

**APPENDIX B
VIDEO SURVEYS
(VOLUME 2)**

IW-1

**VIDEO SURVEY OF THE
13.375-INCH OD STEEL TUBING**

Performed 12-14-04

IW-1 VIDEO SURVEY

DATE(S): 14-Dec-04

CITY OF MIRAMAR INJECTION WELL NO. 1

JOB NUMBER 1570820

CONTRACTOR: Youngquist Brothers, Inc.

PROJECT MANAGER: Susan Bodmann

COUNTY: Broward
 OWNER: City of Miramar

VIDEO CONTRACTOR: Florida Geophysical
 TOTAL DEPTH: 3,100 ft bls

DESCRIPTION OF OPERATIONS: Video logging of IW-1
13.375-inch existing steel tubing

DEPTH IN FEET To	OBSERVATIONS
44 to 45	Gray deposits on steel tubing wall
85	Gray deposits on steel tubing wall, no welded joints are visible.
90	Gray deposits on steel tubing wall
95	Side view of tubing
99 to 104	Gray deposits on steel tubing
127 to 130	Gray deposits on steel tubing
154	Gray deposits on steel tubing
165 to 170	Gray deposits on steel tubing
194	Gray deposits on steel tubing
204 to 209	Gray deposits on steel tubing
215 to 230	Gray deposits on steel tubing
242 to 253	Gray deposits on steel tubing
255 to 266	Gray deposits on steel tubing
335 to 337	Gray deposits on steel tubing
347 to 350	Gray deposits on steel tubing
357 to 362	Gray deposits on steel tubing
369 to 374	Gray deposits on steel tubing
374 to 376	Side view, no weld visible
374 to 379	Gray deposits on steel tubing
391	Side view, no weld visible
373 to 330	Side view of tubing upwards from 373 to 330 feet bpl, no visible welded joints
401 to 422	Gray deposits on steel tubing
427 to 436	Gray deposits on steel tubing
490	Gray deposits on steel tubing
531 to 534	Gray deposits on steel tubing
573	Gray deposits on steel tubing
614	Gray deposits on steel tubing
655	Gray deposits on steel tubing

DEPTH IN FEET		OBSERVATIONS
To		
697		Gray deposits on steel tubing
736		Gray deposits on steel tubing
778 to 780		Gray deposits on steel tubing
818 to 820		Gray deposits on steel tubing
859		Gray deposits on steel tubing
902 to 904		Gray deposits on steel tubing
944		Gray deposits on steel tubing
1025 to 1027		Gray deposits on steel tubing
1065 to 1067		Gray deposits on steel tubing
1107 to 1109		Gray deposits on steel tubing
1147 to 1149		Gray deposits on steel tubing
1189 to 1191		Gray deposits on steel tubing
1231		Gray deposits on steel tubing
1271 to 1273		Gray deposits on steel tubing
1309 to 1312		Gray deposits on steel tubing
1351 to 1355		Gray deposits on steel tubing
1393 to 1395		Gray deposits on steel tubing
1415		Gray deposits on steel tubing
1435 to 1437		Gray deposits on steel tubing
1478		Gray deposits on steel tubing
1519		Gray deposits on steel tubing
1560		Gray deposits on steel tubing
1600		Gray deposits on steel tubing
1612 to 1615		Gray deposits on steel tubing
1639 to 1645		Gray deposits on steel tubing
1660		Gray deposits on steel tubing
1681 to 1685		Gray deposits on steel tubing
1725		Gray deposits on steel tubing
1765		Gray deposits on steel tubing
1807		Gray deposits on steel tubing
1848		Gray deposits on steel tubing
1889 to 1892		Gray deposits on steel tubing
1929		Gray deposits on steel tubing
1970		Gray deposits on steel tubing
2011		Gray deposits on steel tubing
2055		Gray deposits on steel tubing
2095		Gray deposits on steel tubing
2167		End of video #1
		Video # 2
3031 to 3096		Poor visibility, murky water
3096		Side view of borehole, no visibility
3101		Side view of borehole, no visibility

IW-1
VIDEO SURVEY OF THE
16-INCH OD FINAL CASING
Performed 7-14-05

IW-1 VIDEO SURVEY

DATE(S): 14-Jul-05

CITY OF MIRAMAR INJECTION WELL NO. 1

JOB NUMBER 1570820

CONTRACTOR: Youngquist Brothers, Inc.

PROJECT MANAGER: Susan Bodmann

COUNTY: Broward
 OWNER: City of Miramar

VIDEO CONTRACTOR: Florida Geophysical
 TOTAL DEPTH: 3,128 feet bpl

DESCRIPTION OF OPERATIONS: Video logging of IW-1
 16-inch OD final casing for tubing replacement work'

DEPTH IN FEET		OBSERVATIONS
To		
155.1		Welded Joint
196		Welded Joint. Casing appears clean.
231.6		Welded Joint
281.3		Welded Joint
324.6		Welded Joint
367.2		Welded Joint
409		Welded Joint
452		Welded Joint
495.7		Welded Joint
539.2		Welded Joint
578.8		Welded Joint
621.4		Welded Joint
662.8		Welded Joint
705.7		Welded Joint
748.7		Welded Joint
781.1		Welded Joint
828.7		Welded Joint. Casing appears clean. Brush marks can be seen. No encrustation.
870.5		Welded Joint
909.3		Welded Joint
951.8		Welded Joint
994.3		Welded Joint
1036		Welded Joint
1079.2		Welded Joint
1121.3		Welded Joint
1163.2		Welded Joint
1203.6		Welded Joint
1246		Welded Joint
1286		Welded Joint

DEPTH IN FEET		OBSERVATIONS
To		
1327		Welded Joint
1366		Welded Joint
1407		Welded Joint
1448		Welded Joint
1490		Welded Joint
1531		Welded Joint
1574		Welded Joint. Casing appears clean. No encrustation or other deformation of the casing wall.
1613.1		Welded Joint
1653		Welded Joint
1694.3		Welded Joint
1734.5		Welded Joint
1774.8		Welded Joint
1814.6		Welded Joint
1855		Welded Joint
1895		Welded Joint
1935		Welded Joint
1975		Welded Joint
2015.6		Welded Joint
2055.6		Welded Joint
2095.6		Welded Joint
2135.5		Welded Joint. Camera noticeably moved to one side of the casing.
2176.5		Welded Joint
2216.8		Welded Joint
2256.8		Welded Joint
2296		Welded Joint
2336.4		Welded Joint
2375.6		Welded Joint
2415.5		Welded Joint
2455.7		Welded Joint
2495.3		Welded Joint
2535.6		Welded Joint
2566.4		Welded Joint
2606.7		Welded Joint
2648		Welded Joint
2689.3		Welded Joint
2730.5		Welded Joint
2772.2		Welded Joint
2814.7		Welded Joint
2857		Welded Joint. Camera re-centers in 16-inch casing
2897		Welded Joint
2937		Welded Joint
2980		Welded Joint
3022		Weld above packer hanger

DEPTH IN FEET		OBSERVATIONS
	To	
3044.7		Grapple on liner hanger packer assembly
3051		Decrease in diameter
3059.8		Threads
3091		Base of packer assembly
3095		Base of 16-inch OD casing
3118		Injection zone
3128		Too murky to see. Stopped video

IW-1

**VIDEO SURVEY OF THE
10.75-INCH FRP TUBING**

Performed 8-9-05

IW-1 VIDEO SURVEY

DATE(S): 9-Aug-05

CITY OF MIRAMAR INJECTION WELL NO. 1

JOB NUMBER 1570820

CONTRACTOR: Youngquist Brothers, Inc.

PROJECT MANAGER: Susan Bodmann

COUNTY: Broward
OWNER: City of Miramar

VIDEO CONTRACTOR: Florida Geophysical
TOTAL DEPTH: 3,123 ft bpl

DESCRIPTION OF OPERATIONS: Video logging of IW-1
10-inch FRP tubing

DEPTH IN FEET		OBSERVATIONS
To		
120	Joint	
150	Joint	
179	Joint	
208	Joint	
238	Joint	
268	Joint	
297	Joint	
327	Joint	
356	Joint	
386	Joint	
415	Joint	
444	Joint	
473	Joint	
503	Joint	
533	Joint	
563	Joint	
592	Joint	
621	Joint	
651	Joint	
679	Joint	
709	Joint	
740	Joint	
769	Joint	
797	Joint	
828	Joint	
856	Joint	
887	Joint	
915	Joint	

DEPTH IN FEET		OBSERVATIONS
To		
944	Joint	
973	Joint	
1003	Joint	
1032	Joint	
1062	Joint	
1091	Joint	
1121	Joint	
1149	Joint	
1179	Joint	
1208	Joint	
1238	Joint	
1296	Joint	
1326	Joint	
1355	Joint	
1385	Joint	
1413	Joint	
1443	Joint	
1473	Joint	
1502	Joint	
1532	Joint	
1562	Joint	
1589	Joint	
1619	Joint	
1649	Joint	
1678	Joint	
1709	Joint	
1739	Joint	
1768	Joint	
1798	Joint	
1827	Joint	
1856	Joint	
1884	Joint	
1916	Joint	
1944	Joint	
1973	Joint	
2004	Joint	
2034	Joint	
2063	Joint	
2091	Joint	
2122	Joint	
2150	Joint	
2180	Joint	
2209	Joint	

DEPTH IN FEET		OBSERVATIONS
To		
2238	Joint	
2270	Joint	
2297	Joint	
2329	Joint	
2356	Joint	
2386	Joint	
2415	Joint	
2445	Joint	
2475	Joint	
2504	Joint	
2532	Joint	
2563	Joint	
2592	Joint	
2621	Joint	
2652	Joint	
2680	Joint	
2709	Joint	
2740	Joint	
2769	Joint	
2798	Joint	
2828	Joint	
2857	Joint	
2885	Joint	
2914	Joint	
2943	Joint	
2972	Joint	
3001	Joint	
3028	Bottom of FRP Tubing (3033)	
3033	Cement over packer	
3037	Cement over packer	
3045	Packer Top	
3051	Packer bottom	
3087	Bottom of 16-inch casing (3095)	
3123	Injection Zone; Cloudy	

IW-2
VIDEO SURVEY OF THE
13.375-INCH OD STEEL TUBING
Performed 11-30-04

IW-2 VIDEO SURVEY

DATE(S): 30-Nov-04

CITY OF MIRAMAR INJECTION WELL NO. 2

JOB NUMBER 1570820

CONTRACTOR: Youngquist Brothers, Inc.

PROJECT MANAGER: Susan Bodmann

COUNTY: Broward
 OWNER: City of Miramar

VIDEO CONTRACTOR: Florida Geophysical
 TOTAL DEPTH: 3,100 ft bls

DESCRIPTION OF OPERATIONS: Video logging of IW-2
13.375-inch existing steel tubing

DEPTH IN FEET	OBSERVATIONS
To	
0 to 32	Deposits buildup on tubing wall
32	Welded joint
32 to 37	Smooth steel tubing visible
74	Welded joint
115	Welded joint
155	Welded joint
196	Welded joint
238	Welded joint
281	Welded joint
330	Welded joint
403	Welded joint
403 to 415	Visibility decreased, coarse tubing wall
422	Welded joint
444	Welded joint
479 to 478	Smooth steel visible
483	Welded joint
527	Welded joint
568	Welded joint
649	Welded joint
690	Welded joint
730	Welded joint
770	Welded joint
812	Very visible welded joint
853	Slightly visible welded joint
895	Welded joint
937	Very visible welded joint
979	Slightly visible welded joint
1010 to 1021	Coarse tubing walls, darker color, smooth steel not visible.

DEPTH IN FEET		OBSERVATIONS
To		
1021		Welded joint
1061		Welded joint
1103		Very visible welded joint
1144		Poor visibility
1165		Welded joint
1185		Welded joint
1228		Welded joint
1269		Welded joint
1290 to 1295		Coarse tubing walls, darker color, smooth steel not visible.
1310		Welded joint
1348		Welded joint
1389		Smooth steel visible
1430		Welded joint
1472		Slightly visible welded joint
1514		Welded joint
1515		Smooth steel visible
1555		Welded joint
1598		Welded joint
1640		Welded joint
1681		Welded joint
1723		Welded joint
1761		Welded joint
1800		Welded joint
1840		Welded joint
1881		Welded joint
1923		Welded joint
1965		Welded joint
2006		Welded joint
2048		Welded joint
2171		Welded joint
2212		Welded joint
2254		Welded joint
2296		Welded joint
2338		Welded joint
2378		Welded joint
2420		Welded joint
2461		Welded joint
2503		Welded joint
2544		Welded joint

DEPTH IN FEET		OBSERVATIONS
To		
2585		Welded joint
2626		Welded joint
2668		Welded joint
2708		Welded joint
2749		Welded joint
2790		Welded joint
2831		Welded joint
2873		Welded joint
2910		Welded joint
2951		Welded joint
2993		Welded joint
2996		Welded joint
2997		Base of packer assembly
3007		Side view
3009		Side view
3013 to 3030		Poor visibility
3046 to 3050		Side view, murky water, poor visibility
3053 to 3056		Horizontal Fracture
3059 to 3064		Horizontal Fracture
3065		Vertical Fracture
3076		Bedding plane
3078		Bedding plane
3081		Vertical Fracture
3086		Bedding plane
3090 to 3093		Vertical Fracture
3096		Bedding plane
3098 to 3100		Cavernous
2750		Side view
2531		Side view
2503		Side view
		End of Video

IW-2

**VIDEO SURVEY OF THE
16-INCH OD FINAL CASING**

Performed 10-5-05

IW-2 VIDEO SURVEY

DATE(S): 5-Oct-05

CITY OF MIRAMAR **INJECTION WELL NO. 2**

JOB NUMBER 1570820

CONTRACTOR: Youngquist Brothers, Inc.

PROJECT MANAGER: Susan Bodmann

COUNTY: Broward
 OWNER: City of Miramar

VIDEO CONTRACTOR: Florida Geophysical
 TOTAL DEPTH: 3,100 ft bls

DESCRIPTION OF OPERATIONS: Video logging of IW-2
 16-inch OD final casing for tubing replacement work

DEPTH IN FEET		OBSERVATIONS
To		
72		Welded Joint
116		Welded Joint. Casing appears clean.
158		Welded Joint
201		Welded Joint
243		Welded Joint
276		Welded Joint
319		Welded Joint
362		Welded Joint
405		Welded Joint
448		Welded Joint
491		Welded Joint
534		Welded Joint
576		Welded Joint
619		Welded Joint
661		Welded Joint
704		Welded Joint
747		Welded Joint. Casing appears clean. Brush marks can be seen. No encrustation.
790		Welded Joint
831		Welded Joint
872		Welded Joint
913		Welded Joint
953		Welded Joint
994		Welded Joint
1037		Welded Joint
1077		Welded Joint
1117		Welded Joint
1158		Welded Joint
1200		Welded Joint

DEPTH IN FEET		OBSERVATIONS
To		
1243		Welded Joint
1283		Welded Joint
1326		Welded Joint
1366		Welded Joint
1406		Welded Joint
1446		Welded Joint
1490		Welded Joint. Casing appears clean. No encrustation or other deformation of the casing wall.
1530		Welded Joint
1570		Welded Joint
1612		Welded Joint
1654		Welded Joint
1695		Welded Joint
1734		Welded Joint
1776		Welded Joint
1817		Welded Joint
1859		Welded Joint
1901		Welded Joint
1943		Welded Joint
1985		Welded Joint
2028		Welded Joint
2068		Welded Joint
2111		Welded Joint
2153		Welded Joint
2193		Welded Joint
2233		Welded Joint
2273		Welded Joint
2314		Welded Joint
2353		Welded Joint
2393		Welded Joint
2434		Welded Joint
2474		Welded Joint
2514		Welded Joint
2556		Welded Joint
2597		Welded Joint
2638		Welded Joint
2681		Welded Joint
2723		Welded Joint
2762		Welded Joint
2804		Welded Joint
2844		Welded Joint
2886		Welded Joint
2928		Welded Joint
2969		Welded Joint

DEPTH IN FEET To	OBSERVATIONS
2991	Decrease in diameter. Top of Packer Assembly
2995	Threads
2997	Welded Joint
2991	Side view
2995	Side view. Section of Packer left in casing
3000	Welded Joint
3007	Base of packer assembly
3044	Base of 16-inch OD casing
3100	Stopped Camera in sediment

IW-2

**VIDEO SURVEY OF THE
10.75-INCH FRP TUBING**

Performed 11-5-05

IW-2 VIDEO SURVEY

DATE(S): 5-Nov-05

CITY OF MIRAMAR INJECTION WELL NO. 2

JOB NUMBER 1570820

CONTRACTOR: Youngquist Brothers, Inc.

PROJECT MANAGER: Susan Bodmann

COUNTY: Broward
 OWNER: City of Miramar

VIDEO CONTRACTOR: Florida Geophysical
 TOTAL DEPTH: 3,160 ft bls

DESCRIPTION OF OPERATIONS: Video logging of IW-2
10-inch FRP for tubing replacement work

DEPTH IN FEET	OBSERVATIONS
To	
30	Joint
60	Joint
90	Joint
120	Joint
151	Joint
180	Joint
209	Joint
239	Joint
268	Joint
297	Joint
327	Joint
356	Joint
385	Joint
415	Joint
444	Joint
473	Joint
503	Joint
532	Joint
562	Joint
591	Joint
621	Joint
651	Joint
680	Joint
708	Joint
738	Joint - pipe dough on casing
768	Joint
798	Joint
826	Joint

DEPTH IN FEET		OBSERVATIONS
To		
854	Joint	
883	Joint	
913	Joint	
942	Joint	
972	Joint	
1002	Joint	
1027	Joint	
1057	Joint	
1087	Joint	
1117	Joint	
1144	Joint	
1174	Joint	
1202	Joint	
1232	Joint	
1261	Joint	
1290	Joint	
1320	Joint	
1350	Joint	
1379	Joint	
1408	Joint	
1437	Joint	
1467	Joint	
1496	Joint	
1526	Joint	
1556	Joint	
1584	Joint	
1614	Joint	
1643	Joint	
1673	Joint	
1703	Joint	
1733	Joint	
1762	Joint	
1792	Joint	
1822	Joint	
1850	Joint	
1880	Joint	
1908	Joint	
1938	Joint	
1968	Joint	
1996	Joint	
2026	Joint	
2056	Joint	
2086	Joint	

DEPTH IN FEET		OBSERVATIONS
To		
2113		Joint
2143		Joint
2173		Joint
2201		Joint
2231		Joint
2261		Joint
2291		Joint
2321		Joint
2351		Joint
2379		Joint
2409		Joint
2439		Joint
2466		Joint
2496		Joint
2526		Joint
2556		Joint
2584		Joint
2614		Joint
2644		Joint
2672		Joint
2702		Joint
2732		Joint
2760		Joint
2790		Joint
2820		Joint
2840		Joint
2878		Joint
2928		Pipe dough on casing
2937		Joint
2966		<u>Packer assembly</u> - Side view
2967		<u>Base of 10.75-inch FRP</u>
2968		<u>16-inch steel casing visible</u>
3003		Base of original packer assembly
3040		Base of 16-inch OD steel casing
3155		Bottom of borehole. End of video