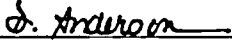
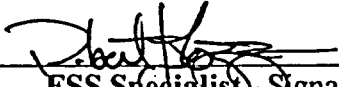





**MAINE YANKEE
FINAL STATUS SURVEY RELEASE RECORD
FR-2900 ROADS/RAILROAD
SURVEY UNIT 1**

Prepared By:	<div style="text-align: center;"> _____ FSS Engineer - Signature <u>D ANDERSON</u> _____ Printed Name</div>	Date: <u>2/1/05</u>
Reviewed By:	<div style="text-align: center;"> _____ FSS Specialist - Signature <u>ROBERT TORZIC</u> _____ Printed Name</div>	Date: <u>2/1/05</u>
Reviewed By:	<div style="text-align: center;"> _____ Independent Review - Signature <u>WJ Cooper</u> _____ Printed Name</div>	Date: <u>2/3/05</u>
Approved By:	<div style="text-align: center;"> _____ Superintendent, FSS - Signature <u>George Pillsbury</u> _____ Printed Name</div>	Date: <u>2/15/05</u>
Approved By:	<div style="text-align: center;"> _____ FSS, MOP - Signature <u>JAMES R. PARKER</u> _____ Printed Name</div>	Date: <u>2/17/05</u>

**MAINE YANKEE
FINAL STATUS SURVEY RELEASE RECORD
FR-2900 ROADS/RAILROAD
SURVEY UNIT 1**

A. SURVEY UNIT DESCRIPTION

Survey Unit FR-2900-01 consisted of the East Plant Access Road and adjoining parking lots located along the Back River. The road extended from site coordinates 408,000N and 624,500E to 409,750N and 625,250E using the Maine State Coordinate System (West Zone) NAD 1927, as shown on Map FR 2900 SITE (Attachment 1).

The East Access Road served as the primary access and egress route during Maine Yankee's operating history and for a portion of the decommissioning activities. As a result, radioactive materials were routinely transferred along the route. The 8,878 m² survey design area encompassed the following lands:

- Road surfaces extending from the former Information Center footprint to Old Ferry Road
- Information Center parking area
- Overflow parking lot B adjacent to the East Plant Access Road
- Access road to the Maine Yankee boat ramp
- Parking lots adjacent to Bailey Barn.

The majority of surfaces within Survey Unit 1 consisted of sub-asphalt soil. However, 356 m² of asphalt remained where the Plant Access road joined Old Ferry Road. The survey area was located entirely outside the Restricted Area and is illustrated in more detail on Map FR 2900-1 (Attachment 1). The design area of 8,878 m² was used to determine the locations of direct point measurements. Due to a Maine Yankee commitment, gamma scans were performed on the road footprint and 1 meter on both sides of the roadway. This 1-meter border on both roadway edges was not included in the original survey design area calculation. As a result, an additional 1,160 m² of soils received gamma scans outside of the original survey design.

B. SURVEY UNIT DESIGN INFORMATION

The survey unit was designated a Class 3 land survey per the LTP (Table 5-1C). The survey unit design parameters for FR-2900 as a Class 3 survey are shown in Table 1. Given a relative shift of 3.0, it was determined that 14 direct measurements were required for the Sign Test. Measurement locations were randomly determined and are illustrated on Map FR 2900-1 SU/DP (Attachment 1). Direct measurements (soil samples) were collected from the required locations and analyzed with laboratory gamma spectroscopy instrumentation.

Because the roadway had served as the principal pathway for radioactive materials routinely entering and leaving site, gamma scans were performed over 100% of the road footprint and 1 meter on either side using either E-600/SPA-3 or *in situ* gamma spectroscopy (ISOCS) instrumentation. Proximity to the Independent Spent Fuel Storage Installation (ISFSI) determined the choice of instrumentation, as high backgrounds prohibited the use of E-600/SPA-3 instruments on that portion of road adjacent to the ISFSI berm. In addition to the road footprint, scans were also performed in a 2 meter perimeter around the parking lots adjacent to the Bailey Barn (Sections I and J) and a portion of the driveway into the former Information Center parking lot (Section N) at a water runoff location. To facilitate data handling due to the size of the area, the survey unit was segregated into the sections delineated on Map FR 2900-1 Areas (Attachment 1).

For those portions of the road scanned with E-600/SPA-3 instrumentation, 2 by 3 meter grids were established by dividing the road width plus 1 meter on either side (9.25-meter total width) into 3 equal size lanes. The lanes were then subdivided into 2 meter lengths, creating grids of approximately 6.2 m². To match the road design, 2-meter wide perimeters were established around the Section I and J parking lots. The perimeters were further subdivided into 5-meter lengths. At the former Information Center driveway, a 45-meter stretch along the water runoff area on the access ramp was also divided into 2 by 5 meter grids for scanning purposes. Configuration of the scans are illustrated on the applicable maps listed in Table 1A and provided in Attachment 1.

Road sections scanned with ISOCS detectors (Sections D, E, F, G and the asphalt portion of A) used overlapping 28 m² fields of view to obtain the 100% scan coverage. The ISOCS detector was positioned perpendicular to the surface at a 3-meter distance, using a 90-degree collimator. Configuration of the scans are also provided on applicable maps as given in Table 1A and included in Attachment 1. Because the perimeter of the boat access road in Section K and the "B" parking lot in Sections L and M were surveyed previously under FR-1800, Bailey House Land Area, scans were not performed in these sections.

A total of 5,805 m² was scanned during the performance of this survey, exceeding the 1% to 10% requirements for a Class 3 area. The road scans included soils 1 meter on either side although the original design estimate did not account for those zones. The survey instruments used are listed by model and serial number in Attachment 2 (Table 2-1). Scan MDCs are also listed in Attachment 2 (Table 2-2) and are compared to the DCGL and the investigation level.

For the areas scanned with E-600/SPA-3 instrumentation, background values were based on local scaler values in the survey unit. These background values were used to establish scan alarm setpoints, and to confirm the scan MDCs used were appropriate.

TABLE 1A

Section	Scan Grid Size	Medium	Instruments Used	Map
A	28 m ² field of view	asphalt	ISOCS	FR2900-1 SS AA
A	2 m by 3 m	sub-asphalt soil	E-600/SPA-3	FR2900-1 SS A
B	2 m by 3 m	sub-asphalt soil	E-600/SPA-3	FR2900-1 SS B
B	2 m by 3 m	sub-asphalt soil	E-600/SPA-3	FR2900-1 SS C
B	2 m by 5 m (perimeter)	sub-asphalt soil	E-600/SPA-3	FR2900-1 SS J
C	2 m by 3 m	sub-asphalt soil	E-600/SPA-3	FR2900-1 SS C
D	28 m ² field of view	sub-asphalt soil	ISOCS	FR2900-1 SS D
E	28 m ² field of view	sub-asphalt soil	ISOCS	FR2900-1 SS E
F	28 m ² field of view	sub-asphalt soil	ISOCS	FR2900-1 SS F
G	28 m ² field of view	sub-asphalt soil	ISOCS	FR2900-1 SS G
H	2 m by 3 m	sub-asphalt soil	E-600/SPA-3	FR2900-1 SS H
I	2 m by 5 m (perimeter)	sub-asphalt soil	E-600/SPA-3	FR2900-1 SS I
J	2 m by 5 m (perimeter)	sub-asphalt soil	E-600/SPA-3	FR2900-1 SS J
J	2 m by 3 m	sub-asphalt soil	E-600/SPA-3	FR2900-1 SS B
K	N/A	sub-asphalt soil	N/A	FR2900-1 SS K
L	N/A	sub-asphalt soil	N/A	FR2900-1 SS L
M	N/A	sub-asphalt soil	N/A	FR2900-1 SS M
N	2 m by 5 m (portion of perimeter)	sub-asphalt soil	E-600/SPA-3	FR2900-1 SS N

TABLE 1
SURVEY UNIT DESIGN PARAMETERS

Survey Unit	Design Criteria	Basis
Area	8,878 m ²	No limit for Class 3, based on LTP Table 5-2
Number of Direct Measurements Required	14	Based on adjusted LBGR of 3.5 pCi/g, sigma ¹ of 0.23 pCi/g and a relative shift of 3.0. Type I = Type II = 0.05
Sample Area	N/A	Class 3 Area
Sample Grid Spacing	N/A	Class 3 Area
Scan Grid Area	6 m ² - 10 m ² grids for E-600/SPA-3; ISOCS scan at 3-meters	See Section B
Area Factor	N/A	Class 3 Area
Scan Area	5,805 m ²	Class 3 Area – 1% to 10% (LTP Table 5-3)
Background		
SPA-3 (Scan)	11,107 cpm	Sections A, B-1, I
	11,822 cpm	Section B-2
	12,627 cpm	Section B-3
	13,671 cpm	Section C-1
	14,623 cpm	Section C-2
	15,629 cpm	Section C-3
	13,300 cpm	Section H-1
	14,300 cpm	Section H-2
	13,700 cpm	Section H-3
	12,500 cpm	Section H-4
	12,900 cpm	Section H-5
	13,600 cpm	Section H-6
	12,600 cpm	Section H-7
	11,457 cpm	Section J
	12,567 cpm	Section N
Scan Investigation Level (E-600/SPA-3)	3 Sigma of Background plus Background	See Table 2-2, Attachment 2 (Reference 7)
Scan Investigation Level (ISOCS)	1.0 pCi/g Cs-137	ISOCS investigation level with detector at 3-meter height (Reference 6)
DCGL	4.2 pCi/g Cs-137	LTP, Rev. 3, Section 6.7
Design DCGL _{EMC}	N/A	Class 3 Area

¹ LTP Revision 3, Table 5-1C for Bailey House Land Area, R1800

C. SURVEY RESULTS

As required, 14 direct soil measurements were performed in Survey Unit 1 and the results are presented in Table 2. All direct measurements were below the DCGL.

ISOCS gamma scans were performed at 283 locations using an investigation level of 1.0 pCi/g Cs-137. The gamma scans were performed for a sufficient count time to achieve a typical Minimum Detectable Activity (MDA) of approximately 10% of the DCGL. All scan activity levels were below the MDAs which were below the prescribed investigation level. Therefore, no investigations were required in those areas where ISOCS scans were performed.

A total of 410 grids were scanned using E-600/SPA-3 instrumentation. Only 32 verified scan alarms were received, which equates to less than 8% of all grids scanned. The investigation of verified alarms is discussed in Section D.

TABLE 2
DIRECT MEASUREMENTS

Sample Location		Cs-137 (pCi/g)	Uncertainty (pCi/g)
FR2900-1-3S001SS	<	4.12E-02	
FR2900-1-3S002SS	<	4.78E-02	
FR2900-1-3S003SS		5.26E-02	3.06E-02
FR2900-1-3S004SS	<	4.52E-02	
FR2900-1-3S005SS	<	4.68E-02	
FR2900-1-3S006SS	<	5.34E-02	
FR2900-1-3S007SS	<	4.58E-02	
FR2900-1-3S008SS	<	4.72E-02	
FR2900-1-3S009SS	<	4.36E-02	
FR2900-1-3S010SS	<	4.71E-02	
FR2900-1-3S011SS	<	4.67E-02	
FR2900-1-3S012SS	<	4.61E-02	
FR2900-1-3S013SS	<	4.82E-02	
FR2900-1-3S014SS	<	4.26E-02	
Sample Mean		4.67E-02	
Median		4.68E-02	
Standard Deviation		3.32E-03	
Sample Range		4.12E-02 – 5.34E-02	

“<” indicates MDA value. Bold indicates positive detection value.
Samples were also analyzed for Co-60. All were less than MDA.

D. SURVEY UNIT INVESTIGATIONS PERFORMED AND RESULTS

Soil scans performed with the E-600/SPA-3 during initial surveys identified 32 scanned grids with verified alarms. An investigation package was written to perform additional scans within the identified grids, mark and log each verified alarm and collect a soil sample at the highest verified alarm location. Locations of grids requiring investigation scans are illustrated on the applicable maps as provided in Table 3. As a result of the investigation, a total of 32 soil samples were collected. Results of the soil samples are presented in Attachment 3-1 (Attachment 3). All soil sample results were below the DCGL.

The investigation was conducted via survey investigation package XR2900-01.

TABLE 3

XR-2900 INVESTIGATION SURVEY MAPS

Section	Investigated Grids	Total Area in m ²	Map
A	S003	6.2	XR2900-1 SS A
B-1	S106, S107, S109, S110, S111, S112, S115, S118,	49.6	XR2900-1 SS B
B-3	S189, S192, S195, S198, S201	31.0	XR 2900-1 SS C
C-1	S225, S231, S237, S240, S243, S246, S249, S252, S255	55.8	
C-2	S259, S265, S268, S273, S276	31.0	
C-1a ²	S237, S240, S243, S246, S249, S252, S255	43.4	XR2900-1 SS C1a
H-5	S319, S340	12.4	XR2900-1 SS H
J	S168, S171	12.4	XR2900-1 SS J
Total Investigated Area		198.4 m ²	

E. SURVEY UNIT DATA ASSESSMENT

An analysis of the direct sample measurement results, including the mean, median, standard deviation, and sample result range, is provided in Table 2. Of the 14 soil samples collected, only one sample identified Cs-137 activity, with the reported value less than 2% of the DCGL. All other values were below the MDA. The identified sample activity and Minimum Detectable Activities are listed in Table 2. The mean and median activities for Cs-137 were also less than the DCGL. In addition, Co-60 was not identified in any of the 14 samples.

² The seven grids in Section C1a were initially investigated using the Section C-1 alarm setpoints. Background was re-assessed and a new alarm setpoint (18,200 cpm) determined for these grids. The seven grids were then surveyed as Section C-1a. As such, the grids given as Section C-1a appear in both Section C-1 and C-1a in the above table.

For illustrative purposes, as indicated in LTP Section 5.9.3, a simplified general retrospective dose estimate can be calculated from the average residual contamination level by subtracting the mean fallout Cs-137 value (0.19 pCi/g)³ for disturbed soil from the survey unit sample mean activity (0.0467 pCi/g). The net result is negative and would equate to an annual dose rate of 0.0 mrem/year. However, for purposes of demonstrating compliance with the radiological criteria for license termination and the enhanced State criteria, background activity was not subtracted from the soil sample analysis activity values.

F. ADDITIONAL DATA EVALUATION

Attachment 4 provides additional data evaluation associated with this Survey Unit, including relevant statistical information. Based on survey unit direct measurement data, this attachment provides the Sign Test Summary, Quantile Plot, Histogram, and Retrospective Power Curve.

1. The Sign Test Summary provides an overall summary of design input (Table 1) and resulting calculated values used to determine the required number (N) of direct measurements (per LTP Section 5.4.2). The Sign Test Summary is a separate statistical analysis that also calculates the mean, median, and standard deviation of the direct measurements.

The critical value and the result of the Sign Test are provided in the Sign Test Summary table, as well as a listing of the key release criteria. As is shown in the table, all of the key release criteria were clearly satisfied for the FSS of this survey unit. The sample standard deviation is smaller than the design sigma; therefore no additional samples were required.

2. The Quantile Plot was generated from the direct measurement data listed in Table 2. The data set and plot are consistent with expectations for a Class 3 survey unit. All of the measurements are well below the DCGL of 4.20 pCi/g for land outside the restricted area.
3. A Histogram Plot was also developed based on the direct measurement data values. This plot shows a normal distribution.
4. A Retrospective Power Curve was constructed, based on FSS results. The curve shows that this survey unit having a mean residual activity at a small fraction of the DCGL has a high probability ("power") of meeting the release criteria. Thus, it can be concluded that the direct measurement data support rejection of the null hypothesis, providing high confidence that the survey unit satisfied the release criteria and that the data quality objectives were met.

³ See Attachment E to Maine Yankee Procedure PMP 6.7.8 (Reference 5).

G. CHANGES IN INITIAL SURVEY UNIT ASSUMPTIONS ON EXTENT OF RESIDUAL ACTIVITY

The survey was designed as a Class 3 land survey area; the FSS results were consistent with that classification. The direct measurement sample standard deviation was less than the design sigma. Thus, a sufficient number of sample measurements were taken and no additional measurements were required.

H. LTP CHANGES SUBSEQUENT TO SURVEY UNIT FSS

The FSS of Survey Unit 1 was designed, performed and evaluated in the July/September 2004 time frame. The design was performed to the criteria of the LTP Revision 3 (References 2 and 4). Maine Yankee LTP Change No. 05-001 modified the Table 6-11 "Contaminated Material DCGL" to reflect an increased Deep Soil DCGL of 0.86 pCi/g for Co-60 for soil in the RA. Because FR-2900 Survey Unit 1 is located outside the RA, this LTP change did not impact the outcome of final survey results within this survey area. No subsequent LTP changes with potential impact to this survey unit need to be evaluated.

I. CONCLUSION

The FSS of this survey unit was designed based on the LTP designation as a Class 3 area. The survey design parameters are presented in Table 1. The required number of direct measurements was determined for the Sign Test in accordance with the LTP. As presented in Table 2, all direct measurements were less than the DCGL of 4.2 pCi/g Cs-137.

A Sign Test Summary analysis demonstrated that the Sign Test criteria were satisfied. The direct measurement sigma was determined to be less than that used for design, thus indicating that a sufficient number of samples was taken.

The Retrospective Power Curve shown in Attachment 4 confirmed that sufficient samples were taken to support rejection of the null hypothesis, providing high confidence that the survey unit satisfied the release criteria and the data quality objectives were met. Attachment 4 also revealed that direct measurement data represented essentially a normal distribution.

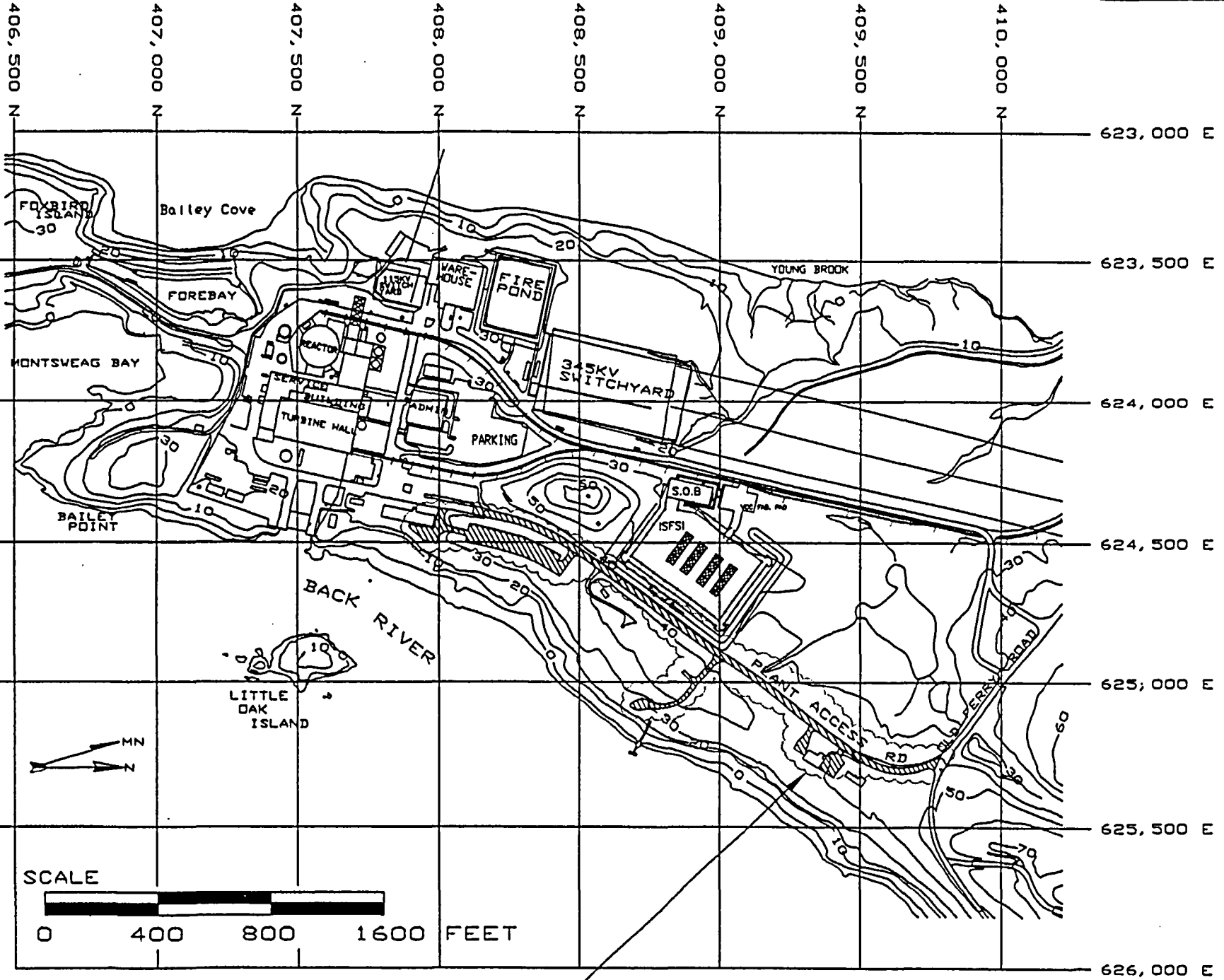
The scan survey design for this survey unit was developed in accordance with the LTP Revision 3 Addenda (References 2 and 4) with significant aspects of the design discussed in Section B and Table 1. ISOCS scans performed at a distance of 3 meters in a systematic grid pattern throughout the survey unit did not identify activity above the scan investigation level of 1.0 pCi/g Cs-137. Scans performed with E-600/SPA-3 instrumentation resulted in 32 verified alarms. An investigation was conducted via package XR 2900-01 and 32 additional soil samples were obtained. All soil sample results were less than the MDAs.

It is concluded that FR-2900 Survey Unit 1 meets the release criteria of 10CFR20.1402 and the State of Maine enhanced criteria.

J. REFERENCES

1. Maine Yankee License Termination Plan, Revision 3, October 15, 2002 and Addenda provided by Maine Yankee letter to the NRC, MN-02-061, dated November 26, 2002
2. NRC letter to Maine Yankee, dated February 28, 2003
3. Maine Yankee letter to the NRC, MN-03-049, dated September 11, 2003 (LTP Supplement to LTP Revision 3)
4. Issuance of License Amendment No. 170, NRC letter to Maine Yankee, dated February 18, 2004
5. Maine Yankee Procedure PMP 6.7.8, FSS Data Processing and Reporting, Attachment E, Approach for Dealing With Background Radioactivity for Maine Yankee Final Status Surveys
6. Maine Yankee Calculation No. EC-003-04 (MY), Use of In Situ Object Counting System (ISOCS) for FSS Surveys
7. Maine Yankee Calculation No. EC 009-01 (MY), Instrumentation Selection and MDC Calculation

Attachment 1
Survey Unit Maps



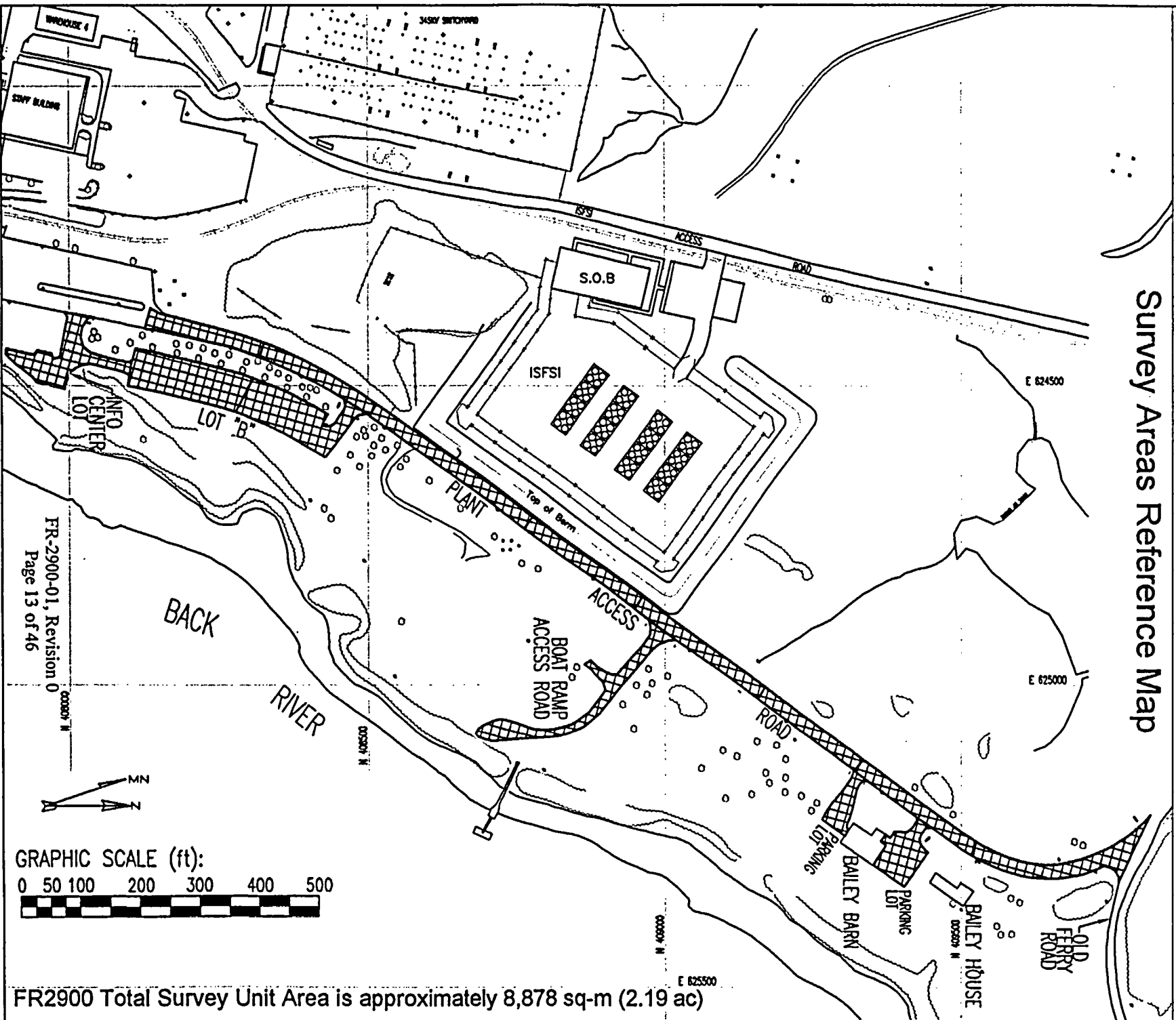
SURVEY AREA, FR 2900

Note: Grid based on Maine State Coordinate System (West Zone) NAD 1927

Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey Survey Area Name: East Plant Access Roads and Lots

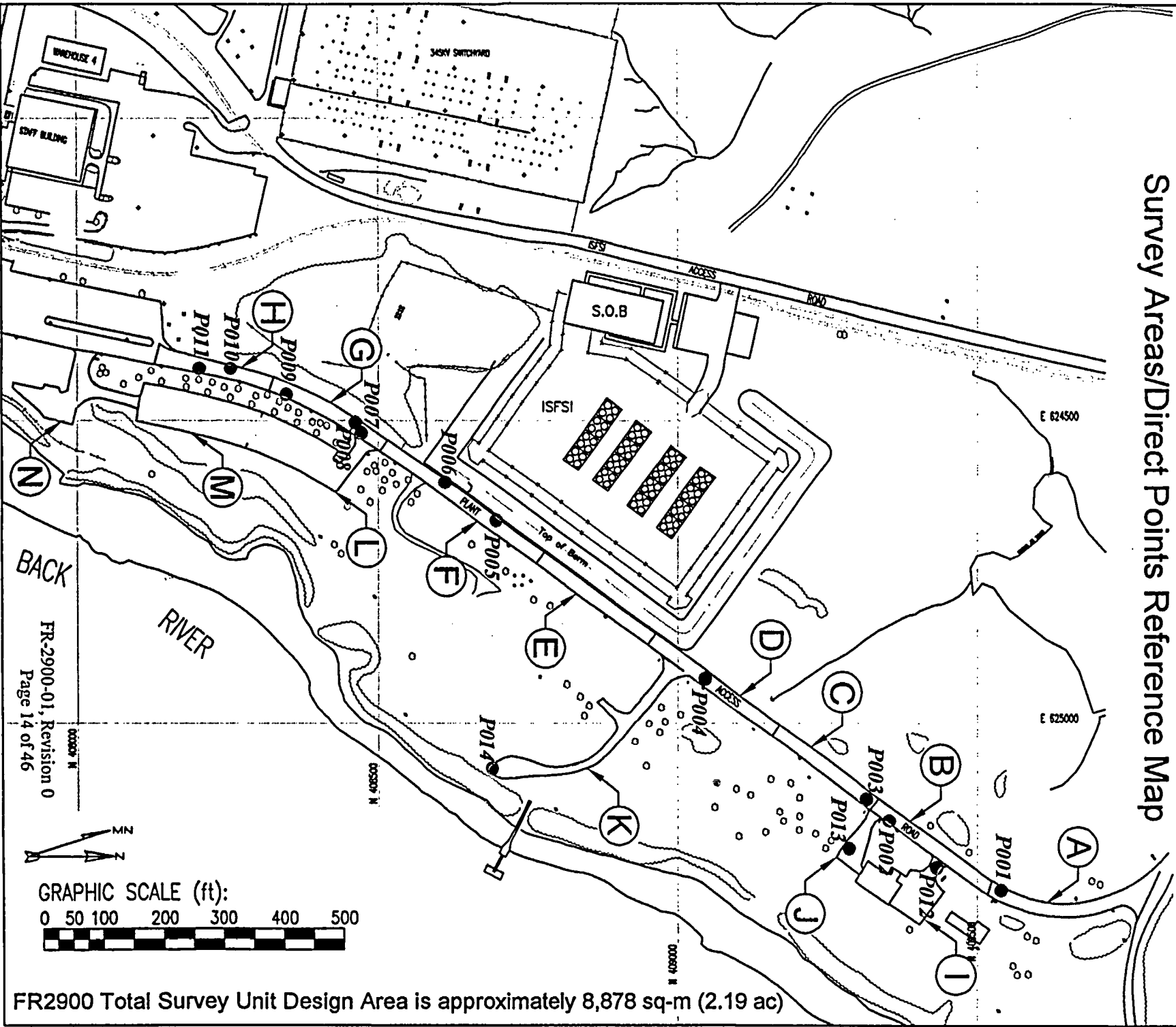
Final Status Survey

FR 2900: East Plant Access Road and Lots Survey Areas Reference Map



FR2900 Total Survey Unit Area is approximately 8,878 sq-m (2.19 ac)

Final Status Survey FR 2900: East Plant Access Road and Lots Survey Areas/Direct Points Reference Map

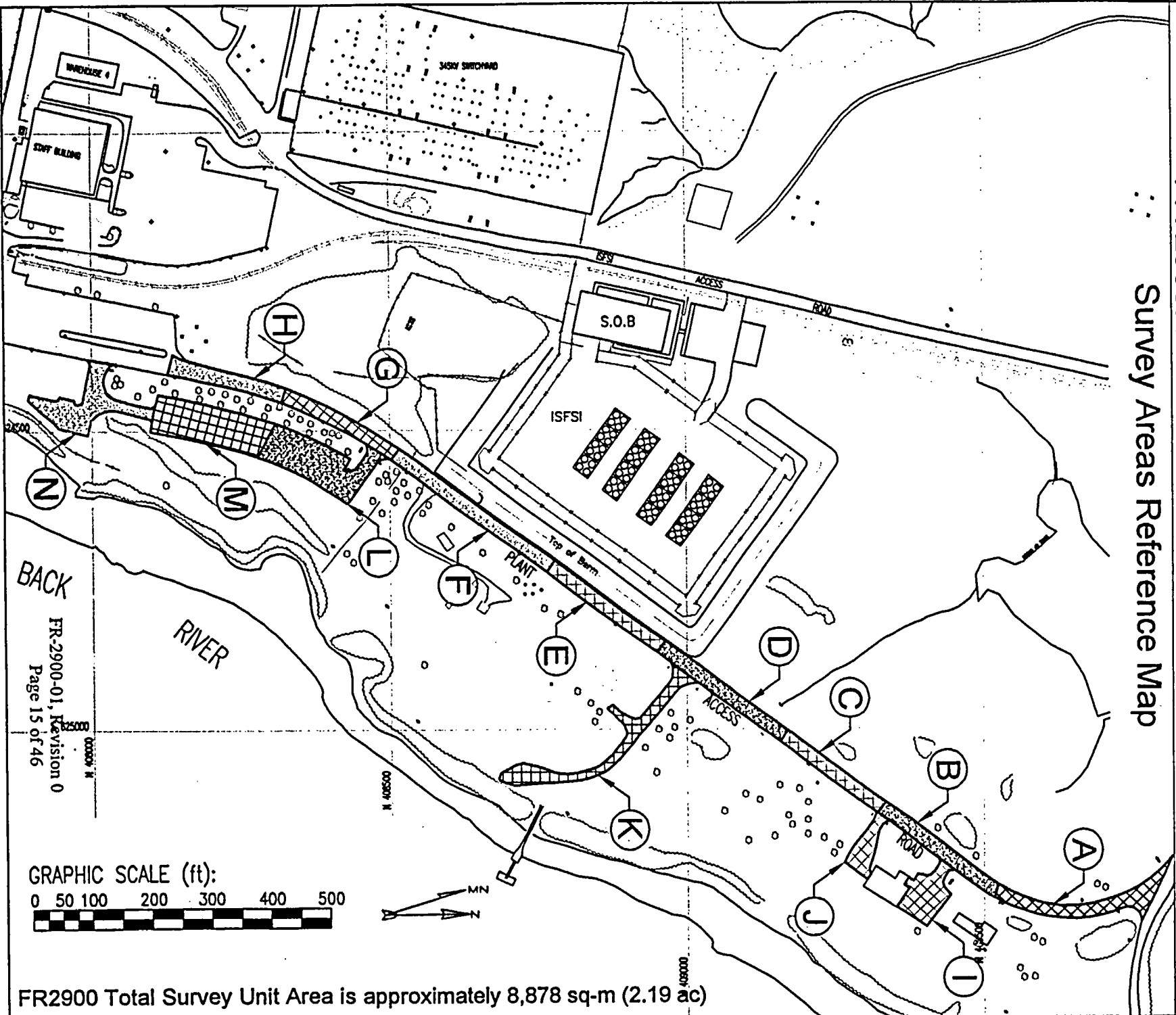


FR2900 Total Survey Unit Design Area is approximately 8,878 sq-m (2.19 ac)

Final Status Survey

FR 2900: East Plant Access Road and Lots

Survey Areas Reference Map



GRAPHIC SCALE (ft):
0 50 100 200 300 400 500

FR2900 Total Survey Unit Area is approximately 8,878 sq-m (2.19 ac)

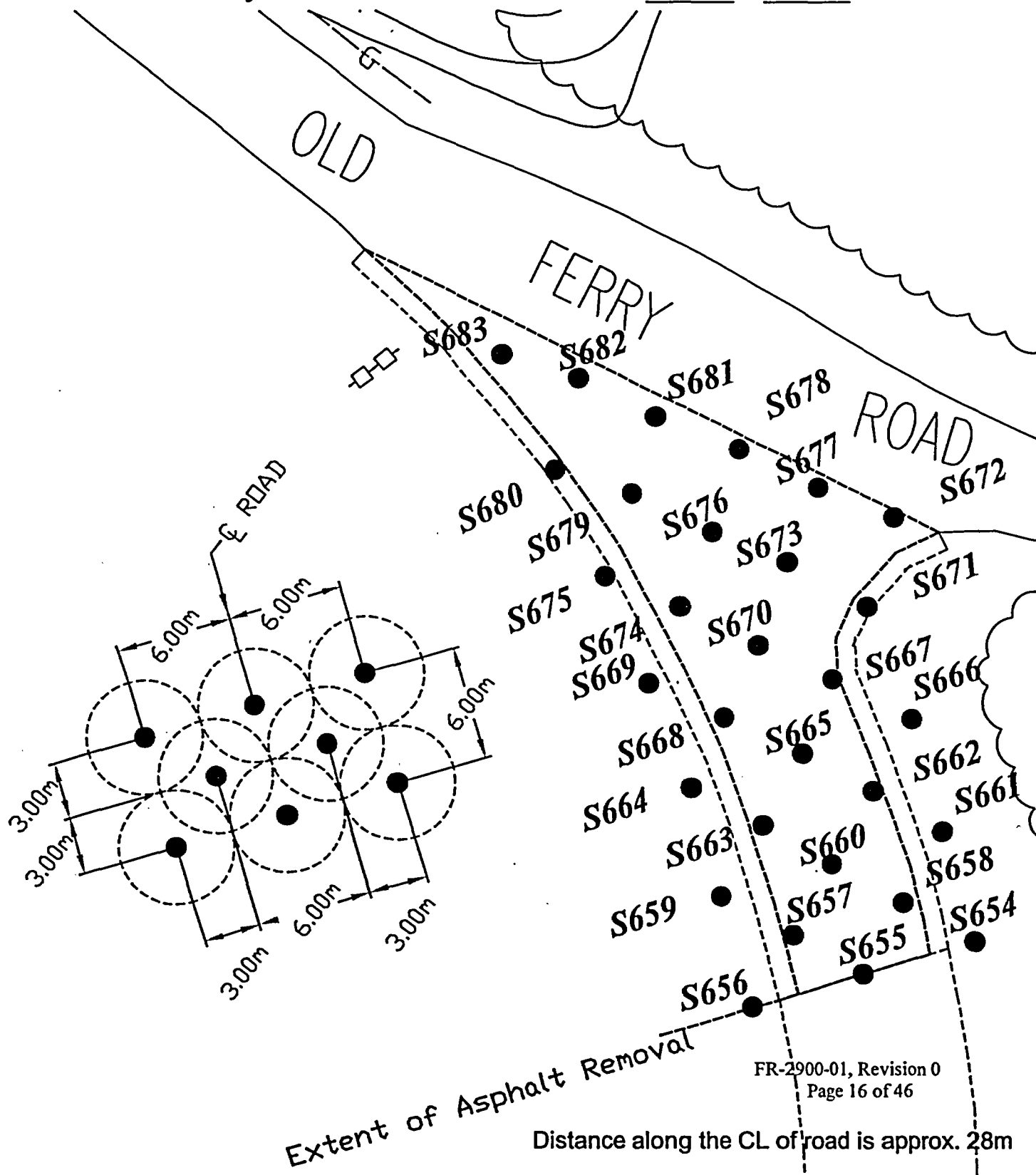
BACK

FR-2900-01, Revision 0
Page 15 of 46

Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Final Status Survey
FR 2900: East Plant Access Road and Lots
Survey Area "A" ISOCS Scans S654 - S683



Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

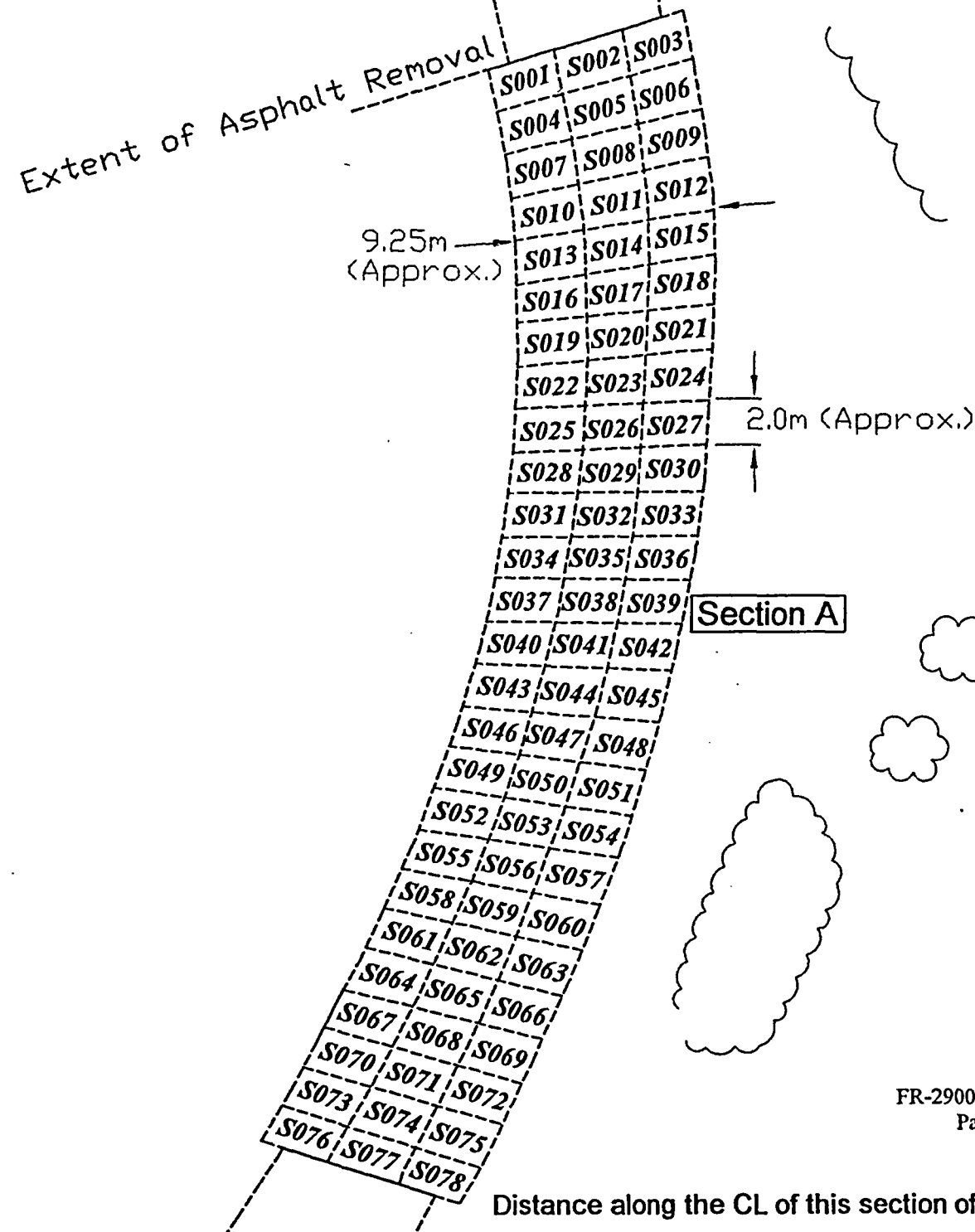
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Final Status Survey

FR 2900: East Plant Access Road and Lots

Survey Area "A" Survey Scans S001 - S078

Section A, Alarm Setpoint 13,600 cpm







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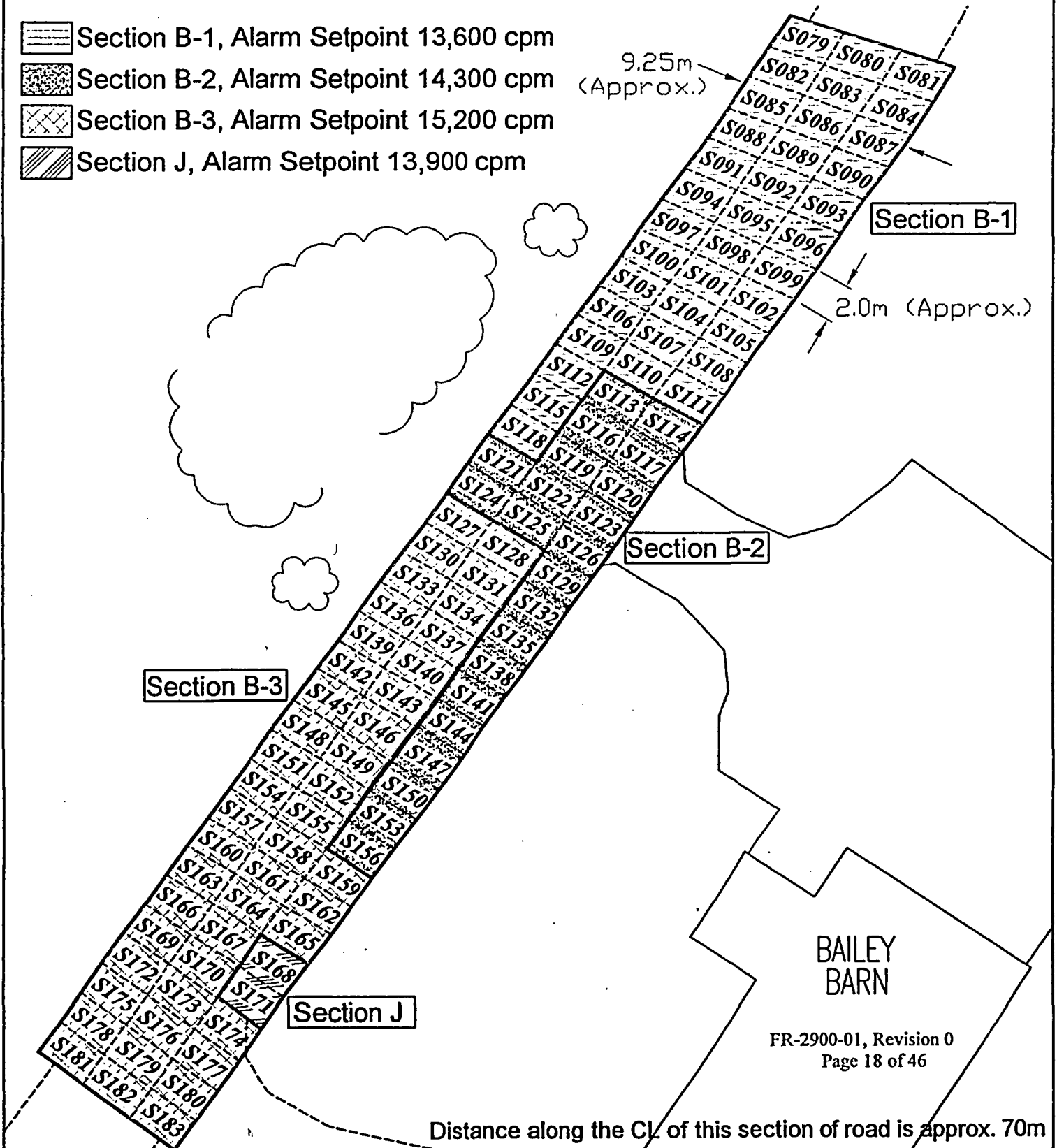
Survey Area Name: East Plant Access Road and Lots

Final Status Survey

FR 2900: East Plant Access Road and Lots

Survey Area "B" Survey Scans S079 - S183

-  Section B-1, Alarm Setpoint 13,600 cpm
-  Section B-2, Alarm Setpoint 14,300 cpm
-  Section B-3, Alarm Setpoint 15,200 cpm
-  Section J, Alarm Setpoint 13,900 cpm



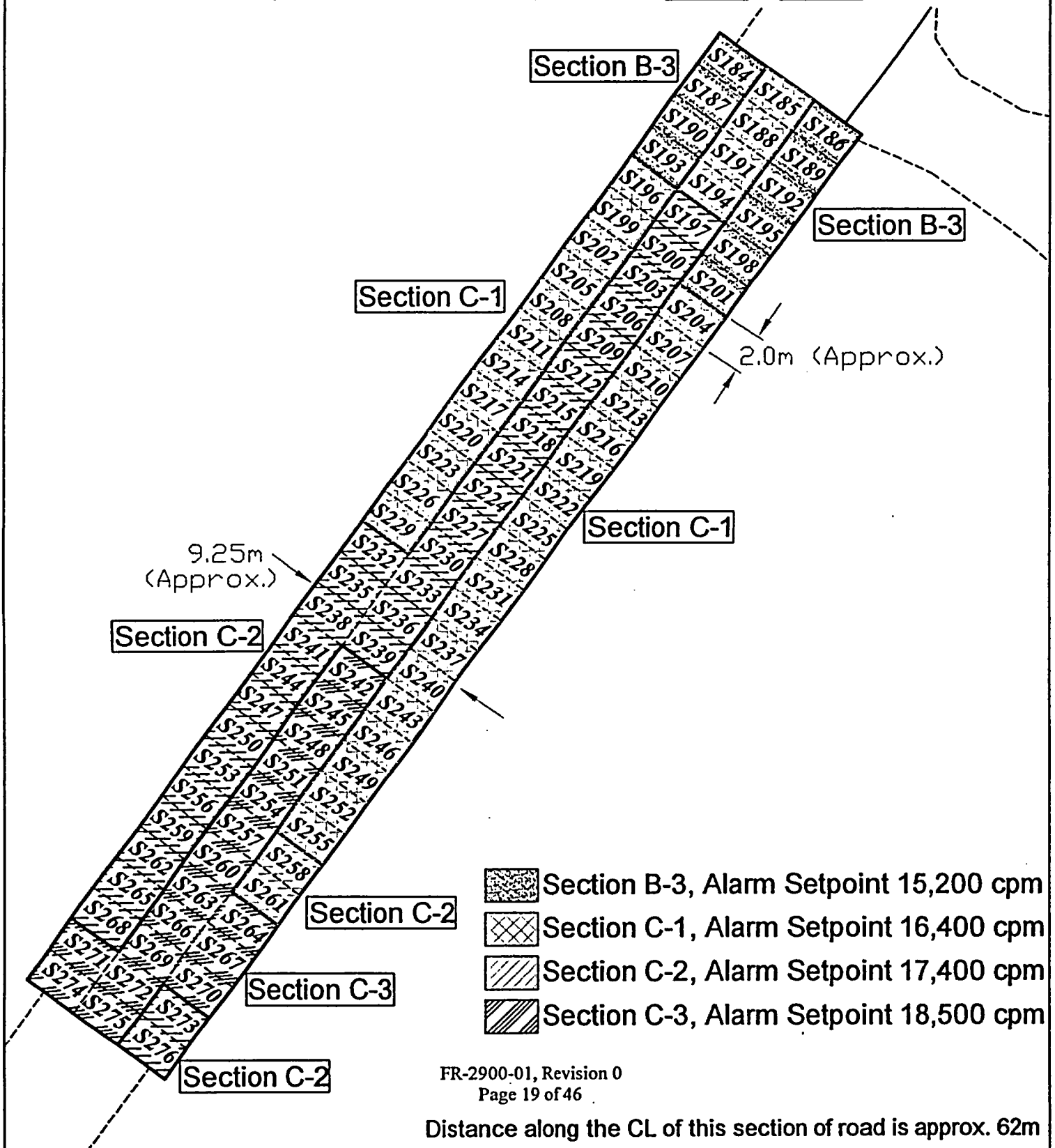
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Survey Area Name: East Plant Access Road and Lots

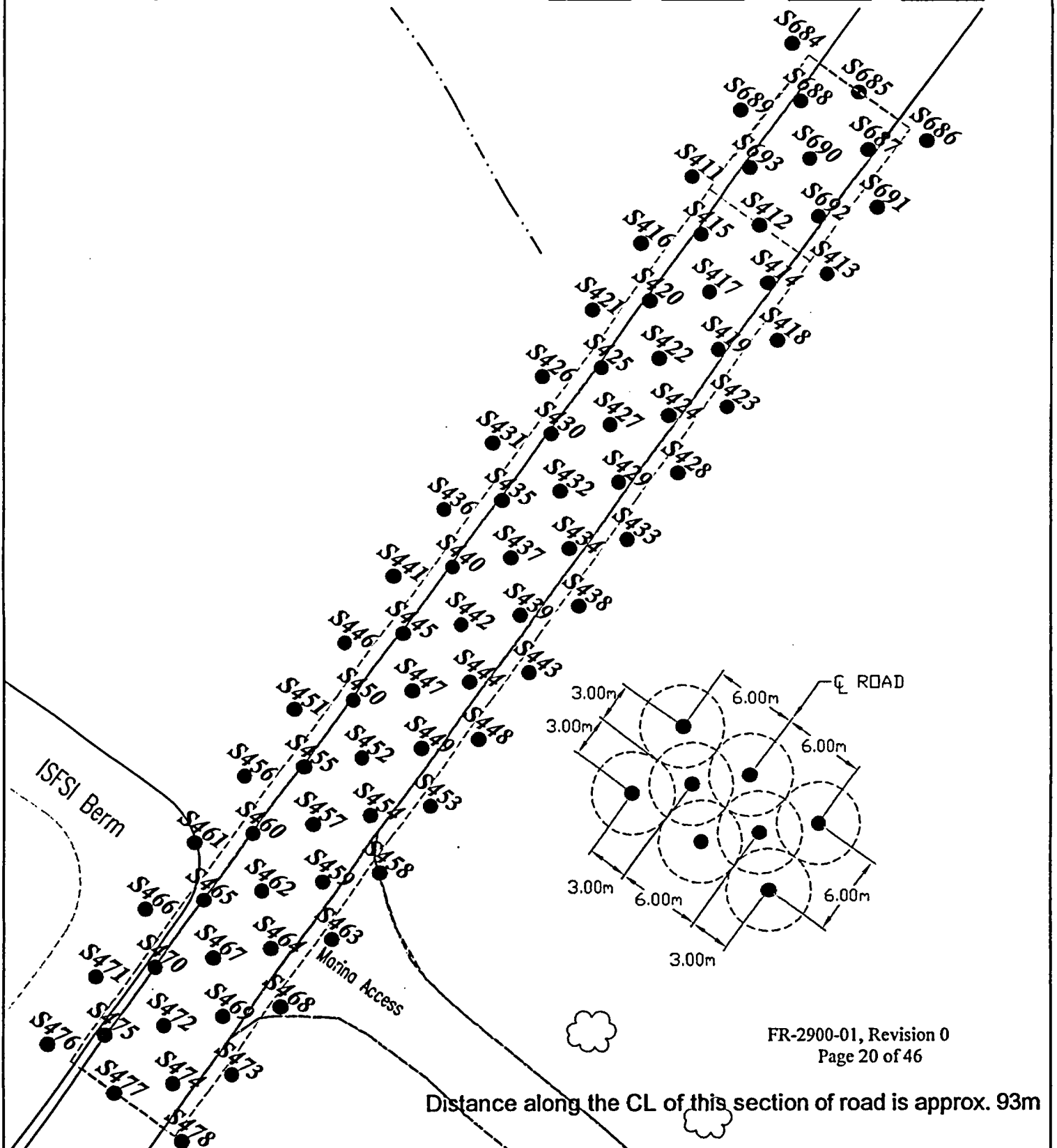
Final Status Survey

FR 2900: East Plant Access Road and Lots

Survey Area "C" Survey Scans S184 - S276



Survey Area Name: East Plant Access Road and Lots



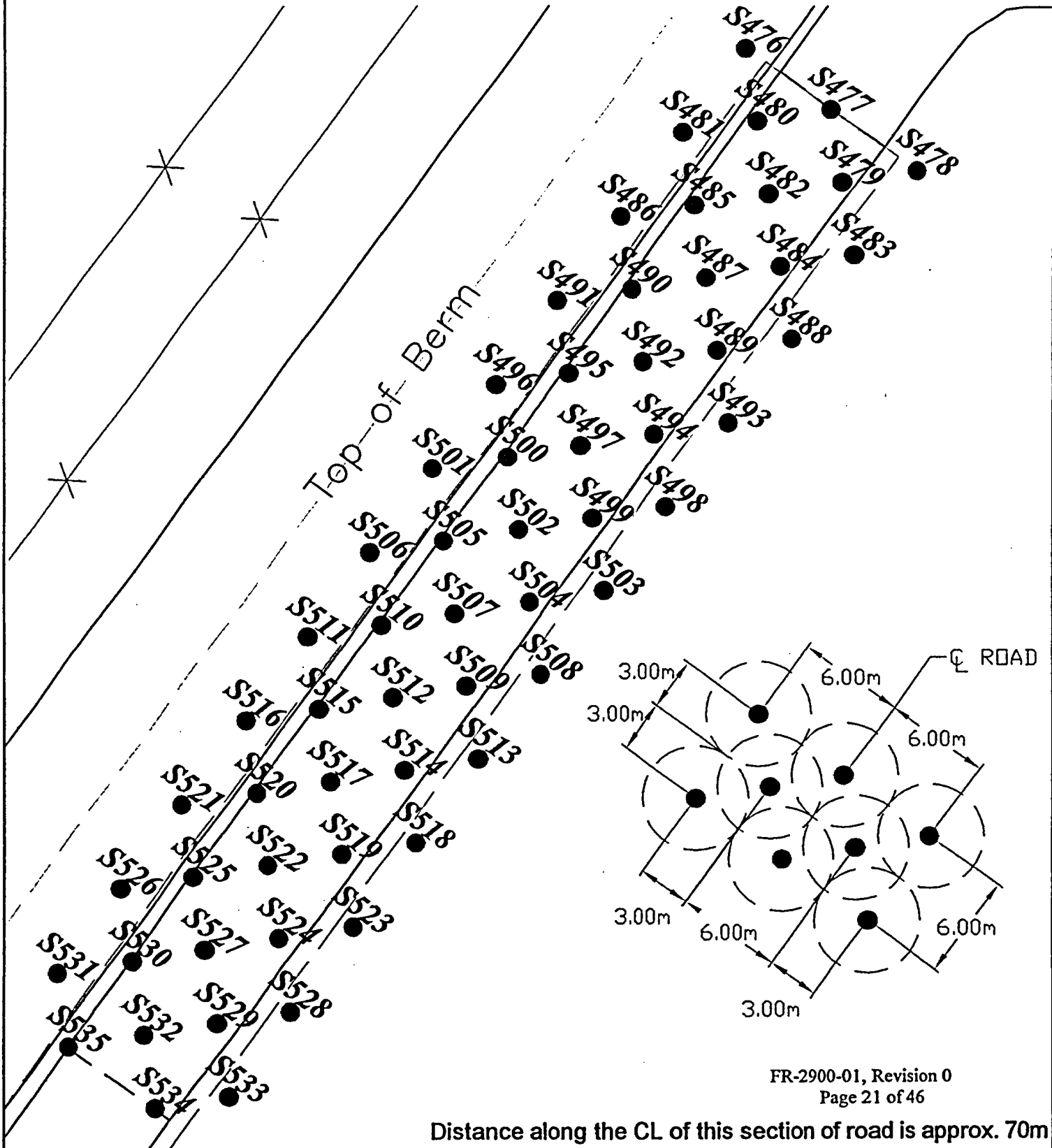
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Survey Area Name: East Plant Access Road and Lots

Final Status Survey

FR 2900: East Plant Access Road and Lots

Survey Area "E" ISOCS Scans S479 - S535



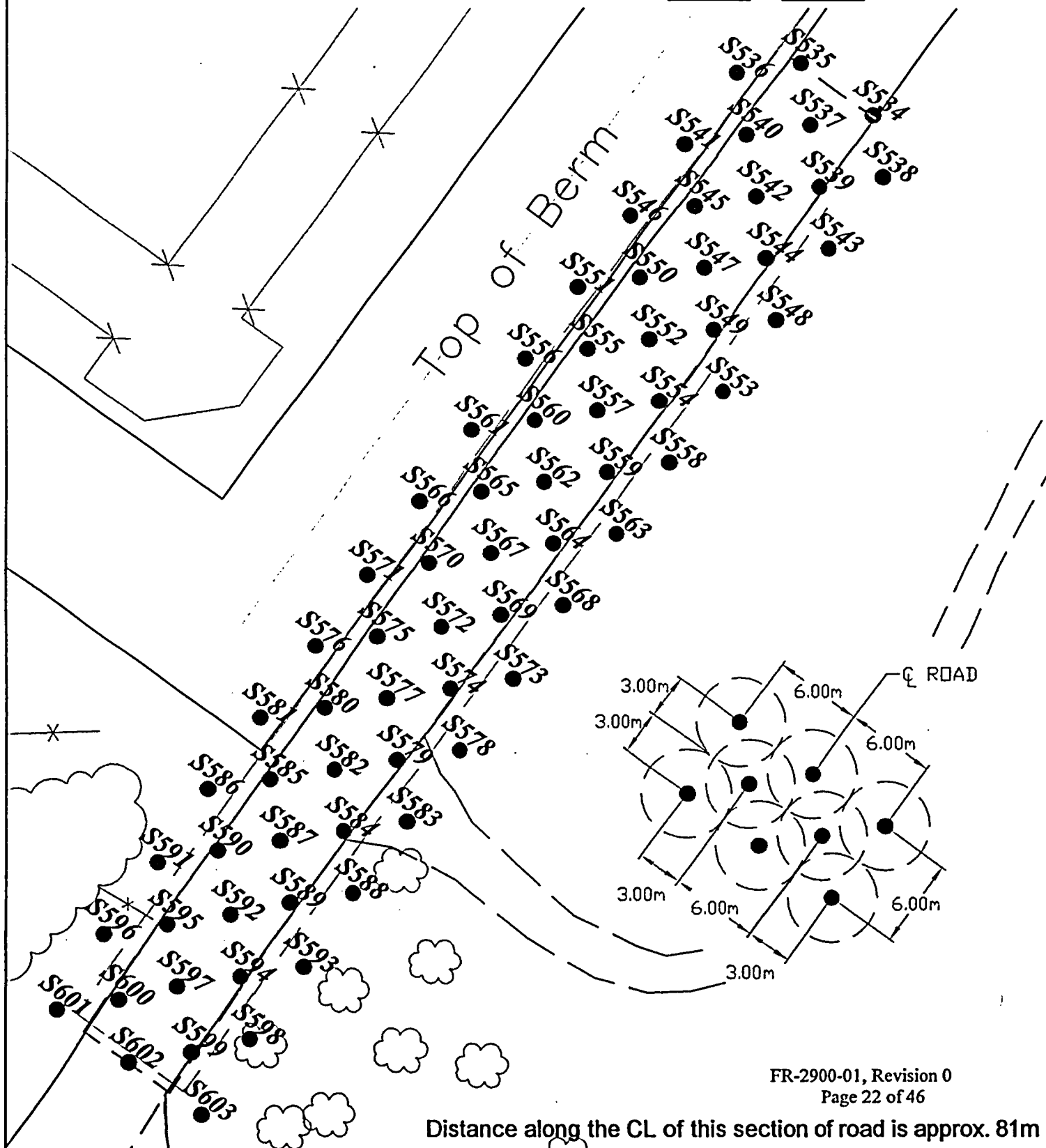
Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Final Status Survey

FR 2900: East Plant Access Road and Lots

Survey Area "F" ISOCS Scans S536 - S603



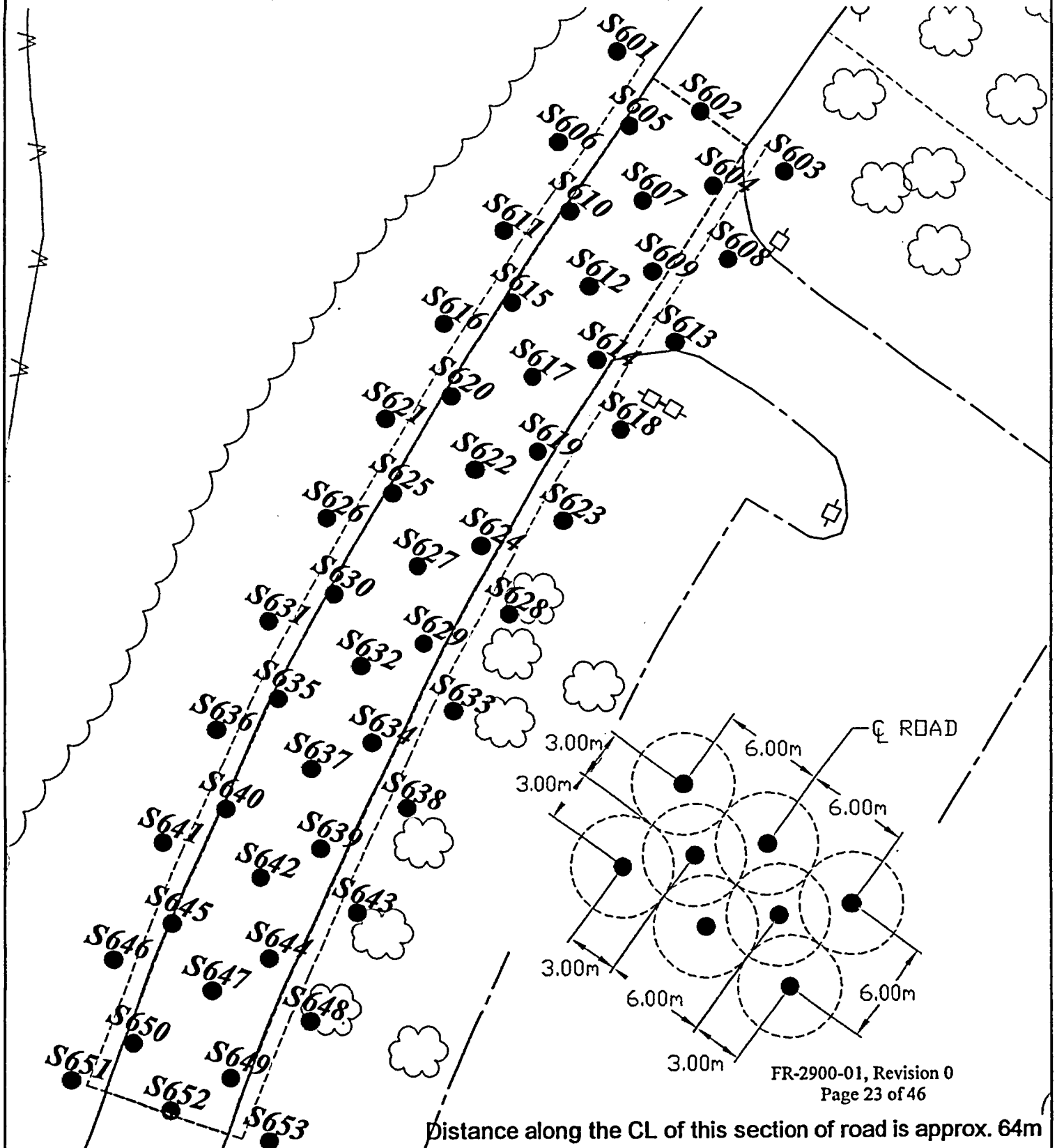
Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Final Status Survey

FR 2900: East Plant Access Road and Lots

Survey Area "G" ISOCS Scans S604 - S653



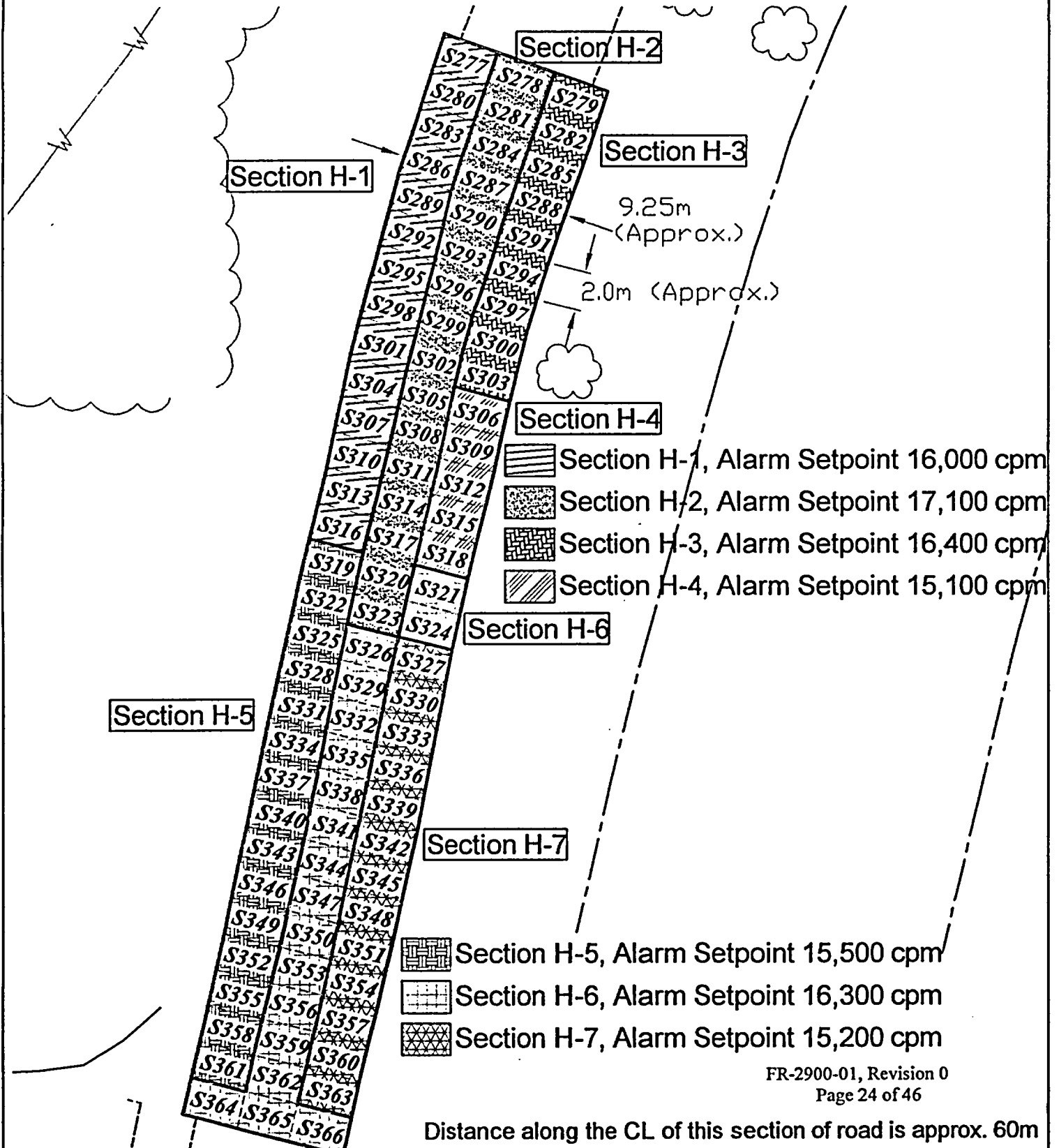
Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Final Status Survey

FR 2900: East Plant Access Road and Lots

Survey Area "H" Survey Scans S277 - S366



Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Final Status Survey

FR 2900: East Plant Access Road and Lots

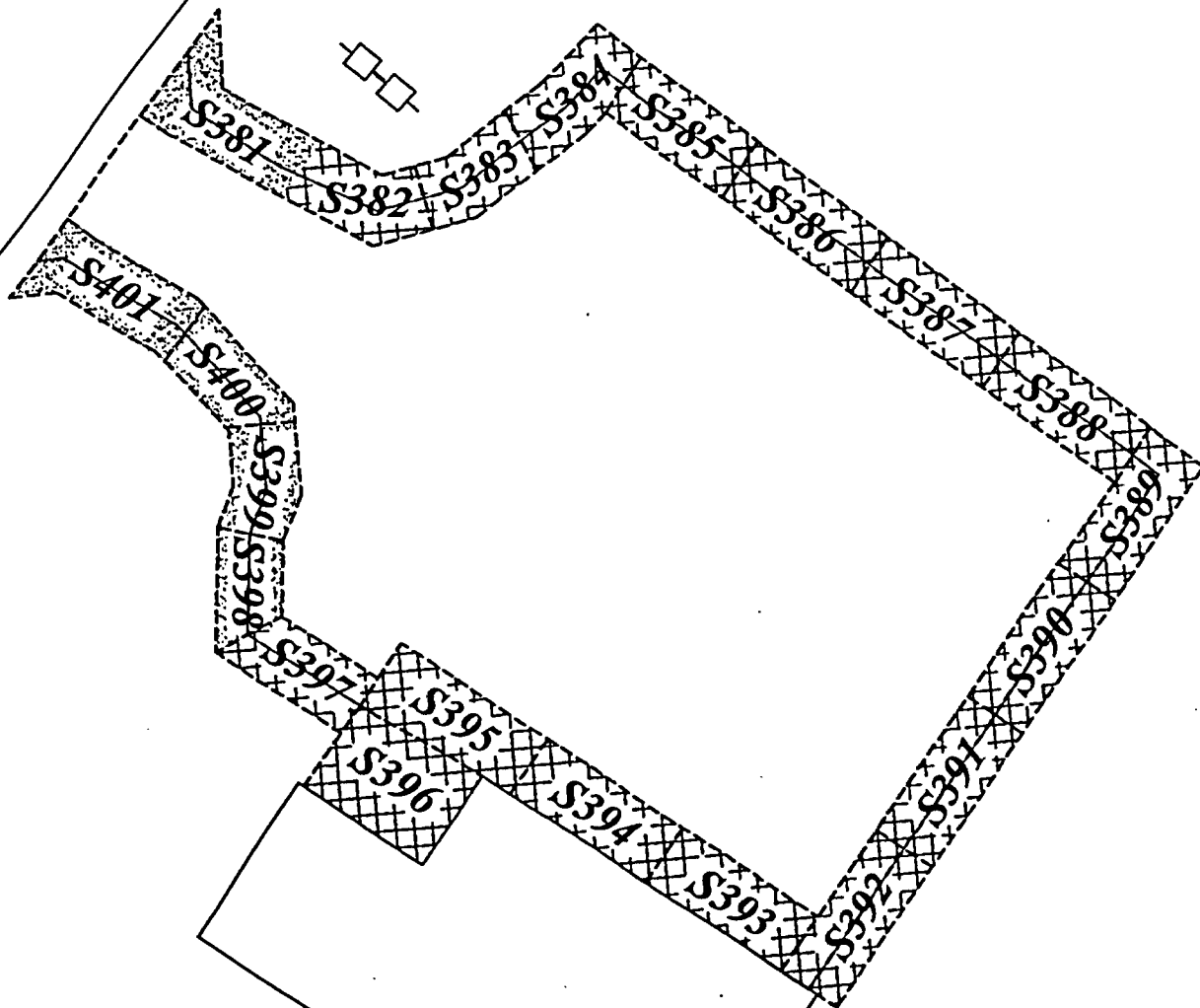
Survey Area "I" Survey Scans S381 - S401



Section B-1, Alarm Setpoint 13,600



Section B-2, Alarm Setpoint 14,300



BAILEY
BARN

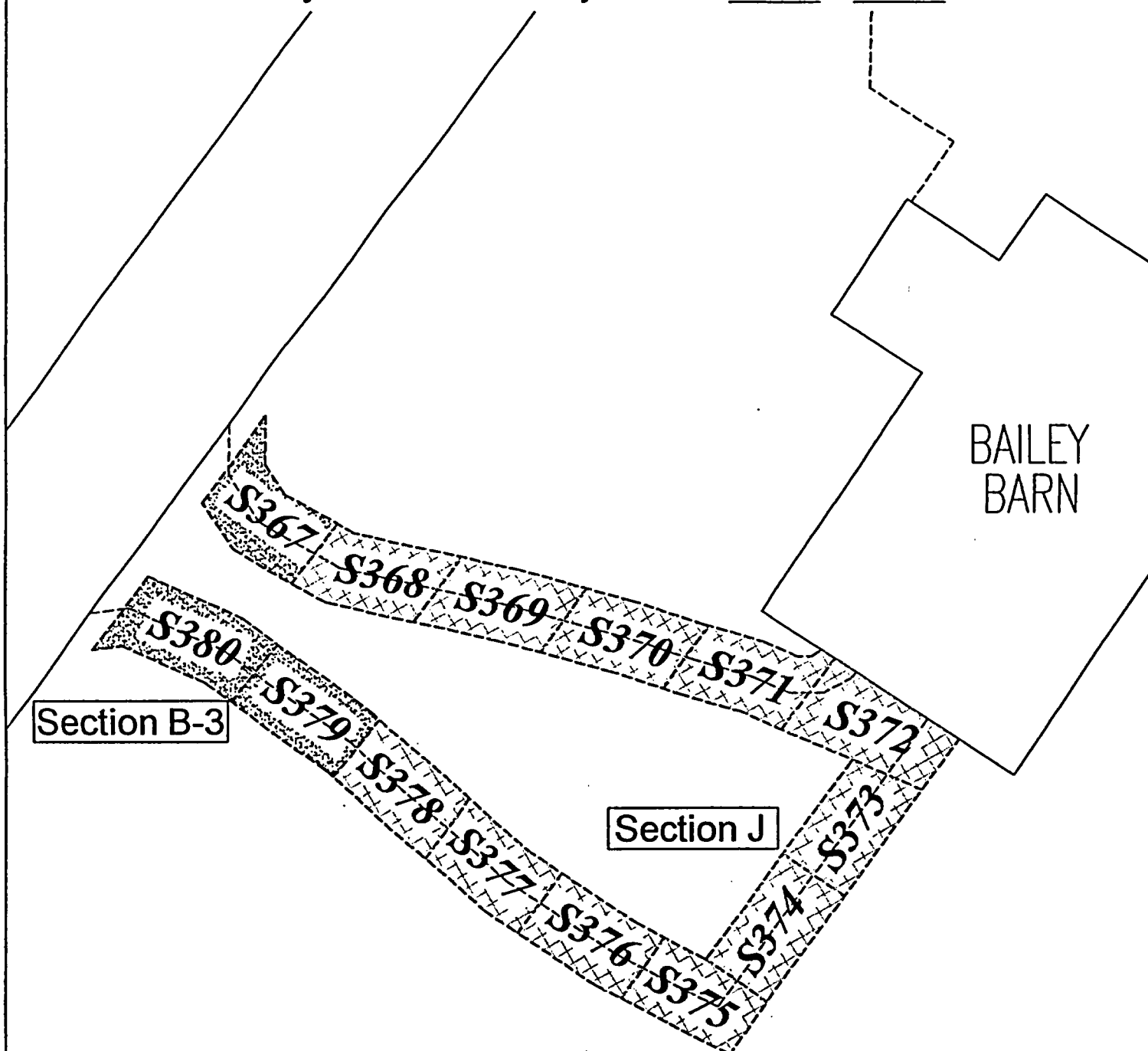
Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Final Status Survey

FR 2900: East Plant Access Road and Lots

Survey Area "J" Survey Scans S367 - S380



Section B-3

Section J



Section B-3, Alarm Setpoint 15,200 cpm



Section J, Alarm Setpoint 13,900 cpm

FR-2900-01, Revision 0

Page 26 of 46

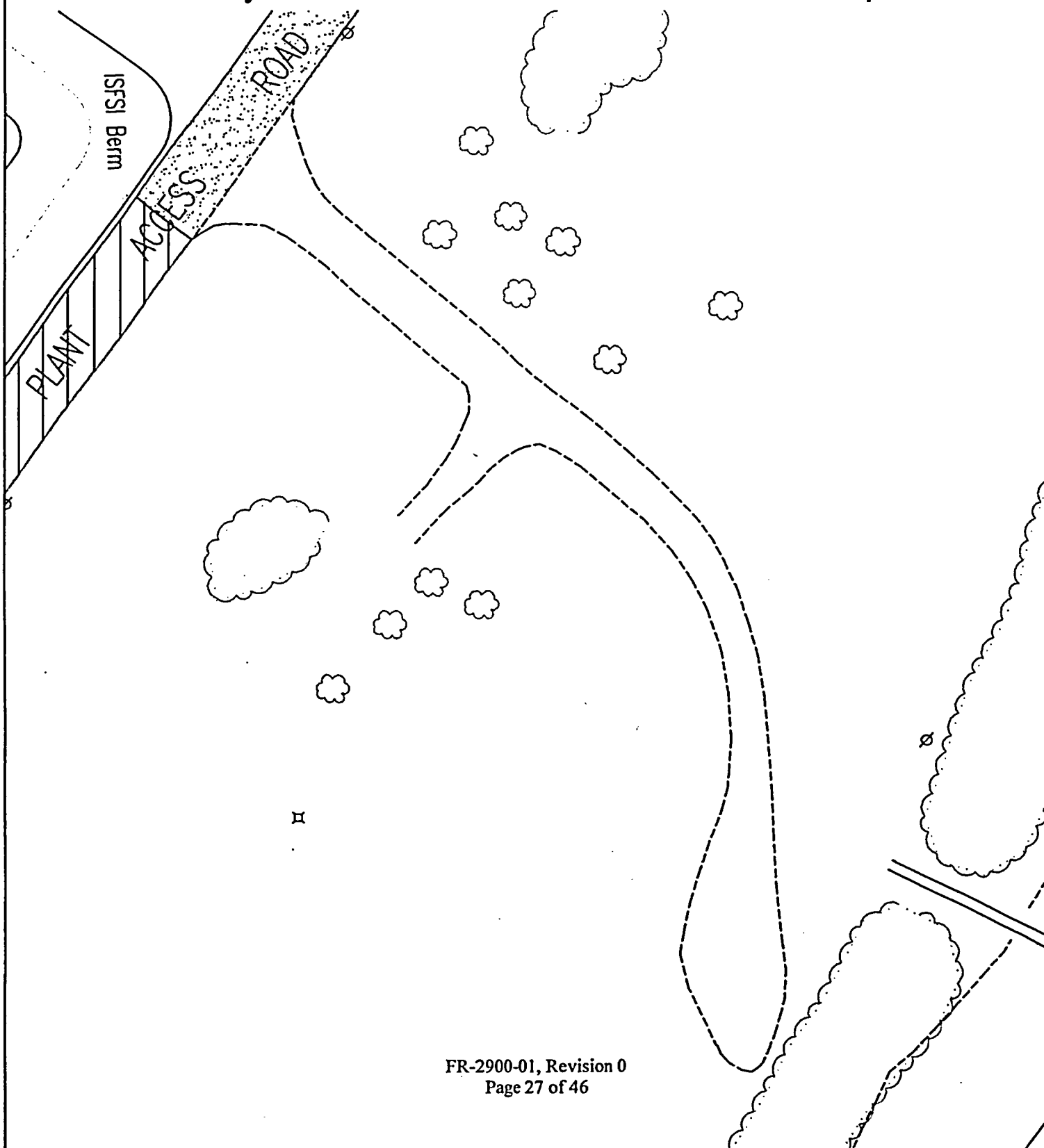
NOTE: Bailey Barn Lot Grids are approx. 2m wide by 5m long.

Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Final Status Survey

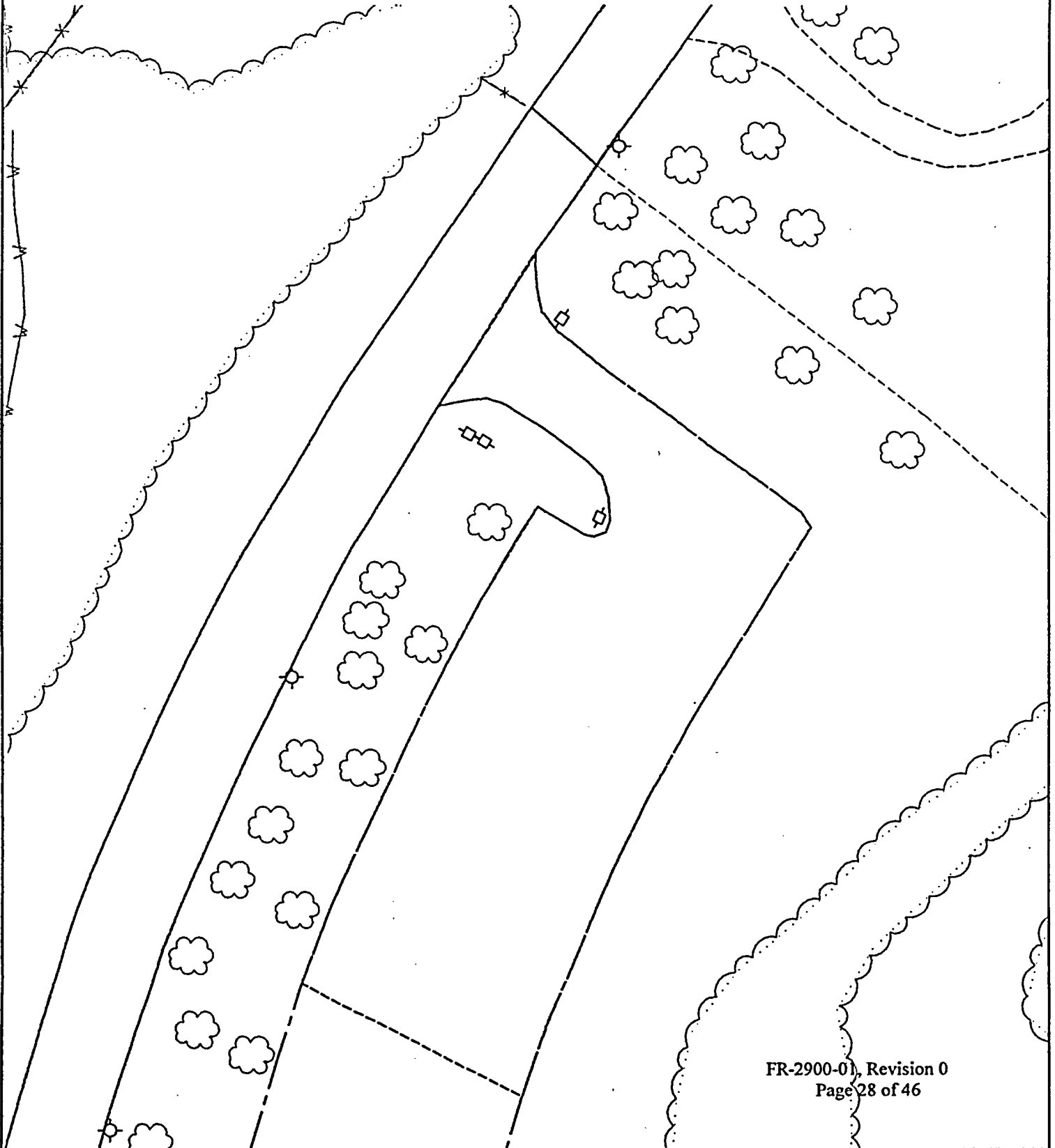
FR 2900: East Plant Access Road and Lots
Survey Area "K" No Scans Chosen for this Map



Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Final Status Survey
FR 2900: East Plant Access Road and Lots
Survey Area "L" No Scans Chosen for this Map

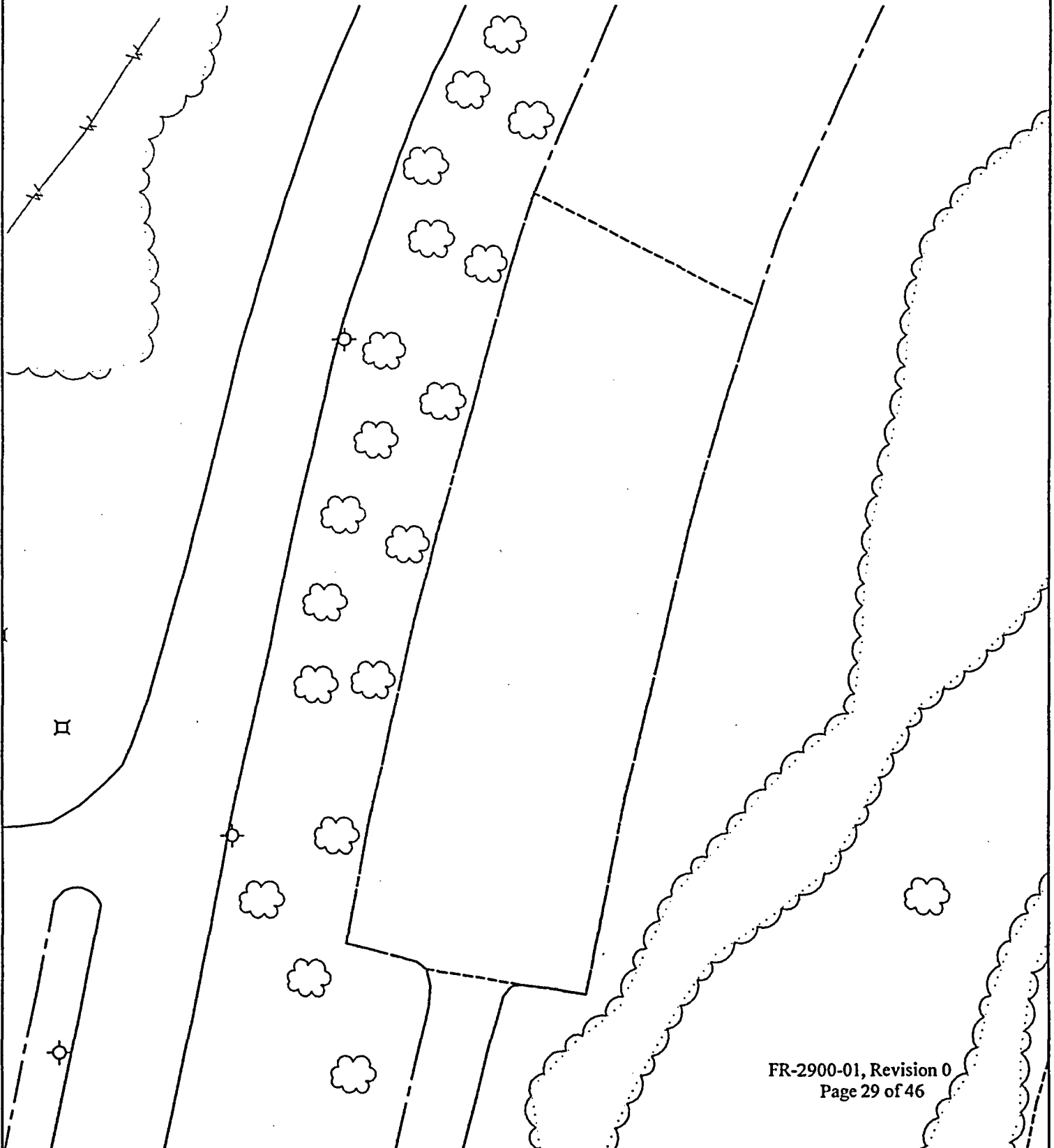


Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Final Status Survey

FR 2900: East Plant Access Road and Lots
Survey Area "M" No Scans Chosen for this Map



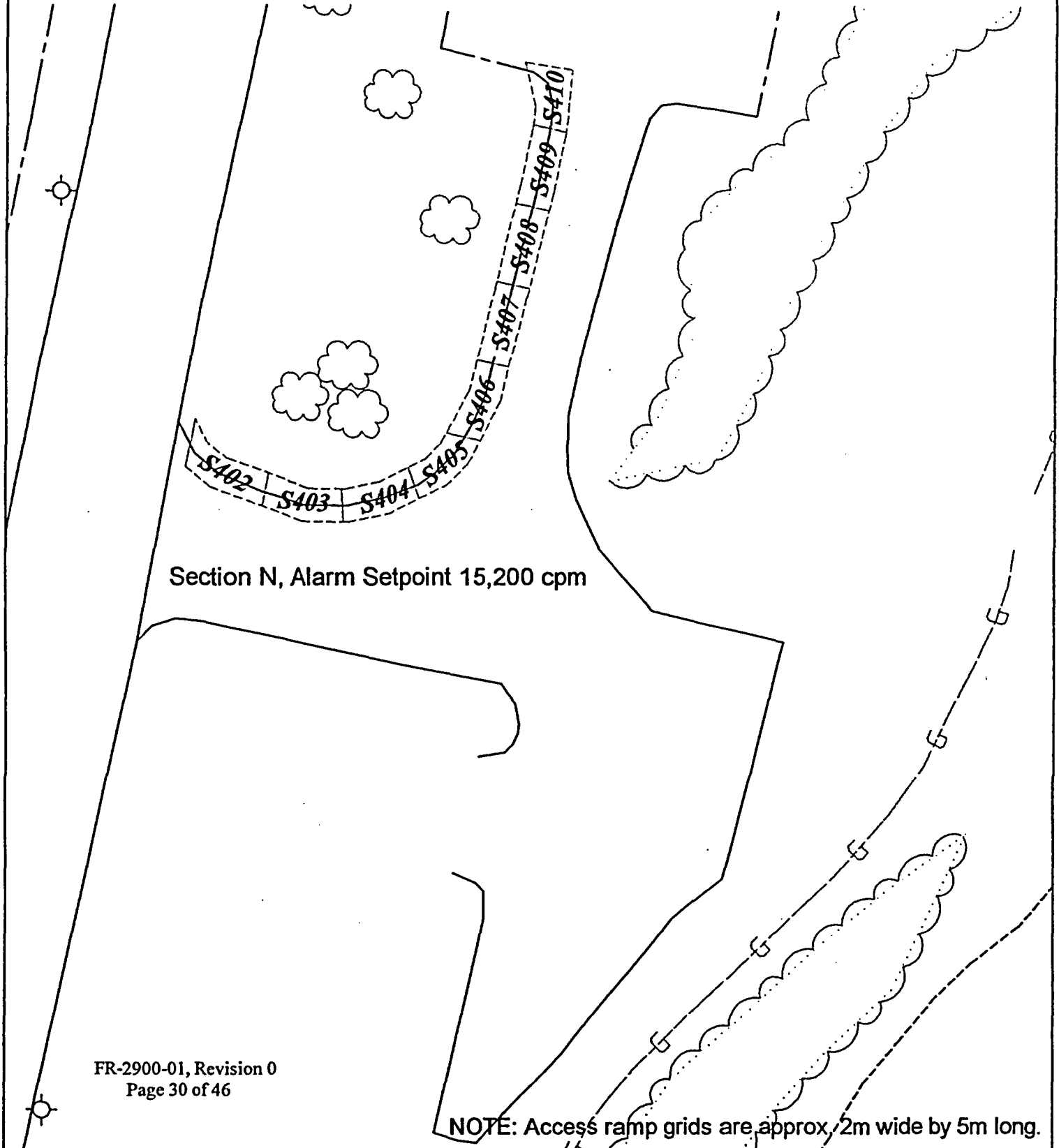
Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Final Status Survey

FR 2900: East Plant Access Road and Lots

Survey Area "N" Survey Scans S402 - S410



Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Investigation Survey

XR 2900: East Plant Access Road and Lots

Survey Area A Alarm Grids



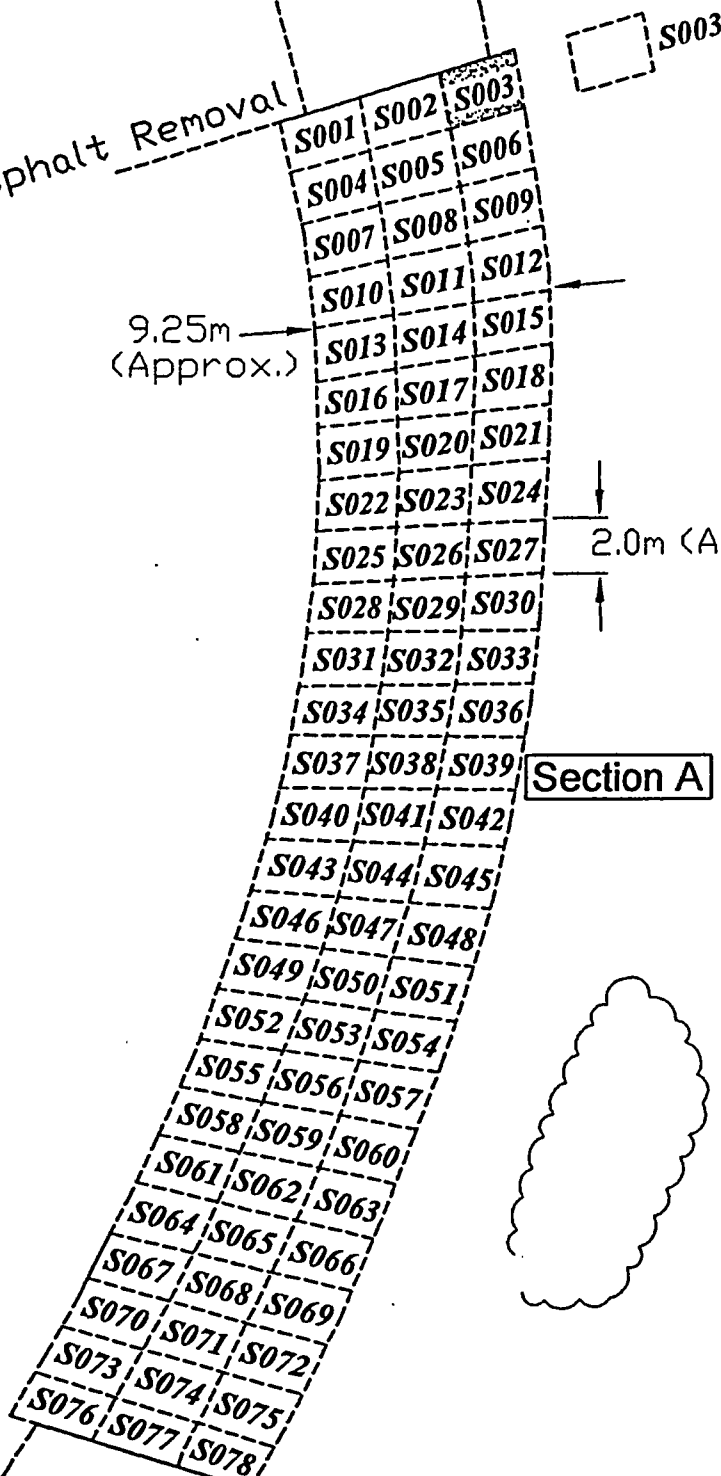
Section A, Alarm Setpoint 13,600 cpm

Extent of Asphalt Removal

9.25m
(Approx.)

2.0m (Approx.)

Section A



Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Investigation Survey

XR 2900: East Plant Access Road and Lots

Survey Area B1 Alarm Grids

 Section B-1, Alarm Setpoint 13,600 cpm

9.25m
(Approx.)

Section B-1

2.0m (Approx.)

Section B-2

Section B-3

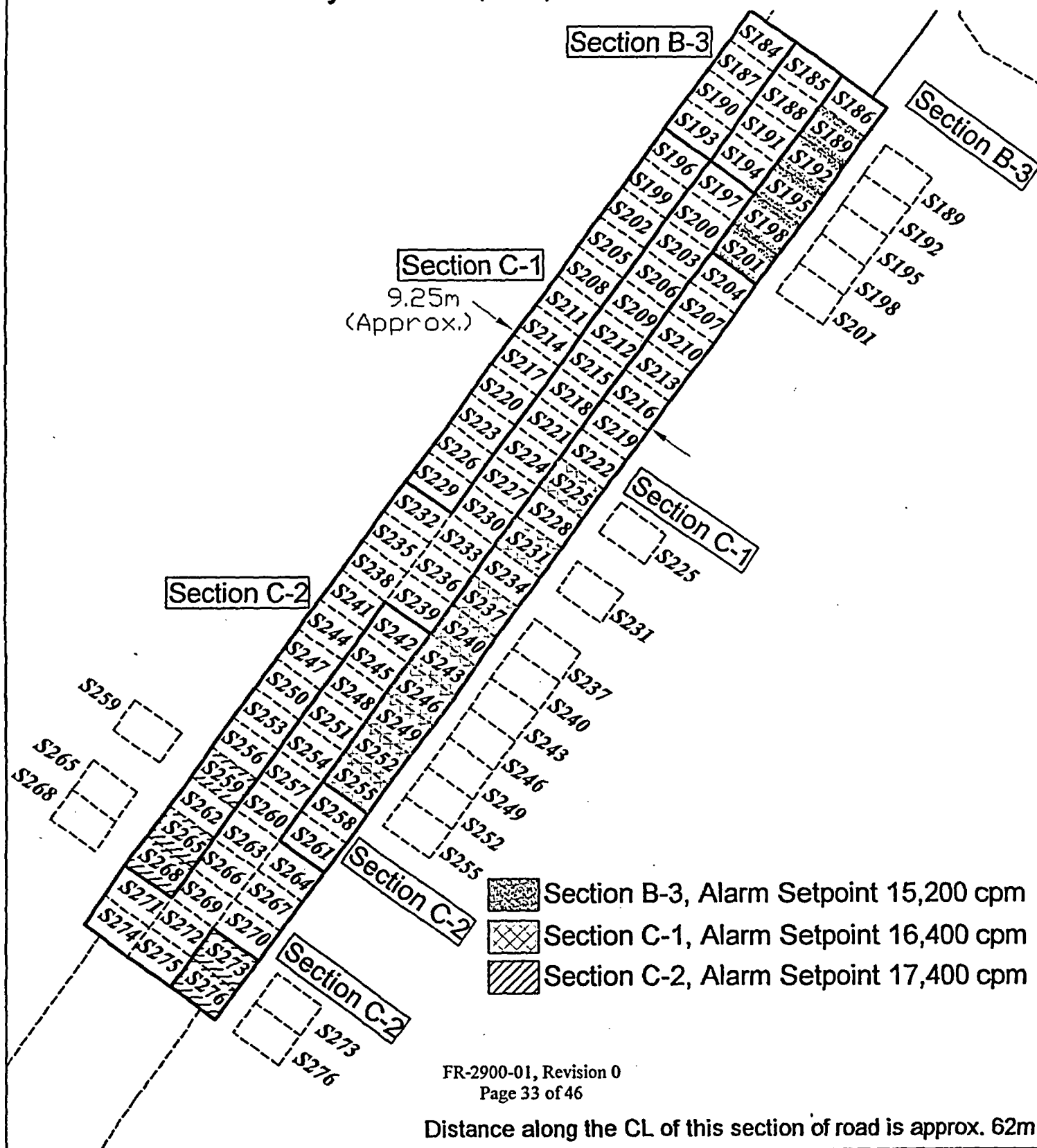
Section J

BAILEY
BARN

Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

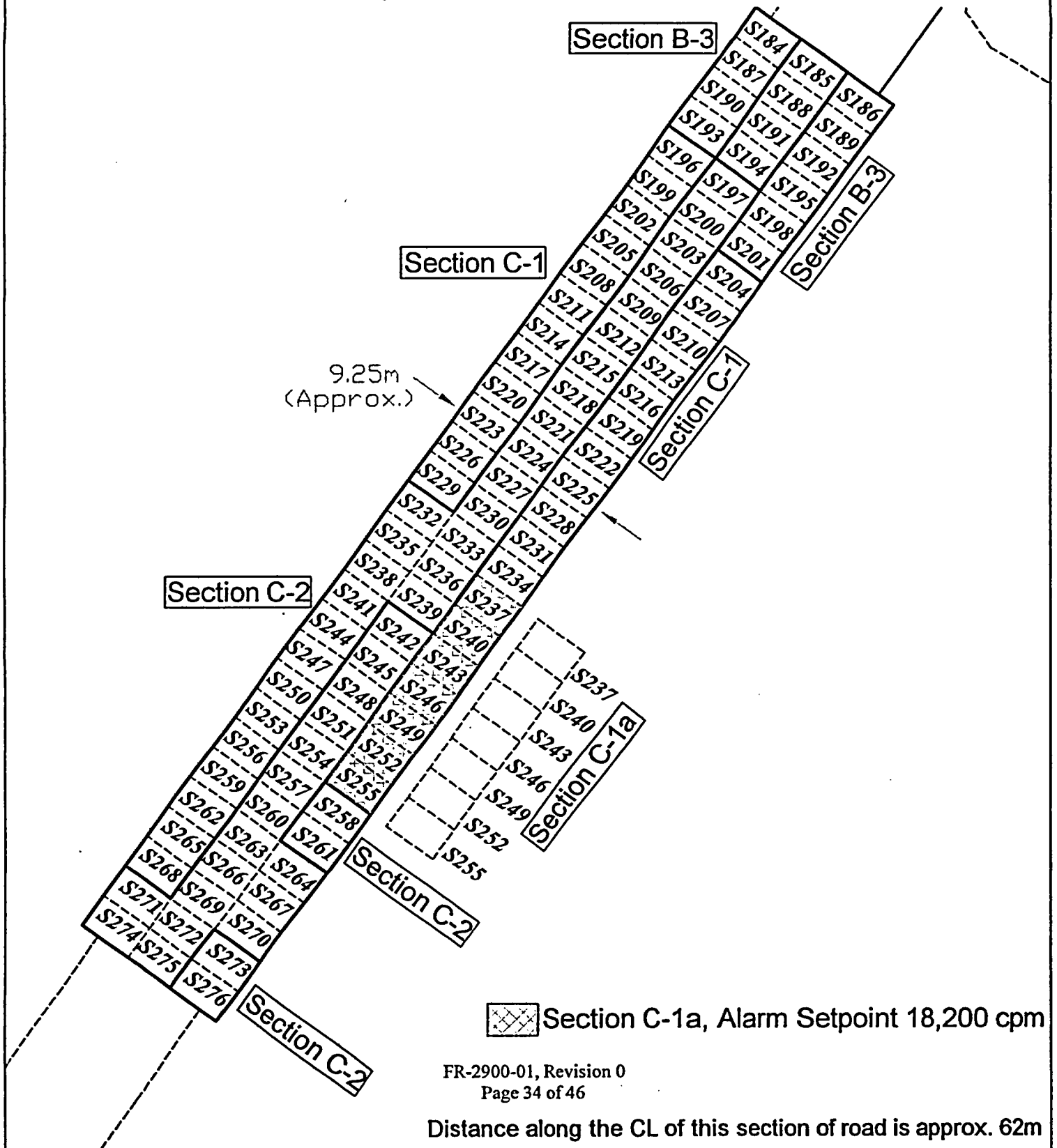
Investigation Survey XR 2900: East Plant Access Road and Lots Survey Area B3, C1, C2 Alarm Grids



Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Investigation Survey
XR 2900: East Plant Access Road and Lots
Survey Area C1a Alarm Grids



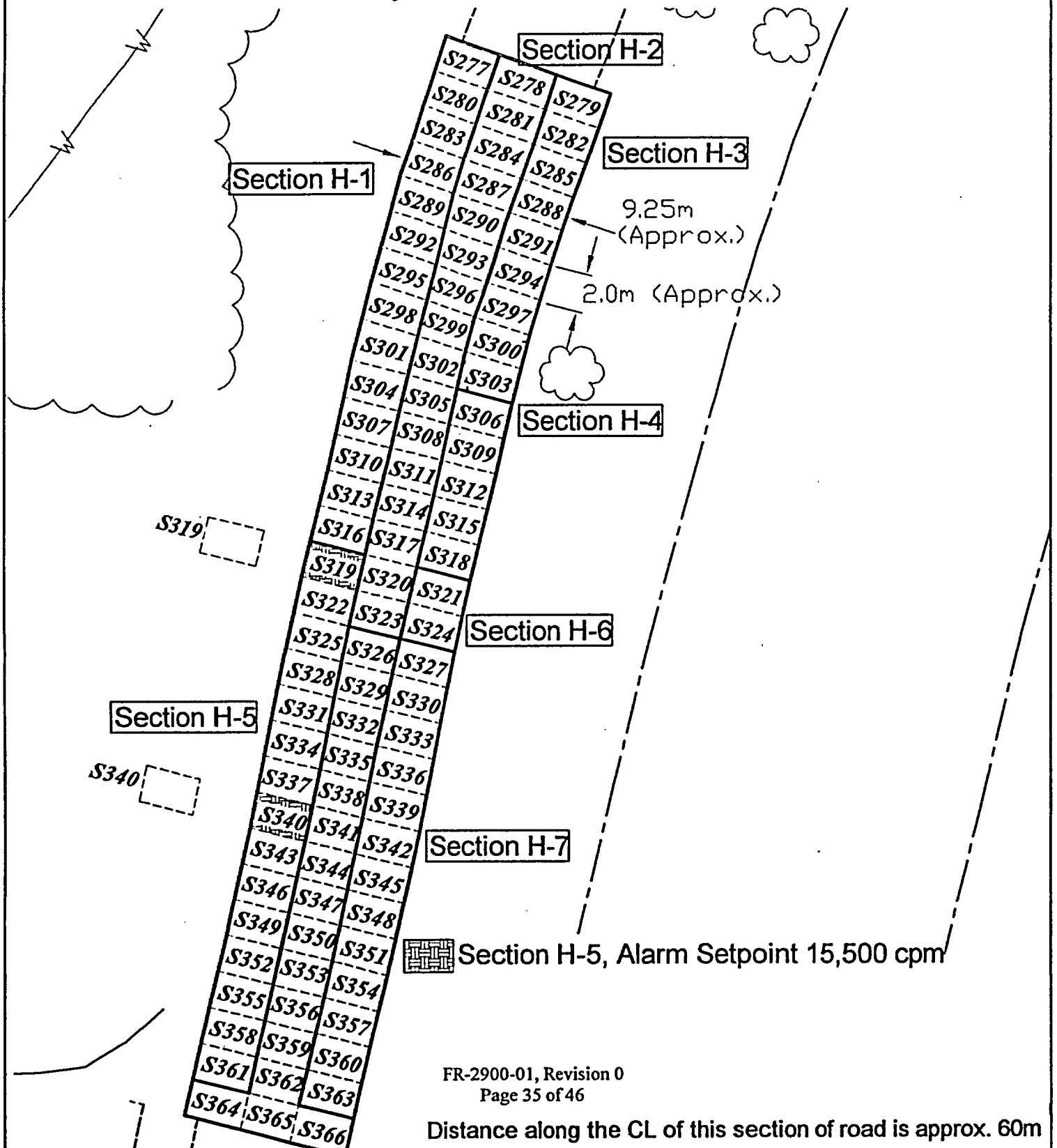
Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Investigation Survey

XR 2900: East Plant Access Road and Lots

Survey Area H5 Alarm Grids




Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey

Survey Area Name: East Plant Access Road and Lots

Investigation Survey

XR 2900: East Plant Access Road and Lots

Survey Area J Alarm Grids

 Section J, Alarm Setpoint 13,900 cpm

9.25m
(Approx.)

Section B-1

2.0m (Approx.)

Section B-2

Section B-3

Section J

BAILEY
BARN

Attachment 2

Survey Unit Instrumentation

TABLE 2-1

INSTRUMENT INFORMATION

E-600 S/N	SPA-3 Probe S/N
2488	2055
1645	726560
2618	725328
1606	2055
2617	726554

ISOCS Detectors (Field Measurements)

Detector No.	MDC (pCi/g)
7722	0.11 to 0.45
7607	0.11 to 0.45
7780	0.11 to 0.45

HPGe Detectors (Laboratory Analysis)

Detector No.	MDC (pCi/g)
FSS1	0.041 to 0.06
FSS2	0.041 to 0.06

TABLE 2-2**INSTRUMENT SCAN MDC, DCGL, AND
INVESTIGATION LEVEL**

Parameter	Instrument Values	Comments
SPA-3 Scan MDC	5.9 pCi/g Cs-137	LTP Rev 3 Table 5-6
ISOCS Scan MDC	0.11 to 0.45 pCi/g	< 25% DCGL
DCGL	4.2 pCi/g Cs-137	Approved DCGL for land areas outside the Restricted Area, LTP Section 6.7 (Reference 2)
E-600 SPA-3 Investigation Level (Alarm Setpoint)	13,600 cpm	Sections A, B-1, I
	14,300 cpm	Section B-2
	15,200 cpm	Section B-3
	16,400 cpm	Section C-1
	17,400 cpm	Section C-2
	18,500 cpm	Section C-3
	16,000 cpm	Section H-1
	17,100 cpm	Section H-2
	16,400 cpm	Section H-3
	15,100 cpm	Section H-4
	15,500 cpm	Section H-5
	16,300 cpm	Section H-6
	15,200 cpm	Section H-7
	13,900 cpm	Section J
	15,200 cpm	Section N
Investigation Level (ISOCS @ 3 m)	1.0 pCi/g Cs-137	Reference 6

Attachment 3

Investigation Table

TABLE 3-1**XR2900-01 INVESTIGATION SOIL SAMPLING RESULTS**

Section	Elevated Grid Sample Location	Initial Scan Value (cpm)	Alarm Setpoint (cpm)	Invest. Scan Value (cpm)	Invest. Scaler Value (cpm)	Activity (pCi/g Cs-137)	DCGL Comparison
A	XR2900013S003	14,220	13,600	14,070	12,970	< 4.55E-02	< DCGL
B-1	XR2900013S106	14,200	13,600	13,700	12,070	< 5.78E-02	< DCGL
B-1	XR2900013S107	14,160	13,600	13,770	11,880	< 4.51E-02	< DCGL
B-1	XR2900013S109	13,650	13,600	13,490	11,510	< 4.34E-02	< DCGL
B-1	XR2900013S110	13,650	13,600	14,070	12,090	< 4.30E-02	< DCGL
B-1	XR2900013S111	13,790	13,600	13,150	12,010	< 5.01E-02	< DCGL
B-1	XR2900013S112	13,680	13,600	13,510	12,260	< 4.81E-02	< DCGL
B-1	XR2900013S115	13,600	13,600	13,670	11,990	< 4.76E-02	< DCGL
B-1	XR2900013S118	13,910	13,600	13,540	11,890	< 5.42E-02	< DCGL
J	XR2900013S168	14,510	13,900	14,300	12,650	< 4.72E-02	< DCGL
J	XR2900013S171	14,220	13,900	14,490	12,670	< 5.06E-02	< DCGL
B-3	XR2900013S189	15,680	15,200	15,250	13,430	< 4.78E-02	< DCGL
B-3	XR2900013S192	15,210	15,200	15,250	13,810	< 4.71E-02	< DCGL
B-3	XR2900013S195	15,600	15,200	15,320	13,780	< 5.24E-02	< DCGL
B-3	XR2900013S198	15,310	15,200	15,140	13,440	< 4.69E-02	< DCGL
B-3	XR2900013S201	15,870	15,200	15,500	14,070	< 5.37E-02	< DCGL
C-1	XR2900013S225	16,430	16,400	16,280	14,180	< 4.72E-02	< DCGL
C-1	XR2900013S231	16,490	16,400	16,980	15,020	< 5.21E-02	< DCGL
C-1a	XR2900013S237	16,510	16,400	17,530	15,470	< 5.67E-02	< DCGL
C-1a	XR2900013S240	16,700	16,400	17,110	14,920	< 5.35E-02	< DCGL
C-1a	XR2900013S243	16,920	16,400	17,270	15,350	< 4.87E-02	< DCGL
C-1a	XR2900013S246	16,650	16,400	17,580	15,480	< 5.06E-02	< DCGL
C-1a	XR2900013S249	17,120	16,400	17,410	15,860	< 4.78E-02	< DCGL
C-1a	XR2900013S252	17,350	16,400	17,030	15,180	< 5.27E-02	< DCGL
C-1a	XR2900013S255	17,010	16,400	17,680	15,490	< 4.47E-02	< DCGL
C-2	XR2900013S259	17,990	17,400	17,200	15,430	< 5.11E-02	< DCGL
C-2	XR2900013S265	17,560	17,400	18,180	15,950	< 4.84E-02	< DCGL
C-2	XR2900013S268	17,590	17,400	18,030	16,150	< 5.31E-02	< DCGL
C-2	XR2900013S273	17,910	17,400	17,430	15,710	< 4.34E-02	< DCGL
C-2	XR2900013S276	17,820	17,400	17,830	16,070	< 5.26E-02	< DCGL
H-5	XR2900013S319	15,750	15,500	15,280	13,650	< 4.76E-02	< DCGL
H-5	XR2900013S340	18,140	15,500	16,790	16,840	< 4.78E-02	< DCGL
Survey Unit Mean / DCGL							0.011
Total							0.011

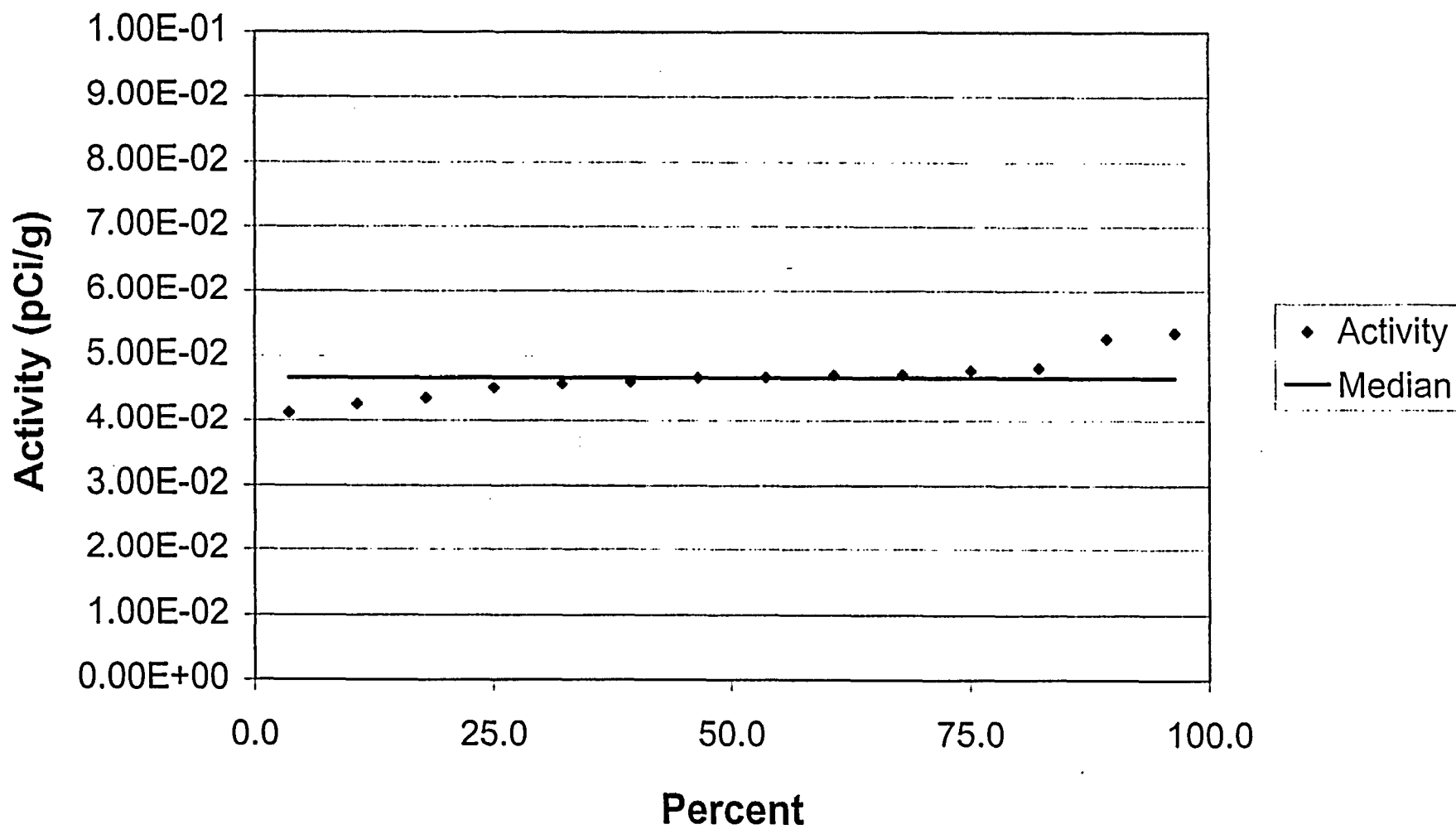
- NOTES: 1. "<" indicates value less than MDA, MDA value is reported.
2. The samples were also analyzed for Co-60; all were less than an MDA of 0.06 pCi/g.

Attachment 4
Statistical Data

Survey Package FR 2900 Unit 1 Soil Sign Test Summary

Evaluation Input Values		Comments
Survey Package:	FR 2900	East Access Road
Survey Unit:	01	
Evaluator:	Anderson	
DCGL _w :	4.20E+00	Cs-137 DCGL outside Restricted Area
DCGL _{emc} :	N/A	
LBGR:	3.50E+00	
Sigma:	2.30E-01	LTP Rev. 3 Table 5-1C for FR 2900
Type I error:	0.05	
Type II error:	0.05	
Nuclide:	CS-137	
Soil Type:	N/A	
Calculated Values		Comments
Z _{1-α} :	1.645	
Z _{1-β} :	1.645	
Sign p:	0.99865	
Calculated Relative Shift:	3.0	
Relative Shift Used:	3.0	Uses 3.0 if Relative Shift is >3
N-Value:	11	
N-Value+20%:	14	
Sample Data Values		Comments
Number of Samples:	14	
Median:	4.68E-02	
Mean:	4.67E-02	
Net Sample Standard Deviation:	3.32E-03	
Total Standard Deviation:	3.32E-03	
Maximum:	5.34E-02	
Sign Test Results		Comments
Adjusted N Value:	14	
S+ Value:	14	
Critical Value:	10	
Sign test results:	Pass	
Criteria Satisfaction		Comments
Sufficient samples collected:	Pass	
Maximum value <DCGL _w :	Pass	
Median value <DCGL _w :	Pass	
Mean value <DCGL _w :	Pass	
Maximum value <DCGL _{emc} :	Pass	N/A for Class 3
Total Standard Deviation <=Sigma:	Pass	
Criteria comparison results:	Pass	
Final Status		Comments
The survey unit passes all conditions:	Pass	Survey Unit Passes

FR-2900 SU-1 Quantile Plot



One-Sample T-Test Report

Page/Date/Time 2 9/28/04 6:38:32 AM
Database
Variable C2

Plots Section

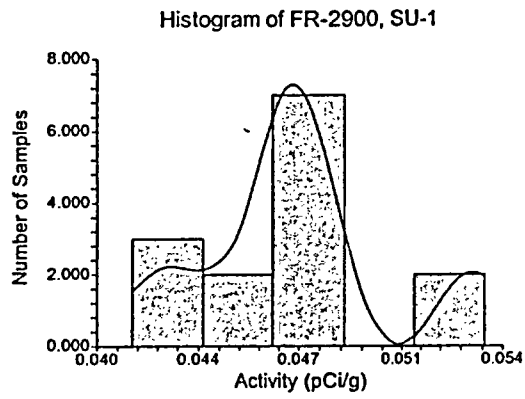


Chart Section

