

APPENDIX K

WP-5 - SHAFT PILOT HOUSE
CORE ANALYSIS RESULTS

MSES

Environmental & Engineering Consultants

APPENDIX K⁽¹⁾

WP-5 - D SHAFT PILOT HOLE
CORE ANALYSIS RESULTS
PERMIT APPLICATION NUMBER VAS2D926BBOC

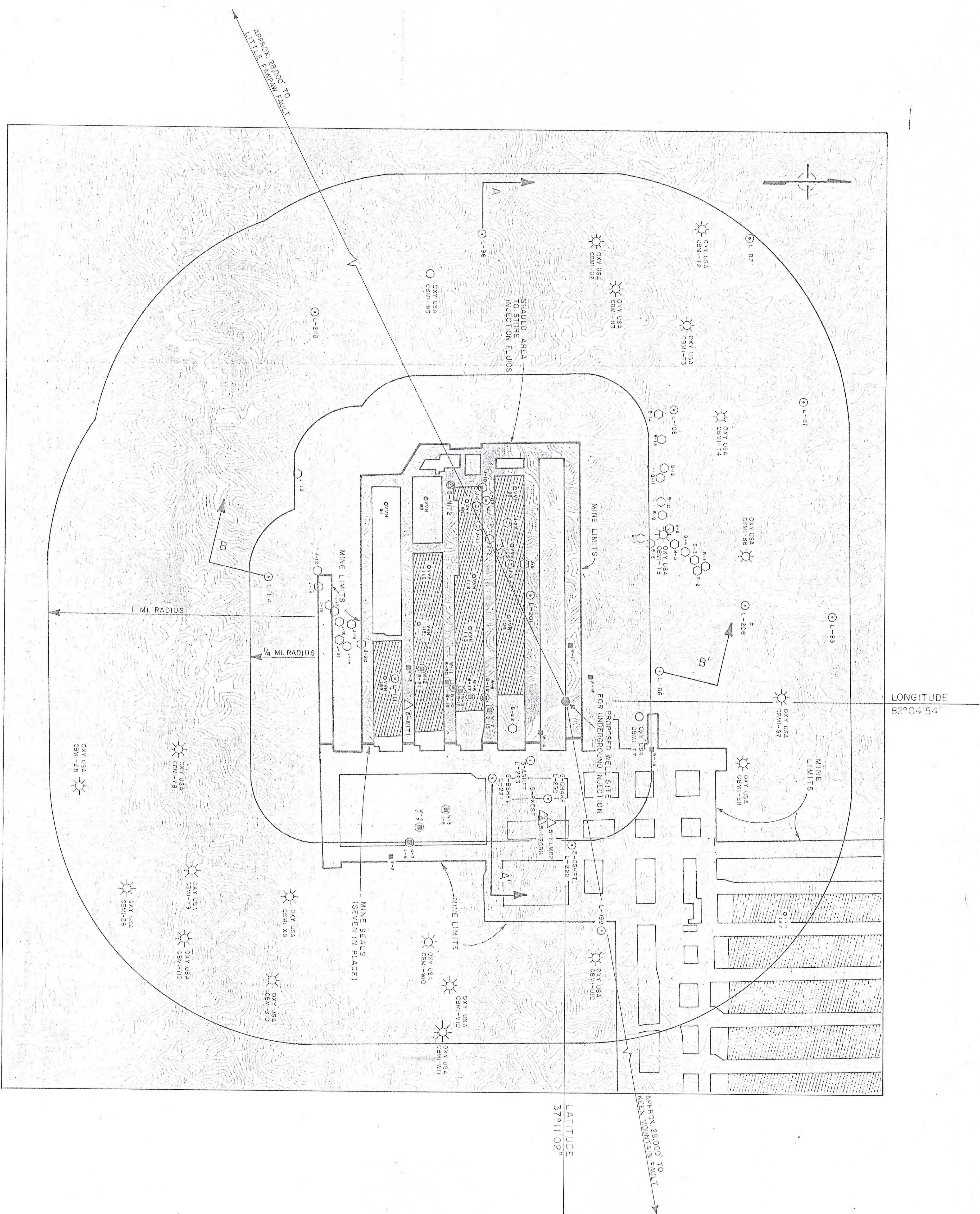
Sample Number	Depth (ft)	Horizontal K - Air Millidarcys	Vertical K - Air Millidarcys	Porosity (Helium) %	Saturation Pore Volume Water (%)	Grain Density gm/cc	Description
1	300.6-301.5	0.01	< .01	5.0	61.3	2.67	Sandstone
2	362.3-363.0	0.07	< .01	3.5	84.4	2.75	Siltstone
3	440.1-440.9	< .01	< .01	4.0	73.4	2.71	Sandstone
4	477.3-477.9	0.07	0.07	7.5	25.2	2.67	Sandstone
5	522.3-522.9	< .01	< .01	2.0	77.3	2.73	Sandstone
6	681.9-682.7	< .01	< .01	3.6	63.5	2.71	Sandstone
7	722.6-723.4	< .01	< .01	2.0	85.9	2.71	Siltstone
8	781.0-781.5	0.02	< .01	4.5	26.6	2.67	Sandstone
9	822.2-823.0	0.01	< .01	1.9	91.8	2.74	Siltstone
10	911.9-912.5	< .01	< .01	4.0	57.0	2.73	Sandstone
11	983.1-983.8	0.01	< .01	1.3	60.4	2.77	Sandstone
12	1135.8-1136.5	0.06	< .01	0.8	53.8	2.68	Sandstone
13	1242.8-1243.5	0.03	< .01	6.9	40.5	2.65	Sandstone
14	1401.9-1402.4	< .01	< .01	1.9	70.4	2.71	Siltstone
15	1422.4-1423.2	0.03	0.03	5.5	4.4	2.65	Sandstone
16	1581.9-1582.7	0.04	< .01	3.4	29.6	2.65	Sandstone
17	1552.6-1553.6	0.02	< .01	3.9	10.9	2.64	Sandstone
18	1691.5-1692.2	0.02	< .01	4.0	52.3	2.67	Sandstone
19	1651.5-1652.4	< .01	< .01	2.1	58.5	2.70	Sandstone
20	1670.8-1671.5	0.01	< .01	0.9	6.2	2.72	Sandstone
21	1726.6-1727.2	< .01	< .01	1.0	78.5	2.88	Siltstone

APPENDIX K⁽¹⁾

WB-5 - D SHAFT PILOT HOLE
CORE ANALYSIS RESULTS
PERMIT APPLICATION NUMBER VAS2D926BBUC
(continued)

<u>Sample Number</u>	<u>Depth (ft)</u>	<u>Horizontal K - Air Millidarcys</u>	<u>Vertical K - Air Millidarcys</u>	<u>Porosity (Helium) %</u>	<u>Saturation Pore Volume Water (%)</u>	<u>Grain Density gm/cc</u>	<u>Description</u>
22	1761.0-1761.5	0.01	< .01	2.7	57.0	2.69	Sandstone
23	1788.3-1788.9	0.02	< .01	6.0	55.1	2.71	Sandstone
24	1780.0-1780.8	< .01	< .01	0.8	15.0	2.75	Sandstone

⁽¹⁾ Test data provided by Island Creek Coal Company



LEGEND

- | | |
|---|---|
|  | FRESH WATER SUPPLY(1990 SURVEY) |
|  | PROPOSED INJECTON WELL SITE |
|  | COALEBED METHANE WELL (PRODUCING) |
|  | MISCELLANEOUS CORE HOLE / WELLS |
|  | EXPLORATION CORE HOLE (PLUGGED) |
|  | VERTICAL VENTILATION HOLE |
|  | PROPOSED COALEBED METHANE WELL (UNDRILLED) |
|  | PROPOSED MONITORING LOCATION(EXISTING) |
|  | SURFACE MINED AREAS |
|  | CONSTRUCTED MINE SEALS BY ISLAND CREEK COAL COMPANY |
|  | FRESH WATER SUPPLY(1993 SURVEY) |

PROPOSED FLOOD LEVEL MONITORING POINTS

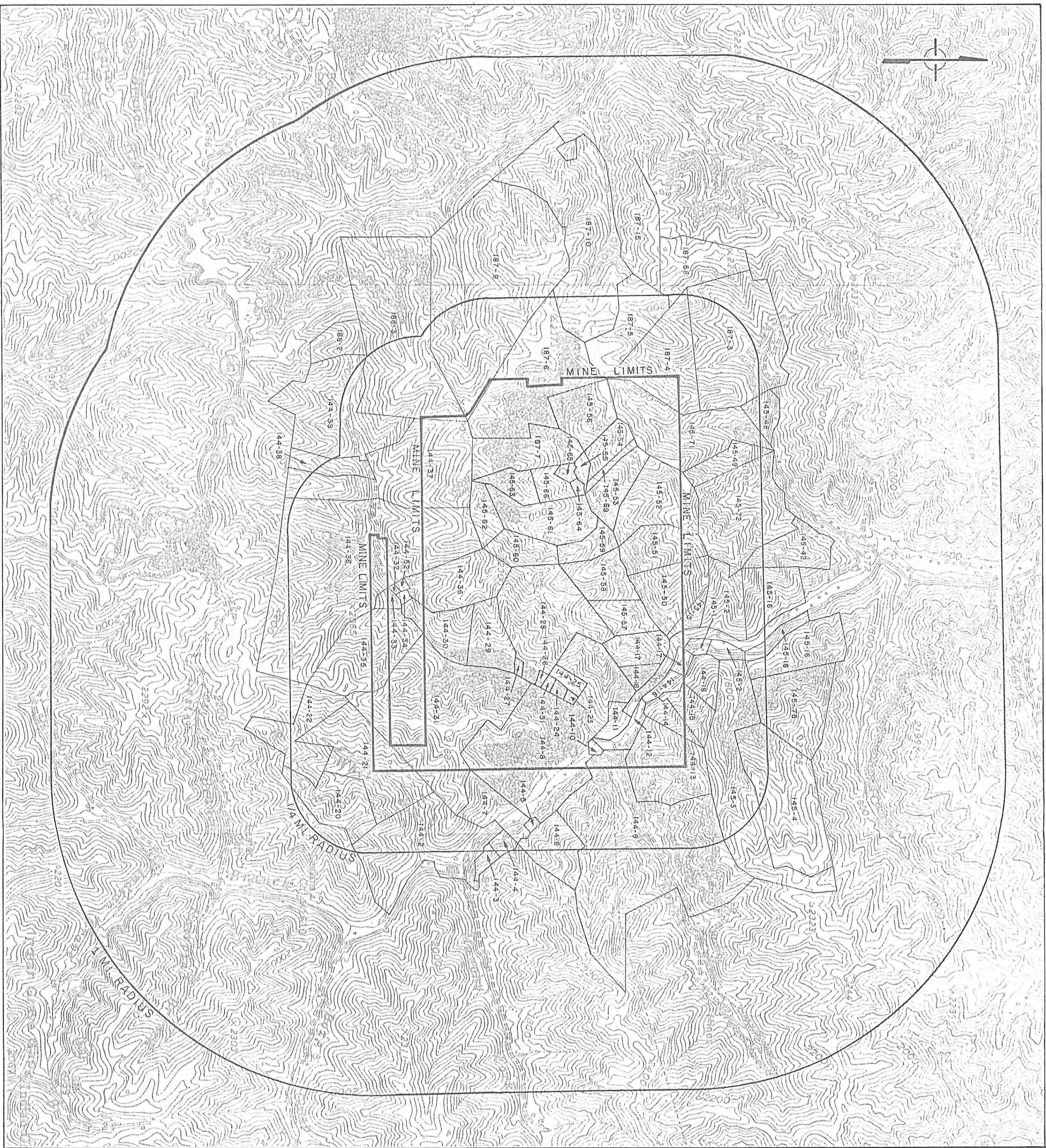
INJECTION WELL (PROPOSED)
5-NIT2 (EXISTING)
VISUALLY CHECK MINE SEALS

NOTES

- 1 - NO IN-TAKE OR DISCHARGE STRUCTURES EXIST WITHIN A ONE-MILE RADIUS. NO HAZARDOUS WASTE TREATMENT, STORAGE, OR DISPOSAL FACILITIES EXIST WITHIN A ONE-MILE RADIUS.
- 2 - WELL INFORMATION WITHIN A ONE-MILE RADIUS IS GIVEN IN APPENDIX A.
- 3 - NO INJECTION WELLS OR ABANDONED WELLS ARE KNOWN TO EXIST WITHIN A ONE-MILE RADIUS.
- 4 - ACTIVE DEEP MINING EXTENDS TO THE EAST AND NORTHEAST OF THE PROPOSED DISPOSAL AREA. NO DEEP MINING HAS OCCURRED OR IS PRESENTLY OCCURRING TO THE SOUTH, WEST, OR NORTHWEST OF THE PROPOSED DISPOSAL AREA.

REVISEMENTS			DATE	BY	REVISION
NO.	DESCRIPTION	DATE			
1	REVIEWED	1/27/52			
2	REVIEWED ON LAYERS 3 AND 4 FOR TAILING	1/27/52			

For	ISLAND CREEK COAL COMPANY
Title	AREA OF REVIEW AND MAP OF WELLS
Drawn	L. E. C. Scale 1" = 1000'
Engineer	M. B. ALDA
Checked	L. M. R. DWG. NO. 91-56-1
	DATE



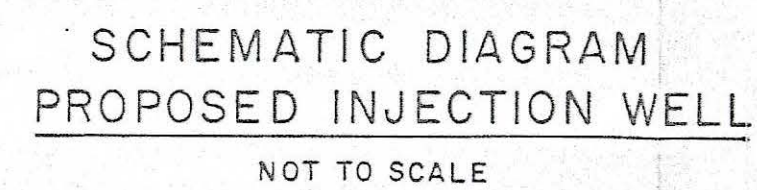
SURFACE OWNERS

1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	22
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NOTE:

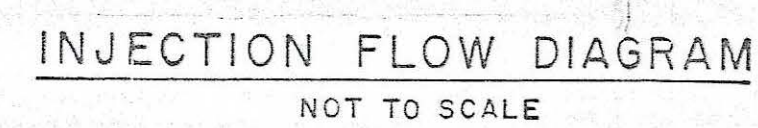
- 1-SURFACE PROPERTY LINES AND OWNERS NAMES ARE TAKEN FROM THE BUCHANAN COUNTY TAX MAPS.
- 2-OWNERSHIP INFORMATION PROVIDED BY ISLAND CREEK COAL COMPANY BY MAP DATED MAY 25, 1993.

[illegible]



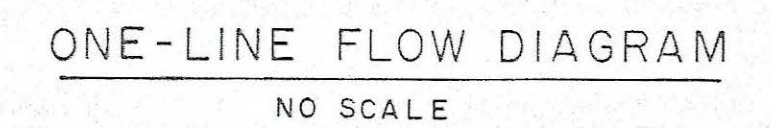
1 - ALL DEPTHS, CASING LENGTHS, TUBING LENGTHS, AND PACKER SETTING ARE APPROXIMATE.

2 - PROPOSED LOCATION OF INJECTION WELL IS SHOWN BY DWG. 91-56-1.



NOTES

- 1 - ALL PIPING WILL BE STEEL.
2 - NO STORAGE TANKS REQUIRED.
3 - NO PUMPING REQUIRED.



LEGEND

-  - BALL VALVE
-  - METER WITH SWEEP HAND AND TOTALIZER
-  - FLOW DIRECTION
-  - VENT AND LEVEL MEASUREMENT PORT
-  - PRESSURE MONITORING POINT
-  - FLUID OBSERVATION POINT

REVISIONS				For ISLAND CREEK COAL COMPANY			
NO.	DESCRIPTION	DWN.	DATE	Title			
1	ADDED MONITORING POINTS & NOTES		FEB 7-93	WELL SCHEMATIC DIAGRAM AND INJECTION FLOW DIAGRAM			
				Drawn _____ RNS 8-92 Scale NOT TO SCALE			
				Engineer _____ ADA 8-92 DWG. NO. _____			
				Checked _____ LMR-SARC 8-92 _____			
				Date _____			
				MSFS FILE NO. D-2479			

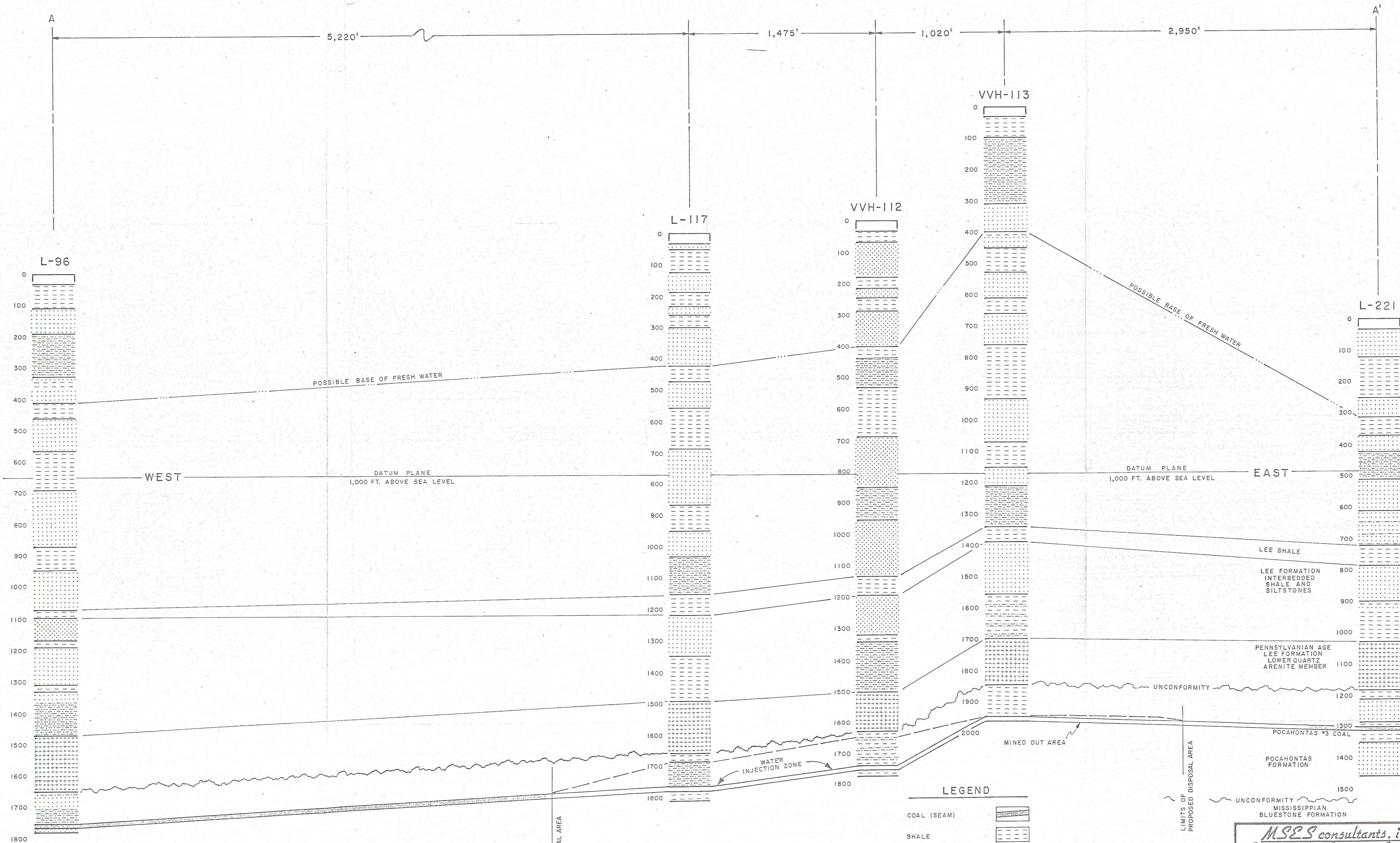
MSES consultants, inc.
Environmental & Engineering Consultants
Clarksburg, West Virginia

For ISLAND CREEK COAL COMPANY

Title	WELL SCHEMATIC DIAGRAM AND INJECTION FLOW DIAGRAM
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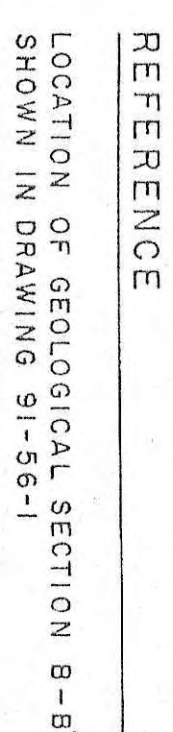
Drawn	RNS	8-92	Scale	NOT TO SCALE
Engineer	ADA	8-92	DWG. NO.	91-56-4
Checked	LMR:SARC	8-92		

SECS FILE NO D-2479



REFERENCE
 LOCATION OF GEOLOGICAL SECTION A-A'
 SHOWN BY DRAWING 91-56-1

MSES consultants, inc. Environmental & Engineering Consultants Clarksburg, West Virginia	
For ISLAND CREEK COAL COMPANY	
Title GEOLOGICAL SECTION A-A'	
Drawn RNS Engineer ADA Checked SARC	Date 7-92 Scale SEE ABOVE DWG. NO. 91-56-2



POCAHONTAS

UNCONF.

NOTE

LIMITS OF PROPOSED DISPOSAL AREA

VERTICAL SCALE: $\frac{3/4" = 100'$

HORIZONTAL SCALE: $3" = 1,000'$

NOTE

MSES consultants, inc.
Environmental & Engineering Consultants
Charlottesville, Virginia

GEOLOGICAL SECTION B-B'

MSES consultants, inc.
Environmental & Engineering Consultants

Clarkburg, West Virginia

Drawn	RNS	7-92	Scale SEE ABOVE
Engineer	ADA	7-92	
Checked	SARC	7-92	
		Date	

DWG. NO. 91-56-

MSES FILE NO. D-247