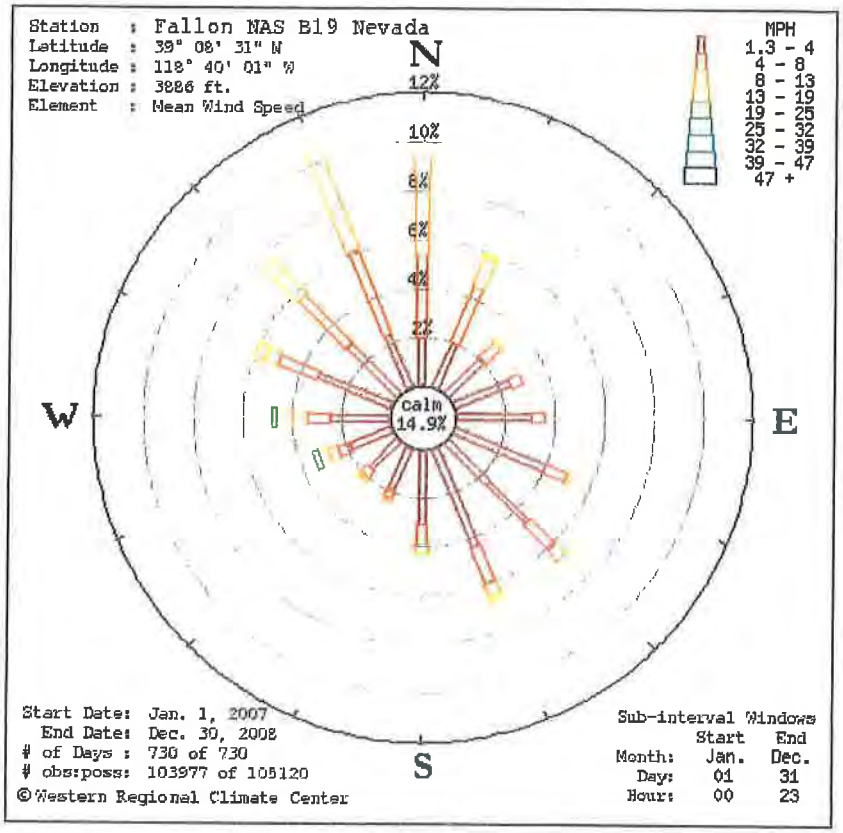
ADJACENT LAND USE PLAN
PHILIP SERVICES – 21 EMI
JANUARY 2001
LYON COUNTY

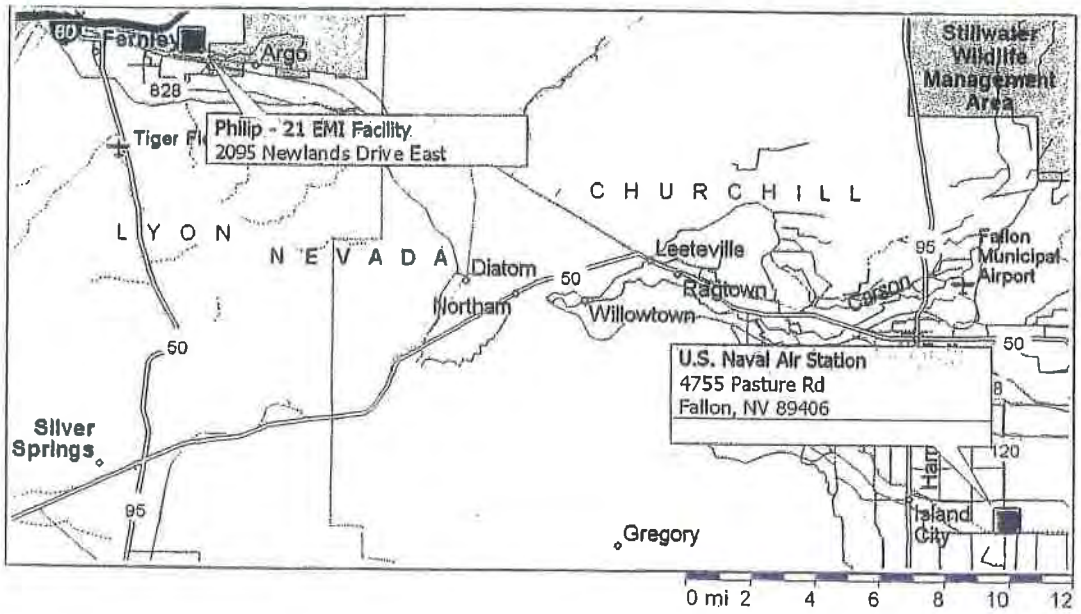
FERNLEY NEVADA

Project No. 80600317

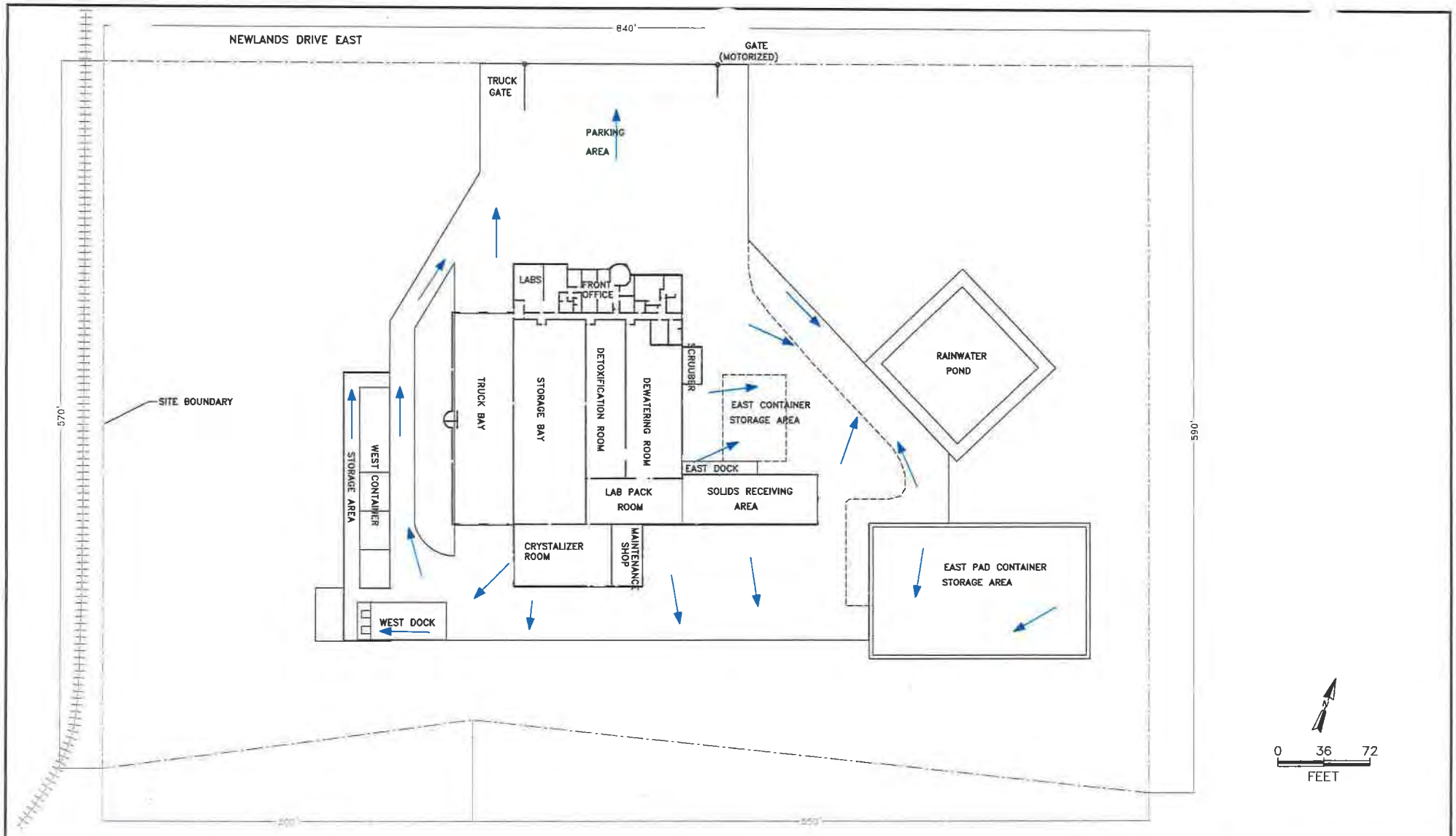
FIGURE B2-2

LOCAL WIND PATTERNS





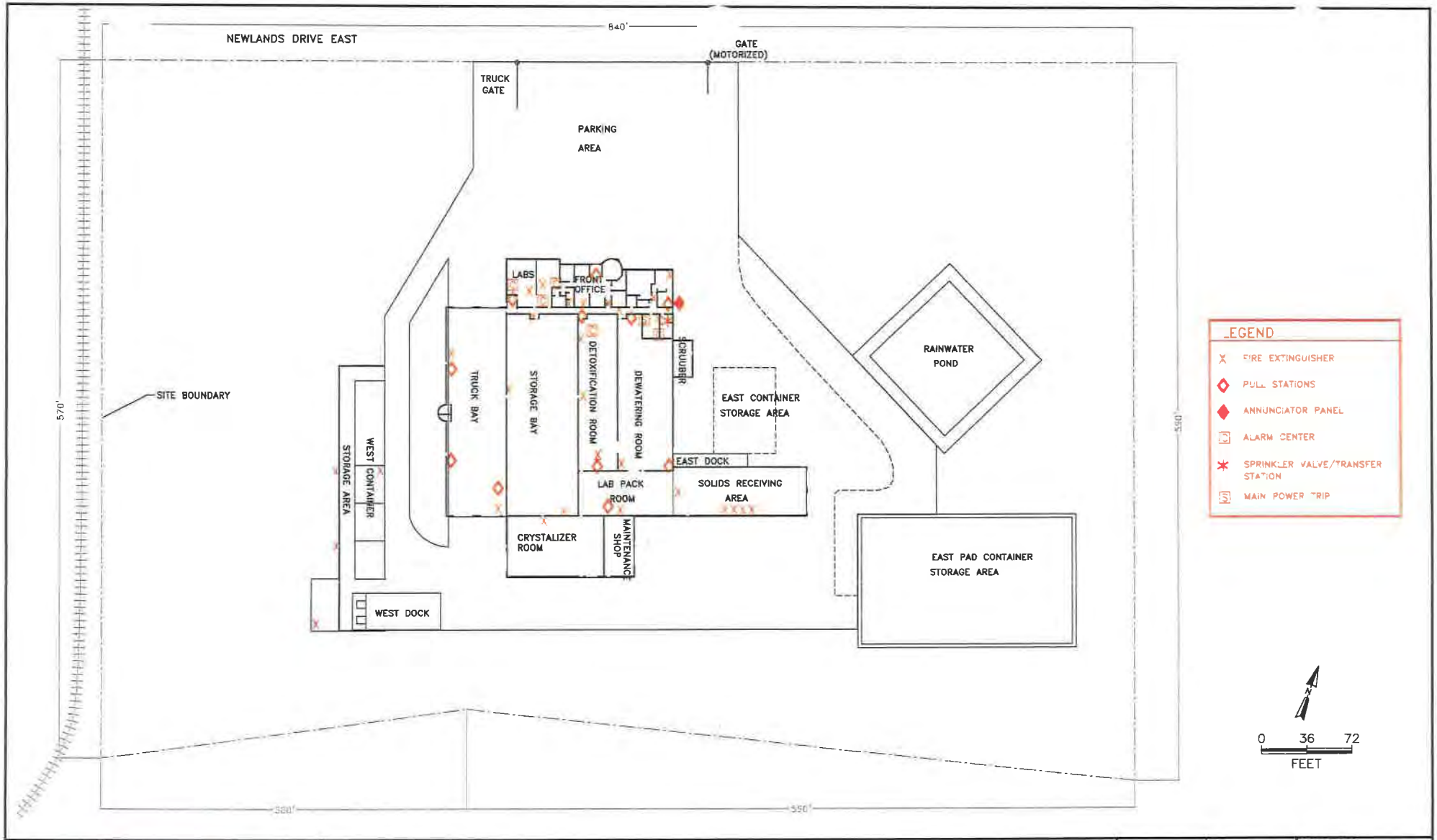
PSC FERNLEY FACILITY
LOCAL WIND PATTERNS
FIGURE B2-3



PSC

TITLE:
Stormwater Drainage Patterns
PSC Fernley Facility
Fernley, Nevada

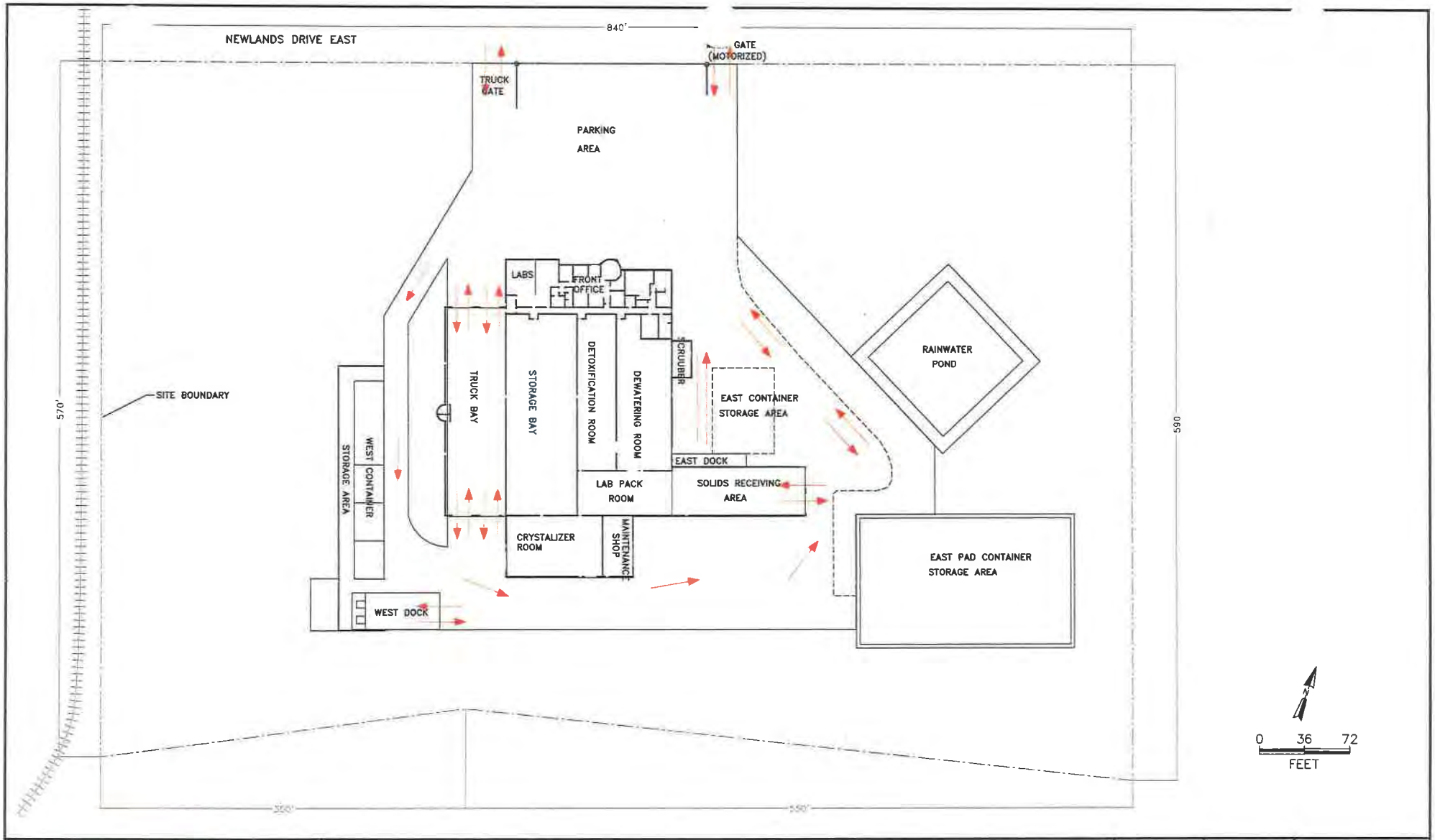
DWN: dtb	DES.:	PROJECT NO.:
CHKD:	APPD:	FIGURE NO.: B2-4
DATE: 7/10/12	REV.:	



PSC

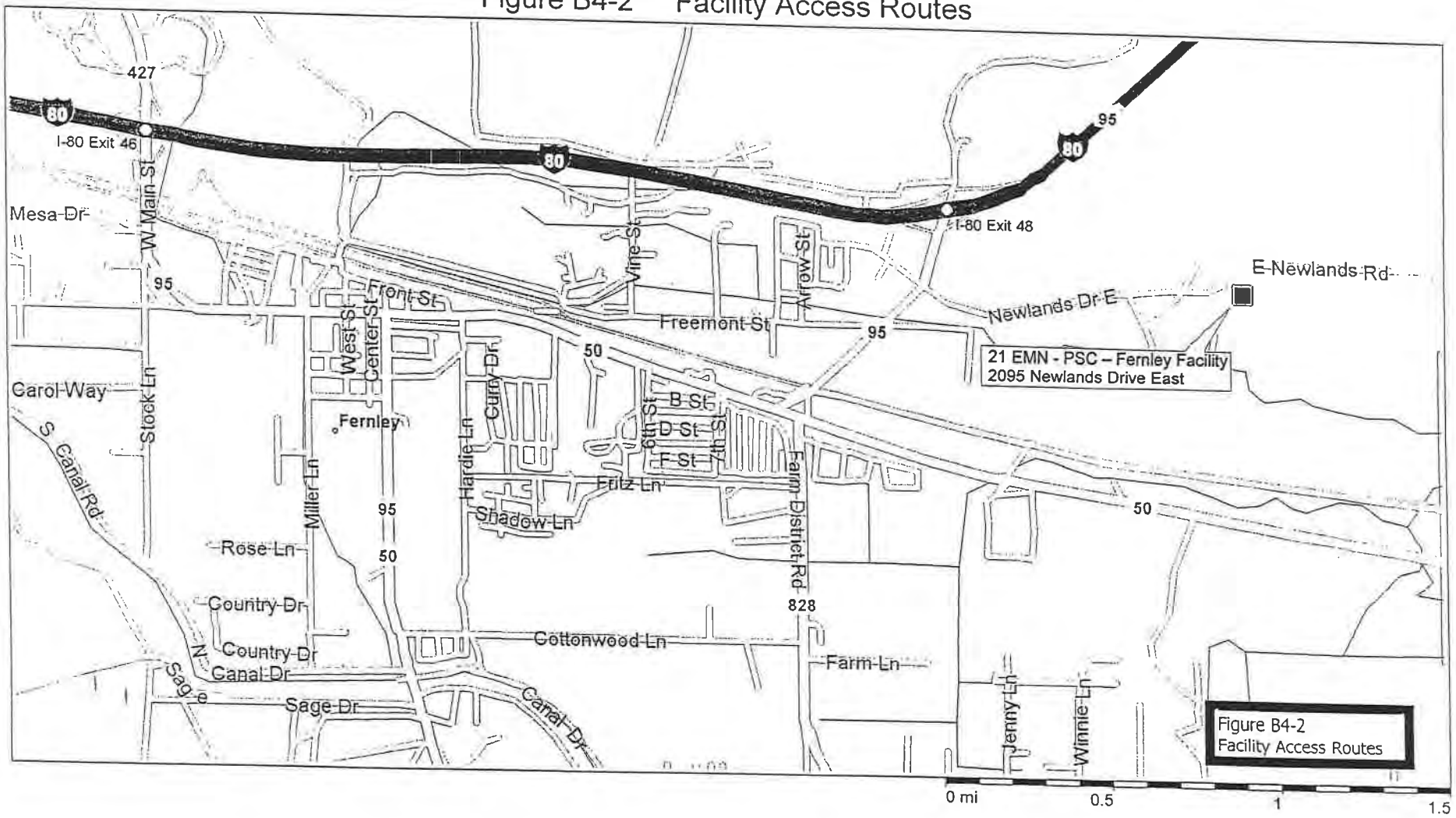
TITLE:
Fire Detection and Prevention Equipment
PSC Fernley Facility
Fernley, Nevada

DWN: dtb	DES.:	PROJECT NO.:
CHKD:	APPD:	FIGURE NO.: B2-5
DATE: 7/10/12	REV.:	



PSC	TITLE: Traffic Patterns and Access Control PSC Fernley Facility Fernley, Nevada	DWN: dtb	DES.:	PROJECT NO.:
		CHKD:	APPD:	FIGURE NO.: B4-1
		DATE: 7/10/12	REV.: 1	

Figure B4-2 Facility Access Routes



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SECTION C

WASTE CHARACTERISTICS

SECTION C. WASTE CHARACTERISTICS

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Appendix C-2 Quality Assurance Program Plan

Appendix C-3 Example Waste Management Forms

SECTION C. WASTE CHARACTERISTICS

This section describes the characteristics of hazardous wastes managed at the PSC Fernley facility. This section also contains the facility Waste Analysis Plan which describes the sampling methodologies, analytical techniques, waste acceptance procedures, and waste tracking systems utilized for safe waste management. Although brief descriptions of the facility and waste management processes are presented in this section, refer to Section B, Facility Description and General Provisions, and Section D, Process Information, for detailed information.

For the purposes of the WAP, the following terms are defined:

- Verifications are the procedures with criteria for determining waste received is the same as the waste described on the manifest and matches the profile. This may include: visual inspection, screening analysis, drum count and fingerprinting.

- Full Characterization means acceptable knowledge, including existing published or documented data on the hazardous waste or on waste generated from similar processes. The use of acceptable knowledge shall include confirmation by the generator that the process generating the hazardous waste has not significantly changed; or laboratory analysis of the wastestream consisting of chemical, physical, and/or biological analyses using methods specified in SW-846.

- Waste Profiling – The process of evaluation a wastestream for acceptance at the facility. Profiling includes gathering and compiling information from the generator and/or laboratory testing and determining whether the waste can be safely managed as well as accepted under permit conditions.

- Recertification of a profile (reprofiling) – Completing profile documentation on a bi-annual basis or receiving certified documentation that the profile remains unchanged from the generator.

- Process Limitations has two components – physical (equipment, e. g., specific gravity to maintain tank integrity), and treatment limits (chemical and regulatory).

- Wastestream is hazardous waste from a single generator specific and unique to the waste generation process.

- Waste Shipment is a hazardous waste transferred from point A to point B by a single waste manifest or shipping paper. For operating tracking purposes, the term waste receipt is used synonymously.

- Knowledge is enough evidence to substantiate the waste profile questionnaire. Evidence means site visits, process evaluation, and sample date and/or documented studies using valid sampling and analytical techniques.

- QA/QC (Quality Assurance/Quality Control) is laboratory procedures that assure that the chemical analyses are precise and accurate (See SW 846).

- Compatibility is the combining of wastes without chemical or physical reaction; i.e., there is no fire, explosion, or sudden or non-sudden excessive heat generated or other unexpected and adverse reaction that would affect safe handling or storage.

- Waste Profile Questionnaire is a document, usually filled out by the generator, that responds to the information needs of the TSD. This may be done electronically.

- Profile is the generator certified document based on the waste profile questionnaire that describes the wastestream to regulatory and permit requirements.

C1.0 CHEMICAL AND PHYSICAL CHARACTERISTICS OF WASTE

40 CFR 270.14(b), 264.13(a)

This section generally describes the hazardous wastes that are stored, treated or generated at the PSC Fernley facility. Any hazardous waste listed on the facility Part A Application may be managed on-site. Although it is not feasible to provide detailed descriptions of all possible wastes that could be received, incoming wastestreams can be categorized by the ultimate treatment or disposal option that will be used to manage the waste. Facility waste management and treatment process options include:

- Water Treatment
- Stabilization (off-site)
- Storage
- Consolidation
- Incineration (off-site)
- Landfill (off-site)
- Recycling (on and off-site)
- Fuel Blending (off-site)

Appendix C-1 provides waste characterization data that represents typical wastestreams handled in each management option.

The chemical characteristics of the waste to be accepted at the facility are any chemical waste excluding radioactive, explosive, infectious or PCBs greater than 50 ppm. Waste for processing must meet the limitations described in Table C2-3, Storage and Process Limitations.

Hazardous wastes generated at the facility are treated on-site whenever possible. Prior to disposal off-site, wastes are sampled and analyzed as described in Section C2.0, Waste Analysis Plan. The wastes are designated per 40 CFR 261.

C2.0 WASTE ANALYSIS PLAN

40 CFR 264.13(b) and (c), 270.14(b),

C2.1 Introduction

The PSC Fernley facility has developed this Waste Analysis Plan (WAP) as required by 40 CFR 264. A current copy of this WAP is maintained at the facility at all times.

The PSC Fernley facility is a commercial hazardous waste storage and treatment facility. The facility can receive, store and process wastes in either bulk loads or containers. Section D shows the facility layout including the addition of planned units. Details regarding tank systems, container storage areas, and process equipment are provided in Section D, Process Information. Analytical requirements and process limitations applicable to each facility waste management option are summarized in Table C2-2, Waste Analysis Summary, and in Table C2-3, Storage and Process Limitations. Waste management options are described in detail in Section B, Facility Description and General Provisions.

The WAP describes the sampling methodologies, analytical techniques, waste acceptance procedures, and waste tracking systems utilized for safe waste management. The procedures described in this WAP apply only to materials that are designated as hazardous wastes per 40 CFR 261. The forms presented in Appendix C-3 of this WAP are typical forms currently used by the facility, and may be revised as needed to address regulatory changes, facility operations, and customer needs. Records required by this WAP may be kept in either paper or electronic format.

The following specific decision-making responsibilities covered under this WAP are defined:

- Laboratory Management Group: makes the following waste management determinations:
    - Acceptability of the waste based on permit conditions, treatability and applicable disposal regulations.
    - Treatability protocols for unusual wastestreams, e.g. high selenium wastestreams for stabilization.

- Disposition of the waste. How the waste is to be treated or disposed.
- Selection of the final disposal option.
- Generators have the required hazardous waste notifications in place.

- Facility Management, consisting of the plant manager and plant supervisory personnel, makes the following waste management determinations:
  - Designated Tier of the waste
  - The final off-site disposal facility, but not the off-site options available.
  - Discrepancy determinations based on mandatory verification analysis.

C2.2 Identification of Waste and Restricted Waste

Wastes identified in Section A of this permit application are acceptable at the facility. Restricted wastes, which are wastes unacceptable at the facility, include wastes containing greater than 50 ppm PCBs, explosive waste as defined in 40 CFR 261.23(6), (7) or (8), biologically hazardous waste and radioactive waste. Wastes containing greater that 500 ppm VOC or greater than 10% TOC will not be accepted for treatment or storage in tanks with the exception of trichloroisocyanuric and dichloroisocyanuric acid in tanks T-4 through T-7, but may be stored and/or consolidated in containers prior to being sent for management at an offsite facility. TOC analysis is conducted during the verification process. VOC analysis is based on certification by the generator that the waste does not contain >500 ppm VOC at the point of origination.

C2.3 Pre-Acceptance Procedures

The PSC Fernley facility has developed a series of control procedures to determine the acceptability of specific wastes for management at the facility. Pre-acceptance procedures dictate what information must be obtained to determine the acceptability of the waste for management. At a minimum, the facility must obtain all information required by 40 CFR 264.13 and other information necessary to manage a waste. Pre–acceptance procedures allow the facility to determine the acceptability of a given waste based on permit limitations, regulatory requirements, and whether the facility can safely manage the materials.

The pre-acceptance procedures must be completed prior to acceptance of the initial shipment of the waste. The PSC Fernley facility will obtain detailed chemical and

physical information for each wastestream prior to approval of the initial shipment of that wastestream to the facility. This information shall be representative of the wastestream. The minimal requirements for waste acceptance are delineated in Table C2-3, Storage and Process Limitations. Additionally, the generator, either through laboratory analysis or generator knowledge, must sufficiently describe the waste using EPA hazardous waste numbers. Waste for which the generator has not provided sufficient information to properly characterize the waste, will not be accepted at the facility. However, the generator will be given the opportunity to correct the profile information and resubmit the waste for acceptance at the facility.

C2.3.1 Waste Profile System

The PSC Fernley facility obtains detailed information regarding each regulated wastestream before it is stored, treated or disposed (referred to as a "waste profile"). The waste profile information is provided by the generator, and must contain the information necessary to manage the waste in accordance with 40 CFR 264.13(a). The profile may be based on: 1) existing published or documented data on the hazardous waste; 2) waste generated from similar processes; 3) data obtained by analytical testing; or 4) generator knowledge.

The facility uses this information to determine if the waste can be accepted for storage or treatment operations. Approval of a waste profile is dependent on existing permits and operational constraints. Figure C2-1, Waste Profile System, outlines the procedures involved in waste profiling. The forms used to document the information obtained in the waste profile system are in Appendix C-3, Example Waste Management Forms. The procedure for the completion of a waste profile is described below:

1) The generator completes (or provides sufficient information to allow the PSC Fernley facility to complete) a waste profile questionnaire for submittal and review. The waste profile questionnaire describes the wastestream, the process generating the waste, and identifies all applicable hazardous waste numbers determined through the waste designation procedures required by 40 CFR 261 Subpart B. The profile information may be based on analytical testing or generator knowledge.

As part of the profiling process, generators will be required to certify whether or not their waste is subject to the requirements of 40 CFR 264 Subpart CC (i.e., does the waste contain > 500 ppmw volatile organics). This determination may be made through the use of EPA-approved test methods or through generator knowledge. Additionally, the generator will provide data as to the total organic compound (TOC) content. Wastes that exceed 500 ppm VOC or 10% TOC will not be treated or stored in tanks with the exception of trichloroisocyanuric and dichloroisocyanuric acid in tanks T-4 through T-7, but may be stored and/or consolidated in containers prior to being sent for management at an offsite facility.

2) The profile is reviewed by Materials Management to:
   - determine if the waste designation information is sufficient;
   - decide if the waste is acceptable under the PSC Fernley facility permits;
   - determine the appropriate management option for the waste;
   - review the profile for completeness of physical and chemical information.

3) If the profile information is sufficient, and Materials Management's review indicates that the material is acceptable, a copy of the profile is sent to the generator for approval and certification. If the profile review by laboratory management deems the wastestream as unacceptable, the material will not be received at the facility. Facility management may recommend to the generator alternative facilities for the wastestream.

C2.3.2 Profile Full Characterization Procedures

Each wastestream that is received by the facility from an off-site generator shall undergo full characterization every other year. Full characterization is defined as completion by the generator, of a waste profile sheet, including identifying hazardous waste constituents and characteristics necessary for proper designation and management of the wastestream, along with accounting for 100% of the material (i.e. 25% to 30% oil and 70% to 75% water). This may be done by PSC personnel, with information provided by the generator. The waste profile sheet shall be certified and dated by the generator, and placed in the facility operating record, in the corporate office, or in an electronic format accessible from both locations.

a. Except as specified in b. below, full characterization shall include or consist of:

i. Acceptable knowledge, including existing published or documented data on the hazardous waste or on waste generated from similar processes. The use of acceptable knowledge shall include confirmation by the generator that the process generating the hazardous waste has not significantly changed; or

ii. Laboratory analysis of the wastestream consisting of chemical and physical, analyses using methods specified in 40 CFR Appendix III.

b. In the following circumstances a wastestream shall undergo full characterization which may include generator identification or laboratory analyses for hazardous waste constituents and characteristics reasonably expected to be present in the wastestream. This does not include those constituents and characteristics that are covered by waste codes assigned through the waste designation process, or when the presence of a constituent or characteristic would not change the proper management of the wastes:

i. The PSC Fernley facility has been notified, or has reason to believe, that the process or operation generating the hazardous waste has significantly changed.

ii. There is a discrepancy between a generator's waste designations, or a parameter value is outside the range of values on the waste profile sheet, as determined by verification analyses or other waste analyses or waste evaluation.

c. The following wastes are exempt from the requirement for full characterization by laboratory analysis only, unless such analysis is needed to manage the waste in accordance with this permit and the land disposal restrictions in 40 CFR 268, or there is a waste discrepancy as defined by b.ii. above:

i. Wastes that designate under 40 CFR Subpart 261 subpart D, Lists of Hazardous Wastes, and which have no waste codes associated with characteristic or criteria hazardous wastes;

ii. Laboratory chemicals packaged in accordance with 40 CFR 264.316;

iii. Empty product containers as defined in 40 CFR 261.7;

iv. Unused commercial products (i.e. off-specification or outdated materials) that have materials safety data sheet (MSDS) sufficient to ensure safe and effective management of the wastes in compliance with this Permit;

v. Residue and debris from the clean up of spills or release of:

A. A single known substance;
B. A commercial product; or
C. Other material for which a MSDS or waste profile can be provided;

vi. Equipment removed from service (i.e. ballasts, batteries, cathode ray tubes, fluorescent light bulbs, hydraulic equipment, switches, transformers, and electrical equipment) that contains hazardous waste that can be adequately identified for proper designation and management;

vii. Debris from the demolition and/or dismantling of equipment from known processes and which is contaminated with hazardous waste which can be adequately identified for proper designation and management;

viii. Confirmed non-infectious organic solvent wastestreams (such as xylene, acetone, ethyl alcohol, or isopropyl alcohol) from medical or related biotechnical sources. These types of wastes must be confirmed not-infectious by the generator, and the process generating the waste must be reviewed by the Laboratory Management group personnel.

C2.3.3 Waste Acceptance Evaluation

The Laboratory Management group is responsible for evaluating whether to accept or reject the waste. This decision is made based on:

- A review of the profile full characterization results as described in Section C2.3.2;
- The experience and judgment of Laboratory Management group;
- Any additional documentation, including information that the waste is subject to the Land Disposal Restrictions of 40 CFR Part 268, if appropriate; and
- Unacceptable wastes.

The pre-acceptance evaluation is concluded with documentation in the electronic profile of the decision regarding the acceptability of the waste and the proposed method of management. Facility management's technical on-site treatment, storage and off-site disposal decisions are based on:

- Management methods available, this includes both onsite and offsite disposal options. All inbound waste will be designated a Tier One or a Tier Two waste. Tier One waste is waste that will not be processed by treatment at the facility but may be consolidated or recontainerized. Tier Two waste is waste that will be processed by treatment at the facility and may be bulked into storage, treatment, dewatering or evaporation tanks.;
- Descriptions of wastes listed on the Part A;
- Determination if the waste is a restricted waste, as defined below;
- Conditions or limitations of existing permits and regulations;

- Capability to manage the waste in a safe and environmentally sound manner;
- Profile description of the process generating the waste;
- Profile description of the chemical and physical properties of the waste;
- Any additional documentation, including information that the waste is subject to Land Disposal Restriction of 40 CFR 268, if appropriate;
- Results of any analyses; and
- Management's technical experience and judgment.

A restricted waste will be rejected during the pre-acceptance process for one of the following reasons:

- Incomplete or outdated information provided by the waste generator;
- The material is radioactive waste;
- The waste contains greater than 50 ppm PCBs;
- The EPA waste code is specifically excluded from acceptance at the facility; or
- The waste cannot be treated, processed, stored, or evaporated at the facility.

C2.4 Incoming Waste Procedures (Tier One)

Tier One waste is comprised of wastestreams that are more effectively managed at off-site facilities. All incoming wastes are potentially Tier one wastes. The following factors determine the appropriate tier of waste:

- The facility's ability to store material within permit constraints;
- The facility's treatment effectiveness, e.g. is the waste more efficiently treated at an off-site facility;
- Designated facility personnel's decision to manage the material as either a Tier One or Tier Two waste

Designated facility personnel responsible for tier determination are the Plant Manager or Laboratory Manager. Since this decision is based primarily on the permit constraints, permit training is the primary criterion of eligibility and ability to determine the tier rating of a waste.

The purpose of Tier One mandatory verification procedures is to verify that the contents of each waste shipment match the identity of the waste as specified on the manifest and

are suitably packaged for shipment to an off-site facility. This is accomplished through the following steps:

1) Waste shipments arriving at the facility are directed to the unloading area.
2) The manifest and physical load are inspected to verify the following:
   a) The correct number of containers or volume (if bulk) of each type of waste is indicated on the manifest.
   b) The information on the manifest is correct.
   c) The containers are not leaking, are properly labeled and are in approved storage and shipping containers.

   Manifest discrepancies are by contacting the generator for clarification and/or further instruction.
3) The wastes listed on the manifest are checked to ensure that each waste is permitted for receipt at the facility, and that an approved waste profile is on file for that generator. Information on the manifest is verified to be current and accurate against information on the profile by office personnel. The following information will be verified:
   - Correct waste codes have been assigned to the waste shipment.
   - Correct LDR notification and certification information have been provided.
   - Safe and effective management in conformance with the conditions of this permit is considered using the following factors:
     - Compatibility of the wastestream during treatment and storage.
     - Reactivity of the wastestream.
     - Ignitability of the wastestream.
     - Facility and process limits.
4) The hazardous waste technician receives a waste tracking number from the recordkeeper for each container or bulk waste shipment and records the number on the Waste Check-In Sheet for containers or the Input Log for wastes in bulk. This number is also marked on the container. Recordkeeping and waste tracking procedures are discussed in Section C2.8.
5) When the containers are unloaded, numbered and recorded on the check-in form, the wastes are sampled and analyzed for the appropriate parameters for each particular waste (Refer to Table C2-2). Bulk wastes are sampled and analyzed before processing.
6) Upon verification that the waste on the shipment is properly represented by the waste profile, the waste may be processed. No waste will be processed

until this verification is complete. Prior to mandatory verification analysis the transporter is given a signed copy of the manifest, indicating the facility accepts the shipment. This occurs after a piece count verification is conducted.

7) When there is a discrepancy between a generator's waste designation, or a parameter value is outside the range of values on the waste profile, as determined by verification analysis or other waste analyses or waste evaluation, the following steps shall be taken:
   a) The generator will be informed of the discrepancy and given the following options:
      i) Amend the current profile or manifest, or submit a new profile which properly represents the waste.
      ii) Provide the PSC Fernley facility permission to transport the load to an alternate TSD facility
   b) A significant manifest discrepancy shall be resolved within 15 days after receipt of the waste. If a longer period is required, PSC will notify the Nevada Department of Environmental Protection, in accordance with 40 CFR 264.72(c).
8) Hazardous waste brought on-site cannot leave its respective unloading area until the manifest number and facility container number for containerized waste have been recorded on logging and tracking forms. Entry into the facility waste tracking system shall be completed within 72 hours after manual entry of the information on forms.

C2.5 Incoming Waste Procedures (Tier Two)

Tier Two waste is comprised of wastestreams that are more effectively managed and processed at the PSC Fernley facility. The following factors determine the appropriate tier of waste:

- The facility's ability to store material within permit requirements;
- The facility's treatment capability; and
- Management's decision to manage the material as either a Tier One or Tier Two waste.

Tier Two mandatory verification analysis is more strenuous than Tier One verification analysis. The intent is to verify that the contents of each waste shipment match the

identity of the waste as specified on the manifest and profile. However, additional procedures, delineated by the following additional steps, are conducted for the management and treatment of these wastestreams:

1) Steps as outlined for Tier One waste in Section C2.4.
2) Mandatory verification will include additional testing that will preclude storage incompatibilities and potential problems in managing the waste. TOC content will be verified prior to the introduction of waste into any tank.
3) Prior to processing, all Tier Two wastes will undergo additional testing. This testing will be based on the processing the material will undergo. The following tests will be performed:

   a) For all wastes undergoing consolidation to a tank, compatibility testing in accordance with ASTM D5058A will be conducted and recorded in the operating record. This testing will include all containers to be consolidated as well as residues remaining in the consolidation tank. Tank to tank transfers will also undergo compatibility testing. Wastewaters subsequent to neutralization and precipitation treatment are not subject to compatibility testing. Wastes subsequent to treatment will undergo the following additional testing:
      i) Cyanide/sulfide bearing wastes:
         A. pH and cyanide/sulfide spot test prior to dewatering.
      ii) Corrosive wastes:
         A. pH prior to dewatering.
   b) Waste being consolidated into containers will be subject to compatibility testing.
   c) For all wastes undergoing wastewater treatment a bench test protocol will be developed. The intent of the bench test is to determine the proper stoichiometry of the reagents. In most situations, the Fernley facility will endeavor to use wastes to treat wastes. Appendix C-3 provides a sample form used for bench test procedures. This test will be documented in the operating record. The following parameters are measured or observed:
      (i) Temperature change (measured)
      (ii) Vapor generation (observed)
      (iii) Polymerization (observed)
      (iv) Violence of the reaction (observed)

(v) Layering (observed)
(vi) Bubbling/foaming (observed)
(vii) Solidification (observed)
(viii) Precipitation (observed)
(ix) Emulsification (observed)

C2.6 Sampling Methodology

40 CFR 264.13, Part 261, Appendix I

The PSC Fernley facility sampling and analysis procedures are designed to obtain representative information used to evaluate a hazardous waste. A representative sample of a material is analyzed to:

- Verify generator supplied wastestream information on manifests and/or waste profile sheets,
- Determine safe and appropriate treatment or disposal processes based on waste characteristics, and
- Determine treatment process control information.

Analytical results obtained under this Waste Analysis Plan are incorporated in the operating record.

C2.6.1 Sampling Methods and Equipment

The PSC Fernley facility uses sampling methods presented in SW-846 (Test Methods for Evaluating Solid Waste, Revision IIIB, December 1996 and subsequent updates and revisions) and ASTM Methods (American Society for Testing Materials). Table C2-4 delineates appropriate sampling methods. Sampling is performed by personnel who are properly trained in representative sampling methodology (refer to Section H, Personnel Training).

Sampling devices are selected according to size and type of container and the specific material matrix involved. The sampling method and equipment used for the various materials and types of containment vessels are presented in Table C2-4, Sampling

Methods and Equipment. Sampling equipment is rinsed or disposed between sampling events to avoid cross contamination. Rinsate and/or sampling equipment is disposed with a compatible wastestream from the area where sampling occurs. Disposable sampling equipment is repackaged and disposed appropriately in accordance with 40 CFR 268.

Depending on the nature of the waste material and the feasibility of obtaining a sample, a top-to-bottom sample is generally obtained from the container. Grab samples from different layers are obtained from tanks or tank trucks.

Sample containers are provided with standardized verbiage (See Appendix C-3, Example Waste Management Forms). Samples are preserved, if necessary, and taken to the appropriate sample storage location in the laboratory for analysis. Samples are logged in a sample check-in book located in the laboratory. Sample preservation and tracking procedures are described in Appendix C-2, Quality Assurance Program Plan.

Samples are stored in containers that are compatible with the sampled material. All samples are stored in glass or plastic containers, except chlorinated solvents or chlorinated solvent-contaminated materials that are stored in glass or metal containers only, and hydrofluoric acid that is stored in plastic containers only. Solid samples and oils can be stored in plastic, glass, or metal containers. Containers are liquid-tight and range in size from 40 ml to 1,000 ml. Sample/container compatibility is summarized in Table C2-5.

Final disposition of samples, after analyses are complete, is determined by the most suitable treatment process for that sample. For example, a waste acid sample analyzed at the facility would typically be returned to the waste acid storage tank.

C2.6.2 Frequency of Sampling and Analysis

40 CFR 264.13(b)(4)

A minimum of 10% of all Tier One and Tier Two containers of each regulated wastestream or profile received from off-site shall be randomly sampled. Tier Two regulated waste undergoing wastewater or inorganic storage tank consolidations are sampled at a 100% frequency prior to processing, but not necessarily during the

acceptance process. For the purposes of this plan, the term "regulated wastestream" means hazardous waste regulated by 40 CFR 261 that is represented by a single waste profile. Samples are not required from materials that are:

- Not regulated by 40 CFR 261; or
- Waste received from another PSC facility, provided the waste has been fully characterized in accordance with the PSC Fernley facility's Waste Analysis Plan and the waste tracking procedures as described in Section C2.8.

For mandatory verification analysis, containers are randomly selected for sampling by the technician who checks the drums into the facility. As the containers are unloaded, each receives a waste receipt number. The technician chooses at least one drum out of every ten drums for sampling, based on the waste receipt number. When less than ten containers of a wastestream are received on a single profile, at least one container is randomly selected for sampling by the technician assigning waste receipt numbers.

Samples from drum lots may be composited for any applicable supplemental analyses if the mandatory analyses confirm the material is as described by the generator. If the mandatory analyses indicate that the material may not match the profile, supplemental analyses may be performed to see if the waste could match another profile from the same generator, or to determine whether the wastestream is a completely different waste. Supplemental analyses may also be performed to confirm a result obtained from mandatory analyses or to develop treatment or management information. Table C2-2, Waste Analysis Summary describes the mandatory and supplemental analyses applicable to a given waste management option.

Tier Two and bulk waste shipments are subject to processing analysis. Each Tier Two container, storage tank and treatment tank is composite sampled and tested for compatibility. Each pre-treatment tank transfer is also compatibility tested. Sampling of bulk containers or tanks is by coliwasa sampling or grab sampling at each layer. Processing analysis for wastewater tank treatment protocols are based on bench testing of each waste constituent or reagent. Observations and measurements as listed in Section C2.5 are recorded. Tier Two containers for railcar fuel consolidation tank treatments are tested for compatibility prior to rail tank car consolidation. Post treatment wastewater sampling and analysis is limited to pre-dewatering and pre-evaporation analysis as discussed in Section C2.7, Analytical Parameters and Rationale.

Waste sent off-site for treatment and/or disposal are sampled as required by the destination facility, and as necessary to comply with the land disposal restrictions in 40 CFR Part 268.

C2.7 Analytical Parameters and Rationale

40CFR 264.13(b)(1)

The usage and applicability of analyses are described herein. The analytical procedures and methods described in this text, whether standard procedures or procedures developed by the PSC Fernley facility through its operation experience, have been chosen for their ability to identify waste and to provide the information required to properly and safely manage wastes. In each case facility management selects the appropriate parameters from those listed below according to the needs and requirements specified for profile analyses, incoming shipment identification analyses, and process analytical testing (refer to Tables C2-2 and C2-3).

Analytical tests are classified as either mandatory, supplemental, or processing:

Mandatory Analysis	All incoming waste, Tier One and Tier Two wastes, and identification samples are subject to the mandatory verification analyses as a first step in the analytical scheme.
Supplemental Analysis	Facility management may select additional supplemental analyses to obtain information required for efficient process control or to further evaluate a positive result from a mandatory screening test (for example, a flash point may be run to provide more specific waste data when a positive flammability potential is reported during the mandatory analysis testing).
Processing Analysis	Containers designated for treatment or consolidations are tested under processing analysis. Consolidation of organic wastestreams and wastewater wastestreams are subject to compatibility testing. Wastewater treatments are also

bench tested. Cyanide/sulfide and corrosive wastes are analyzed post treatment to determine suitability for dewatering and evaporation.

Post Treatment Analysis — Treatment residuals, filtercake from processing will be analyzed for total metals if the material is going to a smelter for additional metal content recovery, if required by the final destination. All treatment sludges are sent off-site to a Subtitle C landfill as hazardous waste with all inbound EPA waste numbers on the outbound manifest and LDR. The destination facility may conduct additional treatment (e.g., stabilization) to achieve LDR treatment standards.

This arrangement allows a multi-tiered approach to waste identification, enabling the PSC Fernley facility to structure the analysis to adequately identify the waste or to define operational parameters for various treatment processes.

Analyses, when required, will be performed upon receipt of the waste at the facility. Most analyses utilize procedures from authoritative sources such as the EPA, American Society of Testing Materials (ASTM) or standard methods for the analysis of water and wastewater. The analytical parameters and rationale are identified below, and analytical methods are identified in appendix D of the Quality Assurance Program Plan (See Appendix C-2). Additional parameters not listed may be added as required (by changes in regulations, processes, wastestreams, etc.).

C2.7.1 Mandatory Verification Analyses

Mandatory analyses include basic screening procedures or “fingerprints” that are performed to provide a general identification of the waste, to verify that the waste received is as described in pre-acceptance paperwork, and to indicate a waste management scenario that is suitable. These analyses are conducted in conformance with the facility QA/QC manual. The parameters and associated rationale for these analyses are described below (also refer to Table C2-1, Analytical Parameters, Methods, and Rationale).

- Physical Description is used to determine the general properties of the waste (color, physical state, layering, etc.). This facilitates subjective comparison of the sampled waste with prior waste descriptions or samples. It applies to all incoming wastes and is used to identify any obvious change in the waste's physical properties.

- Ignitability Screen is used to indicate the potential ignitability of the waste. This test is used to identify any obvious difference in waste types such as a waste flammable solvent substituted for waste mineral acid. This test is not performed on solids unless the waste contains free liquids as defined in 40 CFR 260.10, or on liquids with the characteristic code D001.

- pH is used to indicate the pH and, in general, the corrosive nature of the waste. The pH test may not apply to certain wastes, such as organic solvents, waste oil or insoluble solid wastes. Results will be used to assure that corrosive wastes are handled in areas suitable for storage and treatment of these types of wastes.

- Halogen Screen (Beilstein Screen or field test kit) is used to indicate the presence of halogens in organic wastes.

- Specific Gravity provides information regarding the general chemical composition of a waste. It is used to compare and identify differences between the waste and prior waste descriptions.

- Radiation Screening is used to detect the presence of radioactive constituents in a waste. This screen applies to all incoming waste. A Geiger counter test reading greater than 2x background constitutes grounds for rejection of the waste.

- Cyanide Screen is used to indicate whether the waste produces hydrogen cyanide upon acidification below pH 2. It is performed on those wastes with a pH greater than 9 identified or suspected of containing cyanide (e.g., photography wastes, plating bath wastes, etc.)

- Sulfide Screen is used to indicate whether the waste produces hydrogen sulfide upon acidification below pH 2. It is performed on those wastes with a pH greater

than 9 identified or suspected of containing sulfide (e.g., oil and oil sludges, paint and paint sludges, aluminum chemical-milling wastes, etc.).

- PCB screening is used to determine the presence of polychlorinated biphenyls in a waste. It is performed on wastes suspected of containing PCBs.

- Compatibility Screen is used to determine the compatibility and potential reactivity of bulk and container shipments to be consolidated with other wastes in a tank or container.

- Water Compatibility Screen is used for both Tier One and Tier Two wastes to determine the compatibility and potential water reactivity of any waste that will contact water during its storage or processing. This test does not apply to wastestreams that are water-based or contain water.

- Acid Concentration Test is used to determine compatibility with other wastestreams for storage, consolidation and treatment. This test applies only to acidic wastestreams that will be mixed with any other wastes.

- TOC Screen is used to determine the organic content of wastes prior to introduction to any inorganic storage tank.

C2.7.2 Supplemental Analyses

These analyses are conducted in conformance with the facility QA/QC Manual. Appropriate supplemental tests are performed on wastes accepted at the facility when one of the following three conditions are met:

- If a discrepancy is noted during mandatory verification testing and additional information is required to determine how to manage the waste;

- If additional or more precise information is required in order to manage the waste safely within the facility's permit conditions; and

- If facility management has reason to believe the composition of the waste has changed.

The results of these supplemental analyses provide facility management with another level of confidence concerning the proper means of treatment, storage, and disposal. Each waste management option has a unique set of limitations. Once facility management has made a preliminary decision as to the acceptability of a waste for a particular management option, supplemental analyses may be conducted as necessary to ensure that the waste does not exceed a parameter limitation for that option. Refer to Table C2-2 for description of the supplemental analyses applicable to specific management options. Supplemental analyses include, but are not limited to the following:

- Heat of Combustion (BTU) is used to determine the heating value of materials for use as waste-derived fuel in cement kilns.

- Flash Point is used to further characterize ignitable liquid wastes to establish proper storage modes and conformance with permit conditions.

- Total Metals is used to quantify the concentration of specified metals in a waste.

- Total Chlorine is used to quantify the concentration of halogens as necessary to comply with off-site receiving facility criteria.

- Total Cyanides is used to quantify cyanides as necessary to comply with LDRs and off-site receiving facility criteria.

- Total Sulfides is used to quantify sulfides as necessary to comply with LDRs and off-site receiving facility criteria.

- TCLP is used to provide a determination whether a waste exhibits the characteristic of toxicity, or to determine if a treated waste meets an LDR treatment standard.

C2.7.3 Processing Analyses

These analyses are conducted in conformance with the facility QA/QC Manual. Tier Two wastes undergo processing analysis. Since Tier One waste is not processed, no processing analysis is conducted on these wastes.

- Compatibility testing is used to determine if waste when commingled will lead to adverse reaction. Compatibility testing is used for container and bulk consolidations.

- Bench Treat Protocols are used to determine the effectiveness of wastewater treatment and as a precautionary tool to ensure the treatment reaction is controlled. Wastewaters, subsequent to treatment, are evaporated or shipped off-site for final disposal. Bench treatment protocols identify treatment parameters, which may include:

  - Rate of reagent addition.
  - Time required to cool reaction.
  - Alternative treatment chemicals.
  - Quantity of waste to be treated.

C2.7.4 Post Treatment Analysis

These analyses are conducted in conformance with the facility QA/QC Manual. Plant residuals and wastes generated onsite, filtercake and sludges, will be analyzed under the following conditions:

Source	Analysis Required	Frequency
Filtercake and sludges for Subtitle C Treatment or Landfill	None (waste will be manifested with appropriate EPA Hazardous Waste Numbers	NA
Filtercake and sludges for metal recovery	Total metals for the metal to be recovered (e.g. filtercake for copper recycling will be analyzed for total copper only).	Every load

Wastes that have not undergone any treatment or consolidation (Tier One waste), are not subject to post treatment analysis.

C2.8 Recordkeeping and Waste Tracking

This section describes the recordkeeping procedures for waste analysis and handling and the tracking procedures for identifying each waste movement at the facility.

As required by 40 CFR 264 Subpart E all records of test results, waste analyses, or other determinations performed for the purpose of designating, treating, storing, or disposing of hazardous waste are kept in the operating record until final facility closure. Manifests of on-site generated waste signed by the initial transporter are kept at least three years, or until a signed copy is received from the receiving facility. The signed facility copy is kept at least three years. Original copies of waste profiles are filed and electronic versions of profiles are available to plant personnel. Examples of recordkeeping forms are presented in Appendix C-3.

As required by 40 CFR 264 Subpart E, the procedures for identifying each waste movement at the facility are described in this section. Information regarding bulk shipments of wastes in tankers and wastes in containers received from off-site are recorded on a Check-in Sheet. The unique sequential number printed on each Check-in Sheet is the core of the waste tracking system at the PSC Fernley facility. Each waste load is given a unique waste receipt number to track its progress through the facility. Specific details of waste tracking are described below.

Container Tracking

Each inbound manifest or waste shipment is assigned a waste receipt number. The waste receipt number allows easy identification of the waste shipment and correlates to a specific manifest and generator. Each drum is sequentially assigned a drum number that utilizes the waste receipt number as a prefix to that specific waste shipment.

Each container of waste received at the facility is issued an inbound waste tracking number that is attached to the container (in barcode format). The waste tracking number for containers is the waste receipt number plus the sequential number of a

specific container from a load. For example, if a load of 10 containers is received from a generator, the entire load is received on the same waste receipt number, but each container is identified by the waste receipt number plus a unique identifier number from 1 to 10. The waste tracking number and the identity of the material in the container is recorded on the Check-in Sheet. The Check-in Sheet is attached to a copy of the hazardous waste manifest and given to the plant recordkeeper for entry into the data tracking system.

Each time a container is processed, the waste tracking number of the container and the process being performed on the material is recorded on a Waste Process Form. Documentation of compatibility testing will be retained with these forms. Any time a new container of material is produced during processing, the new container is issued a computer generated waste tracking number that is affixed to the new container. The new waste tracking number and the identity of the newly-generated material is recorded on the Waste Process Form. At the end of each shift, Waste Process Forms are submitted to the plant recordkeeper for entry into the data tracking system.

When a container is prepared for shipment off-site, the waste tracking number of the container is recorded on the outgoing waste handling form. The outgoing waste handling form is attached to the generator copy of the outgoing manifest and submitted to the plant recordkeeper for entry into the data tracking system.

These procedures provide a paper trail for each container as it passes through the facility. Any waste generated during the processing of the material can be tracked back to the original container by use of the Waste Process Forms. Examples of waste tracking forms are in Appendix C-3.

Tracking of Waste in Tanks

Bulk wastes arriving at the facility are issued a waste receipt number and are sampled before offloading. The sample is analyzed and the results are compared to the profile. All analytical records are retained in the operating record. Compatibility tests are performed prior to offloading. Shipping papers are checked to ensure the waste matches the description on the profile. The manifest number, waste receipt number, generator name, waste type, gallons received, percent solids and tank system number are recorded on the daily operating log.

Record Locations

All records less than three years old are maintained in the operating record at the facility. The following record locations are provided:

1. Generator signed profiles are located in file cabinets in the front office and designated file storage area.
2. Inbound Manifests are located in file cabinets in the Administrative Manager's office and designated file storage area.
3. Outbound Manifests are located in file cabinets in the Administrative Manager's office and designated file storage area.
4. Tracking/Process Forms are located in files in the front office and designated file storage area.
5. Tank Logs are kept electronically in the facility tracking database.
6. Inspection Records are located in file cabinets in the front office and designated file storage area.
7. Profile Analytical is located in the file cabinets in the laboratory and the designated file storage area.
8. Bench Treat Protocols are located in file cabinets in the laboratory and the designated file storage area.
9. Verification Analytical is located in file cabinets in the laboratory and the designated file storage area.
10. Supplemental Analytical is located in file cabinets in the laboratory and the designated file storage area.
11. Compatibility Records are located in files in the front office and the designated file storage area.
12. Work Orders are located in files in the maintenance office and the designated file storage area.
13. Training Records are located in file cabinets in the front office and the designated file storage area.

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TABLE C2-1. ANALYTICAL PARAMETERS, METHODS, AND RATIONALE

Mandatory Verification Analyses (Tier One)

Parameter	Method Reference	Rationale
Physical Description	ASTM D 4979	Determine variations in waste type
Ignitability Screen	Methods D4982-89, or D3828	Determine Variations in waste type; storage limitations; compatibility
pH	SW 846 Methods 9040, 9041, or 9045	Determine Variations in waste type; storage limitations; compatibility
Radiation Screen	Geiger Counter[2]	Restricted Material

Mandatory Verification Analyses (Tier Two)

Parameter	Method Reference	Rationale
Physical Description	ASTM D 4979	Determine variations in waste type
Ignitability Screen	Methods D4982-89, or D3828	Determine variations in waste type; Storage limitations; compatibility
pH	SW 846 Methods 9040, 9041, 9045	Determine variations in waste type; storage limitations; compatibility
Radiation Screen	Geiger Counter[2]	Restricted Material
Halogens (containers)	Beilsteen Screen	Determine variation in waste type
Halogen (bulk)	Field test kit[2]	Determine variation in waste type
Specific Gravity (containers)	ASTM D 4979	General chemical composition; variations in waste type
Specific Gravity (bulk)	ASTM D 1298	General chemical composition; variations in waste type
Cyanide Screen	Field test kit[1]	Determine variations in waste type; storage limitations; compatibility
Sulfide Screen	Field test kit[1]	Determine variations in waste type; storage limitations; compatibility
TOC Screen		Determine variations in waste type; storage and treatment limitations

1. Commercially available spot test that indicate qualitative presence of suspect contaminant.
2. See Section C2.7.1 for a discussion on results of the radioactivity screen.

TABLE C2-1. ANALYTICAL PARAMETERS, METHODS, AND RATIONALE (CONTINUED)

Supplemental Analyses (Tier One and Tier Two)

Parameter	Method Reference	Rationale
Heat of Combustion (BTU)	ASTM D-240	Fuel consolidation; kiln Specifications
Flash Point	SW 846 Method 1020	Determination of ignitability; Storage limitations; compatibility
Total Metals	SW 846 Method Series 3030, Method Series 6000	Alternative fuel specifications; Air Permit requirements, LDR Compliance
Total Chlorine	SW-846 Method 9076	Off-site receiving facility criteria
Total Cyanides	SW 846 Method 9010	Off-site receiving facility criteria; LDR compliance
Total Sulfides	APHA Method 427	Off-site receiving facility criteria; LDR compliance
TCLP	SW 846 Method 1311	Determination of toxicity Characteristic; LDR compliance

TABLE C2-1. ANALYTICAL PARAMETERS, METHODS, AND RATIONALE (CONTINUED)

Processing Analyses (Tier Two Only)

Parameter	Method Reference	Rationale
Physical Description	ASTM D 4979	Determine variations in waste type
Ignitability Screen	Methods D4982-89, or D3828	Determine variations in waste type; Storage limitations; compatibility
pH	SW 846 Methods 9040, 9041, or 9045	Determine variations in waste type; storage limitations; compatibility
Halogen (containers)	Beilstein Screen	Determine variations in waste type
Halogen (bulk loads)	Field test kit[1]	Determine variations in waste type
Specific Gravity (containers)	ASTM D 4979	General chemical composition; Variations in waste type
Specific Gravity (bulk Loads)	ASTM D 1298	General chemical composition; variations in waste type
Radiation Screen	Geiger Counter[3]	Restricted Material
Cyanide Screen	Field test kit[2]	Determine variations in waste type; Storage limitations; compatibility
Sulfide Screen	Field test kit[2]	Determine variations in waste type; storage limitations; compatibility
Water Compatibility Screen	D 5058C	Determination of compatibility and proper management option
Acid Concentration Test (for acidic wastes w/ pH <2)	ASTM D 1067 (test method B)	Determination of compatibility and proper management option
Compatibility Testing	ASTM D5058A	To determine compatibility of wastes prior to consolidation.
Bench Treat Protocol (Wastewater Treatment)	Current wastewater treatment literature and lab/treatment tech experience. ASTM D5058A	To determine effectiveness of treatment and ensure safe mixing of reagents and wastes

1. Field test kit used will be Chlor-D-Tect, CHEMetrics or equivalent.
2. Commercially available spot test that indicates qualitative presence of suspect contaminant.
3. See Section C2.7.1 for a discussion on results of the radioactivity screen.

TABLE C2-2. WASTE ANALYSIS SUMMARY

Waste Analysis	Solvent Recycling	Fuel Consolidation	Water Treatment	Incin-eration	Land Disposal	Stabil-zation
Mandatory Verification Analyses*						
Physical Description	√	√	√	√	√	√
Ignitability Screen	√	√	√	√	√	√
pH	√	√	√	√	√	√
Halogen Screen	√	√		√	√	√
Specific Gravity	√	√	√	√	√	√
Radiation Screen	√	√	√	√	√	√
Cyanide Screen	√	√	√		√	√
Sulfide Screen	√	√	√	√	√	√
PCBs	√	√	√	√	√	√
Compatibility Screen	√	√	√	√	√	√
Water Compatibility Screen	√	√	√	√	√	√
Acid Concentration Test			√**			
TOC Screen			√			
Supplemental Analyses						
Heat of Combust.(BTU)		√ (1)				
Flash Point		√ (2)		√ (2)		
Total Metals		√ (3)	√ (4)			
Total Chlorine		√ (3)				
PCBs	√ (5)	√ (5)				
Total Cyanides	√ (6)	√ (6)	√ (6)	√ (6)	√ (6)	
Total Sulfides	√ (6)	√ (6)	√ (6)	√ (6)	√(6)	
TCLP					√ (7)	√ (7)

√ Indicates that waste analysis may be applicable to wastestream type.
* The applicability of mandatory tests is described in Section C2.7.
** Acidic Wastes Only

(1) Performed on all rail tank cars prior to loading.
(2) Performed as necessary for determination of storage constraints or DOT shipping information
(3) Performed as necessary on all rail tank cars subsequent to loading to comply with off-site receiving facility criteria.
(4) Performed as required by the air permit.
(5) Performed as necessary to comply with off-site receiving facility criteria.
(6) Performed as necessary to confirm compliance with LDR treatment standards or off-site receiving facility criteria.
(7) Performed as needed to confirm compliance with LDR treatment standards at a minimum one out every ten thousand outbound loads.

TABLE C2-3. STORAGE AND PROCESS LIMITATIONS (For Container Storage)

Waste Analysis	Solvent Recycling	Fuel Consolidation	Water Treatment (neutralization)	Incin-eration	Land Disposal	Stabilization
Physical Description	Semisolid /liquid	Solid/liquid	Semisolid /liquid	none	Solid/liquid	Solid/liquid
pH	0 – 14	0 – 14	0 – 14	0 – 14	0 – 14	1 - 13
Specific Gravity	0.6 – 1.7	0.6 – 1.7	0.6 – 1.7	0.6 – 1.7	0.6 – 1.7	0.6 – 1.7
Radiation Screen	See Below[1]	See Below[1]	See Below[1]	See Below[1]	See Below[1]	See Below[1]
Heat of Combustion (BTU)	N/A	> 5000[2]	N/A	None	N/A	N/A
Flash Point	No limit	No limit	No limit	No limit		
Total Metals	No limit	See Below[2]	No limit	No limit	No limit	No limit
Total Chlorine	0 – 100%	0 – 10%	0 – 50%	0 – 100%	0 – 50%	0 – 50%
PCBs	<50 ppm	<50 ppm	<50 ppm	<50 ppm	<50 ppm	<50 ppm
Cyanides	<250ppm	<250ppm	No limit	No limit	<250ppm	No limit
Sulfides	<500ppm	<500ppm	No limit	No limit	<500ppm	No limit
Compatibility Screen	Observe[3]	Observe[3]	Observe[3]	Observe[3]	Observe[3]	Observe[3]
Water Compatibility Screen	Observe[3]	Observe[3]	Observe[3]	Observe[3]	Observe[3]	Observe[3]
TCLP	N/A	N/A	N/A	N/A	N/A	N/A
TOC Screen	N/A	N/A	10% TOC[4]	N/A	N/A	N/A

1. See Section C2.7.1 for a discussion on results of the radioactivity screen
2. Specifications vary depending on requirements imposed by final receiving facility. Storage and processing equipment have no limitations.
3. Observe for excessive heat generation, polymerization, off-gassing, layering, bubbling, or other unanticipated reaction.
4. Trichloroisocyanuric and dichloroisocyanuric acid in tanks T-4 through T-7.

TABLE C2-3. (CONTINUED) STORAGE AND PROCESS LIMITATIONS

Waste Analysis	Consolidation (tank)	Storage (container)	Consolidation (container)
Physical Description	Semisolid/ Liquid	Solid/liquid	Solid/liquid
pH	0 – 14	0 – 14	0 – 14
Specific Gravity	0.6 – 1.7	No limit	No limit
Radiation Screen	See below[1]	See below[1]	See below[1]
Heat of Combust (BTU)	N/A	None	None
Flash Point	200 degrees F	No limit	No limit
Total Metals	No limit	No limit	No limit
Total Chlorine	No limit	No limit	No limit
PCBs	< 50 ppm	< 50 ppm	< 50 ppm
Cyanides	No limit	No limit	No limit
Sulfides	No limit	No limit	No limit
Compatibility Screen	Observe[3]	None	None
Water compatibility Screen	Observe[3]	Observe[3]	Observe[3]
TCLP	N/A	N/A	N/A
TOC	10%	N/A	N/A

1. See Section C2.7.1 for a discussion on results of the radioactivity screen.
2. Specifications vary depending on requirements imposed by final receiving facility. Storage and processing equipment have no limitations.
3. Observe for excessive heat generation, polymerization, off-gassing, layering, bubbling, or other unanticipated reaction.

TABLE C2-4. SAMPLING METHODS AND EQUIPMENT FOR WASTE TYPES

WASTE TYPE	EQUIPMENT TYPES BY CONTAINMENT VESSEL		METHOD REFERENCE
	DRUM/CONTAINER	TANK (ER)	ASTM(b)/SW846(a)
Free flowing liquids and slurries	-Glass/PVC Tube -Coliwasa	-Weighted bottle Dipper Glass/PVC Tube	D4057-81/1.2.1.1 1.2.1.2 1.2.1.3
Sludges	-Glass/PVC Tube -Trier	-Dipper Trier Metallic tube	D4057-81/1.2.1.3 1.2.1.5
Extremely viscous liquid/sludge	-Scoop -Auger -Metallic tube	-Shovel Scoop Metallic tube Auger	D140-70/1.2.1.7 1.2.1.6
Soil-like and packed solids	-Auger -Metallic tube -Trier -scoop	-Trier Metallic tube Shovel Scoop Auger	D1452-65/1.2.1.7 1.2.1.6 1.2.1.5
Solids (impervious)	-Auger -Knife -Saw	N/A	N/A

(a) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846, Third Edition (November 1986, and subsequent updates).

(b) ASTM-American Society for Testing Materials. Annual Book of ASTM Standards, Philadelphia, PA.

TABLE C2-5. SAMPLE/CONTAINER COMPATIBILITY

Sample	Plastic	Container Glass	Metal
Acids(except HF)	*	*	
HF	*		
Alkalines	*	*	
Solvents	*	*	*
Oils	*	*	*
Solids	*	*	*
Aqueous	*	*	*

* Sample compatible for storage in this type of container.

LIST OF FIGURES

Figure C2-1 Waste Profile System

Figure C2-2 Tier One/Two Determination

Figure C2-3 Waste Check-In Flow Chart

Figure C2-4 Waste Verification Flow Chart

Waste Profile System

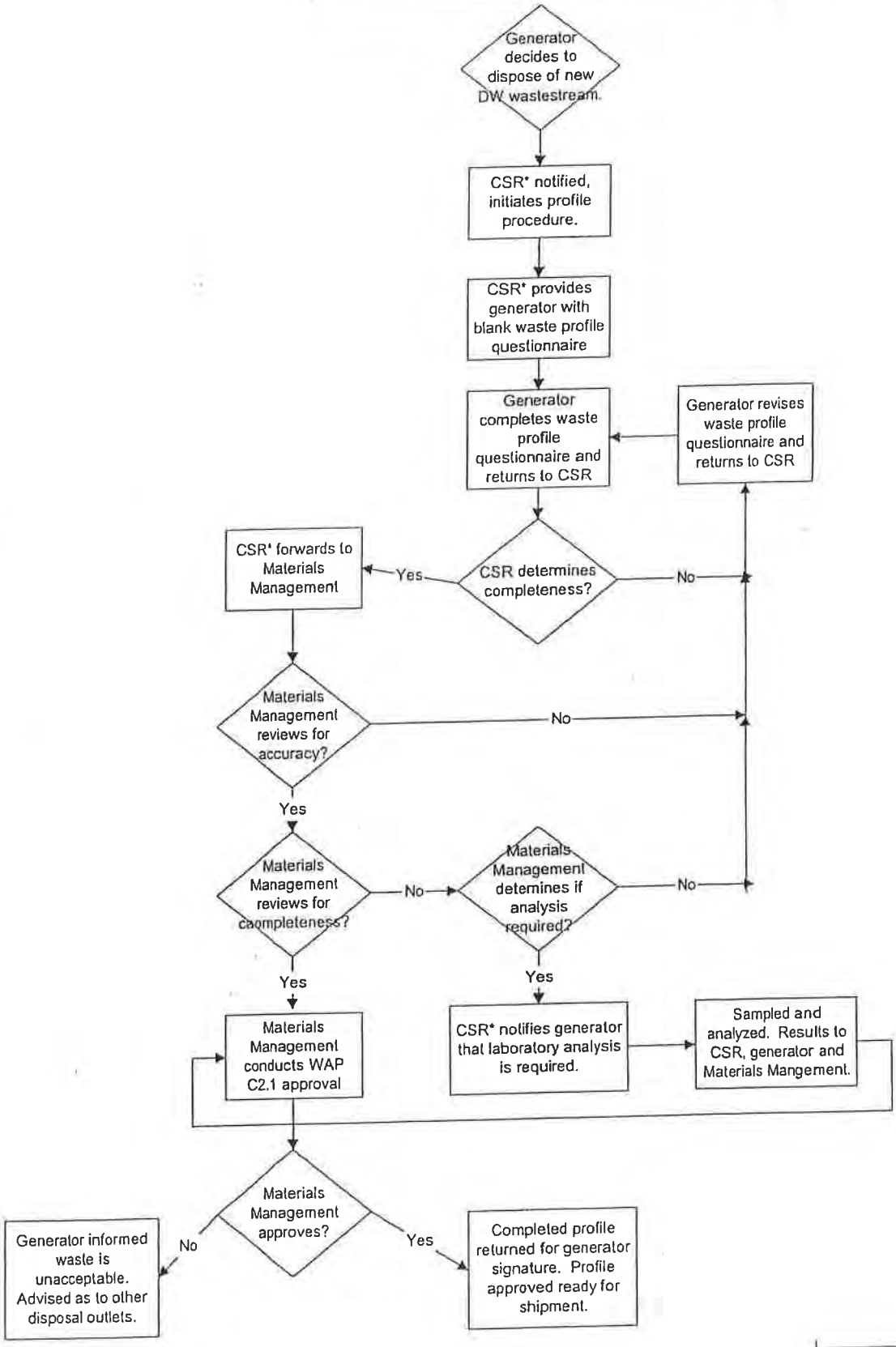
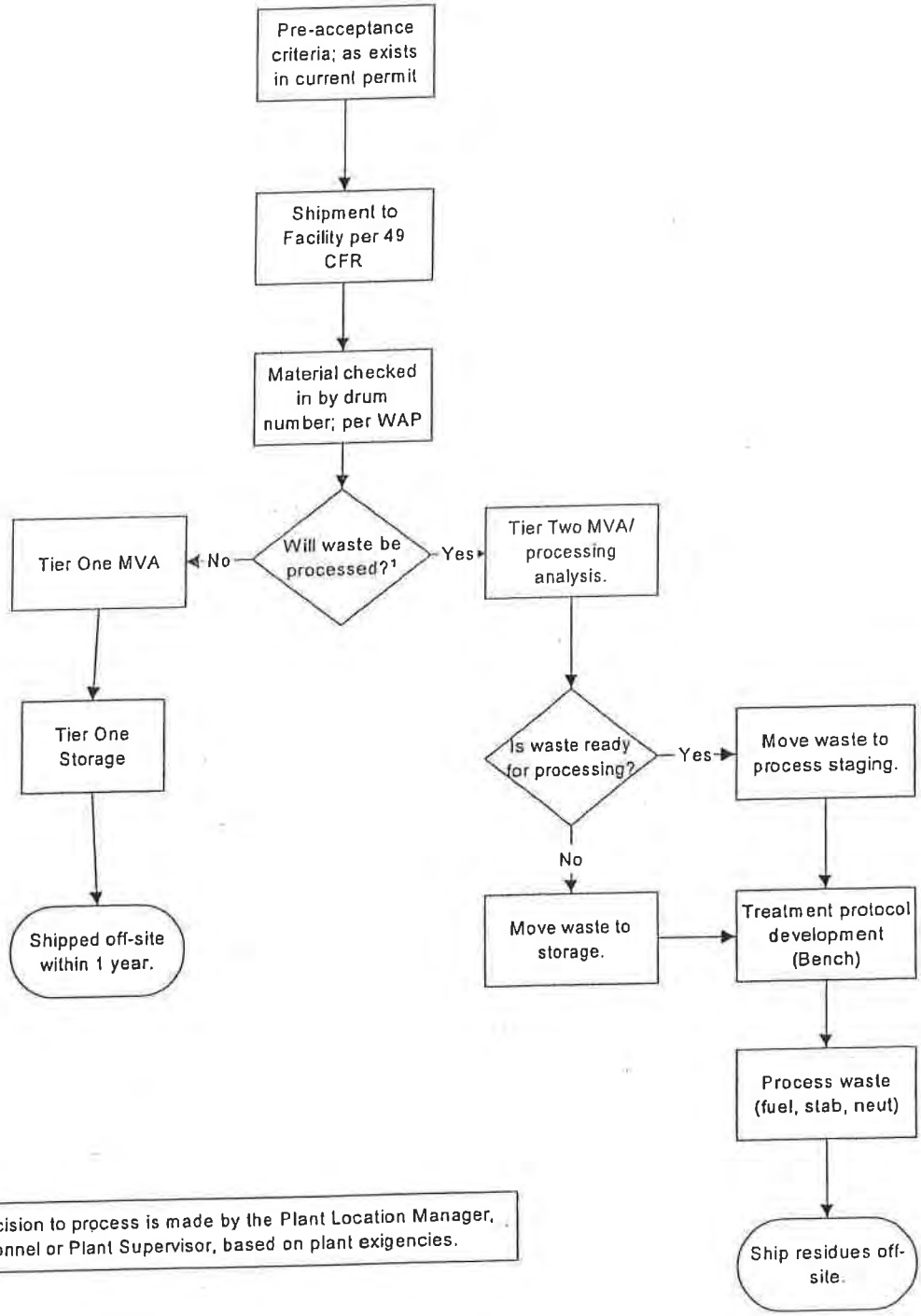


Figure C2-1
Waste Profile System

*CSR is Customer Service Representative

Tier One and Two Acceptance and Processing



Footnote 1 The decision to process is made by the Plant Location Manager, Check-in Personnel or Plant Supervisor, based on plant exigencies.

FIGURE C2-2
Tier One/Two Determination

Waste Check-In

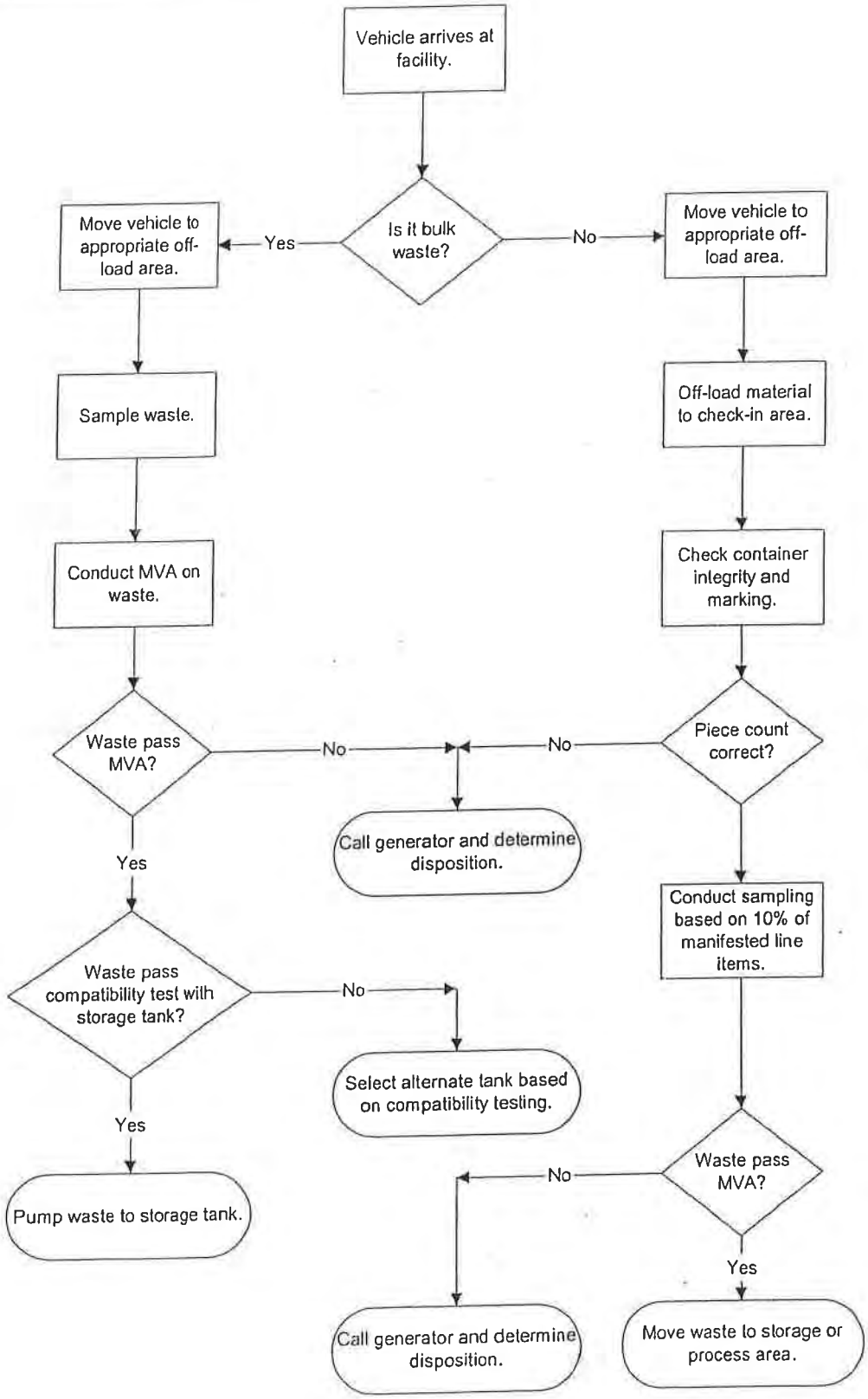
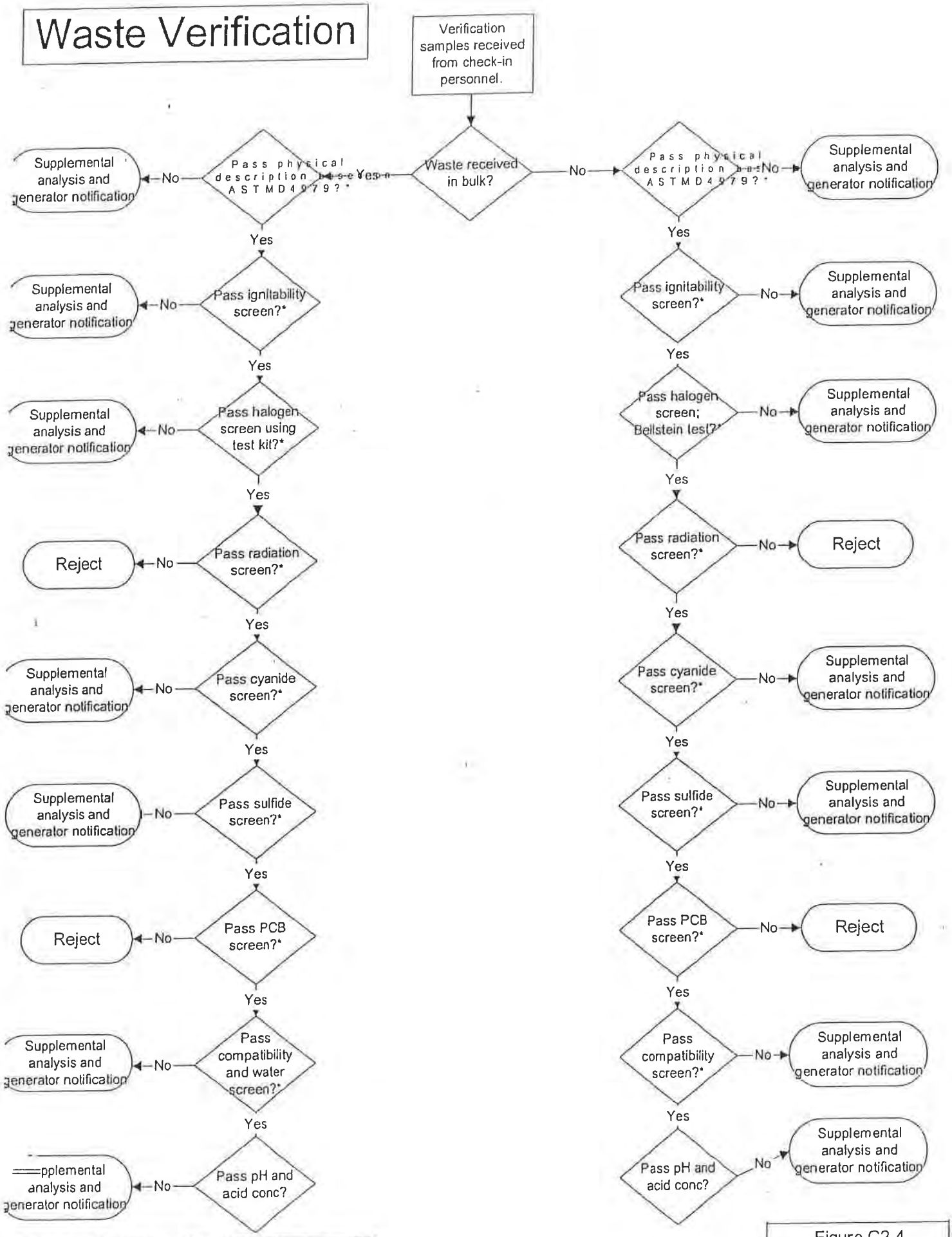


Figure C2-3
Waste Check-In

Waste Verification



*Rationale for testing of waste streams are explained in Section C2.6.1and Table C2-1.

Figure C2-4
Waste Verification

APPENDIX C-1
TYPICAL ANALYSES OF WASTES

Inorganic Treatment

Example Wastestreams

Generator's Waste Profile F97093-11

Starts : 07 MAY 2012
Expires: 31 MAY 2013
Printed: 25 JUN 2012

Status : ACTIVE
Sales Rep 1972 Sally Chapin
Acct Mngr 262 Brian D'Souza

A: GENERATOR (113299) SITE INFORMATION

ALS - CHEMEX
4977 ENERGY WAY
RENO, NV 89502
> Contact Dan Smith
TSDF Approval List No

EPA NVR000083246
NAICS 9999 Neshap N
Phone (775) 356-5395

B: CUSTOMER (26424) INFORMATION

ALS - CHEMEX LABS INC
4977 Energy Way
RENO, NV 89502

C: WASTE INFORMATION

On File > MSDS No Analysis No Sample No

Waste Name ACID SOLUTION
Process LAB WASTE
Unused Commercial Product No Spill Residue No

D: PHYSICAL CHARACTERISTICS OF WASTE

Phys States	L-Liq	Top Color	LIGHT YELLOW	Odor		PH Range	<2
		Mid Color		Layers	Single Phased	Free Liq %	100%
		Bot Color		Spec Grav	1.0-1.1	Flash Test	Gen Knowledge
		% Ash	NS	BTU/Lbs	ND	Flash Rnge	>200F
		% Water	0-60	% Halogens	NS	Viscosity	Low
						Pumpable	Yes

E: CHEMICAL COMPOSITION OF WASTE

NITRIC ACID (15 %) WATER (0 - 60 %)
HYDROCHLORIC ACID (10 - 25 %)

PCB's NO Cyanides NO Phenolics NO Sulfides NO Dioxins NS
TOC 1600 VOC <10 Information Provided By Generator

F: METALS METHOD Gen Knowledge

Arsenic	<5	Cadmium	<1	Chromium	<5	Silver	>5	Zinc	
Barium	<100	Merc TCLP	<0.2	Selenium	<1	Nickel		Copper	
		Lead	>5	Merc Tot		Thallium		Chrome-6	

G: OTHER CHARACTERISTICS OF WASTE

Ign. Solid	No	Oxidizer	No	Explosive	No	Shock Sensitive	No	Cyanide Reactive	No	Sulfide Reactive	No
Explosive		Asbestos		Radioactive	No	Water Reactive	No	Reactive (Other)	No
Herbicides	NS	Pesticides	NS	Ammonia	NS	Infectious	No	Medical	No

H: EPA / STATE WASTE IDENTIFICATION

EPA Waste Yes State Waste No TSCA No Waste Water No Universal Waste No
Form W103 Source G22 Origin 1 SubPart CC No NESHAPS No CERCLA No Debris No Reg. Organics No

EPA Codes D002 D008 D011
State Codes
UHC
Categorical Discharge Standards No DW/EHW: DW

I: SHIPPING INFORMATION

Marine Pollutant No

Containers DF Fiber Drum Qty to Ship Now DM Projected Volume

DOT Descrip UN3264 WASTE CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HYDROCHLORIC ACID, NITRIC ACID) 8 PGII RQ(10) ERG(154)

J: SPECIAL DISPOSAL INSTRUCTIONS

Generator's Waste Profile HDWY05-10

Starts : 07 MAR 2012
Expires: 31 MAR 2013
Printed: 25 JUN 2012

Status : ACTIVE
Sales Rep 2056 Lourdes Toledo
Acct Mngr 2061 Patty Nguyen

A: GENERATOR (20070) SITE INFORMATION

Headway Technologies, Inc.
497 SOUTH HILLVIEW DR.
MILPITAS, CA 95035

EPA CA0000909523
NAICS 3679 Neshap N

> Contact JIMMY THOMPSON
TSDF Approval List No

Phone (408) 205-7604

B: CUSTOMER (32518) INFORMATION

HEADWAY TECHNOLOGIES ATTN: Accounts Payable
678 SOUTH HILLVIEW DRIVE
MILPITAS, CA 95035

C: WASTE INFORMATION

On File > MSDS No Analysis No Sample No

Waste Name FIELD ETCH
Process NICKEL ETCHING PROCESS
Unused Commercial Product No Spill Residue No

D: PHYSICAL CHARACTERISTICS OF WASTE

Phys States	L-Liq	Top Color	GREEN	Odor	Mild	MINERAL ACID	PH Range	<2
		Mid Color		Layers	Single Phased		Free Liq %	100%
		Bot Color		Spec Grav	>1		Flash Test	Gen Knowledge
		% Ash	NA	BTU/Lbs	<5000		Flash Rnge	No Flash
		% Water	85-90%	% Halogens	UNKNWN		Viscosity	Low
							Pumpable	Yes

E: CHEMICAL COMPOSITION OF WASTE

WATER	(85 - 90 %)	HYDROCHLORIC ACID	(8 - 15 %)
SULFURIC ACID	(10 - 20 %)	UHC: NICKEL	(< 1 %)
HYDROGEN PEROXIDE	(0 - 1 %)		

PCB's N/A Cyanides N/A Phenolics N/A Sulfides N/A Dioxins NS
TOC <1% VOC N/A Information Provided By Generator

F: METALS METHOD Gen Knowledge

Arsenic	<5	Cadmium	<1	Chromium	<5	Silver	<5	Zinc	<250
Barium	<100	Merc TCLP	<0.2	Selenium	<1	Nickel	<600	Copper	<50
		Lead	<5	Merc Tot	N/A	Thallium	<7	Chrome-6	<5

G: OTHER CHARACTERISTICS OF WASTE

Ign. Solid	No	Oxidizer	No	Explosive	No	Shock Sensitive	No	Cyanide Reactive	No	Sulfide Reactive	No
Explosive		Asbestos				Radioactive	No	Water Reactive	No	Reactive (Other)	No
Herbicides	NS	Pesticides	NS			Ammonia	NS	Infectious	No	Medical	No

H: EPA / STATE WASTE IDENTIFICATION

EPA Waste Yes State Waste Yes TSCA No Waste Water No Universal Waste No
Form W103 Source G04 Origin 1 SubPart CC No NESHAPS No CERCLA No Debris No Reg. Organics No

EPA Codes D002
State Codes 792
UHC NICKEL
Categorical Discharge Standards No

DW/EHW: DW

I: SHIPPING INFORMATION

Marine Pollutant No

Containers DF Fiber Drum Qty to Ship Now 55'S Projected Volume

DOT Descrip UN3264 WASTE CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (SULFURIC ACID, HYDROCHLORIC ACID) 8 PGII RQ(D002) ERG(154)

J: SPECIAL DISPOSAL INSTRUCTIONS

Generator's Waste Profile 483342-01

Starts : 02 FEB 2012
Expires: 28 FEB 2013
Printed: 25 JUN 2012

Status : ACTIVE
Sales Rep 1972 Sally Chapin
Acct Mngr 262 Brian D'Souza

A: GENERATOR (25113) SITE INFORMATION

THYSSEN KRUPP BDM.USA
14255 MT BISMARK ST.
RENO, NV 89506
> Contact Mike Rodgers
TSDF Approval List No

EPA NVD092497999
NAICS 3312 Neshap N
Phone (775) 972-0272

B: CUSTOMER (26673) INFORMATION

Thyssen Krupp BDM.USA Formerly: Precision Rolled Pro
14255 MT. BISMARK STREET
RENO, NV 89506

C: WASTE INFORMATION

On File > MSDS No Analysis No Sample No

Waste Name SPENT HYDROCHLORIC / HYDROGEN PEROXIDE SOLUTION
Process PICKLING
Unused Commercial Product No Spill Residue No

D: PHYSICAL CHARACTERISTICS OF WASTE

Phys States	L-Liq	Top Color	VARIES / GREEN	Odor	Strong acidic	PH Range	<2
		Mid Color		Layers	Single Phased	Free Liq %	98%
		Bot Color		Spec Grav	1.0-1.1	Flash Test	Gen Knowledge
		% Ash	NS	BTU/Lbs	NA	Flash Rnge	>200F
		% Water	77-80	% Halogens	NS	Viscosity	Low
						Pumpable	Yes

E: CHEMICAL COMPOSITION OF WASTE

HYDROCHLORIC ACID	(19 - 21 %)	WATER	(77 - 80 %)
HYDROGEN PEROXIDE	(1 - 2 %)	CHROMIUM	(5 - 10 ppm)

PCB's NS Cyanides NS Phenolics NS Sulfides NS Dioxins NS
TOC <10% VOC <500PPM Information Provided By Generator

F: METALS METHOD Gen Knowledge

Cadmium	<1	Chromium	>5	Silver	<5	Zinc	
Arsenic	<5	Merc TCLP	<0.2	Selenium	<1	Nickel		Copper	
Barium	<100	Lead	<5	Merc Tot		Thallium		Chrome-6	

G: OTHER CHARACTERISTICS OF WASTE

Ign. Solid	No	Oxidizer	No	Explosive	No	Shock Sensitive	No	Cyanide Reactive	No	Sulfide Reactive	No
Explosive	N/A	Asbestos	N/A	Radioactive	No	Water Reactive	No	Reactive (Other)	No
Herbicides	NS	Pesticides	NS	Ammonia	NS	Infectious	No	Medical	No

H: EPA / STATE WASTE IDENTIFICATION

EPA Waste Yes State Waste No TSCA No Waste Water No Universal Waste No
Form W103 Source G02 Origin 1 SubPart CC No NESHAPS No CERCLA No Debris No Reg. Organics No

EPA Codes D002 D007
State Codes
UHC NICKEL
Categorical Discharge Standards No DW/EHW: DW

I: SHIPPING INFORMATION

Marine Pollutant No

Containers TP Tote Qty to Ship Now 6XTOTES Projected Volume

DOT Descrip UN3264 WASTE CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HYDROCHLORIC ACID, HYDROGEN PEROXIDE) 8 PGII ERG(154)

J: SPECIAL DISPOSAL INSTRUCTIONS

APPENDIX C-2

QUALITY ASSURANCE PROGRAM PLAN

PSC Fernley Facility Process Control Laboratory
QUALITY ASSURANCE PROGRAM PLAN

PSC FERNLEY FACILITY
PROCESS CONTROL LABORATORY
QUALITY ASSURANCE MANUAL

Thursday, March 02, 2000

1. **Organization/Responsibilities** The organizational structure and the responsibilities of each position in the PSC Fernley facility process control laboratory are outlined and described in Appendix E.

2. **Policy for Quality Assurance/Quality Control**

   a. The principal objective for operating the Fernley facility PCL is to consistently produce complete analytical data that accurately represent the wastestreams from which those samples are taken. The standard of accuracy as defined in Appendix A is ± 3%.

   b. All analytical procedures will be completed according to approved methods. Once control charts have been established for analyses, the statistics used for the chart (i.e., the mean and standard deviation) become the data quality objectives for those tests.

   c. No sample, to include pre-acceptance, processing and post treatment sample data as described in the WAP, will be recorded without including results for any analyses of QC samples associated with the data. Data will be entered in indelible ink on printed bench sheets and kept for at least three years. All data is reviewed and validated prior to release of the data from the Fernley facility PCL.

   d. Initial training for new laboratory technicians on analytical methods and QA/QC requirements and procedures will be conducted on priority basis, within 180 days of hire. Additional training is to be conducted periodically as required to maintain competence in analytical skills. Records of all training are kept in each trainee's personnel folder. Sample procedures training is conducted as designated in Section H of the permit.

   e. Located in the lab are copies of the PSC Fernley facility Waste Analysis Plan, Standard Methods for the examination of Water and Wastewater, applicable EPA Methods, this QA Manual, and in a readily available binder, materials safety data sheets for al potentially hazardous chemicals used in the lab.

3. **Sampling Procedures:** Sampling methods are delineated in Table C2-4 of the PSC Fernley facility WAP.

4. **Sample Management**:

   a. Samples are received from plant operators. Preservation techniques and maximum holding times are observed as indicated in the analytical methods designated in Table D2-1 of the WAP

   b. The laboratory manager as sample custodian assures: 1) samples are stored properly and handled by a minimum number of people; 2) the lab is secured at all times when not in use; 3) only authorized personnel are allowed in the lab; 4) samples are logged on "Truck Check In Sheet" and "Profile Sample Check In Sheets"; 5) someone is designated to analyze samples and 6) chain of custody procedures.

5. Methods Appendix D contains brief descriptions of the methods used in the Fernley facility PCL. Methods included in this quality assurance manual are limited to instrumental techniques whose quality control parameters are well established in general practice. Table C2-1 of the WAP delineates test methods.

6. **Data Management:** Raw Data is entered into a Microsoft® Access® database, or equivalent, for archiving and reporting. Hard copies of "Truck Acceptance Reports" are generated from the database, signed by the materials manager, and filed in filing cabinets. An automatic tape backup of the Access® database is performed every night. All records mentioned in the preceding and subsequent paragraphs and required in standard analytical methods are retained at the PSC Fernley facility PCL offices in file cabinets for a period of at least three years. Before any result is reported, all raw data and calculations are reviewed for accuracy and signed by the laboratory manager acting as the quality assurance officer. If data contained on any record is transcribed to facilitate brevity or neatness, the original is also kept. All data is recorded in ink and corrections are initialed.

7. Signatures and Initials of Record - See Appendix E.

8. **Audits**: Two types of audits are used to determine status of the PSC Fernley facility PCL operations. A system audit is used to assess personnel, equipment, facilities, and analytical procedures. The system audit is conducted periodically by laboratory manager. An outside audit will be conducted by at least annually. This audit may be accomplished by another Fernley facility Laboratory Manager or by an outside audit agency.

TABLE 1. Quality Control Procedures Frequency Chart

Parameters	Calibrations	Check standards	Blanks	Duplicates	PE Samples
Metals (ICP)	Daily, 10mg/lL 100 mg/L	1 per day*	1 per day (at beginning of calibration run on truck samples;and between each TCLP sample)	1 per day	1 every 12 months
Metals (AA) (for ICP Verification only)	On use, depending Upon metal being Analyzed	On use, per sample batch	On use, per sample batch	On use, per sample batch	1 every 12 months
TOC	As needed based on check standard performance	Daily, 500 mg/L	1 per day	1 per day	1 every 12 months
pH	Each day, buffers 4 S.U. and 10 S.U.	1 per day	N/A	1 per month	1 every 12 months
Cyanide	Daily 0.1 mg/L, 0.2 mg/L, 0.5 mg/L, and 0.8 mg/L	1 per day	1 per day	1 per day	1 every 12 months
Organic Vapor Analyzer	Internal electronic	Methane, by manufacturer's representative	Ambient air per manufacturer's instructions	1 per week	N/A

* The workday is defined as any day that the lab provides support for plant operations

QUALITY ASSURANCE PROGRAM PLAN APPENDICES:

A – Glossary of Common QA Terms

B – Control Charting Standards

C – Laboratory Quality Assurance Checklist

D – Analytical Methods

E – Organization/Responsibilities

APPENDIX A

GLOSSARY OF QUALITY ASSURANCE/QUALITY CONTROL TERMS

Accuracy	Degree of agreement of an analytical result with true value. Accuracy is affected by both random and systematic errors, but is sometimes used (improperly) to denote only systematic error. (See **Bias** below.)
Action Limit	A type of control limit on a control chart, which, if exceeded, requires corrective action to be taken. Action limits are usually place at ± 3 standard deviations from the expected or mean value
Batch	A set of consecutive determinations (analyses) made without interruption: a "run". Results are usually calculated from the same calibration curve or factor
Bias	That part of inaccuracy of analytical results caused by systematic error.
Blank	An analysis made by the same procedure as a sample, but intended not to contain the determinand (analyte). (In water analyses, pure water would be analyzed to determine the blank.)
Check Standard	A solution of known concentration that is used to check the precision of analyses (and bias due to calibration). When used in conjunction with a control chart it becomes a control standard. Check standards are prepared from different sources than standards used for calibration.
Data Quality Objectives (DQOs)	Qualitative and quantitative statements of the quality of data needed to support specific decisions or regulatory actions. Quantitative statements address accuracy, completeness, representativeness, and defensibility as a minimum, and quantitative statements should address bias and precision.
Precision	A qualitative term used to denote the scatter of results. Precision is said to improve as the scatter among results becomes smaller. Also referred to as imprecision. Precision is usually measured as standard deviation or relative percent difference (RPD)
Quality Assurance (QA)	The total integrated program for ensuring the reliability of monitoring and measurement data.
Quality Control (QC)	The routine application of statistically based procedures to evaluate and control the accuracy of results from analytical measurements.

Random Errors	Errors occurring when repeated analyses of identical portions of a homogeneous sample do not give a series of identical results. The results differ among themselves and are more or less scattered about some value. They are termed random because the sign and magnitude of the error of any particular result vary at random, and cannot be predicted exactly.
Relative Percent Difference (RPD)	The difference between duplicate results for analyses of a sample, relative to the mean (average) value of those results, and expressed as a percent. RPD= = Where " " is the result of the first analysis, and " " the second.
Relative Standard Deviation (RSD)	The standard deviation relative to the mean (also called coefficient of variation). It is calculated as either: or Where is the mean result and s is the standard deviation (see **Standard Deviation** below) is sometimes referred to as the percent relative standard deviation of %RSD.
Standard	A solution of known concentration, either a "check" or "control" standard, or a calibration standard that is used to prepare a calibration curve.
Standard Operating Procedures (SOP)	A detailed written description of a procedure designed to systematize performance of the procedure.
Standard Deviation	A constant that describes the spread of results. An actual standard deviation is denoted by "σ", whereas an estimate of the standard deviation is denotes by "s". For a sample of "n" replicate results taken from a population of sample analyses of known concentration, the estimate of the standard deviation is: S= = = where x_i is a result and is the mean of "n" results. For duplicate analyses of "m" pairs of unknown samples, the estimate of standard deviation of the

	difference)d) for the two samples in each pair is : s=
Systematic Errors	Errors that are indicated by tendency of results to consistently be greater or smaller that the true value. Usually, bias can be considered to be equivalent to systematic error.
Warning Limit	A type of control limit that is specified by a value on a control chart, usually ±2 standard deviations distant from the expected or mean value. Action is required when results fall outside the warning limits too frequently. A single value outside a warning limit does not require action, but should alert one to a possible problem. Three consecutive results outside a warning limit should be cause for action.

APPENDIX B

BENCH SHEET FOR REPLICATES OF STANDARD SOLUTIONS

Parameter: _____ Method: _____

TEST (n)	DATE	RESULT		
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
		A		

Standard Deviation =

APPENDIX B (CONT'D)

EXAMPLE OF COMPLETED BENCH SHEET – STD SOLUTIONS

Parameter: ICP Check Standard Solution, 200 µg/L Method: SW846 6010

TEST	DATE	RESULT		
1	07/02/96	212	14.3	204.49
2	07/03/96	208	10.3	106.09
3	07/05/96	186	-11.7	136.89
4	07/06/96	202	4.3	18.49
5	07/08/96	190	7.7	59.29
6	07/09/96	178	-19.7	322.09
7	07/11/96	226	28.3	800.89
8	07/12/96	214	16.3	265.69
9	07/14/96	182	-15.7	246.49
10	07/15/96	179	-18.7	349.69
11	08/02/96	212	14.3	204.49
12	08/03/96	208	10.3	106.09
13	08/05/96	186	-11.7	136.89
14	08/06/96	202	4.3	18.49
15	08/08/96	190	-7.7	59.29
16	08/09/96	178	-19.7	388.09
17	08/11/96	226	28.3	800.89
18	08/12/96	214	16.3	265.69
19	08/14/96	182	-15.7	246.49
20	08/15/96	179	-18.7	349.69
3954			5152.2 = A	

IPC CHECK STANDARD SOLUTION CONTROL CHART

Mean Concentration of Std Solution 197.7 µg/l
Std Deviation 16.5 µg/l

```
C                          °
O                          °
N          +3s = 247.2     ° ---------------------------------------------------- Action Limit
C                          °
E          +2s = 230.7     ° ----------------------------------------------------Warning Limit
N                          °            x              x
T                          °                     x
R                          °   x              x Concentration
A            x = 197.7     ° ----x--------------------------x--------------------of standard
T                          °                 x                 x    x              (mean value)
I                          °                     x
O                          °x                        x           x
N          -2s = 164.7     °-------------------------------------------x-----x—warning Limit
                           °                                              x  (16)
(in     -3s = 148.2        °-------------------------------------------------------------Action Limit
µg/l)                      °                                                                x
                           °                                                                (18)
                         Û-------------------------------------------------------------------
                            1   3   5   7  9   11   13   15   17   19
                              2   4   6  8  10   12   14   16   18   20
                           SEQUENCE OF RESULTS (OVER PERIOD OF TIME)
```

Results of Replicate Analyses obtained after the chart was made:

1	170	6	211	11	196	16	155
2	210	7	180	12	186	17	164
3	197	8	170	13	170	18	138
4	220	9	218	14	164	19	
5	185	10	225	15	188	20	

Note: After calculating a standard deviation (as on page 12), the control chart shown above (without the "x" data points) was constructed. Subsequent analyses of the standard solution, as indicated in the "Results of Replicate Analyses" were then plotted on the chart with an "x". The above chart shows the procedure was in control on analyses #1-15 but exceeded the warning limits on #16. At that point, the analyst might have investigated possible causes and taken corrective actions, but is not required to do so. By #18, the procedure was out of control (beyond the action limit on the low side). The analyst should cease analyzing the metal by ICP at that point until the problem has been corrected.

APPENDIX C

PSC Fernley Facility PCL Quality Assurance Checklist

	Yes	No	Comments
General			
1. Is Quality Assurance Manual up-to-date, available to all lab Personnel?	___	___	_____
Laboratory Procedures			
1. Are EPA-approved methods used and readily available to and used by all lab personnel?	___	___	_____
2. Are calibration and maintenance of instruments/equipment satisfactory?	___	___	_____
3. Does written schedule for required equipment maintenance exist?	___	___	_____
4. Are QC procedures in the QA Manual used consistently?	___	___	_____
5. Are QC records adequate to determine if Lab is in control?	___	___	_____
Laboratory Facilities and Equipment			
1. Is distilled or deionized water available (as required by the method)?	___	___	_____
2. Is dry, uncontaminated, compressed air available (if needed)	___	___	_____
3. Is the fume hood air-flow measured periodically and is it adequate?	___	___	_____
4. Is the laboratory there sufficiently lighted?	___	___	_____
5. Are adequate electrical sources available in the lab?	___	___	_____
6. Are instruments appropriate for the method and in good condition?	___	___	_____
7. Are trouble shooting procedures and written requirements for daily operation of instruments available to each instrument operator?	___	___	_____
8. Are standards available to perform required QC checks?	___	___	_____
9. Is proper volumetric glassware used ?	___	___	_____
10. Is glassware cleaned?	___	___	_____
11. Are Solvents and standard reagents properly stored?	___	___	_____
12. Are calibration and check standards frequently cross-checked	___	___	_____
13. Are standards discarded after recommended shelf life has expired?	___	___	_____

14. Are reagent bottles marked with date received, opened, and when known, with expiration date? ___ ___ _____
15. Are blanks run each day for appropriate analyses? ___ ___ _____

16. Are sufficient SOPs on hand for lab operations (e.g., cleanup, hazard response)? ___ ___ _____
17. Are gas cylinders (if used) replaced at 100 – 200 psi? ___ ___ _____

Laboratory's Precision, Accuracy, and Control Procedures

1 Are duplicates analyzed for all analyses and are the results recorded? ___ ___ _____
2. Are control samples required by the QA Manual introduced into the train of actual samples to ensure valid data are being generated? ___ ___ _____
3. Are control charts maintained and used routinely? ___ ___ _____

4. Is the lab within control (i.e., is precision good) ___ ___ _____

Date Handling and Reporting

1. Are round-off rules documented and uniformly applied? ___ ___ _____
2. Are significant figures established for each analytical procedures? ___ ___ _____
3. Are results checked by at least a person other than the analyst? ___ ___ _____
4. Are correct formulas used to calculate final results? ___ ___ _____
5. Do report forms exist to provide complete data documentation and permanent records and to facilitate data processing? ___ ___ _____
6. Are data reported in proper form and units? ___ ___ _____
7. Are lab records maintained for three years? ___ ___ _____
8. Is all data recorded in indelible ink with corrections initialed? ___ ___ _____
9. Is a list of initials identifying to whom they belong filed in the lab? ___ ___ _____
10. Are lab notebooks and pre-printed data forms bound permanently to provide good and defensible documentation? ___ ___ _____
11. Does an efficient filing system exist? ___ ___ _____

Laboratory Personnel

1. Are enough analysts present to perform necessary analyses ___ ___ _____

2. Do analysts have on-hand necessary references for procedures being used? ___ ___ _____

3. Are analyst trained in procedure performed? ___ ___ _____

APPENDIX D

ANALYTICAL METHODS

ACID DIGESTION OF SEDIMENTS, SLUDGES AND SOILS, METHOD 3050

ACID DIGESTION OF SEDIMENT, SLUDGES, AND SOILS (MICROSCALE), MODIFIED METHOD 3050

QUICK ACID DIGESTION OF SEDIMENTS, SLUDGES, AND SOILS, MODIFIED METHOD 3030

ACID DIGESTION FOR ARSENIC AND SELENIUM, METHOD 3114

ACID DIGESTION FOR MERCURY, METHODS 7470 AND 7471

METHOD FOR TOXICS CHARACTERISTIC LEACHING PROCEDURE (TCLP), METHOD 1311

TOTAL AND NON-AMENABLE CYANIDE DISTILLATION, METHOD 9010

COLORIMETRIC DETERMINATION OF CYANIDE, METHOD 4500CN$^-$E

IRON CYANIDE DETERMINATION ($FeCL_3$, METHOD

TOTAL RECOVERABLE OIL AND GREASE (GRAVOMETRIC SEPARATORY FUNNEL EXTRACTION), METHOD 9070

DETERMINATION OF TOTAL DISSOLVED SOLIDS AT 180 C, METHOD 209B

DETERMINATION OF SETTLEABLE SOLIDS, METHOD 209E

BTU AND ASH, METHODS D240-85 AND D5468-95

CHLORINE HOT WIRE TEST, HAZCAT CHEMICAL IDENTIFICATION SYSTEM, HAZECH SYSTEMS, INC., JANUARY 1989

FLASH POINT SCREEN, METHOD D4982-89

FLASH POINT (D001), METHOD D3828

PCB, METHODS 8082 AND 8000

PERCENT WATER, ASTM METHODS D4377-84 AND D4017-96a

APPENDIX E

1. Organization The PSC Fernley facility process control laboratory (PCL) is operated by a materials manager, a lab supervisor and laboratory technician.

2. Responsibilities

a. The materials manager is responsible for establishing quality assurance and quality control (QA/QC) policies and ensuring those policies are followed.

b. The laboratory supervisory is the primary laboratory analyst and is responsible for performing analyses on waste materials and quality control samples and recording results. The lab supervisor is also the sample custodian. The lab supervisor assists in establishing QA/QC policies and ensuring those policies are followed

c. The laboratory technician , in the absence of or under the direct supervision of the lab supervisor, perform analyses on waste materials and QC samples and record results. The lab supervisor will verify such results.

3. Signatures and Initials of Record

Marie Weinheimer _____

Bill Webster _____

Robert Potts _____

Lupe Schaffer _____

APPENDIX C-3

EXAMPLE WASTE MANAGEMENT FORMS

21st Century EMP Philip Service Corp.

Treat[illegible] Protocol

Reactor	Batch Number	Log Number	Gallons	Date

Source of Material	Metal Pool	Code	Sample Vol

CALCULATIONS:

Caustic Needed for Neutralization:		Gallons
Bleach Needed for Oxidation to Excess:		Gallons
Sodium Metabisulfite Needed for Excess:		Pounds
Acid Need to Degas/Neutralize:		Gallons

Hazards:

INSTRUCTIONS

		DATE	START	STOP	REAGENT / TANK	QUANTITY	pH	TEMP	OPERATOR	COMMENTS
Step 1:										
Step 2:										
Step 3:										
Step 4:										
Step 5:										
Step 6:										
Step 7:										
Step 8:										
Step 9:										
Step 10:										

AUTHOR: _____

Operations Review and Sign Off _____

PHILIP SERVICES **21 st Century Environmental Management Inc. Of Nevada**

GENERATOR'S WASTE MATERIAL PROFILE WORKSHEET

Date Received in Lab: _____ Profile Number

Account Representative Order#

SIC Code

A. GENERATOR INFORMATION

1. US EPA ID # 2. State ID No.

3. Name

Facility Address

City State Zip Code

Contact Title Phone

Consultant (If any) Fax

4. Form Code _____ Source Code _____ Origin Code _____ & Phone

B. MAIL PHILIP ENVIORONMENTAL INC. INVOICES TO: 1. [ ] Generating Facility at above address

2. Company Name 3. Phone

4. Address

City: State Zip Code

5. Attention: Fax:

C. WASTE INFORMATION

1. Name of Waste:

2. Process Generating Waste (be specific)

3. Generator has provided the following: [ ] Other [ ] Sample [ ] MSDS [ ] Waste Analysis

D. PHYSICAL CHARACTERISTICS OF WASTE

1. Color	2. Physical State @ 70 F	3. Layers:	4. Specific Gravity	5. Free Liquids:
	[ ] Solid [ ] Semi solid [ ] Liquid Other	[ ] Multi-layered [ ] Bi-Layered [ ] Single phased	[ ] <0.8 [ ] 1.1 - 1.2 [ ] 0.8-1.0 [ ] 1.3-1.4 Exact/Other	[ ] NO [ ] YES _____ %

6. pH: [ ] NA [ ] <2 [ ] 2 -4 [ ] 4-6 [ ]6-8 [ ] 8-10 [ ] 10-12.5 [ ] >12.5 Range

7. Liquid Flash Point [ ] <73F [ ] 73-100 F [ ] 101-141 F [ ] 142-200 F [ ] >200 F [ ] None [ ] Closed cup [ ] Open Cup

8. Fuel Blending: BTU/lb Ash %

E. TOTAL COMPOSITION OF WASTE (all hazardous & non-hazardous)

1. Include sludges & water as constituents

	RANGE min	RANGE max

PLEASE NOTE: The Total composition must be greater than or equal to 100% TOTAL _____ %

2. Indicate if this waste contains any of the following:

	Not Present	Concentration	
PCB	[ ]	ppm	[ ] lab analysis
Cyanides: amenable	[ ]	ppm	
total	[ ]	ppm	[ ] generator knowledge
Phenolics	[ ]	ppm	
Sulfides	[ ]	ppm	

F. METALS Indicate if this waste contains any of the following metals and which test method was used

[ ] TCLP [ ] TOTAL ( ) Generator

Metal	Waste No.	Less Than	Actual
Arsenic (As)	D004	[ ] <5 ppm	ppm
Barium (Ba)	D005	[ ]<100ppm	ppm
Cadmium (Cd)	D006	[ ] <1 ppm	ppm
Chromium (Cr)	D007	[ ] <5 ppm	ppm
Lead (Pb)	D008	[ ] <5 ppm	ppm
Mercury (Hg)	D009	[ ] <0.2 pp	ppm
Selenium (Se)	D010	[ ] <1 ppm	ppm
Silver (Ag)	D011	[ ] <5 ppm	ppm
			ppm
Nickel (Ni)		[ ] <134 pp	ppm
Thallium (Ti)		[ ] <120 pp	ppm
Copper (Cu)			ppm
Hexavalent Chrome			ppm

TOC _____ %

VOC _____ PPM

GENERATOR'S WASTE MATERIAL PROFILE WORKSHEET (Continued)

G. Is this waste any of the following? [ ] ignitable solid [ ] Water Reactive [ ] Reactive
[ ] Oxidizer [ ] Shock Sensitive [ ] None Apply

GENERATOR'S WASTE MATERIAL PROFILE WORKSHEET (Continued) Profile Number

H. USEPA/ STATE WASTE IDENTIFICATION

1. Hazardous / Dangerous Waste? [ ] Yes[ ] No 2. NESHAPS [ ] yes [ ] no
3. PCB Regulated By TCSA? [ ] Yes[ ] No 4. State Codes
5. List all applicable RCRA numbers:

I. SHIPPING INFORMATION

1. Is this a DOT hazardous material?, [ ] Yes [ ] No 2. Reportable Quantity (RQ) in pounds:
3. Method of Shipment [ ] Bulk liquid [ ] Bulk Solid [ ] Container (type / size)
4. Number of Units to ship now 5. Anticipated volume / units per year [ ] One Time

US DOT DESCRIPTION: USE THE FULL BASIC DESCRIPTION ON THE HAZARDOUS WASTE MANIFEST			
6. Proper Shipping Name		if generic "n.o.s." indicate the two predominant constituents in parenthesis	
7. Hazard Class	8. DOT Number	9. Packing Group Number	10. Additional Information

J. SPECIAL HANDLING INFORMATION

SUBPART CC - CERTIFICATION

] This profile has >500PPMW of volatile organic compounds and is subject to Subpart CC of the RCRA regulations.
[ ] This profile is NOT subject to Subpart CC of the RCRA regulations as it contains <500PPMW volatile organic compounds OR is subject to the followng exemptions:
[ ] It is listed organic waste which meets the corresponding organic constituent treatment standard.
[ ] It is waste which is subject to Underlying Hazardous Constituent treatment standard and is certified to meet all applicable organic standards.

THIS DETERMINATION IS BASED ON: [ ] TESTING [ ] GENERATOR KNOWLEDGE

GENERATOR'S SIGNATURE I CERTIFY THAT I HAVE PERSONALLY EXAMINED AND I AM FAMILIAR WITH THE INFORMATION SUBMITTE AND ALL ATTACHED DOCUMENTS, AND THAT BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THAT THE SUBMITTED INFORMATION IS TRUE AND COMPLETE.

Signature Title Date

For 21 st CENTURY EMI/PHLIP SERVICES CORP USE ONLY

LAB REVIEW	RCRA / DOT REVIEW
Signature Date	Status [ ] Approved [ ] Denied
Treatment Codes	Signature Date

21ST CENTURY EMI / PHILIP SERVICES CORP.
2095 Newlands Dr. E.
Fernley, NV 89408
Phone: (775) 575-2760 FAX: (775) 575-2803

'hilip Services Corporation

Waste Receipt Container Check-In : EMI-28169

Date : 01/28/2004
Time : 09:07:58

Date 01/28/2004
Gov't No

Generator 38629
Carrier ADV104
Bill To ZZPACT

SIC Code 9999
Benzene No
Neshap No
Manifest 51635

Order 3030-35
Containers 3

Name _____ Date/Time Checked In _____ Analyzed By _____

No.	PgL	Inter-Co #	Profile #	Waste Categories	Physical Description	Type	Quantity	U	IS	%Sol	Location	S/C
001	1A		302349-01	AF01 AF02 AF03	Hplc Organic Solvent Waste				0	0		
002	1B		180223-02	INC13	Ethidium Bromide Solid Waste				0	0		
003	1C		180224-02	INC09	Ethidium Bromide Liquid Waste				0	0		

End Waste Receipt Container Check-In Form (pvWrcCif) Printed 01/28/2004 at 09:07:58 by DEBBIEC

Operations Summary for Waste Receipt : EMI-28169

Manifest Line	1A 51635 Containers 1
Profile/Status	302349-01 / Active
Waste Name	HPLC ORGANIC SOLVENT WASTE
DOT Proper Ship Name	WASTE FLAMMABLE LIQUIDS, N.O.S. (ETHYL ACETATE, HEPTANE)
Dangerous/Hazardous	Yes Cercla No
State Waste Codes	214
EPA Codes	D001 F003
Waste Category	AF01 AF02 AF03
Treatment Designation	A-FUELS

Manifest Line	1B 51635 Containers 1
Profile/Status	180223-02 / Active
Waste Name	ETHIDIUM BROMIDE SOLID WASTE
DOT Proper Ship Name	HAZARDOUS WASTE, SOLID, N.O.S. (METHYLENE CHLORIDE, METHANOL)
Dangerous/Hazardous	Yes Cercla No
State Waste Codes	352
EPA Codes	F002 F003
Waste Category	INC13
Treatment Designation	INC13-COMP

Manifest Line	1C 51635 Containers 1
Profile/Status	180224-02 / Active
Waste Name	ETHIDIUM BROMIDE LIQUID WASTE
DOT Proper Ship Name	NON-RCRA HAZARDOUS WASTE LIQUID
Dangerous/Hazardous	Yes Cercla No
State Waste Codes	134
EPA Codes	
Waste Category	INC09
Treatment Designation	INC09

Process Form # _____

Date		Technicians	
Operator			
Shift			
Process Type			
Dest. Tank Number		No. of New Containers	
Start Time			

Destination Container Type	Destination Container Waste Category	Destination Storage Area

	Origin/Source Container#	% or Gal. Waste Leaving Origin	Mist/Fumes	Layering	Polymerization	Precipitation	Emulsification	Viscosity	Bubbing	Foaming	Solidification	Spattering	Interaction	Comments
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

DID PROCESS EMPTY TANKS? YES NO

SECTION D

PROCESS INFORMATION

SECTION D. PROCESS INFORMATION

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SECTION D. PROCESS INFORMATION

Hazardous wastes received at the facility are stored in tanks and containers and treated in tanks and process units. The locations of tank systems, outdoor container storage pads, and treatment areas are shown on Figure D1-2, Container Storage Areas and Figure D2-1, Tank Location Plan. This section provides detailed descriptions, designs, and operating information for hazardous waste storage, treatment, and process units at the facility.

D1.0 CONTAINERS

This section describes container management practices and structural design information for container storage areas at the facility. Containers of waste received from off-site are stored in outdoor container storage areas shown in Figure D1-2, Container Storage Areas, as well as inside the main building in the Lab Pack Room (Figure D1-2c) and Truck Bay (Figure D1-3).

Other areas within the facility where hazardous waste containers are managed, but not stored, include the Dewatering Area, Detoxification Area, Crystallizer Area, Solids Receiving Area, East and West Loading Docks, and the Check-in Areas.

All F020-F027 wastestreams will be stored only on the West Pad Container Storage Area or in portable secondary containment pallets on the East Pad Container Storage Area and the East Container Storage Area. The West Pad Container Storage Area and secondary containment pallets meet the requirements of 264.175(b) for secondary containment.

D1.1 Description of Containers

40 CFR 264.171, 264.172, 268.50

The facility receives hazardous wastes in labeled US DOT approved containers that are visually examined for structural integrity and leakage prior to storage. The condition of drums in storage is assessed during inspections described in Section F2.1, General Inspection Requirements. Any containers showing evidence of leakage or damage will be placed in overpack drums, processed immediately, or the waste will be transferred

into a container in acceptable condition as described in the Contingency Plan under Emergency Response Procedures. The facility receives containers packaged in accordance with 49 CFR 173 (Subparts A, B, E, and F) and designed in accordance with 49 CFR 178 (Subpart B, H, J, L, and N).

Liquid wastes are stored, with a space allowance for liquid expansion (in accordance with 49 CFR 173.24a(d)), in closed-head drums with bungs and vents (designed in accordance with 49 CFR 178 Subpart J and L). Sludges and solids may be stored in open head drums which utilize gaskets and bolt rings. Containers of waste will remain closed and sealed except when adding to, removing from, or sampling the waste.

Containers of waste, whether received from an off-site facility, consolidated, or generated on-site, are marked and labeled in order to identify the major risk(s) associated with contents of the container. Drums in storage at the facility are marked with the criteria found in 40 CFR 262.32, 49 CFR 172 Subpart D and labeled in accordance with 49 CFR 172 Subpart E and identified using criteria found in 40 CFR 261. All RCRA hazardous wastes received at the facility are considered to be Hazardous Materials by DOT. Major risk category is determined utilizing the proper shipping name found in the Hazardous Material Table in 49 CFR 172.101. Each shipping name has one or more hazard classes identifying the major risks associated with the substance. A container received at the facility without appropriate labeling will be properly labeled prior to storage or processing. Section F.2.1 describes inspection procedures for ensuring that containers are properly labeled. Any labels found to be illegible or peeling off containers are replaced or reattached.

During check-in, containerized wastes are assigned an in-house waste tracking number that is printed on a label. This tracking label also has the date in which the container was received. The tracking label is affixed to the container for recordkeeping purposes. The tracking label provides a unique identification number for each container received or generated at the facility. This information is input into the facility operating system for tracking purposes. Tracking of containerized waste at the facility is done utilizing a bar code label system described in Section C2.7. Tracking of onsite processes is done utilizing the Waste Process Form. All unique identification numbers and processes are recorded on the process form. Newly generated material is assigned a new unique identification number based on the process form number. Process form information is

input into the facility operating system linking the old container number to newly processed material.

Prior to being shipped off-site, containers of waste are prepared for transportation, labeled and marked in accordance with 49 CFR 172 and 40 CFR 262.30-33. All empty containers are managed in accordance to 40 CFR 261.7. Each unique container number is input on the outgoing waste handling form. Information on the outgoing waste handling form is input to the facility operating system, creating a container tracking mechanism from the point of receipt to shipment off-site.

D1.2 Container Management Practices

40 CFR 264.35, 264.173, 264.175(c), and 270.15(b)(2)

This section describes safe management practices for moving, stacking and storing containerized waste.

D1.2.1 Safe Management Practices for Moving, Transferring, and Storing

Containers of waste arrive at the facility in box vans and on flat-bed trucks. Containers are unloaded by facility employees, typically using forklifts equipped with a drum handling attachment. Containers are staged in a check-in area to await sampling and assignment of a waste tracking number. Containers may be placed in a check-in area before being moved to a storage stack or processing area. Waste check-in and discrepancy procedures are discussed further in Section C2.6, Analytical Parameters and Rationale.

Once the waste has been checked-in, containers are sorted by type (waste code, liquids, solids, etc.) and transferred to appropriate storage areas. The compatibility of wastes is confirmed by the procedures described in Section C2.4, Incoming Waste Procedures. In the event of a discrepancy, containers will be relabeled and marked to ensure proper management and segregation. Wastes are segregated into compatible storage containment areas, based on the wastes' primary DOT hazard class by Table F5-1. Segregation by primary DOT hazard class and Table F5-1 provides an easily recognizable method to meet the requirements of 264.177.

Routes for transferring drums to and from staging and storage areas are discussed in Section B4.0, Traffic Information. The containers are transferred by forklift and stacked on top of or beside containers already stacked on the storage pad. The forklift operator sets the containers down, backs away, and returns to the staging area to repeat the process. Forklift drum-handling attachments are designed to safely transport two drums at a time without creating unnecessary stress or strain on the drums. This handling method guards against drum ruptures and leaks. Drum dollies are also used for safely moving drums within the facility. Facility personnel are trained in the proper handling of drums and containers as part of the Hazardous Waste Management training module (Figure H2-4) and on the job training. Forklift operators are instructed to yield to truck and pedestrian traffic within the facility.

Container management practices to prevent spills and leakage include keeping containers closed, except when adding to, removing from, inspecting, or sampling the waste, and using the appropriate tools when opening containers. Containers are inspected during unloading for signs of leakage and for proper closure of lids.

D1.2.2 Stacking Patterns

Container staging and storage areas are located both indoors and outdoors at the facility. As described in section D1.2.1, wastes received are grouped based on DOT primary hazard classifications such as: Flammable, Poison, Corrosive, Oxidizer and Class 9. Segregation into compatible storage containment cells is done by DOT primary hazard class in accordance with Table F5-1. Acceptable waste codes are listed by container storage area in Table D1-1. Table D1-3 provides the container stacking patterns for the facility.

D1.2.3 Container Storage Operations

Containers in the facility are stored in designated Container Storage Areas, as shown on Figures D1-2, D1-2a-c, and D1-3. The container storage areas are designed to facilitate drum transfer activities, inspection, and storage by providing adequate secondary containment, aisle spacing, and drum stacking arrangements. Maximum drum storage capacities are described below. Containers which are subject to the air emission requirements of Subpart CC, are discussed further in Section F6.0. Waste

containers with 10% or more organic concentration, or containing 500 ppm or more volatile organics, may not be staged or stored in Truck Bay. As discussed in Section D1.2.1 wastes are segregated into compatible storage containment areas, based on waste type and primary hazard classification. Compatibility groups for storage are as defined in the Segregation Table for Hazardous Materials, found at Table F5-1. As required by 40 CFR 264.177, all incompatible materials are segregated by berms.

Container storage area sumps and containment are inspected daily for evidence of accumulated liquids. Prior to storage in areas without secondary containment, containers are visually inspected for the presence of free liquids. Secondary containment calculations for the West Pad container storage area are included in Appendix D-3. Information on the truck bay secondary containment is included in Section D1.3.2 and Figures D1-4 and D1-5.

Container storage areas may also be used for storage of non-state household hazardous waste (HHW). These non-RCRA containers are segregated according to the compatibility standards for RCRA hazardous waste. Non-state household hazardous waste containers will be identified and labeled as HHW, and also have DOT and waste tracking labels.

East Pad Container Storage Area

The East Pad Container Storage Area provides outdoor storage for bulk and non-bulk containers of waste solids. Containers with EPA waste codes F020, F021, F022, F023, F024, F026, and F027 may not be stored within this area. Containers of organic waste can be stored anywhere within the East Pad Container Storage Area, as long as they are clearly marked as such, and provided that segregation requirements found in Table F5-1, “Segregation Table for Hazardous Materials” are met.

The area is one large, paved unsegregated storage cell, consisting of 52 rows or stacks of waste containers. The area is surrounded by a raised, concrete berm to collect rainwater and prevent run-on. Rainfall accumulates in a low corner of the area, where it can be collected and transferred to a nearby stormwater evaporation pond. A forklift access aisle runs down the middle of the pad, with 26 rows on each side. Each row is four feet wide, allowing for drum stacks two wide or for super sacks, and 40 feet deep. Containers may be stored on pallets for ease of stacking and movement, and to elevate

containers to prevent contact with any accumulated rainwater. Stacking in each row is up to two high. Between stacks is a 36 inch aisle space to allow for container inspection. Maximum capacity in the East Pad Container Storage Area is 1,200 cubic yards of material. Table D1-1 lists waste codes that can be stored within the East Pad Container Storage Area. Layout of the East Pad Container Storage Area is shown in Figure D1-2a.

East Container Storage Area

The East Container Storage Area is a paved, sloped, marked area on the east side of the facility for staging and storage of solids in bulk containers (i.e. roll-off boxes, end dumps) and non-bulk containers, Organic waste containers can only be stored within the designated area indicated in Figure D1-2b. At the low end of the area is a raised concrete berm sufficient to prevent run-on and direct rainfall run-off from the area to a low-point sump and stormwater evaporation pond. Layout of the East Container Storage Area is shown in Figure D1-2b. Maximum waste storage capacity in the East Container Storage Area is 896 cubic yards. Table D1-1 lists the waste codes that can be stored in the East Container Storage Area.

West Pad Container Storage Area

The West Pad Container Storage Area consists of four segregated storage cells of various sizes and a fifth cell for waste check-in and storage. All cells feature bermed concrete construction, sloped to epoxy-coated sumps for drainage and collection of accumulated liquids. Storage cells 1 through 4 are provided with metal canopies to shelter containers from the sun and rain. Secondary containment details are discussed further in Section D1.3.1. Design and layout drawings for the West Pad Container Storage Area are found in Appendix D-1.

Within each segregated containment cell are rows or stacks for storage of compatible waste containers. Each row is four feet wide, allowing for drum stacks two wide or for supersacks or boxes, and 26 feet deep. Containers in storage may be placed on pallets for ease of stacking and movement. Containers may be double stacked. Containers staged for check-in are typically placed directly on the concrete. The inspection aisle between rows is 36 inches wide. Maximum waste storage capacity in the West Pad Container Storage Area is 314 cubic yards, which equals up to 1,152 55-gallon drums

in cells 1 through 4 and the check-in cell. Table D1-1 lists the wastes that can be stored in the West Pad Container Storage Area.

Truck Bay Container Storage Area

Wastes are stored in the Truck Bay Container Storage Area in bulk and non-bulk containers. Bulk containers have a volume greater than 119 gallons, non-bulk containers have a volume less than 119 gallons. The storage area is divided into three sections, each segregated by containment curbs and berms. Storage consists of two categories: Acid wastes and alkaline/cyanide wastes.

Cyanide and/or alkaline waste containers are stored in the southeast portion of the truck bay. Storage may consist of up to three rows of containers, running the length of the area. A 36 inch aisle space between rows will be maintained. Waste containers may be stored on pallets (whenever feasible) for ease of movement and stacking, or placed directly on the ground. Containers may be stacked up to two high. Maximum waste capacity in this area of the Truck Bay is 45 cubic yards, which equates to 165 drums.

Acid waste containers are stored in the western half and in the northeast portion of the truck bay. Again, storage may consist of up to three rows of containers, running the length of each area. Aisle space between rows will be at a distance of no less than 36 inches. Waste containers may be stored on pallets (whenever feasible) for ease of movement and stacking, or placed on the ground. Containers may be stacked up to two high. Maximum waste capacity in these two combined areas of the truck bay is 100 cubic yards, which equates to 367 drums.

Layout of the Truck Bay Container Storage Area is shown in Figure D1-3. Secondary containment features for the Truck Bay Container Storage Area are described in section D1.3.2 and shown in Figures D1-4 and D1-5. Table D1-1 lists the waste codes that can be stored in the Truck Bay Container Storage Area.

Lab Pack Room

Lab packing and loose packing operations are performed in the Lab Pack Room, formerly known as the Drying Room. The Lab Pack Room provides indoor storage for 20

55-gallon drums of consolidated materials (1,100 gallons) and 36 lab packs and/or loose pack 55-gallon equivalent containers (1,980 gallons). Refer to Section B1.6.1 for a description of lab pack and loose pack containers.

The Lab Pack Room is constructed with a concrete floor that is sloped to a sump for collection of accumulated liquids. All containers stored within the room are placed on portable secondary containment trays to provide segregation between incompatible materials. Non combustible partitions or separation by distance are used between container consolidation locations to meet separation requirements in the International Fire Code (IFC).

Inbound containers in the Lab Pack Room are stacked in accordance with Table D1-3. Inspection aisles between rows are 36 inches wide. Containers containing consolidated liquids and solids are stored in portable secondary containment pallets that provide adequate spill containment and segregation from incompatible materials. Consolidation containers are only opened when adding to or removing materials from one container to another. When consolidation containers become full, they are sealed and removed from the Lab Pack Room and prepared for shipment or processing. Compatible solids, liquids and sludges generated from depacking/consolidation activities in the Lab Pack Room may be placed in tanks for treatment. Table D1-1 lists the hazardous waste codes that are permitted for storage in the Lab Pack Room.

Figure D2-1 shows the location of the Lab Pack Room within the facility and Figure D1-2c shows the layout of the Lab Pack Room. Design information and containment calculations for secondary containment pallets in use in the Lab Pack Room can be found in Appendix D-3.

D1.3 Secondary Containment System Design and Operation

40 CFR 270.15(a)(1),(2),(3),(4),&(5), 264.175(a),(b)(1),(2),(3), (4),&(5), and 264.175(d)

This section provides design and construction information which demonstrates that the container storage areas are capable of adequately containing precipitation and/or leakage from drums. Operational information demonstrating that containers are kept from contact with standing liquids and are properly stored and maintained is also provided. Design features for each containment area are summarized in Table D1-2, Container Storage Area Containment Checklist.

D1.3.1 West Pad Design and Construction of Base

40 CFR 264.175(a),(b)(1),&(d), 270.15(a)(1)

The West Pad Container Storage Area secondary containment structures were constructed in accordance with the design drawings and specifications found in Appendix D-1, Engineering Designs. Concrete foundation and slab designs incorporate recommendations made in the geotechnical engineering reports, found in Appendix D-4. Each segregated, concrete containment cell is sloped to drain and collect any accumulated liquids in dedicated blind sumps. Each cell has sufficient capacity to contain at least 10% of the total volume of all containers stored within. Containment cells feature watertight joints constructed per design details outlined in Appendix D-1. Epoxy coatings are applied in all containment area sumps for chemical resistance and reduced permeability. The asphalt paving around the West Pad Container Storage Area is sloped and graded to prevent run-on by channeling rainfall away from the containment cells.

Container storage pads are inspected as described in Section F2.1 to determine that integrity is maintained. The floor, sumps, and curbing are visually examined for signs of deterioration or cracks. Any observed cracks are injected or filled with an appropriate material as per manufacturer's specifications. In this way, container storage areas are maintained free of cracks and gaps. Examples manufacturer's data sheets for typical sealants, injection epoxies, and coatings used for secondary containment areas are found in Appendix D-2.

Drum capacities and secondary containment calculations for each segregated cell in the West Pad Container Storage Area are found in Appendix D-3.

D1.3.2 Truck Bay Secondary Containment

The Truck Bay is divided into three distinct sections that that are separated by berms to segregate and prevent mixing of incompatible wastes. Each section has a concrete floor that is sloped to direct spills to a low-point sump. As depicted in Figure D1-3, two of the sections are used for acid wastes, while the third section is used for cyanide and alkaline wastes. The two sumps in the Acid Section gravity drain into one of the acid

waste storage tanks located in the Tank Storage Bay. The sump in the Cyanide/Alkaline Section gravity drains into one of the alk./cyanide waste storage tanks located in the Tank Storage Bay (See Figure D1-4, Truck Bay Area Sumps and Figure D1-5, Truck Bay Containment Schematic). Each of these systems has more than sufficient secondary containment capacity to account for the containers stored in Truck Bay, as well as load/unload activities in the Truck Bay and waste storage in the Tank Storage Bays.

The tanks that are designated to receive drainage of leaks and spills from Truck Bay are not dedicated to secondary containment and may contain other compatible liquids. If the spilled volume in Truck Bay is greater than the available tank capacity, the excess material will flow through the tank overflow piping into the concrete secondary containment system. Secondary containment system capacities and calculations are found in the Appendix D-3.

D1.3.3 Containment System Capacity and Drainage Control

40 CFR 270.15(a)(2),(3),(4),&(5), 264.175(b)(2),(3),(4),&(5)

Sumps and sump pumping systems are used to collect and remove liquids which accumulate from precipitation, spills, area washdown, and equipment decontamination. Specific sump locations are listed in Table D1-4, and shown on containment design drawings found in Appendix D-1. Sumps and secondary containment systems are inspected routinely for leakage as described in Section F2.1.

Outdoor secondary containment systems, unless sheltered from rain, must have adequate capacity to contain rainfall from a 25-year/24-hour storm plus the greater volume of 100% of the volume of the largest liquid storage container or 10% of the volume of all containers storing free liquids until the collected material is detected and removed. The 25-year/24 hour storm rainfall value for the Fernley location is 1.8 inches. This value is based on the 1973 NOAA Atlas 2, Volume VII 25 year 24 hour precipitation map for Nevada, enclosed in Appendix D-3. Detailed secondary containment calculations are included in Appendix D-3.

Liquids accumulated in outdoor sumps determined not to be precipitation or wash down water may be pumped into empty labeled drum(s), tanks or tanker truck depending on

the quantity and type of liquid collected. This material may then be stored and treated on-site or sent to an off-site facility for treatment. Sumps and containment pallets are inspected after rainfall events (outdoor), containment washdown, and at least once each operating day in accordance with the schedules located in Table F2-4 and F2-5. Inspection forms for all hazardous waste management areas are located in Appendix F-1. Sumps containing less than one inch of visible liquid are considered empty. Table D1-4 provides additional information on the location and volume of sumps at the facility.

A) Sumps and Containment Pallets Exposed to Rain or Washdown Water

If an area with a sump or a portable secondary containment pallet has been exposed to rain or washdown water, any water in the sump is assumed to be uncontaminated unless there has been an identified release of waste in the immediate area or it appears contaminated:

- from an "oil sheen" in an organic storage area,
- by discoloration, or
- by reduced water clarity.

The appearance of the sump water will be checked during scheduled inspections as described in Section F2.0. If the sump water appears to be contaminated, due to the above conditions, or if the source of a release is identified, the in-house laboratory will assess the degree and type of contamination. Depending on results, the sump water may be consolidated into a storage or treatment tank for processing, pumped into a tanker truck for treatment off-site, or in the case of minor organic contamination pumped through a carbon adsorption unit before being processed for evaporation in the crystallizer. Water not found to be contaminated is routed to the rainwater evaporation pond.

B) Sumps Not Exposed to Rain or Washdown Water

Liquid in an area sump which has not been exposed to rain or washdown water is assumed to be contaminated. The source and composition of the liquid is determined by inspection of possible leak sources. The leak is stopped, and the liquid is removed and managed similarly to the source material.

D1.4 Prevention of Reaction of Ignitable, Reactive, and Incompatible Wastes in Containers

40 CFR 270.15(c),(d), 264.17, 264.176, & 264.177

Ignitable and Reactive Wastes

The facility accepts wastes meeting the ignitability and reactivity characteristics listed in 40 CFR 261.21(a)(1), (2) and (4) and 261.23(a)(2), (4), and (5). Waste characteristics are identified and documented through customer (generator) analyses and waste acceptance procedures as described in Section C2.0, Waste Analysis Plan.

Per 40 CFR 264.17, ignitable and reactive wastes are prevented from accidental ignition or reaction in that they are protected from open flames and smoking is prohibited in storage and operating areas within the facility. No open flames, cutting or welding is allowed within 50 feet of any waste treatment, storage, handling, loading, and unloading areas where ignitable or reactive wastes are present unless a second employee provides fire watch by standing ready with a compatible fire extinguisher. Wherever a hazard exists from ignitable or reactive wastes, "Danger - No Smoking, No Open Flames" signs are posted prominently.

Ignitable and reactive wastes are stored only with compatible wastes in segregated storage areas. Compatibility is determined based on primary DOT hazard classifications. All container storage areas are set back at least 50 feet from the nearest facility boundary line, as required per 40 CFR 264.176. Section F3.0, Preparedness and Prevention Measures, discusses procedures to prevent generation of extreme heat or pressure, fire, explosion, or violent reaction, uncontrolled mists, fumes, or gases, and to prevent structural damage to the storage area from storage of ignitable or reactive wastes.

Incompatible Wastes

Container storage operations are designed to prevent simultaneous storage of incompatible wastes within the same containment system. Containers of waste are segregated into storage cells, or placed in secondary containment pallets, based on their primary hazard classification, as depicted in Table F5-1. Container storage cells

feature sumps and segregation berms to prevent spilled incompatible materials from commingling. If a spilled material is present in the sumps and containment systems, all materials are removed and the area decontaminated before any new waste can be stored in the affected area. These procedures are described in Section G6.3 of the Facility Contingency Plan, Reactivation of Activities in the Affected Area.

Consolidation of containerized wastes is only performed on compatible wastes. Incompatible wastes are not mixed. The compatibility of wastes is determined by the compatibility procedures described in Section C2.6 Analytical Parameters and Rationale.

D2.0 TANK SYSTEMS

This section provides tank design, construction, and operational information to adequately assess the suitability of tank systems for their designated usages. Tank systems include storage, treatment, and post-treatment tanks. All waste tanks, along with the waste codes allowed for each, are listed in Table D2-1, Permissible Waste Codes for Tanks. Figure D2-1, Tank Location Plan, shows the location of each tank in the facility. Additional tank information, including data sheets and engineering certifications, is found in Appendix D-6. The Tank Replacement Project plan is presented in Appendix D-7.

D2.1 Tank Design Specifications

40 CFR 264.191(a)(b), 264.192(a), 270.16(a),(b),(c),& (e)

Hazardous waste tanks and ancillary equipment have adequate secondary containment and comply with 40 CFR 264 Subpart J. All waste tanks at the Fernley facility are above ground tanks.

Tank design and operating information is provided in Appendix D-6. Tables D2-1 and D2-2 specify the intended use of each tank and the type of waste stored within it. More specific information on characteristics for the wastes stored within tanks is provided in Section C1.0, Chemical and Physical Characteristics of Waste.

Tanks at the Fernley Facility are designed to accepted industry standards. Polyethylene tanks are designed and fabricated in accordance with ASTM D1998 specifications. Welded tanks meet American Institute of Steel Construction (AISC) construction standards. When recommended by consulting engineers, steel tank interior surfaces are coated or lined with chemically compatible corrosion-resistant materials. Manufacturers' specifications on tank exterior and interior coatings are provided in Appendix D-2 and Appendix D-6.

<u>Tank Foundations</u>

Tank foundations have been assessed for compliance with the International Building Code (IBC). The secondary containment structure for each tank system is sloped to facilitate drainage. Some tanks are situated on grout leveling pads designed to

compensate for the slope of the pad. All tank designs include base anchorage features to resist sliding or overturning due to seismic loads. Tank anchorage features are designed to meet current International Building Code seismic requirements for the Fernley area. Design details for tank leveling structures and anchorage configurations are shown in Appendix D-6. The seismic activity study for the Fernley Facility is provided in the original geotechnical report, found in Appendix D-4.

D2.2 Integrity Assessments of Tanks

40 CFR 264.191 and 264.192

In compliance with requirements of 40 CFR 264 Subpart J, all new and existing hazardous waste management tanks undergo integrity assessments. These assessments determine that the tank is adequately designed and has sufficient structural strength and compatibility with the waste to be stored or treated to ensure that it will not collapse, rupture, or fail. Tank integrity assessments are certified by an independent, qualified, registered professional engineer. Evaluation procedures for certifying tank integrity are described below for existing tanks and new tank installations.

D2.2.1 Tank Integrity Assessment Program

40 CFR 264.191

Integrity assessments were conducted for all waste tanks to determine that the tank systems as designed and constructed have sufficient structural strength and compatibility with the waste(s) so that they will not collapse, rupture, or fail. The assessments were performed and certified by an independent, qualified registered professional engineer. Copies of engineering assessments for all storage and treatment tanks are included in Appendix D-6 of this application.

Information used by the engineer in assessing a tank system may include:

1. Standards to which the tank was designed and constructed,
2. Standards to which the foundation was designed and constructed,
3. Applicable Building Code requirements,

4. Materials of construction, and supplemental measures for control of corrosion, if required,
5. Documented age of the tank system,
6. Structural calculations based on wall thickness measurements, and
7. Results from either a leak test, internal inspection, or other tank system integrity examination that addresses cracks, leaks, corrosion, and erosion.

Inspection of a tank system may include visual inspection of tank shells and welds for cracks, leaks, corrosion, erosion, and general condition, inspection of ancillary equipment, and ultrasonic thickness measurements for steel tanks. Tank support structures are inspected for cracks, corrosion and weld conditions. All waste tanks are placed on an inspection schedule, and any defects identified are recorded and 3rd party inspectors are brought in to assess the tank for integrity and suitability for continued service.

D2.2.2 New Tank Design and Installation

40 CFR 264.192

New waste tanks must have a written assessment from an independent, qualified registered professional engineer attesting that the tanks have sufficient structural integrity and are acceptable for storing and treating hazardous waste. Assessments are conducted to verify that the foundation, structural support, seams, connections, and pressure controls (if applicable) are adequately designed and that the tanks have sufficient structural strength and compatibility with the waste(s).

Information used by Engineers to assess a new tank system includes:

1. Standards to which the tank was designed,
2. Standards to which the foundation was designed and constructed,
3. Applicable Building Code requirements,
4. Materials of construction, and supplemental measures for control of corrosion, if required, and
5. Structural calculations.

The structural assessment for a new tank verifies that the tank foundation is adequately designed to maintain the load of a full tank. The assessment also ensures that ancillary equipment is adequately supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.

New tanks are installed using proper handling procedures to prevent damage to the tank system during installation. Before being placed in use, an independent professional engineer or qualified installation inspector inspects the tank system for the items listed below:

1. breaks, punctures, scrapes, corrosion, and any other structural damage,
2. inadequate construction/installation, and
3. tightness prior to being placed in use.

Tanks will not be placed into service if leaks are found. Any discrepancies noted during the installation inspection will be corrected before tanks are placed in service. Written statements by those supervising the installation will be kept on file at the facility. The written statements certify that the tank system was properly designed and installed and that repairs, where needed, were performed.

D2.3 Secondary Containment Systems for Tanks

40 CFR 264.193(a),(b),(c),& (d), 270.16(g)

This section describes secondary containment systems for tanks at the Fernley Facility. Tank secondary containment systems are designed, installed, and operated to prevent any migrated waste or accumulated liquid from entering the soil, groundwater, or surface water at any time during use of the tank system. The containment system is capable of collecting releases and accumulated liquids until the collected material can be removed.

This section also provides design and construction information on the structural integrity of tank system bases and information on their ability to prevent migration of wastes or accumulated liquid. Tank secondary containment is provided by concrete vault systems. Tank secondary containment structures were designed in accordance with the

recommendations of soils report provided in Appendix D-4, Geotechnical Engineering Report.

D2.3.1 Design and Construction of Base

40 CFR 264.193(b),(c),& (e)(1)

Each tank system base and secondary containment system is constructed of, coated, or lined with materials having sufficient strength, thickness, and resistance to prevent failure due to pressure gradients, physical contact with wastes, climatic conditions, and the stress of daily operations. Containment structures are placed on a base that is capable of providing support, resisting pressure gradients above and below the system, and preventing failure due to settlement, compression, and uplift.

The tank system secondary containment structures consist of impermeable bermed concrete foundations sloped to collection sumps. The secondary containment structures are built in accordance with the engineering design drawings and specifications in Appendix D.1. Construction and installation of the tank foundation was performed in accordance with standard ACI specifications. Structural design information for the tank system containment structures is included in Appendix D-1.

Impermeability of existing concrete containment systems in the facility is achieved by the sealants, waterstops and coatings used as shown on the design drawings in Appendix D-1. Appendix D-2 provides manufacturers' chemical resistance information for concrete coating and sealing products.

D2.3.2 Containment System Capacity and Drainage Control

40 CFR 264.193(c)(3),& (4)

All storage and treatment tanks are located within an enclosed building. The building was designed with sufficient containment for simultaneous spillage of all storage tanks. The active portion of the building is divided into secondary containment systems. Each tank secondary containment system is designed to contain more than 100 percent of the volume of the largest tank. The supporting calculations for the containment system design are found in Appendix D-3.

All tank containment areas are sloped to drain liquids. Each containment area is sloped to a sump within that area to collect and contain spills and wash down water generated during cleaning. Specific sump locations are listed in Table D1-4, and shown on containment design drawings found in Appendix D-1. Secondary containment area sumps are inspected daily. Sump contents are removed as discussed in Section D2.4, Tank Operations and Management Practices.

The secondary containment systems are designed to have adequate structural integrity. The systems are designed to have sufficient strength and thickness to prevent failure caused by contact with the waste, pressure gradients, climatic conditions, and the stress of daily operations.

Secondary containment systems in tank storage and treatment areas are constructed of concrete and sealed chemically-resistant epoxies, joint sealant at construction joints, and waterstops. Chemical resistance data for concrete coating and sealing products is included in Appendix D-2. Inspection information for sumps is provided in Sections F2.1, General Inspection Requirements.

D2.4 Tank Operations and Management Practices

40 CFR 264.194, 270.16(d),& (i)

This section describes tank operations and management practices associated with storage, transfer and treatment of hazardous wastes in storage and treatment tanks. The procedures and equipment used to prevent overfilling of tanks and accidental spills are described. Treatment processes and activities are discussed in detail. Sump operation and management practices are also described.

D2.4.1 Tank System Transfer Operations

The tank system may receive hazardous waste from drums, portable tanks, vacuum and tanker trucks, end dumps, dump trucks, and rail tankers. Bulk liquids are pumped from the Truck Bay Area to designated tanks. See Table D3-1 for a process area pump list. Container transfers into tanks will occur in the Truck Bay Area and Detoxification Area. Sound operating practices are followed to prevent spills, fires, or explosions

during loading and unloading. Waste flow through the facility is indicated on Figures D2-3-1 through D2-3-4, Waste Treatment Process Flow.

Liquid Transfers

Bulk liquid transfers to and from tanks and tanker trucks occurs in the Truck Bay Area (Figure D1-3). Bulk liquid portable tanks are also unloaded in the Truck Bay Area. Prior to transfer, the container to be loaded or unloaded is positioned in the appropriate section of the Truck Bay Area. The Truck Bay Area secondary containment system is segregated using sloped floors, berms, and curbs into separate areas for managing either acid waste or alkaline/cyanide waste (See Figures D1-4 and D1-5, and Section D1.3.2).

After the waste has been accepted and checked for compatibility per the Waste Analysis Plan (See Section C2.0), the following procedure will be used to unload bulk and containerized wastes.

1. Based on laboratory results, the operator will ensure that the waste is located in a compatible containment area that is clear of spills or residues.
2. Measure and verify that the assigned receiving tank has sufficient space, and test that any material existing in the receiving tank is compatible with the material to be unloaded.
3. The operator and truck driver don appropriate PPE.
4. Manually connect and secure hoses, pump and piping.
5. Open valves and start pumping.
6. Monitor all components in the unloading system, containers and tanks to ensure that leaks, spills and overflows do not occur.
7. When unloading is complete wash the inside of the container or tank with water.
8. Flush hose, pump and piping by running a sufficient quantity of water through the unloading system.
9. Dismantle unloading system and complete process tracking forms.

Similar steps are followed when transferring between two tanks, or from a tank to a unit of Subpart X processing equipment. When transferring between two tanks in separate areas of the facility (for example, from a storage tank to a treatment tank), an operator

monitors both tanks involved in the transfer and connections for spills and overflows. In the event that spills occur during unloading and transfer of material, spill response procedures established for the facility and discussed in the Contingency Plan (Section G) are followed.

In addition to the use of specific operating procedures for preventing overfilling of tanks and spillage during transfers, tanks are also equipped with automated controls. All waste storage and treatment tanks are equipped with ultrasonic or float-style level gauges that continuously indicate liquid level in the tank. These tanks are also equipped with separate overfill monitoring equipment. This consists of a level sensor (e.g. high level sensor, or limit switch on float gauge system) which activates both an audible alarm and a visible indicator on the control panel or PLC when the liquid level in a tank reaches a pre-set (maximum) level. Table D2-4 lists the type of instrument used and the height at which the alarm will sound in each tank. An audible alarm will sound in storage bay, laboratory, detoxification area, and dewatering area whenever a high level alarm is tripped. Automated flow control valves immediately stop the tank filling operation when a high-level condition is met. After the transfer operation is halted, an operator can push an "acknowledge" button on the control panel to silence the alarm.

Facility piping is also designed to minimize the potential for waste releases. Piping for each tank or tank system is labeled to minimize the potential for operator error. All piping used for transferring hazardous wastes is aboveground for ease of monitoring and inspection and located within secondary containment. Any waste piping passing through an area where there is a potential for incompatibility will either be double-wall piping or will be outfitted with a sloped containment tray which will divert any spilled liquids in the event of rupture or joint failure to an area of compatibility.

D2.4.2 Waste Management in Tanks

40 CFR 270.16(d)

All waste storage and treatment tanks are shown in Figure D2-1, Tank Location Plan. Waste flow through the facility is indicated on Figures D2-3-1 through D2-3-4, Waste Treatment Process Flow. Waste treatment processes are described in Section B1.6, Detailed Process/Activity Descriptions. Analytical procedures utilized during treatment processes are identified in Table C2-2, Waste Analysis Summary.

D2.4.3 Waste Feed Systems and Safety Cutoffs

40 CFR 270.16(c)

All waste storage and treatment tanks at the facility operate at atmospheric temperatures and pressures, negating the need for pressure controls. Tanks are vented through open ducting to fume scrubbers, so the pressure in any given tank is at or very slightly below atmospheric. Wastes and reagent chemicals are not introduced to tanks or transferred between tanks by completely computerized or automated systems. Direct human interaction and monitoring, assisted by computer controls, are required to unload materials into tanks or transfer materials between tanks. The specific conditions and procedures that govern material addition to tanks and transfers, and the engineering controls that supplement them, are described in detail in Section D4.2.1, Tank System Transfer Operations. These engineering controls and procedures comprise the feed systems, safety cutoff, and bypass systems in use at the Fernley facility.

D2.4.4 Tank System Sump Operations and Management

Sumps and sump pumping systems are used to collect and remove liquids which accumulate from spills and wash down water from area cleaning or equipment decontamination. Tank storage and treatment area sumps are inspected as described in Section F2.1, General Inspection Requirements.

Accumulated liquids in sumps are transferred to an appropriate storage or treatment tank according to the constituents of the waste that is stored in the containment area and depending on storage availability and compatibility. Sump areas containing liquids are typically pumped out using diaphragm or centrifugal pumps.

D2.5 Prevention of Reaction of Ignitable, Reactive, and Incompatible Wastes in Tanks

40 CFR 270.16(j), 264.198, 264.199

Ignitable and Reactive Wastes

Only permitted ignitable wastes are stored and treated in tanks at the Fernley facility. Oxidizers are considered ignitable wastes under 40 CFR 261.21. Waste oxidizer liquids, are stored and treated in tanks. Oxidizer solids are also treated in tanks T-4 and T-5.

Reactive wastes are stored and treated in tanks at the Fernley facility. Reactive wastes may also be batch treated in lab-scale quantities. In accordance with 264.198, all ignitable (non-TOC oxidizers with the exception of trichloroisocyanuric and dichloroisocyanuric acid) and reactive wastes are stored and treated to prevent circumstances which may cause the waste to ignite or react. All treatments involving ignitable and reactive wastes are controlled to prevent the generation of toxic gases and exothermic reactions listed in 40 CFR 264.17. As described in C2.4, Incoming Waste Procedures, wastes for tank treatment are analyzed to ensure compatibility and the appropriate volume of treatment chemicals to prevent any uncontrolled reactions. All tanks at the facility are dedicated to a specific waste type service (acid, alkaline, cyanide, etc.). Prior to introduction of a new wastestream that would be incompatible with previously stored material, all tanks are decontaminated as per clean debris surface standards found in 268.45.

Hazardous waste storage and treatment tanks containing potentially ignitable or reactive waste are adequately located away from (a) a property line which is or can be built upon, and (b) the nearest side of any public way or from the nearest public building, as required by the National Fire Protection Association's (NFPA) buffer zone requirements for ignitable and reactive materials.

Incompatible Wastes

Wastes are tested for compatibility with wastes already in a tank prior to being introduced to the same tank. Incompatibility for all wastes is determined by procedures

described in Section C2.6, Analytical Parameters and Rationale. Waste profiles and check-in procedures are discussed in Section C2.3, C2.4, and C2.5 of the Waste Analysis Plan. Incompatible wastes or materials may not be stored in the same tank or in an unwashed tank (decontaminated to clean debris surface standards found in 268.45) that previously held an incompatible material.

D2.6 Labeling of Tanks

All hazardous waste storage and treatment tanks are labeled in large, contrasting letters that identify the type of waste contained and the tank number and name. Tank identification labels are lettered/numbered in a minimum of 3 inch-high characters, in order to be visible from a distance of 50 feet or more.

Hazardous waste tanks are labeled appropriately to identify the major risks to employees, emergency personnel, and the public for the wastes being stored. Tanks are inspected to insure that labels are not obscured, removed, or unreadable.

D2.7 Control Systems for Air Emissions from Tank Systems

Potential air emissions from tank storage and treatment operations are controlled using either fume scrubbers or dust collection systems. A dust collection system is used for general area ventilation from the Solids Receiving Area. The dust collection system consists of a cyclone separator, baghouse, blower, hoods, and ducting. No wastestreams greater than 500 ppm volatile organics (“Subpart CC wastes”) will be placed in storage or treatment tanks at the Fernley facility.

Wet scrubbers are used to scrub fumes and vapors from all waste storage tanks, as well as treatment tanks T1 through T7. These scrubbers are designed to handle both acidic and alkaline vapors as well as hydrogen sulfide, hydrogen cyanide, and ammonia fumes. Exhaust from these scrubbers, along with general ventilation from the Detoxification and Dewatering Rooms, is routed to a final two stage catenary grid scrubber, which exhausts to the atmosphere.

Each scrubber has one or more liquid recirculation tanks associated with it. These tanks contain scrubbing agents, which periodically require changing or refreshing.

Liquids removed from these tanks are transferred to compatible storage or treatment tanks for processing.

Facility maintains an Air Quality Operating permit for applicable units. Systems and equipment are included in the facility preventive maintenance program, which specifies intervals for monitoring, inspection, testing, and cleaning, as well as maintenance procedures.

D3.0 SUBPART X PROCESSING EQUIPMENT

40 CFR 264.600, 270.23

This section provides design and operational information for Subpart X processing equipment utilized for hazardous waste management at the PSC Fernley facility. Units of Subpart X processing equipment are tools which assist in the processing of wastes. These units do not contain waste in the same way as a tank contains waste, and therefore they are not considered to be tanks.

Health and safety hazards associated with Subpart X units are generally considered to be low. Wastestreams processed in the Subpart X units have previously been treated in tanks which are exhausted to a scrubber system. The scrubber system is permitted by the Nevada Bureau of Air Quality, and has been designed to reduce air emissions and minimize exposure of personnel to airborne contaminants. Additional protection to the employee is provided through the use of appropriate PPE. Basic and process-specific PPE requirements are provided in Tables F3-1 and F3-2. In addition, all personnel are required to complete training in the proper management and safe handling of hazardous waste, as well as in the use, selection, and proper fit of PPE. A complete listing of training modules is described in Section H, Personnel Training.

Locations for Subpart X processing equipment are shown on Figure D2-1, Tank Location Plan. Design specifications and manufacturer information for typical processing equipment is found in Appendix D-5, Subpart X Processing Equipment Vendor Literature. Actual processing equipment in use at the facility may be different in size or type than shown in the literature, or may be an equivalent unit from a different manufacturer.

D3.1 Crystallizer

An evaporator called the crystallizer is located in the Crystallizer Area of the building. The unit consists of two large carbon and stainless steel heat exchangers, a liquid recirculation pump, exhaust fan, spray nozzle, spray chamber, and a steel cone. The crystallizer is designed to evaporate up to 25,000 gallons of water per day. General dimensions of the crystallizer are approximately 33 feet from base to top of stack and 10 feet wide at the widest point narrowing to 6 inches and the bottom and 4 feet at the

top. Effluent is pumped into the unit from the Dewatering Area and recirculated through the heat exchangers and spray nozzle. Effluent sprays out from the nozzle and falls through the spray chamber to the cone below. Heat is supplied to the exchangers by a gas-fired steam boiler. A fan located above the nozzle draws ambient air through the falling spray, allowing a portion of the water to evaporate and humidify the air. Mist eliminators installed above the spray chamber allow only evaporated water and air to be exhausted to the atmosphere. As water is evaporated, dissolved solids in the effluent become concentrated and precipitate into salts that can be removed by pumping the concentrated effluent through a filter press.

The crystallizer is housed in an enclosed building, and located in a sloped, coated concrete containment area to prevent waste releases to the environment. Any leaks, spills, or washdown waters from cleaning the unit drain to a blind sump for collection. Any materials collected in the sump are pumped into the crystallizer for evaporation.

The Crystallizer Area, including the processing equipment and containment, is inspected daily as described in Section F2.1, Inspection Plan, for condition, proper equipment operation, and housekeeping. All deficiencies noted during an inspection are repaired or addressed as described in Section F2.3, Remedial Actions.

Radioactive wastes, explosives, infectious wastes, and waste with greater than 10% TOC or greater than 500ppm VOC will not be processed in the crystallizer. Also wastes with the following EPA waste codes will not be processed in the crystallizer: F021, F022, F023, F026, and F027.

The crystallizer may process wastes with the following EPA waste codes: D004, D005, D006 (non-cadmium batteries), D007, D008 (non-lead acid batteries), D009, D010, D011, F006, F007, F008, F009, F010, F011, F012, F019, K002, K003, K004, K005, K006, K007, K008, P021, P029, P030, P074, P098, P099, P104, P106, P121, U032, U123, and U134. All wastes are tested per Section C2.0, Waste Analysis Plan, before being transferred to the crystallizer.

D3.2 Filter Presses

Two filter presses are located in the Dewatering Room. Filter presses are used to dewater sludges and slurries, separating solids from liquids using special cloth membranes. The general dimensions of the filter press are 43 inches wide at the plates; 59 inches high at the highest point; and 21 feet in length. The membranes are mounted on a series of plastic or rubber plates, mounted on a steel frame, that are pressed together by a hydraulic or pneumatic cylinder to seal them. Slurry is then pumped under pressure into chambers between the plates; where the liquid portion is allowed to pass through the cloth membranes and out of the filter press. Liquids passing through the press are pumped to an appropriate tank or back to the crystallizer for further processing. The solid particles are captured by the cloth membranes and packed into the chambers between the plates. When the filter press is full of solids, the cylinder is released, the plates are separated, and the solids are collected below the press in specially-designed containers on wheels called gaylords for further handling. The filter presses are designed to press approximately 25,000 gallons per day.

All filter presses are housed in an enclosed building, and located in sloped, coated concrete containment areas to prevent waste releases to the environment. Any leaks, spills, or washdown waters from cleaning the units drain to blind sumps for collection. Any materials collected in the sump are pumped to an appropriate tank or to the crystallizer for evaporation.

Filter presses, as well as the containment areas that house them, are inspected daily as described in Section F2.1, Inspection Plan, for condition, proper equipment operation, and housekeeping. All deficiencies noted during an inspection are repaired or addressed as described in Section F2.3, Remedial Actions.

Filter presses may process wastes with the following EPA waste codes: D004, D005, D006 (non-cadmium batteries), D007, D008 (non-lead acid batteries), D009, D010, D011, F006, F007, F008, F009, F010, F011, F012, F019, K002, K003, K004, K005, K006, K007, K008, P021, P029, P030, P074, P098, P099, P104, P106, P121, U032, U123, and U134.

Radioactive wastes, explosives, infectious wastes, and waste with greater than 10% TOC or greater than 500ppm VOC will not be processed in a filter press. Also wastes with the following EPA waste codes will not be processed in a filter press: F021, F022, F023, F026, and F027.

LIST OF TABLES

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Table D1-1. Permissible Waste Codes for Container Storage Areas

Storage Area	EPA Waste Codes Stored
Truck Bay (<500 ppm VOC and 10,000 ppm TOC)	D001 (Oxidizer only), D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, F006, F007, F008, F009, F010, F011, F012, F019, K176, K177, K178, P021, P029, P030, P074, P098, P099, P104, P106, P121, U032, U123, U134, State hazardous and non-hazardous wastes
East Container Storage Area (Solids only. Containers identified with EPA waste codes F020, F021, F022, F023, F026, or F027 will not be stored in this area.)	D001 thru D043, F001 thru F012, F019 thru F028, F032, F034, F035, F037 thru F039, K001 thru K011, K013 thru K052, K060 thru K062, K069, K071, K073, K083 thru K088, K093 thru K118, K123 thru 126, K131, K132, K136, K140 thru K145, K147 thru K151, K156 thru K159, K161, K169 thru K172, K174 thru K178, K181, P001 thru P018, P020 thru P024, P026 thru P030, P033, P034, P036 thru P051, P054, P056 thru P060, P062, P064 thru P078, P081, P082, P084, P085, P087 thru P089, P092 thru P094, P097 thru P099, P101 thru P106, P108 thru P116, P118 thru P123, P127, P128, P185, P188 thru P192, P194, P196 thru P199, P201 thru P205, U001 thru U012, U014 thru U039, U041 thru U053, U055 thru U064, U66 thru U099, U101 thru 103, U105 thru U138, U140 thru U174, U176, U177 thru U194, U196, U197, U200 thru U211, U213 thru U223, U225 thru U228, U234 thru U240, U243, U244, U246 thru U249, U271, U278 thru U280, U328, U353, U359, U364, U367, U372, U373, U387, U389, U394, U395, U404, U409 thru U411, State hazardous and non-hazardous wastes
East Pad Container Storage Area (Solids only. Containers identified with EPA waste codes F020, F021, F022, F023, F026, or F027 will not be stored in this area.)	D001 thru D043, F001 thru F012, F019 thru F028, F032, F034, F035, F037 thru F039, K001 thru K011, K013 thru K052, K060 thru K062, K069, K071, K073, K083 thru K088, K093 thru K118, K123 thru 126, K131, K132, K136, K140 thru K145, K147 thru K151, K156 thru K159, K161, K169 thru K172, K174 thru K178, K181, P001 thru P018, P020 thru P024, P026 thru P030, P033, P034, P036 thru P051, P054, P056 thru P060, P062, P064 thru P078, P081, P082, P084, P085, P087 thru P089, P092 thru P094, P097 thru P099, P101 thru P106, P108 thru P116, P118 thru P123, P127, P128, P185, P188 thru P192, P194, P196 thru P199, P201 thru P205, U001 thru U012, U014 thru U039, U041 thru U053, U055 thru U064, U66 thru U099, U101 thru 103, U105 thru U138, U140 thru U174, U176, U177 thru U194, U196, U197, U200 thru U211, U213 thru U223, U225 thru U228, U234 thru U240, U243, U244, U246 thru U249, U271, U278 thru U280, U328, U353, U359, U364, U367, U372, U373, U387, U389, U394, U395, U404, U409 thru U411, State hazardous and non-hazardous wastes

Table D1-1. Permissible Waste Codes for Container Storage Areas

Storage Area	EPA Waste Codes Stored
West Pad Container Storage Area	D001 thru D043, F001 thru F012, F019 thru F028, F032, F034, F035, F037 thru F039, K001 thru K011, K013 thru K052, K060 thru K062, K069, K071, K073, K083 thru K088, K093 thru K118, K123 thru 126, K131, K132, K136, K140 thru K145, K147 thru K151, K156 thru K159, K161, K169 thru K172, K174 thru K178, K181, P001 thru P018, P020 thru P024, P026 thru P030, P033, P034, P036 thru P051, P054, P056 thru P060, P062, P064 thru P078, P081, P082, P084, P085, P087 thru P089, P092 thru P094, P097 thru P099, P101 thru P106, P108 thru P116, P118 thru P123, P127, P128, P185, P188 thru P192, P194, P196 thru P199, P201 thru P205, U001 thru U012, U014 thru U039, U041 thru U053, U055 thru U064, U66 thru U099, U101 thru 103, U105 thru U138, U140 thru U174, U176, U177 thru U194, U196, U197, U200 thru U211, U213 thru U223, U225 thru U228, U234 thru U240, U243, U244, U246 thru U249, U271, U278 thru U280, U328, U353, U359, U364, U367, U372, U373, U387, U389, U394, U395, U404, U409 thru U411, State hazardous and non-hazardous wastes
Lab Pack Room (Solids only, except for lab packs or liquid containers in secondary containment pallets. All containers identified with EPA waste codes F020, F021, F022, F023, F026, or F027 will be placed in secondary containment pallets.)	D001 thru D043, F001 thru F012, F019 thru F028, F032, F034, F035, F037 thru F039, K001 thru K011, K013 thru K052, K060 thru K062, K069, K071, K073, K083 thru K088, K093 thru K118, K123 thru 126, K131, K132, K136, K140 thru K145, K147 thru K151, K156 thru K159, K161, K169 thru K172, K174 thru K178, K181, P001 thru P018, P020 thru P024, P026 thru P030, P033, P034, P036 thru P051, P054, P056 thru P060, P062, P064 thru P078, P081, P082, P084, P085, P087 thru P089, P092 thru P094, P097 thru P099, P101 thru P106, P108 thru P116, P118 thru P123, P127, P128, P185, P188 thru P192, P194, P196 thru P199, P201 thru P205, U001 thru U012, U014 thru U039, U041 thru U053, U055 thru U064, U66 thru U099, U101 thru 103, U105 thru U138, U140 thru U174, U176, U177 thru U194, U196, U197, U200 thru U211, U213 thru U223, U225 thru U228, U234 thru U240, U243, U244, U246 thru U249, U271, U278 thru U280, U328, U353, U359, U364, U367, U372, U373, U387, U389, U394, U395, U404, U409 thru U411, State hazardous and non-hazardous wastes

Table D1-2. Container Storage Area Containment Checklist

Storage Area	Secondary Containment Volume	Impervious Coating	Sloped	Inspection Schedule	Run-off Containment	Ignitable Reactive Requirement	Aisle Space 3-Foot Minimum
Truck Bay Container Storage Area	X	X	X	Refer to Table F2-4	N/A	X	*
Lab Pack Room Container Storage Area	X			Refer to Table F2-4	N/A	X	X
East Container Storage Area			X	Refer to Table F2-4	X	X	X
East Pad Container Storage Area				Refer to Table F2-4	X	X	X
West Pad Container Storage Area	X	X**	X	Refer to Table F2-4	X	X	X

*= To maintain aisle space requirement during off loading procedures, storage areas will be checked to ensure 3-foot available clearance during inspections (more frequently as needed).
**=Sloped to coated sumps.

Table D1-3. Container Storage Stacking

Volume	Material of Construction	Stack Height	Stacking Pattern
> 10 gallons	Any	Two containers high	In-line; pallets may be used
5 gallons or less	Any	Four containers high	In-line; pallet may be used

Bulk containers will be able to support the weight of another bulk container and pallet (if used).

Table D1-4. Sump Design Information

	Area	Location	Volume (cubic feet)	Drainage
1	Scrubber Room	SE Corner	8	Blind Sump
2	Lab Pack Room		27	Blind Sump
3	Dewatering Room	SE Corner	27	Blind Sump
4	Dewatering Room	Adjacent Tank #307	27	Blind Sump
5	Dewatering Room	East Side	27	Blind Sump
6	Dewatering Room	Adjacent Tank #306	27	Blind Sump
7	Dewatering Room	Adjacent Tank #302	27	Blind Sump
8	Dewatering Room	NW Corner	27	Blind Sump
9	Detoxification Room	Adjacent Tank T-4	27	Blind Sump
10	Detoxification Room	Adjacent Tank T-6	16.3	Blind Sump
11	Detoxification Room	Adjacent Tank T-2	10	Blind Sump
12	Storage Bay	Adjacent Silo	27	Blind Sump
13	Storage Bay	Cell A East side	27	Blind Sump
14	Storage Bay	Cell B East side	27	Blind Sump
15	Storage Bay	Cell C	27	Blind Sump
16	Storage Bay	Adjacent Bleach tank	27	Blind Sump
17	Storage Bay	Cell E West side	27	Blind Sump
18	Storage Bay	Adjacent Tank #206	27	Blind Sump
19	Storage Bay	Adjacent Tank #204	27	Blind Sump
20	Storage Bay	Adjacent Tank #104	27	Blind Sump
21	Storage Bay	Adjacent Tank #109	27	Blind Sump
22	Truck Bay	Alk/Cyn Load/Unload	12	to Tank #201
23	Truck Bay	E. Acid Load/Unload	12	to Tank #111
24	Truck Bay	W. Acid Load/Unload	12	to Tank #111
25	Crystallizer Room		13.3	Blind Sump
26	Solids Receiving Area		8	Blind Sump
27	East Container/SW Pond		11.7	Blind Sump
28	East Pad CSA	South side	8.4	Blind Sump
29	West Pad	Cell #1	342	Blind Sump
30	West Pad	Cell #2	162	Blind Sump
31	West Pad	Cell #3	162	Blind Sump
32	West Pad	Cell #4	162	Blind Sump
33	West Pad	Cell #7	342	Blind Sump

Table D2-1. Permissible Waste Codes for Tanks

Tank Numbers	Waste Type	EPA Hazardous Waste Codes
#201, #202, #203, #204, #205, and #206	Alkaline/Cyanide	D002 (pH>5), D003, D004, D005, D006 (non-cadmium batteries), D007, D008 (non-lead acid batteries), D009 (<260 ppm), D010, D011, F006, F007, F008, F009, F010, F011, F012, F019, K002, K003, K004, K005, K006, K007, K008, P021, P029, P030, P074, P098, P099, P104, P106, P121, U032, U123, U134, State hazardous and non-hazardous wastes
#207 and #208	Alkaline	D001 (Oxidizer Only),D002, D003, D004, D005, D006 (non-cadmium batteries), D007, D008 (non-lead acid batteries), D009 (<260 ppm),, D010, D011, F006, F007, F009, F010, F011, F012, F019, K002, K003, K004, K005, K006, K007, K008, P021, P029, P030, P074, P098, P099, P104, P106, P121, U032, U123, U134, State hazardous and non-hazardous wastes
#101, #102, #103, #104, #105, #106, #107, #108, #109, #110, and #111	Acid	D001 (Oxidizer Only), D002, D004, D005, D006 (non-cadmium batteries), D007, D008 (non-lead acid batteries), D009 (<260 ppm), D010, D011, F006, F019, K002, K003, K004, K005, K006, K007, K008, U032, U123, U134, State hazardous and non-hazardous wastes
T-6 and T-7	Chemical Treatment	D001 (Oxidizer Only), D002 (with pH>5), D003, D004, D005, D006 (non-cadmium batteries), D007, D008 (non-lead acid batteries), D009 (<260 ppm), D010, D011, F006, F007, F008, F009, F010, F011, F012, F019, K002, K003, K004, K005, K006, K007, K008, P021, P029, P030, P074, P098, P099, P104, P106, P121, U032, U123, U134, State hazardous and non-hazardous wastes
T-1, T-2, T-3, T-4, and T-5	Chemical Treatment	D001 (Oxidizer Only), D002, D003, D004, D005, D006 (non-cadmium batteries), D007, D008 (non-lead acid batteries),, D009 (<260 ppm),, D010, D011, F006, F007, F008, F009, F010, F011, F012, F019, K002, K003, K004, K005, K006, K007, K008, P021, P029, P030, P074, P098, P099, P104, P106, P121, U032, U123, U134, State hazardous and non-hazardous wastes
#301, #302, #303, #304, #305, #306, and #307	Post Treatment (Storage and clarification of effluent)	D004, D005, D006 (non-cadmium batteries), D007, D008 (non-lead acid batteries), D009 (<260 ppm),, D010, D011, F006, F007, F008, F009, F010, F011, F012, F019, K002, K003, K004, K005, K006, K007, K008, P021, P029, P030, P074, P098, P099, P104, P106, P121, U032, U123, U134, State hazardous and non-hazardous wastes

Table D2-2. Tank Status and Design Information

Tank Number	Tank Status		Tank Usage	Tank Coatings		Materials of Construction
	Regulated / Non-regulated	Existing / Planned		Interior	Exterior	
101	regulated	existing	Acid Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
102	regulated	existing	Acid Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
103	regulated	existing	Acid Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
104	regulated	existing	Acid Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
105	regulated	existing	Acid Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
106	regulated	existing	Acid Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
107	regulated	existing	Acid Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
108	regulated	existing	Acid Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
109	regulated	existing	Acid Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
110	regulated	existing	Acid Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
111	regulated	existing	Acid Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
201	regulated	existing	Alk./Cyanide Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
202	regulated	existing	Alk./Cyanide Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
203	regulated	existing	Alk./Cyanide Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
204	regulated	existing	Alk./Cyanide Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
205	regulated	existing	Alk./Cyanide Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
206	regulated	existing	Alk./Cyanide Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.

Table D2-2. Tank Status and Design Information

Tank Number	Tank Status: Regulated / Non-regulated	Tank Status: Existing / Planned	Tank Usage	Tank Coatings: Interior	Tank Coatings: Exterior	Materials of Construction
207	regulated	existing	Alkaline Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
208	regulated	existing	Alkaline Storage	ORPE	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
301	regulated	existing	Post-Treatment	ORPE	none	linear polyethylene vertical cone bottom tank, mounted in a steel stand.
302	regulated	existing	Post-Treatment	ORPE	none	linear polyethylene vertical cone bottom tank, mounted in a steel stand.
303	regulated	existing	Post-Treatment	ORPE	none	linear polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
304	regulated	existing	Post-Treatment	ORPE	none	linear polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
305	regulated	existing	Post-Treatment	ORPE	none	linear polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
306	regulated	existing	Post-Treatment	ORPE	none	linear polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
307	regulated	existing	Post-Treatment	ORPE	none	linear polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
401	non-regulated	existing	Reagent Caustic Storage	none	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
402	non-regulated	existing	Reagent Bleach Storage	none	none	Cross-linked polyethylene vertical tank, w/ flat, sloped bottom, on a plastic base.
T-1	regulated	existing	Treatment Tank	VENS	E / P	Carbon steel, rectangular, flat bottom tank.
T-2	regulated	existing	Treatment Tank	VENS	E / P	Carbon steel, rectangular, flat bottom tank.
T-3	regulated	existing	Treatment Tank	VENS	E / P	Carbon steel, rectangular, flat bottom tank.
T-4	regulated	existing	Treatment Tank	VENS	E / P	Carbon Steel, flat bottom, fixed-roof vertical tank
T-5	regulated	existing	Treatment Tank	VENS	E / P	Carbon Steel, flat bottom, fixed-roof vertical tank
T-6	regulated	existing	Treatment Tank	butyl rubber	E / P	Carbon steel, rectangular, flat bottom tank.
T-7	regulated	existing	Treatment Tank	MPT	E / P	Carbon steel, rectangular, flat bottom tank.

Legend:
E=Epoxy basecoat
P=Polyurethane topcoat
ORPE= Oxidation-resistant Polyethylene Liner
VENS=Vinyl Ester Novolac System
MPT=Modified Polyvinyl-based Terpolymer

Table D2-3. Tank Permitted Capacities by Waste Category

Tank No.	Tank Usage	Acid Storage	Alkaline Storage	Alk./Cyanide Storage	Treatment	Post-Treatment	Total Volume (gallons)
101	Acid Storage	6,000					6,000
102	Acid Storage	6,000					6,000
103	Acid Storage	6,000					6,000
104	Acid Storage	6,000					6,000
105	Acid Storage	6,000					6,000
106	Acid Storage	6,000					6,000
107	Acid Storage	6,000					6,000
108	Acid Storage	6,000					6,000
109	Acid Storage	6,000					6,000
110	Acid Storage	6,000					6,000
111	Acid Storage	6,000					6,000
201	Alk./Cyanide			6,000			6,000
202	Alk./Cyanide			6,000			6,000
203	Alk./Cyanide			6,000			6,000
204	Alk./Cyanide			6,000			6,000
205	Alk./Cyanide			6,000			6,000
206	Alk./Cyanide			6,000			6,000
207	Alkaline Storage		6,000				6,000
208	Alkaline Storage		6,000				6,000
301	Post-Treatment					7,400	7,400
302	Post-Treatment					7,400	7,400
303	Post-Treatment					12,500	12,500
304	Post-Treatment					12,500	12,500
305	Post-Treatment					12,500	12,500
306	Post-Treatment					12,500	12,500
307	Post-Treatment					6,500	6,500
T-1	Treatment Tank				6,125		6,125
T-2	Treatment Tank				6,125		6,125
T-3	Treatment Tank				6,125		6,125
T-4	Treatment Tank				3,750		3,750
T-5	Treatment Tank				3,750		3,750
T-6	Treatment Tank				7,580		7,580
T-7	Treatment Tank				7,580		7,580
Total Volume by Category		66,000	12,000	36,000	41,035	71,300	226,335

Table D2-4. Tank High Level Alarms

Tank Number	Location	Tank Diameter(ft.)	Tank Height (ft. in.)	Nominal Tank Volume (gal)	Hi-Level Alarm Height (ft)	Working Tank Volume (gal)	Alarm Type	Level Indicator
101	Storage Bay	10' 0"	12' 6 1/2"	6,250	11.0	6,000	SENSOR	ULTRASONIC
102	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
103	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
104	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
105	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
106	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
107	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
108	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
109	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
110	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
111	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
201	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
202	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
203	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
204	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
205	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
206	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
207	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
208	Storage Bay	10' 0"	12' 6 1/2"	6250	11.0	6,000	SENSOR	ULTRASONIC
301	Dewatering	11' 10"	14' 11"	7,794	12' 9"	7,400	SENSOR	Infared
302	Dewatering	11' 10"	14' 11"	7,794	12' 9"	7,400	SENSOR	Infared
303	Dewatering	11' 10"	16' 6"	12,750	15' 6"	12,500	SENSOR	Infared
304	Dewatering	11' 10"	16' 6"	12,750	15' 6"	12,500	SENSOR	Infared
305	Dewatering	11' 10"	16' 6"	12,750	15' 6"	12,500	SENSOR	Infared
306	Dewatering	11' 10"	16' 6"	12,750	15' 6"	12,500	SENSOR	Infared
307	Dewatering	10' 0"	13' 2"	7,100	11' 7"	6,500	SENSOR	Infared
T-1	Detox	6.5'x18'	7'0"	7,000	6.0	6,125	PROBE	ULTRASONIC
T-2	Detox	6.5'x18'	7'0"	7,000	6.0	6,125	PROBE	ULTRASONIC
T-3	Detox	6.5'x18'	7'0"	7,000	6.0	6,125	PROBE	ULTRASONIC
T-4	Detox	8' 6"	9' 10"	4,170	7.5	3,750	PROBE	ULTRASONIC
T-5	Detox	8' 6"	9' 10"	4,170	7.5	3,750	PROBE	ULTRASONIC
T-6	Detox	8'x16'	8' 6"	8,100	8.5	7,580	PROBE	ULTRASONIC
T-7	Detox	8'x16'	8' 6"	8,100	8.5	7,580	PROBE	ULTRASONIC

TABLE D3-1: PROCESS AREA PUMP LIST

The following table lists pumps in the PSC Fernley facility that may contact hazardous wastes. Additional pumps are used exclusively for reagent pumping.

PUMP LOCATION	PUMP TYPE	MANAGED MATERIALS
Truck Bay Pumps (3 Stations, 3 Pumps)	3" air driven diaphragm	Acids, Alk./Cyanides, Alkalines and Oxidizers*
Storage Bay Pumps (6 Stations, 6 Pumps)	2" and 3" air driven diaphragm	Acids, Alk./Cyanides, Alkalines and Oxidizers*
Detoxification Pumps (3 Pumps)	2" and 3" air driven diaphragm	Acids, Alkalines, Cyanides, and Oxidizers*
Dewatering Pumps (3 Pumps)	2" and 3" air driven diaphragm	Aqueous solutions following treatment
Crystallizer Pump A	3" air driven diaphragm	Aqueous solutions following treatment
Crystallizer Pump B	Electric Centrifugal Recirculation Pump	Aqueous solutions following treatment
West Pad Pump (Subpart BB Pump, Proposed)	3" air driven diaphragm	Fuel Blendable Waste

*Denotes that pumps may infrequently change service. Pumps are decontaminated between each change of service. In all cases, pumps used to move cyanide wastes are not converted to acid service. The decontamination procedure for cyanide waste is to first pump at least 55 gallons of alkaline waste through the pump, followed by at least 55 gallons of water. Alkaline, oxidizer and acid service exchanges are accomplished by decontaminating all inner surfaces with water. Pumping at least 55 gallons of water through the pump prior to switching service provides adequate decontamination.

LIST OF FIGURES

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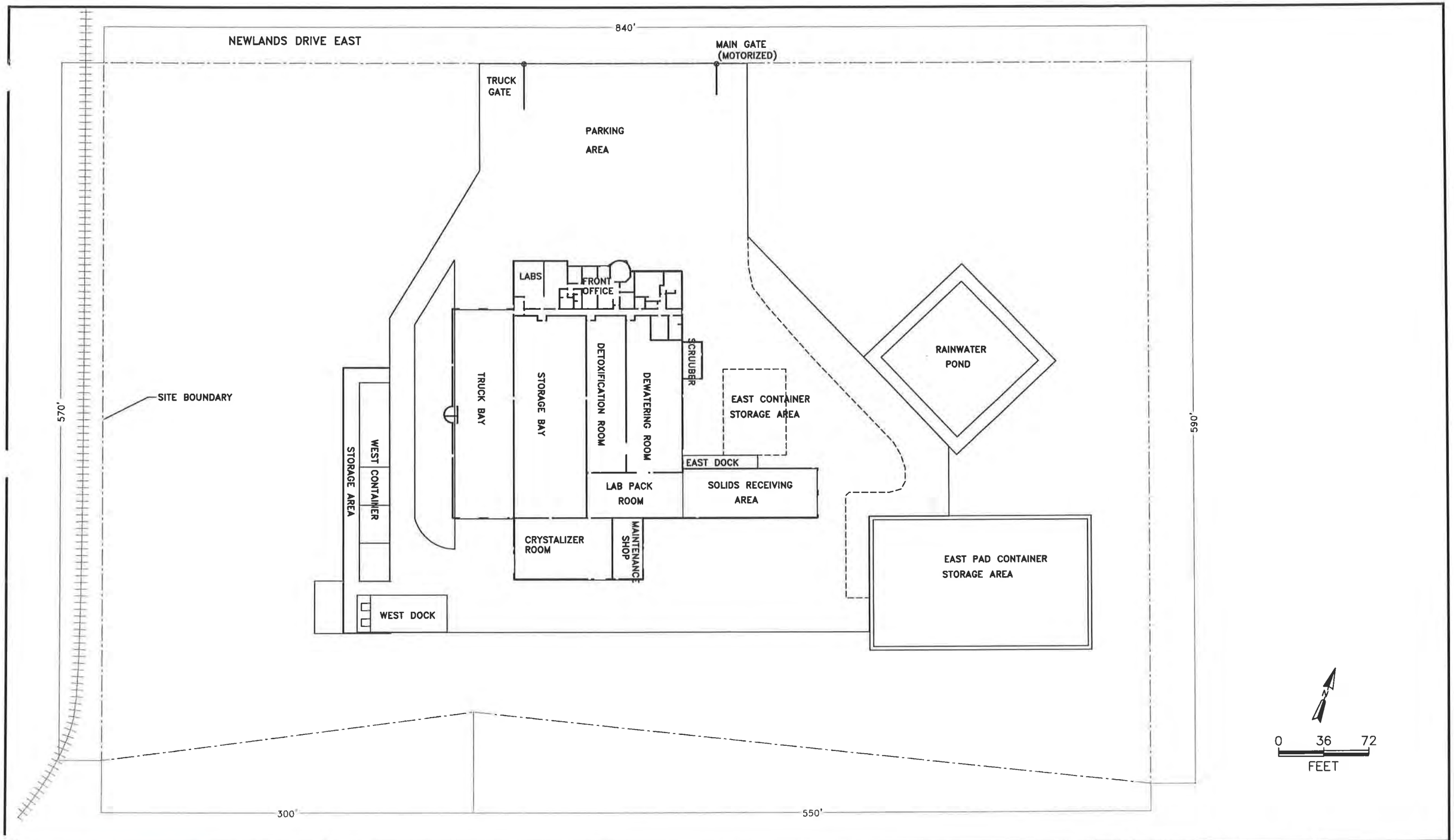
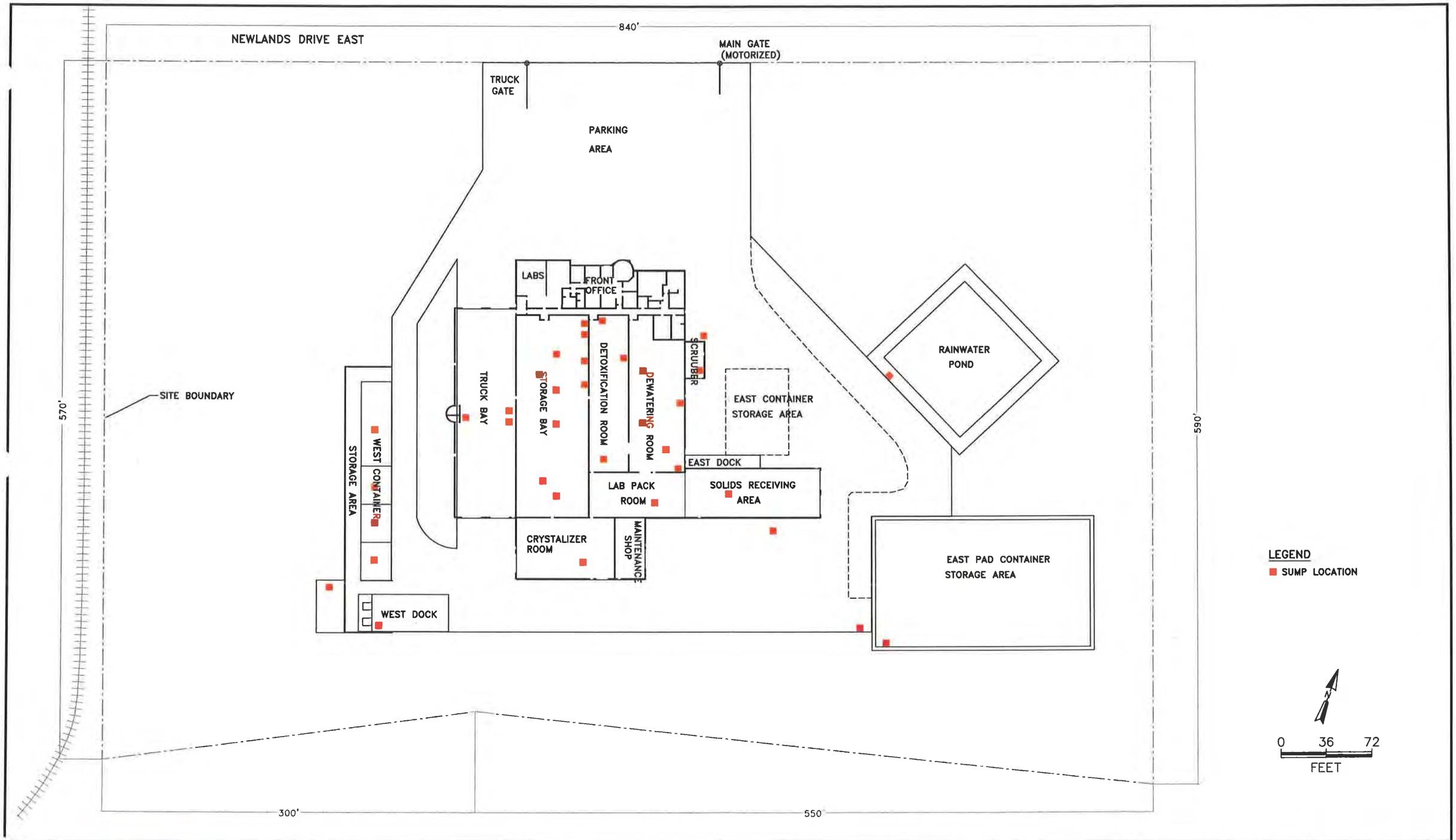
Figure D1-2	Container Storage Areas
Figure D1-2a	East Pad Container Storage Area
Figure D1-2b	East Container Storage Area
Figure D1-2c	Lab Pack Container Storage Area Layout
Figure D1-2d	Vehicle Staging Areas
Figure D1-3	Truck Bay Receiving Area
Figure D1-4	Truck Bay Area Sumps
Figure D1-5	Truck Bay Containment Schematic
Figure D2-1	Tank Locations Plan
Figure D2-2	Tank Fume Scrubbers Schematic
Figure D2-3-1	Waste Treatment Process Flow – Unloading & Storage
Figure D2-3-2	Waste Treatment Process Flow – Detoxification
Figure D2-3-3	Waste Treatment Process Flow – Dewatering
Figure D2-3-4	Waste Treatment Process Flow – Evaporation



PSC

TITLE:
Facility Site Plan
PSC Fernley Facility
Fernley, Nevada

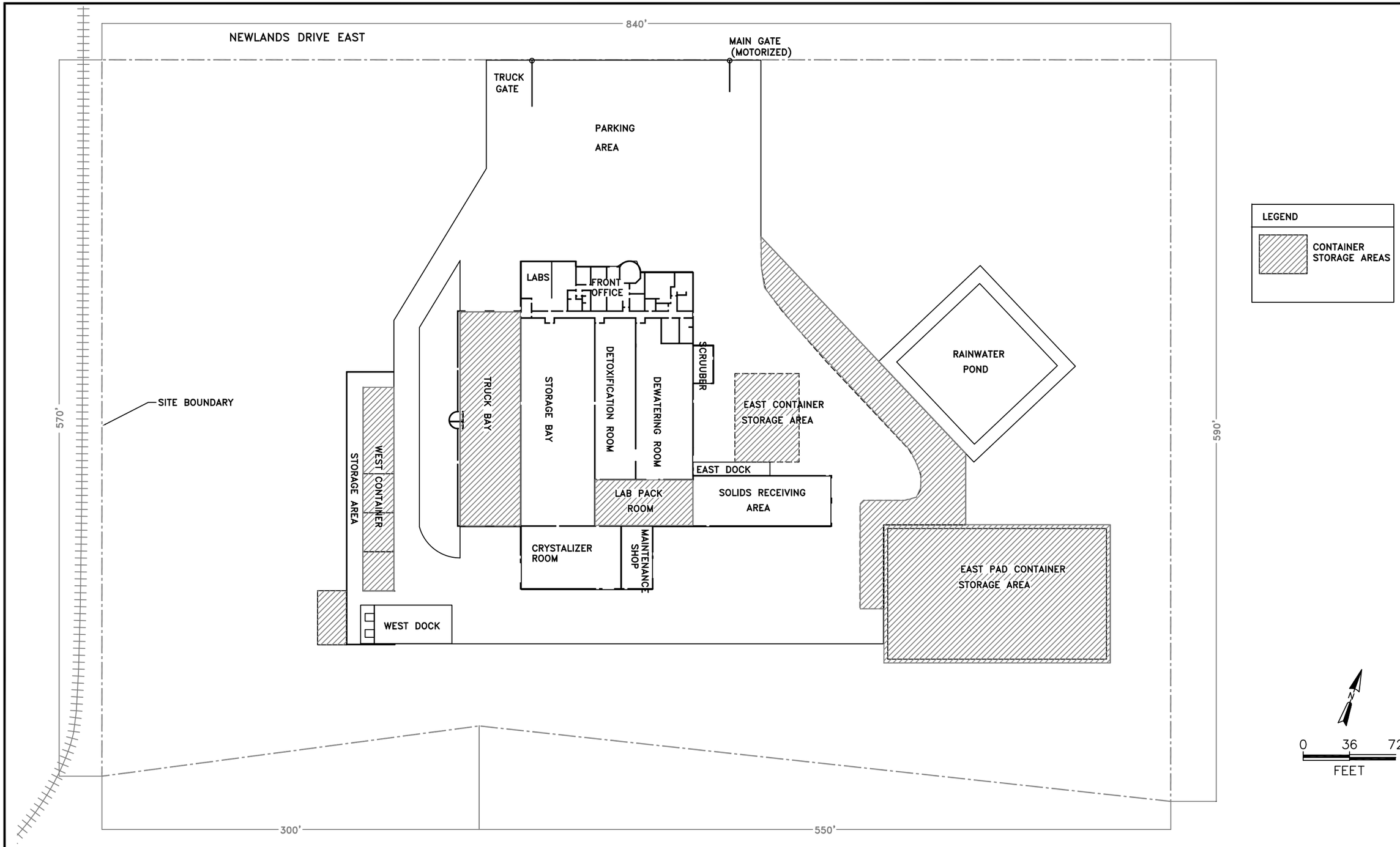
DWN: dtb	DES.:	PROJECT NO.:
CHKD:	APPD:	FIGURE NO.: D1-1
DATE: 7/10/12	REV.:	



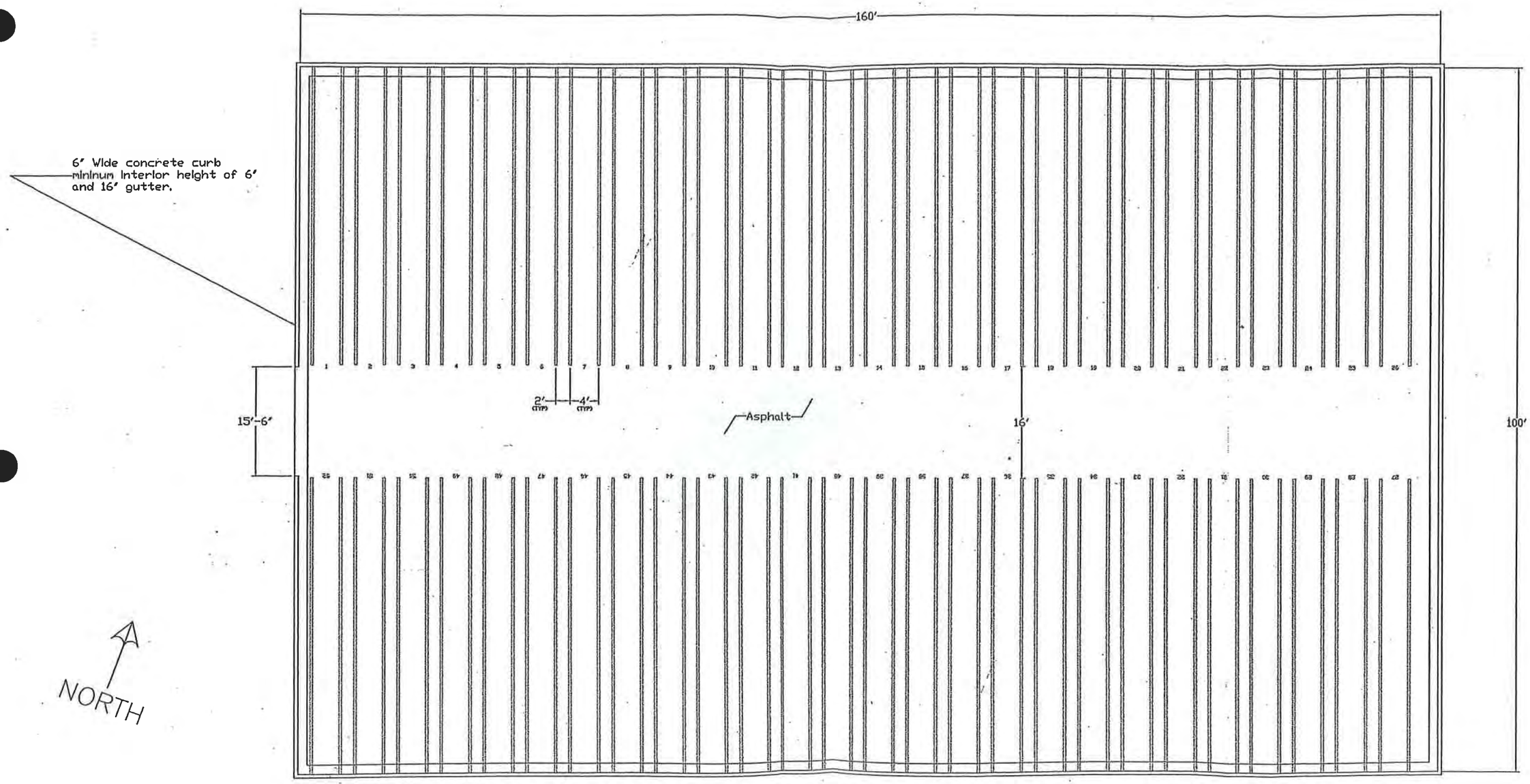
PSC

TITLE:
Sump Locations
PSC Fernley Facility
Fernley, Nevada

DWN: dtb	DES.:	PROJECT NO.:
CHKD:	APPD:	FIGURE NO.: D1-1a
DATE: 7/10/12	REV.:	

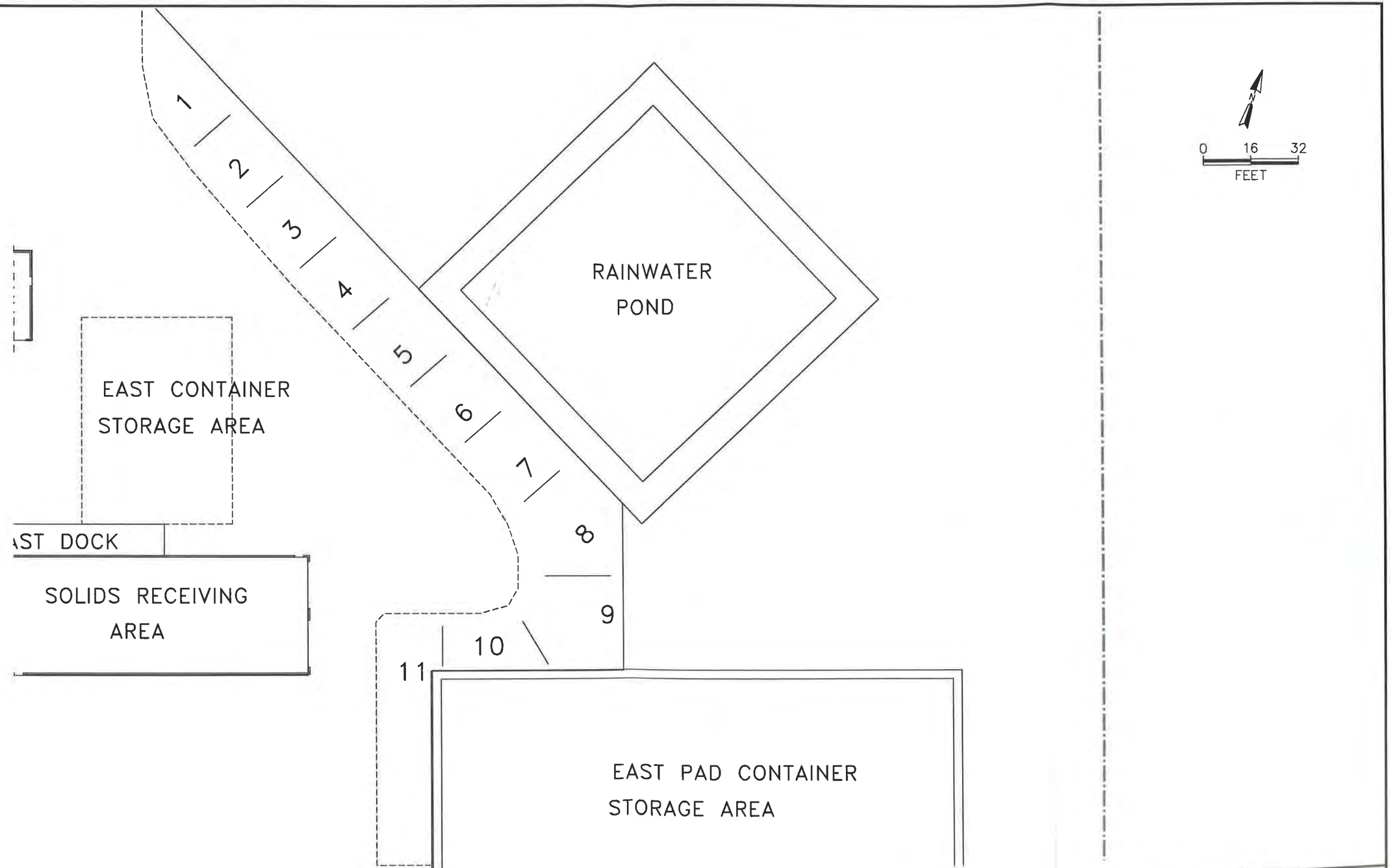


PSC	TITLE: Container Storage Areas PSC Fernley Facility Fernley, Nevada	DWN: dtb	DES.:	PROJECT NO.:
		CHKD:	APPD:	FIGURE NO.: D1–2
		DATE: 7/10/12	REV.:	



ENTERED JUN 1 2 2009

EAST PAD CONTAINER STORAGE AREA
FIGURE D1-2a



PSC

TITLE:
East Container Storage Area
PSC Fernley Facility
Fernley, Nevada

DWN: dtb	DES.:	PROJECT NO.:
CHKD:	APPD:	FIGURE NO.: D1-2b
DATE: 7/16/12	REV.:	

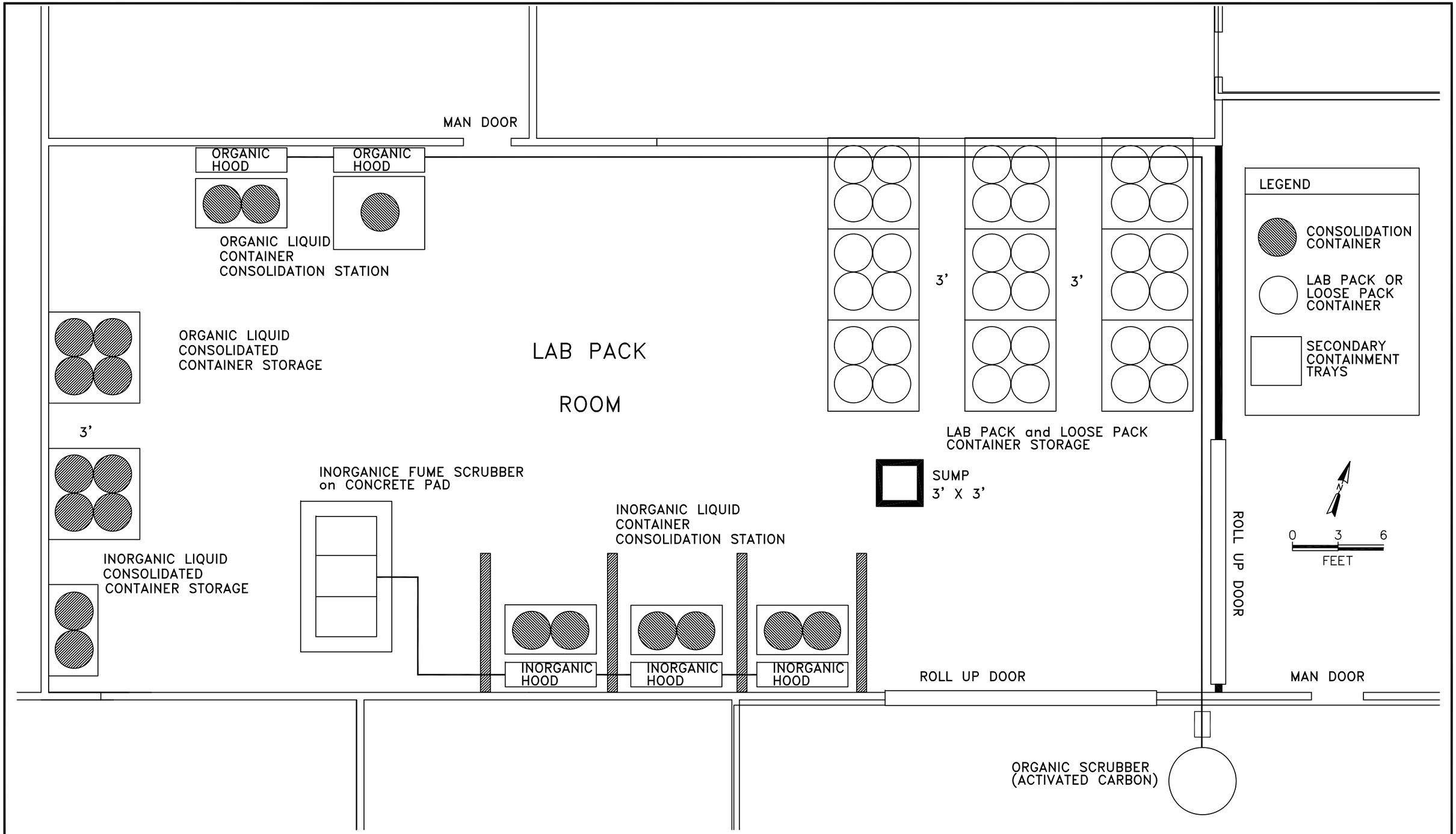
Figure D1-2b (cont.) **East Container Storage Area**

Roll-Off Bin Outdoor Control Area

Figure D1-2b presents a typical placement scenario for roll-off bins, and may be subject to change. The facility will comply with capacity and waste type limitations outlined in Section A and Section D.

Typical contents of bins and corresponding ERG guide numbers are presented below:

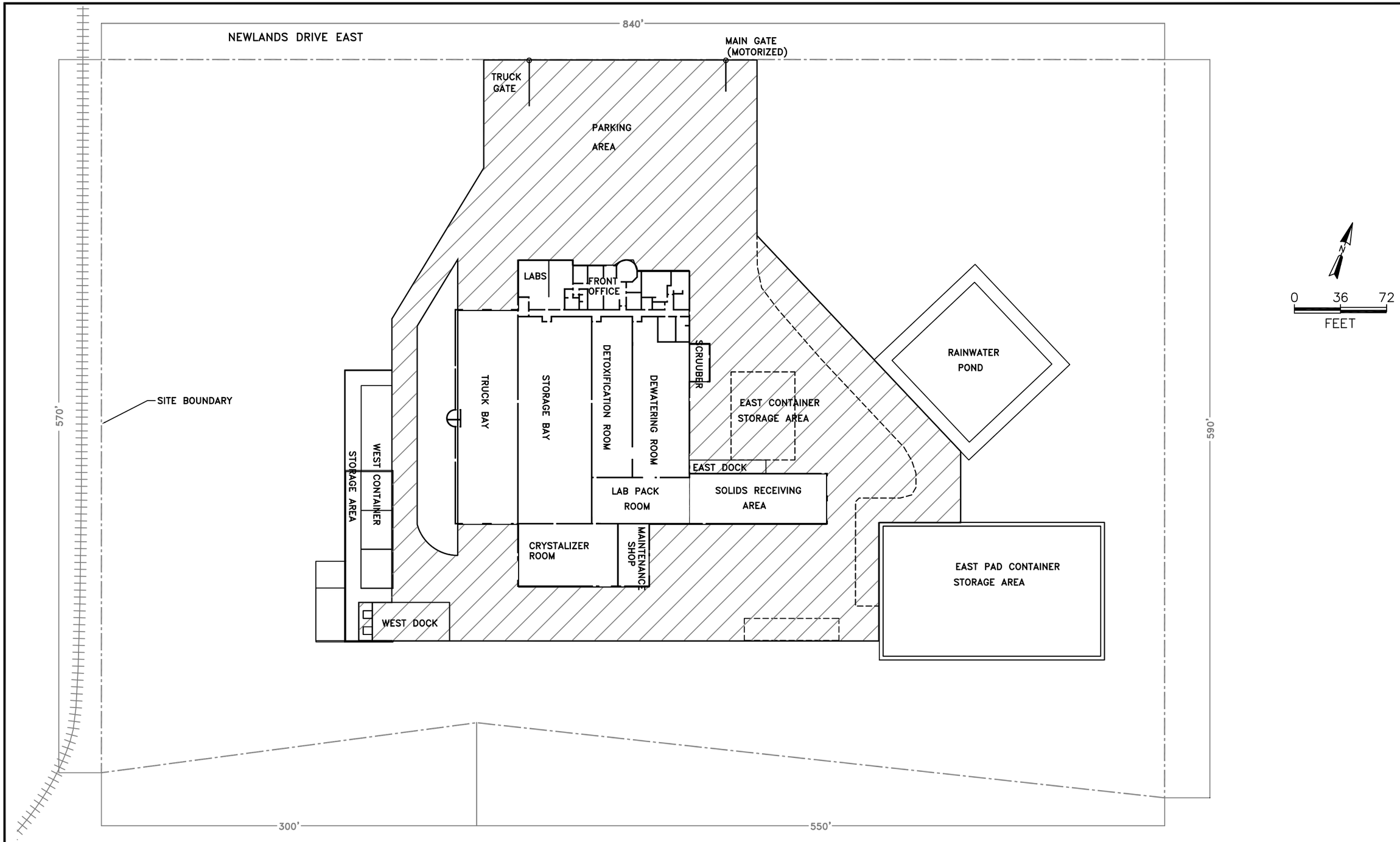
Bin Position #	Contents	ERG Guide Number
1	Empty Flammable / Toxic containers	133
2	Empty Flammable / Toxic containers	133
4	Empty Corrosive containers	154
5	Empty Corrosive containers	154
10	Empty Corrosive containers	154
7	Empty Oxidizer containers	140
8	Empty Oxidizer containers	140
3	Class 9 / non-reg material	171
6	Class 9 / non reg material	171
9	Class 9 / non-reg material	171
11	Class 9 / non-reg material	171



PSC

TITLE:
Lab Pack Area Layout
PSC Fernley Facility
Fernley, Nevada

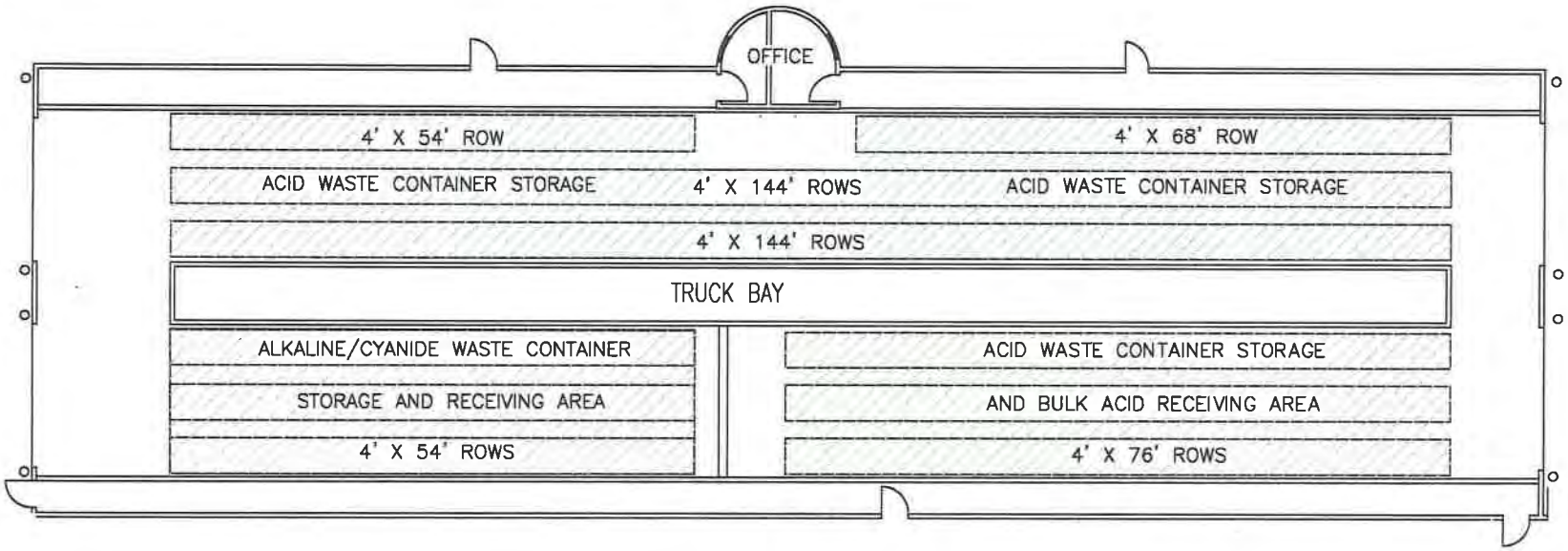
DWN: dtb	DES.:	PROJECT NO.:
CHKD:	APPD:	FIGURE NO.: D1-2c
DATE: 7/11/12	REV.:	



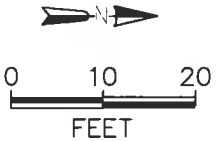
PSC

TITLE:
Pavement Demarcation – Truck Staging Area with Hazardous Waste
PSC Fernley Facility
Fernley, Nevada

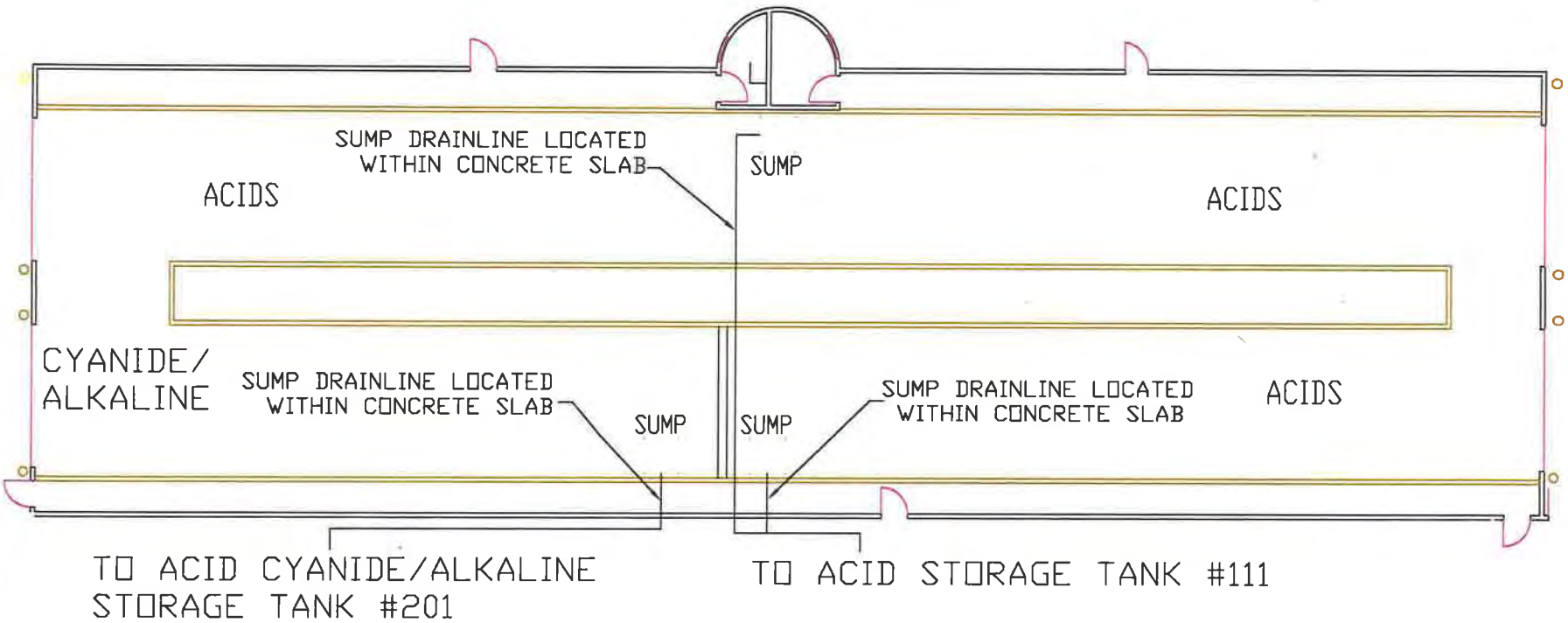
DWN: dtb	DES.:	PROJECT NO.:
CHKD:	APPD:	FIGURE NO.: D1–2d
DATE: 7/10/12	REV.:	



TANK STORAGE BAY AREA

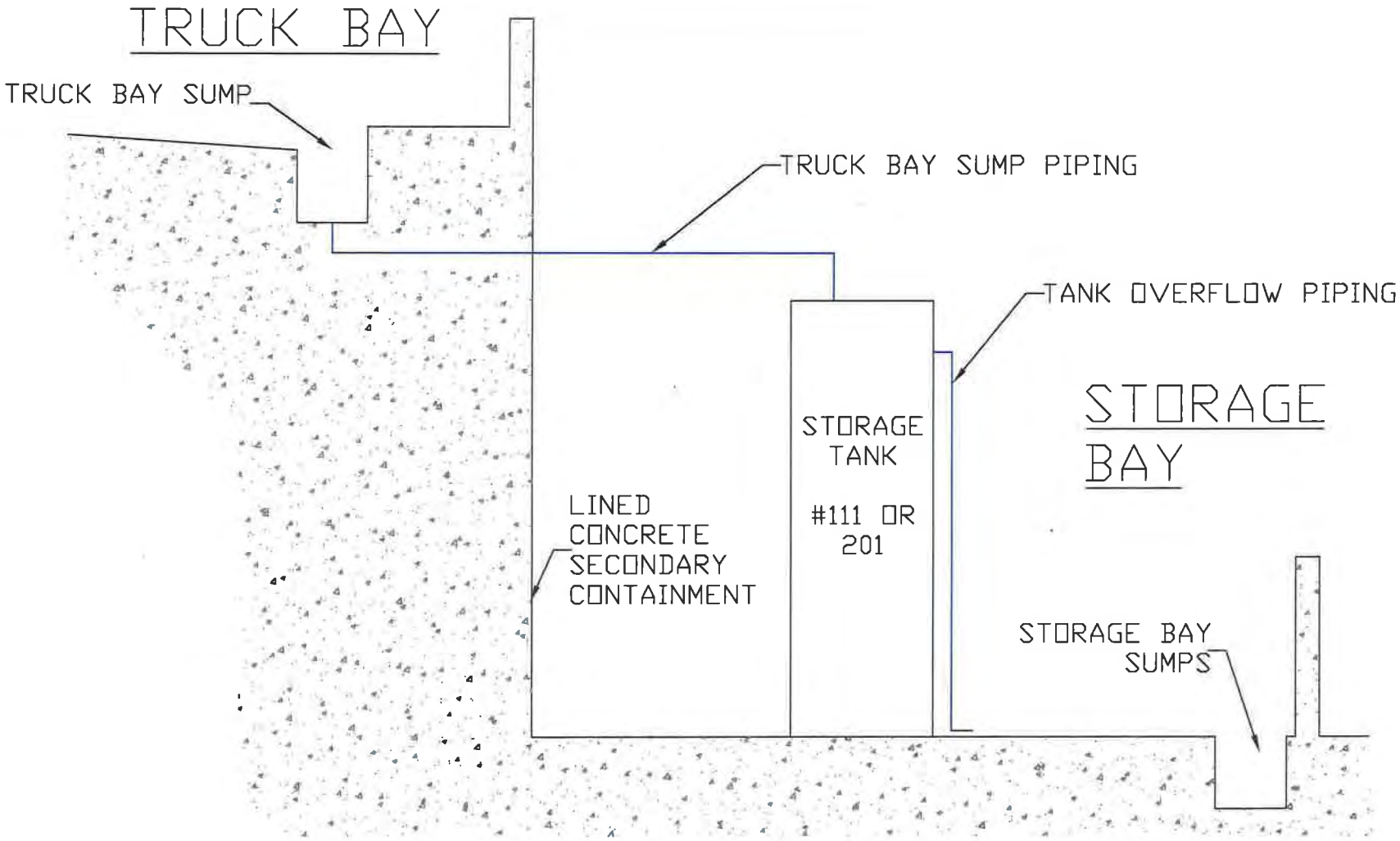


PSC	TITLE: Truck Bay Receiving and Storage Area Fernley Facility Fernley, Nevada	DWN: dtb	DES.:	PROJECT NO.:
		CHKD:	APPD:	FIGURE NO.:
		DATE: 7/17/12	REV.:	D1-3



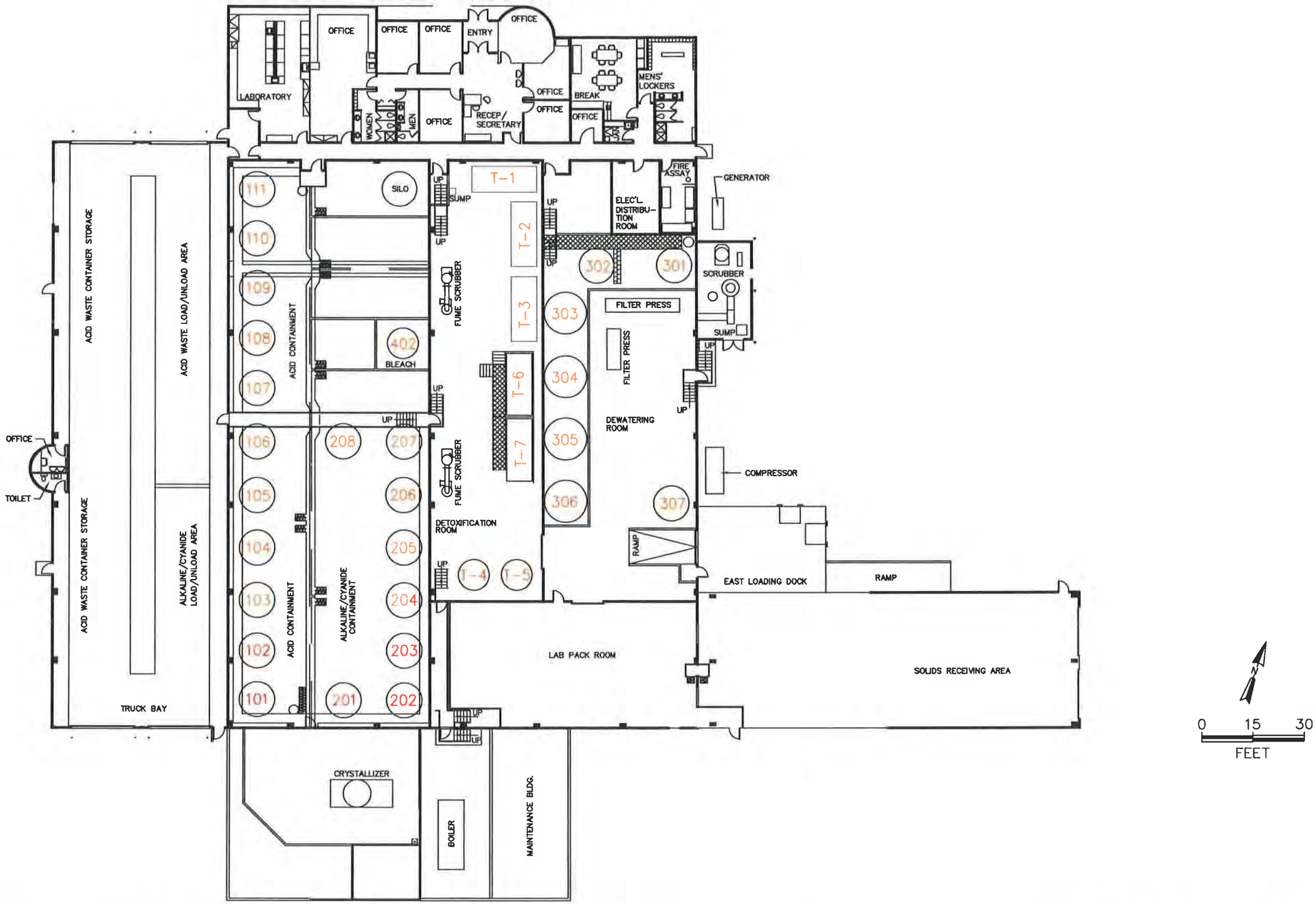
TRUCK BAY SCHEMATIC OF SUMP DRAINS

PSC	TITLE: Truck Bay Schematic of Sump Drains Fernley Facility Fernley, Nevada	DWN: dtb CHKD: DATE: 7/16/12	DES.: APPD: REV.:	PROJECT NO.: FIGURE NO.: D1-4



TRUCK BAY CONTAINMENT SCHEMATIC

PSC	TITLE: Truck Bay Containment Section Fernely, Facility Fernley, Nevada	DWN: dtb	DES.:	PROJECT NO.:
		CHKD:	APPD:	FIGURE NO.: D1-5
		DATE: 7/16/12	REV.:	



PSC

TITLE:
Tank Location Plan
PSC Fernley Facility
Fernley, Nevada

DWN: dtb	DES.:	PROJECT NO.:
CHKD:	APPD:	FIGURE NO.: D2-1
DATE: 7/10/12	REV.: 2	

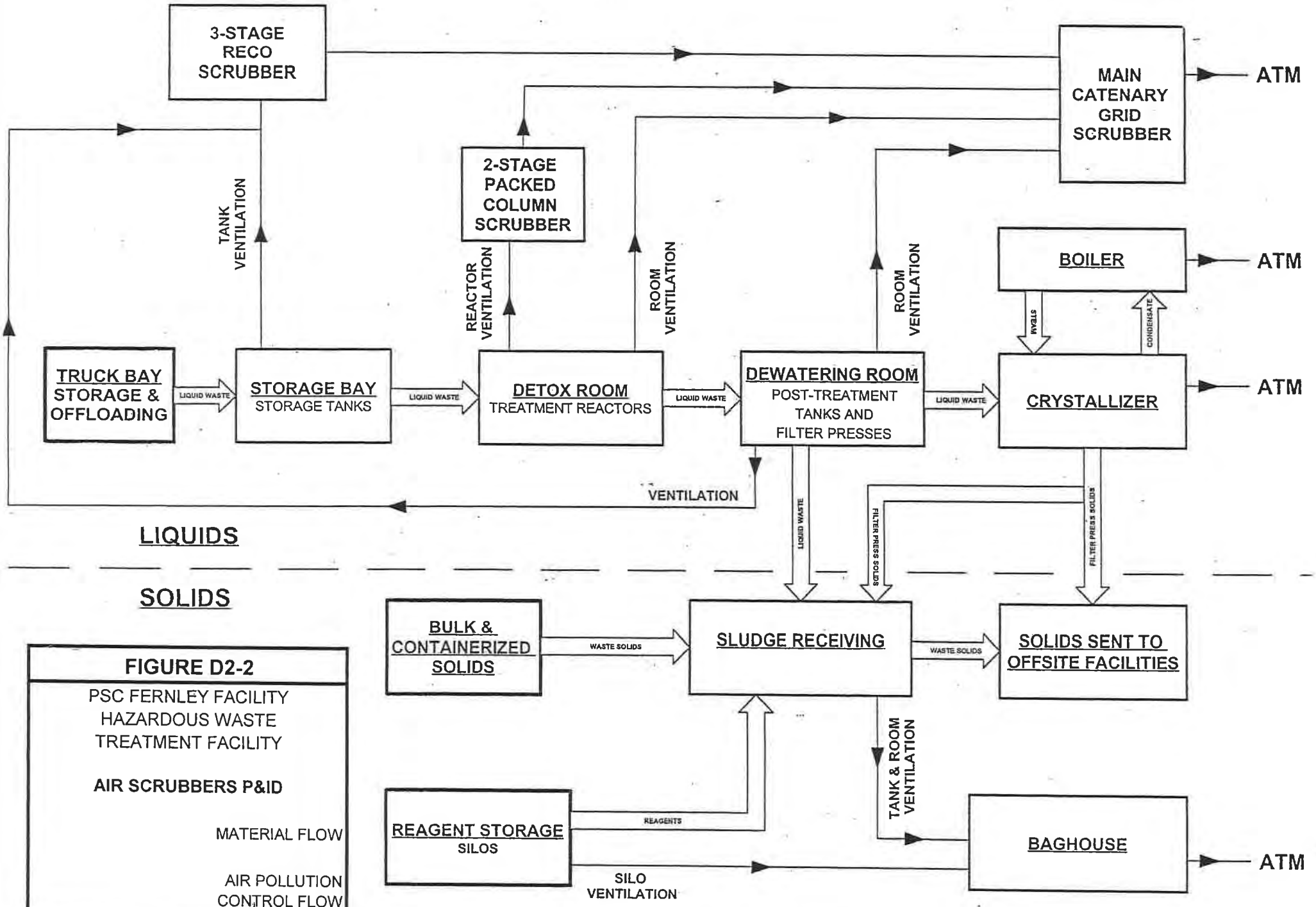


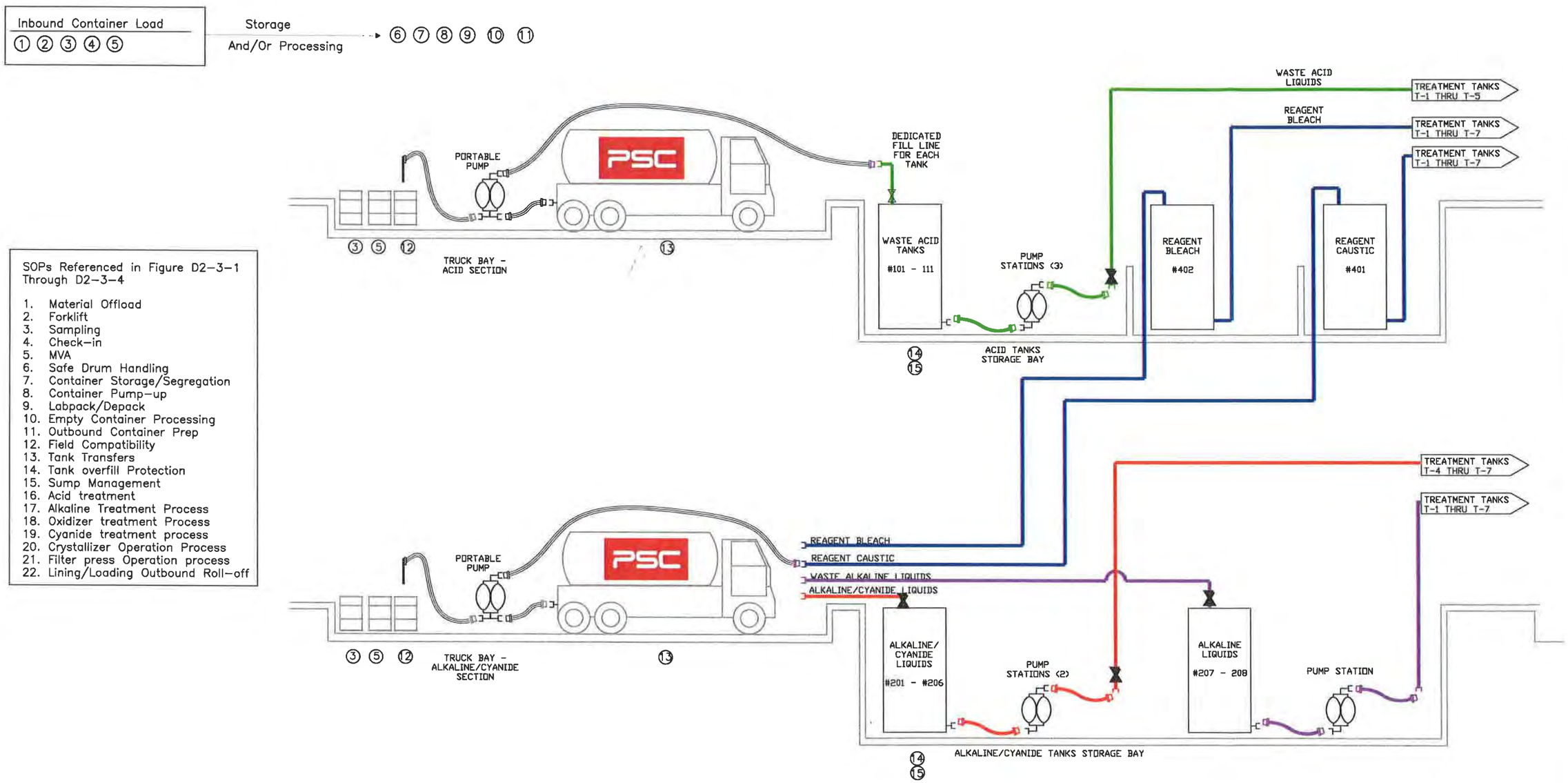
FIGURE D2-2

PSC FERNLEY FACILITY
HAZARDOUS WASTE
TREATMENT FACILITY

AIR SCRUBBERS P&ID

MATERIAL FLOW

AIR POLLUTION
CONTROL FLOW



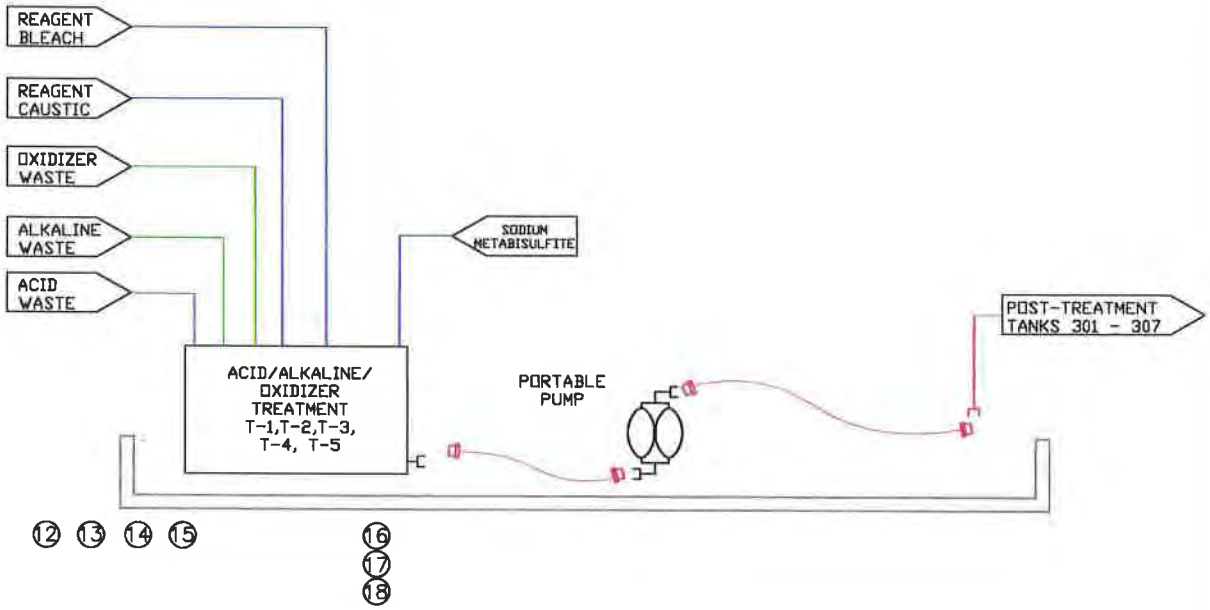
SOPs Referenced in Figure D2-3-1 Through D2-3-4

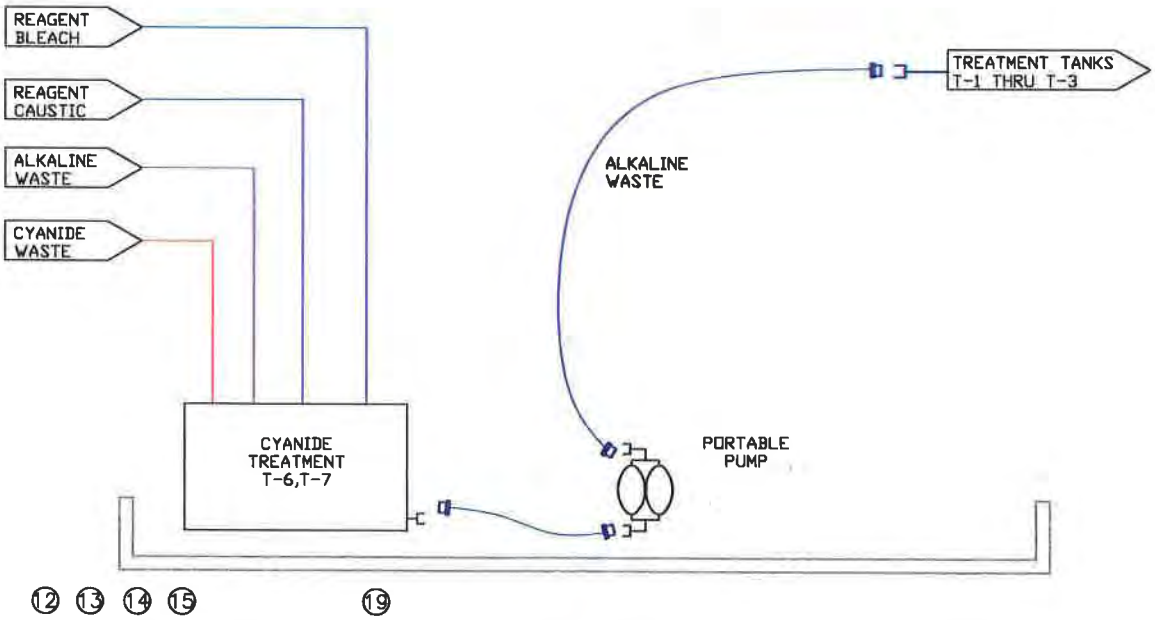
1. Material Offload
2. Forklift
3. Sampling
4. Check-in
5. MVA
6. Safe Drum Handling
7. Container Storage/Segregation
8. Container Pump-up
9. Labpack/Depack
10. Empty Container Processing
11. Outbound Container Prep
12. Field Compatibility
13. Tank Transfers
14. Tank overfill Protection
15. Sump Management
16. Acid treatment
17. Alkaline Treatment Process
18. Oxidizer treatment Process
19. Cyanide treatment process
20. Crystallizer Operation Process
21. Filter press Operation process
22. Lining/Loading Outbound Roll-off

PSC

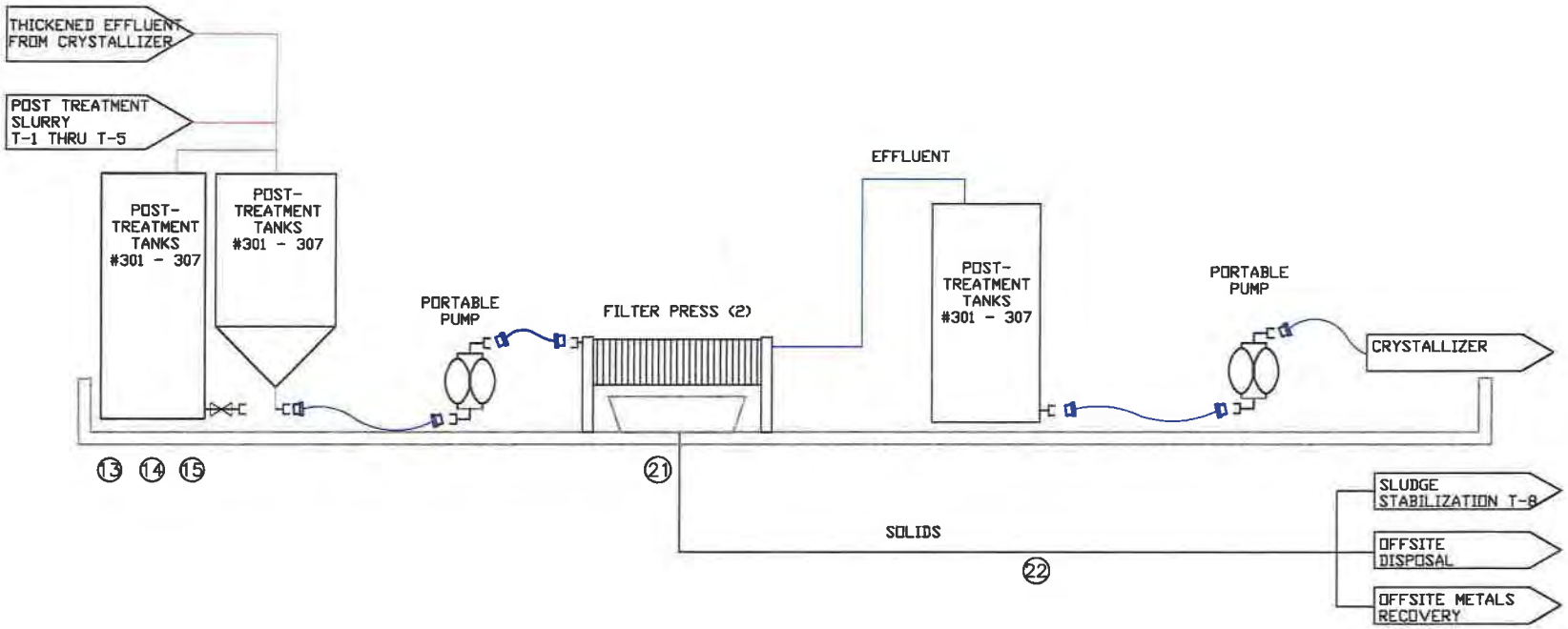
TITLE:
Waste Treatment Process Flow
Unloading and Storage Area
Fernley, NV

DWN:	DES.:	PROJECT NO.:
CHKD:	APPD:	FIGURE NO.: D2-3-1
DATE: 4/8/09	REV.:	

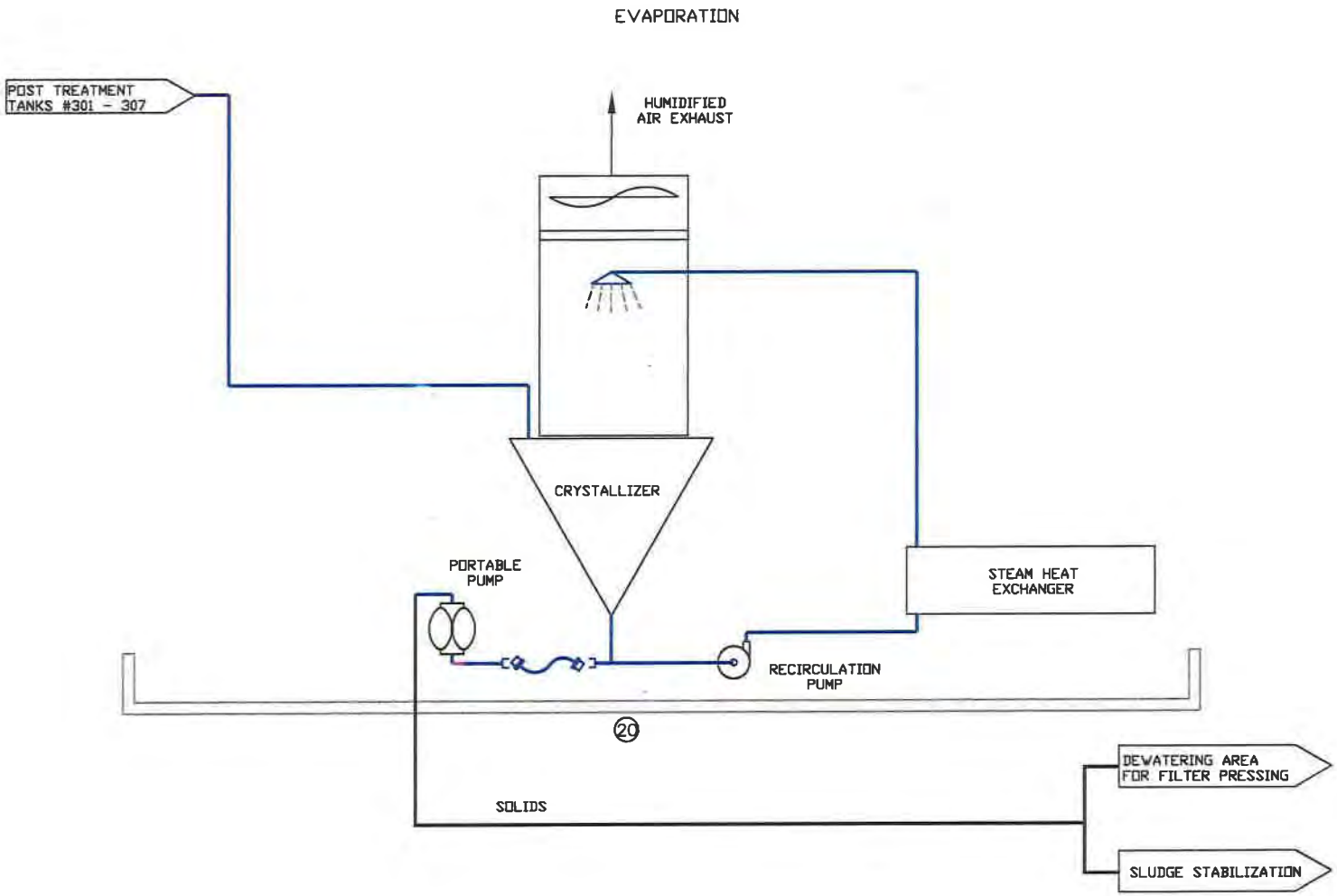




PSC	TITLE: Waste Treatment Process Flow Detoxification Area Fernley, NV	DWN:	DES.:	PROJECT NO.:
		CHKD:	APPD:	FIGURE NO.:
		DATE: 4/8/09	REV.:	D2-3-2



PSC	TITLE: Waste Treatment Process Flow Dewatering Area Fernley, NV	DWN:	DES.:	PROJECT NO.:
		CHKD:	APPD:	FIGURE NO.:
		DATE: 4/8/09	REV.:	D2-3-3



PSC	TITLE: Waste Treatment Process Flow Evaporation Area Fernley, NV	DWN:	DES.:	PROJECT NO.:
		CHKD:	APPD:	FIGURE NO.:
		DATE: 4/8/09	REV.:	D2-3-4

APPENDIX D-1

ENGINEERING DESIGNS

Foundation Drawings

Design Drawings

Construction Drawings

APPENDIX D-2

MANUFACTURERS DATA FOR CONCRETE AND TANK COATING PRODUCTS

Concrete Coatings and Sealers

Tank Exterior Coatings

APPENDIX D-3

SECONDARY CONTAINMENT CALCULATIONS

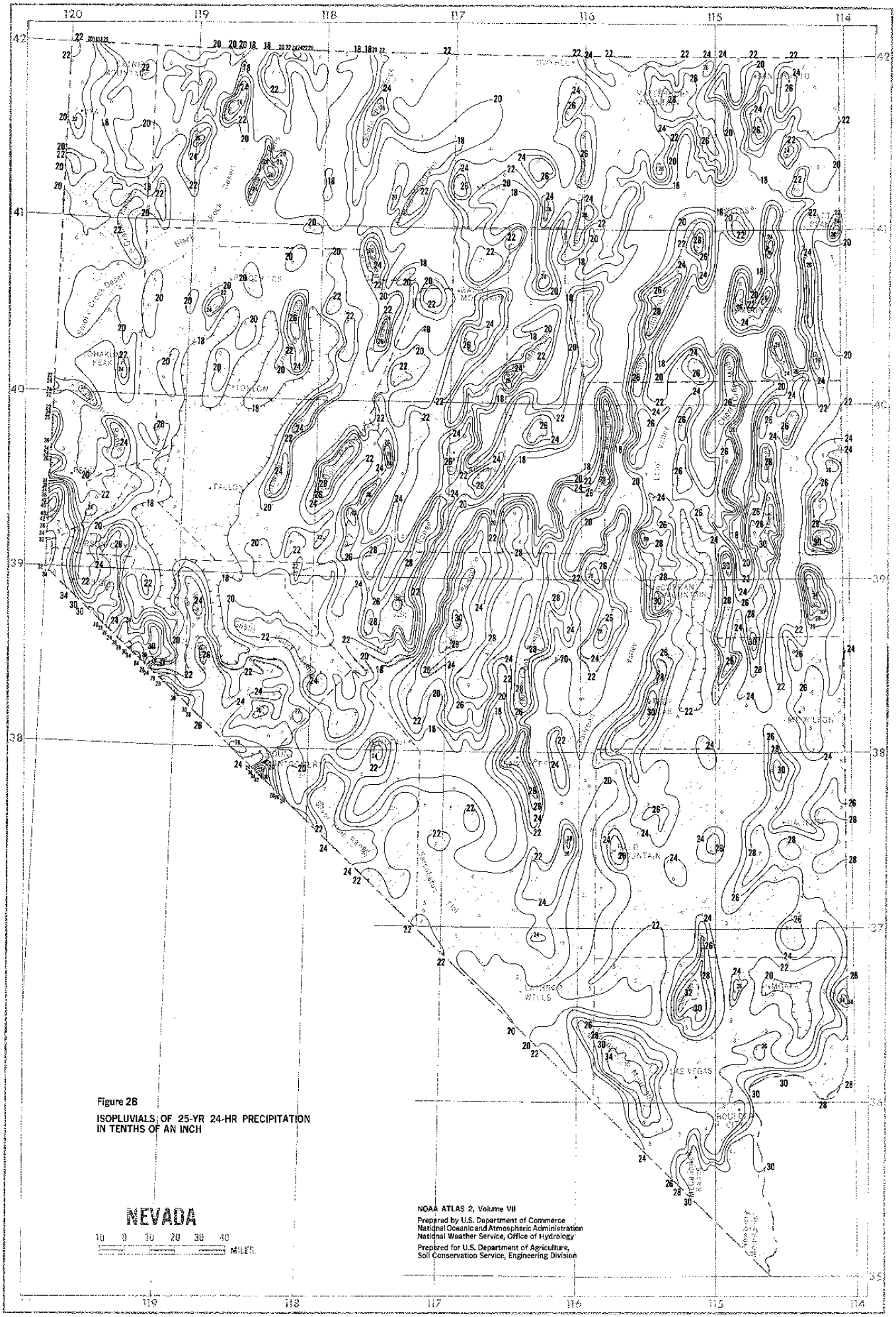


Figure 28

ISOPLUVIALS OF 25-YR 24-HR PRECIPITATION IN TENTHS OF AN INCH

APPENDIX D-4

GEOTECHNICAL ENGINEERING REPORTS

Addendum dated 12/27/2000

Original Investigation dated 2/17/1985

APPENDIX D-5

SUBPART X PROCESSING EQUIPMENT

VENDOR LITERATURE

APPENDIX D-6

TANK DATA SHEETS AND CERTIFICATIONS

Note: Tank data sheets and certifications from structural and corrosion engineers for each existing and proposed storage and treatment tank are found in this Appendix.

Due to the volume of information included, this material has been moved to a separate Volume III of this permit renewal application.

APPENDIX D-7

TANK REPLACEMENT PROJECT

Providing Tomorrow's Solutions Today.

PSC –Fernley

Tank Replacement Project

Three Phase Approach

Preconstruction, Demolition, and Construction Execution Plan

April 18th, 2012 – Last Updated July 10th, 2013

Rev: 2
Date: 10-7-13
1988-PP-002

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27	Phase 3 – Work on Scrubbers	20
28	Phase 3 – Work by Mechanical Contractor	20
29	Phase 3 – Work by Electric Contractor	20
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1 Executive Summary

PSC-Fernley is planning to make construction upgrades to the Detox and Dewatering Areas to complete Tank Replacement Project (TRP) at the facility. The upgrades are being required by Nevada Department of Environmental Protection (NDEP) as part of an overall plan to replace and/or re-certify all the aging process and storage tanks. This document addresses how the TRP will be executed in **3 phases** of construction, rather than in a single mobilization as was presented in the original construction documents developed by Ausenco PSI. The remaining work in the TRP is committed to be completed one year after the effective renewal date of the Part B operating permit, which is expected to be issued during the summer of 2012.

The scope of work in **Phase 1** of the project includes:

- Demolition of existing Tank T-1, T-2, T-3 and the existing Acid Scrubber including existing foundation slabs and ancillary piping on or before July 1, 2012;
- Installing new Tanks T-1, T-2, and T-3 including tank foundation slabs on or before August 16, 2012;
- Installing a new acid scrubber on or before August 16, 2012;
- Installing new catwalks that support tank operations;
- Repair and recoat secondary containment surfaces;
- Obtain Professional Engineering certification for the 2 filter presses in the Dewatering Area;
- Replacing damaged drywall in the Detox Room; and
- Replacing the MCC electrical panel in the Detox Room.

The scope of work in **Phase 2** of the project includes:

- Demolition of existing Tanks C-1, C-2, C-4, C-5, E-1, E-2, and T-5 including existing tank foundation slabs and ancillary piping by March 1, 2013;
- Demolition of existing Tank T-6 **or** removal of the existing liner in Tank T-6 (liner alternative currently under evaluation) by March 1, 2013;
- Installation of new Tanks T-5, 301 and 302, including tank foundation slabs by June 30, 2013;
- Installation of a new Tank T-6 **or** installation of a new liner into existing Tank T-6, certified by Professional Engineer prior to service (liner alternative currently under evaluation).
- Certification from a Professional Engineer for the Crystallizer and ancillary piping;
- Installing catwalks that support tank operations;
- Repair and recoat secondary containment surfaces.

The scope of work in **Phase 3** of the project includes:

- Demolition of existing Tanks C-3, E-3, E-4, E-5, E-6, and T-4, including existing tank foundation slabs and ancillary piping by June 30, 2013;
- Demolition of existing Tank T-7 **or** removal of the existing liner in Tank T-7 (liner alternative currently under evaluation) by June 30, 2013;
- Installation of new Tanks 303, 304, and 307 and including tank foundation slabs, and ancillary piping, by June 30, 2013;
- Installation of a new Tank T-7 **or** installation of a new liner into existing Tank T-7, certified by Professional Engineer prior to service (liner alternative currently under evaluation).
- Completion of all catwalks that support tank operations;
- Installation of ancillary piping to support all tank operations throughout the facility:
- Fire separation barriers and secondary containment berms will be installed in Detox to separate acid and alkaline treatment tanks.
- Install of SCADA tank operational controls and instrumentation including all electrical necessary to support SCADA operations;
- Repair and recoat secondary containment surfaces.

All tanks, ancillary piping, and Subpart X units managing wastewater operations related to the project will be certified by Professional Engineer by June 30, 2013, or will be removed from service.

2 Project Goals

The tank replacement project will involve the removal and replacement of all the critical process vessels, associated piping, wiring, instrumentation, control systems and MCC in the Detoxification and Dewatering areas. Consequently, it will be impossible to conduct this effort without at least some level of disruption to PSC's ongoing business operations. With this being said, this plan will minimize the interruptions and still allow processing during the plant revisions.

- Identify scope items that may be performed prior to construction which are not dependent on construction schedule;
- Minimize the interruption to PSC's ongoing business operations;
- Identify critical schedule dependencies that will be key determiners for the sequencing of work for the various craft trades;
- Identify a strategy to keep a minimal level of equipment in operation during the construction work;
- Complete all work in this scope within one year after the effective date of the facility's renewed Part B operating permit.

This document is intended to be used as a supplement to the baseline construction schedule and provide additional detail and describe the logic behind the sequence events as well as call attention to critical schedule dependencies.

The initial original revision of this plan (Ausenco PSI 1988-T-012 Rev 0.) was developed with the assumption that the work would be conducted during a 12 week shutdown. Because of the logistics required to do all of the work will be allocated over the 2012-2013 timeframe, it has become necessary to phase the work and also allow for some of the tanks to remain in operation while work is being performed. Thus, the project will be conducted in phases, described as follows:

Phase 1 – Acid Tanks T-1, T-2 and T-3 in the Detoxification room will be replaced along with commissioning of a temporary scrubber (form the Ranch Cordova plant) and associated duct and pipe connections. No Dewatering tanks will be changed during this phase; however, some storage bay tanks may be used temporarily for dewatering using existing transfer lines and making manual transfers. Caustic tanks will remain in place.

Phase 2 – Caustic Tanks T-5 and T-6 will be replaced along with Dewatering tanks C-1, C-2, C-4, C-5 as well as E-1 and E-2. This will allow for new caustic processing capability. Tank T-6 will also be evaluated to see if the existing tank liner can be re-lined and certified by a Professional Engineer.

Phase 3 – Caustic Tanks T-4 along with the remainder of the Dewatering Tanks C-3 and E-4, E-5 and E-6 will be removed from service. Tank T-7 will be evaluated to see if the existing tank structure can be re-lined and certified by a Professional Engineer; if not it will be removed from service and demolished. New Tanks T-4, T-7, 305, and 306 will be evaluated for their future need and will be scheduled for replacement at a later date.

3 Plan Approach and Scope of Work

This plan covers the time during the construction work will be performed. It begins when NDEP and local permits have been obtained for the renovations. It ends upon job permit sign off, commissioning

is completed and submission of turn over documents. PSC has elected to self-perform the work of general contractor with technical consulting support from Ausenco PSI. Activities performed by the PSC will consist of significant procurement and preconstruction components.

The Phase 1 period also has a significant scope of work that will be performed by PSC, so it is critical that PSC mobilize sufficient resources to be able to perform this scope. Based current staffing levels at the Fernley plant, there will not be sufficient PSC resources to perform the demolition scope, so it is recommended that PSC mobilize workers from temp agencies such as Manpower, or other facilities to assist during the first week of construction when the demolition is scheduled. Alternately, PSC may want to open T&M contracts with the various subcontractors for additional support.

4 Related Documents

- Ausenco PSI 1988-PP-001 Rev. 1 Project Plan and Hazard Analysis work should be conducted in accordance with this general plan, PSC existing procedures and any additional PPE and safety practices that are specific to individual trades.

- Ausenco PSI Technical Specifications for Tank Replacement. This binder contains Master Format Construction Specifications as well as “Issued for Permitting” drawings relating to the various craft trade divisions.

- PSC’s JSA form – All work and trades should complete a Job Safety Analysis prior to any task

- HazOps review plan (this is a PSC document currently under development)

5 Procurement and Contracting

PSC will need to award subcontracts to the various trades within the first week of the project schedule. This will allow sufficient time for procurement of the longer lead items as well as for off-site fabrication of the large equipment items such as the tanks and catwalk assemblies. As part of the process of awarding contracts to the subcontractors, PSC will need to re-confirm the schedule with all of the craft trades and suppliers of key equipment to ensure that materials and manpower may be obtained to meet the overall project schedule. PSC should obtain revised proposals from the subcontractors if there have been changes in the drawings as a result of the permitting process.

6 Pre-construction - Safety Plan

Preparation for the construction shall include updating the Safety Plan. This document (Ausenco PSI 1988-PP-001 Rev. 1) was initiated during the engineering phase. The update to the document should include an evaluation of the hazards of all of the work to be performed by the owner and the various craft trades. Where hazards are identified, they should be classified and remediation steps should be documented and incorporated into the plan.

PSC should involve and solicit input from the subcontractors in the development of the safety plan as they are most knowledgeable about their respective trades. The first stages of work involve some of the most significant risks for the project because the existing pipes are considered “hazardous” and will contain trace amounts of entrapped fluid. PSC’s staff must have HAZWOPER training, proper PPE

and will have to perform much of this work on elevated work surfaces while using fall restraint systems.

Lastly, the updated plan should address site logistics. This will require coordinating with PSC to designate material lay-down areas for the respective trades, the yard around the facility should contain sufficient space for storage containers as well as outdoor storage for the tanks and catwalks as these are being trucked to site. Provision should be made to secure and lash down plastic tanks if they are stored outdoors due to the possibility of high winds.

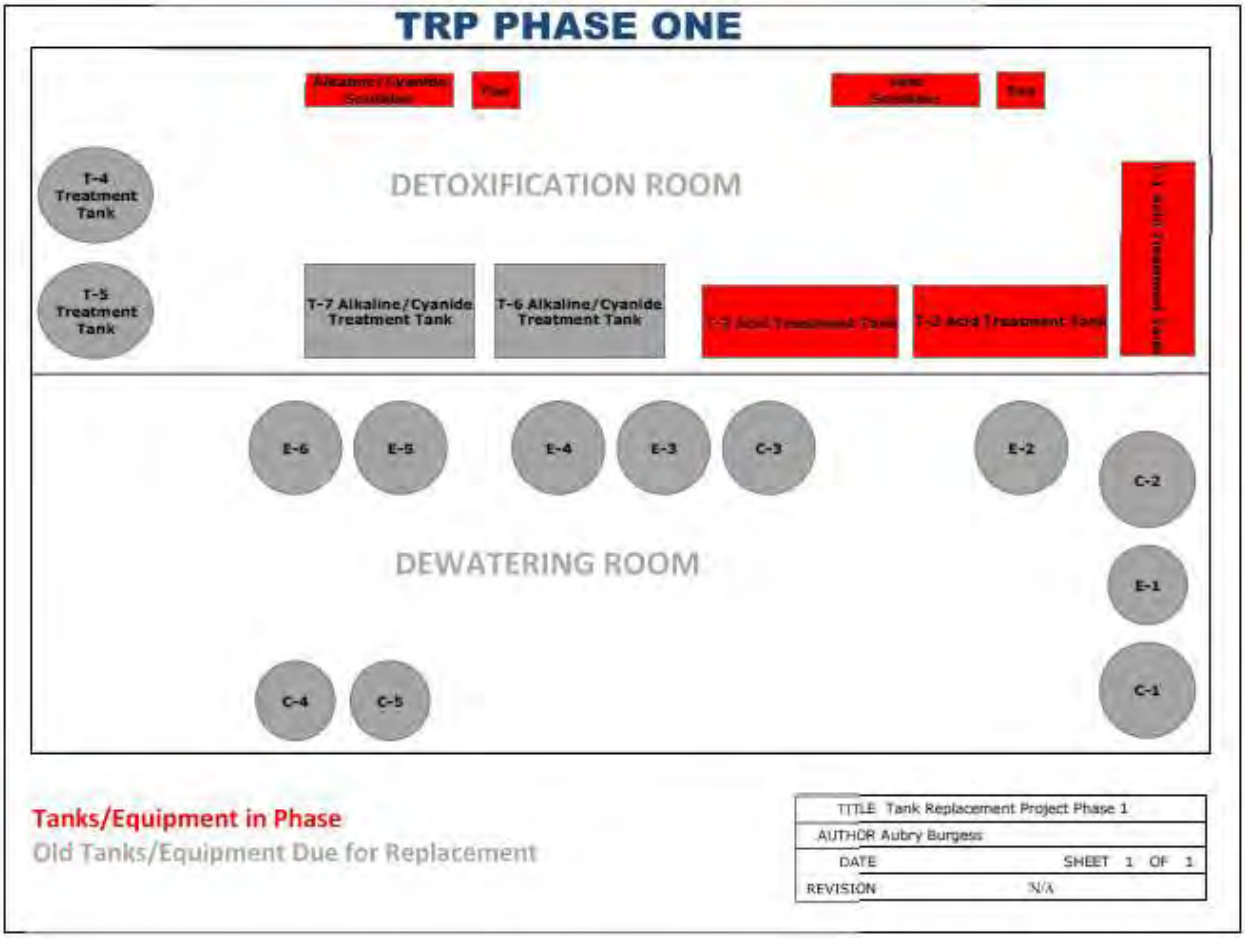
7 Phase 1 – General Overview

The scope of work for this phase of the project includes the following:

- Demolition of existing Tank T-1, T-2, T-3 and the existing Acid Scrubber including existing foundation slabs and ancillary piping on or before July 1, 2012;
- Installing new Tanks T-1, T-2, and T-3 including tank foundation slabs on or before August 16, 2012;
- Installing a new acid scrubber on or before August 16, 2012;
- Installing catwalks that support tank operations;
- Repair and recoat secondary containment surfaces;
- Obtain Professional Engineering certification for the 2 filter presses in the Dewatering Area;
- Replacing damaged drywall in the Detox Room; and
- Replacing the MCC electrical panel in the Detox Room.

It is anticipated that this construction phase will take approximately 4-6 months to complete. The attached project schedule illustrates the project timeline for each individual task for Phase 1.

Phase 1 will address replacement of the tanks immediately required for compliance with regulatory agencies. These are red-highlighted in the figure below. The following sections in this document relating to Phase 1 will detail the work required by PSC and the respective subcontractors and vendors.



8 Phase 1 – Work by PSC

PSC is responsible for the demolition and decontamination of piping. Immediately upon commencement, this work will need to be performed to so that the trades may then work under standard non-hazardous work practices. While as much of the demolition will be attempted prior to construction, final disconnections to the tanks and vent ducting can only happen after construction begins. In order to keep this work to a week or less, it will be necessary for PSC to bring in supplemental labor in order to support the aggressive schedule (or hire additional support).

A number of the tasks in the PSC's scope can be performed without affecting ongoing operations and thus may be performed prior to construction. These tanks are primarily associated with piping demolition and isolation of utility services so that the areas are not energized when the subcontractors begin work.

PSC will handle all of the piping demolition scope because the pipes may contain entrapped fluids which are considered hazardous due to the extreme acids and caustics used. Many of the pipes slated for removal are already abandoned in place or are no longer used. These pipes may be removed prior to construction.

Below is summary of the piping to be removed and or modified. This plan does not attempt to identify piping on a line by line basis as PSC staff is already familiar with the lines to be removed and will handle this scope internally.

Task	Photo or information
The existing MCC will be fully demolished during Phase 1; however, it is unknown where many of the electrical lines are routed. During the preconstruction, a trial shutdown will be performed to determine the effect of shutting down the MCC.	
Demo piping for T1, T2 T3	
Demo lines on pipe bridge and remove pipe bridge	

Tank 402 will need a new electric centrifugal pump installed (tag P-007A Ref drawing 1988-D-G-002) This pump can be installed in advance on the major construction as some of the piping is already in place. Note that photo is from T207/208, however the pump assembly for T402 will be similar and use the same pump, strainer and misc. other hardware and isolation valves. The wiring work can wait unit the electrical contractor is on site for the construction.	
Abandoned pipe to be removed. Truck Bay transfer line (drawing1988-D-G-004) with 4 valves (currently not tagged) The line should be removed in its entirety including branch lines.	
This transfer line begins at the Truck Bay to Storage Bay rollup door. The line should be removed in its entirety.	
Removal of Misc. “Dead” pipes – There are several pipes associated with the north pipe rack that	These are difficult to see in a photo since pipes to be removed are comingled with pipes that will remain in service. PSC staff as well as Ausenco’s PM can identify these and provide direction to the demolition crew.

9 Phase 1 – Tank Fabrication

Purchase orders have been issued for treatment tanks T-1, T-2 and T-3. Tanks in the Detox room were designed by Tobey Wade based on similarity to existing designs and their form factors were specifically designed to fit into the existing space. Fabrication will be performed to be by Peabody who is also the vendor for the floor coatings. This was a major factor in directed source selection of the tanks because having the same vendor for the tanks and floor coatings solves a major logistical hurdle of having two coordinate between multiple sources for these critical scope items.

10 Phase 1 – Work on Walls and Surface Finishes

Work on walls and surface finishes will primarily involve reinstallation of drywall and surface epoxy finish after the drywall is complete. The drywall to be replaced is located on the wall between the Detox and Dewatering room behind T-1 to T-7. The existing drywall has been heavily corroded by the chemical vapours in the room. The new surface paint will be an epoxy based finish that has been successfully used in the other areas of the plant.

Installation of the drywall cannot be performed efficiently until the tanks have been removed. The PSC scope involving demolition of various electrical and piping lines must be complete. A budget line item has been included in the construction budget for PSC to purchase a refurbished man-lift. The most significant surface finish scope is the preparation of the entire floor area in the Detox areas for a new application of floor epoxy. The area must be sandblasted to level the floor and remove existing coating materials. This will require that the contractor coordinate with PSC to isolate ventilation of these areas as well as sealing the entrances to prevent dust migration to other areas of the plant. While sandblasting is occurring, it will not be possible to perform other work in these areas.

Once new epoxy is applied to the floor, work should commence only after the manufacturer's recommended cure time is complete. The floors should be safe to walk on within a day and safe for equipment to drive on within 48 hours. Nevertheless, the extreme weight of the rigging equipment will most likely cause some abrasion so provisions should be made to perform touch-ups after the heavy rigging is complete. The epoxy floor product will not only be applied to the floors, but the containment walls as well. Since the containment walls are not weight-bearing, they will not have the strengthening agent present. Another important note is that the epoxy flooring is part of the overall chemical containment strategy of the rooms, so floor coating materials should be applied not only to flooring, but also on the equipment and tank pads.

11 Phase 1 – Work by Rigging Contractor

Bragg Crane (and their respective suppliers) will have overall responsibility for fabrication of catwalk assemblies. Steel should be placed on order as soon as possible after PO is released to minimize exposure to commodity price fluctuations. Non-metallic grating was selected because it will have better long term corrosion resistance to the chemicals in the area, is lighter and may be removed and replaced by a single man for serviceability and is also less likely to injure workers knees if they occasionally need to perform work in a kneeling posture.

Bragg is performing the rigging scope, so they should coordinate with PSC to transfer the Peabody tanks (which will be fabricated locally in Reno) and truck them to site.

The rigging scope performed by Bragg Crane will be the most complex and schedule-critical scope of the construction phase. This is primarily because their scope will involve the several mobilizations scheduled around the work of the various other subcontractors.

Prior to commencement of the construction phase, all tanks and catwalks should be pre-staged in the designated material lay-down area in the plant yard.

12 Phase 1 – Work by Concrete Contractor

The concrete scope primarily involves the preparation of the tank pads for T-1, T-2 and T-3. Additionally a small pad will be needed next to the MAPCO scrubber to relocate the fan assembly.

Cure time for the concrete is approximately 6 days according to L&H concrete. Break samples will be evaluated as the cure commences. Rigging may commence once the concrete has been deemed suitably cured.

13 Phase 1 – Work by MAPCO (Scrubbers)

MAPCO scope for the scrubbers involves three chief components.

- Retrofit existing acid scrubber
- Install new caustic scrubber
- Install vent lines

Work to retrofit the existing scrubber may begin immediately upon construction commencement and concurrently to PSC's demolition scope. Installation of the new caustic scrubber may begin once T-1, T-2 and T-3 have been rigged into place. This scrubber work may be concurrent to the installation of the remaining tanks and catwalk assemblies. Vent lines for the scrubbers are partially dependent on mechanical work and catwalks, but for the most part are separate as the vent line routing follows mostly existing ripe racks and in some cases is supported by wall brackets which are independent of the pipe racks. Most of the pipe routings are fairly straight forward, however, the caustic line from the scrubber to T-4 and T-5 will require some field routine in order to make the final connections.

14 Phase 1 – Work by Mechanical Contractor

The mechanical scope involves the installation of new piping for process fluids, air and water. For the most part, mechanical work cannot begin until the pipe racks are substantially in place. To ensure that mechanical work proceeds as efficiently as possible, the mechanical contractor should have all required materials on-site staged in the designated lay-down area prior to construction. Instruments be brought on site with tags pre-installed and should be staged in a location where they are protected from physical damage and weather (preferable in an indoor location).

Once the mechanical contractor begins pipe installation, it is important to note that the contractor will need to regularly check the slopes and elevations of piping. As noted in the construction specification

binder, the building's floor is not 100% level, and thus vigilance is necessary to obtain the proper slopes for drainage and to minimize entrapped fluids.

Upon completion of piping and instruments, the mechanical contractor will need to closely coordinate with the automation system integrator in order to test instruments, stroke valves. The piping vendor may need to manually open and close automated valves in order to pressure test various segments of the system.

15 Phase 1 – Work by Electric Contractor

The electrical scope in Phase 1 will involve running conduit and services to the new tank pumps and agitators.

16 Phase 2 – General Overview

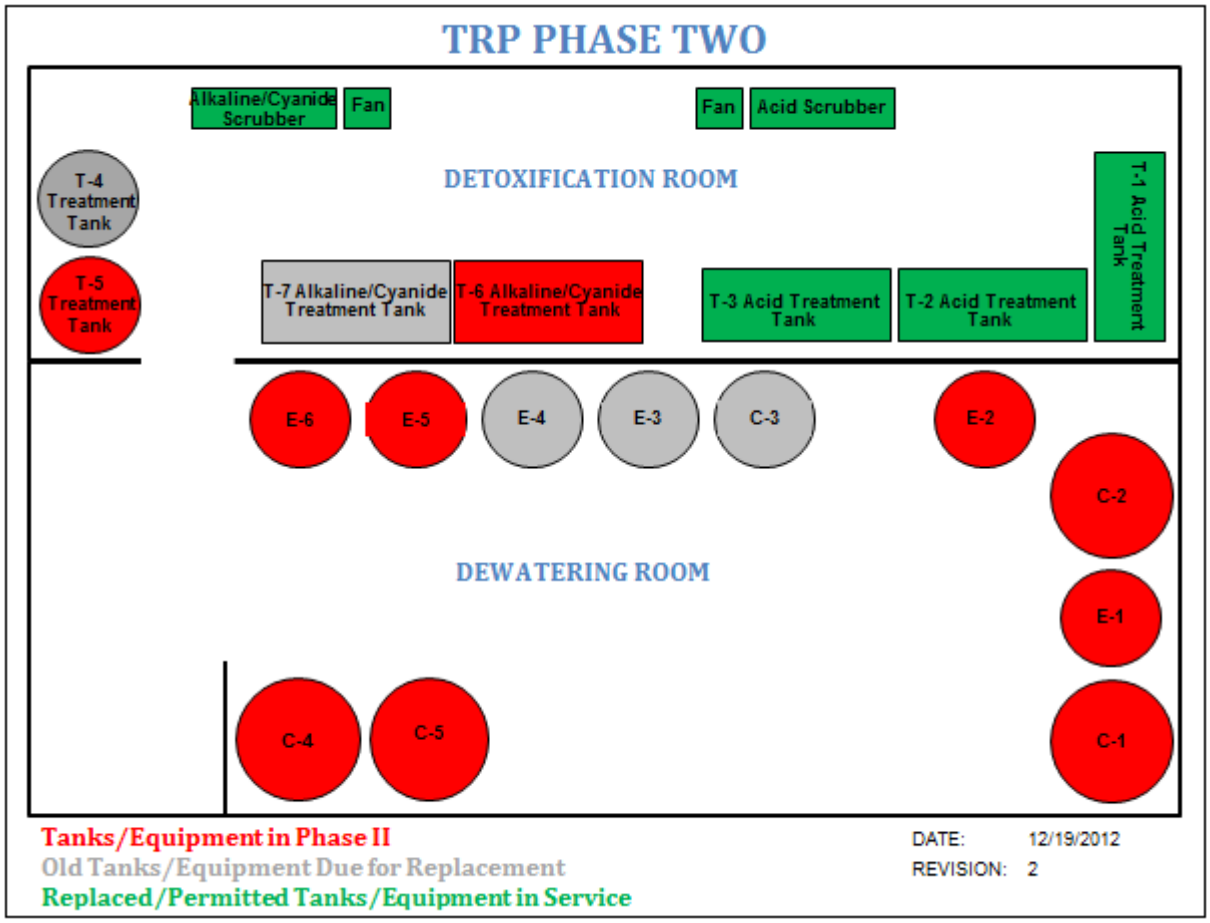
The scope of work for this phase of the project includes the following:

- Demolition of existing Tanks C-1, C-2, C-4, C-5, E-1, E-2, E-5, E-6 and T-5 including existing tank foundation slabs (if necessary) and ancillary piping by March 1, 2013;
- Demolition of existing Tank T-6 **or** removal of the existing liner in Tank T-6 (liner alternative currently under evaluation) by March 1, 2013;
- Installation of new Tanks T-5, 301 and 302, including tank foundation slabs (if necessary) by June 30, 2013;
- Installation of a new Tank T-6 **or** installation of a new liner into existing Tank T-6, certified by Professional Engineer prior to service (liner alternative currently under evaluation) by June 30, 2013;
- Certification from a Professional Engineer for the Crystallizer and ancillary piping;
- Installing catwalks that support tank operations;
- Repair and recoat secondary containment surfaces.

It is anticipated that this construction phase will take approximately 4-6 months to complete. The attached project schedule illustrates the project timeline for each individual task for Phase 2.

Tank foundation concrete slabs will not be demolished unless it is determined that such a course needs to be done by the certified engineer. If the slabs are not demolished, the slabs will be recoated, refinished, etc. to meet the engineering requirements.

Phase 2 will commence the replacement of the caustic processing tanks. Only two will be completed at a time so two may remain in operation. Additionally, dewatering tanks will be replaced. Replacement of dewatering tanks will begin with the tanks on the North and East walls because these have a separate catwalk and support structure thus allowing for logical separation of work.



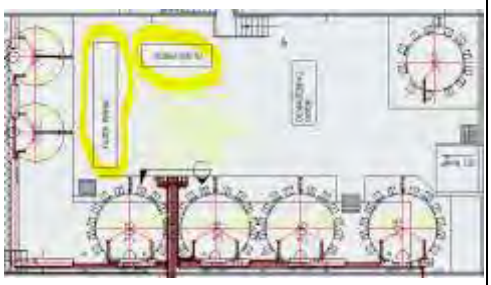
17 Phase 2 – Work by PSC

PSC is responsible for the demolition, decontamination and/or disposal of piping. Immediately upon commencement, this work will need to be performed to so that the trades may then work under standard non-hazardous work practices. While as much of the demolition will be attempted prior to construction, final disconnections to the tanks and vent ducting can only happen after construction begins. In order to keep this work to a week or less, it will be necessary for PSC to bring in supplemental labor from their other facilities in order to support the aggressive schedule (or hire additional support).

PSC will need to procure the additional materials required for Phase 2. Major items include:

- New Tanks
- Piping and Mechanical Materials (via Subcontractor)

The dewatering tanks have a relatively short lead time; however, they too should be purchased as soon as possible after PO release. Since these are made of relatively lightweight plastic, they may need to be secured with tie-downs if they are stored in the PSC yard before construction. Even a moderate wind could cause them to blow around and become a hazard in the material lay down area. Instruments, especially flow meters have long lead times, so procurement of these items must be built into the schedule.

Level indicators and miscellaneous instrumentation that is not currently used may be removed from the tanks. Any electrical feeds to instruments and motors on the tops of the tanks should be removed. Motors and agitators should be removed and stored in a safe dry place for reinstallation.	
PSC staff should begin removal of conduit, cable trays and other non-critical electrical services. Once conduits and cable trays are removed, PSC staff may begin drywall demolition.	
Move filter presses. Both filter presses in Dewatering area will be moved to east wall. These are being moved so that there will be forklift access to the tanks for demolition. Additionally, they will be relocated in the new design so they do not interfere with the pipe transfer panel that will be installed.	

18 Phase 2 – Work by Rigging Contractor

Bragg Crane's scope in this phase will be similar to that in Phase 1, however, with a different set of tanks as listed in the Phase 2 scope of work. It should be noted that while only T-5 and T-6 will be removed, these share a catwalk with T-4 and T-7 respectively. All of the catwalks will need to be removed to allow work to proceed efficiently. For the period between Phase 2 and 3, PSC will have to use a man-lift instead of a catwalk to access the tops of these tanks.

19 Phase 2 – Work by Concrete Contractor

The concrete scope primarily involves the preparation of the tank pads for T-5 and T-6 and affected tanks in dewatering area.

Cure time for the concrete is approximately 28 days, but that time can be reduced according to L&H concrete by accelerated curing. Break samples will be evaluated as the cure commences. Rigging may commence once the concrete has been deemed suitably cured.

20 Phase 2 – Work on Scrubbers

Major scrubber work will have already been completed in prior phases; however, PSC will need to make final connections to new tanks.

21 Phase 2 – Work by Mechanical Contractor

The scope in Phase 2 relating to the mechanical work and general considerations are the same as Phase 1. Most notably, in Phase 2 work will being in the Detox area, so the pipe transfer panel and wall penetrations should be put in place.

The other significant area of work will be the caustic valving near T-4 and T-5. Although PSC's current plan calls for replacing T-4 and T-5 are different times, it may be worth considering a short shutdown to allow for replacing these at the same time. This would significantly simplify piping.

22 Phase 2 – Work by Electric Contractor

The electrical scope in Phase 2 will involve running conduit and services to the new tank pumps and agitators.

23 Phase 3 – General Overview

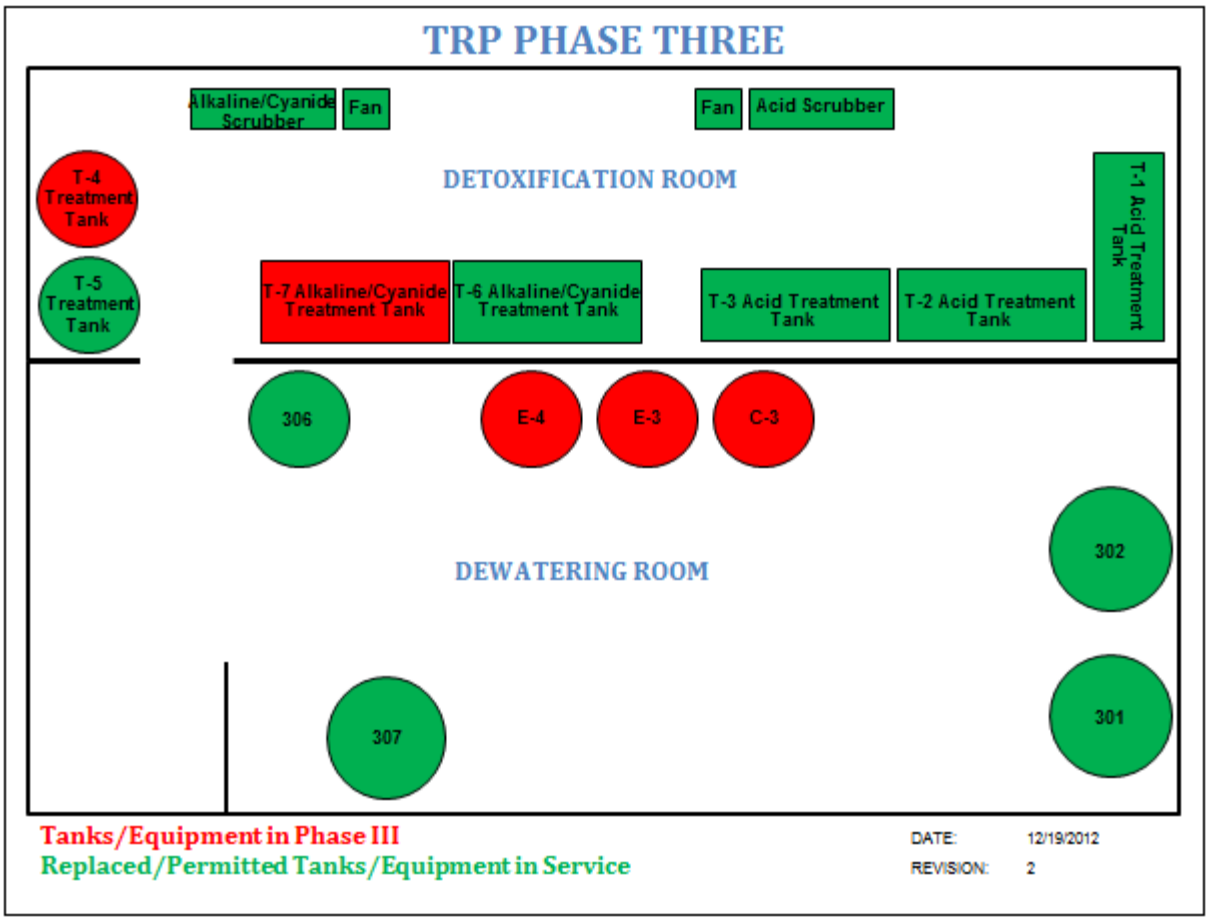
The scope of work for this phase of the project includes the following:

- Demolition of existing Tanks C-3, E-3, E-4, and T-4, including existing tank foundation slabs (if necessary) and ancillary piping by June 30, 2013;
- Demolition of existing Tank T-7 **or** removal of the existing liner in Tank T-7 (currently under evaluation) by June 30, 2013;
- Installation of new Tanks 303, 304, and 307 and including tank agitators and tank foundation slabs (if necessary) by June 30, 2013;
- Installation of a new Tank T-7 **or** installation of a new liner into existing Tank T-7, certified by Professional Engineer prior to service (currently under evaluation).
- Completion of all catwalks throughout the facility that support tank operations;
- Installation of ancillary piping to support all tank operations throughout the facility:
- Install of SCADA tank operational controls and instrumentation including all electrical necessary to support SCADA operations;
- Repair and recoat secondary containment surfaces.
- A splash separation barrier and a secondary containment berm will be installed in Detox to separate acid and cyanide treatment tanks.

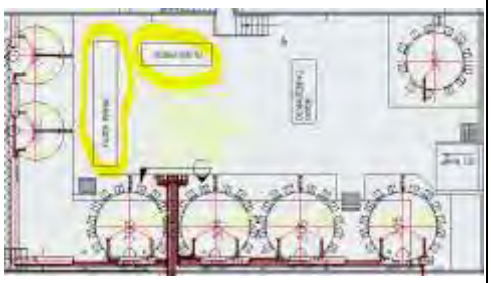
It is anticipated that this construction phase will take approximately 4-6 months to complete. The attached project schedule illustrates the project timeline for each individual task for Phase 3.

Tank foundation concrete slabs will not be demolished unless it is determined that such a course needs to be done by the certified engineer. If the slabs are not demolished, the slabs will be recoated, refinished, etc. to meet the engineering requirements.

Phase 3 will include replacement of the final caustic tanks as well as completion of the dewatering tanks. Tanks T-4, T-7, 305 and 306 are currently being evaluated for their future need and a determination on their status will be made prior to the completion of the TRP. The below sections contain a summary of major tasks to be performed.

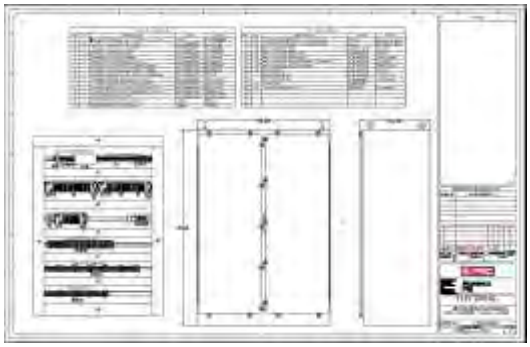


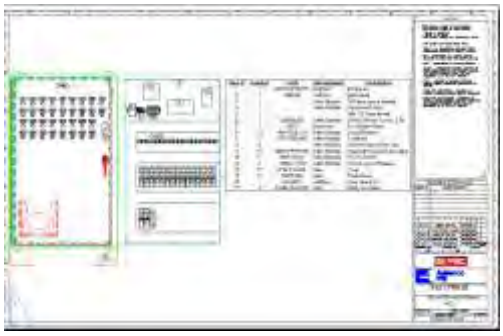
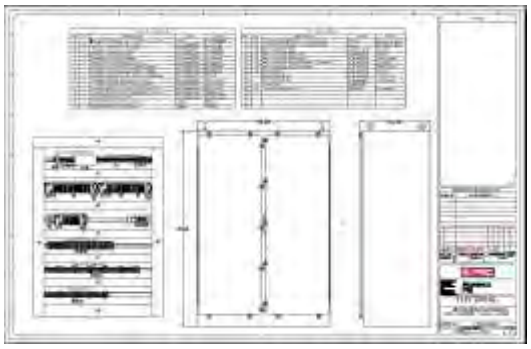
Task	Photo or information
Demo piping and vents on T4	

Add E-Stops and Disconnects to Detox filter presses. This work should only require about one day of work and can be performed prior to construction during non-operations times. There are no drawings for press controls and panels will not be accessible until construction, so E-stop wiring will need to be field configured and documented.	
Existing tank alarm panel in Dewatering may be demolished and conduits prepared for installation of new stack light and HMI station. The electrowinning equipment near the silver recovery tanks should be disconnected and removed for storage and reinstallation.	
Disconnect piping and electrical from affected Dewatering tanks	

24 Phase 3 – Work by Ausenco PSI for SCADA

The bulk of the work for the SCADA scope will be performed off-site prior to construction at Ausenco PSI's shop. The longest lead items in the SCADA scope will be the procurement and fabrication of materials for the PLC, MCC and J-boxes. Some of these items may have 30 day lead times. These should be purchased as soon as possible after PO release to limit exposure. The PLC program developed by Ausenco PSI will cover be developed with modules for tank control. The program will cover all the tanks in this final phase.

The main PLC panel and other associated panel will be fabricated off site, with FAT prior to shipment to site. These panels may be staged in electrical room during preconstruction phase. Material procurement should begin as soon as possible upon contract release.	
Instrument List “Issued for Construction”	If possible, instruments should be ordered and staged on site at PSC prior to commencement of construction. Instruments should be pre-tagged with plastic tags and stored in an area where they will remain free from damage. Depending on instrument lead times and contract award dates, long lead instruments such as flowmeters should be pre-ordered to avoid lead time exposure.
Label existing piping with line numbers per PIDs. Most existing pipes are not adequately labelled.	Ausenco PSI ‘s Project Manager can work with PSC staff to identify and label piping prior to construction
A Control Philosophy document should be developed, reviewed and approved. This document will be the guiding document for PLC logic development. PSC should provide significant input as to interlocks and valve line-up sequencing.	PSC will need to devote internal resources to support this effort.
PLC and SCADA code will be pre-developed and FAT tested prior to construction.	PSC will need to provide documentation of existing system operations as some of these will need to duplicated by new PLC.

Some of the I/O that will be controlled by the new PLC will come from the client's existing Phoenix panel. When the main PLC panel is staged in the electrical room a trial cut over can be performed to verify communications between the existing and new panels. Photo of existing Phoenix panel	
The new MCC panel (drawing 1988-M-002) can be pre-mounted and powered for the nearby electrical panels. Conduit from this panel to the Detox room can be staged to pull boxes in advance of major construction.	
The PLC panel may be staged in the electrical room and set up to confirm temporary communications with the SCADA. It can remain in the electrical room until the demolition of the existing unit, when it can be moved into its final position. This will prevent physical damage during the demo phase.	

The work in Phase 3 by Ausenco will involve configuring the PLC and SCADA for the new instruments and tanks that well be added. Once this is complete, a SAT must be executed. This effort will leverage the work already completed in the previous phases.

25 Phase 3 – Work by Rigging Contractor

Bragg Crane's scope in this phase will be similar to that in Phase 1 and 2, however, with a different set of tanks as listed in the Phase 3 scope of work. It is anticipated that this phase will have fewer complications than previous phases as tanks are more accessible.

26 Phase 3 – Work by Concrete Contractor

The concrete scope primarily involves the preparation of the tank pads for T-4 and T-7 and affected tanks in dewatering area. Additionally, PSC should have the contractor perform repair work to any cracked bases and the concrete curb in the dewatering area. The containment berm should be repaired between Dewatering and Detox rooms as this berm may need to be notched in order to fit the tanks through the door.

A concrete berm will also be constructed in this phase to segregate the acid treatment tanks from the alkaline treatment tanks. A sump will also be provide for the collection of liquids in the alkaline area.

Cure time for the concrete is approximately 6 days according to L&H concrete. Break samples will be evaluated as the cure commences. Rigging may commence once the concrete has been deemed suitably cured.

27 Phase 3 – Work on Scrubbers

Major scrubber work will have already been completed in prior phases; however, PSC will need to make final connections to new tanks.

28 Phase 3 – Work by Mechanical Contractor

The scope in Phase 3 relating to the mechanical work will be concentrated on the installation and completion of the tank ancillary piping and catwalk systems. These efforts will need to be closely coordinated with instrumentation and control installation to ensure the system can be installed concurrently.

Also, non-combustible partition will be constructed in the Detox Area during this phase that will provide IFC segregation between acid and alkaline treatment tanks.

29 Phase 3 – Work by Electric Contractor

The electrical scope in Phase 3 will involve running conduit and services to the new tank instruments and agitators. Most significant in this phase, there will be significant demolition along the east wall to re-route wiring for the silver nitrate and electro-winning apparatus.

The new PC client and associated enclosure will need to be installed on the Dewatering area and new wiring with E-Stops needs to be installed for the filter presses.

The electrical scope will need to be coordinated with the mechanical scope to ensure that the bulk of the new conduit runs are installed after the catwalks are substantially complete. Placement of the new PLC panel will be next to the new acid scrubber. Conduit runs to instruments will slightly lag the mechanical contractor as instruments must be placed before they may be wired.

Work in the Dewatering area involving final connection of the filter presses, placement of the new HMI operator station and reconnection of the T307 electrowinning equipment may commence after the tank

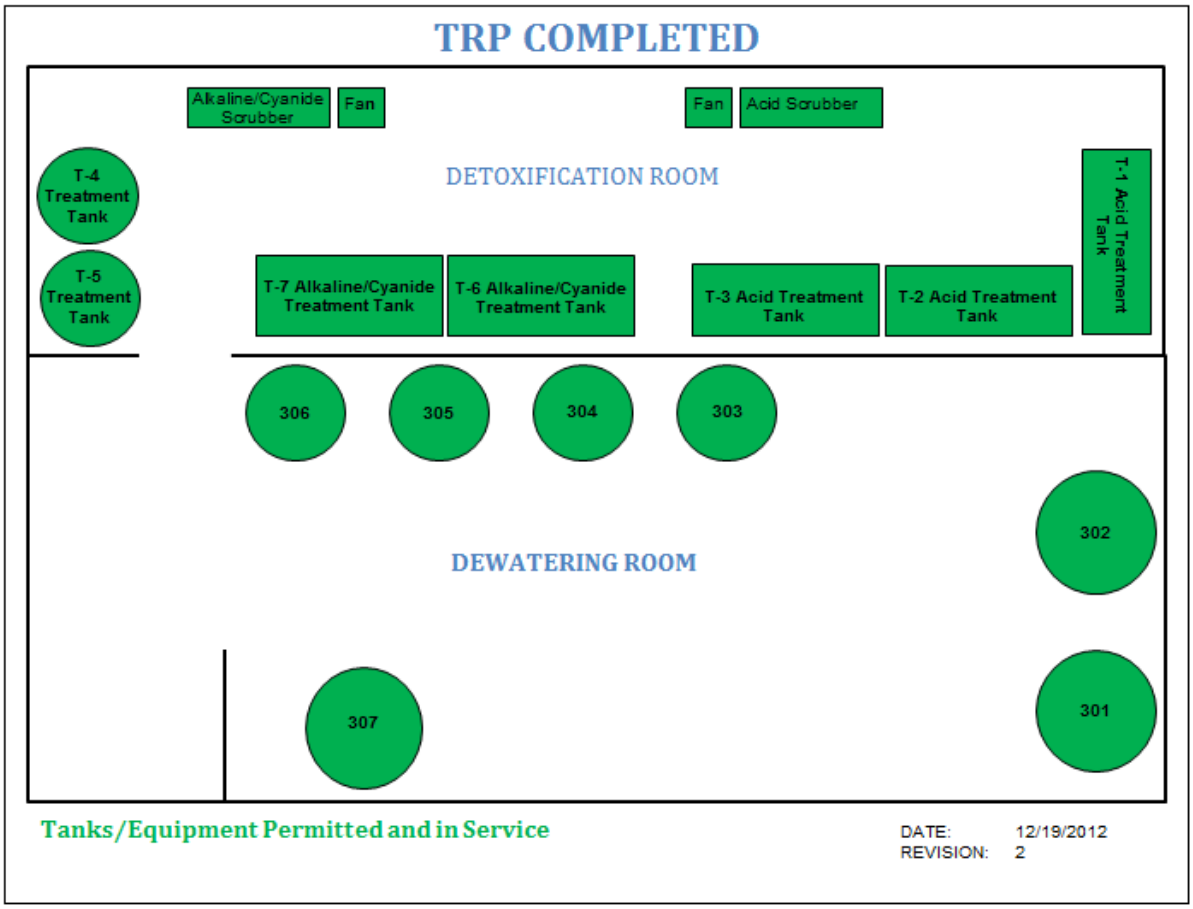
rigging is complete and concurrently with the catwalk installation since catwalk and electrical work are on opposite sides of the room.

Once new conduits are installed and PLC/instrument wiring is in place, the electrical contractor must closely coordinate with the automation system integrator to document and perform loop checks. The electrical contractor has the primary responsibility to perform loop checks; however, the automation system integrator will be on hand to confirm the loop portion from the PLC I/O to the screen on the HMI.

30 Completion, Post-construction & Closeout Activities

The closeout phase involves the demobilization and creation of record documents. PSC should assemble turn over documents from all of respective subcontractors and store these under PSC's document management system. As mentioned, in some of the previous sections, it may be necessary to have the concrete, wall, and coatings vendors to return for touch-up work if there is minor damage during the course of construction.

An engineering certification will be provided to NDEP that states that all construction efforts were performed in accordance with the PSC-Fernley's Part B operating permit. All tanks, ancillary piping, and Subpart X units managing wastewater operations related to the project will be certified by Professional Engineer by June 30, 2013, or will be removed from service.



PSC FERNLEY FACILITY
TANK REPLACEMENT PROJECT
SUMMARY SCHEDULE

OLD TANK#	OLD TANK OUT-OF-SERVICE DATE	REPLACEMENT TANK#	REPLACEMENT TANK IN-SERVICE DATE
ACID WASTE STORAGE TANKS			
S-7	10/1/09	101	2/20/09
S-8	9/1/09	102	2/20/09
S-9	< January 2007	103	2/20/09
S-10	10/1/09		
CS-8	< January 2007	104	5/18/10
CS-9	< January 2007		
CS-10	< January 2007		
S-16	10/1/08	105	2/25/09
S-17	10/1/08		
S-18	10/1/08	106	2/25/09
S-19	10/5/08		
S-20	< January 2007	107	2/25/09
S-21	10/1/08		
S-22	10/1/08	108	1/27/09
S-23	10/1/08		
S-24	10/1/08	109	1/27/09
S-25	< January 2007		
S-26	10/1/08		
S-27	10/1/08	110	1/30/09
S-28	10/1/08		
S-29	10/1/08	111	1/30/09
S-30	10/1/08		
ALKALINE WASTE STORAGE TANKS			
S-3	4/1/09	207	5/18/10
S-4	4/1/09		
S-5	4/1/09	208	5/18/10
S-6	< January 2007		
E-7	< January 2007		
ALKALINE/CYANIDE WASTE STORAGE TANKS			
S-1	9/26/09	201	5/18/10
S-2	10/10/09	202	5/18/10
S-11	8/16/08	203	5/18/10
S-12	8/2/08	204	5/18/10
S-13	8/2/08	205	5/18/10
S-14	7/26/08	206	5/18/10
S-15	7/19/08		
WASTE TREATMENT TANKS (DETOX)			
T-1	6/13/12	T-1	8/16/12
T-2	2/10/12	T-2	5/7/12
T-3	2/10/12	T-3	6/26/12

PSC FERNLEY FACILITY
TANK REPLACEMENT PROJECT
SUMMARY SCHEDULE

OLD TANK#	OLD TANK OUT-OF-SERVICE DATE	REPLACEMENT TANK#	REPLACEMENT TANK IN-SERVICE DATE
T-4	6/30/13	T-4	
T-5	12/17/12	T-5	3/1/13
T-6*	3/1/13	T-6	6/30/13
T-7*	6/30/13	T-7	
DEWATERING AREA TANKS			
C-1	3/1/13	301	6/30/13
C-2	3/1/13	302	6/30/13
C-3	6/30/13	303	6/30/13
C-4	3/1/13		
C-5	12/10/12	304	6/30/13
E-1	3/1/13		
E-2	3/1/13	305	
E-3	6/30/13		
E-4	6/30/13	306	
E-5	6/30/13		
E-6	6/30/13	307	6/30/13
SUBPART X UNITS			**Certification Date**
JWI Filter Press			08/16/12
Shank Filter Press			06/01/12
Crystallizer			6/30/13

* Tank will be evaluated for re-lining

Shading Legend

Phase 1
Phase 2
Phase 3