ENERGYSOLUTIONS

Attachment A

Clive Processing Facility License Application

December 18, 2008
Revision 5

ENERGYSOLUTIONS

Clive Processing Facility License Application

December 18, 2008
Revision 5

Table of Contents

I. Clive Processing Facility (CPF) Application

Energy*Solutions*, LLC (Energy*Solutions*) requests authorization of the activities discussed herein at the Clive Processing Facility (CPF) within the following license constraints:

1. All radioactive material shall be acceptable for receipt as defined in Appendix A, Waste Receipt Concentration Limits; and
2. The maximum contact dose rate on a waste container is 1 R/hr (or 500 mR/hr at 30 cm), and
3. The maximum container volume inventory onsite shall be 62,000 ft^3; and
4. The possession time limit for radioactive material received for processing shall be no more than 365 days.

CPF operations will be conducted on Energy*Solutions* property located within Section 32, Township 1 South, Range 11 West, SLBM, Tooele County, Utah. This location is known as Clive, Utah and includes the Energy*Solutions* Clive Disposal Facility. Figure 1, Site Location, shows the location of the facility in relation to Grantsville, Tooele, Salt Lake City and other population centers along the I-80 corridor. Figure 1.A, Surrounding Property Ownership Map, illustrates property ownership of lands adjacent to Energy*Solutions* Clive Facility.

Radioactive Material License UT 2300249, issued by the Utah Division of Radiation Control (DRC) allows Energy*Solutions* to dispose of specified radioactive wastes in accordance with specified conditions and restrictions. Energy*Solutions* also conducts disposal operations under Radioactive Material License UT 2300478 issued by the DRC for 11e.(2) byproduct material (the "11e.(2) License"). Figure 2, Site Layout and Facility Legend, illustrates the general layout of the Clive Facility. Most of the land within a 10-mile radius of the site is public domain administered by the Bureau of Land Management.

Several hazardous waste industries have located in the Clive area. Energy*Solutions'* Clive Facility is located within an area that is designated as a Hazardous Industrial District MG-H by Tooele County. This designation limits, through zoning, the future uses of land in the area of the Clive Facility to heavy industrial processes (General Industrial District M-G type uses) and to industries dealing with hazardous wastes, by the issuance of conditional use permits. The Hazardous Industrial District MG-H designation does not provide for any other type of land use. The remoteness of the site from the urbanized areas of Tooele County makes the surrounding area an improbable location for any other significant industrial use that may be impacted by the radioactive waste management activities.

The licensed area and facility for the CPF will be within the current owner-controlled area of the Energy*Solutions'* Clive Facility (Mixed Waste Operations Building) and will have its' own restricted area (RA) to control licensed and special nuclear material (SNM) activities (Figure 3, Proposed Processing Facility Site Layout; Figure 4, Existing Building Floor Plan; and, Figure 5, Remodeled Floor Plan). This is a secured area protected by a 6 foot security fence with a 24 hour a day, 7 days a week, security force. Security guards are trained in accordance with Energy*Solutions'* procedures for safety, both radiological and non-radiological. All individuals desiring CPF site access must have a current security badge issued by Energy*Solutions'* Security. The Clive Facility Radiation Protection Program dictates requirements for visitors to access the CPF RA. All visitors in the RA are monitored pursuant to the Energy*Solutions'* Clive Facility Radiation Protection Program.

Energy*Solutions* is a national and international company with extensive experience in all facets of radioactive material management, including processing, disposal, transportation, decommissioning,

design and project management. The CPF will have benefit of the wealth of experience and knowledge within the company to ensure and provide for safety and efficient operations.

II. Radiation Protection Program

The Clive Facility comprehensive radiation protection program (RPP) addresses all aspects of the operations, including the CPF. The program is operated under the direction of the Corporate Radiation Safety Officer (CRSO) with implementation by the Director of Health Physics (DHP) through the Clive Processing Facility Radiation Safety Supervisor (CPFRSS). All activities are controlled by the RPP. As a result, the descriptions of processes herein do not have specific details for each activity involved since all of the activities are covered within the RPP, e.g., the activity of opening packages or containers involves an assessment of the radiological potential presented by the contents of the package which is covered by implementing procedures and a Radiation Work Permit (RWP).

Included within the RPP are the ALARA Program and its' functional arm, the Radiation Safety Committee (RSC). The RSC, chaired by the CRSO, includes site management in various disciplines to conduct formal reviews of the site RPP and the effectiveness of the ALARA program in meeting ALARA goals and objectives. The RSC meets on a quarterly basis or as needed.

1. Personnel Radiation Protection

   Operations in the CPF are performed in accordance with the provisions of worker instructions/procedures and a RWP. Personnel radiation exposures are monitored through the use of TLDs (other approved devices may be used) and direct reading dosimeters (DRDs). Records of exposure are reviewed frequently and personnel exposure is closely managed as an element of an active ALARA program. All radiation detection and measurement instruments are calibrated and maintained in accordance with the instrumentation program described in the RPP. As a representative of the CRSO, all activities within the CPF shall be physically supervised by a qualified Health Physics Technician.

2. Contamination Control and Monitoring

   A RWP establishes the radiological controls necessary to perform an operation safely and consistent with the ALARA philosophy. The RWP describes the requirements for protective clothing, respiratory protective equipment, dosimetry and radiological monitoring. In addition, the RWP includes any special instructions, precautions, workstation set-up, mock-up training (if necessary), etc. Contamination levels are monitored following the opening of shipping containers. Contamination controls are practiced in accordance with the RPP and applicable implementing procedures.

   In addition, engineering controls, such as modular containment systems, may be established within the CPF to provide additional capabilities for separation of high contamination-risk potential activities from other activities that present less risk of contamination. Modular containment systems are pre-fabricated containment systems that provide localized engineering controls, in which, personnel may work. This type of system will provide a negative-pressure atmosphere (maintain airborne and loose surface contamination within) and discharge through a portable HEPA system or connected to the building HVAC. Its location within the CPF building will vary depending on needs. Its interaction with the building HVAC is controlled by operating procedure(s).

   The concrete floor of the building is sealed with an epoxy paint to minimize infiltration of

contamination and maximize decontamination efforts.

3. Airborne Radioactivity Control and Monitoring

Within the CPF, process and engineering controls (such as mentioned in Section II.2 above) are implemented to minimize airborne radioactive materials. Although routine airborne radioactivity levels normally do not require respiratory protection, personnel may be provided with respiratory protective equipment, as deemed necessary by the Radiation Safety staff. In some cases, respiratory protection equipment may be dictated by chemical or other industrial hazards.

Airborne radioactivity levels are determined by collecting air samples. These air sampler(s) will be located in areas where the highest potential for airborne radioactivity may exist, in worker breathing zones or at other locations deemed appropriate by Radiation Safety. In addition to portable air sampling, continuous air monitor(s) (CAM) will be located in the CPF to provide real time airborne monitoring. Operability (sensitivity) of the CAM is a function of area background and the specific radionuclides anticipated to be present; its use may be supplemented or replaced by fixed station air sampling at a frequency determined by Radiation Safety.

4. Environmental Monitoring Program

a. Overview

The current environmental monitoring program adequately addresses potential direct radiation dose. Radiation dose from radioactive material is controlled using shipping receipt and routine radiation surveys. Dosimeters are placed on the Restricted Area Fence adjacent to the CPF storage pad, as directed by the DHP, to monitor the quarterly gamma dose to the environment.

Two separate systems will be used to ventilate the CPF. One system has inlet ducts in the immediate area where the waste will be processed and exhausts out the Stack (Stack 1) on the east side of the CPF. The other system draws air from the south-west corner of the building and exhausts out a stack 30 meters south of Stack 1 (Stack 2). The airborne radioactivity concentration at the inlet from Stack 2 is comparable to that breathed by the workers. Stack 1 has 24,000 CFM and Stack 2 has a 30,000 CFM ventilation capacity.

Stack 1 has a sampling/monitoring system to assess any potential radioactive material effluents. When the CPF is operating, daily checks will be performed to verify flow and alert/alarm status. Near isokinetic air sampling is performed to obtain representative sampling of the radionuclides effluent. The ventilation effluent samples are operated continuously except for periods of maintenance, calibration, malfunction or sample filter changes. The CPF will collect samples for particulate, tritium and radioiodine. At the CRSO's discretion, tritium or radioiodine sampling may be curtailed if not present in process waste or stored within the CPF building. Tritium or radioiodine sampling may also be curtailed by the CRSO if present in the waste, but not in concentrations sufficient to detect releases.

EPA AERMOD buoyant gaussian plume software will be used to determine the reduction in the airborne radioactivity concentrations at any given receptor location

from that measured in the Stack exhaust. The EPA Regulatory Model (AERMOD) is the next generation air dispersion model based on planetary boundary layer theory. AERMOD fully incorporates the PRIME building downwash algorithms, advanced depositional parameters, local terrain effects, and advanced meteorological turbulence calculations. These calculations produce EPA-approved modeling results that effectively gauge plume magnitude and concentration given local meteorological conditions and downwash effects generated via source-structure proximity.

Figure 10, a 2007 AERMOD model is attached for review. The model results assumed that the Stack 1 effluent contained 4414 ug/m^3 particles of 10 micrometers or less (PM10) with an exhaust flow rate of 11.33 MPS. The 2007 average wind speed and direction, precipitation and temperature data from the Clive Meteorological station were used in conjunction with opaque cloud cover, relative humidity, barometric pressure and global horizontal radiation measurements from a Salt Lake City (SLC) meteorological station to generate a surface data file that could be meshed with upper air data from the SLC airport meteorological station to determine atmospheric mixing heights.

Latitude and longitude coordinates for the Clive site meteorological station were also pre-processed with the weather data to help the model define sun elevation, sunrise and sunset times specific to the Clive site. Seasonal Albedo, Bowen Ratio and Surface Roughness data also specific to Clive were pre-processed with the surface, onsite and upper air data. All of these data described were then input into the AERMOD platform and used for the meteorological conditions emulated by the plume model. The processing building height and footprint were programmed into the model so that building downwash characteristics could be analyzed in relation to the stack source modeled.

The maximum annual average concentration generated by the model was 2.45 ug/m^3, 36 meters east of Stack 1. The concentration at the northern edge of Section 29 was 0.04 ug/m^3. So the 2007 model expects that radioactive concentrations would be reduced by at least 5.6E-4 at the location having the highest concentration and by 9.1E-6 at Station B-1.

b. Particulate Monitoring

Effluent particulate will be monitored real-time by a continuous air monitor system, such as, a Canberra iCam® alpha and beta air monitor or equivalent with visible display of alpha and beta concentration. A remote alarm will be displayed in a normally occupied area within the CPF. Particulate filters will be collected weekly, and after decay for short-lived radioisotopes, analyzed by gamma spectroscopy. The gamma spectroscopy results and subsequent effluent dose will be tracked, trended and maintained on a weekly basis. These data will be used to provide input for operational controls and the environmental report.

Effluent particulate samples shall be composited and sent for off-site analyses once per calendar quarter. Evaluation by alpha spectroscopy and nuclide-specific analyses for ^{90}Sr, ^{99}Tc, ^{241}Pu, and ^{14}C shall be performed.

c. Tritium Monitoring

Effluent tritium will be monitored by a continuous air monitor system, such as, an

Ortec OS1700 tritium bubbler or equivalent. Tritium samples will be collected weekly and analyzed by liquid scintillation. The tritium results and subsequent effluent dose will be tracked, trended and maintained on a weekly basis. These data will be used to provide input for operational controls and the environmental report.

d. Radioiodine Monitoring

Effluent radioiodine will be monitored by a continuous air monitor system, such as, a Canberra PGM102 Portable Gas Monitor or equivalent (permissible to also use removable in-line cartridges with appropriate sample media). Radioiodine samples will be collected weekly and analyzed by gamma spectroscopy. The radioiodine results and subsequent effluent dose will be tracked, trended and maintained on a weekly basis. These data will be used to provide input for operational controls and the environmental report.

e. Abnormal Operations

When a ventilation stack effluent monitor, including particulate, radioiodine, or ^{3}H, is declared inoperable, all potential airborne-producing operations within the CPF serviced by the affected sampling system shall cease until the sampler system is restored to service, or an alternative method of sampling or inventory control is approved by the CRSO.

f. Alarm Setpoints

Since the stack effluent monitors are downstream of the HEPA system, there will be minimal particulate releases from the effluent. Even though the particulate monitor does provide information to calculate effluent dose, its main function is to warn of a beach or failure in the HEPA system. Therefore, the particulate monitor high alarm setpoint shall be set at five times the nominal 24-hour background count rate (radon and gamma background compensation may be included) or process-specific alarm setpoints may be calculated. Process-specific setpoint calculations shall be documented and approved by the CRSO.

g. Compliance with Dose Limits for Individual Members of the Public

Data from the ventilation stack effluent monitors will provide the necessary information to demonstrate that the annual time-weighted emissions do not exceed the values specified in R313-15-302 for a member of the public The Environmental Protection Agencies' COMPLY code will be used to demonstrate compliance with the DRC limits on airborne emissions as required by UAC R313-15-101(4). LLD's for sample analysis will be 10-50% of the applicable effluent concentration limit (ECL) R313-15.

Dosimeters will be placed along the Restricted Area (RA) boundary for the CPF, as directed by the CRSO. The external dose from the RA monitors when summed with the dose at the stack effluent shall not exceed annually 100 mrem TEDE to a member of the public.

Since the CPF is within the Clive Facility RA, the current approved Clive Environmental Monitoring Plan will be used to report environmental releases from the Section 32 RA. The quarterly environmental report will be modified to include the CPF.

5. Emergency Response

The license constraints as defined in Section I will maintain quantities of radioactive below

the quantities requiring an emergency plan, as specified in UAC R-313-22-32(8)(a). The CPF will use the currently approved and operational State-Issued Part B Permit Contingency Plan. This Plan is used for operations at the Clive Mixed Waste Facility, also on Section 32.

The current State-Issued Part B Permit Contingency Plan is written to accommodate radioactive material concentrations similar to those proposed in Appendix A, Waste Receipt Concentration Limits.

6. Release for Unrestricted Use Area
Monitoring and release of items for unrestricted use is a normal and necessary part of routine operations. The criteria used for such releases are stipulated in the RPP (currently based on U.S. Nuclear Regulatory Commission Regulatory Guide 1.86). All material and equipment leaving the CPF RA will be surveyed for radioactive contamination by a qualified Health Physics Technician. The guidelines in NRC Regulatory Guide 1.86 will be used as the limits for unconditional release. Items that do not meet the limits in NRC Regulatory Guide 1.86 will not be released unconditionally and will be controlled and managed as radioactive material.

III. Processing Building

The CPF is housed inside the current Clive Mixed Waste Operations Building and adjacent container storage pad. Energy*Solutions* will establish the envelope of requirements within the building with which radioactive material will be processed.

1. Building Specifications

a. General: The building, constructed in 1998, is a pre-engineered steel structure with steel siding and roofing. Drawings 0254-A01, 0254-A02, and 0254-A03 show the building layout and general design. The building is divided into three areas; a maintenance bay, an operations bay and a two story office/access control area, with all processing activities limited to the "operations bay."

b. Building Fire Protection: The building is equipped with a fire suppression system that covers the operations bay with heat-activated sprinklers. The system is fed by a 500 gpm NFPA certified electric fire pump, located south of the building in a separate structure, with a backup diesel generator. The water supply tank for the fire system has a maximum capacity of approximately 60,000 gallons and a minimum fire reserve capacity of 30,000 gallons, thus providing at least 60 minutes of fire suppression in the building. The building also has a fire alarm system with both automatic and manual activation. Water will be collected on the concrete floor and collection trenches inside the building. The entire floor and trench system within the building has a secondary containment system underneath the slab. Collected water will be removed with a vacuum truck and transferred to appropriate water management facilities for disposition.

c. HEPA Ventilation
A building, multi-stage HEPA ventilation system with twin discharge effluent stacks will provide a minimum of ten air changes per hour and operate continuously, except as specified below, once licensed activities begin within the CPF. This system will maintain a negative pressure to control the unmonitored release of airborne

radionuclides. The ventilation system exhaust air sampling (24,000 CFM effluent stack only) is conducted to ensure that any releases are within the levels prescribed by UAC R313-15 using dose conversion factors (DCF) from ICRP-68 or 72 (Figures 6, 7, and 8; Ventilation/Filtration System).

In order to control unmonitored releases of airborne radionuclides, the following functions and controls are incorporated into the CPF ventilation system operation:

1) Air balance at least annually and following any ventilation system or process changes that could alter the effectiveness of the system;

2) Particulate removal efficiency of the main filtration system HEPA filters by DOP or comparable testing in accordance with ANSI standards immediately following installation of new HEPA filters or at least annually.

3) When the CPF ventilation system is non-operational:
   a) The environment within the CPF will be evaluated by Radiation Safety and high airborne or high contamination-producing operations shall cease;
   b) System(s) shall be operational within 24 hours or all operations shall stop and building loose surface contamination reduced to 25,000 dpm/100 cm^2.

4) Roll-up Door Interlocking System: The building will be equipped with an electronic interlock system between the ventilation fans and the roll-up doors. The system will allow only one roll-up door to be opened at a time and only when a ventilation fan is running, therefore, maintaining a constant negative pressure within the CPF building. Pressure differentials will be monitored, utilizing differential pressure gauges, between the operations bay and the adjacent maintenance bay, office area and building exterior.

5) Ventilation System Fire Protection: The baghouse and dust collector will be equipped with thermo couplers that will shut down the associated fans when excess heat (i.e. fire) within the collection units is detected. This will not extinguish a fire, but will limit the supply of oxygen within the system to suppress a fire. Once the fire is extinguished, the equipment and system components will be evaluated and repaired as required prior to resuming processing operations. Any damaged equipment or waste generated during the repairs will be handled as waste and disposed of in accordance with the RML.

The general philosophy is to create an airflow pattern such that the air flows from areas of lower or no contamination into areas of higher contamination. That is, areas of greater potential for contamination will be at a negative pressure to areas of lesser potential. The areas of more or less negative pressure may change as the work being performed changes but the working concept is to minimize the potential for spread of radioactive material by appropriate use of airflow.

d. Operations Bay Floor: The bay floor is designed and constructed to contain waste and liquid spills, as well as wash down water. There are three key components to the floor system: a HDPE liner and leak detection system beneath the concrete floor; the concrete floor; and, the concrete floor coating. In summary, the concrete bay floor is constructed on top of a gravel bed underlain with a HDPE liner. The liner is attached to the inside of the building foundation walls and slopes to a central location where a collection and inspection system provides leak detection. The bay floor consists of a 10" thick concrete slab with two layers of reinforcement. The perimeter of the floor is constructed at an equal elevation and the floor slopes towards the center where collection troughs collect water. There is also a collection trough on the south end of the floor across the width of the building. The concrete floor is coated with an epoxy floor coating and aggregate binder designed to protect against chemicals, acids, solvents, high temperature and abrasion

e. Overhead Crane
An overhead crane was installed as part of the building in accordance with engineering and building codes. This crane will be used to lift and move equipment, containers, etc. Crane operators will be qualified in accordance with the Clive Training program. The crane will continue to be operated with approved procedures as dictated by manufacturer's instructions and OSHA requirements.

IV. Processing Operations

1. Liquids
The CPF will receive or manage liquids for processing. These liquid wastes are stored as stipulated in the Permit. Solidification of liquids will be performed with approved solidification media (Appendix B), in accordance with manufacturer's instructions. This list of approved media has already been approved by DRC for use at the Clive Containerized Waste Facility (CWF).

2. Sorting or Segregating Process
Sorting is defined as separating material into different categories in order to optimize packaging or processing of radioactive material with respect to chemical and physical properties. Segregating is similar to sorting except this process is specific to removing non-conforming or difficult material. In these processes, containers are opened, contents removed, sorted/segregated and prepared for disposal or further processing. Material is sorted to maximize the benefit of the various technologies utilized by CPF to minimize volume and produce a better waste form. In some cases, materials are blended together to provide a better feed for other processes. These activities take place with direct Radiation Safety support.

Generally, waste will be sorted into the following general categories:

a. Incinerable Waste: This category of waste will include wood, certain plastics, paper, cloth, and adsorbed liquids. Wastes that are not acceptable for burning will be eliminated from this class of waste.
b. Waste for Shredding: This category of waste includes waste that will be shredded for volume reduction.
c. Unacceptable Waste: This category of waste includes materials that cannot be accepted at a burial site in its present form. Waste in this category must be treated or shipped to a permitted facility.

d. Other

Waste may also be sorted by radionuclide concentration to better manage radionuclide effluent concentrations. Wastes that contain high concentrations of volatile radionuclides (such as H-3 and C-14) are evaluated relative to effluent concentration limits and may be processed in a manner to minimize airborne releases and disposed appropriately.

3. Segmentation Area

Because materials received for processing have varying physical dimensions, the items often need to be reduced in size to allow processing. Welding and joining of contaminated materials is also a common maintenance need for equipment repair or container repair or lid closure. A wide variety of cutting, sectioning and joining tools may be used. Examples are, hydraulic cutter/shears, chop saws, table saws, other power saws, air arc and other cutting or welding torches, a log splitter used primarily to break fuel racks, bolt cutters and miscellaneous other mechanical, hand, and power cutting and joining tools.

4. Overfill and Repackage Area

Overfilling/underfilling (placing material in the bottom of a shipment container before filling) is done during repackaging prior to closing the package for shipment.
Overfilling/underfilling is essentially a blending operation in that flowable material suitable for disposal is used to fill voids in packages destined for disposal.

V. Radioactive Waste Management and Storage

The CPF will not store waste for any purpose other than staging it for processing, inspection, or consolidation prior to transport for disposal or further processing. All storage of radioactive material will be in specifically designated areas. The CPF, including storage locations, will be tied to this radioactive materials license and the license constraints as stipulated in Section I with a maximum container volume inventory onsite of 62,000 ft^3. The possession time limit for radioactive material received for processing shall be no more than 365 days.

Containers used for outside storage of radioactive materials must be capable of withstanding environmental conditions. Wooden containers are not considered suitable for long-term outside storage. Materials received in wooden containers may remain outside for a period not to exceed 15 days. After 15 days, the material must be moved inside or re-packaged in a container suitable for outside storage. Outside storage of radioactive materials is only permitted on approved surfaces as specified by the State-issued Part B Permit. Waste containers (containers or SCO components) will remain closed and strong tight when outside the CPF Processing building.

In order to accommodate a demarcation when a container that has been emptied of its' contents and can be removed from the Electronic Waste Management System (EWMS) database, it shall be designated as an "Energy*Solutions*-Empty." This is a container specifically surveyed to assure it is visibly empty, shall have no removable external contamination greater than 2,200 dpm/100 cm^2 beta-gamma and 220 dpm/100 cm^2 alpha, external radiation levels shall not exceed 0.5 mR/hr on contact and shall be labeled with a Caution Radioactive Material (CRM) EMPTY label. The CRM EMPTY label shall contain the external dose rate, the measured internal contamination level and the date of the survey. Energy*Solutions*-Empty containers will be stored as specified by the State-issued Part B Permit.

Energy*Solutions* intends to process waste streams received from research and power reactors, US

government entities that use radioactive materials, and other commercial enterprises who generate Naturally-Occurring or Accelerator-Produced Material (NARM) or Low Level Radioactive Waste (LLRW). The typical waste streams from these facilities include:

- Charcoal
- Incinerator Ash
- Soil
- Liquids
- Filter media
- Mechanical Filters
- Demolition Rubble
- Ion Exchange Media (cation, anion and mixed bed)
- Contaminated Equipment
- Glassware or Labware
- Paint or plating
- Evaporator Bottoms/Sludges/Concentrates
- Compactable Trash
- Noncompactable Trash
- Treated biological materials
- Activated Material
- Components incorporating radioactivity in their design
- Other miscellaneous materials intended for ultimate LLRW disposal

All shipments received for processing at the CPF shall comply with 49 CFR, Transportation and 10 CFR 71, Packaging and Transportation of Radioactive Material, as applicable.

1. Electronic Waste Management System (EWMS)

   Energy*Solutions* will use an electronic data base to manage records of receipt, transfer and disposal. This EWMS will be similar to the one currently in use at Energy*Solutions'* Bear Creek, Tennessee Processing Facility and will be used to track waste as it is processed through the facility from point of receipt to final shipment offsite for disposal.

   Shipment waste manifests received at the facility will be manually entered or electronically uploaded into the EWMS. Information tracked with each package includes:

   - Waste Generator
   - Manifest Number
   - Barcode
   - Container Type
   - Next Process Code
   - Package Dose Rates
   - Disposition Site
   - Received Date
   - Package Mass
   - Material Volume
   - Special Handling/Processing Requirements
   - Contents and Waste Form
   - Activity per Isotope
   - Special Nuclear Material / Source Material
   - Storage Location

After incoming data entry is complete, the EWMS will generate a report verifying that the waste meets the Waste Receipt Concentration Limits and the maximum container volume inventory limit. If errors are flagged, the customer and state regulator will be contacted, as appropriate for resolution.

During the process of waste, records will be generated to document the "daughtering" (explained below) of the waste and changes in waste mass, volume, waste form, dose rates etc. The new information will be entered into the EWMS. Parent – daughter relationships will be maintained in the EWMS to provide a clear track from the original incoming parent container to the final waste product.

The EWMS will also configure shipments and generate NRC Forms 540, 541, and 542 for outbound shipments. This includes classifying waste packages for both transportation and disposal, outbound compliance checks against 49 CFR, 10 CFR 61, and disposal site regulations. These checks are performed on each outbound package prior to shipment.

The EWMS is utilized in additional ways to manage waste on site including:

- Quarterly inventory control – all waste packages are scanned and checked against the inventory to verify proper control, and
- The waste age is tracked to ensure waste is processed and shipped within the 365 day requirement.

a. Waste Attribution

Secondary waste (including, but not exclusive, floor sweepings, baghouse dust, HEPA filters, fly ash, mop water, scrubber salts, slag and anti-contamination clothing) that cannot be easily tracked back to a specific customer becomes CPF-generated waste. Because there is not a "date received from a customer" to associate with this waste, the date the waste is generated (defined below) becomes the date associated with the waste and such secondary waste is considered newly generated waste for tracking and aging purposes. Where practical for large campaigns, secondary waste will be attributed to the waste generator for disposal at a licensed, low-level, radioactive waste, disposal facility.

In the case of CPF-generated secondary waste, the date of generation is the date the container being used for collection of the waste is considered full and is moved from the collection point to a queue for processing or disposal. For HEPA filters and bag house bags, it would be the day they are removed from service. For reusable equipment deemed to be no longer useful, it would be the day that the determination is made it is no longer reusable. It should be noted that for long campaigns of one generator's waste, while the waste may all be attributable to the original generator, the date of generation may have to be determined as noted above, otherwise HEPA filters and other long term contaminated items would have to be removed from service early to preclude their becoming aged waste.

For waste received at the CPF, the potential for producing LLRW Class B or C waste will be small. In addition, the CPF, through process knowledge, packaging techniques and other controls can ensure that, if necessary, a Class B or C waste is not produced. Any Class B or C waste produced, as a result of processing a generator's

waste, will be returned to the customer or shipped for waste disposal at a licensed radioactive waste disposal facility. This mechanism will be controlled in the customer's processing contract, as stipulated in Section V.3 below. In addition, all Class A waste disposition from the CPF for disposal will be sent to licensed radioactive waste disposal facilities and permitted mixed waste facilities, if necessary.

For unique or specific waste streams, e.g. DOE, the CPF can establish protocols and procedures to control and properly disposition secondary waste. This would be controlled contractually as specified in Section V.3. The Clive Facility currently disposes of Clive-generated secondary waste (Class A) as authorized with agreement from the Northwest Compact. The CPF will comply with the current Northwest Compact agreement or negotiate new terms.

b. Waste Tracking

The CPF will maintain a record of all radioactive material received, as specified in Section V.1 above. The EWMS will have a precision limit of 0.1 microcurie rounded up to the next 0.1 microcurie. Each package of radioactive material, upon receipt, will be marked with a unique identifier that will allow for retrieval of pertinent data as referenced above.

Most waste received is sorted prior to processing. Waste sorted into smaller packages is referred to as daughtering. All packages whether received from customers or daughtered at the CPF will maintain waste generator identification, contain a unique identifier, have package activity based upon either manifested activity or mass-apportioned activity based upon the incoming container specific activity, dose to curie scaling, lab analysis and/or waste volume.

After processing and packaging is complete, the waste is stored on site, until transportation for disposal, return to customer or other disposition is arranged. Prior to final departure, the containers are staged. The waste container is inspected for defects, surveyed, checked for contamination and any final labeling applied just prior to shipment. The vehicle is inspected, and if acceptable, the waste containers are loaded and secured. Waste containers and vehicles are marked, labeled, and placarded in accordance with DOT regulations and a final inspection on the vehicle and load is performed.

Just before departure, the responsible supervisor and the driver review the shipping papers, destination route, handling requirements and emergency procedures. When the responsible supervisor is satisfied the shipment is proper and complies with applicable laws and safety practices and the driver is fully prepared, the shipment is released. Once the shipment has left the CPF proper, the relevant shipment data may be removed from the EWMS.

2. Lab Operations

Energy*Solutions* maintains a radiochemistry laboratory (Lab) on the Clive Facility site. The Lab has a full complement of sample preparation equipment such as balances, drying ovens, fume hood, hot plates, glassware, and chemicals. The lab currently has a Gamma Spectroscopy System operating numerous High Purity Germanium detectors. The Lab has Low Background Alpha/Beta Counters equipped with automatic sample changers. A Liquid Scintillation Counter is available for low energy beta and alpha counting and a Whole Body

Counter is used for In-vivo Bioassay Monitoring. Laboratory samples include, but are not limited to, the following: environmental air, soil and water samples, occupational air samples, etc. Analysis of customer waste samples (to evaluate acceptability for processing) is also performed. CPF samples will be controlled by procedure and returned to the CPF after analysis for proper disposition as described in Section V.1.a, Waste Attribution.

3. Waste Acceptance Criteria (WAC)

The first step for receipt of waste at the CPF is the completion of a contract with the generator. At a minimum, this contract shall require written assurances by the facility or customer shipping the radioactive material indicating that the facility or customer shall accept return of the material processed or unprocessed. In addition, for states outside the Northwest Compact, the state or appropriate Compact must be a signatory to an Interregional Access Agreement for Waste Management or assurances shall be obtained from the appropriate state governor's office, the state radiation control program, and the appropriate Compact official, if any.

The CPF will establish a CPF Waste Acceptance Criteria (WAC) procedure for waste acceptance that can be utilized by clients to determine if their waste meets the criteria for acceptance at the CPF and to establish administrative requirements for receipt of radioactive material for processing, including scheduling authorization protocols. The WAC is developed in accordance with the RPP, the radioactive materials license and is based on conservative criteria that assure readily acceptable waste is shipped to CPF. As part of the scheduling authorization, the following shipment information, at a minimum, will be evaluated:

- Contract current and requirements
- Number of packages
- Volume of waste
- Package/shipment configuration
- Nuclides and activities
- Contact and 30 cm dose rates
- Physical/chemical forms
- Shielding
- Hot particles

This evaluation will be used by the CPF management, prior to authorizing scheduling of shipment, to determine current radiological status of the CPF (i.e., current container volume inventory, RA fence dose rate, RWP's, equipment status, etc.) and ensure that shipment can be received at the CPF when it arrives.

For clients that have waste that does not meet the WAC, an Out-of-WAC committee will be established to review and approve the shipment of the waste, prior to shipment. The Out-of-WAC committee is composed of individuals, including the DHP or designee, that have specialized knowledge of license requirements, process limitations, State-issued Part B Permit requirements, health and safety and radiation safety.

Prior to shipping waste to the CPF, the client will characterize the waste physically, chemically and radiologically. If the waste meets the WAC and the Waste Receipt Concentration Limits, the client may ship the material to the CPF. Each shipment shall be authorized by the LLRW Processing Manager and the Clive Processing Facility Radiation

Safety Supervisor (CPFRSS) (or designee), prior to shipment leaving the customer's facility.

As part of the receipt process for CPF radioactive material, Energy*Solutions* will review the shipment documentation for acceptability (including Waste Receipt Concentration Limits and maximum container volume inventory limit), physically inspect the container for compliance with shipping regulations and do a radiological survey on the shipment. After the radioactive material has been approved for receipt at the CPF, it is sent to the CPF for processing. All material within the CPF proper will be accounted for on the EWMS..

In addition, as part of the receipt process, either as a function of the Shipping and Receiving process or at the CPF, a detailed radiological survey (contamination and dose rate) of each package shall be performed and compared to the manifest. Unacceptable deviations shall be documented via the Condition Report (CR) process. Exceptions or modifications to this survey may be authorized by the DHP for ALARA considerations.

Packages are opened pursuant to the RPP and associated procedures, then sorted to remove, any undesirable materials and to direct the waste to the appropriate process area at the CPF. If the stated physical, radiological or chemical composition of a waste becomes doubtful during processing, appropriate analyses and determinations are done. Any unacceptable material may be removed for alternate processing, disposal or return to the client. This direct inspection and sorting of wastes provides major assurance that improper material will not be processed or disposed. Energy*Solutions'* experience in waste sorting has shown that this practice can be done safely with minimal exposure and is both practical and effective.

4. Special Nuclear Material (SNM)
The CPF will use concentration-based SNM controls as authorized by the U.S. Nuclear Regulatory Commission (NRC) and the UDRC. All waste at the CPF will comply with the SNM controls as authorized by the U.S. Nuclear Regulatory Commission and the UDRC. Appropriate procedural controls will be implemented upon receipt of final Order from the NRC and authorization from the UDRC.

5. High Radiation Storage Area
A High Radiation Storage Area (HRSA) will be located in the storage and laydown yard adjacent to the CPF building. The HRSA will be used to secure (until the material is transferred inside the CPF building) radioactive material that meets the definition of a high radiation area, as defined in the RPP. Radioactive material transferred into and out of the HRSA, as well as other high radiation areas, will be under the constant purview of a senior Health Physics Technician or stored in an area as defined in the RPP. Access to high radiation areas shall be controlled by the CPFRSS. The CPF HRSA will be located and managed to maintain worker dose ALARA and ensure dose to members of the public is within regulatory limits.

6. Waste Classification
All waste, at the CPF, packaged for disposal at a licensed radioactive waste disposal facility, will be classified using the guidance provided in U.S. Nuclear Regulatory Commission, Issuance of Final Branch Technical Position on Concentration Averaging and Encapsulation, Revision in Part to Waste Classification Technical Position, dated January 17, 1995, and in accordance with the radioactive waste disposal facility license requirements.

7. Sharing of Clive Facilities

In order to utilize Clive-specific waste transfer and unloading capabilities, some waste destined for the CPF may be transferred or unloaded to the CPF from one of several areas within the RA:

- Rail Intermodal Unloading area
- Rotary Dump Facility
- Rail Car Rollover
- East Truck Unloading Facility
- Mixed Waste Truck Unloading dock

For such evolutions, the waste will be manifested to the CPF, comply with Class A concentration limits and meet the requirements for SNM as stipulated in Radioactive Material License UT 2300249. In addition, for Rotary Dump Facility or Rail Car Rollover, waste shipments destined for the CPF, the operating procedure for the Rotary Dump Facility or Rail Car Rollover, have specific requirements for handling LLRW or 11e.(2) waste. Each type of waste has operational requirements to ensure that the waste is not commingled. This procedure will be revised to add similar requirements for bulk handling of CPF waste.

Access to the CPF, for these types of evolutions, is through the CPF, RA, south gate. The process of sharing Clive facilities will be controlled by an operating procedure(s).

VI. Mixed Waste Operations

As with existing operations at the Clive Mixed Waste Facility, LLRW processing at the CPF will be jointly regulated by both the Radioactive Material License (RML) and the Mixed Waste State-issued Part B Permit (Permit) including the 365 possession time limit. Radiation safety, including personnel, public, and environmental radiological dose and contamination control, will be controlled by the RML. Hazardous waste management, when applicable, will be regulated by the Permit. Similarly, eventual building decommissioning will continue to be regulated by the Permit, with RML oversight for radiological issues.

The main distinction from current operations will be that LLRW processing will include routine transfer from the CPF to disposal in the Class A and Class A North cells; or to an offsite LLRW disposal facility. Currently, all waste managed at the Clive Mixed Waste facility, whether hazardous or not, is disposed in the Mixed Waste cell or at offsite RCRA treatment, storage, and disposal facilities. Otherwise, the Mixed Waste Facility already permits many of the activities that will occur under the LLRW processing license, including sorting/segregation of commingled wastes, solidification and size reduction.

LLRW transfer from the CPF to LLRW disposal will require controls to prevent cross-contamination of processed LLRW with hazardous wastes or hazardous waste residuals that may be present in the CPF Building. The hazardous waste rules provide standard methods and metrics for equipment and facilities to move into and out of hazardous waste regulation. These include decontamination standards, testing protocols, and operating constraints.

Detailed standards, inspection points, and documentation requirements will be incorporated into the Permit prior to the start of processing operations. The primary operating constraint will be that the building can only be used for LLRW or mixed waste management at one time. If the building has not been decontaminated and tested; or if any mixed waste is present in the building, then processed

LLRW will have to be managed as a mixed waste.

VII. Management

Appendix I, Organization defines Energy*Solutions'* management structure for Radioactive Material License's UT 2300249 and UT 2300478. Appendix I will be amended, as stipulated below, to include the CPF and key management personnel responsible for radiation safety, industrial safety, and their respective training and experience requirements.

Appendix I revisions:

1. Section I.1.1.2- President of Commercial Facilities: The President of Commercial Facilities reports to the Chief Executive Officer and provides oversight and direction and leadership for all commercial facilities including the Clive disposal facility and the Clive Processing Facility.

2. Section I.1.1.6- Vice President of Clive: The Vice President of Clive reports to the President of Commercial Facilities and is responsible for the oversight of site operations including waste acceptance, sampling, management and disposal; laboratory, engineering, Radiation Safety activities, Clive Processing Facility and carrying out activities efficiently and safely in accordance with design specifications, quality assurance program requirements, and all applicable regulations.

3. Section I.1.3- Director of Compliance and Permitting: The Director of Compliance and Permitting reports to the Vice President of Environmental Compliance and Permitting and is responsible for initiating and maintaining licenses and permits. The Director of Compliance and Permitting is also responsible for the preparation of all reports submitted in accordance with Energy*Solutions* licenses and permits for the Clive facility (including the Clive Processing Facility). The Director of Compliance and Permitting oversees the administration of the Groundwater Monitoring Program, and the Air Quality Program. The Director of Compliance and Permitting shall oversee and facilitate permit and license renewals, modifications, and amendments. The Director of Compliance and Permitting will set compliance objectives with the Vice President of Clive and Vice President of Environmental Compliance and Permitting. Direction and support will be provided for policy development and site training to assist in ensuring compliance.

4. Section I.1.5- LLRW Processing Manager: The LLRW Processing Manager reports to the Director of LLRW Operations and is responsible for the day-to-day processing operations, including the CPF. The LLRW Processing Manager works closely with Health Physics, Safety and Health, and Quality Assurance to assure that all aspects of waste processing operations are conducted according to safety, radiation, quality assurance program requirements and in accordance with applicable regulations.

5. Section I.1.6- Clive Processing Facility Radiation Safety Supervisor (CPFRSS): The CPFRSS reports to the DHP and assists in the management of the CPF radiation safety program.

6. Section I.1.8- Clive Processing Facility: One or more Health Physics Technician II(s) must be at the CPF whenever access to CPF is necessary. Certain specific activities may require additional specific health physics support. All activities within the CPF shall be physically supervised by a qualified Health Physics Technician

7. Section I.2.5- LLRW Processing Manager: The LLRW Processing Manager must have a minimum of five years experience in radioactive waste management.

8. Section I.2.6- Clive Processing Facility Radiation Safety Supervisor (CPFRSS). The CPFRSS has a high school diploma or equivalent, five years working directly with radioactive material, or an equivalent combination of education and experience, NRRPT or eligible, valid driver's license, and physically able to meet all requirements of the job.

All personnel working within the confines of the CPF will be trained and qualified for their specific job function in accordance with the Clive Facility Training Manual.

VIII. Decommissioning Funding Plan

A Decommissioning Funding Plan, as required by Utah Administrative Code (UAC) R313-22-32(7), will be submitted to the DRC. The CPF will not be brought into operation for waste management until decommissioning funding calculations that reflect actual as-built conditions are provided, approved by DRC, and fully funded. In this way, the funding calculations best reflect actual as-built conditions; while retaining State control that un-funded facilities are not brought into waste management operation.

Appendix A
Waste Receipt Concentration Limits

Table I	
Radionuclide	uCi/cm^3
C-14	8.00E-01
C-14 in activated metal	8.00E+00
Ni-59 in activated metal	2.20E+01
Nb-94 in activated metal	2.00E-02
Tc-99	3.00E-01
I-129	8.00E-03
Alpha emitting transuranic nuclides with half-life greater than 5 years (note 1)	1.00E+01
Pu-241 (note 1)	3.50E+02
Cm-242 (note 1)	2.00E+03
Ra-226 (note 1)	1.00E+01
note 1- Units are nanocuries per gram	

Table II	
Radionuclide	uCi/cm^3
Total of all nuclides with less than 5 year half-life	7.00E+02
H-3	4.00E+01
Co-60	7.00E+02
Ni-63	3.50E+00
Ni-63 in activated metal	3.50E+01
Sr-90	4.00E-02
Cs-137	1.00E+00

Waste Concentration Determination Rules

1. Waste concentration determined by Table I radionuclides. If the radioactive waste contains only radionuclides listed in Table I, concentration shall be determined as follows:
   a. If the concentration does not exceed the value in Table I, the waste is acceptable for receipt at the Clive Processing Facility. If the concentration exceeds the value in Table I, the waste is not acceptable for receipt at the Clive Processing Facility.
   b. For wastes containing mixtures of radionuclides listed in Table I, the total concentration shall be determined by sum of fractions. If the sum of the fractions for mixtures of radionuclides is less than 1.0, the waste is acceptable for receipt at the Clive Processing Facility. If the sum of the fractions for mixtures of radionuclides is equal to or greater than 1.0, the waste is not acceptable for receipt at the Clive Processing Facility.

2. Waste concentration determined by Table II radionuclides. If the waste does not contain any of the radionuclides listed in Table I, concentration shall be determined based on the concentrations shown in Table II.
   a. If the concentration does not exceed the value in Table II, the waste is acceptable for receipt at the Clive Processing Facility. If the concentration exceeds the value in Table II, the waste is not acceptable for receipt at the Clive Processing Facility.
   b. For wastes containing mixtures of radionuclides listed in Table I, the total concentration shall be determined by the sum of fractions. If the sum of the fractions for mixtures of radionuclides is less than 1.0, the waste is acceptable for receipt at the Clive Processing Facility. If the sum of the fractions for mixtures of radionuclides is equal to or greater than 1.0, the waste is not acceptable for receipt at the Clive Processing Facility.

3. If the waste does not contain any radionuclides listed in either Table I or II, the waste is acceptable for receipt at the Clive Processing Facility.

Appendix B
Approved Solidification Media

1. Aquaset I and II
2. Concrete (structural)
3. Petroset I and II
4. Petroset- H
5. Aquaset- H

Figure 1- Site Location

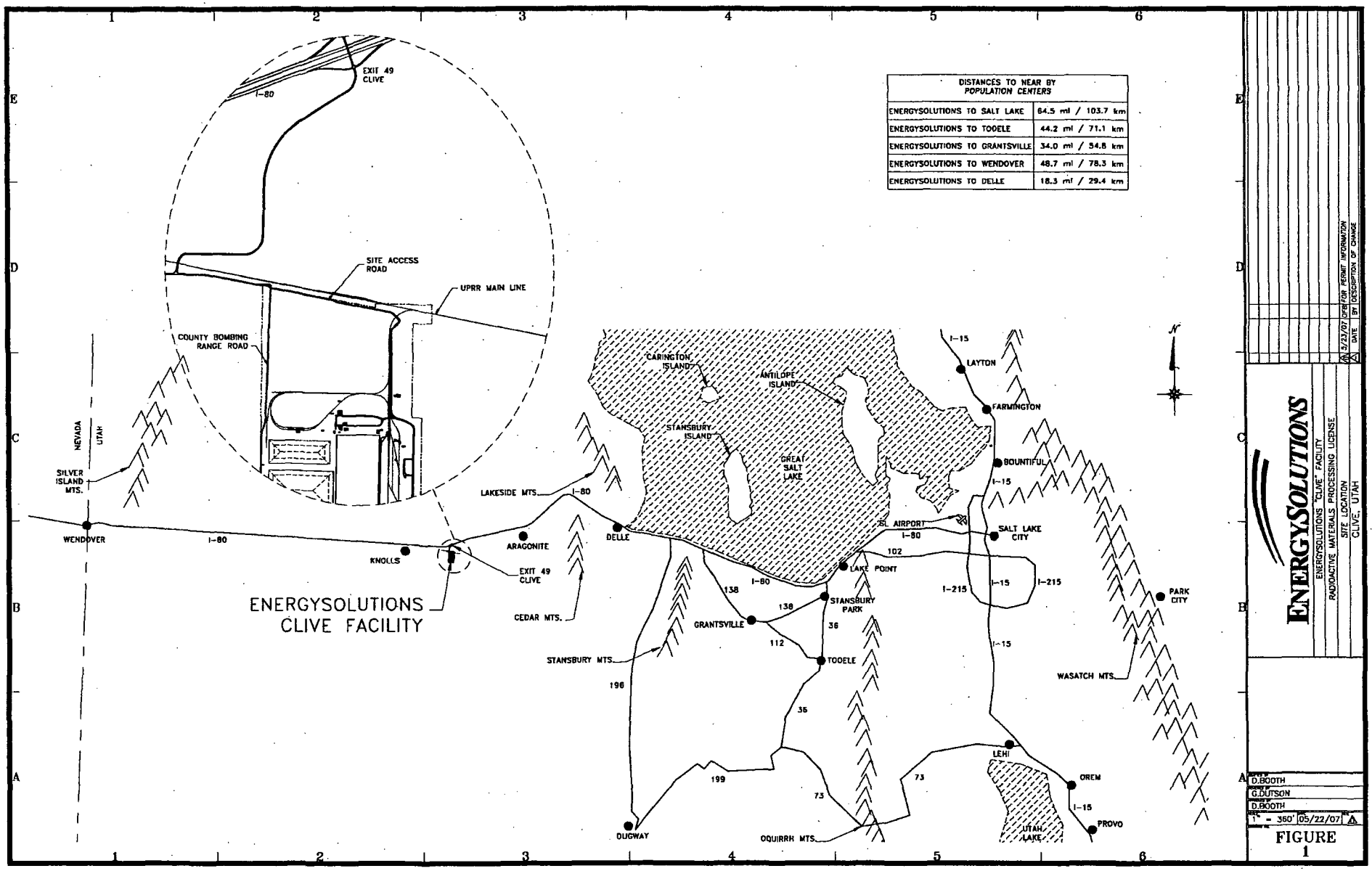


Figure 1.A- Surrounding Property Ownership Map

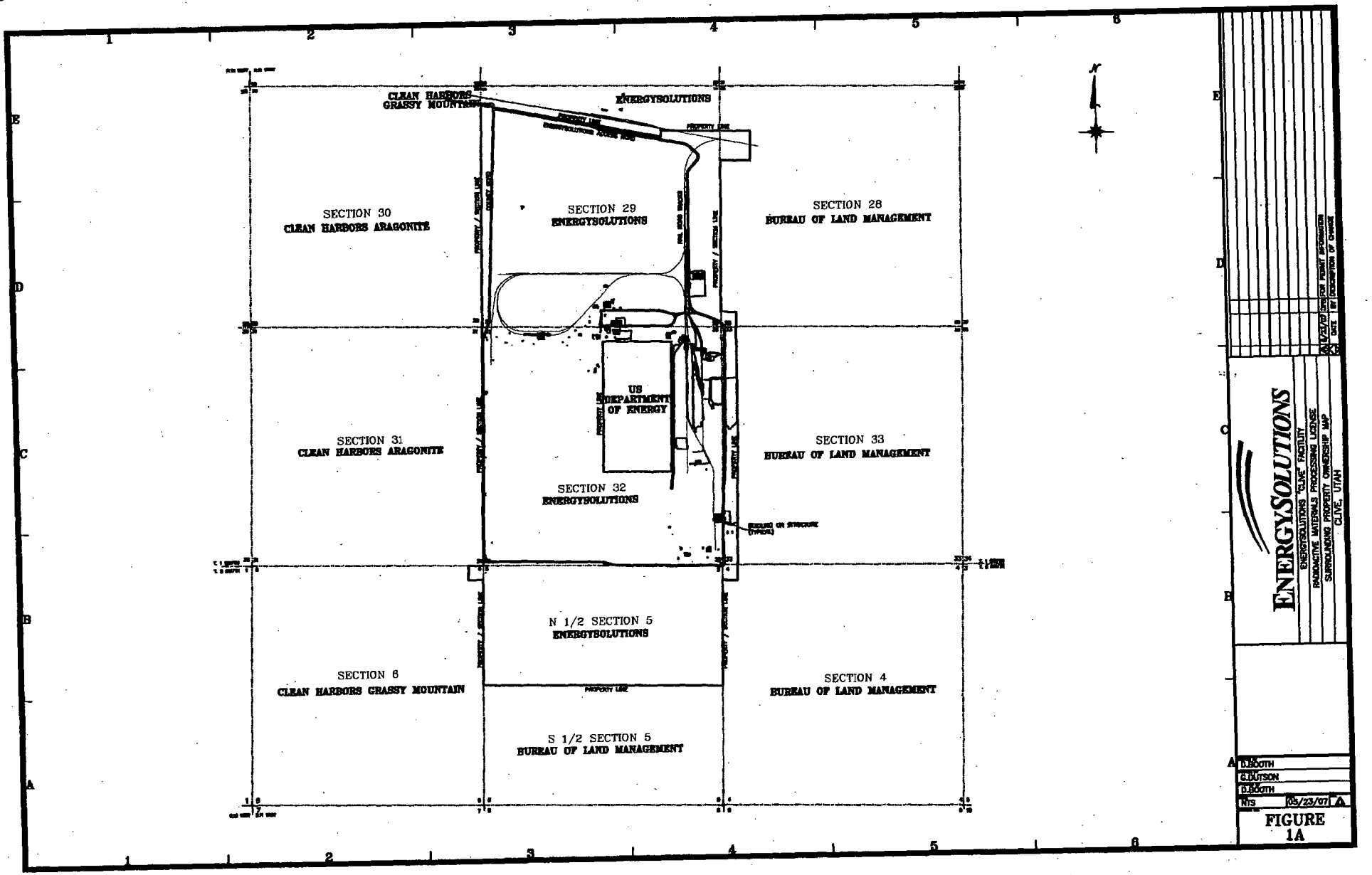


Figure 2- Site Layout and Facility Legend

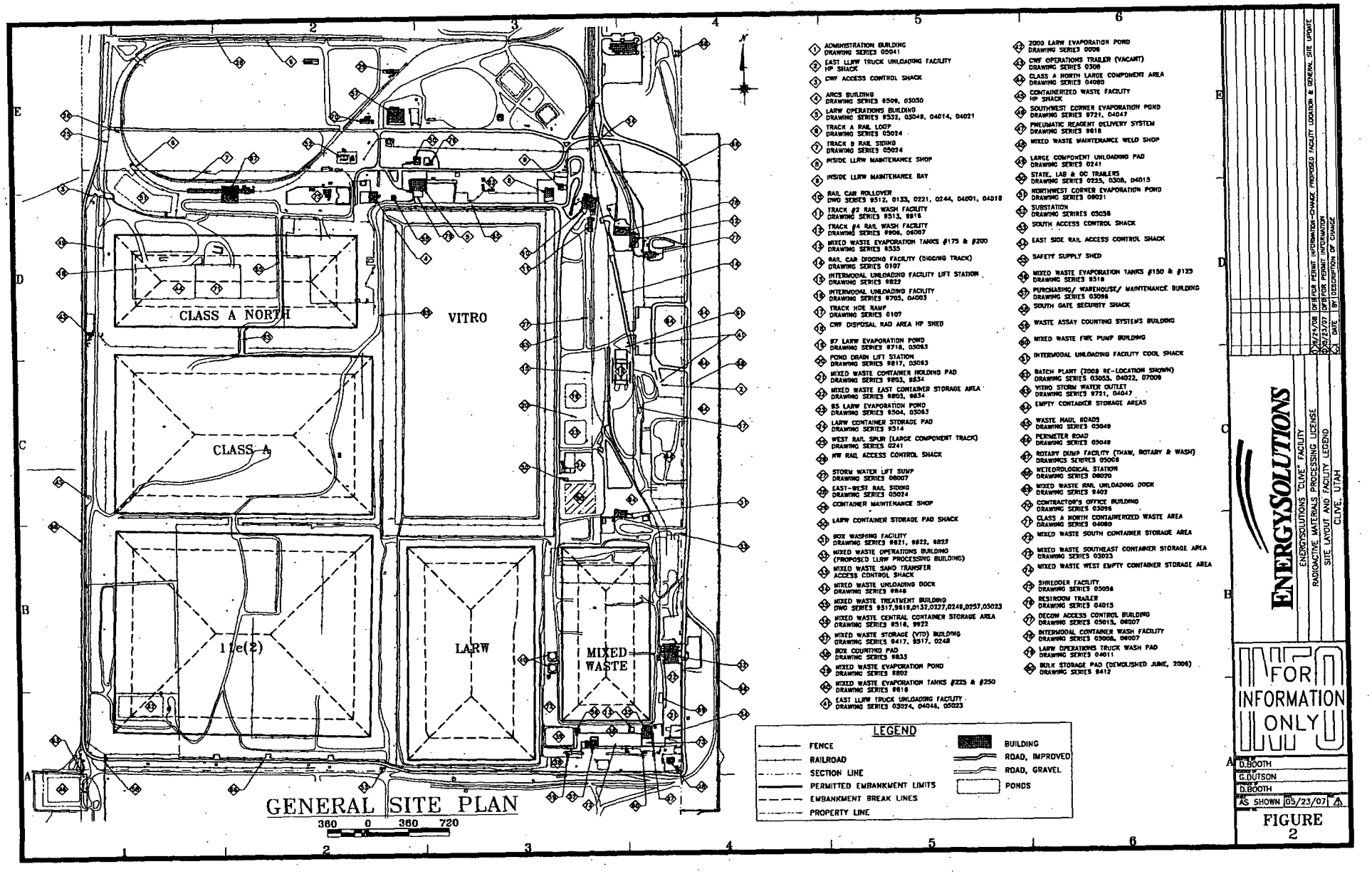


Figure 3- Site Layout

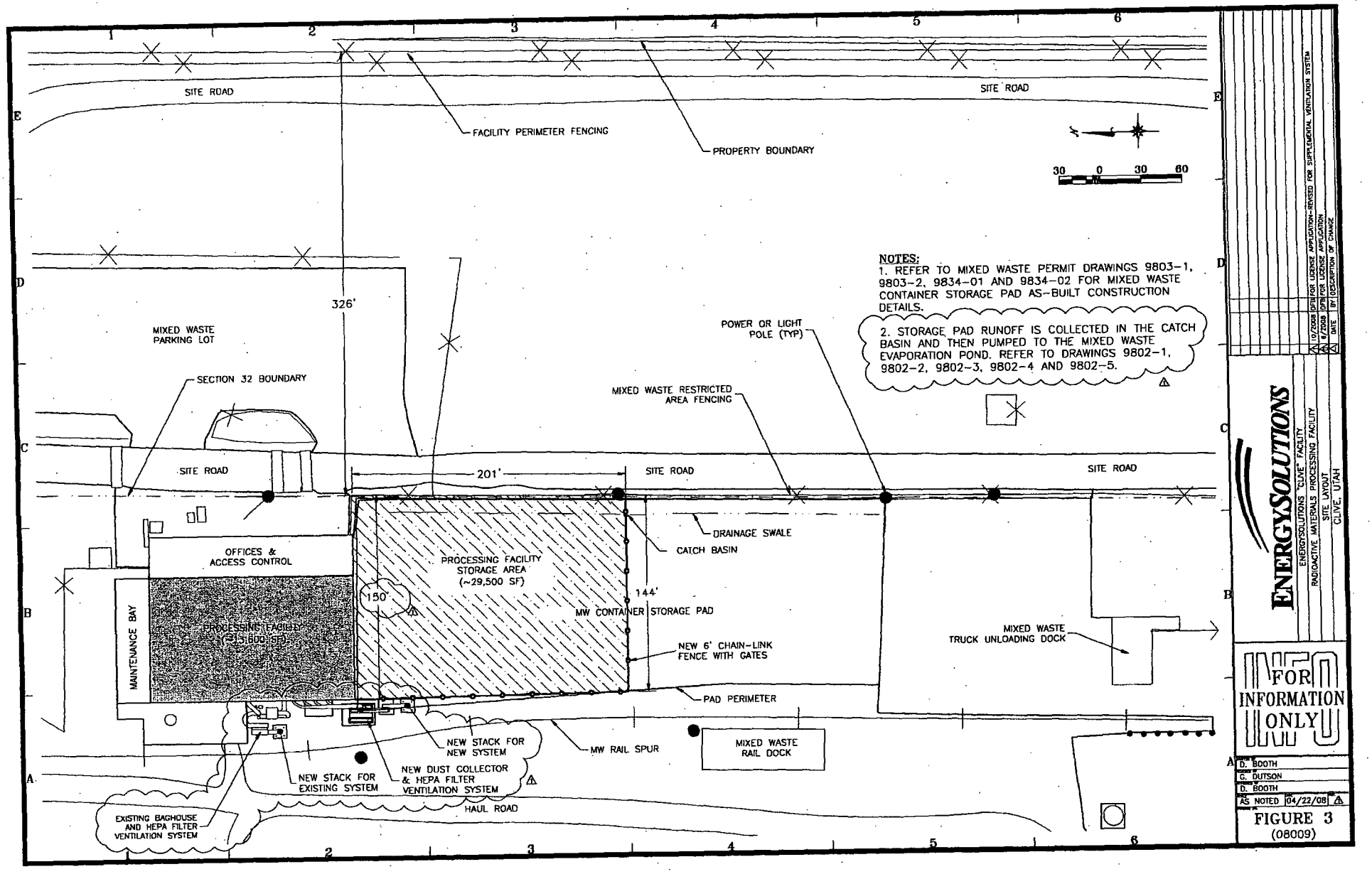


Figure 4- Existing Building Floor Plan

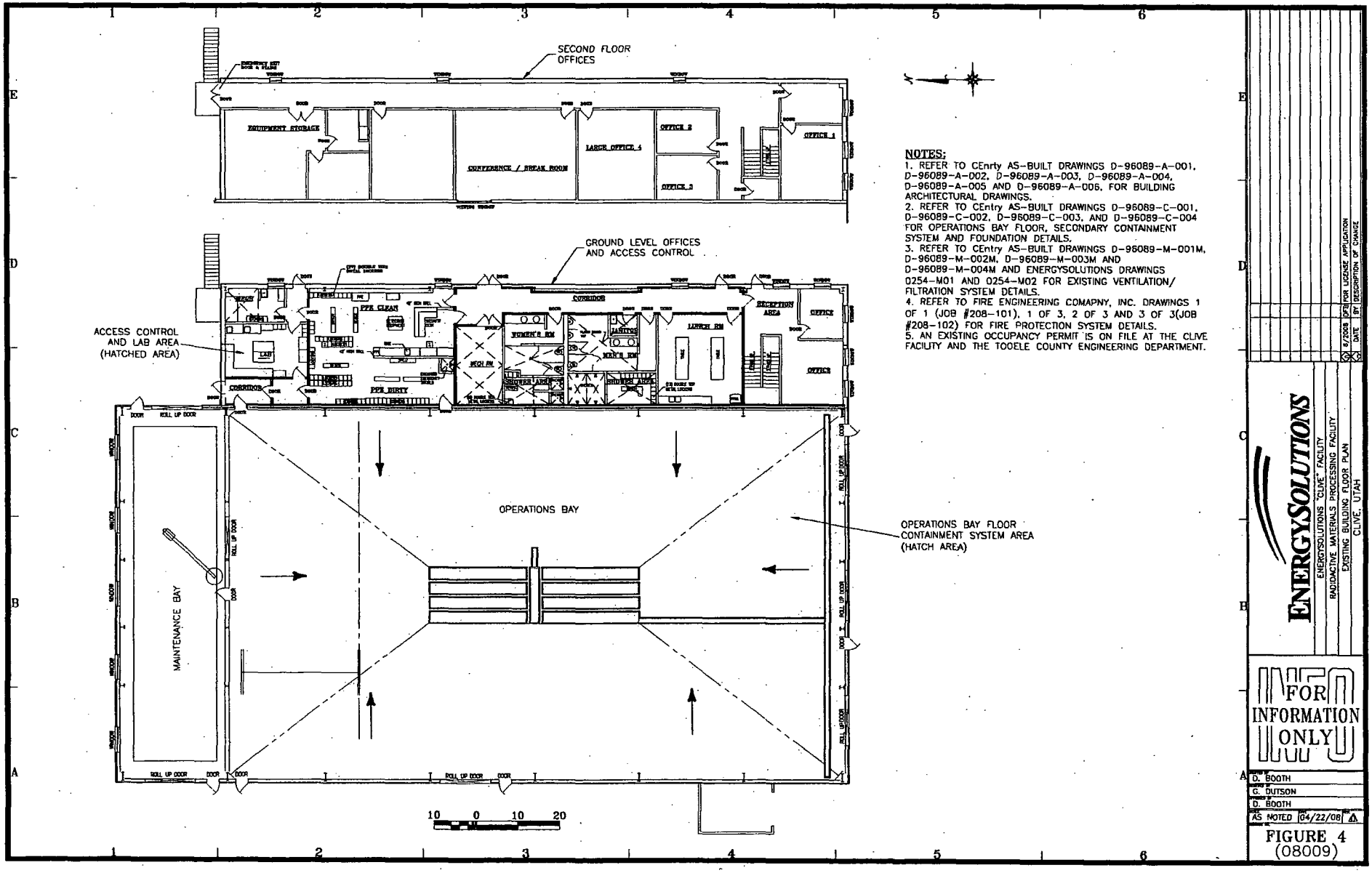


Figure 5- Remodeled Floor Plan

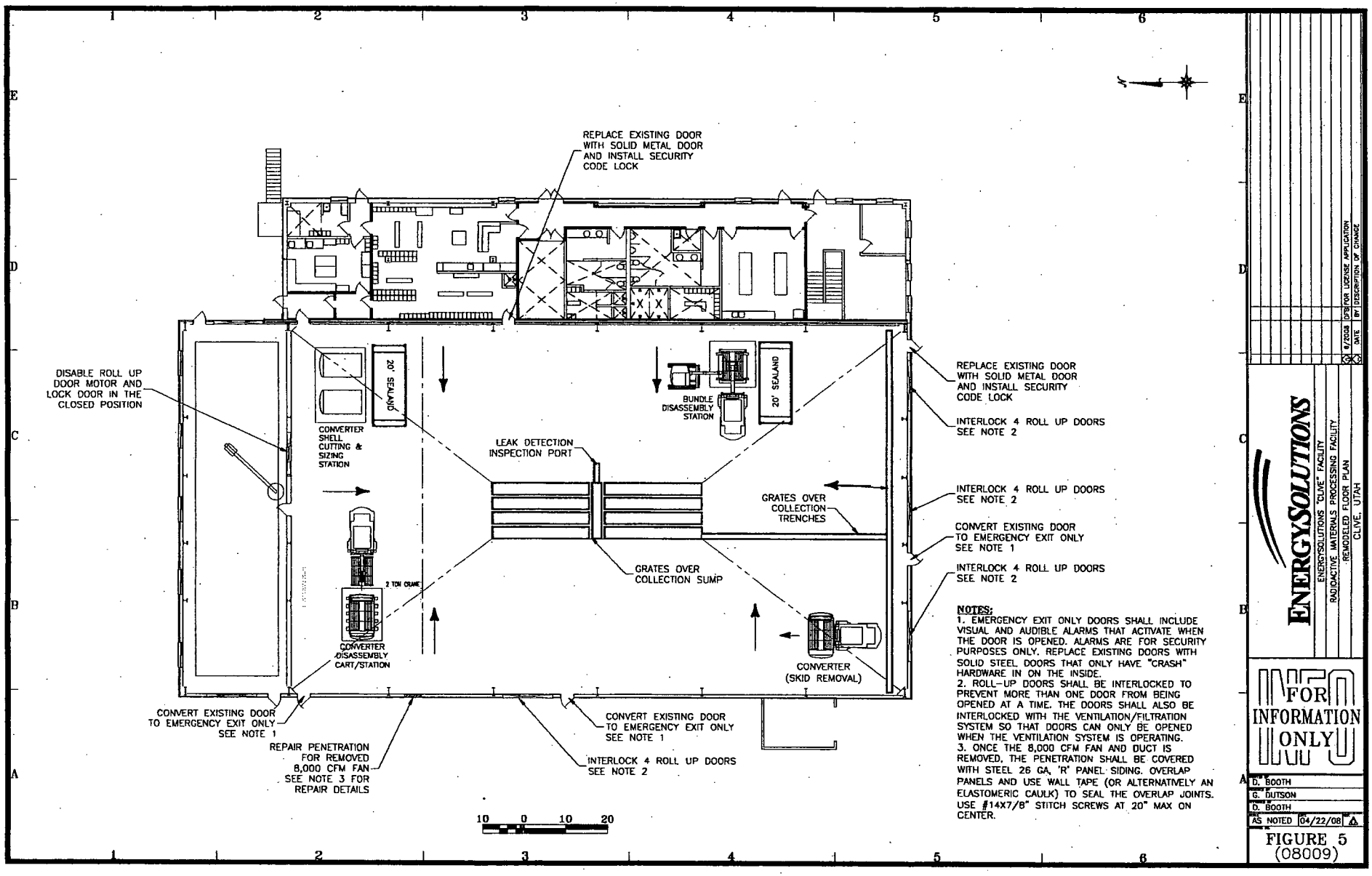


Figure 6- Ventilation/Filtration System, 1 of 3

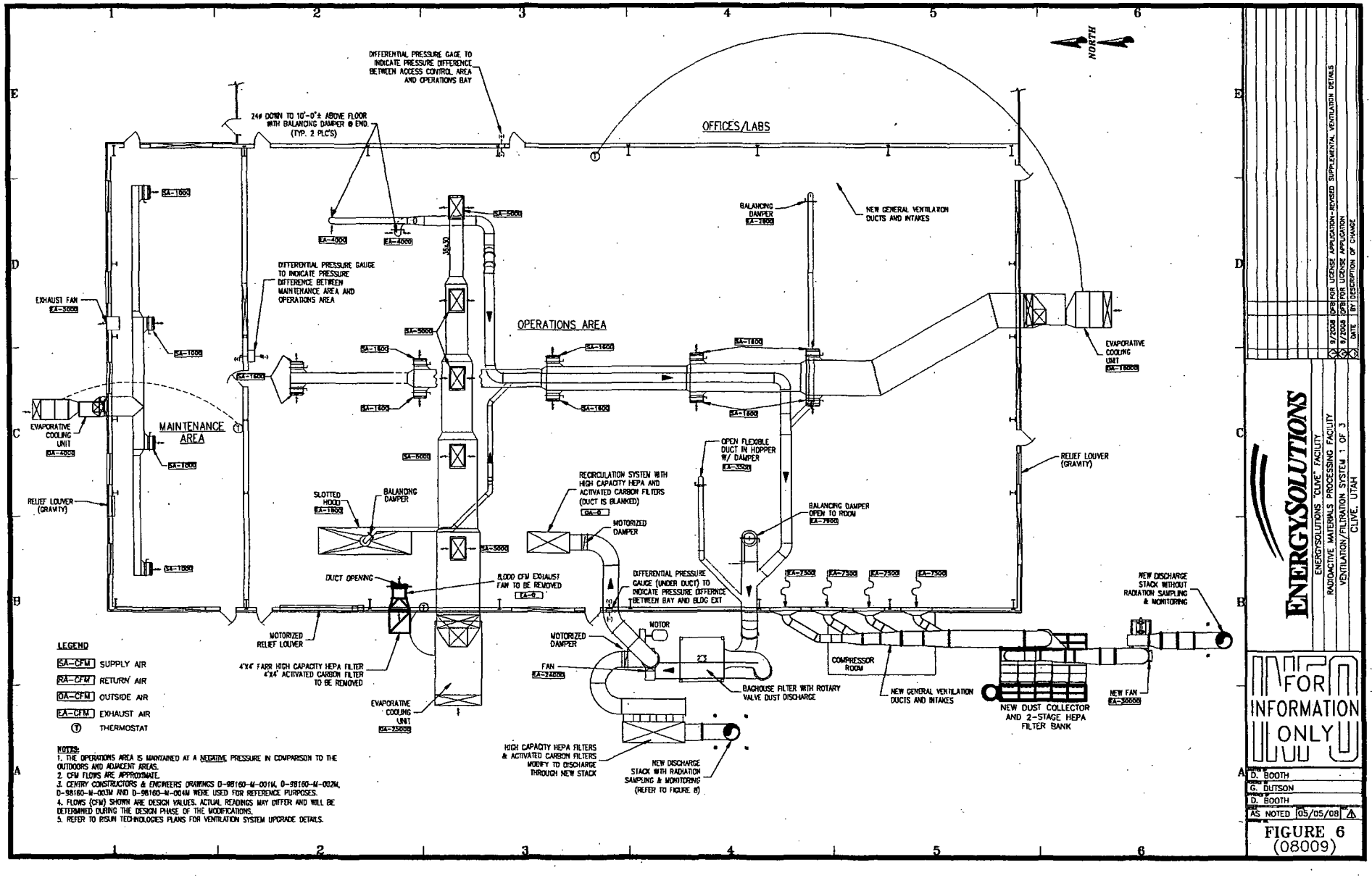


Figure 7- Ventilation/Filtration System, 2 of 3

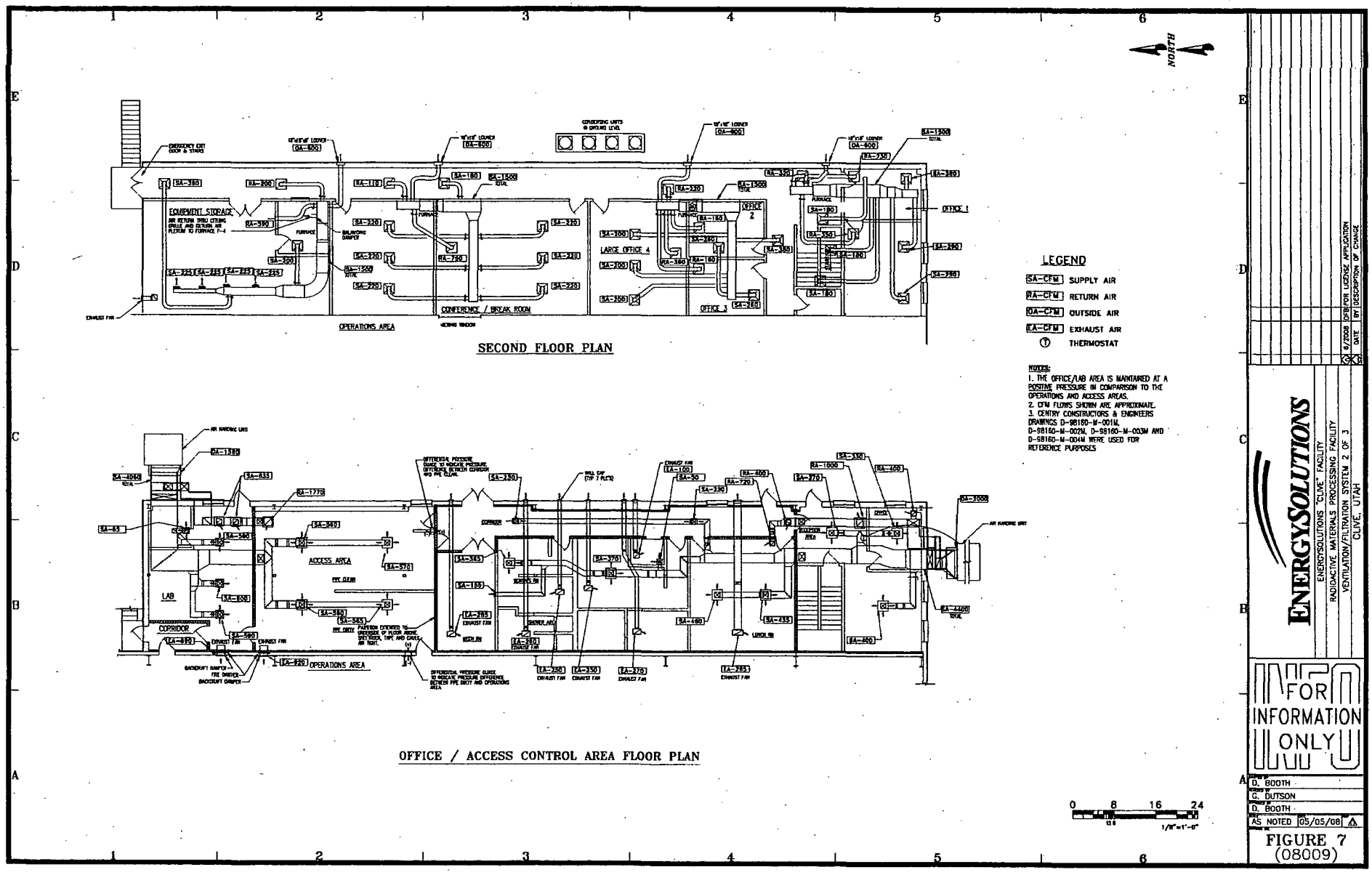
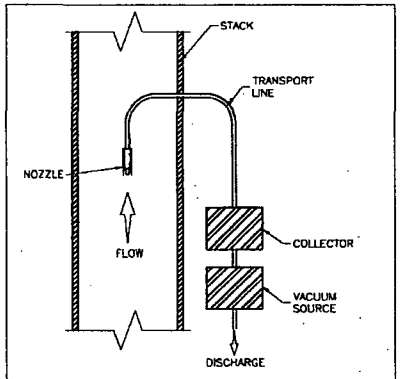


Figure 8- Ventilation/Filtration System, 3 of 3



STACK RAD SAMPLING/ VENTILATION SCHEMATIC AND REQUIREMENTS

NTS

1. NOZZLE IS LOCATED WITHIN CENTER ⅓ OF CROSS SECTIONAL AREA OF STACK.
2. NOZZLE IS LOCATED AT LEAST 3 STACK DIAMETERS FROM BENDS OR ANY TURBULANCE CAUSING APPARATUS, AND FAR ENOUGH FROM STACK EXIT PLANE TO PREVENT WIND EFFECTS.
3. SHROUD SAMPLE NOZZLE.
4. DESIGN SAMPLE TRANSPORT LINES AS SHORT AS POSSIBLE TO MINIMIZE PLATE OUT DUE TO WALL LOSSES.
5. SAMPLE LINE BENDS SHALL NOT BE LESS THAN 3X THE TUBE INSIDE DIAMETER.
6. LOCATE COLLECTOR FOR EASY ACCESSIBILITY.
7. VOLUMETRIC FLOW RATE AT SAMPLE NOZZLE SHALL BE VERIFIED ANNUALLY, AT A MINIMUM.
8. MONITORING EQUIPMENT SHALL BE A CANBERRA iCAM ALPHA/BETA AND A ORTEC 031700 TRITIUM COLLECTION OR APPROVED EQUALS.

VENTILATION SYSTEM DESCRIPTION:

EXISTING SYSTEM: THE EXISTING VENTILATION SYSTEM FOR THE OPERATIONS BAY CONSISTS OF THE FOLLOWING COMPONENTS/SYSTEMS: A 24,000 CFM FAN DRAWS EXHAUST AIR FROM INSIDE THE BAY THROUGH A BAGHOUSE DUST COLLECTOR AND DISCHARGES THROUGH A HEPA FILTER BANK; AN 8,000 CFM EXHAUST FAN LOCATED IN THE WEST WALL DISCHARGES EXHAUST AIR THROUGH A HEPA FILTER; A RECIRCULATION SYSTEM TO RETURN FILTERED (DUST COLLECTOR AND HEPA) AIR BACK INTO THE BUILDING (HOWEVER, THE RETURN DUCT TO THE BUILDING HAS BEEN BLANKED OFF); AND TWO HVAC UNITS (25,000 AND 16,000 CFM) PROVIDE TREATED SUPPLY AIR TO THE BUILDING. DIFFERENTIAL PRESSURE GAGES MONITOR THE DIFFERENTIAL PRESSURES BETWEEN THE OPERATIONS BAY AND THE EXTERIOR OF THE BUILDING, BETWEEN THE OPERATIONS BAY AND ACCESS CONTROL AREA, AND BETWEEN THE OPERATIONS BAY AND THE MAINTENANCE BAY. THE VENTILATION SYSTEM COMPONENTS ARE OPERATED MANUALLY TO MAINTAIN A NEGATIVE PRESSURE WITHIN THE OPERATIONS. SINCE THE COMBINED CAPACITY OF THE HVAC UNITS EXCEEDS THE EXHAUST AIR CAPACITY OF THE FILTER SYSTEMS, THE HVAC UNITS ARE NOT RUN SIMULTANEOUSLY.

MODIFIED SYSTEM: MODIFICATIONS TO THE SYSTEM WILL INCLUDE THE FOLLOWING: POTENTIALLY INCREASE THE FLOW THROUGH THE EXISTING BAGHOUSE COLLECTOR AND HEPA FILTERS; REMOVE THE EXISTING 8,000 CFM EXHAUST FAN WITH ASSOCIATED HEPA AND CARBON FILTERS; INSTALL A SUPPLEMENTAL, GENERAL FILTRATION SYSTEM (FAN, DUST COLLECTOR, HEPA FILTER) THAT WILL DRAW ADDITIONAL EXHAUST AIR FROM THE BAY TO ACHIEVE THE 10 AC/HR; INSTALL A STACK(S) TO DISCHAGE FILTERED AIR ABOVE THE ROOF; AND, INSTALL A DOOR INTERLOCK SYSTEM TO PREVENT OPENING MORE THAN ONE ROLL UP DOOR AT A TIME AND WHEN THE VENTILATION SYSTEM IS NOT OPERATING.

VENTILATION SYSTEM DESIGN CRITERIA AND CALCULATIONS:

1. FACILITY AIR EXCHANGE RATE: 10 AC/HR.

FLOW RATE CALCULATIONS:
OUTSIDE CROSS SECTIONAL BAY AREA = 2200 ft2
INSIDE LENGTH OF BAY = 147.5 ft
INTERIOR VOLUME = 2200 ft2 x 147.5 ft = 324,500 ft3
10 AC/HR = 324,500 ft3 x 10 = 3,245,000 ft3/HR
REQUIRED CFM = 3,245,000 ft3/HR x 1/60 HR/Min
= 54,083 CFM
USE 54,000 CFM

2. DUCTWORK: MINIMUM AND MAXIMUM DUCTWORK VELOCITIES WILL BE 3,500 FPM AND 4,500 FPM RESPECTIVELY. MAXIMUM STACK VELOCITY WILL BE APPROXIMATELY 3,100 FPM.
3. HEPA FILTERS: 2-STAGE HEPA FILTER BANK: 99.95% EFF. HEPA FILTERS.
4. EXHAUST STACK HEIGHT SHALL BE 20% TALLER THAN THE ROOF HEIGHT (28' AT THE PEAK).

10/2008	DPB	CORRECTED STACK VELOCITY	
5/2008	DPB	FOR LICENSE APPLICATION	
DATE	BY	DESCRIPTION OF CHANGE	

ENERGYSOLUTIONS

ENERGYSOLUTIONS "CLIVE" FACILITY
RADIOACTIVE MATERIALS PROCESSING FACILITY
VENTILATION/FILTRATION SYSTEM 3 OF 3
CLIVE, UTAH

FOR INFORMATION ONLY

DRAWN BY D. BOOTH
DESIGNED BY G. DUTSON
CHECKED BY D. BOOTH
SCALE AS NOTED DATE 05/05/08 REV 1

FIGURE 8
(08009)

Figure 9- Proposed Environmental Monitoring

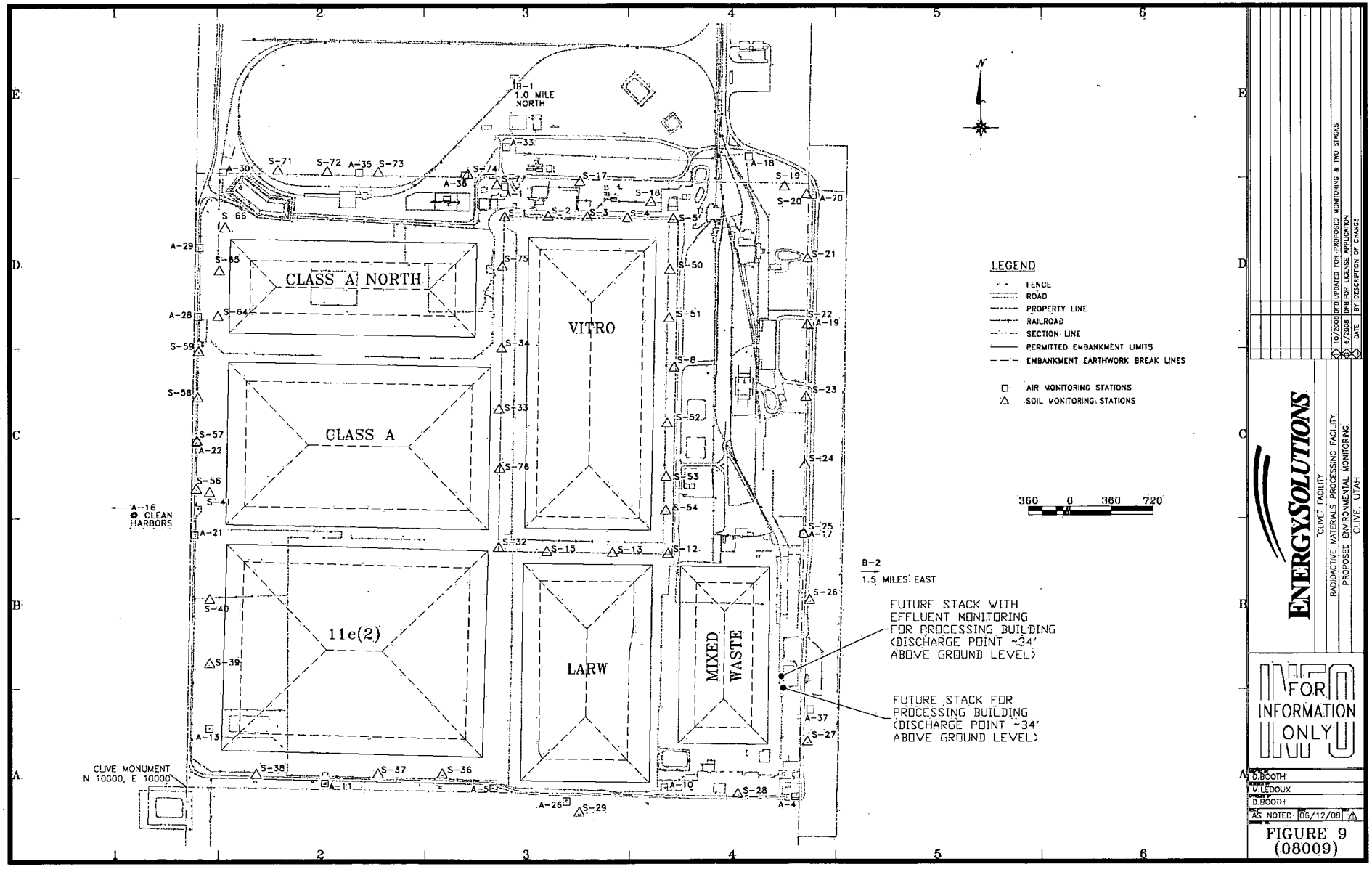


Figure 10- AERMOD Model