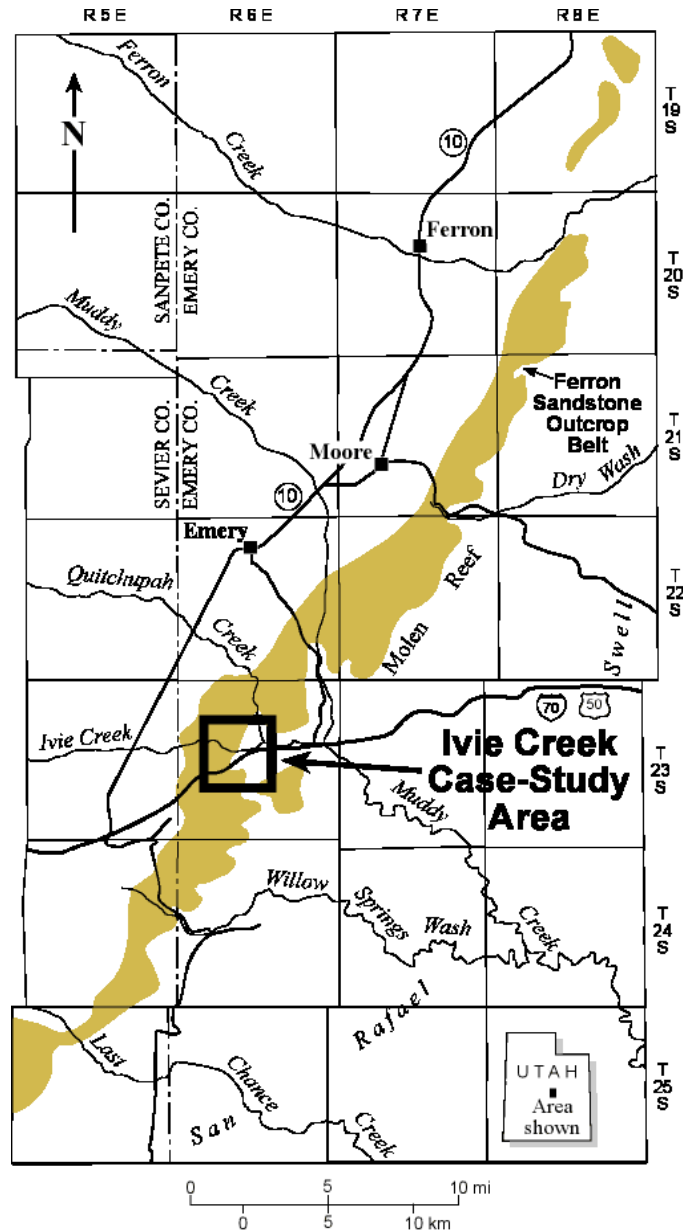


FERRON SANDSTONE PERMEABILITY DATABASE, IVIE CREEK AREA, EMERY COUNTY, UTAH

by
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PERMEABILITY DATABASE,
IVIE CREEK AREA,
EMERY COUNTY, UTAH**

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FERRON SANDSTONE
PERMEABILITY DATABASE,
IVIE CREEK AREA, EMERY COUNTY, UTAH

INTRODUCTION

The Ferron Sandstone of east-central Utah has world-class outcrops of fluvial-dominated and wave-modified deltaic, Turonian-Coniacian-age strata deposited along the margin of the rapidly subsiding Cretaceous foreland basin. The Ivie Creek area (figure 1) was selected to develop a detailed geological and petrophysical characterization, at well-sweep scale or smaller, of the primary reservoir lithofacies typically found in a fluvial-dominated deltaic reservoir. Sedimentary structures, lithofacies, bounding surfaces, and permeabilities measured along closely spaced traverses were combined with drill-hole data to develop a three-dimensional (3-D) view of the reservoir analogs within the area. This report contains raw data (see appendix) and interpretations for outcrop and drill-hole core permeability (plates 1 through 16).

The Ferron Sandstone consists of a series of stacked, transgressive-regressive cycles which form an eastward-thinning wedge. The Ivie Creek area contains abrupt facies changes in two of these regional-scale cycles or parasequence sets, the Kf-1 and Kf-2 (figure 2). Each of

these deltaic cycles produces differing geometries that can be characterized by geologic and petrophysical parameters. These parameters are used in reservoir models and simulations for oil field development and secondary or enhanced oil recovery programs.

Kf-1 consists of fluvial-dominated delta deposits that prograde southeast to northwest across the Ivie Creek area. Progradation of the unit was parallel, or onshore, to the typical regional shoreline trend. However, in the Ivie Creek area, the Kf-1 parasequence set consists of only one parasequence, Kf-1-Iv (Iv), with two bedsets referred to here as Kf-1-Iv[a] and Kf-1-Iv[c]. The older Kf-1-Iv[a] bedset has distinctive, steeply inclined beds or clinoforms defined by bedding surfaces. We interpret the Kf-1-Iv[a] as a fluvial-dominated delta deposit, which changes from proximal to distal from east to west. These clinoform deposits accumulated on an arcuate, delta lobe which prograded into a deeper water, fully marine bay. The main delta, located to the east and northeast, created a protected embayment in the northwest part of the Ivie Creek area. The Kf-1 clinoforms represent deposition into the embayment fed by river channels from the southeast. The Kf-1 clinoforms were the primary focus of the U.S. Department of Energy-funded reservoir modeling and simulation study (Chidsey, 2000), which incorporated the data in this report.

Kf-2 is represented by wave-modified deltaic deposits that generally coarsen east to west, and consist of shoreface and distributary complex facies. These relatively clean, sand-rich deposits accumulated along a local north-south shoreline trend defined by a landward pinchout of marine shoreface facies, as opposed to the more common regional northwest-southeast shoreline trend recognized in other Ferron cycles above and below Kf-2. In the western part of the Ivie Creek area, east- to northeast-flowing distributary channels deposited large amounts of sand in

north-south-trending distributary-mouth bars. Shallow- to moderate-depth marine conditions existed in the eastern part of the area. To date, no reservoir modeling or simulation study has been conducted with the permeability and other petrophysical data (included in this report) collected from the Kf-2 parasequence set in the Ivie Creek area.

Location

The Ivie Creek area is located in the central part of the Ferron outcrop belt (figure 1), about 6 miles (9.7 km) south of the town of Emery, Utah, in the center of T. 23 S., R. 6 E., Salt Lake Base Line (SLBL), Emery County. The Ferron Sandstone exposures straddle Interstate 70 (I-70). A small stream, Ivie Creek, flows just north of the interstate highway, hence the name Ivie Creek area.

Access to the area is excellent because of proximity to I-70. The “Ivie Creek amphitheater” is an informal name applied to a broad, curving area of cliffs north of I-70 where most of the data in this report were collected (figure 3).

Supporting Field Work and Drilling Program

Measured stratigraphic section locations were chosen to develop a general geologic characterization of the Ivie Creek area. Each section was located on photomosaic coverage and plotted on U.S. Geological Survey 7.5-minute topographic maps. Sections were measured using a Jacob’s staff or by directly measuring a unit’s thickness with a tape on the mostly vertical

outcrops. Description of the individual units in the measured sections included the following information: (1) primary and secondary lithologies, composition, color, and grain size of the rocks; (2) size, shape, and degree of induration of the beds; (3) sedimentary structures, biologic structures (trace fossils), and fossils in the rocks; and (4) bounding surfaces and depositional environment of the unit. Lithologic data were entered into a UGS-developed database, and then computer software was used to generate measured stratigraphic columns (sections).

The drill holes in the Ivie Creek area were located 200 to 1,200 feet (60-265 m) downdip from the Ferron outcrop to provide data for a 3-D morphologic interpretation of individual lithofacies, and to capture the various lithologic changes in the Kf-1 and Kf-2 parasequence sets. Cuttings were described and tied to existing well data from the area to pick unit tops and core points. A total of 586 feet (179 m) of core were recovered, photographed, and described from the Kf-1 and Kf-2 parasequence sets (Anderson and others, in press). Descriptions of the cored sections followed the same format as the stratigraphic sections. Drill holes and measured stratigraphic sections were correlated to interpret the stratigraphy and lithofacies.

GAMMA-RAY MEASUREMENTS

Introduction

Outcrop gamma-ray measurements for the Ferron Sandstone in the Ivie Creek area (figure 1) were collected along outcrop permeability transects to: (1) permit detailed correlation among

and between outcrop traverses (plates 1 through 13) and drill-hole gamma-ray logs (plates 14 through 16), (2) determine variations in clay-mineral content (or sand/shale ratios), and (3) detect possible diagenetic changes associated with precipitation of uranium. Variations in the gamma-ray signal are related to clay content in shaly sandstones which, in turn, influences the compartmentalization of flow units.

Methods

Field measurements were taken using a portable 256-channel gamma-ray spectrometer (figure 4) capable of determining total natural gamma counts as well as concentrations of potassium, thorium, and uranium. The spectrometer was tested in the lab and field to determine its vertical resolution and replicability. Test measurements in the field were found to be unreliable in rough topography because gamma rays entered the sides of the detector. This problem was corrected by covering the sides with lead shielding.

Field measurements showed that the total gamma-ray count is not always a reliable indicator of clay content. Potassium and thorium co-vary, probably because they are present primarily in clays. Uranium, however, is not commonly correlated with potassium and thorium. This indicates that uranium is present in minerals other than clays. Consequently, for reliable determination of clay content, potassium and thorium must be measured rather than just total gamma rays. One-minute measurements were made, almost five times the duration needed for good total-gamma values but barely sufficient for reliable potassium, thorium, and uranium measurements. Gamma-ray measurements were run along the same transects as the mini-

permeameter sampling and measured sections (figure 3). The gamma-ray profiles were manually adjusted from the raw data to better match the lithologic units of the measured sections (plates 1 through 13).

All gamma-ray outcrop logging was done along 13 vertical or near-vertical (depending on access) transects. Each transect consisted of 200 to 400 measurements at 0.5 to 1.0 foot (0.15-0.3 m) intervals. All traverses included the entire Kf-1 parasequence set, and most also included all or part of the Kf-2 parasequence set (figure 2).

MINI-PERMEAMETER MEASUREMENTS

Introduction

A large quantity of permeability data was collected and analyzed from outcrop exposures and drill-hole core in the Ivie Creek area (appendix). These data were integrated into a complete reservoir characterization product for the Kf-1 parasequence set that can assist in subsequent reservoir-simulation work. Outcrop permeability testing, when combined with detailed geologic mapping, will improve understanding of the lateral variability in permeability for specific bedform types. Vertical permeability transects provide a coarse map of vertical permeability variations. These variations can be used to correlate the lateral permeability transects with geological mapping. Twenty-two permeability transects, 18 vertical and four sub-horizontal (parallel to bedding), were made on the outcrop in the Ivie Creek area (figure 3). Additional

detailed data was provided from the three nearby drill holes.

Methods

Permeability transect locations were jointly chosen by the geological and engineering teams to include the majority of the lithofacies present in the Kf-1 and Kf-2 parasequence sets (figure 2). Data from these transects were used to determine the statistical structure of the spatially variable permeability field within the delta fronts, to investigate how geological processes control the spatial distribution of permeability, and to evaluate permeability measurement techniques. Measured stratigraphic sections and gamma-ray profiles were tied to the permeability transects (plates 1 through 13). Empirical relationships were developed between mini-permeameter measurements made in the field and laboratory-determined permeabilities. The resulting transforms were used to estimate the relative permeability values to be used as parameters in single-phase reservoir models.

Measurement intervals (station spacing) on all of the vertical transects are 0.3 feet (0.1 m) (figure 5). Core plugs were collected at 3.0-foot (1-m) spacing along the horizontal transects. Core plugs roughly 0.75 inches (0.3 cm) in diameter and 1 to 3 inches (2.5-7.5 cm) long were drilled from the outcrop at each transect station (where possible) to ensure that permeability measurements could be made on fresh, unweathered rock surfaces. Drilling experience and examination of the core plugs indicate that chemical weathering extends into the rock less than 0.5 inches (1.3 cm). Whole plugs were typically recovered only from sandstone beds greater than 2 inches (5 cm) thick. Useful plugs could usually not be obtained from thinner sandstone beds or

from thinly bedded sandstones, siltstones, and mudstones. Core-recovery rates range from 50 to nearly 100 percent. Where core plugs could not be recovered, small rock samples were taken, except where the outcrop was buried under colluvium. Each sample was washed then dried in an oven for two days in an effort to ensure that all moisture was removed from the samples prior to testing.

Permeability was measured in the laboratory on the unweathered end of the core plugs after the unweathered end was trimmed flat with a rock saw. The thin disks trimmed from the plug ends were saved for possible future petrographic analysis. At those stations where a good hole was drilled but a broken core was recovered, permeability was measured in the hole. Prior to measuring field permeability in a core hole, the back of the hole was prepared using a screwdriver and a rock hammer to chip away rough spots, providing a flat surface for the mini-permeameter probe tip. The hole was rinsed out with water and allowed to dry for at least 24 hours prior to permeability testing. The hole was also "cleaned" by a blast of compressed gas immediately before testing.

An electronic miniprobe permeameter (EMP), also referred to as the mini-permeameter, supplied by the Mobil Exploration/Producing Technical Center was used to make laboratory permeability measurements on the trimmed, whole core plugs and to make field measurements in core holes (figure 6). This instrument has an accuracy of 1 to 12 percent and a precision of 1 to 3 percent on homogenous core plugs with permeabilities ranging from 1 to 4,500 millidarcies (md) (J.R. Garrison, Jr., Mobil, verbal communication, 1994). A rack was used to secure the probe in the laboratory; an expansion packer was used to secure the probe in a core hole in the field. In both cases, an air-actuated piston pushes the probe tip against the center of the sample, providing

an air-tight coupling between the probe tip and the rock. A subset of 220 plugs was tested using Mobil's Hassler cell equipment. All test results were compiled in a spreadsheet and plotted in graphical form (plates 1 through 13). A total of 1,954 tests were performed on 1,622 core plugs taken along the transects (appendix - digital files).

Laboratory permeability testing was also performed on 3-inch- (7.6-cm-) wide slabbed core from drill holes using Mobil's stage-mounted, automated mini-permeameter. The distance between measurement points along the core ranged from 0.03 to 0.05 feet (0.9-1.5 cm). Core was selected for slabbing and testing after a series of reconnaissance mini-permeability tests were performed on segments of whole core. Detailed permeability data (1,939 measurements, appendix) were collected from approximately 110 feet (34 m) of slabbed core obtained from Ivie Creek Nos. 3, 5A, and 9A drill holes (figure 3, plates 14 through 16). These samples were tested for comparison to the other portions of the delta-front rocks. Overall, the results are similar to those obtained from outcrop-derived core plugs.

In performing the field and laboratory testing, we collected sufficient information to compare the results of *in-situ* testing (k-hole) to laboratory tests performed on core (k-plugs) collected from the holes tested in the field. Several stations were occupied multiple times in the field in order to obtain statistics to verify the precision of the mini-permeameter. In addition, several stations from which good whole core plugs were recovered were also field tested in the core hole to provide a comparison between field and laboratory measurements of permeability. The *in-situ* tests produce generally larger permeability values. We suspect that this effect might result from differences in surface preparation; the core plugs are trimmed with a saw while testing surfaces in the *in-situ* holes are chipped to a roughly flat surface. Because *in-situ* testing

requires a large field commitment (in time and field personnel) and appears to provide overestimates of rock permeability, we continued to emphasize the collection of core plugs for subsequent laboratory testing.

Due to difficulties in accessing portions of the Ivie Creek amphitheater the cliff face, 20 core plugs were collected from blocks on talus slopes that appear to have fallen from the Kf-1-Iv[a] bedset in the eastern part of the Ivie Creek area. Samples were tested two ways. First, the samples were tested after only brushing off the drill cuttings (unprepared). Second, each sample was washed then dried in an oven for two days in an effort to ensure that all moisture was removed from the samples prior to testing. Apparently, for the samples tested, sample preparation method has little impact on permeability test results.

Outcrop core-plug sampling of both the Kf-1 and Kf-2 parasequence sets shows that at least 14 percent porosity is required to obtain measurable permeabilities with the mini-permeameter.

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Mobil Exploration/Producing Technical Center supplied the mini-permeameter, and technical training and field assistance was provided by J.R. Garrison, Jr. This report was reviewed by Dave Tabet, and Mike Hylland, Utah Geological Survey, and prepared by Cheryl Gustin.

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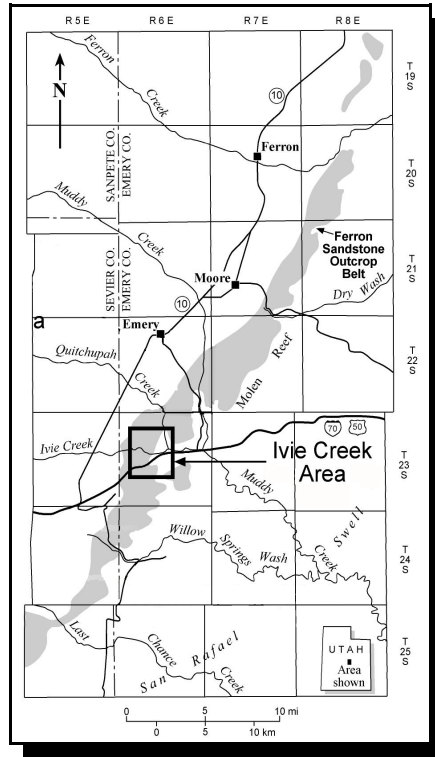


Figure 1. Location map of the Ferron Sandstone project area (outcrop belt is shaded) showing the Ivie Creek area.

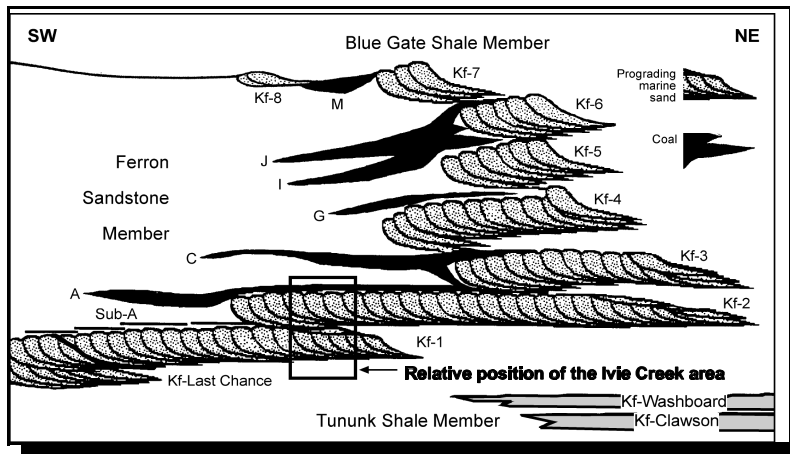


Figure 2. Diagrammatic cross section showing relative positions of Ferron parasequence sets with their associated coal zones (black), and the relative position of the Ivie Creek area within the Ferron Sandstone (from Ryer, 1991; Anderson and others, 1997). The diagram has no scale.

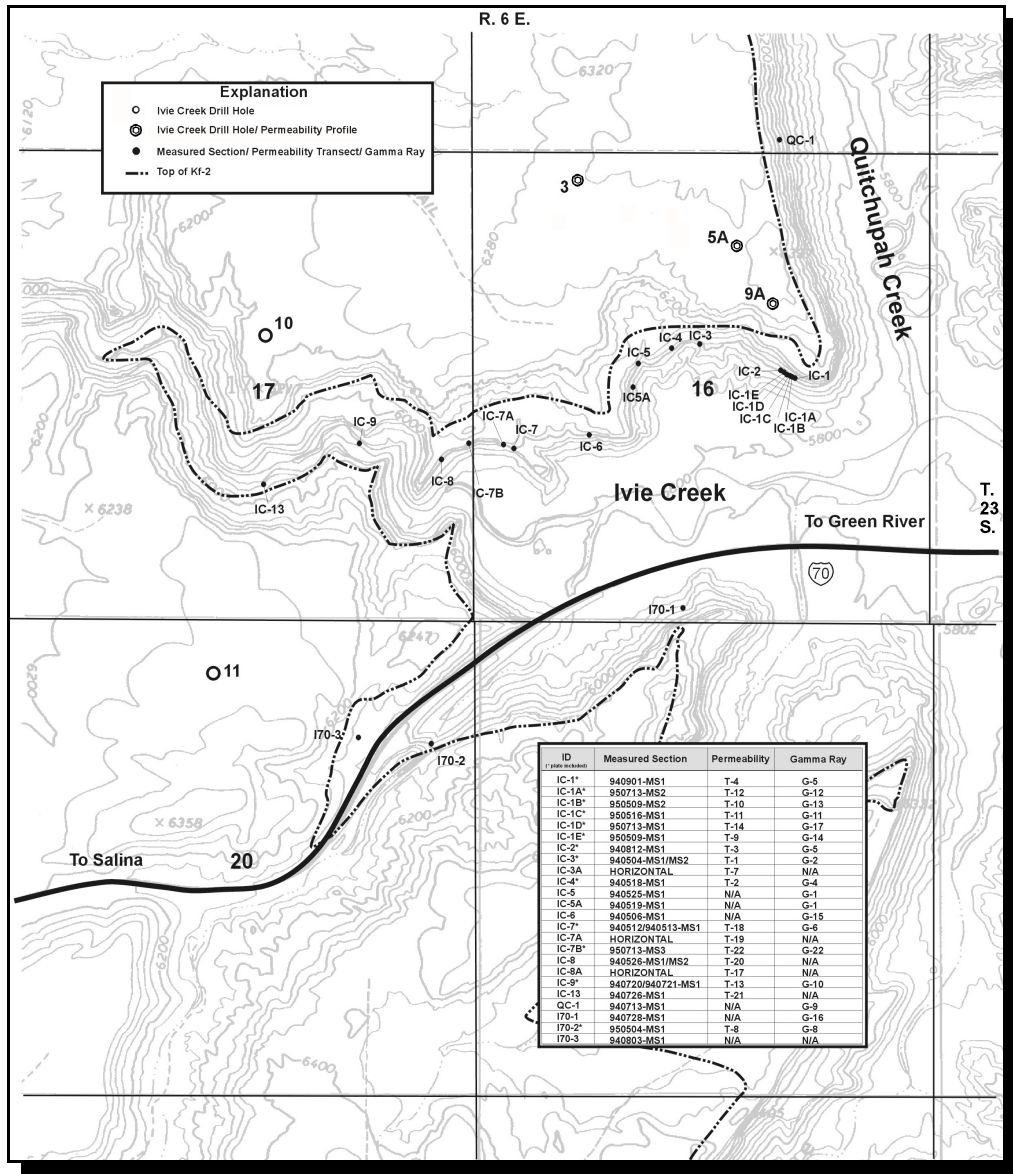


Figure 3. Data collection point locations in the Ivie Creek area, Emery County, Utah.



Figure 4. Gamma-ray spectrometer measures natural gamma counts and concentrations of potassium, thorium, and uranium along a measured section in the Ivie Creek area.



Figure 5. Core-plug sampling along a vertical permeability transect in the Ivie Creek area.



Figure 6. The electronic miniprobe permeameter measuring permeability in a core hole in the Ivie Creek area.

APPENDIX

IVIE CREEK AREA PERMEABILITY DATA TABLES

Ferron Project: UGS Ivie Creek Drill Hole #3

Column 1: depth (ft)

Column 2: permeability (millidarcies) -99.00 indicates no measurement was made

293.65	0.56	295.70	-99.00	297.75	4.65	299.80	0.71
293.70	-99.00	295.75	4.04	297.80	4.33	299.85	0.63
293.75	0.55	295.80	0.90	297.85	0.63	299.90	0.60
293.80	0.56	295.85	0.67	297.90	0.73	299.95	0.60
293.85	1.00	295.90	-99.00	297.95	0.66	300.00	0.69
293.90	1.00	295.95	0.85	298.00	1.00	300.05	-99.00
293.95	3.79	296.00	0.64	298.05	1.00	300.10	0.60
294.00	0.82	296.05	-99.00	298.10	-99.00	300.15	0.86
294.05	0.72	296.10	-99.00	298.15	0.92	300.20	0.62
294.10	1.41	296.15	0.63	298.20	1.00	300.25	0.58
294.15	1.36	296.20	-99.00	298.25	1.17	300.30	0.63
294.20	1.04	296.25	-99.00	298.30	0.57	300.35	1.43
294.25	1.01	296.30	1.72	298.35	0.56	300.40	1.75
294.30	1.00	296.35	2.08	298.40	0.61	300.45	0.92
294.35	1.13	296.40	3.29	298.45	0.72	300.50	1.00
294.40	1.11	296.45	2.38	298.50	0.69	300.55	1.51
294.45	5.00	296.50	2.26	298.55	0.63	300.60	1.04
294.50	1.21	296.55	5.20	298.60	-99.00	300.65	-99.00
294.55	1.44	296.60	6.09	298.65	3.46	300.70	1.00
294.60	-99.00	296.65	6.11	298.70	0.63	300.75	0.88
294.65	2.22	296.70	5.91	298.75	0.60	300.80	0.62
294.70	11.56	296.75	7.37	298.80	1.00	300.85	-99.00
294.75	5.00	296.80	1.97	298.85	0.59	300.90	0.60
294.80	5.01	296.85	5.77	298.90	0.63	300.95	0.62
294.85	1.21	296.90	7.70	298.95	0.56	301.00	0.63
294.90	0.70	296.95	5.33	299.00	-99.00	301.05	0.66
294.95	4.08	297.00	6.25	299.05	0.55	301.10	0.93
295.00	5.32	297.05	7.36	299.10	0.57	301.15	-99.00
295.05	3.90	297.10	8.26	299.15	0.56	301.20	0.63
295.10	-99.00	297.15	7.53	299.20	0.58	301.25	0.62
295.15	1.36	297.20	-99.00	299.25	-99.00	301.30	0.57
295.20	1.83	297.25	6.80	299.30	0.56	301.35	0.58
295.25	1.37	297.30	6.05	299.35	0.56	301.40	0.58
295.30	3.08	297.35	7.94	299.40	-99.00	301.45	21.77
295.35	3.87	297.40	4.93	299.45	0.58	301.50	0.65
295.40	3.71	297.45	8.45	299.50	0.73	301.55	0.82
295.45	5.06	297.50	7.27	299.55	1.00	301.60	2.75
295.50	5.00	297.55	6.31	299.60	1.00	301.65	0.75
295.55	4.56	297.60	-99.00	299.65	1.00	301.70	0.73
295.60	3.13	297.65	5.34	299.70	1.00	301.75	0.89
295.65	3.53	297.70	4.01	299.75	0.81	301.80	0.79

301.85	0.67	304.10	2.04	306.35	10.26	308.60	2.10
301.90	1.04	304.15	2.75	306.40	10.81	308.65	4.51
301.95	1.55	304.20	6.27	306.45	10.74	308.70	2.89
302.00	1.13	304.25	6.65	306.50	13.96	308.75	1.89
302.05	0.72	304.30	-99.00	306.55	12.69	308.80	2.15
302.10	0.64	304.35	7.00	306.60	14.55	308.85	-99.00
302.15	0.59	304.40	8.32	306.65	7.78	308.90	-99.00
302.20	0.60	304.45	6.31	306.70	8.62	308.95	3.43
302.25	0.59	304.50	9.15	306.75	13.01	309.00	3.72
302.30	0.58	304.55	8.79	306.80	15.31	309.05	3.38
302.35	0.58	304.60	9.53	306.85	-99.00	309.10	2.04
302.40	-99.00	304.65	6.21	306.90	12.36	309.15	3.57
302.45	-99.00	304.70	6.03	306.95	13.03	309.20	3.55
302.50	0.58	304.75	9.97	307.00	13.31	309.25	2.81
302.55	0.57	304.80	9.28	307.05	12.83	309.30	2.68
302.60	0.57	304.85	6.13	307.10	11.92	309.35	2.46
302.65	0.57	304.90	8.52	307.15	11.35	309.40	0.84
302.70	-99.00	304.95	-99.00	307.20	9.27	309.45	1.00
302.75	0.57	305.00	11.34	307.25	7.48	309.50	0.68
302.80	0.59	305.05	11.98	307.30	7.88	309.55	0.58
302.85	0.98	305.10	17.40	307.35	12.05	309.60	0.75
302.90	0.99	305.15	13.36	307.40	14.38	309.65	-99.00
302.95	0.62	305.20	20.76	307.45	-99.00	309.70	0.60
303.00	0.76	305.25	-99.00	307.50	7.48	309.75	0.66
303.05	2.00	305.30	16.56	307.55	10.16	309.80	0.64
303.10	-99.00	305.35	17.63	307.60	9.11	309.85	0.70
303.15	1.00	305.40	14.67	307.65	10.99	309.90	1.01
303.20	1.99	305.45	12.81	307.70	8.25	309.95	1.00
303.25	4.45	305.50	-99.00	307.75	8.56	310.00	0.98
303.30	4.58	305.55	14.09	307.80	4.97	310.05	-99.00
303.35	4.92	305.60	14.71	307.85	12.17	310.10	1.19
303.40	6.17	305.65	9.58	307.90	7.17	310.15	-99.00
303.45	4.79	305.70	15.40	307.95	7.23	310.20	0.59
303.50	-99.00	305.75	15.66	308.00	6.04	310.25	0.57
303.55	3.79	305.80	15.82	308.05	5.00	310.30	0.65
303.60	4.66	305.85	17.84	308.10	2.10	310.35	0.69
303.65	12.16	305.90	15.44	308.15	-99.00	310.40	-99.00
303.70	7.10	305.95	13.35	308.20	0.72	310.45	-99.00
303.75	12.96	306.00	16.55	308.25	1.94	310.50	-99.00
303.80	12.56	306.05	13.30	308.30	4.74	310.55	-99.00
303.85	2.38	306.10	15.14	308.35	1.86	310.60	0.82
303.90	2.74	306.15	15.62	308.40	5.15	310.65	0.80
303.95	1.25	306.20	-99.00	308.45	2.40	310.70	1.00
304.00	2.50	306.25	22.01	308.50	3.52	310.75	1.73
304.05	4.27	306.30	8.92	308.55	2.17	310.80	0.82

310.85	1.00	313.10	1.00	315.35	5.42	317.60	-99.00
310.90	-99.00	313.15	0.88	315.40	6.57	317.65	-99.00
310.95	-99.00	313.20	1.48	315.45	4.18	317.70	-99.00
311.00	-99.00	313.25	2.26	315.50	2.31	317.75	-99.00
311.05	0.92	313.30	0.99	315.55	2.18	317.80	2.95
311.10	0.82	313.35	1.05	315.60	6.23	317.85	6.05
311.15	1.00	313.40	2.07	315.65	2.12	317.90	5.32
311.20	1.00	313.45	-99.00	315.70	4.36	317.95	7.19
311.25	-99.00	313.50	1.63	315.75	-99.00	318.00	7.21
311.30	-99.00	313.55	5.84	315.80	3.14	318.05	4.62
311.35	-99.00	313.60	3.36	315.85	3.93	318.10	4.88
311.40	-99.00	313.65	2.16	315.90	1.91	318.15	3.54
311.45	0.64	313.70	1.18	315.95	3.16	318.20	4.03
311.50	0.64	313.75	5.08	316.00	3.39	318.25	6.69
311.55	0.62	313.80	6.18	316.05	6.58	318.30	5.21
311.60	0.61	313.85	-99.00	316.10	2.78	318.35	3.64
311.65	-99.00	313.90	10.57	316.15	3.69	318.40	1.31
311.70	0.98	313.95	7.94	316.20	5.79	318.45	3.48
311.75	0.73	314.00	6.23	316.25	-99.00	318.50	1.55
311.80	0.66	314.05	3.51	316.30	4.26	318.55	2.96
311.85	0.77	314.10	5.35	316.35	3.36	318.60	5.57
311.90	0.59	314.15	16.64	316.40	-99.00	318.65	3.13
311.95	0.62	314.20	13.26	316.45	2.89	318.70	2.83
312.00	-99.00	314.25	11.59	316.50	2.91	318.75	1.97
312.05	2.08	314.30	3.21	316.55	1.70	318.80	1.75
312.10	3.89	314.35	2.90	316.60	6.23	318.85	1.41
312.15	2.25	314.40	-99.00	316.65	1.97	318.90	5.34
312.20	2.41	314.45	1.58	316.70	3.33	318.95	-99.00
312.25	2.05	314.50	2.95	316.75	8.69	319.00	12.57
312.30	1.61	314.55	1.97	316.80	2.82	319.05	4.13
312.35	1.71	314.60	4.26	316.85	2.36	319.10	5.52
312.40	1.00	314.65	5.69	316.90	7.56	319.15	2.12
312.45	1.03	314.70	6.61	316.95	16.36	319.20	1.64
312.50	1.00	314.75	-99.00	317.00	17.21	319.25	3.16
312.55	0.67	314.80	-99.00	317.05	-99.00	319.30	-99.00
312.60	0.98	314.85	1.85	317.10	10.18	319.35	7.13
312.65	5.08	314.90	5.00	317.15	15.74	319.40	1.00
312.70	6.43	314.95	5.22	317.20	24.46	319.45	2.03
312.75	3.20	315.00	5.12	317.25	-99.00	319.50	0.93
312.80	5.00	315.05	5.60	317.30	5.96	319.55	1.00
312.85	15.15	315.10	1.59	317.35	4.48	319.60	1.22
312.90	5.90	315.15	9.39	317.40	5.13	319.65	1.00
312.95	4.14	315.20	-99.00	317.45	9.59	319.70	0.87
313.00	1.44	315.25	2.67	317.50	7.62	319.75	1.00
313.05	0.72	315.30	9.74	317.55	6.64	319.80	1.11

319.85	1.27	322.10	12.24	324.35	8.54	326.60	2.42
319.90	1.25	322.15	17.00	324.40	-99.00	326.65	4.68
319.95	0.97	322.20	12.61	324.45	7.97	326.70	7.27
320.00	0.83	322.25	13.49	324.50	10.37	326.75	9.24
320.05	0.85	322.30	20.32	324.55	8.88	326.80	6.89
320.10	0.65	322.35	16.53	324.60	10.76	326.85	6.20
320.15	0.58	322.40	17.43	324.65	8.07	326.90	4.61
320.20	0.63	322.45	20.06	324.70	-99.00	326.95	4.95
320.25	0.63	322.50	-99.00	324.75	10.94	327.00	3.74
320.30	-99.00	322.55	2.37	324.80	11.15	327.05	-99.00
320.35	0.61	322.60	1.08	324.85	12.37	327.10	6.91
320.40	0.59	322.65	-99.00	324.90	15.77	327.15	14.84
320.45	1.90	322.70	13.49	324.95	13.06	327.20	3.55
320.50	1.59	322.75	11.50	325.00	26.09	327.25	2.29
320.55	2.83	322.80	13.06	325.05	-99.00	327.30	2.75
320.60	2.93	322.85	19.42	325.10	10.46	327.35	1.80
320.65	2.53	322.90	15.05	325.15	8.89	327.40	2.67
320.70	3.52	322.95	13.32	325.20	16.69	327.45	4.48
320.75	5.84	323.00	12.64	325.25	15.10	327.50	3.66
320.80	3.87	323.05	15.15	325.30	12.58	327.55	5.71
320.85	6.48	323.10	-99.00	325.35	11.51	327.60	3.46
320.90	4.94	323.15	10.49	325.40	16.29	327.65	5.15
320.95	3.97	323.20	10.06	325.45	12.62	327.70	-99.00
321.00	9.67	323.25	9.26	325.50	9.18	327.75	4.82
321.05	12.92	323.30	10.56	325.55	5.50	327.80	16.98
321.10	6.34	323.35	14.53	325.60	12.69	327.85	12.28
321.15	12.79	323.40	11.39	325.65	8.30	327.90	10.13
321.20	11.75	323.45	11.11	325.70	8.27	327.95	8.64
321.25	-99.00	323.50	10.47	325.75	8.86	328.00	13.38
321.30	10.40	323.55	10.68	325.80	9.58	328.05	8.24
321.35	9.51	323.60	-99.00	325.85	10.88	328.10	15.88
321.40	9.79	323.65	13.50	325.90	-99.00	328.15	1.24
321.45	12.44	323.70	11.87	325.95	5.99	328.20	-99.00
321.50	-99.00	323.75	15.64	326.00	5.17	328.25	1.85
321.55	15.79	323.80	14.16	326.05	6.39	328.30	3.56
321.60	12.22	323.85	-99.00	326.10	1.28	328.35	-99.00
321.65	17.03	323.90	0.76	326.15	3.97	328.40	1.12
321.70	11.69	323.95	-99.00	326.20	2.40	328.45	6.94
321.75	21.04	324.00	3.60	326.25	3.93	328.50	1.00
321.80	14.61	324.05	5.00	326.30	5.98	328.55	-99.00
321.85	28.51	324.10	5.27	326.35	3.16	328.60	3.09
321.90	19.78	324.15	6.61	326.40	1.87	328.65	4.23
321.95	18.20	324.20	20.19	326.45	1.92	328.70	-99.00
322.00	21.87	324.25	11.54	326.50	3.20	328.75	1.71
322.05	1.04	324.30	8.58	326.55	3.54	328.80	1.98

328.85	-99.00	331.10	-99.00	333.35	3.65	335.60	0.65
328.90	4.64	331.15	1.68	333.40	2.97	335.65	0.63
328.95	14.37	331.20	2.08	333.45	.00	335.70	1.08
329.00	17.07	331.25	1.00	333.50	0.34	335.75	0.64
329.05	7.15	331.30	2.07	333.55	-99.00	335.80	0.76
329.10	5.35	331.35	1.00	333.60	0.38	335.85	0.66
329.15	.00	331.40	0.91	333.65	0.64	335.90	0.70
329.20	.00	331.45	0.71	333.70	-99.00	335.95	0.74
329.25	1.50	331.50	0.65	333.75	6.00	336.00	1.00
329.30	1.02	331.55	0.92	333.80	-99.00	336.05	-99.00
329.35	0.92	331.60	-99.00	333.85	3.37	336.10	1.34
329.40	1.14	331.65	4.80	333.90	6.07	336.15	0.69
329.45	3.44	331.70	1.17	333.95	9.81	336.20	0.79
329.50	4.30	331.75	0.91	334.00	13.76	336.25	0.71
329.55	5.95	331.80	0.62	334.05	22.17	336.30	1.00
329.60	9.07	331.85	3.46	334.10	4.93	336.35	0.75
329.65	15.43	331.90	-99.00	334.15	6.27	336.40	0.80
329.70	14.39	331.95	0.62	334.20	-99.00	336.45	0.96
329.75	22.29	332.00	4.43	334.25	4.76	336.50	0.92
329.80	-99.00	332.05	0.62	334.30	5.61	336.55	0.77
329.85	25.00	332.10	-99.00	334.35	6.88	336.60	0.64
329.90	20.82	332.15	0.83	334.40	.00	336.65	0.70
329.95	24.52	332.20	-99.00	334.45	5.33	336.70	0.64
330.00	17.45	332.25	0.64	334.50	18.89	336.75	1.00
330.05	27.23	332.30	-99.00	334.55	7.64	336.80	-99.00
330.10	9.80	332.35	3.33	334.60	2.73	336.85	0.72
330.15	-99.00	332.40	.00	334.65	2.71	336.90	0.95
330.20	-99.00	332.45	4.62	334.70	1.30	336.95	-99.00
330.25	1.93	332.50	2.42	334.75	0.77	337.00	0.86
330.30	2.02	332.55	2.68	334.80	2.48	337.05	-99.00
330.35	1.03	332.60	-99.00	334.85	6.53	337.10	0.60
330.40	2.03	332.65	-99.00	334.90	.00	337.15	0.60
330.45	3.42	332.70	1.21	334.95	1.00	337.20	0.65
330.50	1.00	332.75	0.58	335.00	2.25	337.25	0.62
330.55	-99.00	332.80	0.77	335.05	0.66	337.30	0.67
330.60	-99.00	332.85	1.40	335.10	0.86	337.35	2.91
330.65	4.22	332.90	4.01	335.15	0.40	337.40	0.66
330.70	2.83	332.95	4.26	335.20	0.67	337.45	0.68
330.75	2.13	333.00	5.36	335.25	0.67	337.50	0.60
330.80	1.96	333.05	23.74	335.30	0.66	337.55	0.68
330.85	1.31	333.10	-99.00	335.35	0.74	337.60	0.41
330.90	-99.00	333.15	3.82	335.40	0.68	337.65	0.71
330.95	3.05	333.20	21.50	335.45	0.64	337.70	0.41
331.00	3.94	333.25	6.96	335.50	0.67	337.75	0.61
331.05	1.00	333.30	-99.00	335.55	1.00	337.80	0.65

337.85	-99.00	340.10	-99.00	342.35	0.42
337.90	2.18	340.15	0.61	342.40	0.59
337.95	0.80	340.20	0.59	342.45	0.58
338.00	0.73	340.25	0.41	342.50	0.60
338.05	0.66	340.30	0.41	342.55	0.40
338.10	0.60	340.35	0.59	342.60	0.59
338.15	0.39	340.40	0.41	342.65	0.59
338.20	0.40	340.45	0.60	342.70	0.41
338.25	0.60	340.50	0.61	342.75	-99.00
338.30	0.65	340.55	0.60	342.80	0.41
338.35	0.62	340.60	0.65	342.85	0.40
338.40	0.66	340.65	0.59	342.90	0.41
338.45	0.96	340.70	0.60	342.95	0.58
338.50	0.60	340.75	0.59	343.00	0.59
338.55	0.41	340.80	0.61	343.05	0.62
338.60	0.60	340.85	0.60	343.10	0.58
338.65	0.62	340.90	0.61	343.15	0.60
338.70	-99.00	340.95	0.60	343.20	0.60
338.75	0.63	341.00	0.65	343.25	0.41
338.80	0.66	341.05	1.24	343.30	0.40
338.85	0.86	341.10	1.03	343.35	-99.00
338.90	0.60	341.15	0.69	343.40	0.41
338.95	0.60	341.20	0.64	343.45	0.41
339.00	0.64	341.25	0.64	343.50	-99.00
339.05	0.63	341.30	0.68	343.55	0.59
339.10	0.99	341.35	0.69	343.60	0.58
339.15	0.67	341.40	0.81	343.65	-99.00
339.20	0.67	341.45	0.69	343.70	0.59
339.25	0.67	341.50	0.63		
339.30	0.66	341.55	0.64		
339.35	0.60	341.60	-99.00		
339.40	0.58	341.65	3.18		
339.45	0.39	341.70	0.84		
339.50	0.59	341.75	2.48		
339.55	0.61	341.80	3.70		
339.60	0.41	341.85	0.69		
339.65	0.61	341.90	1.02		
339.70	0.62	341.95	1.43		
339.75	0.40	342.00	0.82		
339.80	0.40	342.05	0.68		
339.85	0.41	342.10	0.65		
339.90	0.60	342.15	0.63		
339.95	0.62	342.20	0.67		
340.00	0.60	342.25	0.62		
340.05	0.60	342.30	0.63		

Ferron Project: UGS Ivie Creek Drill Hole #5a

Column 1: depth (ft)

Column 2: permeability (md) -99.00 indicates no measurement was made

207.45	0.79	209.50	1.09	211.55	1.00	213.60	2.14
207.50	0.74	209.55	0.92	211.60	4.93	213.65	-99.00
207.55	0.82	209.60	0.92	211.65	1.00	213.70	-99.00
207.60	0.78	209.65	1.00	211.70	0.95	213.75	1.76
207.65	1.01	209.70	0.84	211.75	0.83	213.80	-99.00
207.70	0.81	209.75	2.08	211.80	0.92	213.85	0.94
207.75	1.49	209.80	0.96	211.85	1.00	213.90	5.76
207.80	-99.00	209.85	0.95	211.90	1.23	213.95	1.48
207.85	1.32	209.90	0.67	211.95	1.30	214.00	1.11
207.90	-99.00	209.95	0.76	212.00	1.05	214.05	-99.00
207.95	1.00	210.00	0.78	212.05	1.38	214.10	0.74
208.00	9.23	210.05	3.68	212.10	1.96	214.15	1.01
208.05	1.00	210.10	1.00	212.15	1.40	214.20	1.06
208.10	1.18	210.15	0.73	212.20	4.28	214.25	1.11
208.15	-99.00	210.20	0.86	212.25	2.17	214.30	0.72
208.20	1.00	210.25	0.82	212.30	4.61	214.35	-99.00
208.25	0.96	210.30	1.00	212.35	-99.00	214.40	-99.00
208.30	0.86	210.35	7.50	212.40	1.11	214.45	-99.00
208.35	0.92	210.40	1.20	212.45	1.29	214.50	-99.00
208.40	1.00	210.45	1.05	212.50	1.00	214.55	-99.00
208.45	0.69	210.50	-99.00	212.55	1.29	214.60	-99.00
208.50	-99.00	210.55	0.83	212.60	1.00	214.65	-99.00
208.55	-99.00	210.60	1.07	212.65	1.00	214.70	-99.00
208.60	-99.00	210.65	1.10	212.70	-99.00	214.75	-99.00
208.65	-99.00	210.70	0.84	212.75	11.94	214.80	-99.00
208.70	-99.00	210.75	1.05	212.80	718.20	214.85	-99.00
208.75	-99.00	210.80	1.00	212.85	-99.00	214.90	18.44
208.80	-99.00	210.85	-99.00	212.90	-99.00	214.95	23.51
208.85	-99.00	210.90	9.75	212.95	-99.00	215.00	33.06
208.90	1.00	210.95	1.00	213.00	-99.00	215.05	29.50
208.95	-99.00	211.00	3.51	213.05	3.11	215.10	36.92
209.00	1.01	211.05	1.00	213.10	1.00	215.15	30.22
209.05	1.00	211.10	1.28	213.15	1.00	215.20	22.89
209.10	1.12	211.15	1.00	213.20	1.00	215.25	13.11
209.15	1.00	211.20	1.00	213.25	1.02	215.30	14.81
209.20	2.83	211.25	1.00	213.30	1.09	215.35	64.33
209.25	1.12	211.30	4.84	213.35	4.12	215.40	-99.00
209.30	1.00	211.35	98.28	213.40	-99.00	215.45	-99.00
209.35	0.70	211.40	14.28	213.45	0.92	215.50	-99.00
209.40	1.00	211.45	3.26	213.50	1.39	215.55	-99.00
209.45	0.94	211.50	-99.00	213.55	0.96	215.60	-99.00

215.65	18.13	217.90	21.80	220.15	28.10	222.40	6.12
215.70	19.05	217.95	39.27	220.20	12.81	222.45	6.66
215.75	21.36	218.00	18.44	220.25	10.53	222.50	8.23
215.80	14.22	218.05	17.62	220.30	8.11	222.55	1.77
215.85	20.36	218.10	22.31	220.35	-99.00	222.60	-99.00
215.90	23.55	218.15	-99.00	220.40	1.09	222.65	3.56
215.95	35.16	218.20	-99.00	220.45	1.84	222.70	6.49
216.00	22.90	218.25	-99.00	220.50	1.91	222.75	-99.00
216.05	17.97	218.30	-99.00	220.55	5.19	222.80	1.31
216.10	-99.00	218.35	-99.00	220.60	3.51	222.85	1.35
216.15	-99.00	218.40	-99.00	220.65	5.60	222.90	1.25
216.20	-99.00	218.45	-99.00	220.70	3.36	222.95	1.00
216.25	-99.00	218.50	-99.00	220.75	10.77	223.00	2.67
216.30	-99.00	218.55	-99.00	220.80	12.13	223.05	4.69
216.35	-99.00	218.60	-99.00	220.85	23.16	223.10	1.90
216.40	-99.00	218.65	-99.00	220.90	7.97	223.15	2.18
216.45	18.63	218.70	17.49	220.95	6.75	223.20	1.04
216.50	18.29	218.75	14.22	221.00	25.02	223.25	1.26
216.55	18.17	218.80	10.03	221.05	18.80	223.30	-99.00
216.60	-99.00	218.85	6.47	221.10	9.27	223.35	12.95
216.65	-99.00	218.90	5.12	221.15	6.40	223.40	7.32
216.70	-99.00	218.95	3.11	221.20	10.62	223.45	11.16
216.75	-99.00	219.00	2.26	221.25	10.62	223.50	13.10
216.80	-99.00	219.05	1.51	221.30	3.85	223.55	10.84
216.85	-99.00	219.10	-99.00	221.35	8.15	223.60	20.56
216.90	-99.00	219.15	1.33	221.40	13.69	223.65	14.72
216.95	-99.00	219.20	2.10	221.45	10.04	223.70	14.35
217.00	-99.00	219.25	2.45	221.50	30.93	223.75	15.13
217.05	-99.00	219.30	4.97	221.55	13.18	223.80	13.52
217.10	-99.00	219.35	7.44	221.60	3.89	223.85	13.06
217.15	-99.00	219.40	9.05	221.65	3.02	223.90	13.42
217.20	-99.00	219.45	-99.00	221.70	2.36	223.95	8.50
217.25	-99.00	219.50	12.96	221.75	-99.00	224.00	9.53
217.30	-99.00	219.55	-99.00	221.80	2.04	224.05	10.07
217.35	14.65	219.60	-99.00	221.85	3.13	224.10	4.70
217.40	25.52	219.65	16.73	221.90	2.14	224.15	3.93
217.45	-99.00	219.70	-99.00	221.95	5.04	224.20	0.97
217.50	22.39	219.75	-99.00	222.00	2.79	224.25	1.00
217.55	21.23	219.80	11.94	222.05	2.78	224.30	1.46
217.60	20.77	219.85	12.03	222.10	6.65	224.35	1.35
217.65	14.35	219.90	10.74	222.15	2.21	224.40	1.00
217.70	23.08	219.95	4.40	222.20	7.26	224.45	-99.00
217.75	28.04	220.00	4.12	222.25	6.75	224.50	0.81
217.80	49.98	220.05	16.48	222.30	6.30	224.55	1.00
217.85	17.60	220.10	14.65	222.35	3.43	224.60	1.00

224.65	1.55	226.90	0.64
224.70	1.71	226.95	0.63
224.75	2.07	227.00	0.63
224.80	5.58	227.05	-99.00
224.85	7.35	227.10	-99.00
224.90	3.15	227.15	0.65
224.95	6.02	227.20	0.64
225.00	-99.00	227.25	0.59
225.05	1.41	227.30	0.62
225.10	4.95	227.35	0.71
225.15	0.93	227.40	0.64
225.20	-99.00	227.45	0.69
225.25	1.72	227.50	0.75
225.30	1.39	227.55	0.70
225.35	1.52	227.60	0.70
225.40	-99.00	227.65	0.66
225.45	-99.00	227.70	0.69
225.50	1.18	227.75	0.67
225.55	0.92	227.80	0.92
225.60	0.98	227.85	0.69
225.65	2.22	227.90	0.65
225.70	1.00	227.95	-99.00
225.75	2.09	228.00	0.65
225.80	1.23	228.05	0.69
225.85	2.69	228.10	0.67
225.90	3.75	228.15	0.66
225.95	-99.00	228.20	0.70
226.00	0.86	228.25	0.71
226.05	6.18	228.30	0.69
226.10	0.87	228.35	0.66
226.15	0.88	228.40	0.65
226.20	0.78	228.45	0.67
226.25	0.92	228.50	0.71
226.30	0.76	228.55	0.70
226.35	0.92	228.60	0.71
226.40	0.83	228.65	0.75
226.45	0.92	228.70	0.96
226.50	-99.00	228.75	0.86
226.55	-99.00	228.80	0.82
226.60	0.60	228.85	0.74
226.65	0.63	228.90	0.92
226.70	0.74		
226.75	0.61		
226.80	1.00		
226.85	0.70		

UGS Ivie Creek #5a permeabilities MEPTEC minipermeameter 01/95

2

column 1 - depth (ft)

column 2 - permeability (md) -99.00 indicates no measurement was made

194.60	1.00	195.25	1.25	195.91	-99.00	196.57	-99.00
194.63	1.09	195.29	1.65	195.94	-99.00	196.60	-99.00
194.66	1.22	195.32	1.94	195.98	-99.00	196.63	-99.00
194.70	1.02	195.35	-99.00	196.01	-99.00	196.66	-99.00
194.73	1.01	195.39	-99.00	196.04	-99.00	196.70	-99.00
194.76	1.25	195.42	-99.00	196.07	-99.00	196.73	-99.00
194.79	1.96	195.45	-99.00	196.11	-99.00	196.76	-99.00
194.83	2.45	195.48	2.45	196.14	-99.00	196.80	-99.00
194.86	4.39	195.52	1.87	196.17	-99.00	196.83	-99.00
194.89	4.20	195.55	3.98	196.21	-99.00	196.86	-99.00
194.93	3.43	195.58	2.69	196.24	-99.00	196.89	1.67
194.96	2.17	195.62	-99.00	196.27	-99.00	196.93	1.45
194.99	1.85	195.65	2.57	196.30	-99.00	196.96	3.99
195.02	3.11	195.68	2.89	196.34	-99.00	196.99	2.30
195.06	3.44	195.71	6.60	196.37	-99.00	197.03	4.30
195.09	3.01	195.75	2.74	196.40	-99.00	197.06	6.43
195.12	1.20	195.78	-99.00	196.43	-99.00	197.09	11.45
195.16	3.51	195.81	-99.00	196.47	-99.00	197.12	2.25
195.19	2.77	195.84	-99.00	196.50	-99.00	197.16	-99.00
195.22	1.23	195.88	-99.00	196.53	-99.00	197.19	-99.00

197.22	-99.00	198.01	0.49	198.79	2.86	199.58	1.17
197.26	2.98	198.04	-99.00	198.82	2.05	199.61	1.73
197.29	1.94	198.07	-99.00	198.86	1.91	199.64	1.18
197.32	1.01	198.10	-99.00	198.89	1.25	199.68	4.62
197.36	1.39	198.14	-99.00	198.92	1.00	199.71	37.76
197.39	-99.00	198.17	0.46	198.95	0.92	199.74	1.29
197.42	2.29	198.20	-99.00	198.99	0.99	199.78	1.00
197.45	1.59	198.24	-99.00	199.02	11.69	199.81	1.98
197.48	-99.00	198.27	-99.00	199.05	2.38	199.84	1.06
197.52	-99.00	198.30	19.72	199.09	1.00	199.87	-99.00
197.55	0.87	198.33	8.25	199.12	1.00	199.91	5.00
197.58	0.73	198.37	2.09	199.15	0.65	199.94	3.88
197.62	1.00	198.40	1.49	199.19	0.87	199.97	4.53
197.65	3.44	198.43	-99.00	199.22	-99.00	200.01	2.00
197.68	3.37	198.46	0.77	199.25	12.28	200.04	4.46
197.71	1.96	198.50	-99.00	199.28	-99.00	200.07	4.01
197.75	17.23	198.53	0.56	199.32	-99.00	200.10	-99.00
197.78	1.32	198.56	-99.00	199.35	-99.00	200.14	1.00
197.81	0.70	198.60	0.63	199.38	-99.00	200.17	1.55
197.84	0.52	198.63	-99.00	199.41	0.95	200.20	4.43
197.87	-99.00	198.66	-99.00	199.45	1.79	200.24	-99.00
197.91	0.47	198.69	-99.00	199.48	3.48	200.27	2.04
197.94	-99.00	198.72	-99.00	199.51	-99.00	200.30	5.48
197.97	0.53	198.76	1.28	199.55	1.14	200.33	-99.00

200.37	0.87	201.15	2.47	201.94	1.30	202.73	3.85
200.40	-99.00	201.19	2.51	201.97	1.89	202.76	-99.00
200.43	2.00	201.22	5.09	202.01	4.99	202.79	-99.00
200.46	1.52	201.25	14.53	202.04	4.69	202.82	2.43
200.50	1.04	201.28	6.66	202.07	4.96	202.86	2.69
200.53	2.24	201.32	9.36	202.11	2.69	202.89	-99.00
200.56	3.72	201.35	5.91	202.14	3.55	202.92	-99.00
200.59	-99.00	201.38	8.39	202.17	-99.00	202.96	5.00
200.63	-99.00	201.41	7.48	202.20	-99.00	202.99	5.87
200.66	-99.00	201.45	5.66	202.24	13.61	203.02	4.05
200.69	-99.00	201.48	5.68	202.27	-99.00	203.05	4.29
200.73	3.52	201.51	10.37	202.30	-99.00	203.09	4.49
200.76	3.02	201.54	9.18	202.34	-99.00	203.12	4.12
200.79	5.00	201.58	9.34	202.37	11.55	203.15	4.12
200.82	6.33	201.61	9.98	202.40	16.79	203.19	4.98
200.86	6.42	201.64	6.06	202.43	-99.00	203.22	4.57
200.89	6.34	201.68	6.08	202.46	-99.00	203.25	4.15
200.92	3.55	201.71	5.88	202.50	0.57	203.28	3.67
200.96	8.31	201.74	6.19	202.53	0.51	203.32	3.85
200.99	7.83	201.77	4.19	202.56	-99.00	203.35	3.55
201.02	4.09	201.81	3.90	202.59	-99.00	203.39	3.74
201.05	2.58	201.84	5.08	202.63	0.85	203.42	3.34
201.09	2.75	201.87	5.00	202.66	2.05	203.45	3.07
201.12	2.94	201.91	1.00	202.69	4.06	203.48	3.25

203.52	3.06	204.30	1.51	205.09	0.68
203.55	3.30	204.34	1.52	205.12	0.64
203.58	3.03	204.37	-99.00	205.16	0.65
203.61	5.19	204.40	-99.00	205.19	0.59
203.65	3.83	204.43	1.83	205.22	0.65
203.68	2.94	204.47	1.88	205.26	0.68
203.71	3.79	204.50	1.66	205.29	1.00
203.75	-99.00	204.53	-99.00		
203.78	3.81	204.57	0.59		
203.81	3.58	204.60	0.74		
203.84	10.19	204.63	-99.00		
203.88	-99.00	204.66	-99.00		
203.91	2.94	204.69	0.95		
203.94	1.93	204.73	1.00		
203.97	1.47	204.76	1.58		
204.01	2.79	204.79	1.00		
204.04	3.21	204.83	1.31		
204.07	2.62	204.86	1.12		
204.10	1.20	204.89	1.31		
204.14	2.83	204.93	0.85		
204.17	3.36	204.96	-99.00		
204.20	3.73	204.99	1.00		
204.24	1.81	205.03	1.82		
204.27	-99.00	205.06	0.59		

Ferron Project: UGS Ivie Creek Drill Hole #9a

Column 1: depth (ft)

Column 2: permeability (md) -99.00 indicates no measurement was made

248.60	0.88	250.80	-99.00	253.00	3.86	255.20	0.89
248.65	-99.00	250.85	-99.00	253.05	7.37	255.24	-99.00
248.70	0.68	250.90	-99.00	253.10	-99.00	255.30	2.24
248.75	-99.00	250.95	-99.00	253.15	-99.00	255.35	1.24
248.80	0.69	251.00	1.00	253.20	2.49	255.40	3.17
248.85	0.91	251.05	0.88	253.25	13.50	255.45	1.39
248.90	-99.00	251.10	-99.00	253.30	1.05	255.50	1.74
248.95	-99.00	251.15	-99.00	253.35	-99.00	255.55	3.38
249.00	1.53	251.20	2.29	253.40	1.51	255.60	3.38
249.05	1.49	251.25	1.00	253.45	2.92	255.65	2.82
249.10	1.73	251.30	1.00	253.50	1.42	255.70	2.99
249.15	2.17	251.35	1.40	253.55	2.54	255.75	2.98
249.20	2.39	251.40	1.26	253.60	1.75	255.80	4.76
249.25	2.58	251.45	1.53	253.64	-99.00	255.85	3.74
249.30	1.82	251.50	1.49	253.70	3.06	255.90	-99.00
249.35	2.73	251.55	1.15	253.75	-99.00	255.95	6.37
249.40	2.42	251.60	0.96	253.80	3.75	256.00	4.39
249.45	2.05	251.65	-99.00	253.85	-99.00	256.05	5.00
249.50	3.49	251.70	-99.00	253.90	-99.00	256.10	-99.00
249.55	2.77	251.75	0.86	253.95	-99.00	256.13	-99.00
249.60	2.51	251.80	-99.00	254.00	-99.00	256.20	1.70
249.65	-99.00	251.85	-99.00	254.05	-99.00	256.25	-99.00
249.70	0.86	251.90	1.00	254.10	-99.00	256.30	-99.00
249.75	0.80	251.94	-99.00	254.15	-99.00	256.35	-99.00
249.80	8.46	252.00	2.22	254.20	-99.00	256.40	0.95
249.85	0.87	252.05	-99.00	254.25	-99.00	256.45	1.11
249.90	-99.00	252.10	0.59	254.30	-99.00	256.50	-99.00
249.95	0.63	252.15	0.76	254.35	-99.00	256.55	0.63
250.00	1.00	252.20	0.55	254.40	-99.00	256.60	-99.00
250.05	0.97	252.25	-99.00	254.45	-99.00	256.65	1.00
250.10	-99.00	252.30	-99.00	254.50	-99.00	256.70	2.06
250.15	-99.00	252.35	-99.00	254.55	-99.00	256.75	-99.00
250.20	-99.00	252.40	2.00	254.60	-99.00	256.80	2.02
250.25	0.52	252.45	1.94	254.65	-99.00	256.85	2.21
250.30	7.15	252.50	55.58	254.70	-99.00	256.90	2.20
250.35	0.73	252.55	2.60	254.75	6.32	256.95	1.98
250.40	1.56	252.60	3.17	254.80	-99.00	257.00	2.14
250.45	-99.00	252.65	3.93	254.85	-99.00	257.05	2.43
250.50	-99.00	252.70	4.27	254.90	0.65	257.10	1.77
250.55	-99.00	252.75	-99.00	254.95	-99.00	257.15	2.05
250.60	-99.00	252.80	27.74	255.00	0.96	257.20	2.41
250.65	-99.00	252.85	11.68	255.05	13.12	257.25	2.49
250.70	-99.00	252.90	-99.00	255.10	0.93	257.30	1.93
250.75	-99.00	252.95	14.44	255.15	1.00	257.35	2.64

257.40	1.47	259.80	-99.00	262.20	-99.00	264.60	1.41
257.45	1.63	259.85	3.32	262.25	4.40	264.65	2.01
257.50	1.79	259.90	2.74	262.30	3.64	264.70	1.54
257.55	1.68	259.95	3.46	262.35	-99.00	264.75	1.35
257.60	1.67	260.00	2.69	262.40	-99.00	264.80	2.01
257.65	1.23	260.05	3.96	262.45	-99.00	264.85	1.90
257.70	-99.00	260.10	6.77	262.50	-99.00	264.90	1.81
257.75	-99.00	260.15	6.20	262.55	-99.00	264.95	2.24
257.80	-99.00	260.20	7.74	262.60	2.63	265.00	2.28
257.85	0.77	260.25	5.14	262.65	2.26	265.05	-99.00
257.90	1.62	260.30	5.44	262.70	-99.00	265.10	1.98
257.95	2.58	260.35	7.25	262.75	0.60	265.15	1.99
258.00	4.69	260.40	7.30	262.80	0.63	265.20	-99.00
258.05	4.37	260.45	5.99	262.85	0.75	265.25	0.59
258.10	3.68	260.50	6.05	262.90	1.22	265.30	0.57
258.15	3.03	260.55	6.75	262.95	8.42	265.35	0.63
258.20	4.57	260.60	9.02	263.00	1.23	265.40	-99.00
258.25	3.24	260.65	5.92	263.05	0.55	265.45	0.68
258.30	2.93	260.70	8.28	263.10	-99.00	265.50	0.99
258.35	3.13	260.75	8.88	263.15	0.76	265.55	0.98
258.40	2.51	260.80	11.72	263.20	-99.00	265.60	-99.00
258.45	3.74	260.85	12.66	263.25	0.57	265.65	-99.00
258.50	2.15	260.90	10.65	263.30	-99.00	265.70	1.51
258.55	4.28	260.95	9.02	263.35	1.00	265.75	1.15
258.60	4.09	261.00	5.00	263.40	1.00	265.80	1.14
258.65	3.60	261.05	7.16	263.45	1.00	265.85	2.31
258.70	3.01	261.10	4.18	263.50	1.00	265.90	1.20
258.75	3.41	261.15	3.84	263.55	1.00	265.95	2.20
258.80	2.74	261.20	5.14	263.60	-99.00	266.00	2.27
258.85	3.59	261.25	0.75	263.65	1.19	266.05	-99.00
258.90	1.17	261.30	-99.00	263.70	2.29	266.10	-99.00
258.95	3.51	261.35	7.98	263.75	2.40	266.15	0.51
259.00	10.71	261.40	5.13	263.80	1.07	266.20	0.53
259.05	-99.00	261.45	18.33	263.85	1.00	266.25	0.64
259.10	-99.00	261.50	1.00	263.90	-99.00	266.30	0.75
259.15	3.57	261.55	1.61	263.95	-99.00	266.35	4.88
259.20	1.11	261.60	2.35	264.00	-99.00	266.40	-99.00
259.25	-99.00	261.65	2.38	264.05	-99.00	266.45	0.54
259.30	-99.00	261.70	-99.00	264.10	1.04	266.50	0.55
259.35	1.25	261.75	-99.00	264.15	1.68	266.55	0.60
259.40	-99.00	261.80	2.30	264.20	1.57	266.60	0.61
259.45	1.33	261.85	3.56	264.25	-99.00	266.65	1.00
259.50	1.91	261.90	4.38	264.30	-99.00	266.70	1.00
259.55	1.71	261.95	3.77	264.35	-99.00	266.75	7.81
259.60	1.45	262.00	4.31	264.40	-99.00	266.80	-99.00
259.65	1.56	262.05	-99.00	264.45	-99.00	266.85	0.80
259.70	2.42	262.10	-99.00	264.50	-99.00	266.90	-99.00
259.75	2.42	262.15	-99.00	264.55	-99.00	266.95	1.03

267.00	-99.00	269.40	-99.00	271.80	1.00	274.20	-99.00
267.05	0.72	269.45	-99.00	271.85	-99.00	274.25	2.53
267.10	0.60	269.50	0.88	271.90	1.00	274.30	-99.00
267.15	0.93	269.55	0.72	271.95	1.00	274.35	-99.00
267.20	-99.00	269.60	0.85	272.00	1.00	274.40	0.60
267.25	-99.00	269.65	-99.00	272.05	1.00	274.45	0.57
267.30	-99.00	269.70	5.68	272.10	-99.00	274.50	0.66
267.35	-99.00	269.75	0.90	272.15	1.71	274.55	0.59
267.40	-99.00	269.80	1.00	272.20	1.48	274.60	-99.00
267.45	-99.00	269.85	0.85	272.25	1.51	274.65	0.63
267.50	-99.00	269.90	0.68	272.30	1.00	274.70	0.54
267.55	-99.00	269.95	-99.00	272.35	1.81	274.75	0.52
267.60	-99.00	270.00	-99.00	272.40	1.47	274.80	-99.00
267.65	-99.00	270.05	0.90	272.45	0.85	274.85	0.51
267.70	-99.00	270.10	0.67	272.50	1.32	274.90	1.00
267.75	-99.00	270.15	0.91	272.55	1.56	274.95	-99.00
267.80	-99.00	270.20	0.67	272.60	1.72	274.99	0.54
267.85	-99.00	270.25	-99.00	272.65	1.50	275.05	0.61
267.90	-99.00	270.30	0.64	272.70	-99.00	275.10	-99.00
267.95	1.12	270.35	0.67	272.75	-99.00	275.15	0.60
268.00	1.83	270.40	0.67	272.80	0.86	275.20	0.66
268.05	1.00	270.45	-99.00	272.85	0.98	275.25	-99.00
268.10	0.64	270.50	-99.00	272.90	-99.00	275.30	0.74
268.15	-99.00	270.55	-99.00	272.95	-99.00	275.35	0.70
268.20	0.69	270.60	-99.00	273.00	0.74	275.40	-99.00
268.25	4.08	270.65	-99.00	273.05	0.64	275.45	0.53
268.30	1.30	270.70	1.00	273.10	-99.00	275.50	-99.00
268.35	1.00	270.75	2.39	273.15	0.58	275.55	0.60
268.40	1.00	270.80	0.90	273.20	1.00	275.60	0.55
268.45	0.89	270.85	-99.00	273.25	1.00	275.65	1.12
268.50	0.90	270.90	0.76	273.30	0.76	275.70	0.71
268.55	0.76	270.95	0.91	273.35	0.73	275.75	0.68
268.60	0.90	271.00	1.00	273.40	0.73	275.80	0.60
268.65	0.73	271.05	0.68	273.45	-99.00	275.85	0.69
268.70	-99.00	271.10	-99.00	273.50	-99.00	275.90	-99.00
268.75	0.77	271.15	0.63	273.55	0.78	275.95	-99.00
268.80	0.63	271.20	0.72	273.60	1.11	276.00	0.56
268.85	0.97	271.25	1.00	273.65	0.60	276.05	0.53
268.90	1.00	271.30	5.69	273.69	0.64	276.10	-99.00
268.95	0.99	271.35	1.00	273.75	0.58	276.15	0.69
269.00	0.88	271.40	1.00	273.80	0.63	276.20	-99.00
269.05	-99.00	271.45	4.51	273.84	0.61	276.25	0.59
269.10	-99.00	271.50	-99.00	273.90	0.63	276.30	0.55
269.15	1.23	271.55	-99.00	273.95	0.64	276.35	0.54
269.20	1.91	271.60	0.78	274.00	0.68	276.40	0.53
269.25	1.81	271.65	0.64	274.05	0.72	276.45	-99.00
269.30	1.79	271.70	0.75	274.10	0.68	276.50	1.28
269.35	1.00	271.75	1.32	274.15	-99.00	276.55	0.52

276.60	0.55
276.65	0.53
276.70	0.65
276.75	0.54
276.80	-99.00
276.85	0.56
276.90	0.57
276.95	0.81
277.00	0.54

Ferron Project: Ivie Creek IC-3

Column 1: hole number

Column 2: elevation ft, ref to measured sections IC-3

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

420.00	194.20	-99.00	burrowed	29
419.00	193.90	-99.00	burrowed	29
418.00	193.60	9.91	hor	29
417.00	193.30	6.83	hor	29
416.00	193.00	2.32	hor	29
415.00	192.70	7.71	rip	28
414.00	192.40	-99.00	nd	28
413.00	192.10	-99.00	nd	28
412.00	191.80	7.22	rip	28
411.00	191.50	7.84	hor	28
410.00	191.20	7.26	hor	28
409.00	190.90	7.51	rip	28
408.00	190.60	-99.00	nd	28
407.00	190.30	9.02	rip	28
406.00	190.00	-99.00	nd	28
405.00	189.70	-99.00	hcs	28
404.00	189.40	2.26	hcs	28
403.00	189.10	-99.00	nd	27
402.00	188.70	3.90	rip	26
401.00	188.45	19.60	hcs	26
400.00	188.20	34.05	hcs	26
399.00	187.95	2.11	wavy	26
398.00	187.70	2.49	hor	26
397.00	187.45	-99.00	hor	26
396.00	187.15	-99.00	nd	25
395.00	186.82	-99.00	nd	25
394.00	186.49	10.37	rip	25
393.00	186.16	2.17	rip	25
392.00	185.83	-99.00	rip	25
391.00	185.50	2.88	hcs	25
390.00	185.17	-99.00	nd	25
389.00	184.84	-99.00	nd	25
388.00	184.51	-99.00	nd	25
387.00	184.18	-99.00	nd	25
386.00	183.85	-99.00	nd	25
385.00	183.47	-99.00	nd	23
384.00	183.16	-99.00	nd	23

Note: elevs relative to bottom of section

383.00	182.85	-99.00	nd	23
382.00	182.54	-99.00	nd	23
381.00	182.23	-99.00	nd	23
380.00	181.92	-99.00	nd	23
379.00	181.61	-99.00	nd	23
378.00	181.30	-99.00	nd	23
377.00	180.99	-99.00	nd	23
376.00	180.68	-99.00	nd	23
375.00	180.37	-99.00	nd	23
374.00	180.06	-99.00	nd	23
373.00	179.75	-99.00	nd	23
372.00	179.45	-99.00	nd	22
371.00	178.88	-99.00	nd	22
370.00	178.31	-99.00	nd	22
369.00	177.74	-99.00	nd	22
368.00	177.17	-99.00	nd	22
367.00	176.60	-99.00	nd	22
366.00	176.30	-99.00	nd	21
365.00	176.00	-99.00	nd	21
364.00	175.70	-99.00	nd	21
363.00	175.40	-99.00	nd	21
362.00	175.10	-99.00	nd	20
361.00	174.78	-99.00	csr	20
360.00	174.47	18.83	csr	20
359.00	174.15	16.63	nd	20
358.00	173.84	-99.00	nd	20
357.00	173.52	-99.00	rip	20
356.00	173.21	-99.00	rip	20
355.00	172.89	24.55	rip	20
354.00	172.58	10.20	rip	20
353.00	172.26	-99.00	rip	20
352.00	171.95	-99.00	rip	20
351.00	171.63	83.82	car	20
350.00	171.32	14.22	car	20
349.00	171.00	-99.00	?	20
348.00	170.69	7.92	crs	20
347.00	170.37	16.66	crs	20
346.00	170.06	6.55	hor	20
345.00	169.74	12.93	hor	20
344.00	169.43	-99.00	hor	20
343.00	169.11	5.09	csr	20
342.00	168.80	-99.00	csr	20
341.00	168.48	5.28	csr	20
340.00	168.17	4.61	csr	20
339.00	167.85	-99.00	nd	19

338.00	167.55	-99.00	nd	19	
337.00	167.20	-99.00	nd	19	
336.00	166.90	-99.00	nd	18	
335.00	166.60	-99.00	nd	18	
334.00	166.25	-99.00	nd	17	
333.00	165.93	-99.00	nd	17	
332.00	165.60	-99.00	nd	17	
331.00	165.28	-99.00	nd	17	
330.00	164.96	-99.00	nd	17	
329.00	164.63	-99.00	nd	17	
328.00	164.31	-99.00	nd	17	
327.00	163.99	-99.00	nd	17	
326.00	163.66	-99.00	nd	17	
325.00	163.34	2.18	burrowed	17	
324.00	163.02	-99.00	burrowed	17	
323.00	162.69	2.21	burrowed	17	
322.00	162.37	-99.00	nd	17	
321.00	162.05	-99.00	nd	17	
320.00	161.72	-99.00	nd	17	
319.00	161.40	-99.00	nd	17	
318.00	161.00	-99.00	nd	16	
317.00	160.40	2.40	burrowed	16	
316.00	159.80	26.03	burrowed	16	
315.00	159.20	-99.00	nd	16	
314.00	158.60	-99.00	nd	16	
313.00	158.00	-99.00	nd	16	
312.00	157.40	-99.00	nd	16	
311.00	156.80	-99.00	hor	16	slightly burrowed
310.00	156.20	-99.00	hor	16	slightly burrowed
309.00	155.60	-99.00	nd	16	
308.00	155.00	-99.00	nd	15	
307.00	154.72	-99.00	nd	15	
306.00	154.44	2.85	hor	15	moderate burrowing
305.00	154.16	-99.00	nd	15	
304.00	153.88	-99.00	nd	15	
303.00	153.60	2.33	burrowed	15	
302.00	153.32	11.09	burrowed	15	
301.00	153.04	11.44	nd	15	
300.00	152.77	-99.00	nd	14	
299.00	152.51	-99.00	nd	14	
298.00	152.25	-99.00	hor	14	
297.00	151.98	83.01	hor	14	
296.00	151.72	34.16	hor	14	
295.00	151.46	86.94	hor	14	
294.00	151.19	24.90	hor	14	

293.00	150.93	47.60	nd	14	
292.00	150.67	-99.00	hor	14	
291.00	150.41	110.23	hor	14	
290.00	150.14	76.22	hor	14	
289.00	149.88	29.81	hor	14	
288.00	149.62	64.71	hor	14	
287.00	149.35	31.46	hor	14	
286.00	149.09	15.52	hor	14	
285.00	148.83	30.76	hor	14	
284.00	148.56	28.97	hor	14	
283.00	148.30	23.45	hor	14	
282.00	148.00	18.13	nd	13	
281.00	147.72	-99.00	nd	13	
280.00	147.44	-99.00	nd	13	
279.00	147.16	-99.00	nd	13	
278.00	146.88	-99.00	nd	13	
277.00	146.61	-99.00	nd	13	
276.00	146.33	-99.00	nd	13	
275.00	146.05	-99.00	nd	13	
274.00	145.77	-99.00	rip	13	
273.00	145.49	-99.00	nd	13	
272.00	145.21	-99.00	nd	13	
271.00	144.93	-99.00	nd	13	
270.00	144.66	-99.00	nd	13	
269.00	144.38	-99.00	hor	13	intensely burrowed
268.00	144.10	-99.00	hor	13	intensely burrowed
267.00	143.82	-99.00	hor	13	intensely burrowed
266.00	143.54	243.87	hor	13	intensely burrowed
265.00	143.26	2.12	hor	13	intensely burrowed
264.00	142.98	5.69	hor	13	intensely burrowed
263.00	142.71	4.14	hor	13	intensely burrowed
262.00	142.43	99.18	hor	13	intensely burrowed
261.00	142.15	-99.00	burrowed	13	
260.00	141.87	2.04	burrowed	13	
259.00	141.59	2.10	burrowed	13	
258.00	141.31	-99.00	burrowed	13	
257.00	141.04	2.12	burrowed	13	
256.00	140.76	2.10	burrowed	13	
255.00	140.48	2.13	burrowed	13	
254.00	140.20	-99.00	hor	13	intensely burrowed
253.00	140.75	13.99	hor	13	intensely burrowed
252.00	140.46	3.93	hor	13	intensely burrowed
251.00	140.11	2.48	hor	13	intensely burrowed
250.00	139.81	4.57	hor	13	intensely burrowed
249.00	139.55	16.19	hor	13	intensely burrowed

248.00	139.23	2.14	hor	13	intensely burrowed
247.00	139.00	2.20	hor	13	intensely burrowed
246.00	138.63	-99.00	nd	13	
245.00	138.26	2.21	nd	13	
244.00	137.88	-99.00	nd	13	
243.00	137.51	-99.00	nd	13	
242.00	137.14	-99.00	mas	12	bioturbated, shaly
241.00	136.86	-99.00	mas	12	bioturbated, shaly
240.00	136.56	2.11	mas	12	bioturbated, shaly
239.00	136.29	2.12	mas	12	bioturbated, shaly
238.00	136.04	-99.00	mas	12	bioturbated, shaly
237.00	135.78	-99.00	mas	12	bioturbated, shaly
236.00	135.55	2.12	mas	12	bioturbated, shaly
235.00	135.16	-99.00	mas	12	bioturbated, shaly
234.00	134.93	2.21	mas	12	bioturbated, shaly
233.00	134.65	2.13	nd	11	
232.00	134.37	2.26	nd	11	
231.00	134.09	-99.00	mas	11	
230.00	133.79	-99.00	mas	11	
229.00	133.52	2.14	mas	11	
228.00	133.19	2.11	mas	11	
227.00	132.89	2.26	mas	11	
226.00	132.59	2.15	mas	11	
225.00	132.29	2.16	mas	11	
224.00	131.92	2.18	mas	11	
223.00	131.53	2.13	mas	11	boundary at 131.4
222.00	131.23	2.16	mas	11	
221.00	130.86	2.18	mas	11	
220.00	130.61	2.28	mas	11	
219.00	130.30	2.26	mas	11	
218.00	130.01	2.18	mas	11	
217.00	129.75	2.17	mas	11	
216.00	129.45	2.22	mas	11	
215.00	129.11	2.18	nd	10	
214.00	128.77	-99.00	nd	10	
213.00	128.43	2.20	nd	10	
212.00	128.09	-99.00	nd	10	
211.00	127.75	-99.00	nd	10	
210.00	127.41	-99.00	nd	10	
209.00	127.07	-99.00	nd	10	
208.00	126.73	-99.00	nd	9	
207.00	126.39	-99.00	nd	9	
206.00	126.05	-99.00	mas	9	fossiliferous sandy sha
205.00	125.80	-99.00	mas	9	fossiliferous sandy sha
204.00	125.57	-99.00	mas	9	fossiliferous sandy sha

203.00	125.35	2.33	mas	9	siliferous sandy sha
202.00	124.92	12.00	nd	8	
201.00	124.48	62.50	nd	8	
200.00	124.05	8.66	nd	8	
199.00	123.61	-99.00	nd	8	
198.00	123.12	-99.00	nd	8	
197.00	122.75	-99.00	nd	8	
196.00	122.31	-99.00	nd	8	
195.00	121.88	-99.00	nd	7	
194.00	121.44	-99.00	nd	7	
193.00	121.01	-99.00	nd	7	
192.00	120.57	-99.00	nd	7	
191.00	120.14	-99.00	tro	6	
190.00	119.85	-99.00	tro	6	
189.00	119.55	-99.00	ripple	6	
188.00	119.34	2.12	nd	6	
187.00	119.12	2.11	nd	5	
186.00	118.91	2.11	nd	5	
185.00	118.70	-99.00	nd	5	
184.00	118.48	-99.00	nd	5	
183.00	118.27	-99.00	nd	5	
182.00	118.05	-99.00	nd	4	
181.00	117.84	-99.00	hor	4	sl. irreg.
180.00	117.55	-99.00	hor	4	lateral shift
179.00	117.25	-99.00	tro	4	m.g.
178.00	116.97	-99.00	tro	4	m.g.
177.00	116.67	-99.00	nd	4	lateral shift
176.00	116.37	2.12	hor	4	shaly ss
175.00	116.05	2.13	hor	4	shaly ss
174.00	115.76	-99.00	nd	3	
173.00	115.48	7.00	nd	3	
172.00	115.19	2.15	nd	3	
171.00	114.90	-99.00	hor	2	moderate burrowing
170.00	114.58	-99.00	hor	2	moderate burrowing
169.00	114.28	-99.00	hor	2	moderate burrowing
168.00	113.72	2.03	?	0	
167.00	113.15	2.04	?	0	
166.00	112.59	2.03	?	0	
165.00	112.03	-99.00	?	0	
164.00	111.46	-99.00	?	0	
1.00	110.90	2.09	hor	0	
2.00	110.61	-99.00	?	0	
3.00	110.32	2.08	hor	0	
4.00	110.02	-99.00	?	0	
5.00	109.72	2.07	hor	0	

6.00	109.41	-99.00	?	0	
7.00	109.10	2.06	hor	0	
8.00	108.81	-99.00	?	0	
9.00	108.51	2.06	hor	0	
10.00	108.23	2.11	?	0	
11.00	107.94	8.70	hor	0	
12.00	107.64	2.12	?	0	
13.00	107.34	2.11	hor	0	
14.00	107.04	2.10	?	0	
15.00	106.73	2.09	hor	0	
16.00	106.40	2.08	hor	0	
17.00	106.15	2.07	rip	0	
18.00	105.85	2.06	hor	28	
19.00	105.57	2.06	hor	28	
20.00	105.35	6.66	hor	28	
21.00	105.10	2.63	hor	28	
22.00	140.82	2.09	hor	28	
23.00	104.50	2.09	hor	28	
24.00	104.15	2.11	hor	28	sampled at a different outcrop
25.00	103.88	3.67	hor	28	overlapping holes in same unit
26.00	105.78	2.20	hor	28	
27.00	105.52	2.16	hor	28	
28.00	105.25	5.04	hor	28	
29.00	104.94	-99.00	hor	28	
30.00	104.56	12.53	rip	28	
31.00	104.15	-99.00	hor	27	
32.00	103.92	6.78	hor	27	
33.00	103.60	2.18	hor	27	
34.00	103.29	2.14	hor	27	
35.00	102.99	2.16	hor	27	
36.00	102.62	2.12	hor	27	
37.00	102.24	3.20	hor	26	
38.00	102.02	2.16	hor	26	laterral shift, assume .3'
39.00	101.72	-99.00	hor	26	
40.00	101.45	-99.00	hor	26	
41.00	101.15	-99.00	hor	26	
42.00	100.83	2.26	hor	26	
43.00	100.53	2.14	hor	26	
44.00	100.10	-99.00	hor	26	
45.00	99.33	-99.00	nd	25	layout problem
46.00	98.55	-99.00	hor	24	
47.00	98.22	-99.00	hor	24	
48.00	97.95	2.13	rip	24	
49.00	97.65	2.14	hor	24	
50.00	97.39	2.13	nd	23	

51.00	97.14	2.13	nd	23	
52.00	96.88	-99.00	nd	23	
53.00	96.63	-99.00	nd	23	
54.00	96.37	138.20	nd	22	
55.00	96.10	-99.00	nd	22	
56.00	95.77	-99.00	hor	20	
57.00	95.52	3.68	hor	20	
58.00	95.21	-99.00	nd	19	
59.00	94.90	3.41	nd	19	
60.00	94.59	-99.00	hor	19	
61.00	94.28	-99.00	nd	19	
62.00	93.97	-99.00	hor	19	
63.00	93.67	-99.00	nd	19	
64.00	93.37	2.26	hor	19	
65.00	93.03	-99.00	nd	18	
66.00	92.68	2.30	nd	18	
67.00	92.34	-99.00	nd	18	
68.00	91.99	2.27	hor	18	
69.00	91.77	-99.00	nd	18	
70.00	91.54	-99.00	hor	18	
71.00	90.24	2.25	nd	18	
72.00	90.94	2.25	nd	18	
73.00	90.64	2.24	nd	18	
74.00	90.34	-99.00	nd	18	
75.00	90.04	-99.00	hor	17	
76.00	89.70	-99.00	hor	17	
77.00	89.34	-99.00	nd	16	
78.00	88.98	-99.00	nd	15	
79.00	88.62	15.14	nd	15	
80.00	88.26	-99.00	nd	15	no holes
81.00	87.90	-99.00	hor	13	
82.00	87.60	2.34	hor	13	
83.00	87.30	2.25	hor	13	
84.00	87.00	2.24	hor	13	
85.00	86.70	2.25	hor	13	
86.00	86.40	2.25	hor	13	
87.00	86.10	-99.00	hor	13	
88.00	85.80	-99.00	hor	13	units combined at T1
89.00	85.50	-99.00	hor	12	
90.00	85.20	-99.00	hor	12	
91.00	84.90	-99.00	hor	12	
92.00	84.60	4.98	hor	12	
93.00	84.30	2.28	hor	12	
94.00	84.00	2.28	hor	12	
95.00	83.70	2.23	hor	12	

96.00	83.10	2.21	hor	11
97.00	82.80	2.17	hor	11
98.00	82.50	-99.00	hor	11
99.00	82.20	2.18	hor	11
100.00	81.90	2.16	hor	11
101.00	81.60	2.15	hor	11
102.00	81.30	-99.00	hor	11
103.00	81.00	2.15	rip	11
104.00	80.70	2.19	hor	11
105.00	80.40	6.68	hor	11
106.00	80.09	-99.00	nd	10
107.00	79.79	-99.00	nd	10
108.00	79.48	-99.00	nd	10
109.00	79.18	-99.00	nd	10
110.00	78.87	-99.00	nd	10
111.00	78.56	-99.00	nd	10
112.00	78.26	3.56	nd	10
113.00	77.95	3.00	tro	9
114.00	77.65	-99.00	tro	9
115.00	77.35	-99.00	tro	9
116.00	77.05	-99.00	tro	9
117.00	76.75	-99.00	hor	9
118.00	76.45	-99.00	hor	9
119.00	76.20	-99.00	hor	9
120.00	75.95	3.13	hor	9
121.00	75.75	2.30	hum	8
122.00	75.50	2.24	hum	8
123.00	75.23	2.27	hum	8
124.00	74.95	-99.00	hum	8
125.00	74.70	-99.00	hum	8
126.00	74.37	-99.00	rip	7
127.00	73.07	-99.00	nd	7
128.00	73.77	-99.00	nd	7
129.00	73.47	2.25	nd	7
130.00	73.17	2.21	hor	7
131.00	72.87	-99.00	hor	7
132.00	72.57	-99.00	hor	7
133.00	72.27	-99.00	ripple	7
134.00	71.97	-99.00	ripple	7
135.00	71.67	-99.00	ripple	7
136.00	71.37	-99.00	ripple	7
137.00	71.07	-99.00	ripple	7
138.00	70.77	-99.00	ripple	7
139.00	70.47	2.16	hor	7
140.00	70.17	-99.00	hor	7

141.00	69.87	-99.00	hor	7
142.00	69.57	9.19	hor	7
143.00	69.27	-99.00	hor	7
144.00	68.97	72.13	hor	7 some burrows
145.00	68.67	2.12	mas	7
146.00	68.37	2.13	ripple	7
147.00	68.07	6.07	ripple	7
148.00	67.77	17.71	ripple	7
149.00	67.47	-99.00	hor	7
150.00	67.17	2.07	hor	7
151.00	67.15	2.24	nd	6
152.00	67.12	2.08	hor	6
153.00	66.82	2.06	ripple	6
154.00	66.49	2.07	planar	6
155.00	66.20	-99.00	ripple	6
156.00	65.93	-99.00	nd	6
157.00	65.65	-99.00	nd	6
158.00	65.38	-99.00	nd	6
159.00	65.10	-99.00	ripple	6
160.00	64.05	2.04	nd	6
161.00	64.60	2.04	hor	6
162.00	64.30	2.04	ripple	6
163.00	64.10	-99.00	ripple	6

LEGEND FOR SED STRUCTURES

=====

- csr: climbing symmetrical ripples
- rip: rippled
- hor: horizontally stratified
- mas: massively bedded (usually a result of bioturbation)
- hcs: hummocky cross-stratification
- conv: convolute bedding
- nd: not drilled
- dnc: drilled but no core recovered;
appears together with other sed structures

Ferron Project: Ivie Creek I70-2

Column 1: hole number

Column 2: elevation ft, ref to measured section I70-2

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

1.00	81.60	178.76	tro	1	Note: elevs relative to bottom of section
2.00	81.20	192.99	tro	1	
3.00	80.69	189.84	tro	1	
4.00	80.18	161.18	tro	1	
5.00	79.67	264.58	tro	1	
6.00	79.16	182.29	tro	1	
7.00	78.65	119.77	tro	1	
8.00	78.14	445.99	tro	1	
9.00	77.63	281.32	tro	1	
10.00	77.12	199.77	tro	1	
11.00	76.61	325.30	tro	1	
12.00	76.10	346.77	tro	1	
13.00	75.59	447.29	tro	1	
14.00	75.08	328.67	tro	1	
15.00	74.50	448.33	tro	2	
16.00	74.10	566.86	tro	2	
17.00	73.70	506.46	tro	2	
18.00	73.30	625.24	tro	2	
19.00	72.90	475.78	tro	2	
20.00	72.50	308.43	tro	2	
21.00	72.10	433.52	tro	2	
22.00	71.70	529.46	tro	2	
23.00	71.30	293.26	tro	2	
24.00	70.90	205.38	tro	2	
25.00	70.50	357.38	tro	2	
26.00	70.10	136.37	tro	2	moderate burrowing
27.00	69.70	190.55	tro	2	moderate burrowing
28.00	69.30	183.19	tro	2	moderate burrowing
29.00	68.90	325.60	tro	2	
30.00	68.50	120.79	tro	2	moderate burrowing
31.00	68.00	272.03	tro	2	moderate burrowing
32.00	67.51	142.90	tro	2	moderate burrowing
33.00	67.01	113.03	tro	2	
34.00	66.52	224.53	tro	2	moderate burrowing
35.00	66.02	204.45	tro	2	
36.00	65.53	200.29	tro	2	
37.00	65.03	221.76	tro	2	
38.00	64.54	183.82	tro	2	
39.00	64.04	296.34	tro	2	
40.00	63.55	136.58	tro	2	
41.00	63.15	-99.00	nd	3	

42.00	62.75	105.04	tro	4
43.00	62.24	426.57	tro	4
44.00	61.72	382.03	tro	4
45.00	61.21	184.01	tro	4
46.00	60.70	78.38	tro	4
47.00	60.30	50.17	tro	4
48.00	59.90	144.28	tro	4
49.00	59.50	123.98	tro	4
50.00	59.10	133.84	tro	4
51.00	58.70	72.77	tro	4
52.00	58.30	140.23	tro	4
53.00	57.90	389.92	tro	4
54.00	57.50	185.99	tro	4
55.00	57.10	420.89	tro	4
56.00	56.62	67.35	tro	4
57.00	56.13	112.46	tro	4
58.00	55.65	113.49	tro	4
59.00	54.65	44.14	tro	5
60.00	54.40	73.61	tro	5
61.00	53.88	122.45	tro	5
62.00	53.37	146.77	tro	5
63.00	52.85	119.32	tro	5
64.00	52.36	183.05	tro	5
65.00	51.87	208.59	tro	5
66.00	51.39	130.36	tro	5
67.00	50.90	58.92	tro	5
68.00	50.47	89.55	tro	5
69.00	50.04	152.15	tro	5
70.00	49.61	113.44	tro	5
71.00	49.19	120.95	tro	5
72.00	48.76	118.64	tro	5
73.00	48.33	26.25	tro	5
74.00	47.90	59.26	tro	5
75.00	47.20	3.90	hor	6
76.00	46.65	5.47	ripple	6
77.00	46.05	7.18	burrowed	7
78.00	45.60	6.03	burrowed	7
79.00	45.15	37.76	hor	7
80.00	44.70	3.76	tro	7
81.00	44.25	14.37	tro	7
82.00	43.80	15.43	tro	7
83.00	43.25	15.36	ripple	8
84.00	42.90	1.94	ripple	8
85.00	42.40	3.72	ripple	9
86.00	41.92	4.49	ripple	9
87.00	41.45	-99.00	ripple	9
88.00	40.97	16.75	ripple	9
89.00	40.50	4.80	ripple	9
90.00	39.90	4.42	ripple	11
91.00	39.43	8.44	ripple	11

92.00	38.96	7.53	hor	11	
93.00	38.49	5.12	hor	11	
94.00	38.02	1.83	hor	11	
95.00	37.55	1.73	hor	11	
96.00	37.16	-99.00	hor	12	
97.00	36.77	5.79	hum	12	
98.00	36.38	1.79	burrowed	12	
99.00	36.00	-99.00	burrowed	12	
100.00	35.61	8.61	rip	12	
101.00	35.22	3.99	rip	12	
102.00	34.83	9.39	rip	12	
103.00	34.45	4.09	rip	12	
104.00	33.93	-99.00	hor	13	highly burrowed
105.00	33.41	29.42	hor	13	highly burrowed
106.00	32.89	-99.00	hor	13	highly burrowed
107.00	32.37	-99.00	hor	13	highly burrowed
108.00	31.85	61.72	hor	13	highly burrowed
109.00	31.33	62.44	hor	13	highly burrowed
110.00	30.81	94.76	hor	13	highly burrowed
111.00	30.28	30.74	hor	13	highly burrowed
112.00	29.76	15.27	hor	13	highly burrowed
113.00	29.24	16.95	hor	13	highly burrowed
114.00	28.72	31.03	hor	13	highly burrowed
115.00	28.20	14.42	hor	13	highly burrowed
116.00	27.71	8.61	hor	13	highly burrowed
117.00	27.22	54.29	hor	13	highly burrowed
118.00	26.73	19.88	hor	13	highly burrowed
119.00	26.24	16.13	hor	13	highly burrowed
120.00	25.75	25.84	hor	13	highly burrowed
121.00	25.25	31.20	hor	13	highly burrowed
122.00	24.76	25.42	hor	13	highly burrowed
123.00	24.27	14.61	hor	13	highly burrowed
124.00	23.78	28.23	hor	13	highly burrowed
125.00	23.29	9.77	hor	13	highly burrowed
126.00	22.80	4.02	hor	13	highly burrowed

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hes: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

Ferron Project: Ivie Creek IC-1

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-1

Column 3: permeability md (null value is -99.00)

Column 4: sed structure

1.00	70.35	-99.00	nd	Note: elevs relative to bottom of section
2.00	70.05	-99.00	nd	
3.00	69.75	4.22	rip	
4.00	69.45	5.28	rip	
5.00	69.25	-99.00	rip	
6.00	68.95	-99.00	rip	
7.00	68.65	-99.00	nd	
8.00	68.35	-99.00	nd	
9.00	68.05	-99.00	nd	
10.00	67.75	-99.00	nd	
11.00	67.45	-99.00	nd	
12.00	66.43	3.06	tro	
13.00	66.17	3.48	tro	
14.00	65.91	3.07	tro	
15.00	65.65	6.79	tro	
16.00	65.35	-99.00	nd	
17.00	65.05	-99.00	nd	
18.00	64.75	-99.00	nd	
19.00	64.45	-99.00	nd	
20.00	64.15	-99.00	nd	
21.00	63.85	-99.00	nd	
22.00	63.55	-99.00	hor	
23.00	63.25	-99.00	nd	
24.00	63.05	-99.00	nd	
25.00	62.85	-99.00	nd	
26.00	62.65	-99.00	nd	
27.00	62.45	-99.00	nd	
28.00	62.25	-99.00	nd	
29.00	62.05	7.22	nd	
30.00	61.85	-99.00	nd	
31.00	61.65	-99.00	nd	
32.00	61.45	-99.00	nd	
33.00	61.15	0.51	nd	
34.00	60.67	-99.00	nd	
35.00	60.19	0.50	nd	
36.00	59.71	0.50	nd	
37.00	59.23	0.52	nd	
38.00	58.75	0.73	nd	
39.00	58.45	0.50	tro	
40.00	58.10	0.50	tro	
41.00	57.75	0.51	tro	
42.00	57.40	0.50	tro	
43.00	57.05	0.52	tro	

44.00	56.70	0.51	tro
45.00	56.35	0.54	tro
46.00	56.05	2.19	tro
47.00	55.75	-99.00	tro
48.00	55.44	47.01	tro
49.00	55.14	16.20	tro
50.00	54.83	27.90	tro
51.00	54.53	-99.00	tro
52.00	54.22	13.78	tro
53.00	53.92	-99.00	tro
54.00	53.62	31.67	tro
55.00	53.31	-99.00	tro
56.00	53.01	-99.00	tro
57.00	52.70	-99.00	tro
58.00	52.40	3.90	tro
59.00	52.09	1.00	tro
60.00	51.79	-99.00	tro
61.00	51.48	13.78	tro
62.00	51.18	1.60	tro
63.00	50.88	16.71	tro
64.00	50.57	26.23	tro
65.00	50.27	5.00	tro
66.00	49.96	24.61	tro
67.00	49.66	6.46	tro
68.00	49.35	6.62	tro
69.00	49.05	11.25	tro
70.00	48.75	1.59	tro
71.00	48.44	14.14	tro
72.00	48.13	11.48	tro
73.00	47.82	3.84	tro
74.00	47.51	8.49	tro
75.00	47.19	3.38	tro
76.00	46.88	3.15	rip
77.00	46.57	1.56	tro
78.00	46.26	-99.00	tro
79.00	45.95	5.10	tro
80.00	45.65	0.77	tro
81.00	45.37	2.69	tro
82.00	45.08	-99.00	tro
83.00	44.80	-99.00	tro
84.00	44.51	0.51	tro
85.00	44.23	-99.00	tro
86.00	43.94	13.68	tro
87.00	43.66	54.06	tro
88.00	43.37	-99.00	tro
89.00	43.09	-99.00	tro
90.00	42.80	9.47	tro
91.00	42.52	7.75	tro
92.00	42.23	3.71	tro
93.00	41.95	-99.00	tro

94.00	41.65	3.03	hor
95.00	41.31	1.20	rip
96.00	40.98	0.73	tro
97.00	40.64	0.67	tro
98.00	40.30	0.73	tro
99.00	39.97	0.81	tro
100.00	39.63	0.85	tro
101.00	39.30	0.74	tro
102.00	38.96	0.54	tro
103.00	38.62	2.69	tro
104.00	38.29	0.54	tro
105.00	38.05	1.00	tro
106.00	37.65	-99.00	rip
107.00	37.39	-99.00	tro
108.00	37.13	0.53	tro
109.00	36.87	0.57	tro
110.00	36.61	0.52	tro
111.00	36.35	0.51	tro
112.00	36.05	0.56	hor
113.00	34.74	0.58	hor
114.00	35.42	0.59	hor
115.00	35.11	0.92	hor
116.00	34.79	0.86	hor
117.00	34.48	0.79	hor
118.00	34.16	0.90	hor
119.00	33.85	1.34	hor
120.00	33.55	-99.00	rip
121.00	33.25	1.48	hor
122.00	32.95	-99.00	hor
123.00	32.65	-99.00	rip
124.00	32.35	3.25	hor
125.00	32.05	4.39	hor
126.00	31.75	-99.00	rip
127.00	31.45	1.36	rip
128.00	31.15	1.67	hor
129.00	30.85	-99.00	rip
130.00	30.55	3.52	hor
131.00	30.25	2.20	hor
132.00	29.95	13.11	hor
133.00	29.65	3.09	hor
134.00	29.35	-99.00	hor
135.00	29.05	4.63	hor
136.00	28.75	11.38	hor
137.00	28.45	-99.00	hor
138.00	28.15	1.67	hor
139.00	27.85	2.72	rip
140.00	27.40	-99.00	nd
141.00	26.95	-99.00	nd
142.00	26.65	-99.00	hor
143.00	26.35	3.09	hor

144.00	26.05	2.44	hor
145.00	25.75	2.48	hor
146.00	25.45	1.45	hor
147.00	25.15	1.55	hor
148.00	24.85	2.80	hor
149.00	24.55	1.48	rip
150.00	24.25	1.03	hor
151.00	23.95	1.61	hor
152.00	23.65	-99.00	rip
153.00	23.35	5.52	hor
154.00	23.03	-99.00	nd
155.00	22.71	-99.00	nd
156.00	22.38	-99.00	nd
157.00	22.06	-99.00	nd
158.00	21.74	0.69	hor
159.00	21.42	-99.00	hor
160.00	21.09	1.12	hor
161.00	20.77	-99.00	rip
162.00	20.45	-99.00	nd
163.00	20.15	1.62	hor
164.00	19.87	-99.00	hor
165.00	19.59	1.00	hor
166.00	19.31	0.90	hor
167.00	19.03	1.12	hor
168.00	18.75	1.00	hor
169.00	18.45	-99.00	nd
170.00	18.13	-99.00	nd
171.00	17.81	-99.00	nd
172.00	17.49	-99.00	nd
173.00	17.17	-99.00	nd
174.00	16.85	-99.00	nd
175.00	16.55	1.30	hor
176.00	16.26	1.35	hor
177.00	15.97	1.09	rip
178.00	15.68	1.89	hor
179.00	15.39	1.00	hor
180.00	15.10	1.37	hor
181.00	14.80	-99.00	hor
182.00	14.51	0.87	hor
183.00	14.22	0.67	hor
184.00	13.93	-99.00	rip
185.00	13.64	0.72	rip
186.00	13.35	0.78	hor
187.00	13.05	0.59	rip
188.00	12.80	1.16	hor
189.00	12.55	-99.00	rip
190.00	12.25	-99.00	rip
191.00	11.91	-99.00	rip
192.00	11.57	0.92	hor
193.00	11.23	0.62	rip

194.00	10.89	0.70	rip
195.00	10.55	-99.00	hor
196.00	10.25	-99.00	rip
197.00	10.03	1.35	rip
198.00	9.80	0.91	bio
199.00	9.57	2.17	rip
200.00	9.35	0.73	rip
201.00	9.05	-99.00	hor
202.00	8.65	0.57	rip
203.00	8.25	0.54	rip
204.00	7.85	-99.00	rip
205.00	7.55	-99.00	rip
206.00	7.27	0.55	rip
207.00	6.99	0.60	hor
208.00	6.71	2.97	rip
209.00	6.43	-99.00	nd
210.00	6.15	1.00	rip

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

nd: not drilled

dnc: drilled but no core recovered;
appears together with other sed structures

half-humm: half-hummocky

unk: unknown

Ferron Project: Ivie Creek IC-2

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-2

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

1.00	129.60	4.01	rip	30	Note: elevs relative to bottom of section
2.00	129.30	2.50	rip	30	
3.00	129.00	-99.00	rip	30	
4.00	128.70	5.24	tro	30	
5.00	128.40	2.85	tro	30	
6.00	128.10	-99.00	tro	30	
7.00	127.80	0.66	tro	30	
8.00	127.50	-99.00	tro	30	
9.00	127.20	0.63	tro	30	
10.00	126.90	-99.00	tro	30	
11.00	126.60	0.90	hor	30	
12.00	126.30	1.72	hor	30	
13.00	126.00	-99.00	hor	30	
14.00	125.25	-99.00	rip	28	
15.00	124.95	-99.00	tro	28	
16.00	124.65	-99.00	tro	28	16.5 is tro
17.00	124.35	-99.00	tro	28	
18.00	124.05	4.84	tro	28	
19.00	123.75	10.62	tro	28	
20.00	123.45	-99.00	tro	28	
21.00	123.15	-99.00	hor	28	
22.00	122.85	4.17	hor	28	
23.00	122.06	-99.00	nd	unk	
24.00	121.27	-99.00	nd	unk	
25.00	120.48	-99.00	nd	unk	
26.00	119.68	-99.00	nd	unk	
27.00	118.89	-99.00	nd	unk	
28.00	118.10	-99.00	half-humm	21	
29.00	117.85	-99.00	half-humm	21	
30.00	117.60	3.40	half-humm	21	
31.00	117.35	5.00	half-humm	21	
32.00	117.10	1.60	half-humm	21	
33.00	116.85	1.35	half-humm	21	
34.00	116.60	1.43	half-humm	21	
35.00	116.35	-99.00	half-humm	21	
36.00	116.10	-99.00	nd	20	
37.00	115.82	-99.00	nd	20	

38.00	115.54	1.47	hcs	20
39.00	115.26	1.08	hcs	20
40.00	114.98	0.68	hor	20 bioturbated, shaly
41.00	114.70	1.00	hor	20 bioturbated, shaly
42.00	114.42	0.74	hor	20 bioturbated, shaly
43.00	114.14	0.56	hor	20 bioturbated, shaly
44.00	113.86	-99.00	hor	20 shaly
45.00	113.58	2.72	hor	20 shaly
46.00	113.30	-99.00	nd	20
47.00	113.00	-99.00	nd	19
48.00	112.73	2.95	mas	19
49.00	112.43	-99.00	half-humm	18
50.00	112.14	-99.00	half-humm	18
51.00	111.85	-99.00	nd	18
52.00	111.56	57.27	half-humm	18
53.00	111.27	8.61	half-humm	18
54.00	110.98	10.94	half-humm	18
55.00	110.69	10.02	half-humm	18
56.00	110.40	7.29	half-humm	18
57.00	110.11	5.65	half-humm	18
58.00	109.82	8.21	half-humm	18
59.00	109.53	13.51	half-humm	18
60.00	109.24	11.96	half-humm	18
61.00	108.95	22.51	half-humm	18
62.00	108.66	-99.00	half-humm	18
63.00	108.37	-99.00	nd	18
64.00	108.08	-99.00	nd	18
65.00	107.79	-99.00	nd	18
66.00	107.50	21.50	half-humm	18
67.00	107.21	19.08	half-humm	18
68.00	106.92	17.42	half-humm	18
69.00	106.63	8.18	half-humm	18
70.00	106.34	9.99	half-humm	18
71.00	106.05	13.07	half-humm	18
72.00	105.76	-99.00	half-humm	18
73.00	105.47	5.73	half-humm	18
74.00	105.18	12.81	half-humm	18
75.00	104.89	1.61	half-humm	18
76.00	104.60	-99.00	nd	18
77.00	104.30	18.38	half-humm	17
78.00	104.00	6.83	half-humm	17
79.00	103.70	8.26	half-humm	17
80.00	103.40	14.09	half-humm	17
81.00	103.10	7.92	half-humm	17
82.00	102.80	11.33	half-humm	17

83.00	102.50	9.07	half-humm	17	
84.00	102.20	7.25	half-humm	17	
85.00	101.90	8.16	half-humm	17	
86.00	101.60	10.84	half-humm	17	
87.00	101.30	-99.00	hor	17	thin bedded
88.00	101.00	4.25	half-humm	17	
89.00	100.70	8.66	half-humm	17	
90.00	100.40	-99.00	half-humm	17	
91.00	100.10	13.02	half-humm	17	
92.00	99.80	8.49	half-humm	17	
93.00	99.50	12.52	half-humm	17	
94.00	99.20	6.37	half-humm	17	
95.00	98.90	-99.00	half-humm	17	
96.00	98.60	9.90	half-humm	17	
97.00	98.30	-99.00	nd	17	
98.00	98.00	4.86	rip	17	shaly
99.00	97.70	11.92	half-humm	17	
100.00	97.40	0.57	half-humm	17	
101.00	97.10	3.23	half-humm	17	
102.00	96.80	-99.00	half-humm	17	
103.00	96.50	5.00	half-humm	17	
104.00	96.20	5.00	half-humm	17	
105.00	95.90	6.36	half-humm	17	
106.00	95.60	8.68	half-humm	17	
107.00	95.30	-99.00	half-humm	17	
108.00	95.00	13.91	half-humm	17	
109.00	94.70	-99.00	nd	17	In recessive break
110.00	94.40	-99.00	nd	17	In recessive break
111.00	94.10	16.41	half-humm	17	
112.00	93.80	7.06	half-humm	17	
113.00	93.50	18.55	half-humm	17	
114.00	93.20	1.90	half-humm	17	
115.00	92.90	6.40	half-humm	17	
116.00	92.60	16.08	half-humm	17	
117.00	92.30	12.97	half-humm	17	
118.00	92.00	13.84	half-humm	17	
119.00	91.70	13.41	half-humm	17	
120.00	91.40	-99.00	half-humm	17	
121.00	91.10	-99.00	rip	16	shaly
122.00	90.80	2.96	half-humm	16	
123.00	90.50	4.72	half-humm	16	
124.00	90.20	3.09	half-humm	16	
125.00	89.90	5.93	half-humm	16	
126.00	89.60	5.00	half-humm	16	
127.00	89.30	6.23	half-humm	16	

128.00	89.00	6.65	half-humm	16	Horizontal transect t5 ties at 89.10'
129.00	88.70	4.62	half-humm	16	
130.00	88.40	-99.00	rip	16	
131.00	88.10	4.22	half-humm	16	
132.00	87.80	4.04	half-humm	16	
133.00	87.50	2.92	half-humm	16	
134.00	87.20	-99.00	half-humm	16	
135.00	86.90	-99.00	rip	15	
136.00	86.55	-99.00	rip	15	
137.00	86.20	9.28	hor	14	sl. shaly
138.00	85.90	-99.00	rip	14	shaly
139.00	85.60	-99.00	rip	14	shaly
140.00	85.30	-99.00	rip	14	shaly
141.00	85.00	2.12	rip	14	shaly
142.00	84.70	2.37	rip	14	shaly
143.00	84.40	1.48	half-humm	14	
144.00	84.10	3.11	half-humm	14	
145.00	83.80	1.00	half-humm	14	low angle inclined up depo dip
146.00	83.50	-99.00	rip	14	sl. shaly
147.00	83.20	2.86	hor	14	
148.00	82.90	-99.00	hor	14	
149.00	82.60	3.35	hor	14	sl. shaly, mod. burrows
150.00	82.30	1.78	hor	14	to sl. wavy
151.00	82.00	1.39	hor	14	to sl. wavy
152.00	81.70	1.60	hor	14	to sl. wavy
153.00	81.40	-99.00	hor	14	to sl. wavy
154.00	81.10	1.36	hor	14	to sl. wavy
155.00	80.80	5.58	rip	14	shaly
156.00	80.42	1.17	hor	13	
157.00	80.14	-99.00	rip	13	
158.00	79.86	0.49	tro	13	low angle troughs
159.00	79.58	0.48	tro	13	low angle troughs
160.00	79.30	-99.00	tro	13	low angle troughs
161.00	79.02	0.47	tro	13	low angle troughs
162.00	78.74	-99.00	tro	13	low angle troughs
163.00	78.46	0.49	tro	13	low angle troughs
164.00	78.18	0.47	hor	13	
165.00	77.90	0.47	hor	13	
166.00	77.62	0.48	hor	13	
167.00	77.34	0.47	hor	13	
168.00	77.06	0.48	hor	13	
169.00	76.78	0.47	hor	13	
170.00	76.50	-99.00	nd	13	
171.00	76.20	-99.00	nd	12	
172.00	75.95	-99.00	nd	12	

173.00	75.60	-99.00	hor	11	
174.00	75.30	-99.00	nd	11	
175.00	75.00	0.85	hor	11	
176.00	74.70	1.38	hor	11	
177.00	74.40	-99.00	hor	11	
178.00	74.10	1.39	hor	11	
179.00	73.80	1.36	hor	11	
180.00	73.30	0.67	hor	11	IC-2 shift, east at hole 180
181.00	72.80	-99.00	rip	10	slightly shaly
182.00	72.50	-99.00	rip	10	slightly shaly
183.00	72.20	-99.00	rip	10	slightly shaly
184.00	71.90	-99.00	nd	10	
185.00	71.60	-99.00	nd	10	
186.00	71.30	-99.00	nd	10	
187.00	71.00	-99.00	nd	10	
188.00	70.70	-99.00	nd	10	
189.00	70.40	-99.00	nd	10	
190.00	70.10	-99.00	hor	9	laminae of shale
191.00	69.84	-99.00	nd	9	
192.00	69.57	-99.00	nd	9	
193.00	69.31	-99.00	nd	9	
194.00	69.05	0.99	hor	8	
195.00	68.75	3.42	rip	8	
196.00	68.45	-99.00	rip	8	
197.00	68.15	1.45	rip	8	
198.00	67.85	-99.00	nd	8	
199.00	67.55	-99.00	rip	8	
200.00	67.25	0.75	rip	8	
201.00	66.95	-99.00	rip	7	Spacing of holes not measured.

LEGEND FOR SED STRUCTURES

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csr: climbing symmetrical ripples
rip: rippled
hor: horizontally stratified
mas: massively bedded (usually a result of bioturbation)
hcs: hummocky cross-stratification
conv: convolute bedding
nd: not drilled
dnc: drilled but no core recovered;
appears together with other sed structures
half-humm: half-hummocky
unk: unknown

Ferron Project: Ivie Creek IC-7B

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-7B

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

1.00	75.55	181.63	hor	1	moderately burrowed	Note: elevs relative to bottom of section	2.00
75.29	153.50		hor	1	moderately burrowed		
3.00	75.03	184.49	hor	1	moderately burrowed		
4.00	74.77	169.49	hor	1	moderately burrowed		
5.00	74.51	30.06	hor	1	moderately burrowed		
6.00	74.25	70.00	hor	1	moderately burrowed		
7.00	73.90	-99.00	hor	1	moderately burrowed		
8.00	73.55	39.07	hor	1	moderately burrowed		
9.00	73.20	34.68	hor	1	moderately burrowed		
10.00	72.85	54.10	hor	1	moderately burrowed		
11.00	72.55	14.37	tro	2			
12.00	72.26	22.53	tro	2			
13.00	71.97	34.58	tro	2			
14.00	71.69	35.30	tro	2			
15.00	71.40	33.27	tro	2			
16.00	71.11	28.64	tro	2			
17.00	70.82	28.77	tro	2			
18.00	70.54	23.02	tro	2			
19.00	70.25	69.34	tro	2			
20.00	69.94	74.23	tro	2			
21.00	69.63	74.23	tro	2			
22.00	69.32	45.39	tro	2			
23.00	69.01	2.68	tro	2			
24.00	68.70	37.86	tro	2			
25.00	68.39	41.03	tro	2			
26.00	68.08	19.00	tro	2			
27.00	67.77	40.64	tro	2			
28.00	67.46	31.34	tro	2			
29.00	67.15	21.34	tro	2			
30.00	66.88	14.16	tro	2			
31.00	66.61	19.13	tro	2			
32.00	66.34	66.97	tro	2			
33.00	66.07	36.37	tro	2			
34.00	65.80	21.86	tro	2			
35.00	65.53	23.57	tro	2			
36.00	65.26	18.55	tro	2			
37.00	64.99	80.37	tro	2			
38.00	64.72	44.80	hor	2			
39.00	64.45	13.34	hor	2			
40.00	64.16	-99.00	nd	3			
41.00	63.87	-99.00	nd	3			

42.00	63.58	-99.00	nd	3
43.00	63.29	-99.00	nd	3
44.00	63.00	-99.00	nd	3
45.00	62.70	-99.00	nd	3
46.00	62.41	-99.00	nd	3
47.00	62.12	-99.00	nd	3
48.00	61.83	-99.00	nd	3
49.00	61.54	-99.00	nd	3
50.00	61.25	-99.00	nd	3
51.00	60.96	-99.00	nd	3
52.00	60.67	-99.00	nd	3
53.00	60.38	-99.00	nd	3
54.00	60.09	-99.00	nd	3
55.00	59.79	-99.00	nd	3
56.00	59.50	-99.00	nd	3
57.00	59.21	-99.00	nd	3
58.00	58.92	-99.00	nd	3
59.00	58.63	-99.00	nd	3
60.00	58.34	-99.00	nd	3
61.00	58.05	-99.00	nd	3
62.00	57.76	-99.00	nd	3
63.00	57.47	-99.00	nd	3
64.00	57.17	-99.00	nd	3
65.00	56.88	-99.00	nd	3
66.00	56.59	-99.00	nd	3
67.00	56.30	-99.00	nd	3
68.00	56.01	-99.00	nd	3
69.00	55.72	-99.00	nd	3
70.00	55.43	-99.00	nd	3
71.00	55.14	12.68	nd	3
72.00	54.85	7.36	nd	3
73.00	54.55	51.42	bioturb	3
74.00	53.87	68.10	tro	4
75.00	53.60	35.52	tro	4
76.00	53.32	203.74	tro	4
77.00	53.05	49.83	tro	4
78.00	52.77	33.72	tro	4
79.00	52.50	38.39	tro	4
80.00	52.22	25.22	tro	4
81.00	51.95	26.36	tro	4
82.00	51.67	169.12	tro	4
83.00	51.39	47.26	tro	4
84.00	51.12	-99.00	tro	4
85.00	50.84	147.42	tro	4
86.00	50.56	168.92	tro	4
87.00	50.28	297.18	tro	4
88.00	50.01	851.79	tro	4
89.00	49.73	128.10	tro	4
90.00	49.45	60.57	tro	4
91.00	49.15	3.21	bioturb	5

92.00	48.88	1.97	bioturb	5
93.00	48.61	2.03	bioturb	5
94.00	48.34	2.03	bioturb	5
95.00	48.07	2.01	bioturb	5
96.00	47.80	2.01	bioturb	5
97.00	47.30	2.05	tro	7
98.00	46.99	1.99	tro	7
99.00	46.69	1.95	bioturb	7
100.00	46.38	2.04	bioturb	7
101.00	46.08	1.98	bioturb	7
102.00	45.77	20.20	bioturb	7
103.00	45.47	70.36	rip/wave	7
104.00	45.16	11.74	rip/wave	7
105.00	44.86	20.89	rip/wave	7
106.00	44.55	3.18	bioturb	7
107.00	44.25	2.98	bioturb	7
108.00	43.95	-99.00	bioturb	7
109.00	43.65	9.38	bioturb	7
110.00	43.35	2.70	bioturb	7
111.00	43.05	23.73	bioturb	7
112.00	42.75	9.81	rip/wave	7
113.00	42.45	9.59	rip/wave	7
114.00	42.15	4.05	bioturb	7
115.00	41.85	20.95	bioturb	7
116.00	41.55	4.55	bioturb	7
117.00	41.25	2.31	rip/wave	7
118.00	40.95	7.21	bioturb	7
119.00	40.65	5.08	bioturb	7
120.00	40.35	4.00	bioturb	7
121.00	40.05	10.36	bioturb	7
122.00	39.75	40.08	bioturb	7
123.00	39.45	14.26	bioturb	7
124.00	39.15	9.34	bioturb	7
125.00	38.85	9.95	bioturb	7
126.00	38.55	10.42	bioturb	7
127.00	38.25	71.95	hor	7
128.00	37.95	-99.00	hor	7
129.00	37.65	17.13	hor	7
130.00	37.35	-99.00	hor	7
131.00	36.90	11.90	hor	9
132.00	36.61	29.04	hor	9
133.00	36.33	-99.00	hor	9
134.00	36.04	5.19	hor	9
135.00	35.76	55.93	hor	9
136.00	35.47	18.59	hor	9
137.00	35.19	10.69	tro	9
138.00	34.90	18.04	tro	9
139.00	34.62	21.47	convolute	9
140.00	34.33	25.17	convolute	9
141.00	34.05	24.95	convolute	9

142.00	33.75	23.98	convolute	9	
143.00	33.45	4.72	convolute	9	
144.00	33.15	23.37	convolute	9	
145.00	32.85	4.05	convolute	9	
146.00	32.55	4.60	convolute	9	
147.00	32.25	4.98	convolute	9	
148.00	31.95	13.42	convolute	9	
149.00	31.65	11.54	convolute	9	
150.00	31.35	1.97	convolute	9	
151.00	31.05	-99.00	rippled	10	intensely burrowed
152.00	30.75	3.67	rippled	10	intensely burrowed
153.00	30.45	7.73	bioturb	11	
154.00	30.15	7.95	bioturb	11	
155.00	29.85	10.34	bioturb	11	
156.00	29.55	-99.00	bioturb	11	
157.00	29.25	18.05	bioturb	11	
158.00	28.95	6.95	bioturb	11	
159.00	28.80	2.10	hor	12	
160.00	28.54	11.52	hor	12	
161.00	28.27	17.72	bioturb	12	
162.00	28.01	12.79	bioturb	12	
163.00	27.75	19.65	bioturb	12	
164.00	27.49	16.17	bioturb	12	
165.00	27.22	6.92	bioturb	12	
166.00	26.96	13.49	bioturb	12	
167.00	26.52	14.29	bioturb	12	
168.00	26.22	2.01	bioturb	12	
169.00	25.93	10.58	bioturb	12	
170.00	25.63	11.31	bioturb	12	
171.00	25.34	20.75	bioturb	12	
172.00	25.04	18.73	bioturb	12	
173.00	24.75	2.36	bioturb	12	
174.00	24.35	-99.00	bioturb	13	
175.00	24.05	17.14	bioturb	13	
176.00	23.75	5.07	bioturb	13	
177.00	23.45	1.99	bioturb	13	
178.00	23.15	1.94	bioturb	13	
179.00	22.85	2.34	bioturb	13	
180.00	22.55	5.26	bioturb	13	
181.00	22.25	2.11	bioturb	13	
182.00	21.95	2.12	bioturb	13	
183.00	21.65	2.04	bioturb	13	
184.00	21.35	2.11	bioturb	13	
185.00	21.05	2.07	bioturb	13	
186.00	20.75	11.05	bioturb	13	
187.00	20.45	2.78	bioturb	13	
188.00	20.15	2.28	bioturb	13	
189.00	19.84	3.04	bioturb	13	
190.00	19.54	3.87	bioturb	13	
191.00	19.24	3.35	bioturb	13	

192.00	18.94	3.62	bioturb	13
193.00	18.63	2.92	bioturb	13
194.00	18.33	4.48	bioturb	13
195.00	18.03	1.99	bioturb	13
196.00	17.73	2.54	bioturb	13
197.00	17.42	5.12	bioturb	13
198.00	17.12	1.97	bioturb	13
199.00	16.82	1.95	bioturb	13
200.00	16.52	1.93	bioturb	13
201.00	16.21	1.95	bioturb	13
202.00	15.91	2.21	bioturb	13
203.00	15.61	2.76	bioturb	13
204.00	15.31	4.04	bioturb	13
205.00	15.00	2.32	bioturb	13
206.00	14.70	2.22	bioturb	13
207.00	14.40	0.86	bioturb	13
208.00	14.10	2.23	bioturb	13
209.00	13.80	2.21	bioturb	13
210.00	13.50	2.10	bioturb	13
211.00	13.20	2.07	bioturb	13

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

Ferron Project: Ivie Creek IC-13

Column 1: hole number

Column 2: elevation ft, ref to IC-13

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

261.00	78.10	5.10	tro?	22	tro? may be equivalent to unit 22.
260.00	77.80	28.76	con	21	contorted w/ bur, silt and nrganic matter
259.00	77.50	2.12	cur	21	current ripples, bur
258.00	77.20	2.13	cur	21	current ripples, bur
257.00	76.90	3.33	cur	21	current ripples, 256-257
256.00	76.60	-99.00	cur	21	current ripples, 256-257
255.00	76.30	3.83	tro	21	tro with clay clasts
254.00	76.00	7.54	mas?	21	massive?
253.00	75.70	2.18	con	21	bur, hor, cur w/some silt, clay, organic material
252.00	75.40	-99.00	nc	21	
251.00	75.10	-99.00	nc	21	
250.00	74.80	-99.00	nc	21	
249.00	74.50	7.25	cur	21	bur in current ripples
248.00	74.20	-99.00	nc	21	
247.00	73.90	-99.00	tro	21	3-4 sm tro, 245-247
246.00	73.60	-99.00	tro	21	3-4 sm tro, 245-247
245.00	73.30	-99.00	tro	21	3-4 sm tro, 245-247
244.00	73.00	-99.00	nc	21	
243.00	72.90	474.80	tro	21	sm tro
242.00	72.60	-99.00	nc	21	
241.00	72.30	-99.00	cur?	21	hard to tell if current ripples
240.00	72.00	-99.00	nc	20	
239.00	71.70	13.34	cur	20	mlcurrent ripples
238.00	71.40	-99.00	nc	20	
237.00	71.10	-99.00	nc	20	
236.00	70.80	-99.00	nc	20	
235.00	70.50	24.55	con	20	contorted bed, 233-235
234.00	70.20	12.40	con	20	contorted bed, 233-235
233.00	69.90	7.69	con	20	contorted bed, 233-235
232.00	69.60	-99.00	nc	18/19	
231.00	69.30	-99.00	nc	18/19	
230.00	69.00	-99.00	nc	18/19	
229.00	68.70	-99.00	nc	18/19	
228.00	68.40	-99.00	nc	18/19	
227.00	68.10	-99.00	nc	18/19	
226.00	67.80	-99.00	nc	18/19	
225.00	67.50	-99.00	nc	18/19	
224.00	67.20	-99.00	nc	18/19	
223.00	67.00	-99.00	nc	18/19	
222.00	66.60	-99.00	nc	18/19	
221.00	66.30	-99.00	nc	18/19	

220.00	66.00	-99.00	nc	18/19
219.00	65.70	-99.00	nc	18/19
218.00	65.40	-99.00	nc	18/19
217.00	65.10	-99.00	nc	18/19
216.00	64.80	-99.00	nc	18/19
215.00	64.50	-99.00	nc	18/19
214.00	64.20	-99.00	nc	18/19
213.00	63.90	-99.00	nc	18/19
212.00	63.60	-99.00	nc	18/19
211.00	63.30	-99.00	nc	18/19
210.00	63.00	53.64	nc	18/19
209.00	62.70	17.15	nc	18/19
208.00	62.40	153.9	nc	18/19
207.00	62.10	55.51	nc	18/19
206.00	61.80	67.45	tro	17 many sm tro w/ bur, 199-206
205.00	61.50	84.33	tro	17 many sm tro w/ bur, 199-206
204.00	61.20	81.80	tro	17 many sm tro w/ bur, 199-206
203.00	60.90	26.12	tro	17 many sm tro w/ bur, 199-206
202.00	60.30	67.85	tro	17 many sm tro w/ bur, 199-206
201.00	60.30	103.09	tro	17 many sm tro w/ bur, 199-206
200.00	60.00	161.52	tro	17 many sm tro w/ bur, 199-206
199.00	59.70	28.66	tro	17 many sm tro w/ bur, 199-206
198.00	59.40	67.80	tro	17 many sm tro w/ incr upwards in bur, 192-198
197.00	59.10	104.69	tro	17 many sm tro w/ incr upwards in bur, 192-198
196.00	58.80	82.88	tro	17 many sm tro w/ incr upwards in bur, 192-198
195.00	58.50	192.11	tro	17 many sm tro w/ incr upwards in bur, 192-198
194.00	58.20	169.93	tro	17 many sm tro w/ incr upwards in bur, 192-198
193.00	57.90	87.82	tro	17 many sm tro w/ incr upwards in bur, 192-198
192.00	57.60	203.02	tro	17 many sm tro w/ incr upwards in bur, 192-198
191.00	57.30	126.13	tro	17 one tro, 190-191
190.00	57.00	291.36	tro	17 one tro, 190-191
189.00	56.70	147.99	tro	17 one tro, 188-189
188.00	56.40	232.14	tro	17 one tro, 188-189
187.00	56.10	115.16	tro	17 one tro
186.00	55.80	75.32	bur	17 bur-to-biot top to tro below
185.00	55.50	100.04	tro	17 one tro, 184-185
184.00	55.20	169.30	tro	17 one tro, 184-185
183.00	54.90	146.82	?	17 bisects bedding surface
182.00	54.60	208.88	tro	17 one tro, 179-182
181.00	54.30	-99.00	tro	17 one tro, 179-182
180.00	54.00	278.44	tro	17 one tro, 179-182
179.00	53.70	110.38	tro	17 one tro, 179-182
178.00	53.40	131.09	tro	17 one tro, 173-178
177.00	53.10	111.44	tro	17 one tro, 173-178
176.00	52.80	115.39	tro	17 one tro, 173-178
175.00	52.50	66.95	tro	17 one tro, 173-178
174.00	52.20	80.87	tro	17 one tro, 173-178
173.00	51.90	53.31	tro	17 one tro, 173-178
172.00	51.60	141.94	x-bed	16 one low-angle x-bed, 167-172
171.00	51.30	124.21	x-bed	16 one low-angle x-bed, 167-172

170.00	51.00	158.68	x-bed	16	one low-angle x-bed, 167-172
169.00	50.70	107.28	x-bed	16	one low-angle x-bed, 167-172
168.00	50.40	108.07	x-bed	16	one low-angle x-bed, 167-172
167.00	50.10	132.78	x-bed	16	one low-angle x-bed, 167-172
166.00	49.80	123.27	x-bed	16	may be same as 147-161 or 2nd one, 163-166
165.00	49.50	121.66	x-bed	16	may be same as 147-161 or 2nd one, 163-166
164.00	49.20	95.37	x-bed	16	may be same as 147-161 or 2nd one, 163-166
163.00	48.90	140.78	x-bed	16	may be same as 147-161 or 2nd one, 163-166
162.00	48.60	123.18	?	16	bisects reactivation surface
161.00	48.30	178.82	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
160.00	48.00	161.66	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
159.00	47.70	114.72	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
158.00	47.40	154.83	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
157.00	47.10	197.33	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
156.00	46.80	64.76	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
155.00	46.50	91.56	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
154.00	46.20	149.99	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
153.00	45.90	161.72	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
152.00	45.60	110.44	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
151.00	45.30	102.39	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
150.00	45.00	74.68	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
149.00	44.70	180.83	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
148.00	44.40	71.91	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
147.00	44.10	186.27	x-bed	16	vlg, low-angle x-bed, hard to see struct, 147-161
146.00	43.80	116.90	tro	16	several sm tro w/bur, 140-146
145.00	43.50	205.52	tro	16	several sm tro w/bur, 140-146
144.00	43.20	214.72	tro	16	several sm tro w/bur, 140-146
143.00	42.90	239.50	tro	16	several sm tro w/bur, 140-146
142.00	42.60	213.46	tro	16	several sm tro w/bur, 140-146
141.00	42.30	372.33	tro	16	several sm tro w/bur, 140-146
140.00	42.00	598.54	tro	16	several sm tro w/bur, 140-146
139.00	41.70	-99.00	nc		
138.00	41.40	-99.00	nc	16	
137.00	41.10	157.10	hum	15	one hum, 135-137
136.00	40.80	111.92	hum	15	one hum. 135-137
135.00	40.50	94.59	hum	15	one hum. 135-137
134.00	40.20	179.55	hum	15	one hum, 133-134
133.00	39.90	153.18	hum	15	one hum, 133-134
132.00	39.60	139.58	hum	15	sm hum
131.00	39.30	144.20	hor	15	several sets of hor, 126-131
130.00	39.00	129.28	hor	15	several sets of hor, 126-131
129.00	38.70	122.04	hor	15	several sets of hor, 126-131
128.00	38.40	90.87	hor	15	several sets of hor, 126-131
127.00	38.10	100.56	hor	15	several sets of hor, 126-131
126.00	37.80	102.46	hor	15	several sets of hor, 126-131
125.00	35.50	103.46	hum	15	3? sm hum. 123-125
124.00	37.20	79.61	hum	15	3? sm hum. 123-125
123.00	36.90	99.42	hum	15	3? sm hum. 123-125
122.00	36.60	41.20	hor	15	one hor, 120-122
121.00	36.30	63.26	hor	15	one hor, 120-122

120.00	36.00	56.44	hor	15	one hor, 120-122
119.00	35.70	55.66	tro	14	114-119 hard to see sed struct, several sm tro?
118.00	35.40	27.24	tro	14	114-119 hard to see sed struct, several sm tro?
117.00	35.10	60.99	tro	14	114-119 hard to see sed struct, several sm tro?
116.00	34.80	40.72	tro	14	114-119 hard to see sed struct, several sm tro?
115.00	34.50	44.03	tro	14	114-119 hard to see sed struct, several sm tro?
114.00	34.20	121.78	tro	14	114-119 hard to see sed struct, several sm tro?
113.00	33.90	105.93	tro	14	one tro, 109-113
112.00	33.60	228.88	tro	14	one tro, 109-113
111.00	33.30	231.71	tro	14	one tro, 109-113
110.00	33.00	207.29	tro	14	one tro, 109-113
109.00	32.70	181.48	tro	14	one tro, 109-113
108.00	32.40	244.23	tro	14	one tro, 105-108
107.00	32.10	102.35	tro	14	one tro, 105-108
106.00	31.80	114.03	tro	14	one tro, 105-108
105.00	31.50	404.82	tro	14	one tro, 105-108
104.00	31.20	109.87	tro	14	one tro, 100-104
103.00	30.90	127.37	tro	14	one tro, 100-104
102.00	30.60	46.61	tro	14	one tro, 100-104
101.00	30.30	97.99	tro	14	one tro, 100-104
100.00	30.00	112.96	tro	14	one tro, 100-104
99.00	29.70	141.38	tro	14	one tro, 98-99
98.00	29.40	153.45	tro	14	one tro, 98-99
97.00	29.10	67.53	tro	14	one tro, 94-97
96.00	28.80	84.76	tro	14	one tro, 94-97
95.00	28.50	113.37	tro	14	one tro, 94-97
94.00	28.20	58.46	tro	14	one tro, 94-97
93.00	27.90	72.25	hum	14	one hum, 91-93
92.00	27.60	81.90	hum	14	one hum, 91-93
91.00	27.30	116.51	hum	14	one hum, 91-93
90.00	27.00	102.78	hor?	14	one hum, 91-93
89.00	26.70	96.53	tro	14	one tro, 88-89
88.00	26.40	162.85	tro	14	one tro, 88-89
87.00	26.10	75.14	hum	14	one hum, 84-87
86.00	25.80	66.28	hum	14	one hum, 84-87
85.00	25.50	69.14	hum	14	one hum, 84-87
84.00	25.20	132.33	hum	14	one hum, 84-87
83.00	24.90	271.40	tro	14	one tro, 77-83
82.00	24.60	212.66	tro	14	one tro, 77-83
81.00	24.30	120.68	tro	14	one tro, 77-83
80.00	24.00	146.21	tro	14	one tro, 77-83
79.00	23.70	41.86	tro	14	one tro, 77-83
78.00	23.40	93.84	tro	14	one tro, 77-83
77.00	23.10	20.84	tro	14	one tro, 77-83
76.00	22.80	18.00	tro?	13	some bur, 75-76
75.00	22.50	2.16	tro?	13	some bur, 75-76
74.00	22.20	2.49	bur	13	bur-to-biot, sl crsn up, 60-74
73.00	21.90	5.66	bur	13	bur-to-biot, sl crsn up, 60-74
72.00	21.60	3.77	bur	13	bur-to-biot, sl crsn up, 60-74
71.00	21.30	11.51	bur	13	bur-to-biot, sl crsn up, 60-74

70.00	21.00	12.04	bur	13	bur-to-biot, sl crsn up, 60-74
69.00	20.70	12.38	bur	13	bur-to-biot, sl crsn up, 60-74
68.00	20.40	11.56	bur	13	bur-to-biot, sl crsn up, 60-74
67.00	20.10	2.10	bur	13	bur-to-biot, sl crsn up, 60-74
66.00	19.80	2.12	bur	13	bur-to-biot, sl crsn up, 60-74
65.00	19.50	7.96	bur	13	bur-to-biot, sl crsn up, 60-74
64.00	19.20	9.49	bur	13	bur-to-biot, sl crsn up, 60-74
63.00	18.90	7.73	bur	13	bur-to-biot, sl crsn up, 60-74
62.00	18.60	3.95	bur	13	bur-to-biot, sl crsn up, 60-74
61.00	18.30	5.07	bur	13	bur-to-biot, sl crsn up, 60-74
60.00	18.00	2.23	bur	13	bur-to-biot, sl crsn up, 60-74
59.00	17.70	10.57	hor	12	may be toe of broad, low-angle x-bed 55-59
58.00	17.40	14.89	hor	12	may be toe of broad, low-angle x-bed 55-59
57.00	17.10	15.00	hor	12	may be toe of broad, low-angle x-bed 55-59
56.00	16.80	7.25	hor	12	may be toe of broad, low-angle x-bed 55-59
55.00	16.50	23.37	hor	12	may be toe of broad, low-angle x-bed 55-59
54.00	16.20	36.13	tro	12	one tro 53-54
53.00	15.90	49.60	tro	12	one tro 53-54
52.00	15.60	149.52	tro	12	one tro 47-52
51.00	15.30	70.35	tro	12	one tro 47-52
50.00	15.00	98.28	tro	12	one tro 47-52
49.00	14.70	38.52	tro	12	one tro 47-52
48.00	14.40	70.43	tro	12	one tro 47-52
47.00	14.10	51.28	tro	12	one tro 47-52
46.00	13.80	30.46	tro	12	one tro, 45-46
45.00	13.50	45.26	tro	12	one tro, 45-46
44.00	13.20	41.08	tro	12	one tro, 38-44
43.00	12.90	207.32	tro	12	one tro, 38-44
42.00	12.60	50.63	tro	12	one tro, 38-44
41.00	12.30	54.56	tro	12	one tro, 38-44
40.00	12.00	-99.00	tro	12	one tro, 38-44
39.00	11.70	68.06	tro	12	one tro, 38-44
38.00	11.40	-99.00	tro	12	one tro, 38-44
37.00	11.10	8.78	?	11/12	bisects contact
36.00	10.80	18.90	hum	11	mostly hum, possibly some hor and small tro
35.00	10.50	14.54	hum	11	mostly hum, possibly some hor and small tro
34.00	10.20	47.29	hum	11	mostly hum, possibly some hor and small tro
33.00	9.90	42.50	hum	11	mostly hum, possibly some hor and small tro
32.00	9.60	38.18	hum	11	mostly hum, possibly some hor and small tro
31.00	9.30	37.54	hum	11	mostly hum, possibly some hor and small tro
30.00	9.00	63.81	hum	11	mostly hum, possibly some hor and small tro
29.00	8.70	35.23	hum	11	mostly hum, possibly some hor and small tro
28.00	8.40	58.85	hum	11	mostly hum, possibly some hor and small tro
27.00	8.10	30.17	hum	11	mostly hum, possibly some hor and small tro
26.00	7.80	16.28	hum	11	mostly hum, possibly some hor and small tro
25.00	7.50	21.08	hum	11	mostly hum, possibly some hor and small tro
24.00	7.20	23.41	hum	11	mostly hum, possibly some hor and small tro
23.00	6.90	26.65	hum	11	mostly hum, possibly some hor and small tro
22.00	6.60	25.51	hum	11	mostly hum, possibly some hor and small tro
21.00	6.30	20.58	hum	11	mostly hum, possibly some hor and small tro

20.00	6.00	18.69	hum	11	mostly hum, possibly some hor and small tro
19.00	5.70	5.83	hum	11	mostly hum, possibly some hor and small tro
18.00	5.40	24.87	hum	11	mostly hum, possibly some hor and small tro
17.00	5.10	51.16	hum	11	mostly hum, possibly some hor and small tro
16.00	4.80	71.52	hum	11	mostly hum, possibly some hor and small tro
15.00	4.50	38.11	hum	11	mostly hum, possibly some hor and small tro
14.00	4.20	37.02	hum	11	mostly hum, possibly some hor and small tro
13.00	3.90	26.09	hum	11	mostly hum, possibly some hor and small tro
12.00	3.60	27.29	hum	11	mostly hum, possibly some hor and small tro
11.00	3.30	7.84	hum	11	mostly hum, possibly some hor and small tro
10.00	3.00	-99.00	thn-bed/ss&sh	10	nc
9.00	2.70	-99.00	thn-bed/ss&sh	10	nc
8.00	2.40	-99.00	thn-bed/ss&sh	10	nc
7.00	2.10	5.03	hum	9	1 to 2 beds, holes 1-7
6.00	1.80	7.65	hum	9	1 to 2 beds, holes 1-7
5.00	1.50	5.55	hum	9	1 to 2 beds, holes 1-7
4.00	1.20	10.44	hum	9	1 to 2 beds, holes 1-7
3.00	0.90	7.79	hum	9	1 to 2 beds, holes 1-7
2.00	0.60	8.47	hum	9	1 to 2 beds, holes 1-7
1.00	0.30	2.97	hum	9	1 to 2 beds, holes 1-7

LEGEND FOR SED STRUCTURES

=====
 csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

Ferron Project: Ivie Creek IC-8

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-8

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

1.00	101.75	219.02	biot/root	28	Note: elevs relative to bottom of section
2.00	101.48	173.12	biot/root	28	
3.00	101.22	208.93	tro	28	
4.00	100.95	56.86	tro	28	
5.00	100.68	38.90	bioturb	28	
6.00	100.42	238.27	bioturb	28	
7.00	100.15	189.44	bioturb	28	
8.00	99.80	80.81	tro	27	
9.00	99.47	347.94	tro	27	
10.00	99.15	115.92	tro	27	
11.00	98.82	276.37	tro	27	
12.00	98.50	218.79	tro	27	
13.00	98.18	116.17	tro	27	
14.00	97.85	128.75	tro	27	
15.00	97.53	170.42	tro	27	
16.00	97.20	142.01	tro	27	
17.00	96.86	139.55	tro	27	
18.00	96.51	130.00	tro	27	
19.00	96.17	107.99	tro	27	
20.00	95.82	81.45	tro	27	
21.00	95.48	11.30	tro	27	
22.00	95.14	70.02	tro	27	
23.00	94.79	48.89	tro	27	
24.00	94.45	36.29	tro	27	
25.00	94.15	39.66	rip	26	
26.00	93.82	40.47	rip	26	
27.00	93.50	26.53	rip	26	
28.00	93.18	69.28	hor	26	
29.00	92.86	111.94	hor	26	
30.00	92.54	118.20	hor	26	
31.00	92.22	66.65	hor	26	
32.00	91.90	158.88	hor	26	
33.00	91.60	18.19	hor	24	
34.00	91.30	37.42	hor	24	
35.00	91.00	23.59	hor	24	
36.00	90.70	9.92	rip?	23	
37.00	90.40	93.55	rip	22	
38.00	90.09	39.31	rip	22	
39.00	89.79	51.48	hor	22	
40.00	89.48	55.21	rip	22	
41.00	89.18	52.72	rip	22	
42.00	88.87	58.19	rip	22	
43.00	88.57	27.86	hor	22	
44.00	88.26	47.99	hor	22	

45.00	87.96	48.88	hor	22	
46.00	87.65	33.48	hor	22	
47.00	87.40	10.29	rip	21	
48.00	87.10	11.96	bioturb	21	
49.00	86.80	-99.00	nd	21	
50.00	86.50	37.23	rip	21	
51.00	86.20	34.44	tro	20	low angle
52.00	85.92	32.64	tro	20	low angle
53.00	85.63	51.36	tro	20	low angle
54.00	85.35	33.70	tro	20	low angle
55.00	85.07	47.20	tro	20	low angle
56.00	84.78	9.34	tro	20	low angle
57.00	84.50	14.16	tro	20	low angle
58.00	84.10	2.24	bioturb	19	
59.00	83.79	3.64	bioturb	19	
60.00	83.48	19.32	bioturb	19	
61.00	83.16	71.68	bioturb	19	
62.00	82.85	42.60	rip	18	
63.00	82.50	41.92	rip	18	
64.00	82.15	73.06	rip	18	
65.00	81.80	26.58	rip	18	
66.00	81.45	38.85	rip	18	
67.00	81.10	-99.00	rip	17*	some burrowing
68.00	80.78	98.07	rip	17*	some burrowing
69.00	80.46	11.64	rip	17*	some burrowing
70.00	80.14	-99.00	nd	17	some burrowing
71.00	79.82	2.00	rip	17	some burrowing
72.00	79.50	7.24	rip	17	some burrowing
73.00	79.18	-99.00	nd	17	
74.00	78.86	8.33	rip	17	some burrowing
75.00	78.54	52.39	hor	17	some burrowing
76.00	78.22	13.13	hor	17	some burrowing
77.00	77.90	30.57	hor	17	some burrowing
78.00	77.40	12.26	tro	16	ai -steep
79.00	77.12	27.88	tro	16	ai -steep
80.00	76.83	58.01	tro	16	ai -steep
81.00	76.55	183.37	tro	16	ai -steep
82.00	76.26	87.21	tro	16	ai -steep
83.00	75.98	150.69	tro	16	ai -steep
84.00	75.69	35.17	tro	16	ai -steep
85.00	75.41	84.09	tro	16	ai - slight
86.00	75.12	110.66	tro	16	ai -steep
87.00	74.84	87.43	tro	16	ai -steep
88.00	74.55	94.49	tro	16	ai -steep
89.00	74.24	159.99	tro	16	ai -steep
90.00	73.93	76.18	tro	16	ai -steep
91.00	73.61	131.34	tro	16	ai -steep
92.00	73.30	67.14	tro	16	ai -steep
93.00	72.99	128.03	tro	16	ai -steep
94.00	72.68	43.46	tro	16	ai - moderate
95.00	72.36	76.93	tro	16	ai - moderate
96.00	72.05	65.75	tro	16	ai - moderate

97.00	71.74	48.25	tro	16	ai - slight
98.00	71.43	72.33	tro	16	ai - slight
99.00	71.11	75.96	tro	16	ai - slight
100.00	70.80	46.52	tro	16	ai - slight
101.00	70.48	77.06	tro	16	ai - slight
102.00	70.17	64.20	tro	16	ai - slight
103.00	69.86	37.14	tro	16	ai - slight
104.00	69.54	19.11	tro	16	ai - slight
105.00	69.23	36.96	tro	16	ai - slight
106.00	68.91	66.96	tro	16	ai - moderate
107.00	68.60	68.08	tro	16	ai - slight
108.00	68.25	78.45	tro	16	ai - moderate
109.00	68.01	95.85	tro	16	ai - moderate
110.00	67.76	151.88	tro	16	ai - moderate
111.00	67.52	151.84	tro	16	ai - moderate
112.00	67.28	-99.00	tro	16	
113.00	67.04	142.19	tro	16	ai - slight
114.00	66.79	85.76	tro	16	ai - slight
115.00	66.55	160.25	tro	16	apparent inclination (ai) slight
116.00	66.25	11.00	hor	15	moderate burrowing
117.00	65.94	32.31	hor	15	moderate burrowing
118.00	65.63	39.86	hor	15	moderate burrowing
119.00	65.32	28.61	hor	15	moderate burrowing
120.00	65.01	48.81	hor	15	moderate burrowing
121.00	64.70	36.59	hor	15	moderate burrowing
122.00	64.42	36.34	hor	15	moderate burrowing
123.00	64.15	28.55	hor	15	moderate burrowing
124.00	63.87	34.10	hor	15	moderate burrowing
125.00	63.53	-99.00	hor	15	moderate burrowing
126.00	63.17	-99.00	nd	14	
127.00	62.80	-99.00	nd	14	
128.00	62.44	-99.00	nd	14	
129.00	62.08	-99.00	nd	14	
130.00	61.72	-99.00	nd	14	
131.00	61.35	-99.00	nd	14	
132.00	60.99	-99.00	nd	14	
133.00	60.63	-99.00	nd	14	
134.00	60.26	-99.00	nd	14	
135.00	59.90	-99.00	hor	13	bioturbated, possible nd ?
136.00	59.60	-99.00	hor	13	bioturbated, possible nd ?
137.00	59.30	-99.00	hor	13	bioturbated, possible nd ?
138.00	59.00	54.64	hor	13	bioturbated
139.00	58.69	22.18	hor	13	bioturbated
140.00	58.38	23.18	hor	13	bioturbated
141.00	58.08	40.32	hor	13	bioturbated
142.00	57.77	10.04	hor	13	bioturbated
143.00	57.46	45.58	hor	13	bioturbated
144.00	57.15	1451.31	hor	13	bioturbated perm on uncut surface
145.00	56.85	15.73	hor	13	bioturbated
146.00	56.54	34.58	hor	13	bioturbated
147.00	56.23	41.58	hor	13	bioturbated
148.00	55.92	15.10	hor	13	bioturbated

149.00	55.62	19.12	hor	13	bioturbated
150.00	55.31	5.99	hor	13	bioturbated
151.00	55.00	21.72	hor	13	bioturbated
152.00	54.70	8.02	hor	13	bioturbated
153.00	54.40	5.71	hor	13	bioturbated
154.00	54.10	39.04	hor	13	bioturbated
155.00	53.80	28.96	hor	13	bioturbated
156.00	53.50	18.88	hor	13	bioturbated
157.00	53.20	43.78	hor	13	bioturbated
158.00	52.90	2.37	hor	13	bioturbated
159.00	52.60	10.49	hor	13	bioturbated
160.00	52.30	9.51	hor	13	bioturbated
161.00	52.00	9.00	hor	13	bioturbated
162.00	51.70	25.88	hor	13	bioturbated
163.00	51.40	37.91	hor	13	bioturbated
164.00	51.10	-99.00	hor	13	bioturbated
165.00	50.80	14.72	hor	13	bioturbated
166.00	50.50	-99.00	hor	13	bioturbated
167.00	50.20	3.67	hor	13	bioturbated
168.00	49.90	-99.00	hor	13	bioturbated
169.00	49.60	6.43	hor	13	bioturbated
170.00	49.30	-99.00	hor	13	bioturbated
171.00	49.00	6.38	hor	13	bioturbated
172.00	48.70	-99.00	hor	13	bioturbated
173.00	48.40	42.18	hor	13	bioturbated
174.00	48.10	-99.00	hor	13	bioturbated
175.00	47.80	-99.00	hor	13	bioturbated
176.00	47.50	-99.00	hor	13	bioturbated
177.00	47.20	2.13	hor	13	bioturbated
178.00	46.90	2.85	hor	13	bioturbated
179.00	46.60	7.61	hor	13	bioturbated

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

Ferron Project: Ivie Creek IC-4

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-4

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

1.00	64.08	2.14	conv	18	Note: elevs relative to bottom of section
2.00	63.80	2.08	conv	18	
3.00	63.50	2.08	conv	18	
4.00	63.20	2.14	conv	18	
5.00	62.90	2.11	conv	18	
6.00	62.60	3.73	tro	18	
7.00	62.28	7.01	tro	18	
8.00	62.00	9.08	tro	18	
9.00	61.69	6.92	tro	18	
10.00	61.42	5.38	tro	18	
11.00	61.12	-99.00	tro/dnc	18	traverse shifted laterally
12.00	60.88	2.13	tro	18	
13.00	60.58	4.39	tro	18	
14.00	60.25	4.47	tro	18	
15.00	60.01	6.45	tro	18	
16.00	59.70	4.75	tro	18	
17.00	59.39	4.67	tro	18	
18.00	59.08	2.08	tro	18	
19.00	58.77	2.27	tro	18	
20.00	58.56	-99.00	nd	17	
21.00	58.35	2.37	hor	17	
22.00	57.86	-99.00	nd	17	
23.00	57.36	2.14	hor	17	
24.00	56.18	-99.00	nd	16	
25.00	55.37	-99.00	nd	16	
26.00	54.55	-99.00	hor/dnc	16	
27.00	53.73	-99.00	rip/dnc	16	
28.00	52.92	-99.00	rip/dnc	15-16	units combined at t2
29.00	51.70	-99.00	mas/dnc	14	bioturbated
30.00	51.40	13.35	mas	14	bioturbated
31.00	51.13	2.87	hor	14	
32.00	50.84	2.62	hor	14	
33.00	50.54	1.98	mas	14	shaly, bioturbated
34.00	50.30	-99.00	nd	14	
35.00	50.05	7.23	mas	14	bioturbated
36.00	50.84	2.32	hor	14	
37.00	50.24	-99.00	nd	14	
38.00	49.63	-99.00	nd	14	
39.00	49.03	2.25	hor	14	
40.00	48.77	2.17	hor	14	
41.00	48.52	-99.00	hor/dnc	14	moderate bioturbation

42.00	48.23	2.17	hor	11-13	
43.00	47.94	2.16	hor	11-13	
44.00	47.52	2.16	hor	11-13	
45.00	47.20	2.15	hor	11-13	
46.00	46.93	2.15	hor	11-13	
47.00	46.60	2.15	hor	11-13	
48.00	46.32	2.14	hor	11-13	
49.00	46.04	2.14	hor	11-13	
50.00	45.74	2.13	hor	11-13	
51.00	45.44	2.13	hor	11-13	
52.00	45.15	2.13	hor	11-13	
53.00	44.78	2.13	hor	11-13	
54.00	44.52	2.22	hor	11-13	
55.00	44.26	2.13	hor	11-13	
56.00	43.97	2.13	hor	11-13	
57.00	43.67	2.13	hor	11-13	
58.00	43.36	2.24	hor	11-13	
59.00	43.09	2.24	hor	11-13	
60.00	42.81	2.23	hor	11-13	
61.00	42.46	2.22	hor	11-13	
62.00	42.21	2.49	hor	11-13	
63.00	41.88	2.29	hor	11-13	
64.00	41.60	3.54	hor	11-13	
65.00	41.29	2.90	hor	11-13	
66.00	41.01	2.44	hor	11-13	bedding slightly inclined for entire unit
67.00	40.82	3.21	rip	11-13	
68.00	40.55	2.28	hor	11-13	units combined at t2
69.00	40.40	-99.00	nd	10	
70.00	40.25	-99.00	nd	10	
71.00	40.10	5.69	hor	10	
72.00	39.78	2.29	rip/dnc	10	
73.00	39.44	36.39	rip	10	
74.00	39.23	2.26	rip	10	
75.00	38.97	2.20	hor	10	
76.00	38.67	2.32	rip	10	
77.00	38.36	-99.00	rip/dnc	10	
78.00	38.06	2.34	rip/dnc	10	
79.00	37.79	4.43	rip	10	
80.00	37.43	2.35	rip/dnc	10	
81.00	37.06	5.20	rip/dnc	10	
82.00	36.82	-99.00	hor	10	moderate bioturbation
83.00	36.52	-99.00	nd	10	
84.00	36.22	-99.00	nd	10	
85.00	35.92	-99.00	nd	10	
86.00	35.62	2.26	hor	10	
87.00	35.21	13.45	hor/dnc	10	
88.00	34.93	2.48	rip/dnc	10	
89.00	34.65	8.58	rip/dnc	10	
90.00	34.36	2.46	rip/dnc	10	
91.00	34.10	6.08	rip/dnc	10	

92.00	33.80	14.62	hcs	10	
93.00	33.47	-99.00	rip	10	
94.00	33.20	-99.00	rip	10	
95.00	33.00	5.02	hor	10	
96.00	32.73	7.25	hor/dnc	9	
97.00	32.40	-99.00	rip/dnc	9	
98.00	32.10	16.35	rip	9	
99.00	31.84	9.55	rip/dnc	9	
100.00	31.57	5.15	rip/dnc	9	
101.00	31.20	3.19	rip/dnc	9	
102.00	30.95	2.12	mas	9	
103.00	30.66	-99.00	nd	9	
104.00	30.38	-99.00	nd	9	
105.00	30.09	-99.00	nd	9	
106.00	29.80	2.22	hor	9	
107.00	29.54	-99.00	nd	9	
108.00	29.28	-99.00	nd	9	
109.00	29.01	-99.00	nd	9	
110.00	28.75	26.76	hor	8	
111.00	28.42	22.63	hor	8	
112.00	28.09	-99.00	nd	8	
113.00	27.75	-99.00	hor	8	thin shale laminae
114.00	27.42	-99.00	nd	8	
115.00	27.10	2.21	hor	7	
116.00	26.94	2.21	hor	7	
117.00	26.76	2.25	hor	7	
118.00	26.49	2.17	hor	7	
119.00	26.22	2.17	hor	7	
120.00	25.95	2.15	hor	7	
121.00	25.70	11.04	hor	7	
122.00	25.40	-99.00	nd	6	unit inaccessible by foot
123.00	25.00	-99.00	nd	6	holes proportionally distributed
124.00	24.70	3.44	hor	6	
125.00	24.40	16.25	hor	6	
126.00	24.10	2.18	hor	6	
127.00	23.80	-99.00	nd	6	
128.00	23.50	2.42	rip	6	
129.00	25.10	2.13	rip	6	
130.00	22.80	0.89	hor	6	
131.00	22.50	2.11	hor	6	
132.00	22.20	2.11	hor	6	
133.00	21.90	7.87	rip	6	
134.00	21.60	2.77	mas/dnc	6	
135.00	21.20	6.21	rip	6	
136.00	20.90	2.08	rip	6	
137.00	20.59	2.06	hor	5	
138.00	20.32	0.85	hor	5	
139.00	20.03	2.02	hor	5	
140.00	19.64	-99.00	hor/dnc	4	
141.00	19.27	2.20	hor	4	

142.00	18.97	2.20	rip	4
143.00	18.75	2.20	rip	4
144.00	18.50	1.30	hor	4
145.00	18.10	1.99	rip	3
146.00	17.74	0.81	hor	3
147.00	17.47	1.98	hor	3
148.00	17.12	1.97	rip	3
149.00	16.81	-99.00	nd	2
150.00	16.50	-99.00	nd	2
151.00	16.19	-99.00	nd	2
152.00	15.89	-99.00	nd	2
153.00	15.58	-99.00	nd	2
154.00	15.27	-99.00	nd	2
155.00	14.96	2.23	dnc	2
156.00	14.65	2.81	hor	2
157.00	14.32	2.21	hor/dnc	2
158.00	14.14	2.22	hor/dnc	2
159.00	13.54	12.69	rip/dnc	2
160.00	13.34	-99.00	nd	2
161.00	13.14	1.97	rip	2
162.00	12.43	-99.00	hor/nd	2
163.00	11.53	2.26	hor/dnc	2
164.00	10.73	2.31	hor	2
165.00	10.46	2.29	hor	2
166.00	10.19	1.98	hor/dnc	2
167.00	9.70	1.98	hor	2
168.00	9.30	0.81	csr	2
169.00	9.00	1.93	rip	2
170.00	8.70	2.23	rip	2
171.00	8.40	0.86	hor	2
172.00	8.10	0.80	rip	2
173.00	7.80	2.23	hor	2

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples
rip: rippled
hor: horizontally stratified
mas: massively bedded (usually a result of bioturbation)
hcs: hummocky cross-stratification
conv: convolute bedding
nd: not drilled
dnc: drilled but no core recovered;
appears together with other sed structures

Ferron Project: Ivie Creek IC-7A

Column 1: hole number

Column 2: elevation ft, No measured section for reference

Column 3: permeability md (null value is -99.00)

1.00	6.46	24.53
2.00	6.15	63.88
3.00	5.84	165.09
4.00	5.51	135.10
5.00	5.19	102.60
6.00	4.86	114.10
7.00	4.52	48.93
8.00	4.17	89.67
9.00	3.88	23.51
10.00	3.54	44.42
11.00	3.23	22.46
12.00	2.89	21.08
13.00	2.58	17.43
14.00	2.23	22.57
15.00	1.93	6.39
16.00	1.59	19.25
17.00	1.29	13.11
18.00	0.95	27.22
19.00	0.65	2.22
20.00	0.34	2.02
21.00	0.00	5.39

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

Ferron Project: Ivie Creek IC-7

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-7

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

1.00	89.30	75.11	hor	27	intensely burrowed	Note: elevs relative to bottom measured section
2.00	89.01	411.92	hor	27	intensely burrowed	
3.00	88.72	63.27	hor	27	intensely burrowed	
4.00	88.37	120.68	hor	27	intensely burrowed	
5.00	88.03	83.90	hor	27	intensely burrowed	
6.00	87.75	45.86	hor	27	intensely burrowed	
7.00	87.48	34.65	tro?	26	structure not specifically tied to p	
8.00	87.13	49.24	tro?	26	structure not specifically tied to p	
9.00	86.84	20.66	tro?	26	structure not specifically tied to p	
10.00	86.52	39.60	tro?	26	structure not specifically tied to p	
11.00	86.05	-99.00	nd	26	structure not specifically tied to p	
12.00	85.57	-99.00	tro?	26	structure not specifically tied to p	
13.00	85.53	2.65	tro?	26	structure not specifically tied to p	
14.00	85.25	13.69	tro?	26	structure not specifically tied to p	
15.00	84.94	11.67	tro?	26	structure not specifically tied to p	
16.00	84.64	11.81	tro?	26	structure not specifically tied to p	
17.00	84.30	3.30	tro?	26	structure not specifically tied to p	
18.00	83.97	-99.00	nd	26	structure not specifically tied to p	
19.00	83.63	2.31	rip/hum	25	structure not specifically tied to p	
20.00	83.30	-99.00	nd	25	structure not specifically tied to p	
21.00	82.96	2.23	rip/hum	25	structure not specifically tied to p	
22.00	82.69	5.09	rip/hum	25	structure not specifically tied to p	
23.00	82.29	2.12	rip/hum	25	structure not specifically tied to p	

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

Ferron Project: Ivie Creek IC-8A

Column 1: hole number

Column 2: elevation ft, no measured section for reference

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: comments

1.00	11.08	174.08	tro	med gr. (l) NOTE: elevs with respect to
2.00	10.76	37.25	tro	med gr. (l) bottom of perm transect
3.00	10.44	208.75	tro	med gr. (l)
4.00	10.14	91.06	tro	fine grained
5.00	9.83	88.88	tro	fine grained
6.00	9.53	59.37	tro	fine grained
7.00	9.20	24.65	tro	fine grained
8.00	8.86	10.20	tro	fine grained
9.00	8.58	24.46	tro	fine grained
10.00	8.26	17.55	tro	fine grained
11.00	7.93	27.55	tro	fine grained
12.00	7.61	49.22	tro	f.g. (u) Hole 12 approx. 2 ft. west
13.00	7.31	80.96	tro	fine grained (u)
14.00	7.02	106.08	tro	fine grained (u)
15.00	6.72	57.84	tro	fine grained (u)
16.00	6.48	59.05	tro	med to fine grained
17.00	6.20	50.85	tro	med to fine grained
18.00	5.90	73.20	tro	med to fine grained
19.00	5.62	30.23	tro	med. to fine grained - on bed set su
20.00	5.39	16.51	tro	fine grained, hole 20 approx. 1 ft.
21.00	5.21	26.73	tro	fine grained, hole 21 approx. 2 ft.
22.00	4.96	20.95	tro	fine grained (l), slight fining up
23.00	4.71	88.68	tro	fine grained (l)
24.00	4.46	78.87	tro	fine grained (l)
25.00	4.22	63.70	tro	fine grained (l)
26.00	3.99	91.72	tro	fine grained
27.00	3.68	53.17	tro	fine grained
28.00	3.41	94.62	tro	fine grained
29.00	3.13	61.78	tro	fine grained
30.00	2.89	61.34	tro	fine grained
31.00	2.61	68.14	tro	fine grained
32.00	2.29	72.45	tro	med. to fine grained
33.00	1.99	110.69	tro	med. to fine grained
34.00	1.72	91.12	tro	med. to fine grained
35.00	1.47	70.77	tro	med. to fine grained
36.00	1.19	163.73	tro	med. to fine grained
37.00	0.91	119.37	tro	med. to fine grained
38.00	0.63	170.16	tro	med. to fine grained

39.00	0.33	16.87	tro	med. to fine grained
40.00	0.00	88.69	tro	med. to fine grained

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

Ferron Project: Ivie Creek IC-1F

Column 1: hole number

Column 2: elevation ft, No measured section for reference

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: comments

1.00	8.90	19.80	hor?	NOTE: all sed structures are
2.00	8.63	42.30	hor?	based on RDA's recollection
3.00	8.36	41.87	hor?	NOTE: elevs with respect to
4.00	8.08	27.06	hor?	bottom of perm transect
5.00	7.78	40.80	hor?	
6.00	7.54	13.13	hor?	
7.00	7.24	10.02	hor?	
8.00	6.94	42.70	half-hum	no core
9.00	6.66	-99.00	half-hum	
10.00	6.34	28.67	half-hum	
11.00	6.03	13.35	half-hum	
12.00	5.71	6.58	half-hum	
13.00	5.38	16.42	half-hum	
14.00	5.11	21.33	half-hum	
15.00	4.79	6.81	half-hum	
16.00	4.49	15.06	half-hum	
17.00	4.21	18.16	half-hum	
18.00	3.90	22.22	half-hum	
19.00	3.60	56.58	half-hum	
20.00	3.30	32.21	half-hum	
21.00	3.00	111.50	half-hum	
22.00	2.70	-99.00	?	extrapolated Z, no core
23.00	2.40	37.16	?	extrapolated Z
24.00	2.10	48.68	?	extrapolated Z
25.00	1.80	124.32	?	extrapolated Z
26.00	1.50	-99.00	?	extrapolated Z, broken core
27.00	1.20	72.67	?	extrapolated Z
28.00	0.90	63.61	?	extrapolated Z
29.00	0.60	15.55	?	extrapolated Z
30.00	0.30	15.18	?	extrapolated Z
31.00	0.00	22.17	?	extrapolated Z

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

Ferron Project: Ivie Creek IC-1D

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-1D

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

1.00	18.30	31.05	half-humm	1	Note: elevs relative to bottom of section
2.00	18.00	81.19	half-humm	1	
3.00	17.70	91.03	half-humm	1	
4.00	17.40	25.41	half-humm	1	
5.00	17.10	11.86	half-humm	1	
6.00	16.80	74.76	half-humm	1	
7.00	16.50	14.51	half-humm	1	
8.00	16.20	9.18	half-humm	1	
9.00	15.90	10.66	half-humm	1	
10.00	15.62	12.54	half-humm	1	
11.00	15.34	19.10	half-humm	1	
12.00	15.07	-99.00	half-humm	1	
13.00	14.79	-99.00	half-humm	1	
14.00	14.51	100.96	half-humm	1	
15.00	14.23	51.66	half-humm	1	
16.00	13.90	6.71	hor	2	
17.00	13.60	2.11	hor	2	
18.00	13.31	3.26	hor	2	
19.00	13.01	6.49	hor	2	
20.00	12.72	2.94	hor	2	
21.00	12.42	4.90	half-humm	2	
22.00	12.13	10.87	half-humm	2	
23.00	11.75	-99.00	hor	3	
24.00	11.50	3.62	half-humm	4	
25.00	11.18	5.55	half-humm	4	
26.00	10.86	5.63	half-humm	4	
27.00	10.54	34.28	half-humm	4	
28.00	10.22	-99.00	nd	5	
29.00	9.90	58.04	half-humm	6	
30.00	9.62	34.98	half-humm	6	
31.00	9.34	166.18	half-humm	6	
32.00	9.05	51.04	half-humm	6	
33.00	8.77	56.29	half-humm	6	
34.00	8.49	12.75	half-humm	6	
35.00	8.21	40.26	half-humm	6	
36.00	7.93	11.75	half-humm	6	
37.00	7.65	41.21	half-humm	6	

38.00	7.36	32.92	half-humm	6
39.00	7.08	48.07	half-humm	6
40.00	6.80	27.26	half-humm	6
41.00	6.50	21.62	half-humm	6
42.00	6.19	6.69	half-humm	6
43.00	5.89	15.03	half-humm	6
44.00	5.58	21.48	half-humm	6
45.00	5.28	2.77	half-humm	6
46.00	4.98	20.49	half-humm	6
47.00	4.67	10.35	half-humm	6
48.00	4.37	13.74	half-humm	6
49.00	4.06	5.09	half-humm	6
50.00	3.76	3.96	half-humm	6
51.00	3.45	9.43	half-humm	6
52.00	3.15	14.19	half-humm	6
53.00	2.80	-99.00	hor	7
54.00	2.50	-99.00	hor	7
55.00	2.20	46.40	hor	8
56.00	1.90	19.57	hor	8
57.00	1.60	24.52	hor	8
58.00	1.30	14.53	hor	8 Only top 1.2 feet of unit was drilled

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

Ferron Project: Ivie Creek IC-9

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-9

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

1.00	89.30	1121.40	hor	15	Note: elevs relative to bottom of section
2.00	89.04	1031.24	hor	15	
3.00	88.78	418.68	hor	15	
4.00	88.25	316.53	tro	15	
5.00	87.99	-99.00	tro	15	
6.00	87.73	100.80	tro	15	
7.00	87.46	-99.00	tro	15	
8.00	87.20	96.64	tro	15	
9.00	86.90	72.64	tro	15	
10.00	86.60	186.75	tro	15	
11.00	86.30	242.91	tro	15	
12.00	86.00	440.87	tro	15	
13.00	85.70	204.97	tro	15	
14.00	85.40	292.73	tro	15	
15.00	85.10	88.15	tro	14	
16.00	84.98	200.16	tro	14	
17.00	84.66	215.51	tro	14	
18.00	84.34	318.27	tro	14	
19.00	84.03	14.55	tro	14	
20.00	83.71	188.90	tro	14	
21.00	83.39	159.50	tro	14	
22.00	83.07	127.16	tro	14	
23.00	82.75	143.97	tro	14	
24.00	82.44	182.43	tro	14	
25.00	82.12	155.55	tro	14	
26.00	81.80	111.48	tro	14	
27.00	81.49	16.60	tro	14	
28.00	81.18	136.19	tro	14	
29.00	80.86	59.97	tro	14	
30.00	80.55	75.30	tro	14	
31.00	80.24	28.69	tro	14	
32.00	79.93	51.59	tro	14	
33.00	79.61	27.41	tro	14	some rip-up clasts
34.00	79.30	32.97	tro	14	
35.00	78.99	46.96	tro	14	
36.00	78.68	111.33	tro	14	
37.00	78.36	182.30	tro	14	
38.00	78.05	130.63	tro	14	
39.00	77.74	66.76	tro	14	
40.00	77.43	40.68	tro	14	
41.00	77.11	2.21	tro	14	
42.00	76.80	2.16	tro	14	
43.00	76.50	-99.00	nd	13	
44.00	76.21	-99.00	nd	13	

45.00	75.91	-99.00	nd	13
46.00	75.62	-99.00	nd	13
47.00	75.33	-99.00	nd	13
48.00	75.03	-99.00	nd	13
49.00	74.74	-99.00	nd	13
50.00	74.44	-99.00	nd	13
51.00	74.15	-99.00	nd	13
52.00	73.85	130.21	tro	12
53.00	71.29	84.79	tro	12
54.00	71.20	356.16	tro	12
55.00	71.01	342.06	tro	12
56.00	70.92	-99.00	tro	12
57.00	70.72	-99.00	tro	12
58.00	70.63	-99.00	tro	12
59.00	70.44	-99.00	tro	12
60.00	70.35	135.77	tro	12
61.00	70.15	178.45	tro	12
62.00	70.06	84.44	tro	12
63.00	69.87	49.29	tro	12
64.00	69.78	64.99	tro	12
65.00	69.58	53.90	tro	12
66.00	69.49	38.01	tro	12
67.00	69.30	41.32	tro	12
68.00	69.21	250.19	tro	12
69.00	68.93	10.10	tro	12
70.00	68.55	73.64	tro	12
71.00	68.18	15.89	tro	12
72.00	67.80	156.81	tro	12
73.00	67.43	31.28	tro	12
74.00	67.05	17.22	tro	12
75.00	66.65	-99.00	tro	12
76.00	66.25	17.75	tro	11
77.00	65.96	118.96	tro	11
78.00	65.68	40.53	tro	11
79.00	65.39	145.25	tro	11
80.00	65.10	119.08	tro	11
81.00	64.82	122.47	tro	11
82.00	64.53	74.43	tro	11
83.00	64.25	98.21	tab	11
84.00	63.96	150.41	tab	11
85.00	63.67	95.60	tab	11
86.00	63.39	71.68	tab	11
87.00	63.10	129.46	tab	11
88.00	62.80	51.06	tab	11
89.00	62.50	15.38	tab	11
90.00	62.20	63.24	tro	11
91.00	61.90	190.40	tro	11
92.00	61.60	146.48	tro	11
93.00	61.30	91.69	tro	11
94.00	61.00	99.49	tro	11
95.00	60.70	57.31	tro	11
96.00	60.40	75.31	tro	11
97.00	60.10	35.12	tro	11

98.00	59.80	90.73	tro	11
99.00	59.50	44.22	nd	11
100.00	59.20	15.73	nd	11
101.00	58.90	80.02	nd	11
102.00	58.61	165.17	tro	11
103.00	58.32	108.70	tro	11
104.00	58.02	56.53	tro	11
105.00	57.73	94.03	tro	11
106.00	57.44	114.44	tro	11
107.00	57.15	121.86	tro	11
108.00	56.75	13.37	hor	10
109.00	56.43	12.96	hor	10
110.00	56.14	42.36	hor	10
111.00	55.84	12.66	hor	10
112.00	55.55	17.67	hor	10
113.00	55.26	3.34	hor	10
114.00	54.97	4.21	burrowed	10
115.00	54.67	2.20	burrowed	10
116.00	54.38	2.16	burrowed	10
117.00	54.09	2.22	burrowed	10
118.00	53.79	4.60	burrowed	10
119.00	53.50	4.13	burrowed	10
120.00	53.17	2.18	burrowed	10
121.00	52.87	3.45	burrowed	10
122.00	52.58	6.38	burrowed	10
123.00	52.29	23.80	burrowed	10
124.00	51.99	17.90	burrowed	10
125.00	51.70	19.08	burrowed	10
126.00	51.47	-99.00	nd	9
127.00	51.18	39.18	nd	9
128.00	50.89	5.75	nd	9
129.00	50.59	6.47	burrowed	9 (SAME AS MAS BIOTURBATED)
130.00	50.30	10.46	mas	8 bioturbated
131.00	50.00	3.73	mas	8 bioturbated
132.00	49.70	21.41	mas	8 bioturbated
133.00	49.40	8.90	mas	8 bioturbated
134.00	49.10	24.30	mas	8 bioturbated
135.00	48.80	176.19	mas	8 bioturbated
136.00	48.50	252.47	mas	8 bioturbated
137.00	48.19	54.82	mas	8 bioturbated
138.00	47.89	224.96	mas	8 bioturbated
139.00	47.58	183.86	mas	8 bioturbated
140.00	47.27	37.80	mas	8 bioturbated
141.00	46.96	124.75	mas	8 bioturbated
142.00	46.66	114.09	mas	8 bioturbated
143.00	46.35	63.17	tro	7
144.00	46.15	165.31	tro	7
145.00	45.86	292.89	tro	7
146.00	45.57	9.25	tro	7
147.00	45.27	148.80	tro	7
148.00	44.98	101.21	tro	7
149.00	44.68	135.68	tro	7
150.00	44.39	113.26	tro	7

151.00	44.09	173.40	tro	7
152.00	43.80	28.33	tro	7
153.00	43.50	67.62	tro	7
154.00	43.20	82.25	tro	7
155.00	42.91	84.15	tro	7
156.00	42.62	143.22	tro	7
157.00	42.32	110.22	tro	7
158.00	42.03	57.04	tro	7
159.00	41.73	149.30	tro	7
160.00	41.44	52.25	tro	7
161.00	41.14	226.16	tro	7
162.00	40.85	51.80	tro	7
163.00	40.55	240.18	tro	7
164.00	40.25	174.37	tro	7
165.00	39.94	151.84	tro	7
166.00	39.64	139.93	tro	7
167.00	39.33	201.26	tro	7
168.00	39.03	160.23	tro	7
169.00	38.73	143.41	tro	7
170.00	38.42	224.61	tro	7
171.00	38.12	211.23	tro	7
172.00	37.82	101.05	tro	7
173.00	37.51	106.15	tro	7
174.00	37.21	142.82	tro	7
175.00	36.91	139.91	tro	7
176.00	36.60	203.90	tro	7
177.00	36.30	95.20	tro	7
178.00	36.01	42.72	tro	7
179.00	35.72	53.31	tro	7
180.00	35.43	45.67	tro	7
181.00	35.14	56.20	tro	7
182.00	34.85	93.10	tro	7
183.00	34.56	17.20	tro	7
184.00	34.27	50.34	tro	7
185.00	33.98	64.52	tro	7
186.00	33.69	64.52	tro	7
187.00	33.40	33.13	tro	7
188.00	33.10	2.13	mas	6 bioturbated
189.00	32.80	11.18	mas	6 bioturbated
190.00	32.50	8.62	mas	6 bioturbated
191.00	32.20	10.70	mas	6 bioturbated
192.00	31.90	2.87	mas	6 bioturbated
193.00	31.60	2.55	mas	6 bioturbated
194.00	31.30	4.21	mas	6 bioturbated
195.00	31.00	2.69	mas	6 bioturbated
196.00	30.70	2.78	mas	6 bioturbated
197.00	30.40	5.00	mas	6 bioturbated
198.00	30.10	3.27	mas	6 bioturbated
199.00	29.80	2.68	mas	6 bioturbated
200.00	29.50	2.09	mas	6 bioturbated
201.00	29.20	3.04	mas	6 bioturbated
202.00	28.90	3.49	mas	6 bioturbated
203.00	28.60	2.11	mas	6 bioturbated

204.00	28.30	3.82	mas	6	bioturbated
205.00	28.00	3.52	mas	6	bioturbated
206.00	27.67	2.12	mas	6	bioturbated
207.00	27.34	7.54	mas	6	bioturbated
208.00	27.02	3.66	mas	6	bioturbated
209.00	26.69	6.15	mas	6	bioturbated
210.00	26.36	2.32	mas	6	bioturbated
211.00	26.04	2.15	mas	6	bioturbated
212.00	25.71	3.83	mas	6	bioturbated
213.00	25.38	2.20	mas	6	bioturbated
214.00	25.05	3.85	mas	6	bioturbated
215.00	24.73	4.09	mas	6	bioturbated
216.00	24.40	2.97	mas	6	bioturbated
217.00	24.09	3.82	mas	6	bioturbated
218.00	23.79	3.37	mas	6	bioturbated
219.00	23.48	4.99	mas	6	bioturbated
220.00	23.17	10.41	mas	6	bioturbated
221.00	22.86	9.34	mas	6	bioturbated
222.00	22.56	23.08	mas	6	bioturbated
223.00	22.25	-99.00	mas	6	bioturbated
224.00	21.95	-99.00	nd	?	not part of measured strat section
225.00	21.65	11.71	nd	?	not part of measured strat section
226.00	21.35	2.51	nd	?	not part of measured strat section
227.00	21.05	-99.00	nd	?	not part of measured strat section
228.00	20.75	5.88	nd	?	not part of measured strat section
229.00	20.45	2.15	nd	?	not part of measured strat section
230.00	20.15	2.50	nd	?	not part of measured strat section
231.00	19.85	5.07	nd	?	not part of measured strat section
232.00	19.55	2.25	nd	?	not part of measured strat section
233.00	19.25	2.37	nd	?	not part of measured strat section
234.00	18.95	7.62	nd	?	not part of measured strat section
235.00	18.65	4.35	nd	?	not part of measured strat section
236.00	18.35	19.59	nd	?	not part of measured strat section
237.00	17.85	5.05	nd	?	not part of measured strat section
238.00	17.55	6.65	nd	?	not part of measured strat section
239.00	17.25	13.71	nd	?	not part of measured strat section

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

planr/incl: ???

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

Ferron Project: Ivie Creek IC-1C

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-1C

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

1.00	2.70	4.48	hor	1	Note: elevs relative to bottom of section
2.00	2.40	4.47	hor	1	Unit 1 is 1.2' below Unit 25 of IC-1E
3.00	2.00	12.85	hor	2	Units 1-3 in T11 are = unit 21-23 in ???
4.00	1.85	3.66	pla	3	
5.00	1.54	7.76	pla	3	
6.00	1.23	4.99	pla	3	
7.00	0.93	5.69	pla	3	
8.00	0.62	12.04	pla	3	
9.00	0.31	10.09	pla	3	
10.00	0.00	5.35	pla	3	

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

planr/incl: ???

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

Ferron Project: Ivie Creek IC-1B

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-1B

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

(Note: elevs relative to bottom of section)

1.00	45.10	13.15	tro	1	32.00	35.65	-99.00	nd	5	
2.00	44.85	2.02	tro	1	33.00	35.27	3.03	hor	6	moderately burrowed
3.00	44.60	1.99	tro	1	34.00	35.00	5.39	hor	6	
4.00	44.35	35.21	tro	1	35.00	34.70	7.56	hor	6	
5.00	44.10	18.95	tro	1	36.00	34.25	-99.00	nd	8	
6.00	43.85	-99.00	tro	1	37.00	33.97	6.30	hor	8	minor burrows
7.00	43.65	-99.00	nd	2	38.00	33.69	11.46	hor	8	minor burrows
8.00	43.35	-99.00	nd	2	39.00	33.41	8.48	hor	8	
9.00	43.05	-99.00	nd	2	40.00	33.13	13.43	tro	8	
10.00	42.75	-99.00	nd	2	41.00	32.85	2.11	tro	8	shaly, friable ss
11.00	42.45	-99.00	nd	3	42.00	32.55	2.08	tro	8	shaly, friable ss
12.00	42.14	-99.00	nd	3	43.00	32.20	-99.00	hor	9	
13.00	41.83	-99.00	nd	3	44.00	31.88	1.98	hor	9	
14.00	41.52	-99.00	nd	3	45.00	31.57	1.95	hor	9	
15.00	41.20	-99.00	nd	3	46.00	31.25	1.96	tro	9	
16.00	40.89	-99.00	nd	3	47.00	30.90	2.62	tro	10	
17.00	40.57	-99.00	nd	3	48.00	30.59	2.16	tro	10	
18.00	40.26	-99.00	nd	3	49.00	30.29	30.45	tro	10	
19.00	39.94	-99.00	nd	3	50.00	29.98	35.88	tro	10	
20.00	39.63	-99.00	nd	3	51.00	29.67	18.82	tro	10	
21.00	39.31	-99.00	nd	3	52.00	29.37	16.42	tro	10	
22.00	39.00	-99.00	nd	3	53.00	29.06	5.69	tro	10	
23.00	38.68	-99.00	nd	3	54.00	28.76	5.91	tro	10	
24.00	38.37	-99.00	nd	3	55.00	28.45	16.24	tro	10	
25.00	38.05	-99.00	nd	3	56.00	28.15	13.03	tro	10	
26.00	37.74	-99.00	nd	3	57.00	27.86	13.29	tro	10	
27.00	37.42	-99.00	nd	3	58.00	27.56	21.75	tro	10	
28.00	37.11	-99.00	nd	3	59.00	27.27	4.61	tro	10	
29.00	36.79	-99.00	nd	3	60.00	26.97	2.29	tro	10	Possible half-humm
30.00	36.23	100.90	hor	4	61.00	26.68	12.89	tro	10	Possible half-humm
31.00	36.05	13.11	hor	4	62.00	26.38	6.96	tro	10	Possible

141.00	2.60	2.74	half-humm	23
142.00	2.30	2.67	half-humm	23
143.00	2.00	-99.00	half-humm	23
144.00	1.70	1.91	half-humm	23
145.00	1.40	1.85	half-humm	23
146.00	1.10	1.81	half-humm	23
147.00	0.80	1.79	half-humm	23
148.00	0.50	1.77	half-humm	23
149.00	0.20	2.40	half-humm	23

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples
rip: rippled
hor: horizontally stratified
mas: massively bedded (usually a result of bioturbation)
hcs: hummocky cross-stratification
conv: convolute bedding
half-humm: half-hummocky
tro: trough cross-bedding
nd: not drilled
dnc: drilled but no core recovered (appears together
with other sed structures)
unk: unknown

Ferron Project: Ivie Creek IC-1E

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-1E

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

1.00	64.10	100.30	tro	1	Began in top of 1c sandstone
2.00	63.82	54.75	tro	1	Note: elevs relative to bottom of section
3.00	63.55	117.24	tro	1	
4.00	63.27	20.43	tro	1	
5.00	63.00	6.57	tro	1	
6.00	62.72	2.33	tro	1	
7.00	62.45	40.14	tro	1	
8.00	62.17	3.60	tro	1	
9.00	61.85	24.24	hor	2	
10.00	61.56	-99.00	tro	2	
11.00	61.27	-99.00	tro	2	
12.00	60.99	4.87	hor	2	
13.00	60.70	-99.00	rip	2	
14.00	60.41	6.52	hor	2	
15.00	60.12	2.01	hor	2	
16.00	59.84	2.02	hor	2	
17.00	59.55	1.94	hor	2	
18.00	59.24	-99.00	nd	3	
19.00	58.93	-99.00	nd	3	
20.00	58.62	-99.00	nd	3	
21.00	58.31	-99.00	nd	3	
22.00	58.00	-99.00	nd	3	
23.00	57.69	-99.00	nd	3	
24.00	57.38	-99.00	nd	3	
25.00	57.07	-99.00	nd	3	
26.00	56.76	-99.00	nd	3	
27.00	56.45	-99.00	nd	3	
28.00	56.14	-99.00	nd	3	
29.00	55.83	-99.00	nd	3	
30.00	55.52	-99.00	nd	3	
31.00	55.21	-99.00	nd	3	
32.00	54.90	1.95	burrowed	4	
33.00	54.61	1.90	burrowed	4	
34.00	54.31	1.85	hor	4	
35.00	54.02	1.83	hor	4	
36.00	53.73	2.51	hor	4	
37.00	53.44	1.76	hor	4	
38.00	53.14	2.30	hor	4	
39.00	52.85	2.25	hor	4	
40.00	52.50	2.27	tro	5	
41.00	52.21	2.17	tro	5	

42.00	51.92	2.14	tro	5	
43.00	51.64	-99.00	tro	5	
44.00	51.35	2.12	tro	5	
45.00	51.15	2.55	?	6	
46.00	50.90	2.05	?	6	
47.00	50.65	2.01	?	6	
48.00	50.35	-99.00	nd	7	
49.00	50.05	-99.00	nd	7	
50.00	49.75	-99.00	nd	7	
51.00	49.45	-99.00	nd	7	
52.00	49.15	-99.00	tro	8	
53.00	48.88	44.80	tro	8	
54.00	48.62	154.59	hor	8	
55.00	48.35	13.37	hor	8	
56.00	47.90	3.06	?	9	
57.00	47.61	9.91	?	9	
58.00	47.33	2.87	?	9	
59.00	47.04	4.88	?	9	
60.00	46.76	8.57	?	9	
61.00	46.47	11.65	?	9	
62.00	46.19	3.69	?	9	
63.00	45.90	25.74	?	9	
64.00	45.45	6.92	hor	10	
65.00	44.99	197.30	hor	10	
66.00	44.53	36.93	hor	10	
67.00	44.07	34.95	hor	10	
68.00	43.61	26.93	hor	10	
69.00	43.15	127.05	half-humm		
70.00	42.82	150.16	half-humm		
71.00	42.50	250.97	half-humm		
72.00	42.17	565.42	half-humm		
73.00	41.85	213.52	half-humm		
74.00	41.52	408.85	half-humm		
75.00	41.20	73.93	half-humm		
76.00	40.87	115.69	half-humm		
77.00	40.55	87.14	half-humm		
78.00	40.55	-99.00	half-humm		
79.00	40.25	44.59	hor	11	
80.00	39.95	24.85	hor	12	bedding parallel to cliniform
81.00	39.66	36.86	hor	12	bedding parallel to cliniform
82.00	39.36	96.33	hor	12	bedding parallel to cliniform
83.00	39.07	11.37	hor	12	bedding parallel to cliniform
84.00	38.78	9.57	hor	12	bedding parallel to cliniform
85.00	38.49	5.16	hor	12	bedding parallel to cliniform
86.00	38.19	8.57	hor	12	bedding parallel to cliniform
87.00	37.90	60.66	hor	12	bedding parallel to cliniform
88.00	37.61	35.24	hor	12	bedding parallel to cliniform
89.00	37.31	21.49	hor	12	bedding parallel to cliniform
90.00	37.02	8.32	hor	12	bedding parallel to cliniform
91.00	36.73	19.93	hor	12	bedding parallel to cliniform

92.00	36.44	39.78	hor	12	bedding parallel to cliniform
93.00	36.14	44.74	hor	12	bedding parallel to cliniform
94.00	35.85	-99.00	hor	12	bedding parallel to cliniform
95.00	35.50	-99.00	hor	13	
96.00	35.10	-99.00	hor	14	
97.00	34.81	13.84	hor	14	
98.00	34.52	9.56	hor	14	
99.00	34.24	4.37	hor	14	
100.00	33.95	9.22	hor	14	
101.00	33.65	-99.00	?	15	
102.00	33.35	35.60	?	15	
103.00	32.45	25.65	tro	16	
104.00	32.17	17.90	tro	16	
105.00	31.89	19.35	tro	16	
106.00	31.62	8.38	tro	16	
107.00	31.34	9.77	tro	16	
108.00	31.06	5.07	tro	16	
109.00	30.78	5.88	hor	16	
110.00	30.50	21.48	hor	16	
111.00	30.23	1.94	hor	16	
112.00	29.95	1.60	hor	16	
113.00	29.67	2.71	hor	16	
114.00	29.39	2.24	hor	16	
115.00	29.11	2.26	hor	16	
116.00	28.83	2.71	hor	16	
117.00	28.56	3.21	hor	16	
118.00	28.28	2.88	hor	16	
119.00	28.00	4.43	hor	16	
120.00	27.70	-99.00	rip	17	
121.00	27.45	3.95	hor	18	
122.00	27.17	2.86	hor	18	
123.00	26.90	2.00	hor	18	
124.00	26.62	3.65	hor	18	
125.00	26.35	5.12	rip	18	
126.00	26.05	3.57	hor	19	
127.00	25.80	2.93	hor	19	
128.00	25.55	2.48	hor	19	
129.00	25.30	3.79	hor	19	
130.00	25.05	-99.00	hor	19	
131.00	24.75	-99.00	rip	20	
132.00	24.45	-99.00	rip	20	
133.00	24.15	-99.00	rip	20	
134.00	23.90	2.79	hor	21	
135.00	23.60	1.39	hor	21	
136.00	23.30	1.45	hor	21	
137.00	23.00	-99.00	hor	22	
138.00	22.75	1.06	hor	23	
139.00	22.45	1.31	hor	23	
140.00	22.14	1.15	hor	23	
141.00	21.84	2.04	hor	23	

142.00	21.54	2.25	hor	23
143.00	21.23	2.22	hor	23
144.00	20.93	-99.00	rip	23
145.00	20.63	2.18	hor	23
146.00	20.32	2.13	hor	23
147.00	20.02	2.34	hor	23
148.00	19.71	2.31	hor	23
149.00	19.41	2.34	rip	23
150.00	19.11	2.30	rip	23
151.00	18.80	2.30	hor	23
152.00	18.50	2.25	rip	24
153.00	18.25	2.21	hor	25
154.00	17.91	2.18	hor	25
155.00	17.58	2.16	hor	25
156.00	17.24	2.13	hor	25
157.00	16.91	2.34	hcs	25
158.00	16.57	2.14	hor	25
159.00	16.24	2.10	hor	25
160.00	15.90	2.09	hor	25
161.00	15.60	2.14	hor	25
162.00	15.30	2.13	hor	25
163.00	15.00	2.06	hor	25
164.00	14.70	2.03	hor	25
165.00	14.40	2.02	hor	25
166.00	14.10	1.97	hor	25
167.00	13.80	1.97	hor	25

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples
rip: rippled
hor: horizontally stratified
mas: massively bedded (usually a result of bioturbation)
hcs: hummocky cross-stratification
conv: convolute bedding
half-humm: half-hummocky
tro: trough cross-bedding
nd: not drilled
dnc: drilled but no core recovered (appears together with other sed structures)
unk: unknown

Ferron Project. Ivie Creek IC-1A

Column 1: hole number

Column 2: elevation ft, ref to measured section IC-1A

Column 3: permeability md (null value is -99.00)

Column 4: sed structure (see legend at end of data)

Column 5: unit number

Column 6: comments

1.00	20.60	-99.00	hor	1	Note: elevs relative to bottom of section
2.00	20.30	-99.00	hor	1	
3.00	20.00	-99.00	hor	1	
4.00	19.70	995.03	hor	1	
5.00	19.40	22.30	hor	1	
6.00	19.10	3.00	hor	1	
7.00	18.80	2.16	hor	1	
8.00	18.50	2.22	hor	1	
9.00	18.10	2.17	tro	2	
10.00	17.81	3.53	hor	2	parallel to clinofom boundary
11.00	17.52	10.72	hor	2	parallel to clinofom boundary
12.00	17.24	22.08	hor	2	parallel to clinofom boundary
13.00	16.95	7.67	hor	2	parallel to clinofom boundary
14.00	16.66	6.43	hor	2	parallel to clinofom boundary
15.00	16.37	11.53	hor	2	parallel to clinofom boundary
16.00	16.09	3.56	hor	2	parallel to clinofom boundary
17.00	15.80	3.62	hor	2	parallel to clinofom boundary
18.00	15.50	-99.00	planr/incl	3	
19.00	15.17	2.00	planr/incl	3	
20.00	14.84	-99.00	planr/incl	3	
21.00	14.51	2.01	planr/incl	3	
22.00	14.19	-99.00	planr/incl	3	
23.00	13.86	2.04	planr/incl	3	
24.00	13.53	-99.00	planr/incl	3	
25.00	13.20	2.22	planr/incl	3	
26.00	12.90	-99.00	planr/incl	4	
27.00	12.61	2.34	planr/incl	4	
28.00	12.32	2.16	planr/incl	4	
29.00	12.04	2.17	planr/incl	4	
30.00	11.75	2.13	planr/incl	4	
31.00	11.46	5.07	planr/incl	4	
32.00	11.17	4.42	planr/incl	4	
33.00	10.89	3.41	planr/incl	4	
34.00	10.60	10.33	planr/incl	4	
35.00	10.30	11.67	tro	5	
36.00	10.02	12.55	tro	5	
37.00	9.73	13.18	tro	5	
38.00	9.45	17.63	tro	5	
39.00	9.17	20.49	tro	5	
40.00	8.88	17.74	tro	5	
41.00	8.60	15.99	tro	5	

42.00	8.34	10.03	tro	5
43.00	8.07	21.71	tro	5
44.00	7.81	25.12	tro	5
45.00	7.55	6.06	tro	5
46.00	7.29	7.56	tro	5
47.00	7.02	4.78	tro	5
48.00	6.76	7.80	tro	5
49.00	6.50	25.33	tro	5
50.00	6.20	24.22	tro	6
51.00	5.87	2.64	hor	6
52.00	5.55	2.52	hor	6
53.00	5.22	3.17	hor	6
54.00	4.90	6.04	hor	6
55.00	4.60	-99.00	rip	7
56.00	4.30	2.02	rip	7
57.00	4.05	20.00	half-humm	8
58.00	3.75	20.46	half-humm	8
59.00	3.44	15.37	half-humm	8
60.00	3.14	18.08	half-humm	8
61.00	2.83	-99.00	half-humm	8
62.00	2.53	15.35	half-humm	8
63.00	2.23	44.59	half-humm	8
64.00	1.92	35.90	half-humm	8
65.00	1.62	33.41	half-humm	8
66.00	1.32	34.65	half-humm	8
67.00	1.01	45.71	half-humm	8
68.00	0.71	61.15	half-humm	8

LEGEND FOR SED STRUCTURES

=====

csr: climbing symmetrical ripples

rip: rippled

hor: horizontally stratified

mas: massively bedded (usually a result of bioturbation)

hcs: hummocky cross-stratification

conv: convolute bedding

half-humm: half-hummocky

tro: trough cross-bedding

planr/incl: ???

nd: not drilled

dnc: drilled but no core recovered (appears together with other sed structures)

unk: unknown

PLATES 1 THROUGH 16

**IVIE CREEK AREA COMBINED PERMEABILITY AND
GAMMA-RAY PROFILES WITH MEASURED
STRATIGRAPHIC SECTIONS AND
DRILL-HOLE CORES**

Plate 1

Measured Section IC-1
Gamma Ray Profile G-5
Permeability Transect T-4
Section 16, T.23S., R6E.

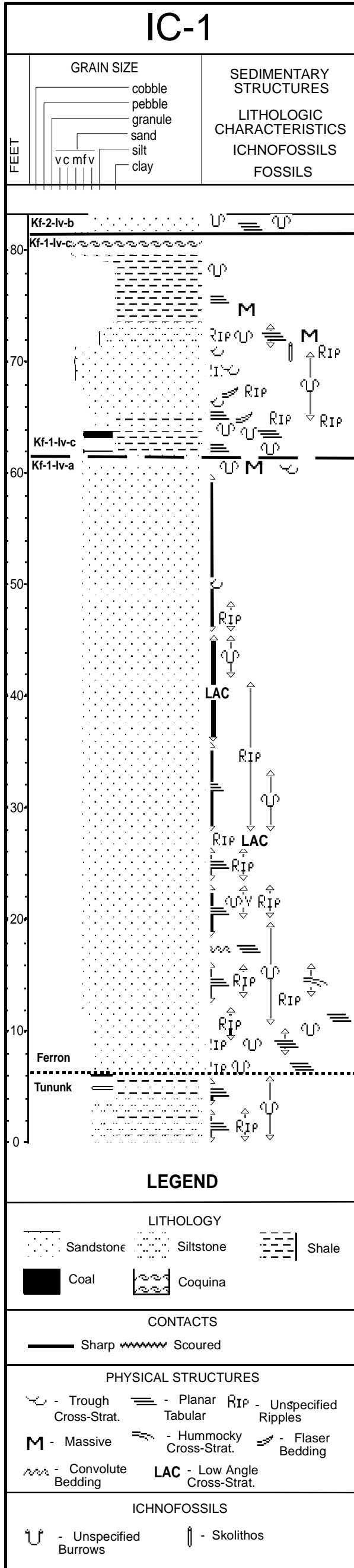
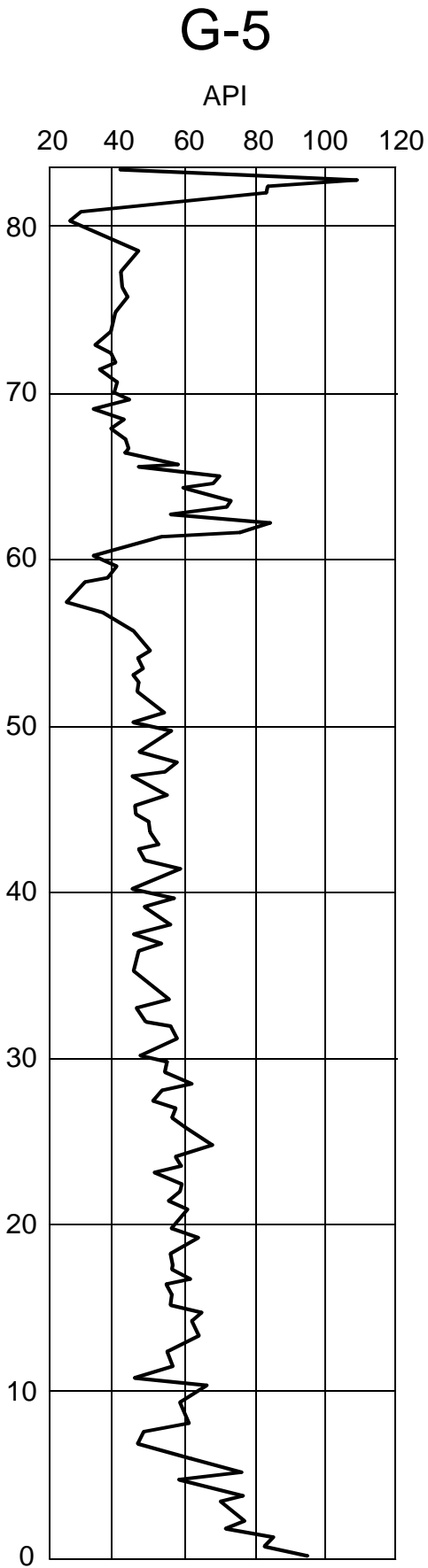
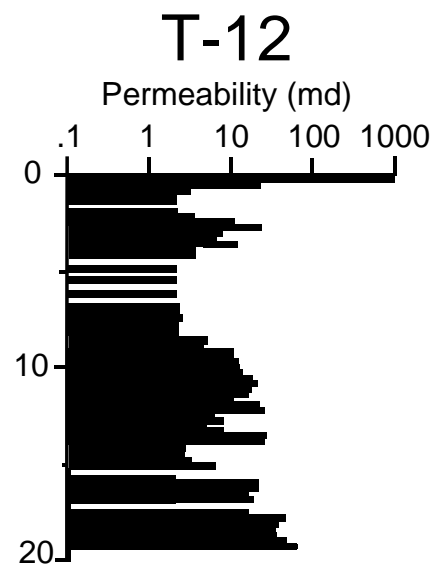
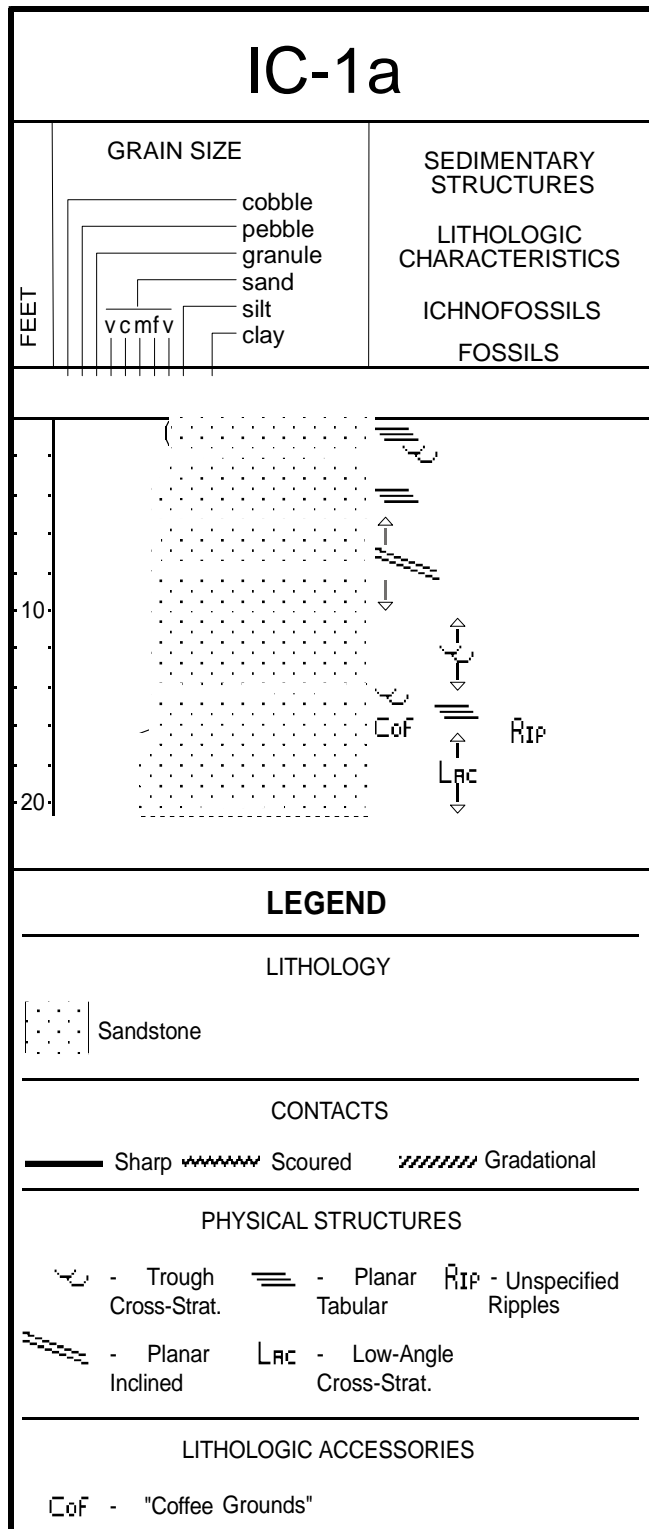
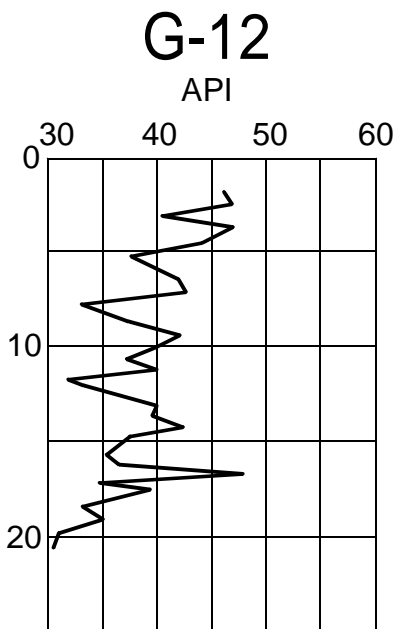


Plate 2

Measured Section IC-1a
 Gamma Ray Profile G-12
 Permeability Transect T-12
 Section 16, T.23S., R.6E.



LEGEND

LITHOLOGY

Sandstone

CONTACTS

Sharp Scoured Gradational

PHYSICAL STRUCTURES

- Trough Cross-Strat.
 - Planar Tabular
 - Unspecified Ripples
 - Planar Inclined
 - Low-Angle Cross-Strat.

LITHOLOGIC ACCESSORIES

- "Coffee Grounds"

Plate 3

Measured Section IC-1b
 Gamma Ray Profile G-13
 Permeability Transect T-10
 Section 16, T.23S., R.6E.

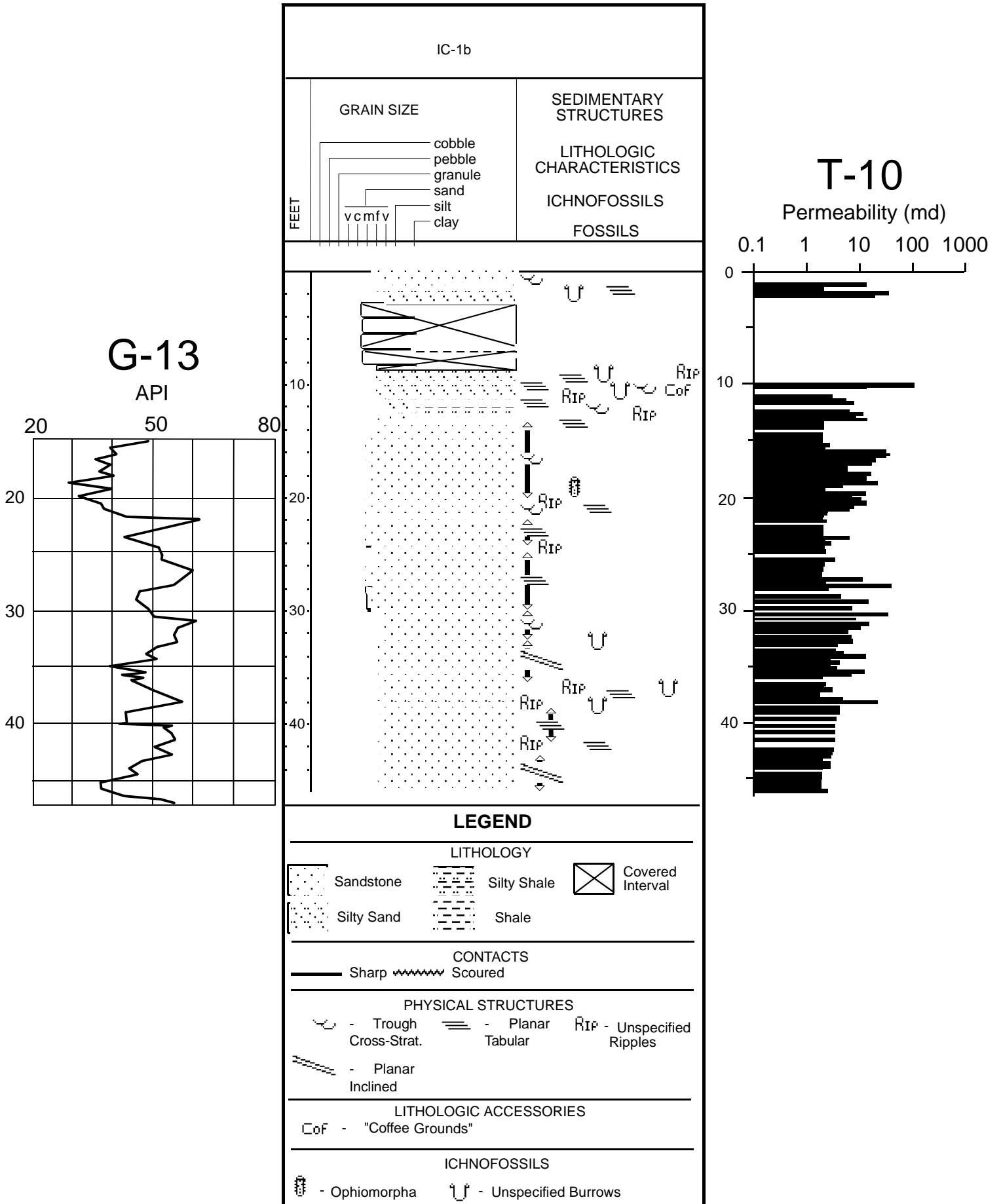


Plate 4

Measured Section IC-1c
 Gamma Ray Profile G-11
 Permeability Transect T-11
 Section 16, T.23S., R.6E.

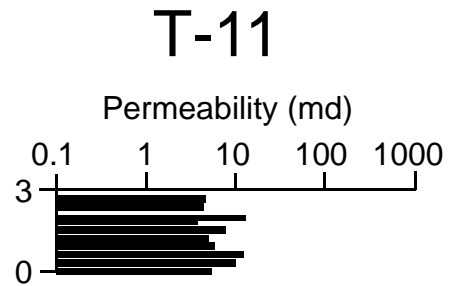
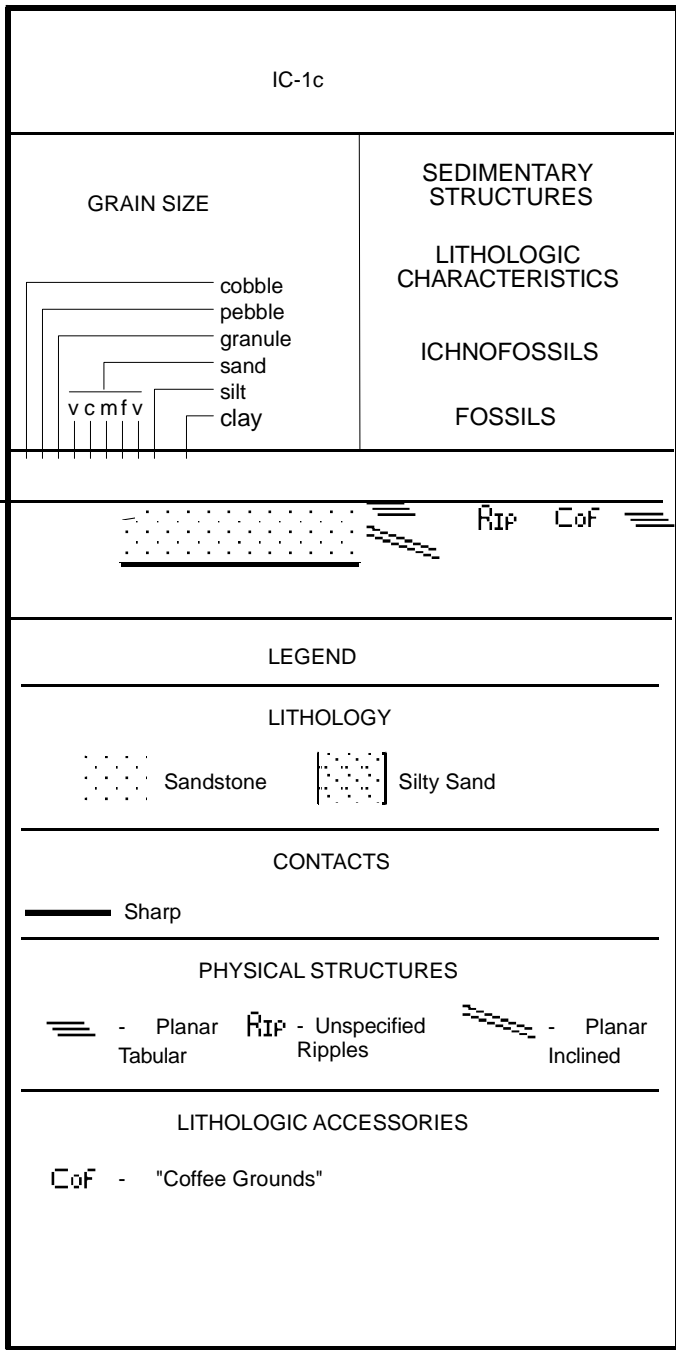
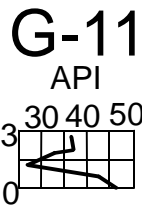


Plate 5

Measured Section IC-1d
 Gamma Ray Profile G-17
 Permeability Transect T-14
 Section 16, T.23S., R.6E.

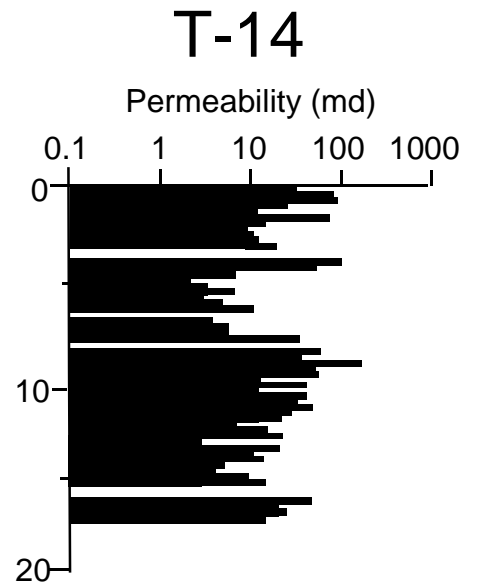
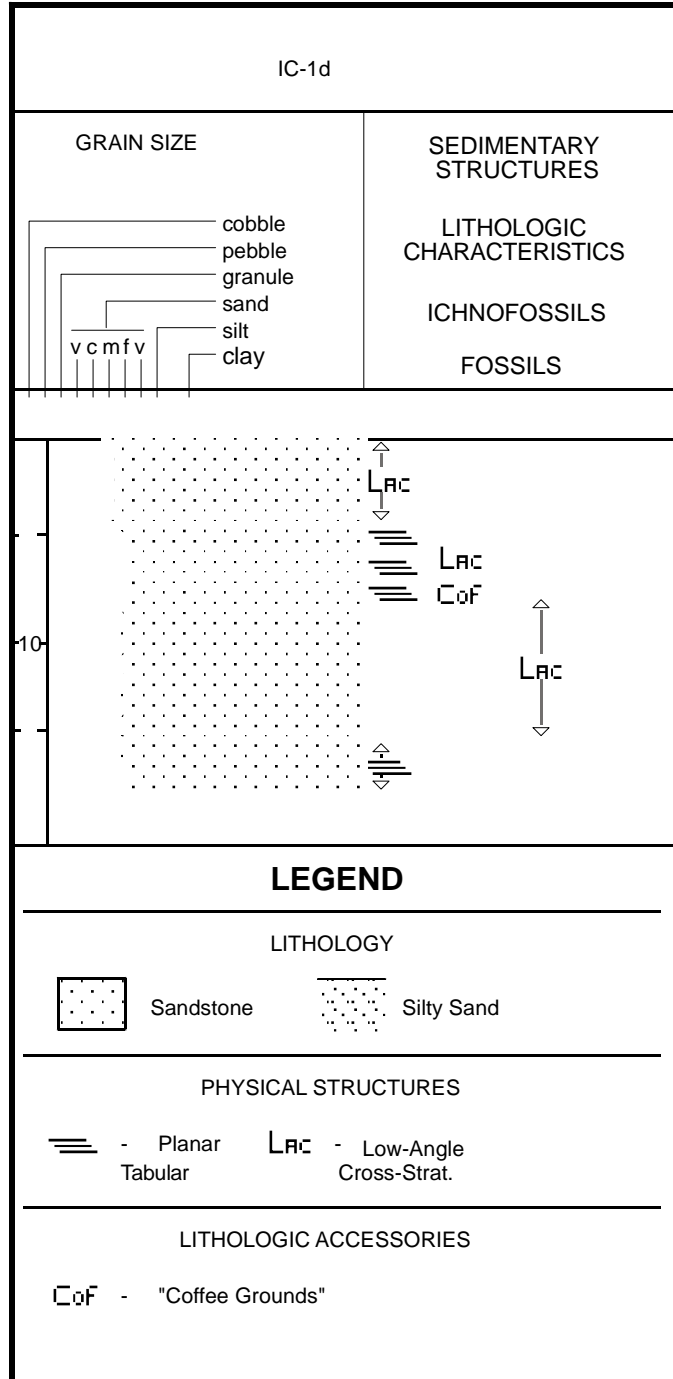
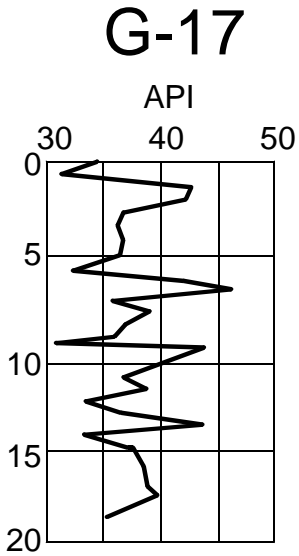
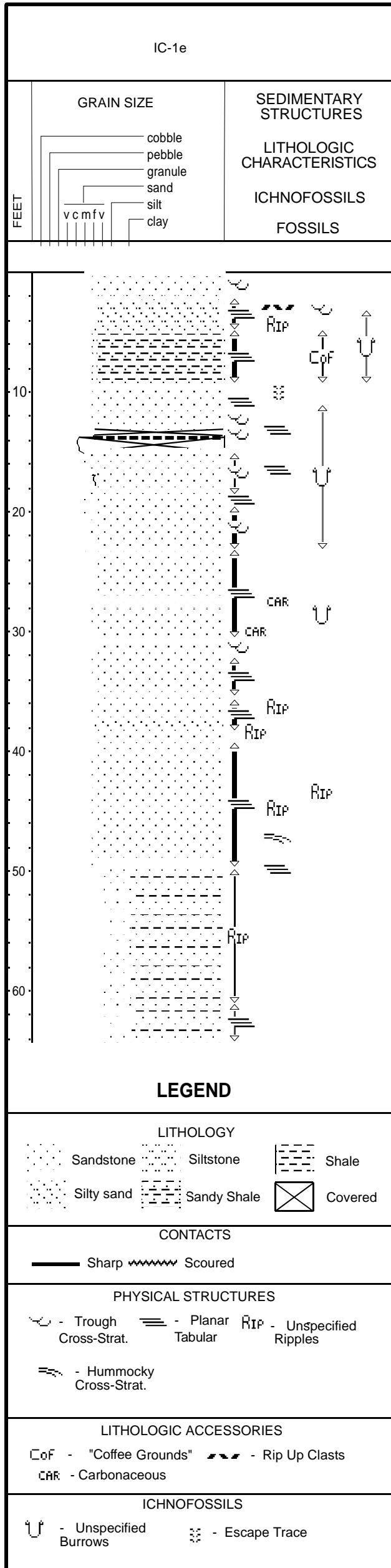
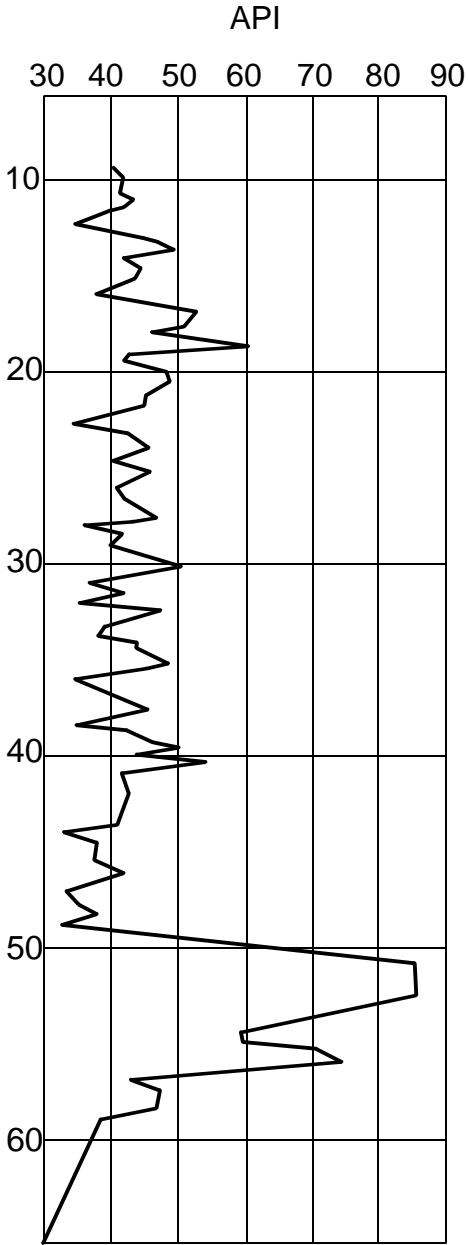


Plate 6

Measured Section IC-1e
 Gamma Ray Profile G-14
 Permeability Transect T-9
 Section 16, T.23S., R.6E.

G-14



T-9

Permeability (md)

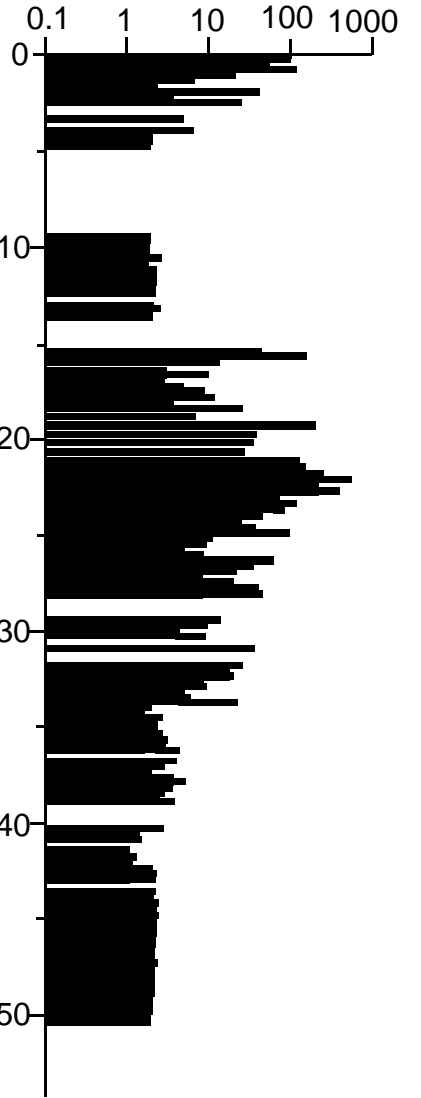


Plate 7

Measured Section IC-2
 Gamma Ray Profile G-5
 Permeability Transect T-3
 Section 16, T.23S., R.6E.

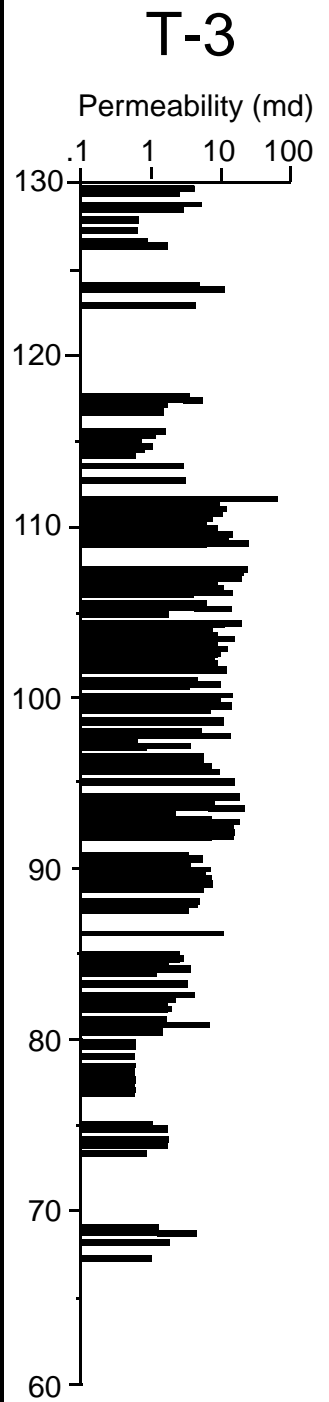
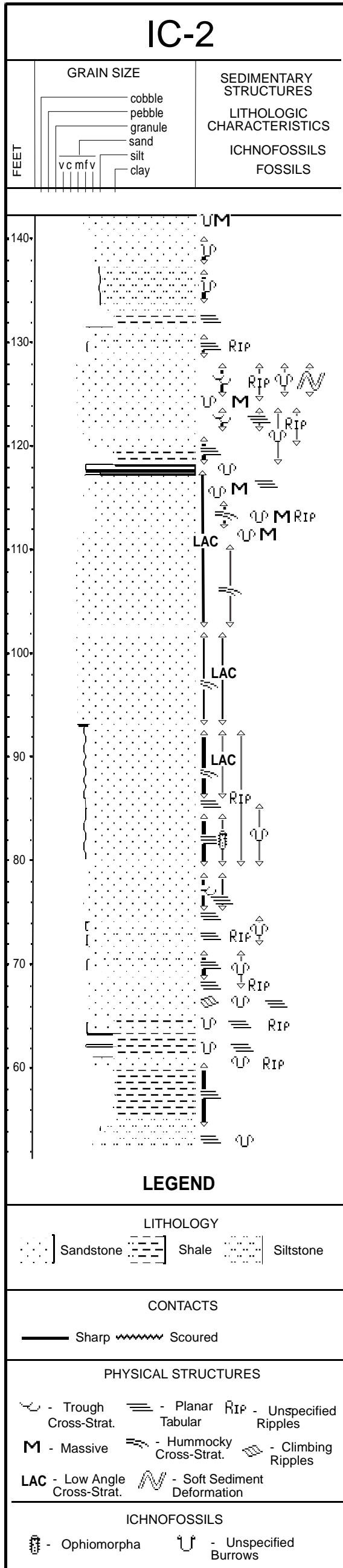
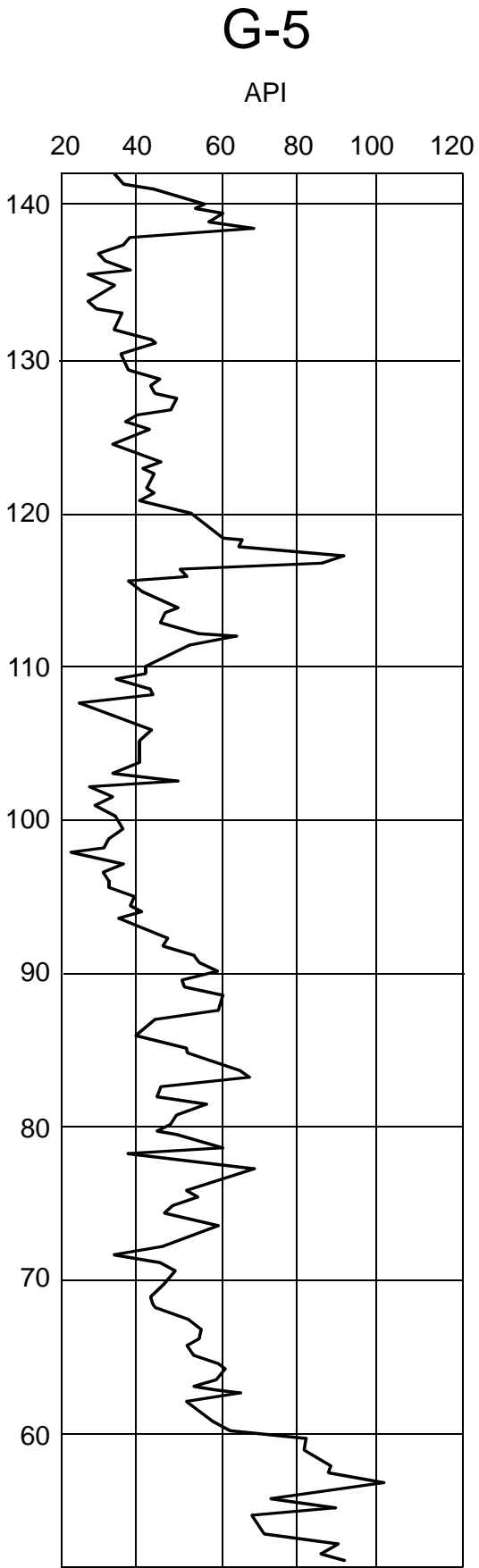


Plate 8

Measured Section IC-3
 Gamma Ray Profile G-2
 Permeability Transect T-1
 Section 16, T.23S., R.6E.

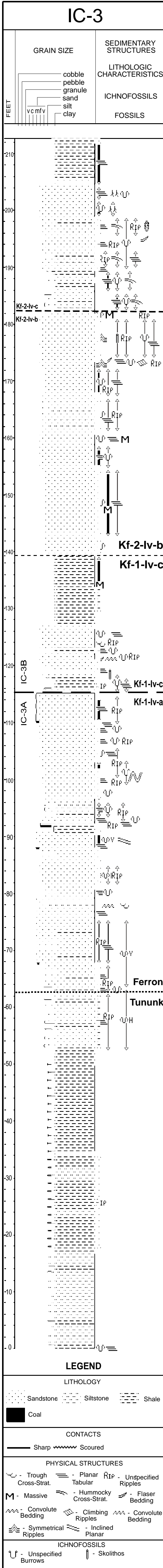
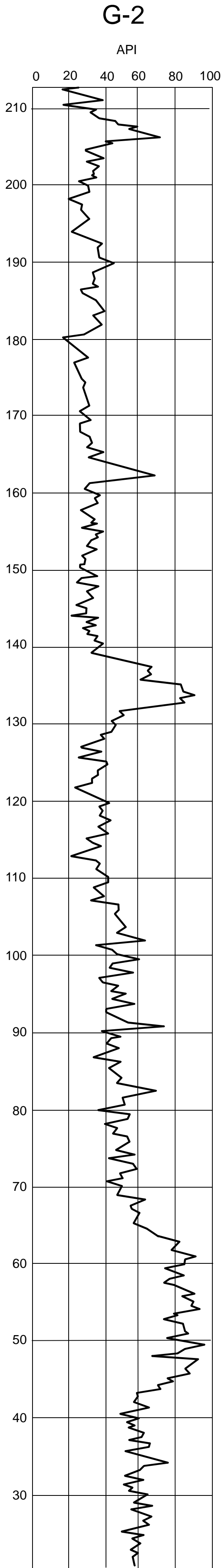


Plate 9

Measured Section IC-4
 Gamma Ray Profile G-4
 Permeability Transect T-2
 Section 16, T.23S., R.6E.

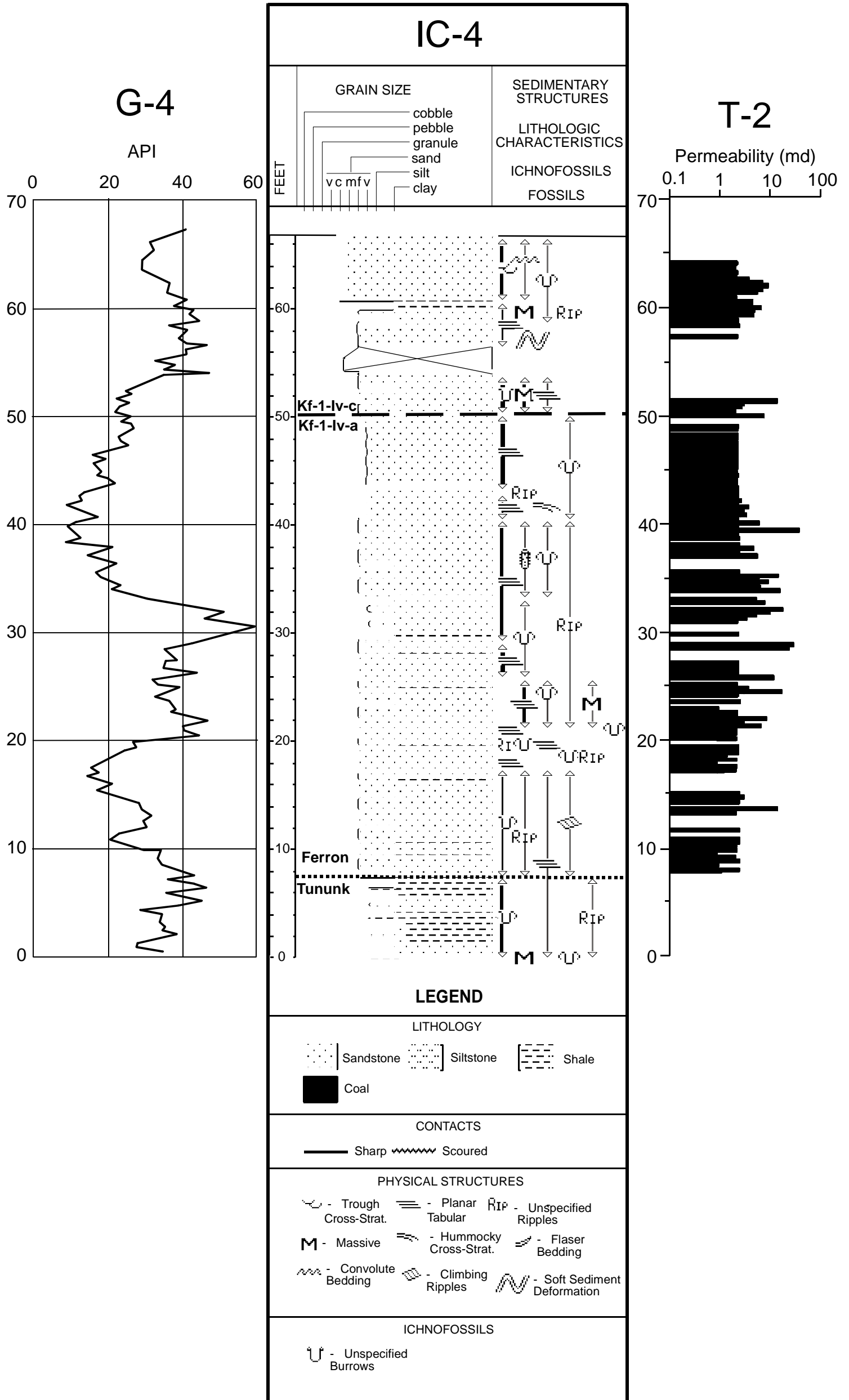


Plate 10

Measured Section IC-7
 Gamma Ray Profile G-6
 Permeability Transect T-18
 Section 16, T.23S., R.6E.

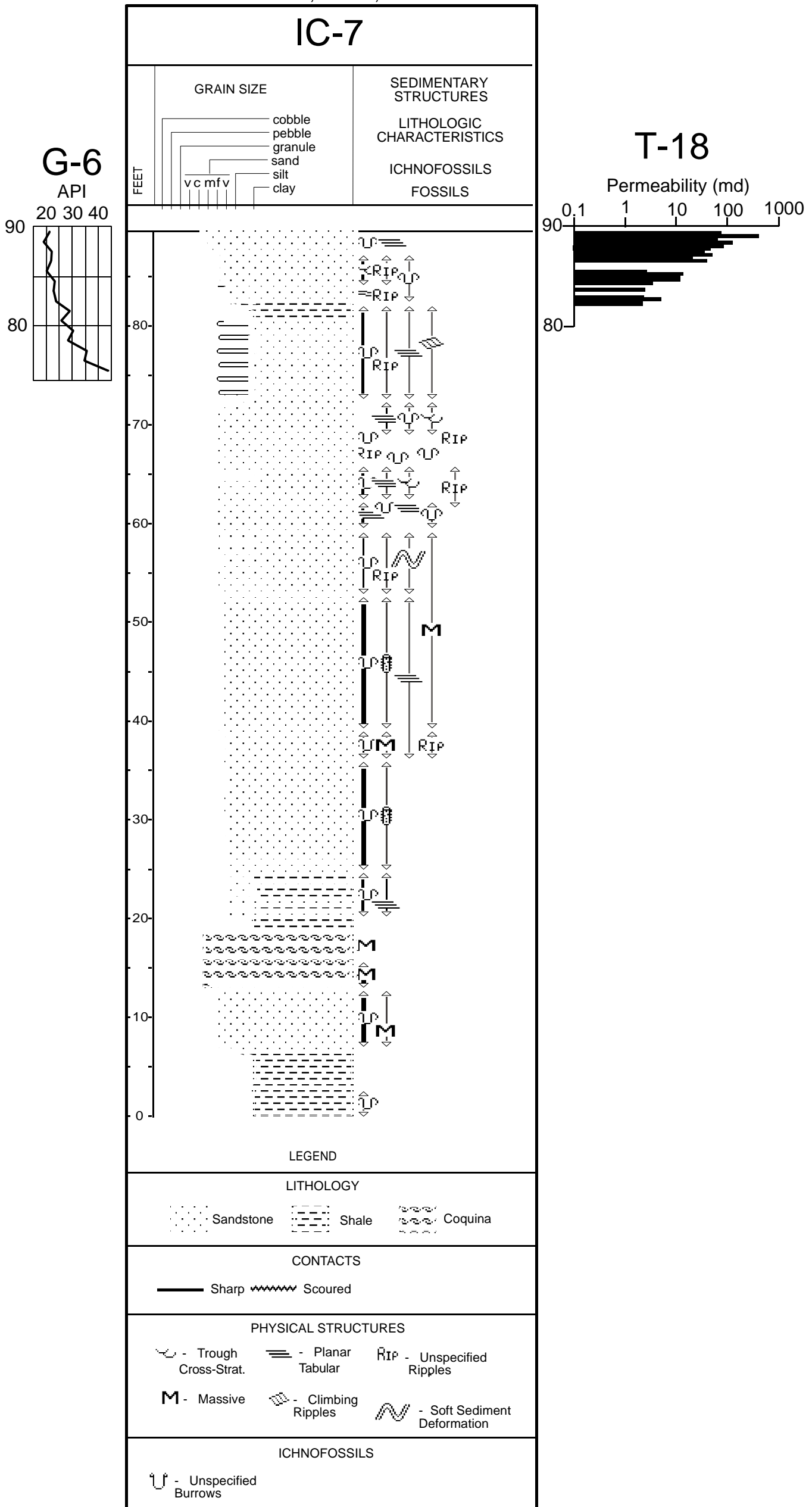


Plate 11

Measure Section IC-7B
 Gamma Ray Profile G-22
 Permeability Transect T-22
 Section 17, T.23S., R.6E.

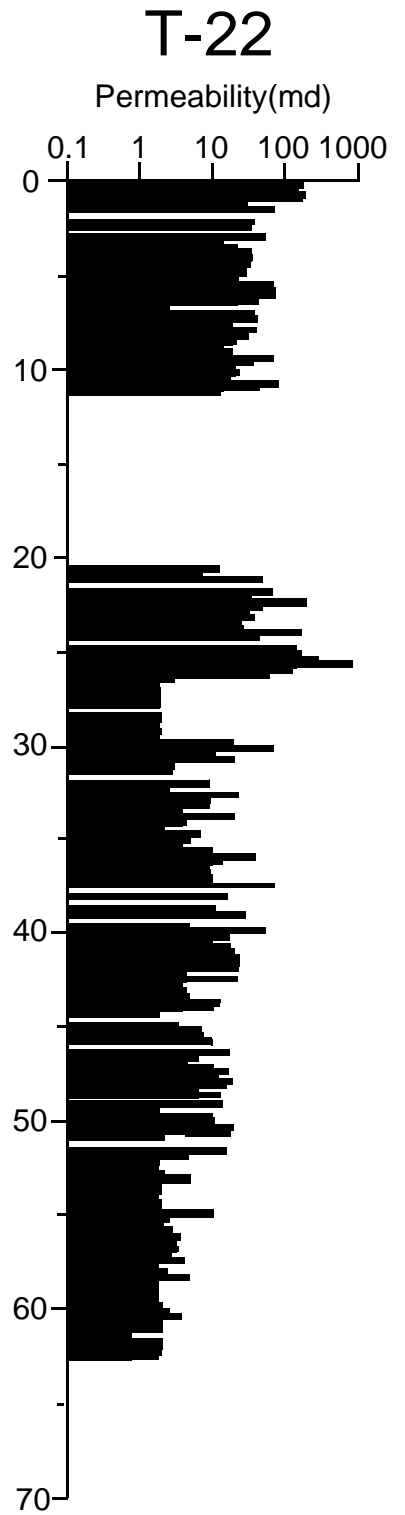
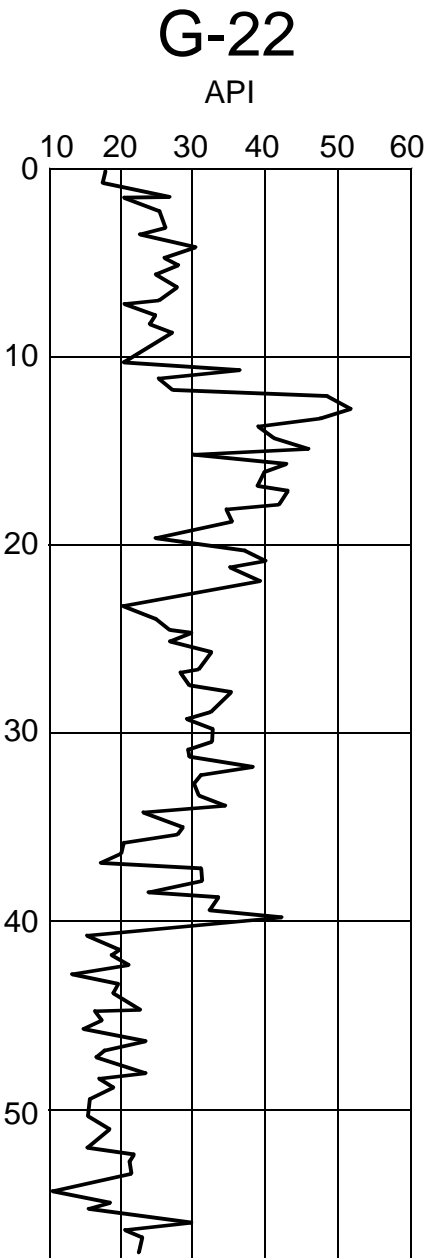
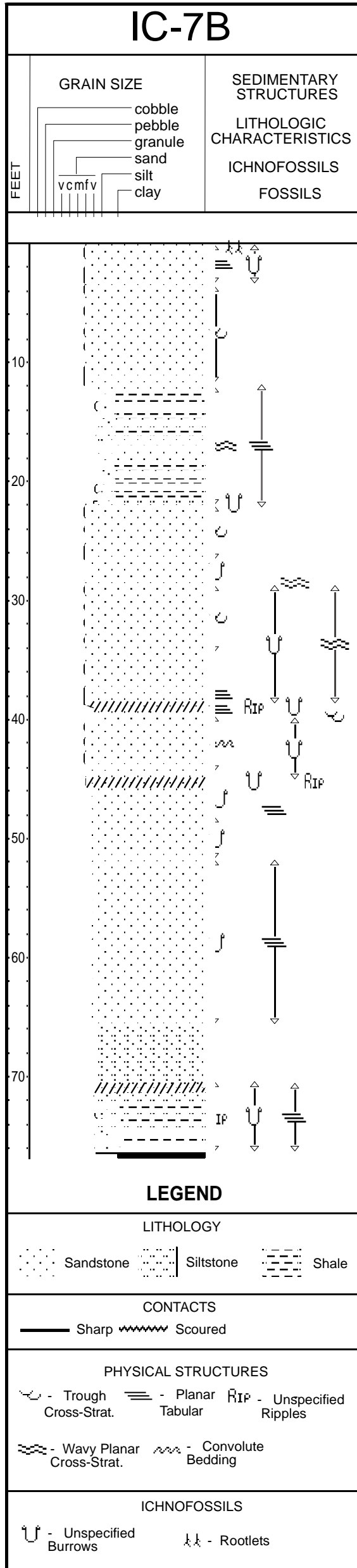


Plate 12

Measured Section IC-9
 Gamma Ray Profile G-10
 Permeability Transect T-13
 Section 17, T.23S., R.6E.

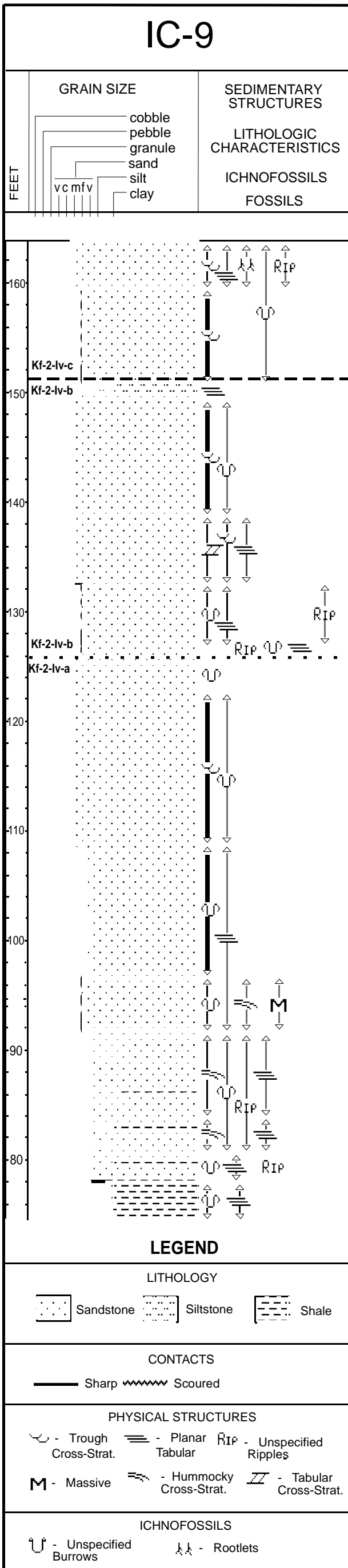


Plate 13

Measured Section I-70-2
 Gamma Ray Profile G-4
 Permeability Transect T-8
 Section 20, T.23S., R.26E.

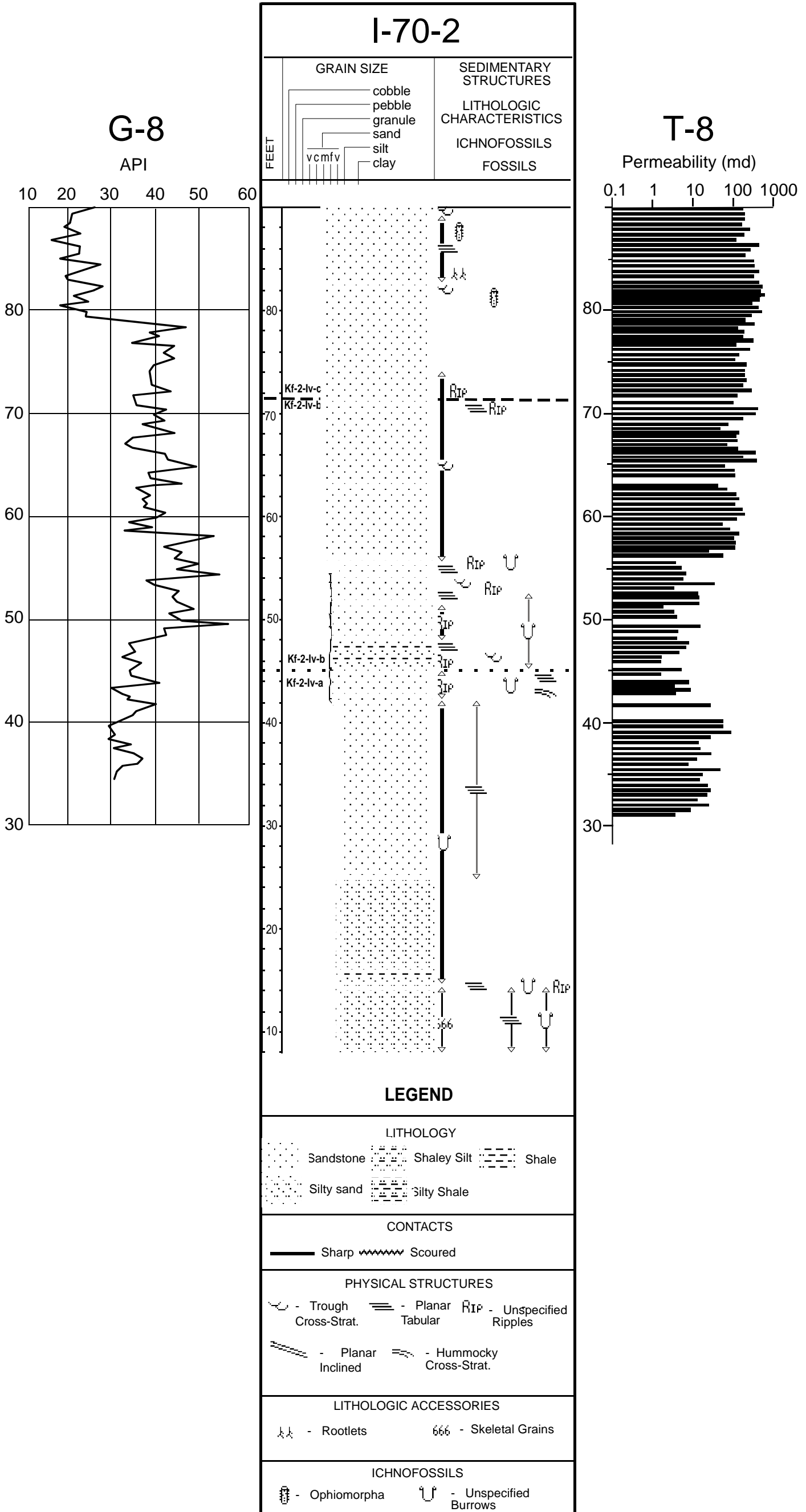
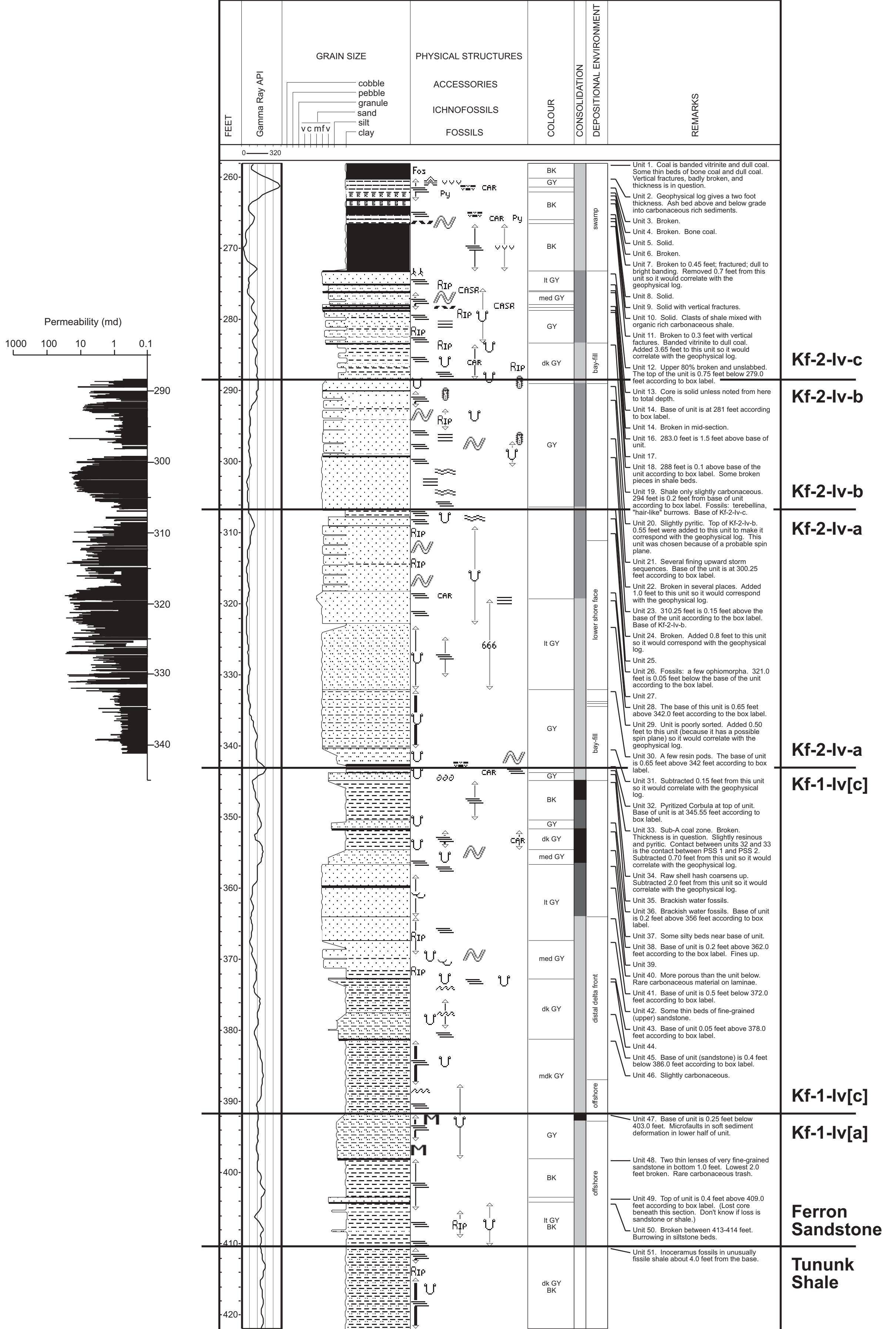


Plate 14

Utah Geological Survey - Ivie Creek No. 3 NWNW Sec. 16, T23S, R06E, Emery Co., Utah

Date logged: December 20, 1995
 Logged by: P.B. Anderson
 Datum elevation: 0.00 ft
 Remarks: API No. T-015-00494
 Well Total Depth: 437.3 feet
 Top of core is at 258 feet. Top to bottom logging.



Kf-2-lv-c

Kf-2-lv-b

Kf-2-lv-b

Kf-2-lv-a

Kf-2-lv-a

Kf-1-lv[c]

Kf-1-lv[c]

Kf-1-lv[a]

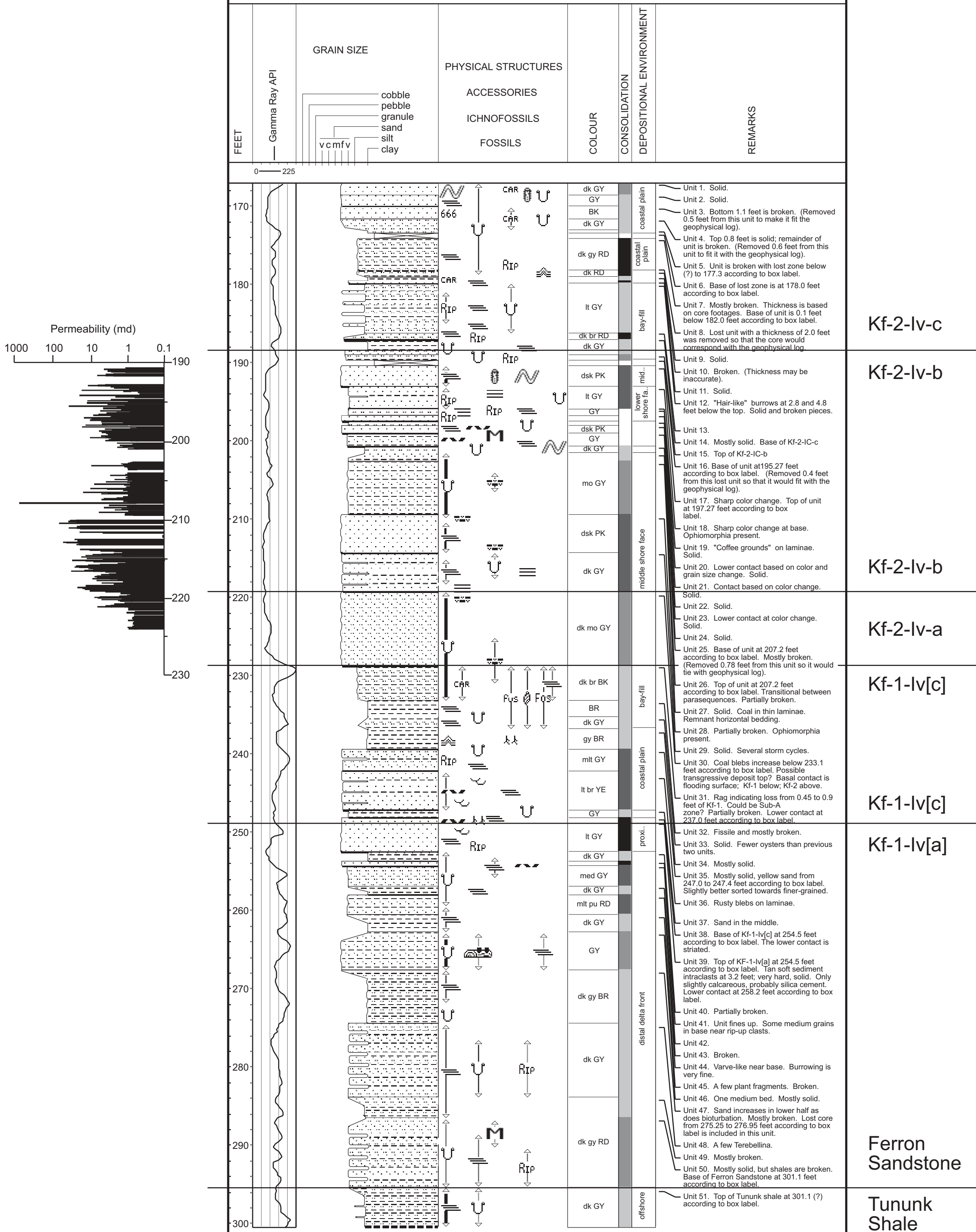
Ferron Sandstone

Tununk Shale

Plate 15

Utah Geological Survey - Ivie Creek No. 5A NWNE Sec. 16, T23S, R06E, Emery Co., Utah

Date logged: December 20, 1995
 Logged by: P.B. Anderson
 Datum elevation: 0.00 ft
 Remarks: API No. T-015-00794
 Well total depth: 313.40 feet
 Top of core at 167 feet. Logged from top to bottom.



EXPLANATION

LITHOLOGY

CONTACTS

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PHYSICAL STRUCTURES

LITHOLOGIC ACCESSORIES

ICHTNOFOSSILS

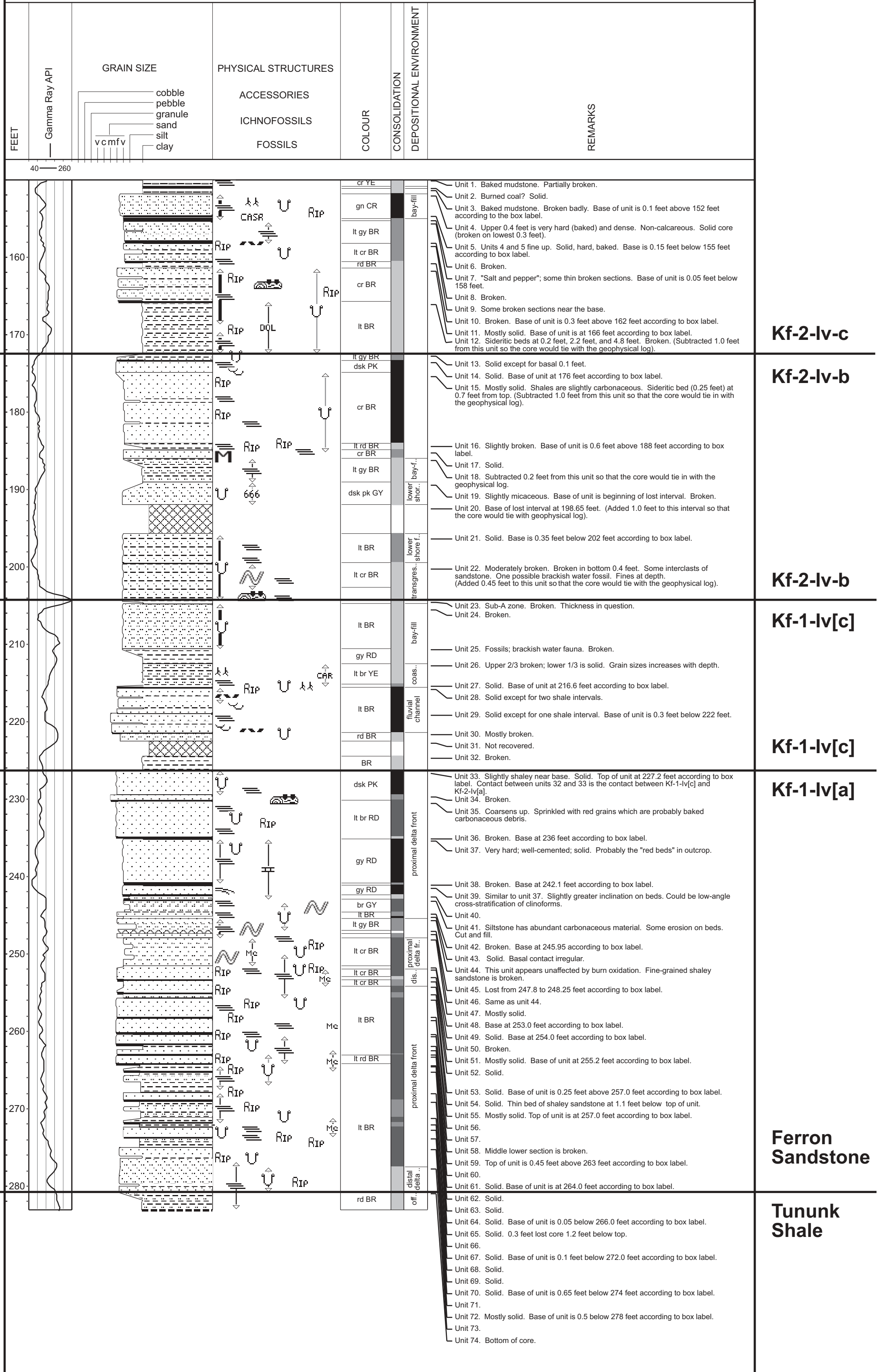
FOSSILS

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Plate 16

Utah Geological Survey - Ivie Creek No. 9A SWNE Sec. 16, T23S, R06E, Emery Co., Utah

Date logged: December 19, 1995
 Logged by: P.B. Anderson
 Datum elevation: 0.00 ft
 Remarks: API No. T-015-01294
 Well total depth: 307.00 feet.
 Top of core began at 150 feet. Top to bottom logging.



EXPLANATION

LITHOLOGY			
	Sandstone		Siltstone
	Silty Sand		Sandy Silt
	Shaly Sand		Shale
			Silty Shale
			Sandy Shale
			Untitled
			Clayey Silt
CONTACTS			
	Sharp		Uncertain
PHYSICAL STRUCTURES			
	Trough Cross-Strat.		Planar Tabular Bedding
	Massive/Homogenous		Soft Sediment Deformation
	Climbing Asymmetrical Ripples		Unspecified Ripples
	Hummocky Cross-Strat.		
LITHOLOGIC ACCESSORIES			
	Calcareous		Rip Up Clasts
	Carbonaceous		Dolomitic
			Micaceous
			Skeletal Grains
ICHTNOFOSSILS			
	Rootlets		Terredolites
			Unspecified Burrows