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MPC&D 08-032

May 14, 2008

U.S. Nuclear Regulatory Commission  
Attn.: Document Control Desk  
Washington, DC 20555

Docket No. 50-312  
Rancho Seco Nuclear Generating Station  
License No. DPR-54

**RANCHO SECO FINAL STATUS SURVEY REPORT – THIRD SUBMITTAL**

Attention: John Hickman

Attached is the Final Status Survey (FSS) Report for several of the Rancho Seco survey units. Specifically, this submittal addresses dismantlement and FSS information for the survey units associated with the 100000, 200000, 501000, 800004, 800007, 800012, 800014, 813000, 823000, 826000, 832000, 839000, 843000, 848000, 851000, 857000, and 899000 areas. Table 1 of the FSS Report provides a description of the survey units addressed in this submittal. The report provides a summary of the survey results and concludes that survey units covered in this report meet the radiological criteria for unrestricted use.

Members of your staff with questions requiring additional information or clarification may contact Bob Jones at (916) 732-4843.

Sincerely,

Steve Redeker  
Manager, Plant Closure & Decommissioning

Cc w/ attachment: NRC Region IV

NMSS 01

RANCHO SECO  
FSS FINAL REPORT

Final Status Survey Report 3

May 15, 2008

# FSS FINAL REPORT

## Final Status Survey Report 3

### 1.0 Overview

As discussed in Section 1.4 of the Rancho Seco License Termination Plan (LTP), SMUD intends to release the Rancho Seco site for unrestricted use in two phases, with the license being terminated after completion of the second phase. The first phase includes the release of the majority of the site, including impacted and non-impacted areas, except for the Interim Onsite Storage Building (IOSB) and the area immediately surrounding it. Once an area has been verified as ready for release, no additional surveys or decontamination of the area will be required unless the controls (e.g., administrative or engineered) established to prevent re-contamination have been compromised.

SMUD will continue to store Class B & C radioactive waste in the IOSB until an acceptable disposal facility becomes available. After disposing of the Class B & C radioactive waste, SMUD will complete the final status survey for the remainder of the site (i.e., the area immediately surrounding the IOSB) and will submit a license amendment request to terminate the 10 CFR Part 50 license and release the remainder of the site for unrestricted use. The spent nuclear fuel and the Greater than Class C (GTCC) waste are stored at the Rancho Seco Independent Spent Fuel Storage Installation (ISFSI), which is licensed under 10 CFR Part 72, independent of the 10 CFR Part 50 licensed site.

Section 1.4 of the LTP discusses the information to be provided to support release of land from the Rancho Seco 10 CFR Part 50 license. The information provided in this report includes a discussion of dismantlement activities performed, final status survey results, and an evaluation of the potential for re-contamination and controls applied to prevent this for each survey unit completed.

The information contained in this submittal, together with the information to be provided in subsequent FSS reports, will be sufficient for the NRC to conclude that, for the land and structures associated with the release, dismantlement has been performed in accordance with the approved license termination plan, and the terminal radiation survey and associated documentation demonstrates that the facility and site are suitable for release in accordance with the criteria for decommissioning in 10 CFR Part 20, Subpart E by meeting a site release criterion of 25 millirem TEDE per year over background.

Once these lands and structures are released, no additional surveys or decontamination of these areas will be required unless the NRC determines that the criteria of 10 CFR Part 20, Subpart E were not met.

### 2.0 Site Information and Physical Description

2.1 Physical Description of Land or Structures to be Released

The land and structures to be released will be described in the application for license amendment and is unchanged by this submittal.

2.1.1 Survey Unit Information Included in this Submittal

As discussed in section 1.0 above, this submittal provides detailed discussion on demolition activities completed and final status survey results for 57 survey units located on the site to be released. Details are provided for each survey unit on survey methods, results, data analysis, and conclusions. Additional information on all other applicable survey units for the site will be provided in subsequent submittals. In all cases, Rancho Seco is providing a complete package of information relating to each survey unit so that the NRC staff can verify that the License Termination Plan has been fully implemented for each survey unit and that the final status survey results support unrestricted release of the land from License DPR-54 in accordance with the proposed license amendment.

This submittal addresses dismantlement and FSS information for survey units associated with the 100000, 200000, 501000, 800004, 800007, 800012, 800014, 813000, 823000, 826000, 832000, 839000, 843000, 848000, 851000, 857000, and 899000 areas. Table 1 provides a description of the survey units addressed in this submittal.

Table 1

Survey Unit	Class	General Description of Survey Unit
F1000001-3	2	100000 Effluent Corridor- The effluent corridor consisted of the open land area bordering "No Name Creek" which was the liquid effluent pathway during plant operation. The survey units had surface areas of 8339, 7744, and 5202 m <sup>2</sup> respectively.
F1000004	1	1000004 Effluent Corridor- This survey unit was a separate class 1 area which resulted from the investigation of elevated measurements within F1000001. The survey unit had a surface area of 198 m <sup>2</sup> .
F2000001	3	2000001 South Outfall- The South Outfall bordered the southern boundary of the Industrial Area and the eastern boundary of the Effluent Corridor. It incorporated the Storm Drain Buffer Zone (800006). Storm water was released within this area. The survey unit had a surface area of 226,567 m <sup>2</sup> .
F5010031	3	5010031 Upper/Outer Yard Pavement- The Upper/Outer Yard is a paved area surrounding the site of the demolished Hazardous Waste Building. The paved area is 2665 m <sup>2</sup> .
F5010032	3	5010032 Hazardous Waste Bld Pad- The Hazardous Waste Building Pad was the concrete foundation of the building used to temporarily store hazardous waste on site. The building itself was demolished leaving only the

		foundation. The survey unit had a surface area of 268 m <sup>2</sup> .
F5010041	3	5010041 Extended Parking Area- The Extended Parking Area is located outside the IA on the north-east side of the site. It was used for contractor parking as well as temporary parking for radwaste shipments. The soil area is 42735 m <sup>2</sup> .
F5010042	3	5010042 Extended Parking Area- The Extended Parking Area is located outside the IA on the north-east side of the site. It was used for contractor parking as well as temporary parking for radwaste shipments. The paved area is 38692 m <sup>2</sup> .
F8000041	3	8000041 Central Transit Area- The Central Transit Area was the primary north to south corridor through the industrial area of the site. The area is 6634 m <sup>2</sup> .
F8000071	3	8000071 West Industrial Area- The West Industrial Area consisted of both soil and paved areas. It was located just north of the retention basins and ran along the west fence to the spray ponds on the north side of the site. The survey unit soil area is 65776 m <sup>2</sup> and the pavement area is 5759 m <sup>2</sup> .
F8000121	3	8000121 Industrial Area Waste Storage Buffer Zone- The IA Waste Storage Buffer Zone consisted of both soil and pavement located around the IOSB and barrel farm. The combined area was 6114 m <sup>2</sup> .
F8000141	3	8000141 North IA Soil- The North IA Area is the open land to the north of the spray ponds. The soil area is 6410 m <sup>2</sup> .
F813000	Typically class 1 floor, lower walls and class 2 upper walls, ceiling	813000 Auxiliary Building- The Auxiliary Building contained the systems used to transport, process and contain radioactive solids, gases and liquids. The surveys presented in this submittal are for the following rooms located on the -20', +20', and grade elevation: 3,13,14,16,17,24,26,27,104-135 ,111 ,112 ,113 ,114 ,115, 206,207, and the mezzanine roof.
F8230001	3	8230001 Intake Pump Structure- The Intake Pump Structure was the concrete support structure for the circulating water pumps located just south of the cooling towers. The survey area is 402 m <sup>2</sup> .
F8261002	3	8261002 LP Turbine Pedestal-The LP Turbine Pedestal was the concrete support structure for the low pressure turbine. It extended from grade level to the 40' elevation of the Turbine Building. The area is 996 m <sup>2</sup> .
F8320001	3	8320001 Diesel Fuel Oil Pad Area- The Diesel Fuel Oil Pad Area is the former location of a concrete foundation pad that supported the fuel oil tank located north of the warehouse. The area is 1560 m <sup>2</sup> .
F8390001	3	8390001 Transformer Yard- The Transformer Yard contained the main station transformers. The yard consists of the concrete pads upon which the transformers sat and the surrounding gravel and rock-covered area. The area is 3385 m <sup>2</sup> .
F8430011,21	3	8430011,21 Barrel Farm- The Barrel Farm was a paved area surrounded by an earthen berm used to store radwaste containers. It was located south of the IOSB.

		The barrel farm area is 1313 m <sup>2</sup> and the berm is 5000 m <sup>2</sup> .
F8480021	3	848000 Retention Basin Buffer Zone- The Retention Basin Buffer Zone was the buffer area surrounding the Retention Basins. The area was 10845 m <sup>2</sup> .
F8480011		8480011 North Retention Basin- The North Retention Basin was one of two concrete-lined holding ponds for the liquid effluent prior to its release offsite. The area is 1432 m <sup>2</sup> .
F8480012		8480012 South Retention Basin- The South Retention Basin was one of two concrete-lined holding ponds for the liquid effluent prior to its release offsite. The area is 1388 m <sup>2</sup> .
F8480017	3	8480017 Retention Basin Surface Soil- The Retention Basin Surface Soil was the "as left" surface soil following demolition and backfilling of the retention basins. The area is 3590 m <sup>2</sup> .
F8480018	2	8480018 Retention Basin Concrete Storage Area-The Retention Basin Concrete Storage Area was a small land area used for the temporary storage of concrete removed from the basins until it could be loaded into containers for transport offsite. The area is 1059 m <sup>2</sup> .
F8510001,2	3	8510001,2 Switch Yard- The Switch Yard contains the electrical switch yard for the facility. It consists of both paved and soil areas. The soil is 16700 m <sup>2</sup> and pavement is 14505 m <sup>2</sup> .
F8570001	3	8570001 Subsurface Vaults- The Subsurface Vaults were the several concrete manholes and hand holes used for access to buried electrical cables located within the Industrial Area yard. The area is 2153 m <sup>2</sup> .
F8990071,2,3	1	8990071,2,3 CDS-Turbine Building Drains- The Turbine Building Drains were the buried and embedded drain pipes which conducted water from the Turbine Building into the clean oily water discharge piping. The areas are 11.1, 22.8, and 180 m <sup>2</sup> respectively.
F8990291	3	8990291 Main Circ Water Pipe- The Circ Water Pipe consisted of 90" to 108" piping which transported water between the circ basin and the condenser bay. The area is 4515 m <sup>2</sup> .
F8990321	2	8990321 Nitrogen System Pipe- The Nitrogen System Pipe was 1" and 2" pipe which transported nitrogen under pressure across the site for use as a cover gas. The area is 24.7 m <sup>2</sup> .
F8990351	3	8990351 Nuclear Service Water Pipe- The Nuclear Service Water Pipe provided cooling water to emergency and shutdown systems such as decay heat coolers and ventilation systems in two trains. The internal surface area is 35.4 m <sup>2</sup> .
F8990471	3	8990471 Service Water Pipe- The Service Water Pipe provided non-domestic water to the site from Folsom South Canal. The area is 250.3 m <sup>2</sup> .
F8990511	2	8990511 Carbon Dioxide System Pipe- The Carbon Dioxide Pipe transported CO <sub>2</sub> under pressure to rooms protected by the Cardox fire protection system. The internal surface area is 2.5 m <sup>2</sup> .
F8990521	1	8990521 Acid Waste System Pipe- The Acid Waste Pipe

		is that portion of the radwaste system that was designed to contain acidic waste from boric acid systems and the battery rooms. The area is 29.6 m <sup>2</sup> .
F8990054	3	8990054 CDS-Storm Drain Non-Discharge Pipe- The Storm Drain Pipe consists of piping that routed storm water from gutters and ditches to locations outside the Industrial Area without going through the normal effluent structure. The area is 4644 m <sup>2</sup> .
F8991073	3	8991073 CDS-Oily Water Separator- The Oily Water Separator pipe routed non-contaminated oily water from building drains through the effluent structure. The area is 55 m <sup>2</sup> .
F8991091		8991091 RHUT Pipe Trench- The RHUT Pipe transported potentially contaminated water from the RHUT Tanks through the storm drains into the effluent structure. The area surveyed upon removal of the pipe was 1544 m <sup>2</sup> .

The locations of the survey areas listed in Table 1 above are shown in Fig. 1.

#### 2.1.2 Survey Unit Information Being Provided in Subsequent Submittals

As discussed previously, Rancho Seco anticipates at least two additional submittals of detailed information on dismantlement activities and final status survey results as these activities are completed. Below is a list of the remaining survey areas to be surveyed and submitted

The schedule and content of each submittal were developed based on a review of the remediation and FSS schedule, as well as in consideration of NRC review requirements. The remediation schedule is dynamic and subject to continued refinement in logic, durations, and completion dates. It is Rancho Seco's intent to maintain the basic submittal schedule provided below. However, as a result of remediation schedule changes, it is possible additional submittals may be made with the goal of providing release records as soon as possible to the NRC to facilitate the agency's timely review.

#### Fourth & Fifth Submittal Scheduled for 7/7/08 & 10/16/08 (~65 Survey Units each)

F800001 Folsom Canal  
F800002 Helo Pad  
F800003 South Scrap Yard  
F800009 SE Industrial Area  
F8000142 North IA Pavement  
F800103 Turbine Building/NSEB Alley  
F8000101,2 Industrial Area Yard  
F800011 Central Corridor  
F808003 Cooling Tower Buffer Area  
F810001 Tank Farm Surface Soil

F810002 Tank Farm Subsurface Soil  
F811000 Reactor Building (~24 Survey Units)  
F812000 Fuel Building (~17 Survey Units)  
F813000 Auxiliary Building (~52 Survey Units)  
F826000 Turbine Building (~16 Survey Units)  
F826025 North Laydown Area  
F826026 South Laydown Area  
F834000 Rail Land  
F837000 RHUT, Aux Boiler Pad  
F848019 Miscellaneous Small Buildings  
F854000 POL Building  
F501005 Access Road  
F899011 Decay Heat System Pipe  
F899040 Reactor Drain System Pipe  
F899042 Radwaste System Pipe  
F899044 Fuel Pool System Pipe

## 2.2 Dismantlement Activities

The Rancho Seco License Termination Plan describes the dismantlement activities to be performed for each area and applicable structure of the Rancho Seco site consistent with the use of the Building Occupant scenario. In general, the LTP indicates that temporary structures will be demolished and that permanent structures will be left standing following final survey. In addition, the ISFSI and IOSB structures will remain. During the period of time represented by this submittal, concrete remediation has taken place in the Auxiliary Building, Turbine Building, and Spent Fuel Building. Interior concrete removal continued in the Reactor Building.

## 3.0 Technical Evaluation

### 3.1 Potential for Cross-Contamination from Subsequent Activities

Since decommissioning activities are being conducted onsite in parallel with final status survey and release decisions, measures must be taken to protect survey areas from contamination during and subsequent to the final status survey. Rancho Seco LTP sections 3.3.5 and 5.2.4 describe contamination and access control measures and periodic routine monitoring practices to prevent and/or detect re-contamination of survey areas during or following FSS. These requirements are implemented, as appropriate, through established procedures as described in the LTP.

The potential for re-contamination and the contamination controls/monitoring for the specific survey areas included in this release phase are discussed and evaluated below:



- 3.1.1 100000 Effluent Corridor  
The majority of the Effluent Corridor was determined to be Class 3 and did not require remediation. A small area was determined to exceed the DCGL and was remediated and resurveyed as a Class 1 area. There is little likelihood that the area will become recontaminated, however the area has been placed under periodic surveillance to ensure it remains in it's "as left" condition.
- 3.1.2 200000 South Outfall  
This area originally received storm water from the industrial area and was successfully surveyed as a Class 3 area. No remediation was required. Because the area drains historically uncontaminated or only slightly contaminated Industrial Area soils and radioactive material is no longer present, there is little likelihood that the soil will become contaminated in the future.
- 3.1.3 501000 Extended Parking Area  
The Extended Parking Area was successfully surveyed as a Class 3 area. No remediation was required. No radioactive material is allowed in the area and there is little likelihood that it will become contaminated in the future. The parking area has been placed under periodic surveillance to detect any potential re-contamination.
- 3.1.4 5010031, 2 Upper/Outer Yard & Hazardous Waste Building Pad  
The Hazardous Waste Storage Building foundation pad and the surrounding Upper/Outer Yard were successfully surveyed as a Class 3 structure and land area. No remediation was required. The foundation pad is all that remains of the structure and it sits in the middle of the paved area north of outside the industrial area. No radioactive material is allowed in the area and there is little likelihood that it will become contaminated in the future. The paved area around the pad has been placed under periodic surveillance to detect any potential re-contamination.
- 3.1.5 800004 Central Transit Yard  
The Central Transit Yard was successfully surveyed as a Class 3 area. No remediation was required. No radioactive material is allowed in the area and there is little likelihood that it will become contaminated in the future. The area has been placed under periodic surveillance to detect any potential re-contamination.
- 3.1.6 800007 West Industrial Area  
The West Industrial Area was successfully surveyed as a Class 3 area. No remediation was required. No radioactive material is allowed in the area and there is little likelihood that it will become

contaminated in the future. The area has been placed under periodic surveillance to detect any potential re-contamination.

3.1.7 800012 Industrial Area Buffer Zone

The Industrial Area Buffer Zone was successfully surveyed as a Class 3 area. No remediation was required. No radioactive material is allowed in the area and there is little likelihood that it will become contaminated in the future. The area has been placed under periodic surveillance to detect any potential re-contamination.

3.1.8 800014 North Industrial Area Soil

The North Industrial Area Soil was successfully surveyed as a Class 3 area. No remediation was required. No radioactive material is allowed in the area and there is little likelihood that it will become contaminated in the future. The area has been placed under periodic surveillance to detect any potential re-contamination.

3.1.9 813000 Auxiliary Building (zones 1-12)

The rooms in zones 1-6 of the Auxiliary Building surveys are some of the most contaminated site areas. The survey units are all classified at least Class 2 for upper walls/ceilings with floors being at least Class 2 but usually Class 1. Most of the lower walls and floors required some concrete remediation. Because remediation is ongoing in adjacent areas, through-wall penetrations are covered, drain pipe openings are plugged, strict access controls are maintained and the areas are subject to periodic surveillance to check for potential re-contamination. Portions of zones 7-12 are Class 2 or 3 with little potential for re-contamination and the controls were somewhat less rigorous.

3.1.10 823000 Intake Structure

The Intake Structure was successfully surveyed as a Class 3 structure. No remediation was necessary and there is little likelihood that the structure will become contaminated in the future. The structure has been placed under periodic surveillance to detect any potential re-contamination.

3.1.11 826000 LP Turbine Pedestal

The LP Turbine Pedestal was successfully surveyed as a Class 3 area. No remediation was required. No radioactive material is allowed in the area and there is little likelihood that it will become contaminated in the future. The area has been placed under periodic surveillance to detect any potential re-contamination.

- 3.1.12 832000 Diesel Fuel Oil Tank Pad Area  
The Diesel Fuel Oil Tank Pad was successfully surveyed as a Class 3 area. No remediation was required. No radioactive material is allowed in the area and there is little likelihood that it will become contaminated in the future. The area has been placed under periodic surveillance to detect any potential re-contamination.
- 3.1.13 839000 Transformer Yard  
The Transformer Yard was successfully surveyed as a Class 3 area. No remediation was required. No radioactive material is allowed in the area and there is little likelihood that it will become contaminated in the future. The area has been placed under periodic surveillance to detect any potential re-contamination.
- 3.1.14 843000 Barrel Farm  
The Barrel Farm was an asphalt covered pad surrounded by an earthen berm used to store radwaste containers during plant operation. No remediation was required but the asphalt pad and soil berm were removed. There is little likelihood that the area will become contaminated in the future. The area has been placed under periodic surveillance to detect any potential re-contamination.
- 3.1.15 8480021 Retention Basin Buffer Zone  
The Retention Basin Buffer Zone was the buffer between the remediated basins and the surrounding land. The area was successfully surveyed as a Class 3 area. No radioactive material is allowed in the area and there is little likelihood that it will become contaminated in the future.
- 3.1.16 8480011,12 North and South Retention Basins  
The concrete retention basins held the liquid effluent from plant operation prior to its release overboard. The basins were remediated, all of the concrete was removed along with any contaminated soil. There is no likelihood that the structures will become contaminated in the future because all radioactive liquid releases have been terminated.
- 3.1.17 8480017 Retention Basin Surface Soil  
The Retention Basin Surface Soil is the clean material that was used to backfill the retention basins after demolition. There is little likelihood that the soil will become contaminated in the future because all radioactive releases have been terminated.
- 3.1.18 8480018 Retention Basin Concrete Storage Area

The Retention Basin Concrete Storage Area was the location used to temporarily store the concrete removed from the retention basins during demolition until it could be packaged and shipped. The area was successfully surveyed as a Class 2 area. No radioactive material is allowed in the area and there is little likelihood that the soil will become contaminated in the future.

3.1.19 851001,2 Switch Yard

The electrical Switch Yard is still in operation. The soil and pavement was successfully surveyed as a Class 3 area. No remediation was required. Access to the area is controlled by operations personnel and there is little likelihood that the structure will become contaminated in the future. The area has been placed under periodic surveillance to detect any potential re-contamination.

3.1.20 857000 Subsurface Vaults

The Subsurface Vaults were the concrete manholes and hand holes used for access to buried electrical cables. The only potential for contamination was from contaminated water in-leakage. The vaults were successfully surveyed as Class 3. Contaminated soil in the surrounding yard has been previously remediated. No radioactive material is allowed in the area and there is little likelihood that it will become contaminated in the future. The area around the vaults has been placed under periodic surveillance to detect any potential re-contamination.

3.1.21 899000 Buried or Embedded Piping Systems

The pipe remaining on site is surveyed and grit blasted, if necessary, to remove surface contamination. Once final surveys are complete, the pipes are plugged to prevent recontamination or, if necessary, grouted in place. There is little likelihood that piping will become re-contaminated following final survey. In addition, the rooms containing access to the pipes are placed under periodic surveillance to detect any potential re-contamination once FSS is complete.

#### **4 Final Status Survey Report**

Rancho Seco LTP section 5.7.3 identifies the contents of the written reports of final status survey results that are to be submitted to the NRC. The contents include the items described in NUREG-1757, Vol. 2, Section 4.5. The survey unit design details and results are provided below in summary fashion. Specific survey unit design details and results are provided in a copy of each survey unit summary report in Attachment I of this submittal.

#### 4.1 Overview of Results

The following survey units are included in this report:

F100001-4 Effluent Corridor  
F200001 South Outfall  
F5010031 Upper/Outer Yard Pavement  
F5010032 Hazardous Waste Building Foundation Pad  
F5010041,2 Extended Parking Area  
F800004 Central Transit Area  
F800007 West Industrial Area  
F800012 IA Waste Buffer  
F8000141 North Industrial Area  
F823000 Intake Structure  
F8261002 LP Turbine Pedestal  
F832000 Diesel Oil Tank Pad Area  
F839000 Transformer Yard  
F843001,2 Barrel Farm  
F8480017 Retention Basin Surface Soil  
F8480018 Retention Basin Concrete Storage Area  
F8480011,12 North and South Retention Basins  
F8480021 Retention Basin Buffer Zone  
F851001,2 Switch Yard Land  
F857000 Sub Surface Vaults  
F813000 Auxiliary Building (Rooms 3, 13, 14, 16, 17, 24, 26, 27, 104-135, 111, 112, 113, 114, 115, mezzanine roof, 206 and 207.)  
F8990054 CDS-Storm Drains Offsite  
F899007 CDS-Turbine Building Drains  
F899029 Main Circ Water Pipe  
F899032 Nitrogen Pipe  
F899035 Nuclear Service Water Pipe  
F899047 Service Water Pipe  
F899051 Carbon Dioxide Pipe  
F899052 Acid Waste Pipe  
F8991073 CDS-Oily Water Separator  
F899109 RHUT Pipe Trench

The summary report for each survey unit contains a description of the survey unit; design information, including classification, size, number of measurements, map, scan coverage, and DCGL; survey results; survey unit investigations (anomalous data); data assessment results, including statistical evaluations, if applicable; changes in initial survey unit assumptions on extent of residual activity, an evaluation of LTP changes subsequent to the FSS of the survey unit and survey unit conclusions.

Overall, the attached survey unit summary reports demonstrate that the survey units meet the criteria for release for unrestricted use in accordance with the NRC approved Rancho Seco License Termination Plan.

#### 4.2 Discussion of Changes to FSS Program

The purpose of this section is to discuss changes to the FSS program. At the time of this submittal there have been no changes made to the FSS Program. Procedures were revised to tighten contamination controls in FSS areas but there was no effect on the final surveys.

#### 4.3 Final Status Survey Methodology

This section summarizes the implementation of the LTP Final Status Survey methodology for the survey units that are included in this first report supporting the release of remaining non-ISFSI and non-IO SB land. A table is provided below that lists the key FSS design features for each survey unit. These design features include the survey unit classification and size, the standard deviation and Lower Boundary of the Gray Region (LBGR) used for determining the number of direct measurements taken, the percent scan coverage, the design DCGL<sub>EMC</sub> and the number of measurements required. This report covers only structures for which the DCGL is 43,000 dpm/100 cm<sup>2</sup> (16,000 dpm/100 cm<sup>2</sup> for special areas) as well as pipe which has a DCGL of 100,000 dpm/100 cm<sup>2</sup> and soil or paved areas which have a DCGL of 52.6 pCi/g Cs-137<sub>sur</sub> and 12.6 pCi/g Co-60. The standard deviations listed were obtained from site characterization data or survey unit specific measurements. The Type 1 and 2 Errors are the default values of 0.05 and the LBGR is initially based on 50% of the DCGL.

Table 2 Survey Unit Design Parameters

Survey Unit ID	Class	Survey Unit Size (m <sup>2</sup> )	Standard Deviation	LBGR	Design DCGL <sub>EMC</sub>	Units	Number of Measurements	% Scan
F1000001 Effluent Corridor								
1	2	8339	14.7	27.8	N/A	pCi/g	19	55
F1000002 Effluent Corridor								
2	2	7744	14.7	25.6	N/A	pCi/g	17	23
F1000003 Effluent Corridor								
3	2	5202	14.7	27.8	N/A	pCi/g	21	23
F1000004 Effluent Corridor								
4	1	198	9.03	25.8	108	pCi/g	15	100
F2000001 South Outfall								
1	3	226567	0.15	25.6	N/A	pCi/g	14	1
F5010031 Upper/Outer Yard Pavement								
1	3	2665	0.034	25.6	N/A	pCi/g	14	14.7
F5010032 Hazardous Waste Building Pad								
2	3	268	397	21500	N/A	dpm/100 cm <sup>2</sup>	14	18
F5010041 Extended Parking Area Soil								
1	3	42735	0.058	51	N/A	pCi/g	14	7.2
F5010042 Extended Parking Area Pavement								
2	3	38692	0.058	25.6	N/A	pCi/g	14	3.3
F8000041 Central Transit Area								

Survey Unit ID	Class	Survey Unit Size (m <sup>2</sup> )	Standard Deviation	LBGR	Design DCGL <sub>EMC</sub>	Units	Number of Measurements	% Scan
1	3	6634	0.01	25.6	N/A	pCi/g	14	10
F800071 West Industrial Area								
1	3	88190	0.034	25.6	N/A	pCi/g	14	6.4
F800121 Industrial Area Buffer Zone								
1	3	6114	0.01	25.6	N/A	pCi/g	15	10
F800141 North Industrial Area								
1	3	55761	0.03	25.6	N/A	pCi/g	14	9.8
F8130051 Aux Building Rm 3 Lower								
1	1	141	9976	21500	156520	dpm/100 cm <sup>2</sup>	26	100
F8130061 Aux Building Rm 3 Upper								
1	1	302	9976	21500	154800	dpm/100 cm <sup>2</sup>	44	100
F8130131 Aux Building Rm 13								
1	1	68.2	12035	21500	207561	dpm/100 cm <sup>2</sup>	18	100
F8130141 Aux Building Rm 14								
1	1	61.6	12035	21500	222282	dpm/100 cm <sup>2</sup>	16	100
F8130181 Aux Building Rm 16								
1	1	114	12035	21500	146200	dpm/100 cm <sup>2</sup>	21	100
F8130191 Aux Building Rm 17								
1	1	167	12035	21500	141900	dpm/100 cm <sup>2</sup>	25	100
F8130321 Aux Building Rm 24								
1	1	153	12035	21500	150500	dpm/100 cm <sup>2</sup>	29	100
F8130351 Aux Building Rm 26								
1	1	182	12035	8050	99015	dpm/100 cm <sup>2</sup>	65	100
F8130361 Aux Building Rm 27								
1	1	283.9	12035	21500	142760	dpm/100 cm <sup>2</sup>	43	100
F8130881 Aux Building Rms 104-135								
1	3	4926	6935	21500	N/A	dpm/100 cm <sup>2</sup>	14	6
F8130991 Aux Building Rm 112								
1	1	243	6935	21500	150500	dpm/100 cm <sup>2</sup>	42	100
F8131001 Aux Building Rm 111								
1	2	83	6935	21500	N/A	dpm/100 cm <sup>2</sup>	17	30
F8131011 Aux Building Rm 113								
1	2	155	6935	21500	N/A	dpm/100 cm <sup>2</sup>	22	39
F8131021 Aux Building Rms 114, 136, 137								
1	1	242.5	6935	21500	141900	dpm/100 cm <sup>2</sup>	46	100
F8131031 Aux Building Rms 115, 203, 315								
1	2	199	6935	21500	N/A	dpm/100 cm <sup>2</sup>	15	80
F8131311 Aux Building Mezzanine Roof								
1	3	482	5461	21500	N/A	dpm/100 cm <sup>2</sup>	14	10

Survey Unit ID	Class	Survey Unit Size (m <sup>2</sup> )	Standard Deviation	LBGR	Design DCGL <sub>EMC</sub>	Units	Number of Measurements	% Scan
F8131351 Aux Building Rm 206								
1	3	294	5461	21500	N/A	dpm/100 cm <sup>2</sup>	14	10
F8131361 Aux Building Rm 207								
1	3	842	5461	21500	N/A	dpm/100 cm <sup>2</sup>	14	10
F8230001 Intake Structure								
1	3	402	667	21500	N/A	dpm/100 cm <sup>2</sup>	14	5
F8261002 LP Turbine Pedestal								
2	3	996	3130	33610	N/A	dpm/100 cm <sup>2</sup>	14	11
F8320001 Diesel Fuel Oil Tank Pad Area								
1	3	1560	0.01	25.6	N/A	pCi/g	14	9
F8390001 Transformer Yard								
1	3	3385	0.432	25.6	N/A	pCi/g	14	11.6
F8430011 Barrel Farm Soil								
1	1	1313	1.46	25.6	64	pCi/g	16	100
F8430021 Barrel Farm Berm								
1	2	5000	0.034	25.6	N/A	pCi/g	15	33
F8480021 Retention Basin Buffer Zone								
1	3	10845	0.047	25.6	N/A	pCi/g	14	13.7
F8480011 North Retention Basin								
1	1	1432	0.49	25.6	64.6	pCi/g	29	100
F8480012 South Retention Basin								
2	1	1388	0.49	25.6	64.8	pCi/g	21	100
F8480017 Retention Basin Surface Soil								
7	3	3590	0.49	25.6	N/A	pCi/g	14	11.7
F8480018 Retention Basin Concrete Storage Area								
8	2	1059	0.49	25.6	N/A	pCi/g	16	26.7
F8510001 Switch Yard Soil								
1	3	16700	0.008	25.6	N/A	pCi/g	14	5
F8510002 Switch Yard Pavement								
2	3	14505	0.097	25.6	N/A	pCi/g	14	3
F8570001 Subsurface Vaults								
1	3	2153	87	21500	N/A	dpm/100 cm <sup>2</sup>	19	9
F8990071 CDS-Turbine Building Drains								
1	1	11.1	23464	50000	100000	dpm/100 cm <sup>2</sup>	409	100
F8990072 CDS-Turbine Building Drains								
2	1	22.8	23464	50000	100000	dpm/100 cm <sup>2</sup>	819	100
F8990073 CDS-Turbine Building Drains								
3	1	180	23464	50000	100000	dpm/100 cm <sup>2</sup>	3997	100
F8990291 Main Circ Water Pipe								
1	3	4515	99	50000	N/A	dpm/100 cm <sup>2</sup>	4	4
F8990321 Nitrogen Pipe								
1	2	24.7	9677	50000	N/A	dpm/100 cm <sup>2</sup>	109	11
F8990351 Nuclear Service Water Pipe								
1	3	35.4	125	50000	N/A	dpm/100	14	7



Survey Unit ID	Class	Survey Unit Size (m <sup>2</sup> )	Standard Deviation	LBGR	Design DCGL <sub>EMC</sub>	Units	Number of Measurements	% Scan
						cm <sup>2</sup>		
F8990471 Service Water Pipe								
1	3	250.3	1992	50000	N/A	dpm/100 cm <sup>2</sup>	71	2
F8990511 Carbon Dioxide Pipe								
1	2	2.5	8930	50000	N/A	dpm/100 cm <sup>2</sup>	40	72
F8990521 Acid Waste Pipe								
1	1	29.6	13000	50000	100000	dpm/100 cm <sup>2</sup>	918	100
F8990054 CDS-Clean Drain Pipe								
4	3	4644	392	50000	N/A	dpm/100 cm <sup>2</sup>	402	2
F8991073 CDS-Oily Water Separator								
3	3	55	0.09	50.93	N/A	pCi/g	15	100
F8991091 RHUT Pipe Trench								
1	2	1544	9.83	25.6	N/A	pCi/g	53	100

#### 4.4 Final Status Survey Results

The methods used to determine the number of direct measurements to be taken are described in the LTP and the specific survey unit summary reports provided in Attachment I. Key survey results are given in Table 3 below.

Table 3 Survey Unit FSS Results

Scan Measurement Range	No. Direct Meas. Taken	Mean Direct Result	Maximum Direct Result	Direct Standard Deviation	Units	No. Scan Elevated Areas
F1000001 Effluent Corridor						
0.014-0.463	19	0.047	0.399	0.103	unity	1
F1000002 Effluent Corridor						
0.127-6.53	17	0.691	4.32	1.43	pCi/g	0
F1000003 Effluent Corridor						
0.015-0.168	21	0.032	0.439	0.094	unity	0
F1000004 Effluent Corridor						
0.018-0.225	15	0.153	0.549	0.152	unity	0
F2000001 South Outfall						
MDA-0.342	14	0.272	0.531	0.159	pCi/g	0
F5010031 Upper/Outer Yard Pavement						
<0.358	14	0.764	0.847	0.049	pCi/g	0
F5010032 Hazardous Waste Building Pad						
4577-5655	14	2503	2666	102	dpm/100 cm <sup>2</sup>	0
F5010041 Extended Parking Area Soil						
<0.371	14	0.093	0.251	0.054	pCi/g	0
F5010042 Extended Parking Area Pavement						
<0.441	14	0.677	0.736	0.038	pCi/g	0
F8000041 Central Transit Area						
<0.331	14	0.665	0.896	0.338	pCi/g	0
F8000071 West Industrial Area						
<0.344	14	0.064	0.090	0.015	pCi/g	0
F8000121 Industrial Area Buffer Zone						
<0.350	15	0.365	0.852	0.390	pCi/g	0

Scan Measurement Range	No. Direct Meas. Taken	Mean Direct Result	Maximum Direct Result	Direct Standard Deviation	Units	No. Scan Elevated Areas
F8000141 North Industrial Area						
<0.384	14	0.078	0.201	0.039	pCi/g	0
F8130051 Aux Building Rm 3 Lower						
1922-189618	26	3560	27664	5084	dpm/100 cm <sup>2</sup>	6
F8130061 Aux Building Rm 3 Upper						
767-51835	44	2076	4373	869	dpm/100 cm <sup>2</sup>	2
F8130131 Aux Building Rm 13						
3297-91179	18	2236	4596	729	dpm/100 cm <sup>2</sup>	1
F8130141 Aux Building Rm 14						
1356-114477	16	2719	11365	2486	dpm/100 cm <sup>2</sup>	5
F8130181 Aux Building Rm 16						
1532-81309	21	3867	23234	4907	dpm/100 cm <sup>2</sup>	0
F8130191 Aux Building Rm 17						
1496-132853	25	2294	4762	723	dpm/100 cm <sup>2</sup>	0
F8130321 Aux Building Rm 24						
3551-124491	29	2379	7812	1628	dpm/100 cm <sup>2</sup>	0
F8130351 Aux Building Rm 26						
4705-68478	65	2422	6284	844	dpm/100 cm <sup>2</sup>	5
F8130361 Aux Building Rm 27						
1996-57103	43	2045	6790	800	dpm/100 cm <sup>2</sup>	0
F8130881 Aux Building Rms 104-135						
2029-6419	14	1629	1940	233	dpm/100 cm <sup>2</sup>	0
F8130991 Aux Building Rm 112						
1228-4531	42	3008	8077	1006	dpm/100 cm <sup>2</sup>	2
F8131001 Aux Building Rm 111						
2171-3213	17	1338	1494	91	dpm/100 cm <sup>2</sup>	0
F8131011 Aux Building Rm 113						
4284-14576	22	1766	2578	253	dpm/100 cm <sup>2</sup>	0
F8131021 Aux Building Rms 114, 136, 137						
<1033-81018	46	1777	8149	1216	dpm/100 cm <sup>2</sup>	0
F8131031 Aux Building Rms 115, 203, 315						
1810-5759	15	1267	1504	116	dpm/100 cm <sup>2</sup>	0
F8131311 Aux Building Mezzanine Roof						
3595-5583	14	1556	1805	149	dpm/100 cm <sup>2</sup>	0
F8131351 Aux Building Rm 206						
2758-6221	14	1620	1961	231	dpm/100 cm <sup>2</sup>	0
F8131361 Aux Building Rm 207						
2810-6668	14	1454	1795	140	dpm/100 cm <sup>2</sup>	0
F8230001 Intake Structure						
4013-6896	14	2284	2630	262	dpm/100 cm <sup>2</sup>	0
F8261002 LP Turbine Pedestal						
1584-3545	14	1708	1940	160	dpm/100 cm <sup>2</sup>	0
F8320001 Diesel Fuel Oil Tank Pad Area						
<0.283	14	0.050	0.063	0.006	pCi/g	0
F8390001 Transformer Yard						
<0.339	14	0.285	0.875	0.362	pCi/g	0
F8430011 Barrel Farm Soil						

Scan Measurement Range	No. Direct Meas. Taken	Mean Direct Result	Maximum Direct Result	Direct Standard Deviation	Units	No. Scan Elevated Areas
<0.344	16	0.063	0.139	0.021	pCi/g	0
F8430021 Barrel Farm Berm						
MDA-0.584	15	0.057	0.077	0.088	pCi/g	0
F8480021 Retention Basin Buffer Zone						
<0.328	14	0.062	0.146	0.025	pCi/g	0
F8480011 North Retention Basin						
0.009-0.084	29	0.043	0.192	0.048	unity	0
F8480012 South Retention Basin						
0.009-0.069	21	0.058	0.421	0.099	unity	0
F8480017 Retention Basin Surface Soil						
<0.296	14	0.059	0.097	0.012	pCi/g	0
F8480018 Retention Basin Concrete Storage Area						
<0.024	16	0.013	0.040	0.012	unity	0
F8510001 Switch Yard Soil						
<5.2	14	0.061	0.090	0.016	pCi/g	1
F8510002 Switch Yard Pavement						
<0.382	14	0.820	0.877	0.028	pCi/g	0
F8570001 Subsurface Vaults						
262-625	19	400	625	87	dpm/100 cm <sup>2</sup>	0
F8990071 CDS-Turbine Building Drains						
838-20923	409	2901	20923	1139	dpm/100 cm <sup>2</sup>	0
F8990072 CDS-Turbine Building Drains						
919-3891	819	1663	3891	385	dpm/100 cm <sup>2</sup>	0
F8990073 CDS-Turbine Building Drains						
818-50087	3997	2236	50087	2445	dpm/100 cm <sup>2</sup>	0
F8990291 Main Circ Water Pipe						
<216	4	171	216	31	dpm/100 cm <sup>2</sup>	0
F8990321 Nitrogen Pipe						
2384-4376	109	3444	4376	430	dpm/100 cm <sup>2</sup>	0
F8990351 Nuclear Service Water Pipe						
6101-10249	14	8258	10249	1345	dpm/100 cm <sup>2</sup>	0
F8990471 Service Water Pipe						
1036-1580	71	1433	1580	93	dpm/100 cm <sup>2</sup>	0
F8990511 Carbon Dioxide Pipe						
1655-2275	40	1929	2275	164	dpm/100 cm <sup>2</sup>	0
F8990521 Acid Waste Pipe						
1267-75621	918	3327	75621	5275	dpm/100 cm <sup>2</sup>	0
F8990054 CDS-Clean Drain Pipe						
6516-9997	402	8211	9997	873	dpm/100 cm <sup>2</sup>	0
F8991073 CDS-Oily Water Separator						
2625-2926 dpm/100 cm <sup>2</sup> Pipe Survey	15	0.049	0.064	0.006	pCi/g	0
F8991091 RHUT Pipe Trench						
<0.006-0.111	53	0.008	0.062	0.008	unity	0

#### 4.5 Survey Unit Conclusions

Rancho Seco concludes that this information is sufficient for the NRC to make a determination equivalent to 10CFR50.82 (a)(11) regarding the survey units contained in this submittal. The surveys for these survey units and associated documentation demonstrate that these areas of the facility and site are suitable for release in accordance with the criteria for decommissioning in 10CFR20, subpart E by meeting a site release criteria of 25 millirem TEDE per year over background for all dose pathways in accordance with the approved License Termination Plan.

As stated in section 4 of the Rancho Seco LTP, as long as the residual activity within a survey unit is less than the DCGL (i.e., the survey unit average activity is less than the DCGL and the EMC criterion has been met), the ALARA criterion has been achieved.

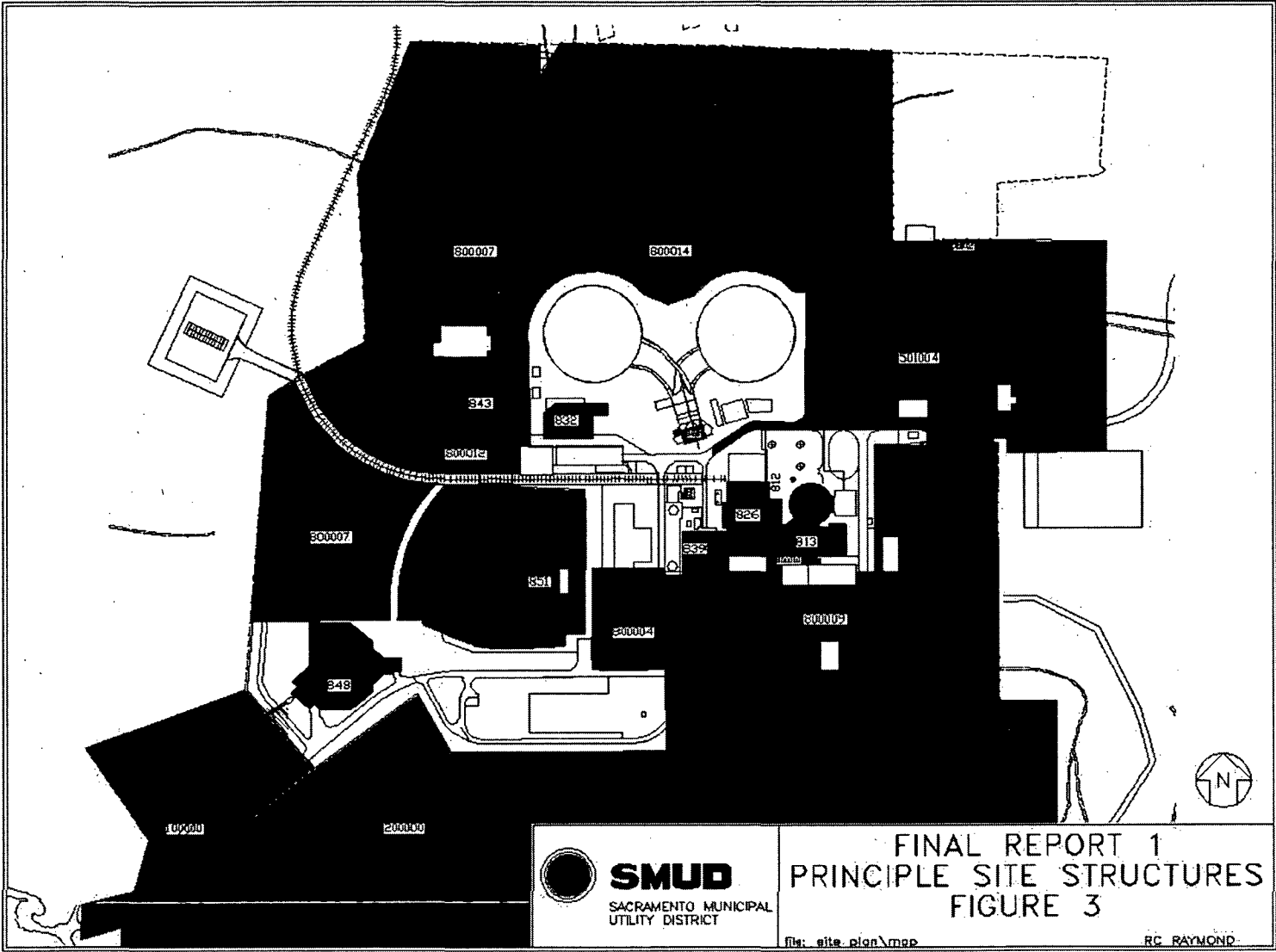
#### 4.6 Revision 1 of Summary Report F8130541, Aux Building Room 40

As part of the corrective action for DQ#07-020, gamma surveys were made in room 40 once remediation was complete in the adjacent pump alley. The gamma survey indicated the presence 5 small elevated areas (less than 0.5 m<sup>2</sup> in total). In the interest of completeness, those areas were evaluated and added to Table 3-1 of the Summary Report for the survey unit. That revised report is included in Attachment 1 of this Report.

## 6.0 References

Rancho Seco License Termination Plan, rev. 0, submitted 4/07.

DQ#07-020, "Elevated Activity in Areas Having Already Completed FSS".



Attachment 1  
Survey Unit Summary Reports