Testing and Correction of Underground Tanks at LLNL

Workplan and Schedule

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Abstract

This report defines a workplan and time schedule for leak tightness testing of underground tank systems and for corrective measures for systems shown by testing to leak. The systems addressed by this report are identified in *Testing Underground Tanks for Leak Tightness at LLNL*, (UCID-20775, July 1, 1986), as having failed a leak tightness test or for which the test results were inconclusive. The workplan prescribes testing all systems to yield conclusive results. Systems shown to leak will be repaired, retested, and either left in service or be closed. Materials effected by leakage will be cleaned up or removed.

Background

This is the third in a series of reports requested by the California Regional Water Quality Control Board (CRWQCB), San Francisco Bay Region.

The first report, *Leak Tightness Assurance Workplan for Underground Storage Tanks at Lawrence Livermore National Laboratory, Livermore Site*, was submitted to the CRWQCB on November 27, 1985. It was written in response to Section C(2)(a) of the California Regional Water Quality Control Board Tentative Order dated October 2, 1985, and adopted November 20, 1985, as Order 85-134. This plan described work to be accomplished to assure leak tightness of underground tanks and sumps and associated piping used to contain hazardous substances.

The second report, *Testing Underground Tanks for Leak Tightness at LLNL* (UCID-20775), was submitted to the CRWQCB on July 1, 1986. This report responded to Section C(2)(b) of CRWQCB Order 85-134. It is a report of the underground tank system leak tightness testing work described by the first workplan (November 27, 1985). During the summer and fall of 1985, 43 underground diesel fuel and gasoline storage tanks and associated underground piping were tested for leak tightness. Following fuel tank testing, a project was undertaken to evaluate test equipment capable of testing the open top containers characteristic of the wastewater retention systems. After completing the evaluation, we tested 38 wastewater tank and sump systems in the spring of 1986.

This report, the third in the series, *Testing and Correction of Underground Tanks at LLNL* (UCID-21205, November 1, 1987), is the response to Section C(3)(a) of the August 19,

1987, CRWQCB Order 87-108. The workplan addresses the 7 underground fuel tank systems that failed a first leak tightness test, and the 18 wastewater retention systems that failed the leak tightness test or for which the test was inconclusive. The workplan presented requires that all systems be successfully tested, and system repairs and decontamination completed as needed.

An additional report, specified in Section C(3)(b) of the August 19, 1987, CRWQCB order, will be prepared by October 1, 1988. It will be a technical report transmitting the results of the system testing and corrective measures described in this report.

Underground Tank Systems

Underground tank systems at Lawrence Livermore National Laboratory are of two principal types; fuel systems and wastewater retention systems.

Fuel systems are used to store gasoline or diesel fuel for vehicles, boilers, and emergency generators. The tanks addressed by the workplan included in this report are single-walled and are constructed of tar-wrapped steel or fiberglass. Underground tank system appurtenances typically include the fill pipe, vent line, supply line, return line, and a manway.

Wastewater retention systems accumulate water generated by rinsing operations as part of metal finishing, electroplating, and laboratory wet chemistry. Accumulated wastewater may or may not be a hazardous waste. Wastewater typically drains from the point of generation through underground pipes into an underground tank or sump. Many systems include one or a pair of aboveground tanks that receive wastewater pumped from a receiving sump. Potential contaminants are specific to each system depending on the operations generating wastewater. Contaminants typically include metals and extremes of pH. Potential contaminants in several systems include solvents and radioactivity. Representative samples of wastewater accumulated and retained in wastewater systems are analyzed for the potential contaminants. Based on the results of analyses, wastewater is discharged from the retention systems into the sanitary sewer or into tankers for treatment or disposal at a permitted facility.

Leak Tightness Testing

The description of leak tightness testing in this section updates information provided in "Summary and Conclusions," *Testing Underground Tanks for Leak Tightness at LLNL*, (UCID-20775, July 1, 1986).

Leak tightness testing began in the summer of 1985 and continues to the present. Forty-three underground diesel fuel and gasoline storage tanks and associated underground piping at the Livermore Site have been tested for leak tightness using performance standards defined by the National Fire Protection Association Code 329 Precision Test. Tests have been performed by operators using seven commercial test methods: Petro-Tite, Horner Ezy-Check, Hunter Leak Lokator, Associated Environmental Systems (A.E.S.), Tank Auditor, Airlay Tank 'Tegrity Tester, and Leak Computer. Thirty-six of the forty-three tank and piping systems were determined to be leak tight after the first test. Of the 7 remaining systems, 5 were retested and determined to be leak tight after additional preparation or repairs following the failure of the first test. Two systems failed tests and have not been repaired. A description and workplan for these seven systems are included in the section "Workplan for Underground Fuel Tank Systems." The location of each system is shown on a map of the Livermore site in Fig. 1.

With the completion of the first round of annual underground fuel tank testing, a project was undertaken to identify, test, and evaluate methods showing possible application to testing leak tightness in the uncovered open-top containers characteristic of the Laboratory's potentially contaminated wastewater retention systems. Evaluation tests were performed in an insulated aluminum experimental tank that permits the measurement of induced leaks and in a concrete sump that is part of an operating wastewater system. A.E.S., Ezy-Check, Tank Auditor, and Leak Computer have been evaluated. Based on completeness of test data, instrument sensitivity, and operator capabilities, Tank Auditor and Leak Computer have come to be the preferred methods for wastewater system testing.

Thirty-eight wastewater tanks and sumps have been tested for leak tightness. Most tests were performed by Tank Auditor. Twenty-one tanks and sumps were shown to be leak tight. Six were shown to leak. The test results for 11 tanks were inconclusive. A description and workplan for each of the wastewater systems that failed, or for which the tests were inconclusive, are included in the section "Workplan for Wastewater Retention Systems." The location of each system is shown on a map of the Livermore site in Fig. 2.

Figure 1. Present status of July, 1986, "Fuel Tank Systems Failing First Leak Tightness Test"

● Wastewater retention system

Figure 2. Systems reported in July, 1986, as "Wastewater Retention Systems With Failed or Inconclusive Test Results"

Most inconclusive test results have been shown to be caused by the addition of liquid to the system during the test period from an uncontrolled source in the building, or by erratic test data caused by fluctuations in air pressure, which are often due to air trapped in pockets in the associated underground piping.

Inconclusive tests are resolved by additional preparation of the tank system prior to testing. Usually this means isolating the container from the associated piping so that each can be tested separately. Isolation is accomplished by the use of plumber's plugs or excavation and installation of a permanent valve. For some systems, successful tests are performed by testing during off-hours and weekends when the risk of an uncontrolled discharge into the container being tested has been minimized.

Routine Testing

After the resolution of inconclusive and failed tank tests described in this report, routine periodic testing of all in-use underground tank systems used to contain liquid hazardous materials will proceed in accordance with the California Administrative Code, Title 23 Waters, Chapter 3, Subchapter 16 "Underground Tank Regulations."

Leaking Systems

Leaking fuel and wastewater systems identified by tank testing have been or will be repaired or closed. Instances of soil contamination discovered thus far have been localized and removed. Localized contamination will continue to be removed at the time of repairs or closure. If an extensive area of contamination is discovered, a program and budget will be created to monitor and control migration of the contaminants, and to provide for the removal of contaminants. Applicable portions of the State Water Resources Control Board July, 1987, Draft *Leaking Underground Fuel Tank Field Manual: Guidelines for Site Assessment, Cleanup, and Underground Storage Tank Closure*, are used as guidance for leak assessment and cleanup.

Workplan for Underground Fuel Tank Systems

This section presents system descriptions, test results, and a discussion of future work for seven underground fuel tank systems. These systems failed a first leak tightness test. They are identified on pages 37-39 of *Testing Underground Tanks for Leak Tightness at LLNL* (UCID-20775, July 1, 1986). Table 1 provides summary information for those underground fuel tank systems that failed the first leak tightness test.

Table 1. Underground fuel tank systems that failed the first leak tightness test.

Reg. number	First used	Last used	Capacity (gal)	Construction material	Substance contained
271-41D	1982	—	2,000	Steel	Diesel
298-11D	1982	—	350	Steel	Diesel
401-11D	1943	1987	10,000	Steel	Diesel
401-12D	1943	1987	10,000	Steel	Diesel
402-11G	1979	1987	10,000	Fiberglass	Gasoline
411-11D	1980	1987	1,000	Steel	Diesel
490-41D	1983	—	2,000	Fiberglass	Diesel

271-41D. This is a 2,000-gallon steel tank that is used to store diesel fuel for an emergency generator. Two initial system tests on July 22, 1985, indicated losses of -0.304 gal/hr and -0.046 gal/hr. On September 18, 1985, a subsequent system test of the tank and piping system was performed and the test results of -0.02 gal/hr indicated that the system was leak tight. On May 12, 1987, a system test was performed and the test results of -0.0183 gal/hr indicated that the system was leak tight. This tank is in service and will be tested for leak tightness in accordance with the Schedule for Underground Fuel Tank Systems.

298-11D. This is a 350-gallon steel tank that is used to store diesel fuel for an emergency generator. The initial system test on July 26, 1985, indicated a loss of -0.118 gal/hr. A tank-only test on the same day showed that the tank was leak tight. On November 6, 1986, subsequent system tests of the tank and piping system were performed, and the test results of 0.00 gal/hr, at 11 inches above the tank top, and -0.05 gal/hr, at 23 inches above the tank top, indicated a leak tight system. However, the results are tentative as the test results are not decisive. This tank is in service and will be tested for leak tightness in accordance with the Schedule for Underground Fuel Tank Systems.

401-11D. This is a 10,000-gallon steel tank that was used to store diesel fuel for a boiler. The initial system test on July 22, 1985, indicated a loss of -0.260 gal/hr. On September 20, 1985, a subsequent system test was performed and the test results of +0.002 gal/hr indicated that the system was leak tight. This tank has been emptied, taken out of service, and will be officially closed in accordance with the Schedule for Underground Fuel Tank Systems.

401-12D. This is a 10,000-gallon steel tank that was used to store diesel fuel for a boiler. The initial system test on July 29, 1985, indicated a loss of -0.256 gal/hr. A subsequent test on November 18, 1985, yielded inconclusive data. Twice-weekly stickings from November 1985 until the tank was pumped out and removed from service showed that the possible leak was not in the tank. Test bores, sampling, and soil analyses for any possible contaminated soil from the possible leak in the piping system will be performed. Any contaminated soil will be removed. This tank will be officially closed in accordance with the Schedule for Underground Fuel Tank Systems.

402-11G. This is a 10,000-gallon FRP tank that was used to store gasoline for vehicle fuel. The initial system test on August 3, 1985, indicated a loss of -0.090 gal/hr. On the same day the test results of a tank only test were -0.047 gal/hr which indicated that the tank was leak tight. Test results from a subsequent system test and tank only test on October 4, 1985, yielded the same results. The delivery line to the tank was tested and certified to be leak tight. On January 10, 1987, a system test was performed, and the test results of 0.00 gal/hr indicated that the system was leak tight. Prior to performing this system test on January 10, 1987, all suction pumps were vented, all gas nozzles were vented, and the system was allowed to stabilize. This procedure removed air pockets that could previously have given false readings. This tank has been emptied, taken out of service, and will be officially closed in accordance with the Schedule for Underground Fuel Tank Systems.

411-11D. This is a 1,000-gallon steel tank that was used to store diesel fuel for vehicles. The initial system test on June 13, 1985, indicated a loss of -0.055 gal/hr. On the same day the test results of a tank only test were -0.007 gal/hr which indicated that the tank was leak tight. On October 4, 1985 a subsequent system test was performed and the test results of +0.003 gal/hr indicated that the system was leak tight. On April 9, 1987, a system test was performed and the test results of 0.000 gal/hr indicated that the system was leak tight. This tank has been emptied, taken out of service, and will be officially closed in accordance with the Schedule for Underground Fuel Tank Systems.

490-41D. This is a 2,000-gallon fiberglass tank used to store diesel fuel for an emergency generator. Two initial system tests on July 25, 1985, indicated losses of -0.354 gal/hr and -0.037 gal/hr. A leak in a piping joint was discovered and repaired. On September 18, 1985, two subsequent system tests were performed and the test results of -0.015 gal/hr and -0.020 gal/hr indicated that the system was leak tight. On April 16, 1987, a system test was performed and the test results of +0.0453 gal/hr indicated that the system was leak tight. This tank is in service and will be tested for leak tightness in accordance with the Schedule for Underground Fuel Tank Systems.

All underground fuel tank storage systems have been successfully tested and are leak tight, or have been removed from service and will be officially closed. No repairs to any underground fuel tank storage systems are required, and no repair work is planned. All in-use underground fuel tank storage systems will continue to be tested annually in accordance with the LLNL Underground Tank Leak Tightness Program and the California Underground Tank Law.

Workplan for Wastewater Retention Systems

This section presents descriptions, test results, and a discussion of future work for 18 wastewater systems. Of the 18 systems, 17 failed or had inconclusive leak tightness tests. One system has not been tested. All are identified on pages 39-42 of *Testing Underground Tanks for Leak Tightness at LLNL* (UCID-20775, July 1, 1986). Table 2 provides summary information for wastewater retention systems that failed the first test or for which the test results were inconclusive.

Table 2. Wastewater retention systems with failed or inconclusive test results.

Reg. number	First used	Last used	Capacity (gal)	Construction material	System use
131-21R	1971	—	4,000	Concrete	Rinse
141-42R	1960	—	450	Concrete	Rinse
141-43R	1960	—	450	Concrete	Rinse
151-22R	1963	—	4,000	Steel/concrete	Rinse
161-31R	1976	—	135	Polyethylene	Rinse
175-31R	1960	1966	1,000	Steel	Rinse
212-42R	1962	—	50	Concrete	Maintenance
222-21R	1970	—	5,000	Concrete	Rinse
222-22R	1970	—	5,000	Concrete	Rinse
241-31R	1959	—	345	Brick	Rinse
291-21X	1961	—	10,000	Concrete	Backwash
298-41R	1963	—	300	Fiberglass	Rinse
310-31R	1956	—	500	Steel	Decon
321A-11X	1971	1966	3,000	Concrete	Backwash
321A-13X	1971	1966	3,000	Concrete	Rinse
361-31R	1961	—	500	Concrete	Sanitary sewer
362-31R	1963	—	1,000	Steel	Rinse
492-41R	1965	—	2,900	Steel/concrete	Maintenance
514-33R	1963	—	350	Steel	Treat

131-21R. This is a concrete open-top tank with a 4,000-gallon capacity. The initial system test on June 10, 1986, was performed at a liquid level below the high level alarm. The test results indicated a net gain of +1.32 gal/hr. The accuracy of this test was low because the very large liquid surface area of the tank caused poor calibration. Air trapped in the piping and run-back were identified as possible causes of the net gain results. The tank and piping will be isolated from the many inlet drains to prevent uncontrolled discharges, and then be retested in accordance with the Schedule for Wastewater Retention Systems. This tank is scheduled to be taken out of service, although a firm date has not been established.

141-42R-A. This is a 450-gallon PVC lined concrete sump that is 4- x 4-feet square and 59-1/8 inches deep. The initial system test on February 25, 1986, was performed over a 3-hour period at a liquid level 53 inches above the high level alarm. After compensating for a slight temperature rise during the test, a net loss of -0.084 gal/hr was recorded. On March 6, 1986, three subsequent tests were performed. The first test at a liquid level of 45 inches indicated a net gain of -0.036 gal/hr. The second test at a liquid level of 53 inches indicated a net gain of +0.042 gal/hr. The results of the first two tests indicated that the sump is leak tight up to a level of 53 inches, which is above the high level alarm. The third test at a liquid level within 1 inch of the top of the sump indicated a loss of -8.43 gal/hr. This system will be repaired, and then retested in accordance with the Schedule for Wastewater Retention Systems.

141-43R. This is a concrete sump that is 4- x 4-feet square, 59 inches deep with a capacity of 450 gallons. The initial system test on May 14, 1986, was inconclusive due to an uncontrolled discharge from a drain in the adjacent building. The tank and piping will be isolated from the many inlet drains to prevent uncontrolled discharges, and then be retested in accordance with the Schedule for Wastewater Retention Systems.

151-22R. This is a 4,000-gallon, 103-inch diameter, open-top steel-clad concrete tank that is PVC lined. The initial system test on March 31, 1986, was performed at a liquid level of 142 inches. The test results indicated a net gain of +2.39 gal/hr. The testing level was lowered to the height of the high level alarm, 95 inches, which isolated the tank from the rest of the system. This second test indicated a net gain of +0.60 gal/hr. The larger net gain indicated by the first high level system test was probably caused by trapped air in the pump lines or fluid leaking back into the tank through the gate valve in the inlet line, or both. The net gain indicated by the second test was not caused by trapped air in the pump lines because the tank had been isolated from the rest of the system. It was probably caused by fluid leaking back into the tank through the gate valve in the inlet line. This tank has a large liquid surface area that adversely affects the accuracy of the test. This tank and piping system will be retested in accordance with the Schedule for Wastewater Retention Systems, using a more sensitive test method.

161-31R. This is an open-top cylindrical polyethylene tank with a capacity of 135 gallons. An initial system test was begun on June 26, 1986. During the tank filling process, several gallons of wastewater were discharged through a break in the PVC inlet pipe that had been damaged during a trenching operation for a utilities project. Soil samples were taken and

analyzed. All wet soil was removed, the break in the PVC inlet pipe was repaired, and the trench was filled with clean fill dirt. This tank and piping system will be retested in accordance with the Schedule for Wastewater Retention Systems.

175-31R. This was a 1,000-gallon steel tank that was completely buried, and had a vertical access pipe extending from the top of the tank to ground level. The initial system test on March 28, 1986, was performed through the vertical access pipe. The test results indicated a net gain of +0.098 gal/hr, although the liquid level could not be raised above 52.5 inches. A leak in the buried manway cover was discovered and repaired. A subsequent system test was scheduled for May 7, 1986. Test personnel found that the tank and system had been overfilled so they lowered the liquid level to 101.5 inches, which partially drained the vent line. The test results indicated a net gain of +0.032 gal/hr that was possibly caused by run-back from the vent line. An additional system test on May 7, 1986, at the same liquid level showed the system to be leak tight with a net loss of -0.009 gal/hr. This tank has been removed from the ground and will not be replaced. Soil sample analyses indicated that no contamination was present in the surrounding fill. This tank will be officially closed in accordance with the Schedule for Wastewater Retention Systems.

212-42R. This is a 50-gallon concrete sump that is located in a controlled area. Due to safety considerations, an in-house system test method is being explored as an alternative to using a commercial tester. An in-house system test or a qualified commercial system test will be performed in accordance with the Schedule for Wastewater Retention Systems.

222-21R and 222-22R. This is a rectangular open-top PVC-lined concrete sump with a capacity of 10,000 gallons. It has 180 ft² of exposed liquid surface area. A vertical concrete partition divides the sump, although there is a connection between the two halves. The results of the initial system test on June 28, 1986, were inconclusive because the liquid surface area was so large. This sump will be isolated from the piping and retested in accordance with the Schedule for Wastewater Retention Systems.

241-31R. This is a 345-gallon acid resistant brick tank. The results of the initial system test on June 20, 1986, were inconclusive because of wide pen swings on the data recorder, possibly caused by air pockets in the piping. This tank will be isolated and then retested in accordance with the Schedule for Wastewater Retention Systems.

291-21X. This is an open-top 10,000-gallon concrete sump consisting of two interconnected 175-inch high containers. The initial system test on June 5, 1986, was conducted over a 3-hour period at a liquid level of 132 inches. The test results indicated a net loss of -1.9 gal/hr. The sensitivity of the test equipment was poor due to the very large liquid surface area of the sump. Air pockets in the extensive piping that feeds into this sump could also have adversely affected the test results. In order to determine the location of the suspected leak, the tank will be isolated from the piping, and each portion of the system will be retested in accordance with the Schedule for Wastewater Retention Systems.

298-41R. This is a 300-gallon fiberglass tank. Two initial system tests were performed on June 24, 1986. The test results were inconclusive because wide chart-recorder pen swings could not be interpreted. Air pockets in the piping are believed to be the cause of the inconclusive results. This tank will be isolated and then retested in accordance with the Schedule for Wastewater Retention Systems.

310-31R. This is a steel tank with a diameter of 31.5 inches and a capacity of 500 gallons. This tank is used to store wastewater from an occasionally used decontamination shower at the old medical facility. The initial system test on March 27, 1986, indicated a leak around the manway cover. After the manway cover gasket was replaced, a high level system test was performed on March 28, 1986. The test resulted in a net loss of -0.42 gal/hr, indicating a possible leak above the elevation of the high level pipeline. Repairs will be made, and a system test performed on this tank in accordance with the Schedule for Wastewater Retention Systems. This tank will be officially closed after the new medical facility is completed. Any contaminated soil that is detected by sampling and analyses, at the time of closure, will be removed.

321A-11X. This is a 3,000-gallon open-top concrete tank. The initial tank test indicated that the tank was leak tight up to the level of the inlet pipe. A subsequent system test with the liquid level above the inlet pipe indicated a net loss of -3.7 gal/hr. A leak is suspected at the connection between the inlet line and the tank. This tank is empty and is scheduled to be officially closed in accordance with the Schedule for Wastewater Retention Systems. Any contaminated soil that is detected by sampling and analyses, at the time of closure, will be removed.

321A-13X. This is a 3,000-gallon open-top concrete tank. The initial system test produced inconclusive results due to poor calibration caused by the large liquid surface area. This tank is

empty and is scheduled to be officially closed in accordance with the Schedule for Wastewater Retention Systems.

361-31R. This is a 500-gallon open-top concrete tank. The initial system test on June 10, 1986, was performed at the level of the high level alarm. The test results were inconclusive because wide chart-recorder pen swings could not be interpreted. Air pockets in the piping that joins the receiving tank and the drains in the adjacent building are believed to be the cause of the inconclusive test. This tank will be isolated and then retested in accordance with the Schedule for Wastewater Retention Systems.

362-31R. This is a 47-inch diameter open-top steel tank that has a 1,000 gallon capacity. The initial test on April 24, 1986, was begun at a liquid level just below the inlet pipe. An uncontrolled discharge of liquid ran into the tank during the test, and the test was stopped. The liquid level was raised to an elevation above the high level alarm and inlet pipe. A test performed at this level produced an inconclusive apparent net loss of -0.28 gal/hr. The presence of air in the inlet line is suspected as the cause. The inlet line will be vented, and the tank and piping will be retested in accordance with the Schedule for Wastewater Retention Systems.

492-41R. This is a 2,900-gallon 47-inch diameter steel-clad concrete tank. The initial test was performed on June 17, 1986. The test results were inconclusive because the data failed to show a definite trend. This tank will be retested in accordance with the Schedule for Wastewater Retention Systems.

514-33R. This is a 36-inch-diameter steel tank with a 350-gallon capacity. The initial test was performed on June 12, 1986, at a liquid level that was approximately 18 inches from the top of the tank. The test results indicated a net loss of -0.19 gal/hr. A loss at this test level indicates a possible tank leak. This tank will be retested in accordance with the Schedule for Wastewater Retention Systems to verify the results of the first test. This tank is presently not in use and may be scheduled to be closed.

Schedule for Underground Fuel Tank Systems

TASK	1987		1988									
	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
<u>271-41D</u> System Test							XXXX					
<u>298-11D</u> System Test		XXXX										
<u>401-11D</u> Site Evaluation/Analyses System Cleanout Site Cleanup (If Required) Closure/Report			XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	
<u>401-12D</u> Site Evaluation/Analyses System Cleanout Site Cleanup (If Required) Closure/Report			XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	
<u>402-11G</u> Site Evaluation/Analyses System Cleanout Site Cleanup (If Required) Closure/Report			XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	
<u>411-11D</u> Site Evaluation/Analyses System Cleanout Site Cleanup (If Required) Closure/Report			XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	
<u>490-41D</u> System Test						XXXX						

Schedule for Wastewater Retention Systems

TASK	1987			1988								
	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
<u>131-21R</u> Isolate Tank and Piping System Test		xxxx	xxxx	xxxx	xxxx	xxxx						
<u>141-42R-A</u> System Test		xxxx										
Site Evaluation/Analyses			xxxx	xxxx	xxxx	xxxx						
Site Cleanup (If Required)						xxxx	xxxx	xxxx				
System Repairs								xxxx	xxxx			
System Test									xxxx	xxxx		
<u>141-43R</u> Isolate Tank and Piping System Test	xxxx	xxxx										
<u>151-22R</u> Isolate Tank and Piping System Test				xxxx	xxxx	xxxx	xxxx					
<u>161-31R</u> Isolate Tank and Piping System Test	xxxx	xxxx										
<u>175-31R</u> Closure/Report					xxxx	xxxx						
<u>212-42R</u> System Test							xxxx					
<u>222-21R & 222-22R</u> Isolate Tank and Piping System Test					xxxx	xxxx	xxxx	xxxx	xxxx	xxxx		

Schedule for Wastewater Retention Systems (Continued)

TASK	1987					1988						
	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
<u>241-31R</u> Isolate Tank and Piping System Test							xxxx	xxxx	xxxx	xxxx		
<u>291-21X</u> Isolate Tank and Piping System Test					xxxx	xxxx	xxxx	xxxx				
<u>298-41R</u> Isolate Tank and Piping System Test	xxxx	xxxx	xxxx	xxxx								
<u>310-31R</u> System Test	xxxx											
Site Evaluation/Analyses		xxxx	xxxx	xxxx								
Site Cleanup (If Required)					xxxx	xxxx	xxxx					
System Repairs						xxxx	xxxx					
System Test								xxxx				
System Cleanout									xxxx	xxxx		
Closure/Report										xxxx	xxxx	
<u>321A-11X</u> Site Evaluation/Analyses				xxxx	xxxx	xxxx						
Site Cleanup (If Required)							xxxx	xxxx	xxxx			
Closure/Report										xxxx	xxxx	
<u>321A-13X</u> Site Evaluation/Analyses						xxxx	xxxx	xxxx		xxxx		
Closure/Report									xxxx	xxxx		
<u>361-31R</u> Isolate Tank and Piping System Test								xxxx	xxxx	xxxx	xxxx	

Schedule for Wastewater Retention Systems (Continued)

	1987					1988						
TASK	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
<u>362-31R</u> Isolate Tank and Piping System Test								XXXX	XXXX	XXXX	XXXX	
<u>492-41R</u> System Test				XXXX								
<u>514-33R</u> System Test	XXXX											
System Cleanout		XXXX	XXXX									
Site Evaluation/Analyses				XXXX	XXXX	XXXX						
Site Cleanup (If Required)						XXXX						
System Repairs (If Required)							XXXX					
System Test (If Required)								XXXX	XXXX			
Closure/Report (If Closed)									XXXX	XXXX	XXXX	