Asbestos Abatement Work Plan for Boiler Units 1, 2, 3 and 4

Kern Power Plant Demolition Project

2401 Coffee Road
Bakersfield, California 93308

Prepared for:

Pacific Gas and Electric Company
2401 Coffee Road
Bakersfield, California 93308

June 25, 2014
Revision 0

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1.0 Certifications

This Asbestos Abatement Work Plan has been prepared to address the removal of asbestos-containing materials (ACM) identified in Boiler Units 1, 2, 3 and 4 at the former Kern Power Plant located at 2401 Coffee Road, Bakersfield, California. This document has been prepared in a manner consistent with the current standards of the profession, and to the best of our knowledge is commensurate with applicable federal, state, and local statutes, regulations, and ordinances.

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2.0 Introduction

Background

PG&E is the owner and operator of Kern Power Plant (KPP, Plant, Site), which has been decommissioned and partially dismantled and demolished. In August 2013 the four (4) boiler units at KPP were toppled by explosive demolition. An accident resulted from the implosion of the boilers, and all work at KPP was subsequently stopped. The felled boiler units have remained in their post-implosion state. PG&E replaced the former demolition contractors with a new project team, and work to complete the dismantling and clearing of the boilers is scheduled to resume in June 2014.

An inspection and resultant survey/sampling of the boiler units in May 2014 identified asbestos-containing materials (ACM) within the each of the four boiler units with no readily apparent pattern based on sample type and location. ACM (>1% asbestos content) was identified in thermal systems insulation (TSI) debris, and in surficial, fibrous debris on refractory brick. This work plan was prepared to address the abatement of these ACM in conjunction with the dismantling and clearing on the boilers as described herein.

It is important to note that the boiler structures are unstable and represent the primary safety hazard in this project. This plan has been developed taking into account this primary hazard and utilizes methods that lend themselves for robust risk mitigation.

Current Site Conditions

The post-implosion rubble pile currently consists of the two felled boiler structures lying on their sides with their former bottoms opposing one another in the center of the rubble pile. Each of the boiler structures contains two boiler units located side-by-side (north-south) within a heavy structural steel frame. The boiler structures also contain appurtenant structures such as ductwork, stairwells and catwalks, piping systems within a light structural steel framework surrounding the boiler units.

The north and south sides of the rubble pile consists of the exposed sides of the boiler structures. Refractory materials can be observed in the boiler unit sidewalls on these sides of the rubble pile. These sides also contain a significant amount of overhanging steel members associated with the appurtenant structures noted above. The east and west ends of the rubble pile consist of light structural steel framing from the former roof structures. These ends are not immediately adjacent to the refractory-containing boiler units. The rubble pile currently extends approximately 275' east-west and 90' north-south.

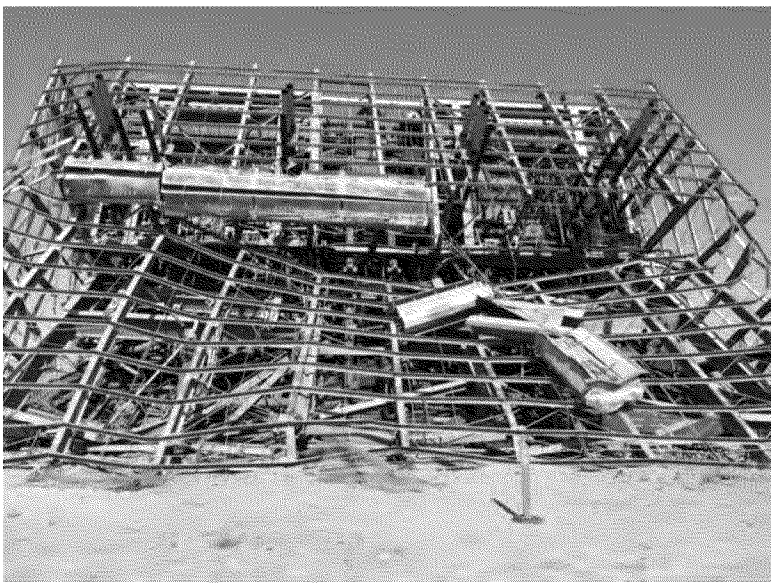
The ground surface surrounding the rubble pile consists of unpaved soil. A small amount of suspect debris consisting of refractory bricks is present on the north and south sides of the boiler structures extending approximately twenty-feet from the edge of the rubble. This refractory debris is widely scattered and infrequent. No suspect debris is observed on the east and west ends of the current rubble pile. TSI debris has been visually identified in the open space between the two felled boiler structures. This debris is also infrequently encountered and is limited to no more than twenty feet from the north and south sides of the pile. A concrete slab is located under the former boiler structures. This concrete paved area is approximately 160' x 80'.

The photographs below illustrate the current state of the post-demolition boiler structures and debris field.

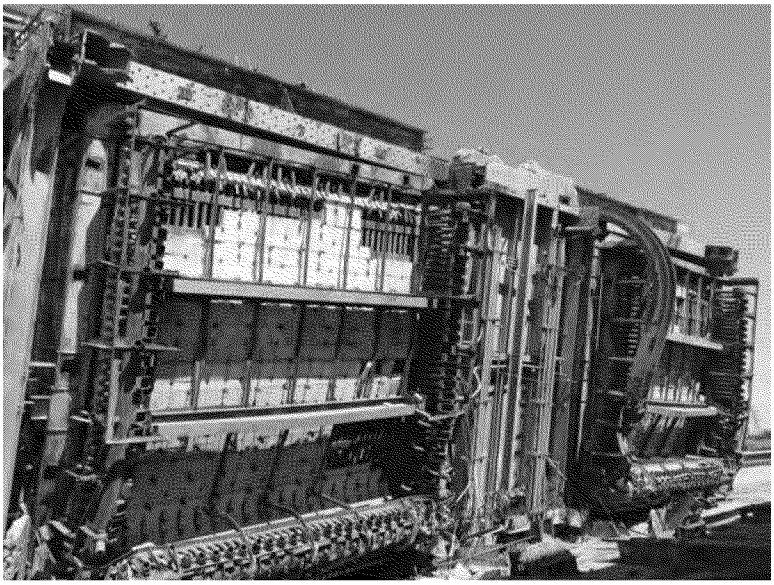
Felled Boiler Structures
(View Looking South)

Felled Boiler Structures
(View Looking North)

Northwest Corner of Boiler Structures
(View Looking SW)

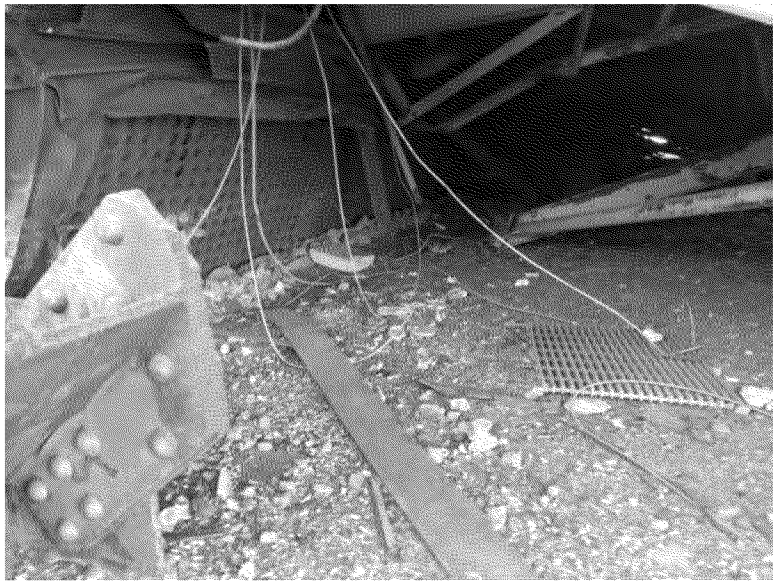


Former Top of Boiler Structures
(East End, View Looking West)



Former Bottom of Boiler Structures
(East Structure, View Looking Southeast)

Debris Between Boiler Structures
(View Looking South)



Debris Under Boiler Structures
(Under NW Boiler Near Bottom)

TSI Debris Between Boiler Structures
(Closeup View)

Goals and Objectives

Safety

Nothing is more important than the safety of the KPP project team personnel. Our respective companies, coworkers, families and communities rely on individual and collective commitments to working safely at all times. The asbestos abatement program herein requires that work be performed in conjunction with dismantling and demolition tasks due to the nature of site conditions. Demolition activities are inherently dangerous and there can be no compromise in safety expectations or implementation.

PG&E has certain contractor safety-related ground rules for working at KPP, including but not limited to:

- Safety expectations and work activities at every level of the job site process are well-defined and communicated to, and understood by, all working personnel prior to the start of all work tasks and activities.
- All job site personnel participate in daily, ongoing safety training and communications related to the work planned for that day. The hazards associated with the work planned for that day will be documented and included as part of these daily communications. All job site personnel will personally acknowledge these communications before work commences.
- Any changes to the work or site conditions or other factors related to the work requires that work will stop, equipment will be placed in safe condition, and supervisors will be notified. Job site personnel will reconvene and address all such changes before work continues.
- All job site personnel have the ability to stop work at any time there is an unsafe condition.

PG&E will implement a contractor oversight program to demonstrate and document that contractors working at KPP abide by these ground rules.

Regulatory Compliance

The central regulatory compliance concerns related to the activities herein are the control of potential air emissions and the management of worker safety during demolition. Asbestos abatement protocols that will be implemented to control air emissions and to manage worker safety will be in accordance with NESHAP 40 CFR 61, Subpart M, and Cal/OSHA 8 CCR 1529. PG&E's contractor(s) will be responsible for implementing the means and methods to control emissions and to manage worker safety. Specifically, the contractor shall prevent visible emissions, use wet methods, use impermeable drop cloths, perform prompt clean up of wastes and debris, decontaminate recyclable materials such as scrap metal, and conduct perimeter and personal air monitoring described in the regulations.

PG&E will evaluate contractor performance to the regulations and conduct continuous oversight and inspection of contractor activities until all asbestos-containing materials are removed. Contractor performance will be evaluated as detailed in the following sections of this work plan and/or related, referenced documents such as the project-specific Health and Safety Plan:

- Section 5 Exposure Assessments and Monitoring
- Section 6 Worker Protection
- Section 7 Asbestos-Containing Material Identification
- Section 8 Engineering Controls and Work Practices
- Section 9 Visual Inspection and Clearance

- Section 10 Reference Documents

Demolition Work Methods

Silverado Contractors, Inc., (Silverado) will perform the demolition of the boiler units and related features. As is customary, Silverado has the authority over the ultimate demolition means and methods employed in the execution of the demolition work. These means and methods will be represented in Silverado's related boiler demolition work plan, safety plan, and task-specific Job Hazard Analysis/Job Safety Analysis (JHA/JSA) forms. PG&E will oversee Silverado's conformance to these documents/plans. The ACM work plan herein provides the framework under which asbestos abatement activities will be performed in conjunction with Silverado's demolition plan for the boiler units.

It is extremely important to note that given the unpredictable condition and uncertain structural integrity of the felled boiler units, decisions regarding demolition and the removal of ACM will be at Silverado's discretion. The safety of asbestos abatement personnel takes precedence over the physical removal of ACM. If at any time personnel cannot safely enter and/or work within the demolition work zones, or if ACM removal methods cannot be performed safely, then ACM removals will stop until such time the area can be secured and work can resume safely.

3.0 Project Team

Management Roles and Responsibilities

PG&E Management Team

PG&E's management team includes executive management and oversight of the work at KPP, as well as on-site project management and oversight. At the executive level, PG&E managers in divisions such as operations, environment, procurement, government compliance and regulations, and safety establish and define company standards, in-house procedures, and specifications. At the project level, the assigned Project Manager ensures and documents compliance with these standards, procedures and specifications. Compliance is further evaluated at both the executive and project levels through company audits, where corrective actions or changes to company standards are evaluated and shared to make improvements in quality and performance.

Contractor Management and Supervision

Contractor management and supervision is conducted in accordance with oversight protocols designed to monitor, evaluate and document contractor performance. Procedures are in place to manage changes to the project (e.g., scope of work changes) in collaboration with senior PG&E management.

Contractor performance and compliance is verified through daily field audits, and continuous inspection and interface of PG&E field representatives and contractor representatives. Verification of compliance to company protocols and procedures is done through in-house and external audits and inspections, including surprise audits and inspections. The PG&E field team also includes third-party demolition and environmental subject-matter experts (SME) who augment PG&E personnel and provide asbestos, demolition and environmental construction expertise. The third party SME's have access to PG&E executive management to report field issues or concerns, and to provide consulting expertise throughout the duration of the work.

At the field level, the contractor management team is tasked with implementing the project, including the following tasks:

- Ensuring the project is executed according to the project plan(s).
- Ensuring project deliverables are on time and at the required level of quality.
- Developing and maintaining records to document and report project activities.
- Securing project information/documentation, and making it available for auditor review.
- Monitoring progress and making adjustments as needed to for successful completion.
- Communicating with PG&E management and stakeholders of progress, corrective actions, and material changes to work.
- Looking for and reporting process improvements.
- Seeking executive support and consultation as needs arise.

Qualifications and Certifications

Certified Industrial Hygienist

PG&E has provided a Certified Industrial Hygienist (CIH) to oversee the work performed by the project team. The CIH will have the knowledge, skills and expertise to support the project and

will provide input and oversight on a range of health and safety issues. The PG&E CIH will be responsible for managing safety-related aspects of the work in an oversight role over the on-site project team.

Certified Asbestos Consultant

Asbestos-related work in California is subject to specific occupational regulations, including requirements that only Cal/OSHA Certified Asbestos Consultants (CACs) provide health and safety related consulting services relating to Asbestos-Containing Construction Material (ACCM, >0.1% asbestos). These services include building inspection, abatement project design, contractor management, supervision of site surveillance technicians, sample collection, preparation of asbestos management plans, and clearance air monitoring.

Additionally, Certified Site Surveillance Technicians (CSSTs) act as independent on-site representatives of an asbestos consultant. The CSST monitors the asbestos abatement activities of others, provides asbestos air monitoring services for area and personal samples, and performs building surveys and contract administration at the direction of an CAC.

The PG&E project team includes at least one CAC who is on site full time during construction. Additionally, one or more CACs or CSSTs will be deployed for direct monitoring of asbestos abatement activities, performance of visual inspections, collection of air monitoring samples, and on-site microscopy of asbestos air samples.

Competent Person

The contractor shall provide a Competent Person who meets the requirements of CFR 29 Part 1926.1101 and CCR 8 Part 1529. The Competent Person shall have a minimum of five years experience as a Competent Person in similar work.

The Competent Person shall be capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, including existing asbestos hazards, and shall have primary responsibility and authority to take prompt corrective measures to eliminate any hazards.

The Competent Person shall make all required inspections pursuant to 8 CCR 1529 (o) including an on-site inspection at least once each work shift. During these inspections, the Competent Person shall:

- Supervise the set up of the asbestos Regulated Area;
- Supervise all employee exposure monitoring;
- Ensure that employees use engineering controls, work practices, and protective equipment in compliance with all requirements;
- Ensure compliance with all regulatory and project-specific practices; and,
- Ensure that all personnel within the Asbestos Regulated Area adhere to the requirements of this work plan.

Abatement Worker Experience Requirements

At least fifty percent of the abatement workforce shall have a minimum of three years experience directly engaged in asbestos abatement work over the last five years.

4.0 Submittals

NESHAP Notification

PG&E shall make NESHAP notification revisions to the San Joaquin Valley Air Pollution Control District (SJVAPCD) showing start and end dates and asbestos types and quantities Additional revisions will be made if start and/or end dates change or in the event of a +/- 20% change in asbestos quantity.

Pre-Construction Submittals

Contractor Licensing/DOSH Registration

The contractor and any abatement-related subcontractors shall maintain a current Contractor's License with the California Contractor's License Board. Licenses shall be Class A or Class B and shall have an Asbestos Certification. Additionally, the contractor and subcontractors shall have a current DOSH Asbestos Registration with Cal/OSHA. Evidence of the contractor's and subcontractor's current Contractor's Licenses and DOSH Asbestos Registrations shall be provided prior to commencement of work.

DOSH Temporary Worksite Notification

The contractor's and subcontractor's DOSH Temporary Worksite Notificationsfor Asbestos Abatement Activities shall be provided prior to commencement of work.

Worker Training Certifications

The contractor shall provide written evidence that workers have been trained in accordance with 29 CFR 1926.1101 and 8 CCR 1529.

The contractor shall identify the project's Competent Person who meets the requirements of CFR 29 Part 1926.1101 and CCR 8 Part 1529 and document evidence of training which meets the criteria of EPA's Model Accreditation Plan (40 CFR part 763) for supervisor, or its equivalent.

Evidence of Medical Surveillance

The contractor shall provide a written certification signed by a licensed physician that all workers and supervisors have met or exceeded all of the medical prerequisites listed herein and in 29 CFR 1926.1101, 29 CFR 1910.134, 8 CCR 1529, and 1531. Visitors entering the Regulated Area shall also provide evidence of medical surveillance if they are engaged in asbestos work for a combined total of 30 days or more, or may be exposed in excess of the Permissible Exposure Limited (PEL).

Fit Test Records

The contractor shall provide respiratory fit test certificates for each worker for each of the individual types and manufacturers of respirators to be used by the worker.

Waste Transporter and Disposal Facilities

The contractor shall provide a list of proposed waste transporters and disposal facilities prior to commencement of work. The list will include the EPA Transporter or TSDF number, address, telephone number and contact name. Disposal facilities shall be approved by PG&E.

Field Test Reports

Air Monitoring Records

Air monitoring reports generated by the contractor in accordance with the protocols described in Section 5.0 shall be provided to PG&E as soon as possible, but no later than five working days following receipt of monitoring results.

Exposure Assessments

The contractor shall provide copies of initial exposure assessments to PG&E no later than five working days from the receipt of monitoring results for each assessment (see Section 5.0).

Exposure Assessments intended to demonstrate satisfaction of respiratory protection requirements, shall be submitted to PG&E for review and approval prior to downgrading respiratory protection.

Daily and Weekly Submittals

Abatement Progress Reports

The contractor shall provide a weekly Abatement Progress Report documenting significant events or actions that occurred during the previous week to PG&E at weekly progress meetings.

Sign In/Out Log Records

The contractor shall maintain a sign-in/sign-out log in the immediate vicinity of the change room of any decontamination area or areas where asbestos removal is being performed. This log shall be maintained from the time the first activity is performed involving the disturbance of asbestos-containing material until final acceptance of the work. All persons entering the Regulated Area, including the contractor's workers, contractor's consultants, owner's consultants, and government officials, shall be required to sign in and out each time upon entering and leaving the Regulated Area. All persons shall indicate name, time, company or agency represented, and reason for entering the Regulated Area. The contractor shall provide copies of the sign-in/sign-out logs from the previous week to PG&E at weekly progress meetings.

Asbestos Waste Disposal Reports

The contractor shall review and report to PG&E, within 24 hours from the end of each day, the amount, type and location of asbestos–containing material removed during the previous day.

Waste Manifests

Contractor shall provide a completed sample uniform hazardous waste manifest for asbestos waste for PG&E review and approval prior to shipment of waste. Manifests will be signed by PG&E.

Contractor shall provide the "generator's" copy of each manifest to PG&E by the end of each day that wastes are transported off-site.

5.0 Exposure Assessments and Air Monitoring

Personal Air Monitoring

Methods and Practices

The contractor shall perform personal air monitoring of its employees to determine employee exposures representative of the 8-hour Time Weighted Average (TWA) and the 30-minute short-term exposure limits. Samples shall be collected from the breathing zone of representative employees performing each specific operation (task) in each work area.

Samples will be collected and analyzed in accordance with NIOSH Method 7400.

If samples are overloaded (dusty), 8-hour samples may be collected using two filter cassettes each run for 4-hours and the results combined. If samples exceed 50% of PEL or excursion limit, reanalyze using TEM analysis (40 CFR 763, Appendix E or NIOSH 7402) to provide asbestos fiber qualification.

Initial Exposure Assessment

The contractor shall perform initial exposure assessments immediately before or at the initiation of each operation to ascertain expected exposures during that operation. The contractor shall conduct exposure monitoring and document the actual level of exposure in accordance with 8 CCR 1529, and shall implement its respiratory protection program accordingly. Upon receipt of personal exposure data, respiratory protection may be adjusted upon review and approval by PG&E.

Additional exposure assessments shall be conducted to evaluate any changes in processes, equipment, personnel or work practices that may result in changes to employee exposures.

Periodic Monitoring

The contractor shall conduct daily monitoring of representative employees performing each specific operation in each work area regardless of initial exposure assessment results.

Reporting

The contractor shall notify their affected employees in writing of the results of monitoring no later than five working days from the receipt of monitoring results. If monitoring results indicate that the PEL or excursion limit has been exceeded, the written notification shall include the corrective action being taken to reduce employee exposures. Monitoring results and corrective actions shall be reported to PG&E in accordance with Section 4.0.

Ambient Air Monitoring

Methods and Practices

The CAC will perform ambient air monitoring before and during the work. Samples will be collected prior to commencement of abatement work and work area preparation to assess ambient air background fiber concentrations. Additionally, work area samples will be collected during each abatement work shift. Sampling will be conducted in accordance with NIOSH Method 7400.

Ambient Air Background Assessment

Ambient air background samples will be collected for a minimum of two work shifts prior to commencement of abatement work and work area preparation. A minimum of two samples will be collected immediately outside of the work area (one upwind, one downwind). Additionally, a minimum of two samples will be collected at the site perimeter (one upwind, one downwind). Additional samples may be collected at the discretion of the CAC.

Work Area (Perimeter) Air Monitoring

Work area monitoring will be conducted during each abatement work shift. Samples will be collected immediately adjacent to the regulated area in accordance with 8 CCR 1529 (g)(4)(B)(2). A minimum of two samples will be collected immediately outside of the work area (one upwind, one downwind). Additional samples may be collected at the discretion of the CAC.

If work area sample results exceed ambient air background levels representing the same area, additional control measures will be employed to prevent the migration of asbestos fibers. If samples are overloaded (dusty), 8-hour samples may be collected using two filter cassettes each run for 4-hours and the results combined. At the discretion of PG&E, samples may be reanalyzed using TEM analysis (40 CFR 763, Appendix E or NIOSH 7402) to provide asbestos fiber qualification.

Sample Analysis

Samples will be analyzed by Phased Contrast Microscopy (PCM) in accordance with NIOSH 7400. Samples will be analyzed on-site by a microscopist or an off-site analytical laboratory. On-site microscopists will be trained in Sampling and Evaluating Airborne Asbestos Dust through NIOSH 582 or equivalent. Off-site analytical laboratory samples will be scheduled for "same day" turnaround (see Reporting requirements, below). Off-site laboratories will be accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

Reporting

Sample results will be reported by the CAC to PG&E (Project Manager and CIH) and the contractor within 24-hours from the end of shift the sampling represents. If sample results exceed background levels, work will stop until additional control measures are devised, documented and implemented.

6.0 Worker Protection

Respiratory Protection

Personnel entering the Regulated Area shall use appropriate respiratory protection. At a minimum, workers will wear a tight-fitting, half-face, air purifying respirator (APR) with HEPA filter cartridges (P100) regardless of personal exposure data.

Tight-fitting, powered, air purifying respirators (PAPR) shall be used whenever a Negative Initial Exposure Assessment has not been produced and an exposure assessment indicates the PEL or excursion limit will not be exceeded.

If an initial exposure assessment pursuant to 8 CCR 1529 (f)(2)(C) has not been made or if an exposure assessment indicates the exposure limit will exceed the PEL or excursion limit, a full facepiece, supplied-air respirator operated in the pressure-demand mode and equipped with an auxiliary positive pressure self-contained breathing apparatus (SCBA) must be employed pursuant to 8 CCR 1529 (h)(3)(E).

Protective Clothing and Equipment

Personnel entering the Regulated Area shall wear protective coveralls, head covering, and foot coverings (typically disposable coveralls with hoods and boots). Gloves shall also be worn. The Competent Person shall inspect protective clothing at least once per shift for damage such as rips or tears. Damaged clothing shall be immediately mended or replaced.

Hygiene Facilities and Practices

A self-contained, trailer-mounted, three-stage decontamination unit consisting of an equipment room, shower facilities, and clean room in series shall be provided for personnel decontamination. The decontamination unit shall be connected to the Regulated Area and will serve as the primary entry and exit point for all personnel.

The equipment room will be supplied with impermeable, labeled bags and containers for the containment and disposal of contaminated protective equipment. Showers will be supplied with hot and cold, potable running water. Shower wastewater will be contained prior to subsequent filtration and disposal (see Section 8.0). The clean room shall be provided with appropriate storage containers for employee street clothing. Procedures for entering and exiting through the decontamination unit shall be in accordance with 8 CCR 1529 (j)(3).

Communication of Hazards

Multi-Employer Worksite Requirements

The contractor's Competent Person shall exercise general supervisory control over the asbestos work and shall inform other employers on the site of the nature of the employer's work with asbestos, of the existence of and requirements pertaining to regulated areas, and the measures taken to ensure that employees of such other employers are not exposed to asbestos.

Signs and Labels

Warning signs shall be displayed at the Regulated Area at sufficient intervals to advise workers and visitors to take the necessary protective steps before entering the area. Signs shall specifically contain the following language pursuant to 8 CCR 1529 (k)(7):

DANGER
ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY
WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA

Waste bags and containers shall be clearly labeled in accordance with 8 CCR 1529 (k)(8)(C) as follows:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

Employee Information and Training

Workers shall have completed asbestos abatement workers training with the equivalent in curriculum training method and length to the EPA Model Accreditation Plan (MAP) asbestos abatement workers training (40 CFR Part 763, Subpart E, Appendix C).

The Competent Person shall be trained in all aspects of asbestos removal and handling, including: abatement, installation, removal and handling; asbestos regulations; the identification of asbestos; removal procedures, where appropriate; and other practices for reducing the hazard. Such training shall be obtained in a comprehensive course for supervisors, that meets the criteria of 8 CCR 1529 (k)(9) and EPA's Model Accredited Plan (40 CFR Part 763, Subpart E. Appendix C), such as a course conducted by an EPA-approved or state approved training provider, certified by EPA or a state, or a course equivalent in stringency, content and length.

7.0 Asbestos-Containing Material Identification

Original Asbestos Surveys - Background

Prior to the start of the boiler abatement or demolition activities, a survey of the boiler units was performed by Forensic Analytical (see Section 10.0, Reference Documents). In that survey, asbestos-containing pipe insulation (41,000 LF), and thermal systems insulation (TSI, 17,000 SF) and related TSI debris (60,000 SF) was identified throughout the boiler units. The refractory materials were not sampled as part of the original survey, but were listed as presumed asbestos-containing materials (PACM).

In May 2012, after publication of the original survey, Focus Environmental Consulting was hired to perform sampling and analytical testing of the refractory materials. Eight (8) samples of the refractory materials was sampled and tested. No asbestos was detected in the 8 samples (see Section 10.0, Reference Documents).

On May 13, 2013, Focus Environmental Consulting conducted a final visual inspection/clearance and air clearance sampling of the boiler units to verify that the pipe insulation and TSI materials had been removed (see Section 10.0, Reference Documents). Eventually, demolition of the boiler units ensued, with the units toppled by explosive demolition/implosion on August 3, 2013. As previously noted, an accident resulted during the implosion of the boilers, and all demolition work at KPP was stopped. The felled boiler units remained in their post-implosion state, but are being prepared for the resumption of dismantling effective June 2014. As part of these preparations, the boiler units were inspected as part of the work planning process. As noted below, additional suspect TSI materials were identified and sampled.

Additional Post-Implosion Asbestos Surveys

In preparation for dismantling the boiler units, RGA Environmental performed an asbestos survey and collected samples of suspect materials and refractory materials on May 29, 2014 (see Section 10.0, Reference Documents).

The TSI debris found in and around the boilers are not present in significant quantifies or frequencies and do not appear to consist of gross accumulations of installed insulating materials. Rather, the presence of TSI debris appears to be the result of small amounts of materials not found during the original, pre-implosion abatement project becoming dislodged during the implosion. Samples of TSI debris collected by RGA were found to contain >1% asbestos.

The analytical testing of the refractory materials identified a "surface fibrous debris" ACM that appeared to be the result of contact between asbestos-containing insulation materials and the refractory materials. According to the survey report and subsequent laboratory clarification (see Section 10.0, Reference Documents), the nature of this debris on the refractory materials is not visible to the naked eye. Therefore, this material would not necessarily have been identified during the original pre-demolition survey/visual inspection. Furthermore, the abatement enclosure in place at the time of abatement underwent successful clearance air testing.

It is noted that not all refractory brick samples had the surficial, fibrous debris, or was shown to contain >1% asbestos. However, based on the presence of the asbestos-containing surface debris on a number of the refractory samples, all of the refractory materials areconsidered ACM. The presumption that all refractory materials are contaminated with surface asbestos fibers and the

presence of TSI debris in the vicinity of the boilers requires a change to the demolition methods envisioned for the completion of the boiler dismantling activity.

Conclusions

Asbestos abatement protocols in accordance with NESHAP (40 CFR 61, Subpart M) and Cal/ OSHA (8 CCR 1529) will be employed to control potential air emissions and manage worker safety during demolition. Specifically, prevention of visible emissions, use of wet methods, use of impermeable drop cloths, prompt clean up of wastes and debris, decontamination of recyclable materials such as scrap metal, perimeter and personal air monitoring, continuous oversight and inspection, and worker protection methods described in these regulations will be diligently employed for the remainder of the boiler demolition until all asbestos-containing materials are removed. This work plan is prepared accordingly.

8.0 Engineering Controls and Work Practices

Work Area Preparation and Layout

Asbestos Regulated Areas and Work Isolation Practices

A Regulated Area will be established to demarcate the area where asbestos work will be performed and where debris and wastes will be encountered. The use of critical barriers are not feasible during the demolition and abatement of the boiler structures due to the size and complexity of the work. Therefore, the Regulated Area will be large enough to provide effective isolation of the asbestos work.

The demolition and abatement work will be performed in two phases. First, overhanging steel that interferes with safe access to the boiler structures will be removed during a "Preliminary Dismantlement" phase. Subsequently, demolition of the main boiler structures will be performed and asbestos debris will be collected and disposed.

The initial Regulated Area encompasses a twenty-foot perimeter immediately adjacent to the post-demolition boiler structures (rubble pile). The initial regulated area will be approximately 315' x 130'. This initial Regulated Area will be used to demarcate the work associated with the initial "Preparatory Dismantlement" phase of the work (see below). The 20' perimeter will enable the placement of drop cloths around the structure during the Preliminary Dismantlement work (see Figure 1, Details A and B).

Upon completion of the Preliminary Dismantlement work, work area isolation will consist of extending the Regulated Area approximately 50-feet in each direction beyond the concrete-paved area under the boiler structures. This will comprise a total area approximately 170' x 260' that will encircle the active demolition and abatement zone. Demarcation will consist, at a minimum, of asbestos warning tape or other flagging. Where additional demarcation control is required, temporary fence fabric ("snow fence") or temporary fence panels may be employed (see Figure 1, Detail C).

Personnel shall don required PPE and respiratory protection prior to entry. Personnel exiting the Regulated Area shall perform the decontamination procedures, including removal of PPE, showering, and re-dressing described in 8 CCR 1529 (j)(3).

The contractor shall maintain a sign-in/sign-out log in the immediate vicinity of the change room of the decontamination unit. All persons entering the Regulated Area, including the contractor's workers, contractor's consultants, owner's consultants, and government officials, shall be required to sign in and out each time upon entering and leaving the Regulated Area. All persons shall indicate name, time, company or agency represented, and reason for entering the Regulated Area.

Personnel Decontamination Facilities

A self-contained, trailer-mounted, three-stage decontamination unit will be used for personnel decontamination. The decontamination unit will be connected to the Regulated Area in a fixed location and will serve as the primary entry and exit point for all personnel. Personnel shall don required PPE and respiratory protection prior to entry. Personnel exiting the Regulated Area shall perform the decontamination procedures, including removal of PPE, showering, and re-dressing described in 8 CCR 1529 (j)(3).

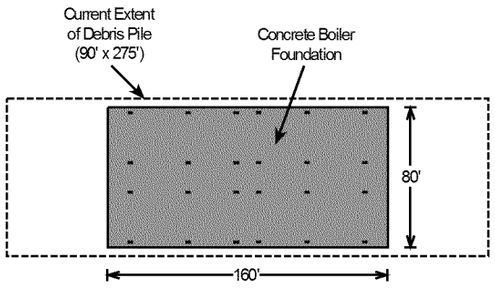


Figure 1A
Current Conditions

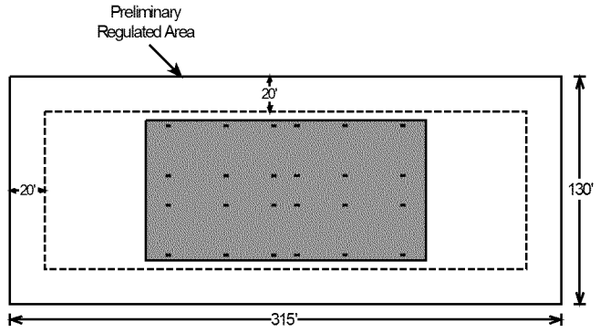


Figure 1B
Regulated Area Configuration
Preliminary Dismantlement Phase

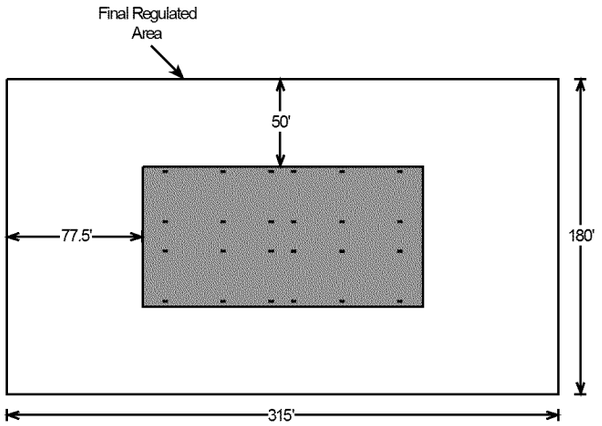


Figure 1C
Regulated Area Configuration
Main Demolition Phase

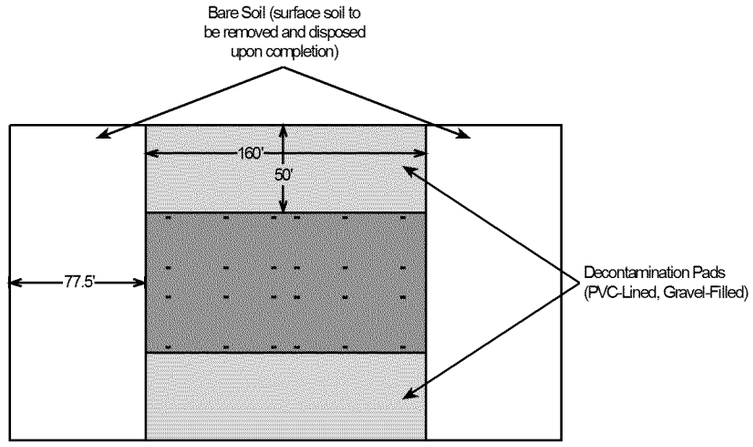


Figure 1D
Decontamination Pads
Main Demolition Phase

Approx. Scale: 1" = 100'

DESTRIER

PG&E Kern Power Plant Demolition Project
2401 Coffee Road
Bakersfield, California 93308

Work Area Layout

Source:	Revision:	Date:	Figure:
	0	06/23/14	1

Salvageable Material Decontamination and Pass-Out

Salvageable material such as scrap metal removed from the boiler structures will be decontaminated and removed from the Regulated Area during demolition and abatement. The salvageable material decontamination and pass-out area shall consist of the area between the Regulated Area demarcation perimeter and the concrete-paved area under the boiler structures.

During the Preliminary Dismantlement portion of the project the decontamination and pass-out will be performed over drop cloths adjacent to the work.

During the main boiler demolition phase, the surrounding area north and south of concrete-paved area will be constructed into two decontamination areas consisting of lined, gravel-filled basins designed to capture wastewater generated during decontamination. The decontamination area basins will be constructed by excavating existing soil to an approximate depth of 6" to 12". The excavations will be sloped to drain to sump areas located in a corner of each basin. The decontamination basins will be lined with an impermeable liner. The lined basin will be filled with drain rock. The area will be covered with steel plates as necessary to protect the lined basins. Wastewater management procedures are described further below.

Waste Pass-Out

The waste pass-out areas will be located at the boundary of the Regulated Area. Wastes will be placed into lined, leak-proof roll-off bins. Bins will be staged at the periphery of the Regulated Area in various locations depending on the demolition and abatement work in progress.

Demolition Practices

Interface of Workers and Equipment

The primary safety consideration on this project will be the separation of workers from demolition equipment and processes. The existing boiler structures consist of relatively unstable, post-implosion structures that are unsafe for entry and are unsafe for workers to approach in a manner whereby asbestos abatement could be safely accomplished prior to demolition.

Best practices for demolition of the boiler structures demand that the structures are dismantled and demolished using hydraulic excavators with demolition attachments such as shears and grapples. Best practices also compel the separation of workers (personnel on foot) from the machine demolition work.

Machine Demolition

Demolition work will be conducted to dismantle and separate portions of the boiler structures such as structural steel members and assemblies, boiler wall sections, boiler tubes and drums, ductwork, and other components. As this work progresses, ground personnel will be limited to performing dust control tasks at safe distances from the active demolition work. Asbestos-contaminated debris such as refractory materials generated during the demolition activities will be controlled by thorough wetting until the demolition work can be stopped and debris can be safely collected by abatement personnel.

Management and Decontamination of Salvageable Materials

Salvageable materials such as scrap metal and bulk concrete will be separated from the boiler structures in a systematic manner using machine demolition methods. As manageably sized pieces are removed they will be passed onto the gravel lined decontamination pads, drop cloths,

or onto the concrete boiler foundation slab for decontamination prior to pass-out from the Regulated Area.

Decontamination will consist of water rinsing the materials to remove any visible traces of demolition residues or debris. Visual inspection procedures and criteria are described in Section 9.0, below. Materials that cannot be successfully decontaminated using a simple water rinse may be decontaminated further using soft bristle brushes (using wet methods) or by wet wiping with cloth rags. Alternatively, contaminated items may be disposed as asbestos waste in lieu of further decontamination.

Decontaminated materials will be passed out of the Regulated Area and managed using typical scrap metal processing and demolition methods. Decontaminated bulk concrete will be transported to an on-site concrete crushing plant for processing with other concrete generated during demolition.

Equipment Decontamination

Heavy equipment, such as demolition excavators will be decontaminated when required to exit the Regulated Area for periodic maintenance or upon completion of work. Decontamination procedures will be similar to those used for salvageable materials.

If equipment requires a short term excursion outside of the Regulated Area (e.g., to provide access for non-abatement personnel such as mechanics) and cannot be sufficiently decontaminated without significant detailed cleaning of tracks, an alternate method may be employed: 1) the equipment will be decontaminated and the tracks covered with plastic sheeting, 2) surrounding area will be decontaminated and visually inspected to ensure no visible debris is present, and 3) the Regulated Area demarcation will be moved inward around the equipment to place it outside of the Regulated Area. Upon completion of maintenance work the Regulated Area will be restored to its original configuration.

Refueling of equipment will be conducted by passing the fueling hose over the Regulated Area demarcation from the outside to an abatement worker on the inside. The equipment will be fueled by the abatement worker and the hose passed back to the worker outside of the Regulated Area upon completion.

Demolition Sequence

Preparatory Dismantlement

The work area currently consists of the post-implosion debris pile and collapsed boiler structures (see Figure 1, Detail A). The periphery of the boiler structures consists of loose and potentially unstable metal structures on the outside of the main structural steel framework surrounding the boiler units. This peripheral material includes light structural steel assemblies, ductwork, staircases, catwalks, piping and other miscellaneous metal assemblies. The presence of this loose material prevents safe access to the portions of the boiler structure that contains the subject asbestos-containing materials. Furthermore, the peripheral material prevents access to the concrete boiler foundation slab and therefore interferes with the construction of the decontamination pad areas.

The first phase of work will consist of the systematic dismantlement of the peripheral material surrounding the debris pile and collapsed boiler structures. Removal will progress until the main structural steel framework surrounding the boiler units and the concrete boiler foundation slab is

accessible. Salvageable materials will be removed and decontaminated prior to pass-out from the Regulated Area as described above. Rather than performing decontamination on the gravel-lined decontamination pad, work will be performed on impermeable drop cloths (10-mil reinforced polyethylene). Steel plate will be employed as needed to prevent damage to the drop cloths. Damage such as rips and tears in the drop cloth will be repaired immediately. Figure 1, Detail B illustrates the details of the work area layout during the Preliminary Dismantlement phase.

As the demolition progresses and permits safe access to the perimeter of the structure, debris that accumulates on the drop cloths will be promptly removed by HEPA vacuuming or manual collection. Debris will be promptly disposed in leak-tight bags or containers.

Rinse water that accumulates on the drop cloths will be subject to storm water best management practices employed to control runoff.

Perimeter Debris Cleanup

Upon completion of the preparatory dismantlement activities, the drop cloths will be removed and disposed. The surrounding soil within the Regulated Area will be hand-cleaned by physically removing any visible demolition debris from the surface. A pre-abatement evaluation of this area revealed a small amount of surface debris such as loose refractory bricks but no significant accumulations of suspect materials or debris.

Construction of Decontamination Area

Once perimeter debris cleanup has been accomplished, the construction of the decontamination basins described above will commence. The top 2" to 4" of soil will be removed and disposed as asbestos waste to alleviate concerns regarding possible cross-contamination of surface soils during the Preliminary Dismantlement work. The remaining soil excavated during the construction of the basins will be stockpiled nearby for subsequent replacement at the completion of the project. Figure 1, Detail D shows the configuration of the decontamination areas.

Demolition and Abatement

Once the decontamination areas have been constructed demolition and abatement of the remaining boiler structures will commence as described above.

Final Cleanup

Upon completion of demolition and abatement visual inspections will be conducted and the decontamination basins will be cleared as described below. Additionally, the east and west portions of the Regulated Area surrounding the concrete paved boiler foundation area (outside of the footprint of the decontamination basins) will undergo surface soil removal as described above (2" to 4") to mitigate possible cross-contamination of surface soils during the main demolition phase (see Figure 1, Detail D).

Asbestos Emissions Control

Wet Methods

Wet methods will be employed throughout the demolition of the boiler structures. Wetting will be performed using fire hoses to "fog" the work areas. Industrial misting units may also be used. Demolition work will be watered to prevent any visible emissions. Water will be initially supplied using an existing on-site connection to a fire hydrant. Subsequently, water will be recycled through a water collection and treatment system. Water application will be performed at

ground level and from elevated man lifts when necessary. Perimeter dust control will be performed as necessary using fire hoses and water trucks to suppress dust from surrounding soil areas.

The boiler structure will be maintained in a continuously wet condition until abatement is complete. This may require wetting between work shifts and on off-days.

Drop Cloths and Other Barriers

Work will be contained and isolated using impermeable drop cloths. The liner installed in the decontamination basis will serve as a drop cloth for work performed in this area. If necessary and feasible, wind barriers may be erected as an additional control measure.

Prompt Clean Up of Wastes and Debris

As described above, the necessary separation of workers and demolition equipment means asbestos-containing debris generated during demolition will be controlled by thorough wetting until the demolition work can be stopped and debris can be safely collected by abatement personnel. Demolition will focus on removing portions of the structure in a manner that a safe margin adjacent to the work is created that enables the prompt clean up of wastes and debris.

The majority of debris that will be encountered will consist of nondescript remnants of demolition debris composed of refractory debris, small pieces of metal, small concrete debris, rust, soil, wood and other similar materials (see photographs, above). This material will be collected using HEPA vacuums and shovels. Debris will be placed directly into waste bins or dispensed into wheelbarrows or totes prior to dumping into bins. If necessary, a skid-steer loader will be used to collect debris or to shuttle material from the work area to the waste bins.

If TSI debris is encountered, work will be stopped or redirected to avoid disturbing the debris. TSI debris will be collected using HEPA vacuums or manual collectionas soon as it is possible to safely access.

Waste Containerization

Wastes will be promptly transferred to leak-tight, labeled containers upon collection. Asbestos bags may be used for small or incidental accumulations of wastes such as TSI debris encountered during demolition. If bags are used, waste will be double-bagged in 6-mil or thicker clear bags.

The majority of the asbestos debris will be bulk-handled and loaded into lined roll off bins. Liners will be folded over and around wastes before bins are closed and sealed for transportation ("burrito-wrapped"). Bins will be closed and secured when not in use.

Authorized Tool List

An authorized tool list documenting the tools and equipment permitted in the Regulated Area will be developed prior to commencement of work and posted at the entrance to the work area. This list is intended as a means to prevent the risk of prohibited practices such as sweeping during abatement work.

Wastewater Management

Storm Water Pollution Prevention

Storm water pollution prevention will conducted in accordance with the site Storm Water Pollution Prevention Plan (SWPPP) prepared by Jacobson and James Associates, Inc. dated

March 22, 2012. Best management practices will be employed at the Regulated Area as required by the SWPPP.

Wastewater Collection and Recycling

During the preparatory dismantlement portion of the project, prior to construction of the decontamination areas, water will be drained onto drop cloths and managed using storm water best management practices to avoid runoff.

During the main demolition and abatement phase, waste water generated during wetting of the demolition work and rinsing of recyclable materials will be conveyed into the lined decontamination areas by gravity flow. Water will flow to lined sumps within the decontamination basins. Sump pumps will drain the sumps through a filtration system into a holding tank. The filtration systems will consist of a manufactured in-line filtration system designed to remove particulates to 5μm.

Water in the holding tank will be recycled by reapplying to the demolition work for decontamination and dust control purposes. Treated water will not be used for general site dust control.

Treated water will be sampled and analyzed for the presence of asbestos fibers upon each change of filter cartridges in the filtration system. If samples indicate asbestos concentrations (fibers >10μm) in excess of the USEPA Maximum Contaminant Level (MCL) for asbestos (7 million fibers per liter or 7 MFL), water will be re-filtered and re-analyzed prior to use for dust control on the demolition work.

Waste water generated from decontamination unit showers will be collected in a holding tank located onboard the decontamination unit trailer. Water from the holding tank will be filtered and conveyed into the decontamination unit basin and managed as described above.

Upon completion of abatement, the gravel-lined decontamination areas will be flushed with clean water to remove any residual fiber contamination (visible debris will be promptly removed as work progresses). Water pumped from the sumps will be tested without prior filtration to determine fiber concentrations of raw water. When raw water samples meet the asbestos MCL standard the decontamination areas will be considered successfully decontaminated and the drain rock (gravel) will be removed and recycled and the liner will be disposed as construction debris. Remaining water will be applied as dust control during removal of the concrete boiler foundations.

9.0 Visual Inspection and Clearance

Visual Inspection Procedures

Waste and debris cleanup will be directly supervised and visually inspected for completeness by the CAC or the Site Surveillance Technician. Salvageable materials undergoing decontamination will be inspected upon completion prior to release for material pass-out from the Regulated Area.

Powered equipment such as demolition excavators will be inspected after decontamination and prior to release from the Regulated Area. As described in Section 8.0, in certain cases contaminated portions of the equipment (e.g., tracks) may be covered to permit reconfiguration of the Regulated Area to accommodate short-term maintenance needs.

Small tools and equipment will be wet-wiped and released for pass-out from the Regulated Area without visual inspection in accordance with standard asbestos abatement practices.

Site Clearance Standards

Debris cleanup from paved and unpaved (soil) surfaces will be considered complete when no visible evidence of debris remains on the ground surface. The nature of asbestos contamination resulting from demolition at the site is not anticipated to have resulted in debris buried below the immediate ground surface.

Decontaminated materials and equipment will be evaluated for presence of contaminated debris using visual means. If tightly-adhered debris or residue is encountered, the material will be evaluated to determine if it may consist of TSI residues or contaminated refractory materials. If tightly-adhered residues do not appear to be associated with the suspect asbestos-contaminated materials the decontaminated (rinsed) materials and equipment will be considered cleared for release and pass-out from the Regulated Area.

When paved and unpaved surfaces are ready for final clearance, the CAC shall document successful visual clearance in writing with copies to PG&E and the contractor.

10.0 Reference Documents

The publications and technical documents listed below form a part of this work plan to the extent referenced. Those publications and other documents are referenced in the text only by the basic designation indicated in parentheses. In all cases, only the most current edition or copy shall apply.

Federal Regulations

- General Industry Standards, Title 29, Code of Federal Regulations, Part 1910.1001 (29 CFR 1910.1001).
- Asbestos, Title 29, Code of Federal Regulations, Part 1926.1101 (29 CFR 1926.1101).
- Respiratory Protection, Title 29, Code of Federal Regulations, Part 1910.134 (29 CFR 1910.134).
- Access to Employee Exposure and Medical Records, Title 29, Code of Federal Regulations, Part 1910.1020 (29 CFR 1910.1020).
- Hazard Communication, Title 29, Code of Federal Regulations, Part 1910.1200 (29 CFR 1910.1200).
- Specifications for Accident Prevention Signs and Tags, Title 29, Code of Federal Regulations, Part 1910.145 (29 CFR 1910.145).
- Title 40, Code of Federal Regulations, Part 260 through 265 and Part 761, (40 CFR, Part 260–265 and 761).
- National Emission Standards for Hazardous Air Pollutants (NESHAP), Asbestos NESHAP Revision, Final Rule, Title 40, Code of Federal Regulations, Part 61, dated November 20, 1990 (40 CFR 61).
- Asbestos Hazard Emergency Response Act (AHERA), Final Rule, Title 40, Code of Federal Regulations, Part 763 (40 CFR 763).
- Title 49, Code of Federal Regulations, Parts 172 and 173 (49 CFR 172 and 173).

State Requirements

- California Code of Regulations, Title 26 (26 CCR).
- California Code of Regulations, Title 8 (8 CCR).

Local Requirements

- San Joaquin Valley Air Pollution Control District Rule 3050 and Rule 4002.

Reference Standards

- American National Standards Institute (ANSI)
  Practices for Respiratory Protection, Publication Z88.2–1980.
- American Society for Testing and Materials (ASTM)
  Safety and Health Requirements Relating to Occupational Exposure to Asbestos, E 84982.
- American Society for Testing and Materials (ASTM)
  Standard for performing Visual Inspections, E 1368.

Asbestos Survey Reports

- *Pre-Demolition Asbestos Survey Report*, Forensic Analytical, FACS Project #PJ15955, January 10, 2012.
- *Sample Analysis of Boiler Brick, Mortar, and Insulation*, Focus Environmental Consulting and LA Testing, May 31, 2012 (analysis report only).
- *Final Air Clearances for Boiler Abatement*, Exhibit 3, Attachment 1, Contract No. 3500988017, Focus Environmental Consulting and LA Testing, May 13, 2013.
- *Limited Asbestos Survey Report (Refractory)*, RGA Environmental, Inc., RGA Project No. PGE35613, June 5, 2014.
- *Limited Supplemental Asbestos Survey Report (TSI Debris)*, RGA Environmental, Inc., RGA Project No. PGE35613, June 6, 2014.
- *Letter re: PGE 35613 Bulk Asbestos Analyses from Micro Analytical Laboratories, Inc. to RGA Environmental, Inc.*, June 10, 2014.