052 0520

LANDAU ASSOCIATES, INC.

USEPA SF
1503794

Sue 10/19

Colbert pre meeting w/ Carol
and Cindy (ORC) at 9:00
on Friday 10/20 in Carol Rushin's
office. Come if you can make it.

Neil
7177

Schedule for Submittal of Deliverables

COLBERT LANDFILL
REMEDIAL DESIGN/REMEDIAL ACTION

Prepared for

Spokane County

Prepared by

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P.O. Box 1029
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April 25, 1989

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Proposed solutions:

- Barrier system
- possible extraction system
- air stripping

Money: 4 PRP's + County?

A) 3 settled - 1 to court EPA is supplying their money.

B) County will supply money over time

some work to date:

Golder contracted by state + EPA (produced RI/FS when not contracted by State + EPA?) The RI withstood significant interrogation from PRPS

Landau hired by County for study from ROD onward

Data availability:

county may have monitor data available on disk - no QA using same lab for 10 years
small % of chemicals monitored

Golder data would possibly be available

Landau data will not be available.

Questions to answer:

1) look for placement of wells - that may better indicate what is there.

2) what's missing in terms of data up to date

3) will these proposed wells characterize the problem properly in terms of the long term.

4) ways to save money (However County will be using lowest cost method)

1.0 INTRODUCTION

The purpose of this document is to provide a schedule for submission of detailed work plans and other documentation related to the Colbert Landfill Remedial Action (Remedial Action). This document is being submitted in accordance with Section XI of Appendix B (Scope of Work) to the Colbert Landfill Consent Decree (Consent Decree), entered with the (Eastern District of Washington) United States District Court on February 28, 1989. The following work plans and additional documentation will be discussed herein:

- Health & Safety Plan;
- Quality Assurance Project Plan;
- Phase I Ground Water Monitoring Plan;
- Phase I Pilot Well Plan;
- Phase I Treatment and Discharge Plan;
- Phase II Ground Water Monitoring Plan;
- Phase II Extraction Well Plan;
- Phase II Treatment and Discharge Plan;
- Landfill Closure Plan;
- Alternative Water Supply Plan;
- Plan for Institutional Controls;
- Phase I and Phase II Progress Reports;
- Phase I Engineering Report;
- Phase II Plans and Specifications;
- Operations and Maintenance Plan; and
- Phase II Construction Documentation Report.

2.0 PROJECT OVERVIEW

The Consent Decree specifies that Spokane County (County) will implement a performance-based pump, treat, and discharge approach for remediation of contaminated ground water emanating from the Colbert Landfill site. This is the remedy selected by the U.S. Environmental Protection Agency (EPA) in the Record of Decision (ROD), with the concurrence of the State of Washington Department of Ecology (Ecology), and further developed in the Scope of Work. The Remedial Action will include three interception/extraction systems (south, west, and east systems), and associated treatment and discharge facilities. The remedy is designed to:

- Prevent further spread of contaminated ground water by installing and operating ground water interception systems (south and west systems);
- Remove contaminated materials which have entered the aquifers, and are contributing to the contamination plumes, by installing and operating a ground water extraction system in the area where the plumes originate (east system);
- Reduce toxicity, mobility, and volume of contaminants by treating all extracted ground water; and
- Provide an alternative water supply to eligible residents deprived of their domestic supply due to demonstrated contamination from the landfill, or because the quantity available has been reduced by the action of the interception/extraction systems.

As specified in the Scope of Work, the Remedial Action will be implemented in two phases. Phase I is designed to better characterize contaminant distribution and site geohydrology. Following completion of the Phase I investigation, design and construction of the Phase II Remedial Action will be accomplished. Specific performance criteria are presented in the ROD (Table 1 Performance Standards) and have been further refined in the Scope of Work (Tables IV-1 and V-1). The Scope of Work specifies the basis for design, the design criteria, and criteria for adjustment and modification of the Remedial Action should the performance criteria be exceeded during operation.

3.0 DESCRIPTION OF DELIVERABLES

3.1 Health and Safety Plan

The purpose of the Health and Safety Plan is to prescribe minimum procedural and equipment requirements for worker and community protection. The plan will be designed to comply with all applicable state and federal regulations. All Landau Associates' (LAI) personnel, subcontractor personnel, and site visitors will be subject to the provisions of this manual. EPA and Ecology (referred to hereafter as the Regulatory Agencies) personnel are responsible for their own health and safety programs.

The Health and Safety Plan will describe:

- Site organization and operation;
- Safety procedures;
- Hazard/risk evaluation;
- Personal safety equipment;

- Air monitoring;
- Emergency response;
- Health and safety training; and
- Routine health care and monitoring.

3.2 Quality Assurance Project Plan

The purpose of the Quality Assurance Project Plan (QAPP) is to establish quality assurance/quality control (QA/QC) procedures for all phases of the Remedial Action. The QA/QC program will be a joint effort between LAI and their subcontractors to assure the management of LAI, the County, EPA, and Ecology that quality control mechanisms are in place and measurement activities are conducted in a planned and controlled manner for all components of the project. These QA/QC procedures will insure that project staff expertise, sample and data collection, and data analysis methods are adequate to provide quality results. The QAPP will be an integrated work plan that provides the philosophy, commitment, and general approach to QA/QC for sampling, monitoring, and laboratory analysis for the Remedial Action. Components of the QAPP will include:

- Project quality assurance organization and responsibilities;
- Quality assurance objectives for measurement;
- Sampling procedures and handling;
- Sample custody;
- Instrumentation and calibration procedures and frequency;
- Analytical procedures;
- Data reduction, validation, and reporting;
- Internal quality control;

- Performance and system audits;
- Preventative maintenance for instruments;
- Procedures to assess data;
- Corrective actions; and
- Quality assurance reports to management.

3.3 Phase I Ground Water Monitoring Plan

is this for the east plume? Phase II is forecast esorth

The purpose of the Phase I Ground Water Monitoring Plan is to establish the procedures for installation and operation of the Phase I ground water monitoring wells. The purpose of the Phase I monitoring wells is to provide the data needed to better define the site geohydrology and contaminant distribution for design of the Phase II Remedial Action. The Scope of Work describes the number, target aquifer(s), and approximate location for these monitoring wells. The Phase I Ground Water Monitoring Plan will describe:

where is this

- Well location rationale;
- Drilling techniques;
- Well installation procedures;
- Monitoring equipment installation;
- Sampling frequency; and
- Analysis parameters.

3.4 Phase I Pilot Well Plan

The purpose of the Phase I Pilot Well Plan is to establish the procedures for the installation and operation of the Phase I pilot wells, and for analysis of the resulting data. The pilot wells will be used as pumping wells for the aquifer (pumping) tests conducted during Phase I. The data from these aquifer

tests are necessary to evaluate the geohydrologic properties near the proposed locations of the Phase II interception/extraction systems. These pilot wells will also supply water for ground water treatability studies, necessary input for Phase II treatment system design. The Scope of Work specifies the number, target aquifers, and approximate locations for the Phase I pilot wells. The Phase I Pilot Well Plan will describe:

- Pilot well location rationale;
- Drilling techniques;
- Well installation procedures;
- Aquifer (pumping) test methods;
- Data acquisition; and
- Data analysis techniques.

3.5 Phase I Treatment and Discharge Plan

The purpose of the Phase I Treatment and Discharge Plan is to describe the design and establish the procedures for construction and operation of the Phase I treatment plant and discharge facilities. Procedures for air monitoring and modeling (as specified in Section V.D. of the Scope of Work) will also be presented in this work plan. The Scope of Work sets forth the treatment method (air stripping), performance requirements, and discharge options for the Phase I treatment and discharge facilities. The Phase I Treatment and Discharge Plan will describe:

- Treatment plant location(s) and discharge routing;
- Treatment and discharge systems design;
- Treatment plant construction;
- Discharge system construction;

- Treatment system startup;
- Treatment system operations;
- Discharge compliance monitoring;
- Treatability studies;
- Air monitoring; and
- Air modeling.

3.6 Phase II Ground Water Monitoring Plan

The purpose of the Phase II Ground Water Monitoring Plan is to establish the locations and procedures for installation and operation of the Phase II ground water monitoring system. The Phase II ground water monitoring system will provide compliance monitoring for the Phase II (south and west) interception systems. The Scope of Work specifies the number of monitoring wells, sampling frequency, chemical analysis parameters, and criteria for modification of the Phase II monitoring system. The location and construction details for Phase II monitoring wells will be based on the data collected during the Phase I investigation and Phase II interception systems design.

3.7 Phase II Extraction Well Plan

The purpose of the Phase II Extraction Well Plan is to prescribe the design of the Phase II interception and extraction systems. The Phase II interception and extraction systems will be designed based on the Scope of Work and the results of the Phase I investigation. The Scope of Work sets forth the bases for design of the interception and extraction systems, and criteria for adjustment to or modification of these systems. The

work plan will present the number, location, and preliminary design for the extraction wells and header systems. The work plan will also include the engineering rationale and analyses upon which design of these components are based.

3.8 Phase II Treatment and Discharge Plan

The purpose of the Phase II Treatment and Discharge Plan is to prescribe the design for the Phase II ground water treatment facilities, and the piping system(s) for and conveyance of treated water to the point of discharge. This plan will also address air emissions abatement (if necessary) based on analysis of Phase I data, and using the criteria specified in Section V.D. of the Scope of Work. As specified in the Scope of Work, the Phase II treatment system(s) will use air stripping and will be designed to treat water to comply with the performance standards. The Scope of Work also specifies discharge options for treated water. These options vary with the interception/ extraction system (south, west or east) and include subsurface infiltration, and discharge to the Little Spokane River and Deep Creek.

Design of the Phase II treatment and discharge system(s) will be based on the criteria set forth in the Scope of Work and data (and subsequent engineering analysis) from the Phase I investigations. This work plan will present the location(s) and preliminary design for the ground water treatment and discharge system(s). In addition, the work plan will include the engineering rationale and analyses upon which the design of these systems are based.

3.9 Peripheral Work Plans

Section XI of the Scope of Work specifies that in addition to the Health and Safety Plan, Quality Assurance Project Plan, and Phase I and Phase II Work Plans, three work plans peripherally related to the accomplishment of the Remedial Action will be developed. These peripheral work plans include the Landfill Closure Plan, Alternative Water Supply Plan, and Plan for Institutional Controls.

As specified in Section VI of the Scope of Work, the Colbert Landfill will be closed by the County to meet the goals and objectives of the State Minimum Functional Standards for landfill closure (WAC 173-304). The Landfill Closure Plan will address site regrading, ground water and gas monitoring, capping, and post-closure maintenance.

Section VIII of the Scope of Work specifies that the County will promptly provide an alternative drinking water supply source if a confirmed exceedance of any compound originating from the site occurs in any domestic water supply well in use prior to the date of entry of the Consent Decree, or installed in uncontaminated areas after entry of the Consent Decree. Similarly, if the Remedial Action adversely affects any of the supply wells (in use prior to the date of entry of the Consent Decree, or installed in uncontaminated areas after entry of the Consent Decree), the County will mitigate the impact. The Alternative Water Supply Plan will describe the procedures to be used for establishing the need for alternative water, verifying the eligibility of effected residents (if any) to obtain alternative water, the source(s) of alternative water, and the distribution

system(s) to be used for conveyance of the alternative water supply.

Section IX of the Scope of Work states:

> "the County shall, to the degree authorized by law, implement institutional controls to prevent human access to the Colbert Landfill until such time as the local jurisdictional health department considers such access to be acceptable. The state may implement institutional controls to prevent installation of purveyor wells in areas and at depths known to be contaminated, where such newly installed wells are likely to cause the spread of contamination, or where such wells are likely to impede Remedial Activities."

Thus, the plan for institutional controls will address access control to the Colbert Landfill site, primarily as an interim measure prior to implementation of the Landfill Closure Plan. Institutional controls pertaining to the installation of purveyor wells falls within the jurisdiction and responsibility of appropriate agencies of the State of Washington, and as such will not be addressed in this work plan. The work plan will discuss the nature of the institutional controls to be implemented, and the method and timing of implementing these institutional controls for controlling public access to the landfill site.

3.10 Phase I and Phase II Progress Reports

As specified in Section XI of the Consent Decree, the County shall submit progress reports to the Regulatory Agencies during Phase I and Phase II activities. These progress reports will describe activities accomplished since the previous progress report, activities anticipated for the next reporting period, and any problems encountered or anticipated in commencing or completing these activities. These progress reports will provide a brief summary of past and future site activities, not a compre-

hensive presentation of all the data collected and analyses performed within the reporting period. Comprehensive information will be presented in the Phase I Engineering Report and Phase II Construction Documentation Report for Phase I and Phase II activities, respectively.

3.11 Phase I Engineering Report

The Phase I Engineering Report will be a comprehensive data and evaluation report, and will:

- Describe the activities accomplished during Phase I;
- Present data collected during these Phase I activities;
- Describe the methods used to analyze the Phase I data, and the results of these analyses;
- Present conclusions resulting from the Phase I activities and subsequent data analysis; and
- Assess the impact of these conclusions on the selected remedial approach.

Design of the Phase II Remedial Action will be based largely on analyses and design parameters developed from Phase I data, and presented within the Phase I Engineering Report. Consequently, the Phase I Engineering Report will include documentation of data analysis methods and the procedures used for development of design parameters. This documentation will be attached as appendices to the main body of the report and will include design assumptions, calculations (or example calculations), and other documentation needed to convey the rationale

used for data analyses and the development of engineering design parameters.

3.12 Phase II Plans and Specifications

The Phase II Plans and Specifications will be developed based on the Phase II work plans. These plans and specifications will provide the detailed design specifications and drawings needed for implementation of the Phase II Remedial Action. A schedule for construction of the Phase II Remedial Action will be submitted with the Phase II Plans and Specifications.

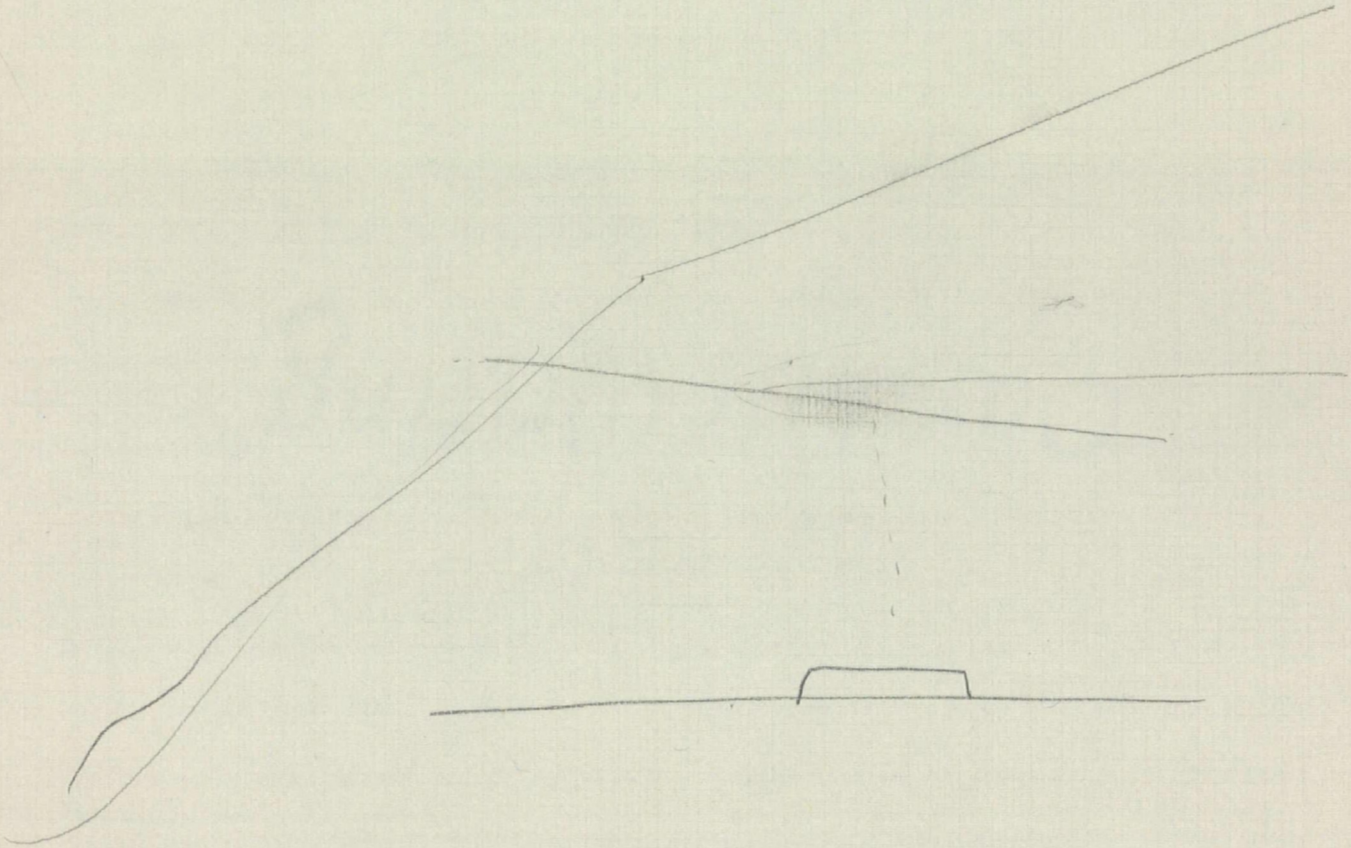
3.13 Operations and Maintenance Plan

An operations and maintenance plan will be prepared in conjunction with the Phase II Plans and Specifications. This operations and maintenance plan will describe:

- Equipment;
- Normal operations and maintenance;
- Potential operating problems;
- Routine monitoring and laboratory testing;
- Alternative O&M;
- Safety plan;
- Records and reporting requirements; and
- Annual O&M budget.

3.14 Phase II Construction Documentation Report

The Phase II Construction Documentation Report will document the as-built status of the Phase II Remedial Action following completion of construction. This report will describe the construction techniques, materials, and design modifications (if



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any) implemented during construction of the Phase II Remedial Action. Any materials or systems testing accomplished as part of construction monitoring will be presented as part of the documentation report.

4.0 WORK PLAN SUBMITTAL PROCEDURES

Both the County and the Regulatory Agencies are interested in implementing the Colbert Landfill Remedial Action in a cost-effective, timely manner. To expedite the work plan review and approval process, county and agency representatives will meet at about the 50 percent completion stage for Phase I work plans and Phase II preliminary work plans. These technical sessions are intended to allow discussion (and resolution) of technical issues, thereby minimizing the iterative process often necessary prior to work plan approval by the Regulatory Agencies.

It is anticipated that monitoring well installation will be a critical path item for Phase I field activities. Consequently, the work plans necessary to initiate Phase I monitoring well installation activities will be submitted to the Regulatory Agencies for review and approval prior to completion of other Phase I work plans. The work plans requiring approval prior to initiation of Phase I monitoring well installation include:

- Health and Safety Plan;
- Quality Assurance Project Plan; and
- Phase I Ground Water Monitoring Plan.

Following submittal of these work plans to the Regulatory Agencies, preparation of the Phase I Pilot Well Plan will commence. The Phase I Treatment and Discharge Plan will be

prepared subsequent to submittal of the Pilot Well Plan. Pilot well installation will not be initiated until agency approval of the Phase I Pilot Well Plan, and construction of the treatment and discharge facilities will not be started prior to receipt of the Regulatory Agencies' approval of the Phase I Treatment and Discharge Plan.

Phase II Extraction Well, Ground Water Monitoring, and Treatment and Discharge Plans will be submitted for agency review as preliminary and final documents. These preliminary and final work plans will constitute 30 and 60 percent Phase II design submittals, respectively. The Health and Safety and Quality Assurance Project Plans developed for Phase I activities will be updated as appropriate to address Phase II construction, and subsequent operation of the Phase II Remedial Action.

Phase II Plans and Specifications will be prepared following agency approval of the Phase II work plans. Preliminary and final Phase II Plans and Specifications will constitute 90 and 100 percent design submittals, respectively.

Phase I data and analyses, and Phase II design and construction, may have a significant impact on landfill closure activities. Consequently, the Landfill Closure Plan will be developed following approval of the Phase II Plans and Specifications. A schedule for submittal of the Landfill Closure Plan will be included with the Phase II construction schedule, which will be submitted with the Phase II Plans and Specifications.

Section VIII of the Scope of Work provides a detailed description of the County's obligations for supplying alternative

water to residents near the Colbert Landfill. The source(s) of alternative water (and means of distribution) will be dependent on whether an equitable agreement can be developed between the County and an existing water purveyor (or purveyors), or whether the County will have to pursue other methods of supplying alternative water. The County will initiate negotiations with the Whitworth Water District, the primary water purveyor in the Colbert Landfill area, prior to June 1, 1989. The Alternative Water Supply Plan will be submitted within 120 days of reaching agreement with the Whitworth Water District (or another water purveyor) to supply alternative water to eligible residents, or within 120 days of determining that such an agreement cannot be reached. The County will implement the criteria for supplying alternative water specified in Section VIII of the Scope of Work until the Alternative Water Supply Plan is developed and approved by the Regulatory Agencies. The County will make alternative water available to the five residences specified in Section VIII of the Scope of Work (b) (6) [redacted]) as soon as practicable, and independent of the Alternative Water Supply Plan.

5.0 SCHEDULE FOR SUBMITTAL OF PROJECT DELIVERABLES

The anticipated schedule for Phase I and Phase II activities, including deliverables, is presented on Figures 1 and 2, respectively. This schedule is based on a number of assumptions and anticipated site conditions, including:

- Timely review and approval of work plans by the Regulatory Agencies;

- Implementation of drilling procedures similar to those used for the Colbert Landfill Remedial Investigation (RI);
- Timely property access for project activities on private property;
- Geologic and geohydrologic conditions similar to those described in the RI; and
- Phase I and Phase II activities restricted to those described in the Scope of Work.

It will not be possible to evaluate the adequacy of many of these assumptions until the Regulatory Agencies have had the opportunity to review specific work plans, and Phase I field activities are underway. Consequently, except for progress reports, Phase I work plans, and the Plan for Institutional Controls, submittal dates for project deliverables will be contingent on completion of the project activity(s) upon which that deliverable is based. Table 1 presents the basis for submittal of project deliverables, and the anticipated submittal date (using the schedule on Figures 1 and 2) to the Regulatory Agencies.

If a deliverable cannot be submitted to the Regulatory Agencies for review by the anticipated date, the County will notify the Regulatory Agencies in writing. This notification will include an explanation of why the anticipated date of submittal cannot be met, and will provide a new submittal date.

2 Hr 9/
1 Hr 10/2
3 Hr 9/25
2 Hr 9/11

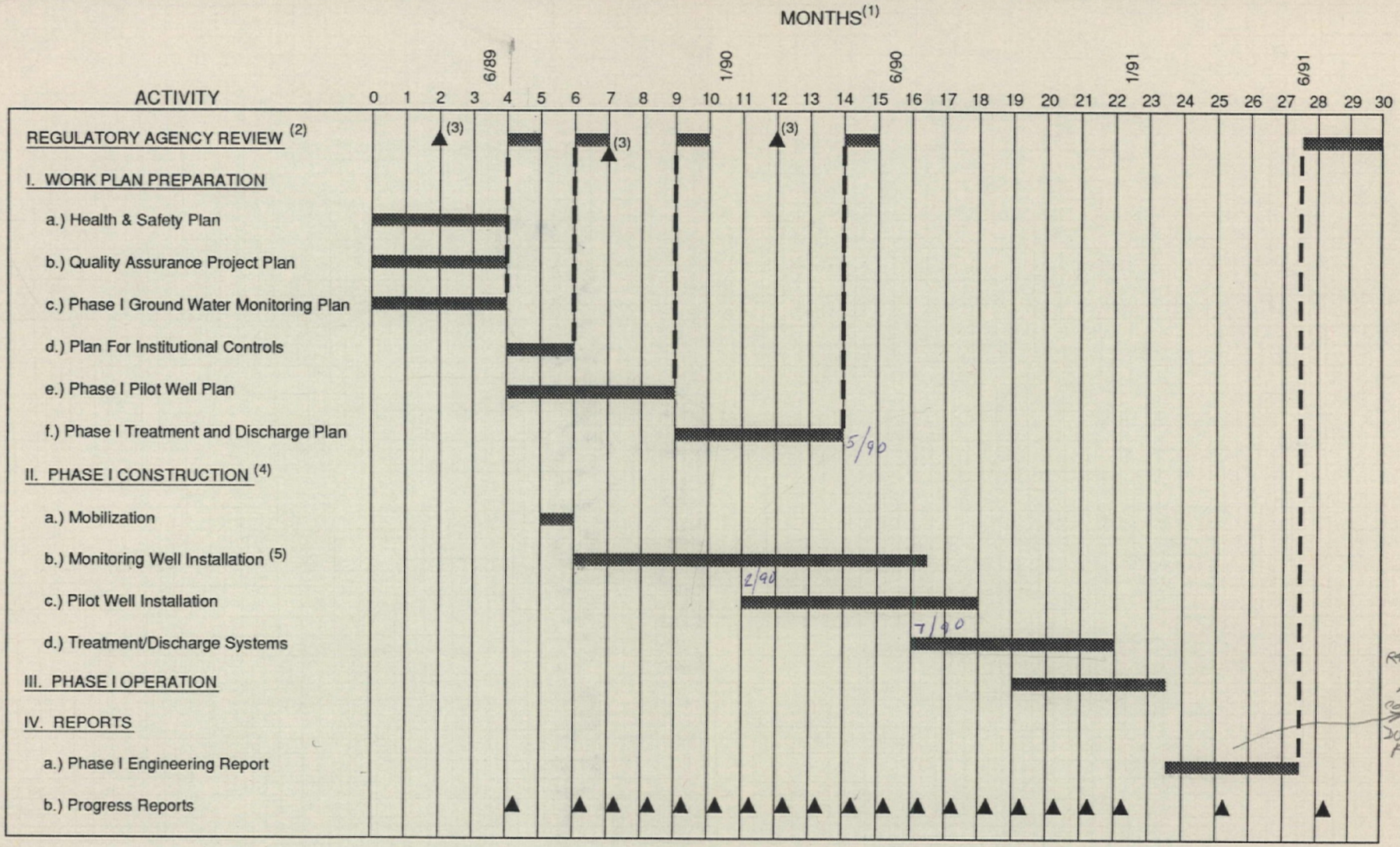
TABLE 1

BASIS FOR SUBMITTAL OF PROJECT DELIVERABLES
COLBERT LANDFILL REMEDIAL DESIGN/REMEDIAL ACTION

BASED ON RESOURCES

	Deliverable	Basis for Submittal	Anticipated Submittal Date	LEAD	ACCORDING TO DOE
DOE	Health & Safety Plan[a]	Established Date	July 1, 1989		
	Quality Assurance Project Plan[a]	Established Date	July 1, 1989	EPA	
DOE	Phase I Ground Water Monitoring Plan	Established Date	July 1, 1989	DOE	
EPA/DOE	Phase I Pilot Well Plan procedures for installation + operation of pilot wells, pump tests + analysis of results for aquifer parameters, supply water for gw treatability studies	Established Date	December 1, 1989	EPA	DOE
EPA/DOE	Phase I Treatment and Discharge Plan procedures for construction + operation of Phase I treatment plant and discharge facilities	Established Date	May 1, 1990		EPA
EPA/DOE	Phase II Ground Water Monitoring[b] Plan compliance monitoring for phase II & twist systems * monitor wells, sampling frequencies, chemical analysis + criteria for modification of the phase II monitoring system location + construction of monitor wells will be based upon data collected during phase I	105 days following Regulatory Agency approval of Phase I Engineering Report	December 15, 1991	EPA	DOE
EPA/DOE	Phase II Extraction Well Plan[b] * the number, design, + location + preliminary design for the extraction wells + header systems	Same as Phase II Ground Water Monitoring Plan	December 15, 1991	EPA	DOE
EPA/DOE	Phase II Treatment and Discharge[b] Plan treatment + discharge facilities + piping systems for + conveyance of treated water to the point of discharge	Same as Phase II Ground Water Monitoring Plan	December 15, 1991		EPA
DOE	Landfill Closure Plan	Submittal schedule to be included with Phase II construction schedule	(c)		DOE
DOE	Alternative Water Supply Plan	120 days following selection of alternative water source	(c)	DOE	EPA
DOE	Plan for Institutional Controls	Established Date	September 1, 1989	DOE	
	Phase I and Phase II Progress Reports	Monthly during periods of construction, quarterly otherwise	(d)		
EPA	Phase I Engineering Report	120 days following completion of Phase I Operation	June 15, 1991	EPA	DOE
EPA	Phase II Plans and Specifications[e]	90 days following Regulatory Agency approval of Phase II work plans	August 15, 1992		DOE
EPA	Operations and Maintenance Plan	Same as Phase II Plans and Specifications	August 15, 1992	EPA	
EPA	Phase II Construction Documentation Report	45 days following completion of Phase II construction	July 1, 1993		
	Community Relations				

(a) Plan will be updated for Phase II activities and will be submitted for Regulatory Agency review within 90 days of agency approval of the Phase I Engineering Report.
(b) For submittal of preliminary work plan. Final work plan will be submitted 90 days following Regulatory Agency approval of the preliminary work plan.
(c) Actual submittal date cannot yet be accurately estimated.
(d) To be submitted by the tenth of the month following reporting period.
(e) For submittal of preliminary plans and specifications. Final plans and specifications will be submitted 45 days following Regulatory Agency approval of the preliminary plans and specifications.



Notes:

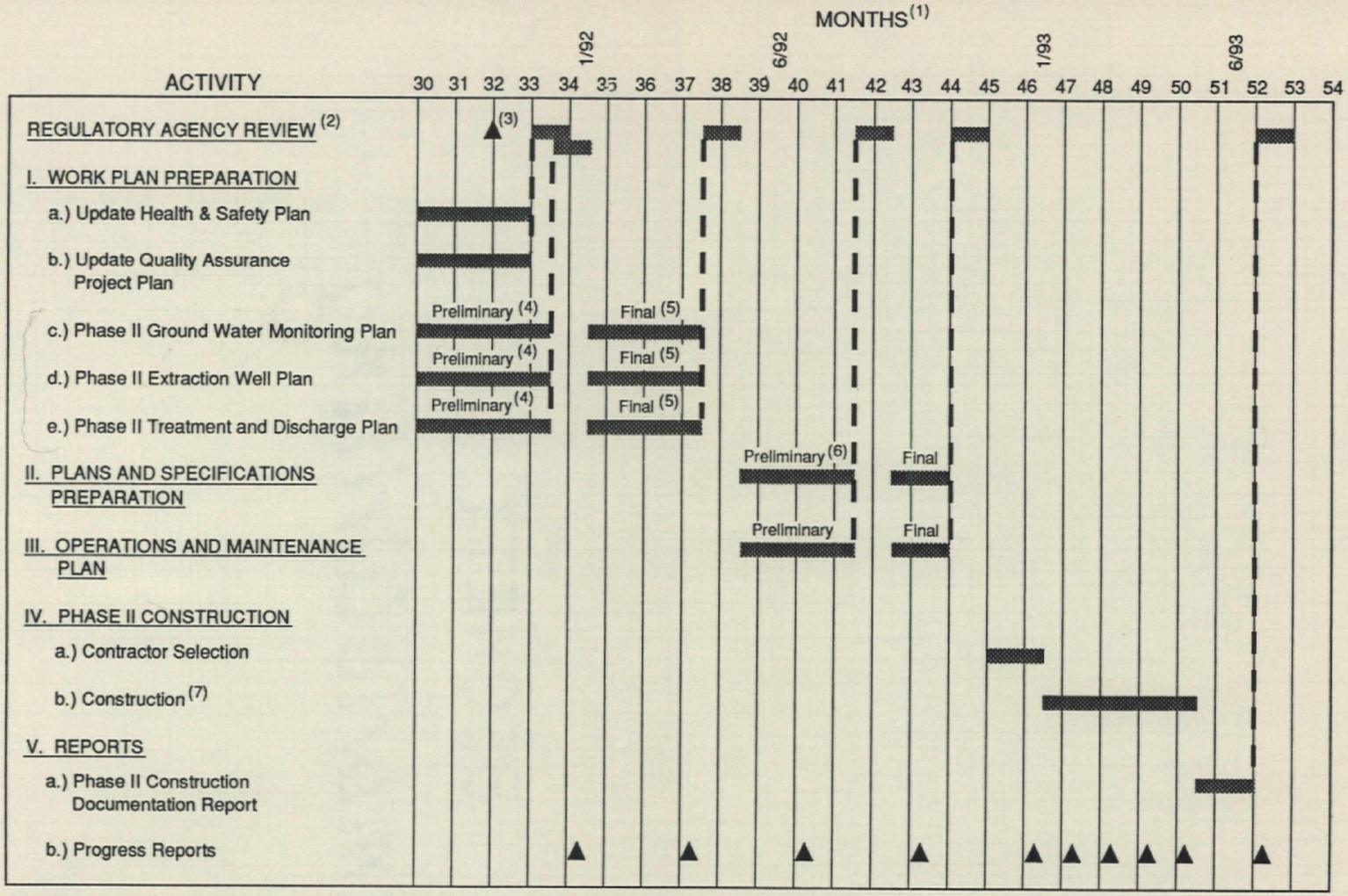
1.) 6/89 ← Date

3 4 ← Time since entry of the Consent Decree

2.) Estimated Schedule. Schedule dependent on actual Agency review period.
3.) County-Agency technical session at 50% completion of work plans.
4.) Phase I Construction initiated 30 days following agency approval of Work Plans I. a.), I. b.), and I. c.).
5.) Estimated time. Actual time will depend on drilling method.

LANDAU ASSOCIATES, INC.	Estimated Schedule Phase I Activities

Figure 1



Notes:

1.) 1/92 ← Date

4 5 ← Time since entry of the Consent Decree.

2.) Estimated Schedule. Schedule dependent on actual agency review period.
3.) County-Agency technical session at 50% completion of preliminary work plans.
4.) Represents 30% Design Submittal.
5.) Represents 60% Design Submittal.
6.) Represents 90% Design Submittal.
7.) Preliminary estimate, construction schedule will be submitted with Plans and Specifications.

LANDAU ASSOCIATES, INC.	Estimated Schedule Phase II Activities

Figure 2