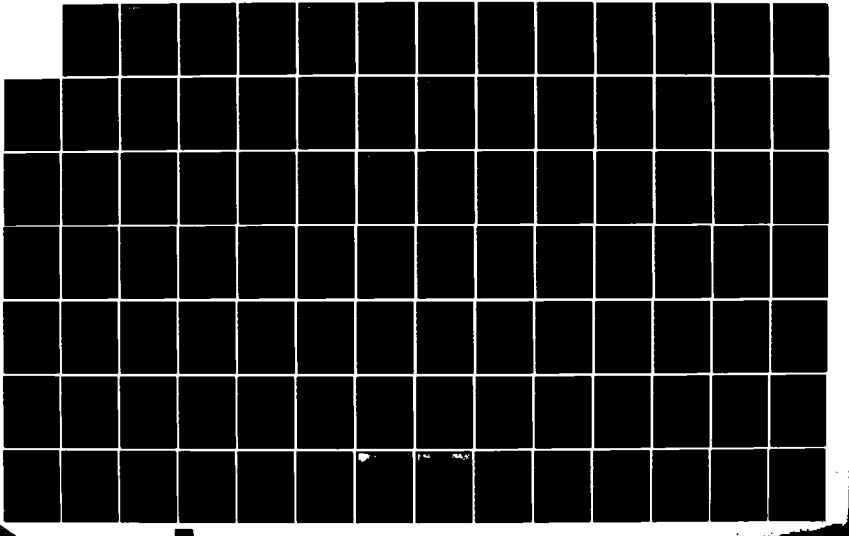
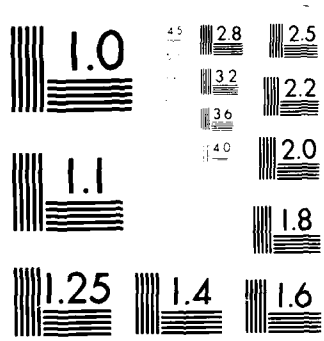
AD-A156 283 INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1) 01/10
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F33615-83-D-4001

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MICROCOPY RESOLUTION TEST CHART

RADIAN

AD-A156 283

INSTALLATION RESTORATION PROGRAM
PHASE II (Stage 2-1)

Volume 2
Final

McClellan AFB California
Air Force Logistics Command
Headquarters Air Force Logistics Command
Wright-Patterson AFB, OH

May 1985

Prepared By:

Radian Corporation
Contract No.-F33615-83-D-4001, Order 16

USAF OEHL Monitor - Captain Robert W. Bauer
Technical Services Division (TS)

Prepared For:

United States Air Force
Occupational and Enviromental Health Laboratory (OEHL)
Brooks Air Force Base, Texas 78235

8501 Mo-Pac Blvd. / P.O. Box 9948 / Austin, Texas 78766 / (512)454-4797

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*Appendices 6, 8, 10, 11 and 13 contain no data. They are included only to maintain the numeric correlation with Phase II-Stage 2-1 task numbers for ease of cross-referencing.

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Appendix 11*	-	No Data	
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		12-C	Discussion of "USGS-MOC" Model
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*Appendices 6, 8, 10, 11, and 13 contain no data. They are included only to maintain the numeric correlation with Phase II-Stage 2-1 task numbers for ease of cross-referencing.

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APPENDIX 1

This appendix provides information regarding Task 1, as discussed in text Section 3.1.

Appendix Contents

1-A Examples of Database Forms

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INSTALLATION RESTORATION PROGRAM
PHASE II (STAGE 2-1)
McCLELLAN AFB, CALIFORNIA

SITE SPECIFIC INFORMATION SUMMARY

GRID CELL: $\underset{X}{--}$, $\underset{Y}{--}$ (X = 01 - 19, Y = 01 - 25)

COORDINATES: X = _____ (Feet East of Grid Origin)
Y = _____ (Feet North of Grid Origin)

VARIABLES:
Z_1 = _____ (Source of Information)
Z_2 = _____ (Current Use)
Z_3 = _____ (Contamination Status)
Z_4 = _____ (Depth to Water)
Z_5 = _____ (Elevation of Water)
Z_6 = _____ (Top of Screened Interval - Elevation)
Z_7 = _____ (Bottom of Screened Interval - Elevation)
Z_8 = _____ (Number of Screened Zones)
Z_9 = _____ (Highest TCE Concentration [ppb])
Z_1 = _____ (Most Recent TCE Concentration [ppb])
Z_{11} = _____ (Land Surface Elevation)
Z_{12} = _____ (Highest 1,1 DCE Concentration [ppb])
Z_{13} = _____ (Most Recent 1,1 DCE Concentration [ppb])
Z_{14} = _____ (Highest 1,2 DCA Concentration [ppb])
Z_{15} = _____ (Most Recent 1,2 DCA Concentration [ppb])

INFORMATION: (Summarize All Pertinent Information for This Location)

_____

_____

_____

_____

_____

_____

Source(s): _____

(Name, Date, or "Well Inventory")

Figure 2.B-1. Site-Specific Information Form

INSTALLATION RESTORATION PROGRAM [ ] NEW

PHASE II (STAGE 2-1) [ ] UPDATE

McCLELLAN AFB, CA

==========

G E N E R A L I N F O R M A T I O N

==========

SOURCE: _____

INFORMATION TYPE: _____

AREA OF INFORMATION: [ ] ENTIRE STUDY AREA

[ ] SPECIFIC CELLS (LIST)

_____

_____

INFORMATION: _____

==========

INSTALLATION RESTORATION PROGRAM

PHASE II (STAGE 2-1)

McCLELLAN AFB, CA

==========

B I B L I O G R A P H I C I N F O R M A T I O N

==========

AUTHOR(S): _____

1ST AUTHOR'S LAST NAME, INITIALS AND SUCCEEDING AUTHORS' INITIALS

_____

FOLLOWED BY LAST NAME,...

PUBLICATION YEAR: ____ (E.G., 1984)

TITLE: _____

PUBLICATION: _____

JOURNAL, OR PUBLISHING HOUSE AND CITY

VOLUME, NUMBER: V.____, No.____ (E.G., V.30, No.12)

PAGES: _____ (FOR ARTICLES USE INCLUSIVE PAGES pp.___-___)

(FOR TEXT USE TOTAL PAGES ___p.)

COMMENTS: _____

_____

_____

_____

_____

_____

_____

DATE REVIEWED: _____

DD-MM-YY

REVIEWER: ___ (INITIALS)

SOURCE: _____

==========

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APPENDIX 2

This appendix provides information regarding Task 2, as discussed in text Section 3.2.

Appendix Contents

2-A Annotated Bibliography

2-B Methodolology for the Reduction of Information from Site-Specific File Sets to the Computer Database

2-C General Information for McClellan AFB Ground-Water Monitoring Wells

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APPENDIX 2-A

Annotated Bibliography

RADIAN
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FIRST AUTHOR: Arcade Water District
PUBLICATION YEAR: 1984
TITLE: Locations, Specifications, Geologic Logs, Water Quality and Production Information for Arcade Water District Production Wells in Close Proximity to the McClellan AFB Study Area
PAGES: 25 p.
SOURCE: Walter Libal, Arcade Water District, 13 June 1984

FIRST AUTHOR: Bachmat Y.and Others
PUBLICATION YEAR: 1980
TITLE: Groundwater Management: The Use of Numerical Models, Water Resources Monograph 5
PUBLICATION: American Geophysical Union
PAGES: 178
SOURCE: Radian Library
COMMENTS: Describes numerous ground-water modeling codes

FIRST AUTHOR: Bahner, L. H.
PUBLICATION YEAR: 1984
TITLE: Memorandum to Jocob Sprouse, General Accounting Office, describing comments to the Phase II McClellan Report as developed by the staff of the USEPA Solid Waste Emergency and Remedial Response and Waste Programs Enforcement
PAGES: 3 p.
SOURCE:: Obtained from the USAF for the project proposal effort

FIRST AUTHOR: Barcelona, M. J.
OTHER AUTHORS: J. P. Gibb and R. A. Miller
PUBLICATION YEAR: 1983
TITLE: A Guide to the Selection of Materials for Monitoring Well Construction and Ground-Water Sampling
PUBLICATION: Illinois State Water Survey Contract Report 327, Champaign, IL
PAGES: 78
SOURCE: Radian Library
COMMENTS: Current, comprehensive monograph on subject

FIRST AUTHOR: Barcelona, M. J.
OTHER AUTHORS: J. A. Helfrich, E. E. Garske and J. P. Gibb
PUBLICATION YEAR: 1984
TITLE: A Laboratory Evaluation of Ground-water Sampling Mechanisms
PUBLICATION: Ground-water Monitoring Review
VOLUME, NUMBER: V. 4 No. 2
PAGES: 32-41
SOURCE: Radian Library Journal
COMMENTS: Rigorous test of reliability, bias of sampling equipment and procedures

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CORPORATION

FIRST AUTHOR: Bayer, J. E.
PUBLICATION YEAR: 1983 MONTH: September DATE: 30
TITLE: Letter to Col. Russell HQ AFLC/SGB describing additional material on Installation Restoration Program, Phase II, McClellan AFB in response to CRWQB, Central Valley Region request
PAGES: 31 p.
SOURCE: Obtained from USAF for the project proposal effort
COMMENTS: Responses developed by Engineering-Science. Some important data, good description of drilling practices.

FIRST AUTHOR: Brunner, P. G. and
OTHER AUTHORS: J. S. Zipfel
PUBLICATION YEAR: 1981 MONTH: April DATE: 30
TITLE: Final Report for Investigating Ground-water Contamination as of 30 April 1981
PUBLICATION: USAF Technical Report
VOLUME, NUMBER: V.1 No. 1
PAGES: 300
SOURCE: Obtained from the USAF for the project proposal effort
COMMENTS: This report describes the results of pre-Phase II ground-water investigations conducted by McClellan AFB. The report describes the results of monitor well installation and sampling activities and soil sampling efforts.

FIRST AUTHOR: California Department of Water Resources
PUBLICATION YEAR: 1984
TITLE: Ground-Water Contour Maps from 1950s thru Early 1980s for the McClellan AFB Area.
PUBLICATION: Unpublished
PAGES: 10
SOURCE: Grant Ardell, California Department of Water Resources

FIRST AUTHOR: California Department of Water Resources
PUBLICATION YEAR: 1974 MONTH: July
TITLE: Evaluation of Ground-water Resources: Sacramento County
PUBLICATION: California Department of Water Resources Bulletin No. 118-3
PAGES: 141
SOURCE: John R. Feldon, California Department of Water Resources
COMMENTS: Contains hydrogeologic information for shallow and deep aquifers in Sacramento County California. The report details general water quality and aquifer characteristics for the McClellan AFB area.

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FIRST AUTHOR: California Department of Water Resources, Central Region
PUBLICATION YEAR: 1984
TITLE: California Department of Water Resources Drillers' Files
PAGES: 400
SOURCE: Grant Ardell, CDWR, Central Region, 23 May 1984
COMMENTS: This file contains construction, testing and geologic logs for off-base wells which lie within the study area. These logs are a subset of those obtained from John Tomko of the CWQCB,CVR 21 May 1984.

FIRST AUTHOR: California Department of Water Resources
PUBLICATION YEAR: August, 1978
TITLE: Evaluation of Ground-water Resources
PUBLICATION: Bulletin 118-6
PAGES: 135
COMMENTS: Report describes the hydrogeology of the Sacramento Valley. Provides general hydrogeologic information for the study area.

FIRST AUTHOR: California Department of Water Resources, Central Region
TITLE: Southwest Area Well Survey File
PAGES: 100
SOURCE: Grant Ardell, CDWR, Central Region, 23 May 1984
COMMENTS: This file contains location maps and descriptions of wells located in the southwest area survey. Some very good inventory data in this file.

FIRST AUTHOR: California Department of Water Resources
TITLE: Water Well Drillers' Reports for Off-Base Wells
PAGES: 1500
SOURCE: John Tomko, CRWQB,CVR 21 May 1984
COMMENTS: Water well drillers' reports for wells within and just outside the area of interest. According to John Tomko of CRWQB, CVR these logs were compiled February, 1984. Because of the lack of significant economic activity in the area, additional wells installed since then should be very few. File considered as back-up to California Department of Water Resources Files.

FIRST AUTHOR: California Division of Mines of Geology
PUBLICATION YEAR: 1984
TITLE: California Geology
PUBLICATION: California Division of Mines and Geology
PAGES: 209
SOURCE: Radian Library
COMMENTS: This article provides an overview of the dual- tube air rotary drilling method.

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CORPORATION

FIRST AUTHOR: California Division of Mines and Geology
PUBLICATION YEAR: 1966
TITLE: Mineral Resources of California
PUBLICATION: California Division of Mines and Geology Bulletin 191
PAGES: 450 p.
SOURCE: Radian Library
COMMENTS: Contains a general description of the geology of the Great Valley geomorphic province boundaries.

FIRST AUTHOR: California Regional Water Quality Control Board
OTHER AUTHORS: Central Valley Region
TITLE: File Containing Water Quality Summaries for Off-Base Wells and Preliminary Summary of Analytical Findings for the Off-Base Sampling Program.
PAGES: 20 p.
SOURCE: John Tomko; CRWQB, CVR

FIRST AUTHOR: California Regional Water Quality Control Board
OTHER AUTHORS: Central Valley Region
TITLE: File of Letters to Off-Base Well Owners Describing Water Quality
PAGES: 110
SOURCE: John Tomko; CRWQB, CVR, 21 May 1984
COMMENTS: File contains letters to well owners listing analytical results and explaining meaning. Also includes recent (1984) analytical results.

FIRST AUTHOR: California Regional Water Quality Control Board
OTHER AUTHORS: Central Valley Region
TITLE: File on General Information for the Quarterly Sampling Effort (Off-Base) and 1st thru 2nd Quarter Results for NW (J-M), Central, and SW Sectors
SOURCE: John Tomko, CRWQB, CVR, 21 May 1984
COMMENTS: Analytical results and general information on quarterly sampling; NW sector, 1st quarter results (Oct-Dec 1983); central sector; 2nd quarter results (Jan-March 1984)

FIRST AUTHOR: California Regional Water Quality Control Board
OTHER AUTHORS: Central Valley Region
PUBLICATION YEAR: 1984
TITLE: McClellan AFB Off-Base Water Quality File Set 1/3 - 3/3
PAGES: 875 p.
SOURCE: John Tomko, CRWQB, CRV; 21 May 1984
COMMENTS: This file set contains analytical data for off-base sampling and analysis program through April, 1984

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FIRST AUTHOR: CH2M Hill
PUBLICATION YEAR: 1981 MONTH: July
TITLE: Installation Restoration Program Records Search for McClellan Air Force Base, California
PUBLICATION: Report to Air Force Engineering and Services Center
VOLUME, NUMBER: V. 1 No. 1
PAGES: 300
SOURCE: Obtained from the Air Force for the project proposal effort.
COMMENTS: This report presents the results of the Phase I Investigation for McClellan AFB. Former waste disposal sites are described and characterized (ranked) in this report. The environmental setting of the Base is also discussed.

FIRST AUTHOR: CH2M Hill
PUBLICATION YEAR: 1984b MONTH: March
TITLE: Installation Restoration Program Phase III/IV Area D Site Characterization Study; Technical memorandum No. 2 for McClellan Air Force Base, CA
PUBLICATION: Report to Air Force Engineering and Services Center Directorage of Environmental Planning
VOLUME, NUMBER: V. 2 No. 1
PAGES: 500
SOURCE: Received from Lt. Col. Myers, May 21, 1984 during Radian-USAF meeting
COMMENT: This report describes the results of an extensive waste/soil boring and sampling program for the characterization of Area D.

FIRST AUTHOR: CH2M Hill
PUBLICATION YEAR: 1984c MONTH: May DATE: 9
TITLE: Installation Restoration Program, Phase III/IV Site Characterization Study, Technical Memorandum No. 3, On-Base Drilling Program and Hydrogeological Evaluation of Area "D"
PUBLICATION: Report to Air Force Engineering and Services Center
PAGES: 500
SOURCE: USAF, Lt. Col. Myers, May 21, 1984
COMMENTS: This report includes discussion on the results and findings for or installation, testing and sampling of post Phase II monitoring wells in Area "D".

FIRST AUTHOR: CH2M Hill
PUBLICATION YEAR: 1984d MONTH: May
TITLE: Draft Source Control Feasibility for Area D, McClellan Air Force Base, Sacramento, California
PUBLICATION: Report to Air Force Engineering and Services Center
VOLUME, NUMBER: V.1 No. 1
PAGES: 300
SOURCE: USAF, Lt. Col. Myers, May 21, 1984
COMMENTS: This report presents the results of the Evaluation of Numerous Potential Remedial Actions for Area "D".

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FIRST AUTHOR: CH2M Hill
PUBLICATION YEAR: 1984e
TITLE: Technical Memorandum: Hydrogeologic Conditions in the Vicinity of Area D, McClellan Air Force Base
PUBLICATION: Technical Memorandum to CES/DEEP
PAGES: 12
SOURCE: Received from Capt. Mario Ierarti, 25 May 1984 during base visit
COMMENTS: This report presents the results of a hydrogeologic analysis for Area D. Local historical ground-water flow directions and velocities are considered.

FIRST AUTHOR: City of Sacramento
PUBLICATION YEAR: 1984
TITLE: Construction and Location Information for City of Sacramento Production Wells in Close Proximity to and within the McClellan AFB Study Area
PAGES: 25 p.
SOURCE: Lee Harry, City of Sacramento
COMMENTS: This file contains location and construction information for City of Sacramento production wells in close proximity to and within the McClellan AFB study area.

FIRST AUTHOR: City of Sacramento
PUBLICATION YEAR: 1984
TITLE: Locations, Specifications, Geologic Logs, Water Quality and Production Information for City of Sacramento District Production Wells in Close Proximity to the McClellan AFB Study Area
PAGES: 20 p.
SOURCE: Duane Malme, City of Sacramento, 13 June 1984

FIRST AUTHOR: County of Sacramento, Tax Assessor's Office
TITLE: Tax Assessor's Maps of Area of Interest Near McClellan AFB
PAGES: 100
SOURCE: John Tomko, CRWQB, CVR; 21 May 1984 and Sacramento County Tax Assessor's Office.
COMMENTS: Set of maps describing (showing) block, section and parcel property divisions in the area of McClellan AFB.

FIRST AUTHOR: Crooks, W. H.
PUBLICATION YEAR: 1984 MONTH: August DATE: 24
TITLE: Letter to General Trevor A. Hammond from William H. Crooks (CVRWQB,CVR) describing comments to the Phase II IRP Report for McClellan AFB
PAGES: 13 p.
SOURCE: Obtained from the USAF for the project proposal effort

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CORPORATION

FIRST AUTHOR: Curran, C. M.
OTHER AUTHORS: M. B. Tomson
PUBLICATION YEAR: 1983
TITLE: Leaching of Trace Organics into Water from Five Common Plastics
PUBLICATION: Ground Water Monitoring Review
VOLUME, NUMBER: V. 3 No. 3
PAGES: pp. 68-71
SOURCE: Radian Library Journal
COMMENTS: Direct laboratory determination of contaminant release from plastics used for casing and transfer tubing.

FIRST AUTHOR: Davis, S. N. and R. J. M. DeWiest
PUBLICATION YEAR: 1966
TITLE: Hydrogeology
PUBLICATION: John Wiley & Sons Inc., Inc.
PAGES: 463
SOURCE: Radian Library
COMMENTS: General Text Describing Hydrogeologic Processes and Methods of Study

FIRST AUTHOR: DEEE Surveyors
PUBLICATION YEAR: 1982 MONTH: September DATE: 2
TITLE: Ground Surface Elevations for McClellan AFB Monitor Wells (On-Base)
PUBLICATION: Letter to Paul G. Brunner from DEEE Surveyors
PAGES: 2 p.
SOURCE: Received from Capt. Mario Ierarti, 25 May 1984 during base visit.
COMMENTS: Ground surface elevations for on-base monitor wells.

FIRST AUTHOR: Dolegowski, J.
PUBLICATION YEAR: 1984 MONTH: September DATE: 11
TITLE: Personal Conversation with John Dolegowski CH2M Hill, Redding CA, September 11, 1984
SOURCE: Elevation data for Base Monitoring Wells 51 through 57. Data also provided for "roofing company wells."

FIRST AUTHOR: Durbin, T. J. & C. Berenbrock
PUBLICATION YEAR: 1984
TITLE: Three Dimensional Simulation of Free Surface Aquifers by the Finite Difference Method
PUBLICATION: USGS Water Study Paper
SOURCE: United States Geological Survey

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FIRST AUTHOR: Ellsworth, A. L.
PUBLICATION YEAR:
TITLE: Letter to Brig. General Trevor A. Hammond describing CDOHS responses to Phase II Report, McClellan AFB
PUBLICATION: 1983 MONTH: August DATE: 17
PAGES: 1 p.
SOURCE: Obtained from USAF for the project proposal effort.

FIRST AUTHOR: Engineering-Science and USAF
PUBLICATION YEAR: 1984
TITLE: Water Level Data for Base Monitor Wells
PAGES: 50 p.
SOURCE: Lt. Col. Milo C. Myers, 12 June 1984
COMMENTS: This file was developed by the USAF and its consultant, Engineering-Science. The file set contains records of periodic water level measurements for on-base monitor wells at McClellan AFB.

FIRST AUTHOR: Engineering-Science
PUBLICATION YEAR: 1983 MONTH: June
TITLE: Final Report: Installation Restoration Program Phase II - Confirmation; McClellan AFB, California
PUBLICATION: Report to USAF Occupational and Environmental Health Laboratory, Brooks AFB, Texas
VOLUME, NUMBER: V. 1 & 2
PAGES: 500
SOURCE: Obtained from the USAF for the project proposal effort
COMMENTS: Report describes the findings of the Phase 2 investigation, including monitor well installation and sampling

FIRST AUTHOR: EPA, Environmental Monitoring Support Laboratory
PUBLICATION YEAR: 1979
TITLE: Handbook for Analytical Quality Control in Water and Wastewater Laboratories
PUBLICATION: EPA-600/4-79-019, EMSL, Cincinnati, OH
SOURCE: Radian Library
COMMENTS: Contains detailed guidance on sampling for trace-level organics, field quality assurance, chain-of-custody and record-keeping.

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FIRST AUTHOR: Fenn, D.
OTHER AUTHORS: E. Cocozza, J. Isbister, O. Braids, B. Yare and P. Roux
PUBLICATION YEAR: 1977
TITLE: Procedures Manual for Ground Water Monitoring at Solid Waste Disposal Facilities
PUBLICATION: U. S. EPA, Office of Solid Waste, Manual SW-616, also cited elsewhere as EPA/530/SW611
PAGES: 269
SOURCE: Radian Library
COMMENTS: General, step-by-step guide for designing and implementing ground-water monitoring programs.

FIRST AUTHOR: Freeze, R.A. and
OTHER AUTHORS: J. A. Cherry
PUBLICATION YEAR: 1979
TITLE: Groundwater
PUBLICATION: Prentice-Hall, Inc., Englewood Cliffs, NJ
PAGES: 604
SOURCE: Radian Library
COMMENTS: General text on ground-water flow and chemistry. Referenced alpha diagram of carbonate anion stabilities - page 99.

FIRST AUTHOR: Humenick, M. J.
OTHER AUTHORS: L. J. Turk and M. P. Colchin
PUBLICATION YEAR: 1978
TITLE: Sampling of Ground-water, Baseline and Monitoring Data for In-Situ Processes
PUBLICATION: Technical Report (CRWR-157/EHE 78-01), Center for Research in Water Resources, The University of Texas at Austin, Austin, Texas
PAGES: 128
SOURCE: Radian Library
COMMENTS: Describes and validates methods of calibrating monitor wells by measuring field parameters in pump discharge to determine optimum time to pump before sampling.

FIRST AUTHOR: Ierarti, M.
PUBLICATION YEAR: 1984 MONTH: May DATE: 25
TITLE: Current Status of On-Base Production Wells
PAGES: 1 p.
SOURCE: Received from Capt. Mario Ierarti, 25 May 1984 during base visit.
COMMENTS: Information pertaining to the current operation status (active, inactive, etc.) of the McClellan AFB production wells.

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FIRST AUTHOR: International Ground Water Modeling Center (IGWMC)
PUBLICATION: 1981
TITLE: Ground-water Models which are Documented and Available
PUBLICATION: Holcombe Research Institute, Indianapolis, Indiana
PAGES: 75
COMMENTS: Describes general features of numerous ground-water modeling codes.

FIRST AUTHOR: Kincaid, C. T. and J. R. Morrey and J. E. Rogers
PUBLICATION YEAR: 1984
TITLE: Geohydrochemical Models for Solute Migration Volume 1: Process Description and Computer Code Selection
PUBLICATION: Electric Power Research Institute, Palo Alto, California
PAGES: 200
COMMENTS: Describes numerous ground-water and geochemical modeling codes.

FIRST AUTHOR: Konikow L. F. and J. D. Bredehoeft
PUBLICATION YEAR: 1984
TITLE: Computer Model of Two-Dimensional Solute Transport and Dispersion in Ground Water
PUBLICATION: USGS Water Resource Investigations, Chapter C2, Book 7
PAGES: 90
SOURCE: Radian Library
COMMENTS: Describes the USGS-MOC ground-water modeling code and its application.

FIRST AUTHOR: Landis, T.
PUBLICATION YEAR: 1983 MONTH: July DATE: 27
TITLE: Internal CDHS Memorandum describing comments to the McClellan Phase II Report
PAGES: 16 p.
SOURCE: Obtained from the USAF for the project proposal effort.

FIRST AUTHOR: Lischeske, C. and
OTHER AUTHORS: D. Spath
PUBLICATION YEAR: 1983 MONTH: September DATE: 7
TITLE: McClellan AFB Groundwater Contamination Action Levels and MCL's
PUBLICATION: List developed by DCOHS, Sanitary Engineering Branch
SOURCE: USAF, Lt. Col. Milo G. Myers, 21 May 1984
COMMENTS: This list identifies action or maximum contaminant levels for various ground-water contaminants. Criteria for the various standards are provided.

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FIRST AUTHOR: Lischeske, Jr., C. R.
PUBLICATION YEAR: 1984 MONTH: May DATE: 21
TITLE: List of Wells Reported But Not Sampled by the California Department of Health Services, Sanitary Engineering Branch
PUBLICATION: Technical Memorandum (unpublished)
PAGES: 1 p.
SOURCE: Carl Lischeske Jr. of California Department of Health Services

FIRST AUTHOR: Luhdorff and Scalmanini, Consulting Engineers
PUBLICATION YEAR: 1983 MONTH: December
TITLE: Base Well Sealing Report, McClellan Air Force Base, California
PUBLICATION: Preliminary Report to U. S. Air Force, McClellan Air Force Base
VOLUME, NUMBER: V1 No. 1
PAGES: 250
SOURCE: Obtained from USAF for the project proposal effort
COMMENTS: Report provides recommendations for grouting base production wells to slow/eliminate vertical movement of contaminants.

FIRST AUTHOR: Miller, C. T. and
OTHER AUTHORS: W. J. Weber, Jr.
PUBLICATION YEAR: 1984
TITLE: Modeling Organic Contaminant Partitioning in Ground-Water Systems
PUBLICATION: Ground Water
VOLUME, NUMBER: V. 22, No. 5
PAGES: 584-592
SOURCE: Radian Library
COMMENTS: Article describes mathematical models used to predict solute matrix interactions.

FIRST AUTHOR: Morrison, R. D.
PUBLICATION YEAR: 1983
TITLE: Ground Water Monitoring Technology
PUBLICATION: Timco Mfg., Inc., Prairie du Sac, Wl
SOURCE: Radian Library
COMMENTS: Good, detailed discussions of procedures, equipment and applications.

FIRST AUTHOR: Myers, M. G., Lt. Col.; Bioenvironmental Engineering Services, McClellan AFB, CA
PUBLICATION YEAR: 1984
TITLE: Personal Communication with E. W. Pearce, Radian Corporation
PUBLICATION: 30 May 1984
COMMENTS: Response to letter of engineering, provided annual cost of USAF technician for sampling effort; requesting that labor be minimized in sample program design.

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FIRST AUTHOR: Nacht, S. J.
PUBLICATION YEAR: 1983
TITLE: Monitoring Sampling Protocol Considerations
PUBLICATION: Ground Water Monitoring Review
VOLUME, NUMBER: V. 3, No. 3
PAGES: 23-29
SOURCE: Radian Library Journal
COMMENTS: Review article

FIRST AUTHOR: Nordhav, Y.
PUBLICATION YEAR: 1983 MONTH: August DATE: 5
TITLE: Letter by Engineering-Science to Col. Milo G. Myers describing additional information for the Phase II work performed for McClellan AFB
PAGES: 2 p.
SOURCE: Obtained from USAF for the project proposal effort

FIRST AUTHOR: Norris, R. M.
OTHER AUTHORS: R. W. Webb
PUBLICATION YEAR: 1976
TITLE: Geology of California
PAGES: 363 p.
SOURCE: Radian Reference Library
COMMENTS: This text book contains physiographic, geographic, morphologic and geologic descriptions of the Central Valley of California. The description of the Central Valley in this book is general in nature and provides good background information.

FIRST AUTHOR: Northridge Water District
PUBLICATION YEAR: 1984
TITLE: Locations, Specifications, Geologic Logs, Water Quality and Production Information for Northridge Water District Production Wells in Close Proximity to the McClellan AFB Study Area
PAGES: 15 p.
SOURCE: Warren Jung, Northridge Water District, 13 June 1984

FIRST AUTHOR: Osiensky, J. L. and G. V. Winter, R. E. Williams
PUBLICATION YEAR: 1984
TITLE: Monitoring and Mathematical Modeling of Contaminated Ground-Water Plumes in Fluvial Environments
PAGES: 299-306
SOURCE: Radian Library
COMMENTS: Article describes transport processes in fluvial deposits. Treats practicality of modeling contaminant movement in variable fluvial systems.

RADIAN
CORPORATION

FIRST AUTHOR: Parsons, F.
OTHER AUTHORS: P. R. Wood and J. DeMarco
PUBLICATION YEAR: 1984 MONTH: February
TITLE: Transformations of Tetrachloroethene and Trichloroethene in Microcosms and Groundwater
PUBLICATION: American Water Well Association Journal
PAGES: 56-59
SOURCE: Capt. Mario Ierarti, USAF McCellan AFB
COMMENTS: Describes study in which tetrachloroethane was found to BE biotransformed to trichloroethene (secondary) and chloroethene, cis and trans - 1, 2 dichloroethene and dichloromethane (tertiary) in saturated porous media.

FIRST AUTHOR: Prickett, T. A., T. G. Naymik and C. G. Lonnquist
PUBLICATION YEAR: 1981
TITLE: A "Random-Walk" Solute Transport Model for Selected Ground-water Quality Evaluations.
PUBLICATION: Illinois State Water Survey, Bulletin 65
PAGES: 103
SOURCE: Radian Library
COMMENTS: Describes the TRANS ground-water modeling code and its application.

FIRST AUTHOR: Quine, R. L. CH2M Hill
PUBLICATION YEAR: 1984e
TITLE: Supplement to Draft Technical Memorandum No. 2, Site Characterization Study, Phase III/IV Area D
PAGES: 40
SOURCE: USAF Lt. Col. Milo G. Myers, 21 May 1984
COMMENTS: Chemical results and boring logs for off-base exploration borings performed 29 March 1984 through 4 April 1984

FIRST AUTHOR: Rio Linda Water District
PUBLICATION YEAR: 1984
TITLE: Locations, Specifications, Geologic Logs, Water Quality and Production Information for Rio Linda Water District Production Wells in Close Proximity to the McClellan AFB Study Area
PAGES: 20 p.
SOURCE: Mason Adams, Rio Linda Water District, 13 June 1984

FIRST AUTHOR: Sacramento County Health Department
PUBLICATION YEAR:
TITLE: McClellan AFB Water Sample Data File, A-Z 16th-26th; 1/2-2/2
PAGES: 1000 p
SOURCE: Ken Knight, Sacramento County Health Department, 21 May 1984

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FIRST AUTHOR: Scalf, M. R.
OTHER AUTHORS: J. F. McNabb, W. J. Dunlap, R. L. Cosby and J. S. Fryberger
PUBLICATION YEAR: 1981
TITLE: Manual of Ground-Water Quality Sampling Procedures
PUBLICATION: National Water Well Association, Worthington OH
PAGES: 89
SOURCE: Radian Library
COMMENTS: General manual for well drilling, sample collection. Includes good elementary background.

FIRST AUTHOR: Seray, D. H.
PUBLICATION YEAR: 1983 MONTH: August DATE: 22
TITLE: Letter and memorandum of understanding between USEPA and USAF for assistance in the McClellan investigation
PUBLICATION: Letter to Brig. Gen. Trevor A. Hammond
PAGES: 9 p.
SOURCE: Obtained from USAF for the project proposal effort

FIRST AUTHOR: Shauer, W. T.
PUBLICATION YEAR: 1983 MONTH: July DATE: 28
TITLE: Letter to Brig. General Trevor A. Hammond from W. T. Shauer describing the County of Sacramento comments/responses to the McClellan AFB Phase II Study
PAGES: 2 p.
SOURCE: Obtained from USAF for the project proposal effort

FIRST AUTHOR: Stahler, J. L.
PUBLICATION YEAR: 1983 MONTH: July DATE: 28
TITLE: Letter to Brig. Gen. Trevor A. Hammond from CDHS describing comments to the Phase II Report for McClellan AFB
PAGES: 2 p.
SOURCE: Obtained from USAF for the project proposal effort

FIRST AUTHOR: Smith, C.
PUBLICATION YEAR: 1984
TITLE: Correspondence with Chuck Smith of CalTrans Marysville District
PAGES: 1 p.
SOURCE: CalTrans
COMMENTS: Letter describing the locations of CalTrans irrigation wells in the area of McClellan AFB

FIRST AUTHOR: Sutay, R. Lt. Col; Bioenvironmental Engineering Services, McClellan AFB
TITLE: Personal communications with E. W. Pearce, Radian Corporation
COMMENTS: Many personal communications regarding various project elements.

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FIRST AUTHOR: Thomas Bros. Maps
PUBLICATION YEAR:1983
TITLE: Street Atlas and Directory for Sacramento County
PUBLICATION: Thomas Bros. Maps
PAGES: 228 p.
SOURCE: Radian Library
COMMENTS: Contains detailed street maps for Sacramento County and the study area.

FIRST AUTHOR: Trescott P.
PUBLICATION YEAR: 1975
TITLE: Documentation of Finite Difference Model for Simulation of Three Dimensional Flow
PUBLICATION: United States Geological Survey Open File Report 75-438.
PAGES: 32
SOURCE: United States Geological Survey

FIRST AUTHOR: USAF
TITLE: File of Summarized Analytical Results for Off-Base Wells
PAGES: 50 p.
SOURCE: USAF, Lt. Col. Milo G. Myers, May 21, 1984
COMMENTS: Water-quality for off-base wells for sampling events prior to August, 1983.

FIRST AUTHOR: USAF
TITLE: Map of Past Waste Disposal/Storage Areas and Base Production and Monitoring Wells for McClellan AFB
PAGES: 1 plate
SOURCE: USAF, LT. Col. Myers, May 21, 1984
COMMENTS: This map illustrates the locations of past waste disposal/ storage sites in addition to monitoring and production wells at McClellan AFB. These data are plotted on a 1:500 basic layout map of the installation.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1984
TITLE: Miscellaneous Off-Base Sampling Data Including Chain-of-Custody Forms, Analytical Results for Samples Collected from the Base Industrial and Domestic Waste Water Treatment Plants and Field Sampling Data
PAGES: 75 p.
SOURCE: Capt. Mario Ierarti
COMMENTS: This file contains chain-of-custody forms and field sampling data from the off-base sampling program as received by the USAF from the CRWQB,CRV. Analytical results for samples collected from the base industrial and domestic wastewater treatment plants have been included.

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FIRST AUTHOR: USAF, McClellan AFB
PUBLICATION YEAR: 1984 MONTH: May
TITLE: USAF Off-Base Well Status Map for McClellan AFB
PAGES: 1 plate
SOURCE: USAF, Lt. Col. Myers, May 21, 1984
COMMENTS: This map shows general location of off-base wells sampled under the Air Force quarterly well sampling program. Symbols are provided on the map to differentiate between wells which were last found to be contaminated and those which were found to be clean (thru the last sampling).
Note: A change in well status occur when analytical changes are noted for at least two consecutive sampling events. Several wells have changed status (to contaminated) but have not been indicated as so on the map. See analytical records.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1984
TITLE: Off-Base Well Information File
PAGES: 200 p.
SOURCE: USAF Lt. Col. Myers, 21 May 1984
COMMENTS: File contains drilling and general logs, locations (maps) and address of numerous off-base wells.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1984 MONTH: April
TITLE: Off-Base Water Quality Data December thru April 1984
PAGES: 300 p.
SOURCE: Capt. Mario Ierarti, USAF, 25 May 1984
COMMENTS: This file contains water quality analysis for off-base wells sampled during the period from December 1983 through April 1984. This file set includes both quarterly and non-quarterly sampling records (non-quarterly analysis performed on an as-required basis).

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1983 MONTH: December
TITLE: Off-Base Water Quality Data October thru December 1983
PAGES: 150 p.
SOURCE: Capt. Mario Ierarti, USAF, 25 May 1984
COMMENTS: This file contains analysis for the McClellan AFB off-base well sampling program for the October - December 1983 sampling episode.

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FIRST AUTHOR: USAF
PUBLICATION YEAR: 1984
TITLE: Summary of Post-Phase Two Water Quality Determinations for Monitor Well 38d, McClellan AFB and Herbicide, Pesticide Analyses for Selected Base Production Wells
PAGES: 45 p.
SOURCE: Lt. Col. Milo G. Myers, 12 June 1984
COMMENTS: This file contains summarized post-Phase 2 water-quality determinations for well 38D.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1984
TITLE: Quarterly Summaries of Weekly VOA Analysis for McClellan AFB Production Wells; Third Quarter, 1983 thru First Quarter, 1984
PAGES: 40 p.
SOURCE: Lt. Col Milo G. Myers, 12 June 1984
COMMENTS: This file set contains summaries of analytical findings for the base production well VOA analysis from 3rd quarter 1983 through 1st quarter 1984. Information from this file was distributed in the site-specific data base.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1983 MONTH: October DATE: 20
TITLE: Recent History of McClellan AFB Landfill/Sludge Disposal Methods and Groundwater Contamination Investigations
PUBLICATION: USAF Internal Document
PAGES: 14 p.
SOURCE: Received from Capt. Mario Ierarti, 25 May 1984 during base visit.
COMMENTS: This USAF internal document lists milestone accomplishemnts for the McClellan AFB ground water investigations from 28 January 1976 through 20 October 1983. This document is due to be updated in the near future.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1983 MONTH: September
TITLE: Off-Base Water Quality Data August thru September 1983
PAGES: 200 p.
SOURCE: Capt. Mario Ierarti, USAF, 25 May 1984
COMMENTS: This file set contains analysis for the McClellan AFB off-base well sampling program for the August-September 1983 sampling episode.

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FIRST AUTHOR: United States Department of the Interior
OTHER AUTHORS: Geological Survey
PUBLICATION YEAR: 1980
TITLE: Rio Linda Quadrangle, California 7.5 Minute Series (Topographic) Map
PAGES: 1 plate
SOURCE: USGS

FIRST AUTHOR: United States Department of the Interior
OTHER AUTHORS: Geological Survey
PUBLICATION YEAR: 1980
TITLE: Rio Linda Quadrangle, California 7.5 Minute Series (Topographic) Map
PAGES: 1 plate
SOURCE: USGS

FIRST AUTHOR: United States Department of the Interior
OTHER AUTHORS: Geological Survey
PUBLICATION YEAR: 1980
TITLE: Sacramento East Quadrangle, California, 7.5 Minute Series (Topographic) Map
PAGES: 1 plate
SOURCE: USGS

FIRST AUTHOR: United States Soil Conservation Service
PUBLICATION YEAR: 1954 MONTH: August
TITLE: Soil Survey of the Sacramento Area, California
PUBLICATION: United States Soil Conservation Service, Series 1941, NG. 11
PAGES: 105 p.
SOURCE: United States Soil Conservation Service
COMMENTS: Describes soils in the Sacramento area.

FIRST AUTHOR: Weir, W. W.
PUBLICATION YEAR: 1950 MONTH: ApPril
TITLE: Soils of Sacramento County California
PUBLICATION: University of California, Division of Soils
PAGES: 119 p.
COMMENTS: Earlier report on soils in Sacramento County, California

FIRST AUTHOR: Wilson, J. T. and R. L. Cosby and G. B. Smith
PUBLICATION YEAR: 1984
TITLE: Potential for Biodegradation of Organo-Chlorine Compounds in Ground Water
PUBLICATION: EPA-600/D-84-138
PAGES: 17 p.
SOURCE: NTIS
COMMENTS: Describes the results of experiments for the characterization of the biodegradation of organo-chlorine compounds in ground water.

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APPENDIX 2-B

Methodology for the Reduction of Information from Site-Specific File Sets to the Computer Database

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METHODOLOGY FOR THE REDUCTION OF INFORMATION FROM THE SITE-SPECIFIC FILE SETS TO THE COMPUTER DATABASE

Following the collection and assimilation of site-specific information into the on- and off-base file sets, data reduction efforts were initiated. Data reduction for the site-specific database consisted of reviewing and reducing information collected for approximately 1300 wells and borings in the study area.

Prior to the data reduction effort, a list of well/boring parameters of significance to the study was developed. A site-specific information summary form was designed from this list. The summary form was used for compiling the data from the file sets into a standard format for assimilation into the site-specific computer database. An example of this form is included in Figure 2.B-1. A listing of the codes used for completing the forms is included as Table 2.B-1.

The procedure used for the review of the site-specific data and for the completion of the site-specific information forms is listed below. In many instances, professional judgement was used for the data reduction effort. The procedure listed below should be considered as the general procedure used for data reduction.

1) **IDENTIFICATION**

For off-base areas, the address for each well location was written in the upper portion of the form to facilitate rapid identification and filing. Site-specific information forms and supporting data for each of the off-base wells have been assembled in the off-base file set by street and by address in ascending order.

On-base wells/borings have no addresses. These wells have been assigned an identification number by previous investigators, the Base or

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INSTALLATION RESTORATION PROGRAM
PHASE II (STAGE 2-1)
McCLELLAN AFB, CALIFORNIA

SITE SPECIFIC INFORMATION SUMMARY

GRID CELL: $\underset{X}{--}$, $\underset{Y}{--}$ (X = 01 - 19, Y = 01 - 25)

COORDINATES:
X = _____ (Feet East of Grid Origin)
Y = _____ (Feet North of Grid Origin)

VARIABLES:
Z_1 = _____ (Source of Information)
Z_2 = _____ (Current Use)
Z_3 = _____ (Contamination Status)
Z_4 = _____ (Depth to Water)
Z_5 = _____ (Elevation of Water)
Z_6 = _____ (Top of Screened Interval - Elevation)
Z_7 = _____ (Bottom of Screened Interval - Elevation)
Z_8 = _____ (Number of Screened Zones)
Z_9 = _____ (Highest TCE Concentration [ppb])
Z_1 = _____ (Most Recent TCE Concentration [ppb])
Z_{11} = _____ (Land Surface Elevation)
Z_{12} = _____ (Highest 1,1 DCE Concentration [ppb])
Z_{13} = _____ (Most Recent 1,1 DCE Concentration [ppb])
Z_{14} = _____ (Highest 1,2 DCA Concentration [ppb])
Z_{15} = _____ (Most Recent 1,2 DCA Concentration [ppb])

INFORMATION: (Summarize All Pertinent Information for This Location)

_____

_____

_____

_____

_____

_____

Source(s): _____

(Name, Date, or "Well Inventory")

Figure 2.B-1. Site-Specific Information Form

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TABLE 2.B-1. NUMERICAL CODES USED FOR COMPLETING SITE-SPECIFIC INFORMATION SUMMARY FORMS

Variable	Description	Numerical Code*
Z_1	Source of Information	If: Well = 1 Boring = 2 Other = 3
Z_2	Current Use	If: Domestic Supply = 1 Municipal Supply = 2 Industrial Supply = 3 Irrigation = 4 Monitor Well = 5 Piezometer = 6 Inactive = 7 Unknown = 9999
Z_3	Contamination Status	If: Known to be impacted = 1 Known not to be impacted = 2 Unknown = 9999
Z_4	Depth to Water	Static Water Level in Feet (below land surface or measuring point), if Unknown = 9999
Z_5	Elevation of Water	Elevation of Static Water Level in Feet, if Unknown = 9999
Z_6	Top of Screened Interval	Elevation of the Top of the Interval from which the Well Receives Ground Water in Feet, if Unknown = 9999
Z_7	Bottom of Screened Interval	Elevation of the Bottom of the Interval from which the Well Receives Ground Water in Feet, if Unknown = 9999
Z_8	Number of Screened Zones	Number of Screened or Perforated Zones, if Unknown = 9999
Z_9	Highest Trichloroethylene (TCE) Concentration	Highest Concentration of TCE Expressed in Parts Per Billion (including "Not Detected"), if Unknown = 9999

(Continued)

TABLE 2.B-1. (Continued)

Variable	Description	Numerical Code*
Z_{10}	Most Recent TCE Concentration	Most Recent TCE Concentration Expressed in Parts Per Billion (including "Not Detected"), if Unknown = 9999
Z_{11}	Land Surface Elevation	Land Surface Elevation in Feet
Z_{12}	Highest 1,1-Dichloroethylene (DCE) Concentration	Highest 1,1-DCE Concentration Expressed in Parts Per Billion (including "Not Detected"), if Unknown = 9999
Z_{13}	Most Recent 1,1-DCE Concentration	Most Recent 1,1-DCE Concentration Expressed in Parts Per Billion (including "Not Detected), if Unknown = 9999
Z_{14}	Highest 1,2-Dichloroethane (DCA) Concentration	Highest 1,2-DCA Concentration Expressed in Parts Per Billion (including "Not Detected"), if Unknown = 9999
Z_{15}	Most Recent 1,2-DCA Concentration	Most Recent 1,2-DCA Concentration Expressed in Parts Per Billion (including "Not Detected"), if Unknown = 9999

*The accuracy or precision of entries to the site-specific information summary form were specified, as required. Codes used to specify the precision of an entry are:

Default (no qualification) = Confirmed. Information accurate, considered factual.

R = Reliable. Information reasonably accurate or believed to be accurate, but not confirmed.

Q = Questionable. Information inaccurate or is suspect. Information should be used with caution.

Radian. The identification number for each base well was recorded on the upper portion of the site-specific information forms.

2) **LOCATION**

As discussed in Section 3.1, a cartesian coordinate system was established for the study area for specifying well/boring locations. The location for each well/boring was referenced by grid cell and grid cell coordinates.

Methods used for locating the wells and borings varied. The accuracy of the well locations also varied. Most of the wells located by the off-base well inventory effort (conducted by Radian) were located by measuring the distance from the well to a landmark, normally a roadway. In some instances, inventory personnel were not able to gain access to a given well. In such cases, the location of the well with respect to appropriate landmarks was estimated, provided that the well could be seen. If the well could not be seen, the well location was assumed at the center of the addressed property, as defined by County Assessor's Maps. In both cases, the estimated location was qualified as being reliable but not confirmed.

Numerous private wells were located by a state well survey conducted for the area southwest of McClellan AFB. Locations developed by the survey were considered as accurate and requiring no qualification.

Drillers' logs also provided location data for several wells. The precision with which drillers specified the locations of the wells varied. Wells whose locations were imprecise or unclear were assigned qualified locations. The degree of qualification was commensurate with the apparent precision/accuracy of the data based on the judgement of the data reduction personnel. In some cases, drillers' location data were so imprecise that the well had to be assumed to lie at the center of the indicated property. Location data for wells located at the center of a property were qualified as reliable.

Wells were also located by means of water-quality data from the off-base well sampling program. In some instances, water-quality data provided evidence that a well or wells existed at an address where none were previously noted. In this instance, the location of the well(s) was assumed to be at the approximate center of the indicated property. In this case, the well location was qualified as reliable.

On occasion, wells were spaced so closely together that coordinate data for one or more of the closely-spaced wells were changed slightly to facilitate plotting. If one or more wells were located within twenty feet of one another, the well coordinates of the closely spaced wells were changed such that they differed by twenty feet. A twenty-foot separation was determined as the minimum separation distance for plotting purposes.

3) **SOURCE OF INFORMATION - Z_1**

The source of information for a data point was specified as a well or boring in Variable Z_1.

4) **CURRENT USE - Z_2**

The current use of a well is specified by Variable Z_2. Where a well was used for multiple purposes, its most critical usage was specified for Z_2. As an example, if a well is used for both domestic supply and irrigation, its most critical use with respect to water quality is domestic supply. Thus, domestic supply would be specified for Z_2.

5) **CONTAMINATION STATUS - Z_3**

The contamination status of a well is specified by this variable. A well was assumed to be contaminated if any organic compounds were found at any time. The well was assumed not to be contaminated if organic analysis for the well indicated that no organic compounds were present.

6) **DEPTH TO WATER - Z_4**

The depth to water for a well is specified by this parameter. Water level data for on- and off-base wells were obtained from several sources. Water-level measurements for on-base wells were obtained by Radian during September, 1984.

Water level measurements for off-base wells were obtained from water well drillers' logs, state well survey data, Radian well inventory data, sampling information, etc. Most of the off-base water level data are non-contemporaneous. Only 1983 or later data were entered as Variable Z_4. Off-base water level data were considered questionable because they were developed by several investigators and because they are non-contemporaneous.

7) **ELEVATION OF WATER - Z_5**

The elevation of water in a well was determined by subtracting the value of Z_5 from the land surface elevation (Variable Z_{11}). The accuracy or level of confidence for this data is imparted by the lowest level of confidence for Variables Z_5 or Z_{11}.

8) **TOP OF SCREENED INTERVAL - ELEVATION Z_6**

The highest elevation from which a well can receive ground water is specified by this parameter. If the information was specified by the well owner (in the case of a private well), the data was considered as questionable. Top of screen data obtained from drillers' records were also used. The top of the screen was considered to be the elevation of the bottom of a competent strata seal. The only strata seal considered competent was grout or cement.

Most of the data for Z_6 were available as depth. Thus, most values for Z_6 were calculated using Z_{11}. The accuracy of the Z_6 values is imparted by the lowest level of confidence for Variables Z_6 and Z_{11}.

9) **BOTTOM OF SCREENED INTERVAL-ELEVATION - Z_7**

The lowest point of a well which receives ground water is specified as Variable Z_7. In almost all cases, the lowest point of a well to receive ground water was considered as the total depth of the well.

Most of the data for Z_7 were in depth. Depth specifications provided by the well owner (in the case of private wells) were considered as questionable. Values of Z_7 were calculated using the values for Z_{11}.

10) **NUMBER OF SCREENED ZONES - Z_8**

The number of intervals from which a well receives ground water is specified as Z_8. Values for the variable were determined mostly from drillers' logs, where available.

11) **HIGHEST TRICHLOROETHYLENE CONCENTRATION - Z_9**

The highest historical concentration of trichloroethylene (TCE) determined for a well is specified by this variable. Chemical data were obtained from previous on- and off-base investigations.

12) **MOST RECENT TCE CONCENTRATION - Z_{10}**

The most recent TCE concentration (up to the time of this study) is specified by this variable.

13) **LAND SURFACE ELEVATION - Z_{11}**

Land surface elevation for a well or boring was determined from United States Geological Survey quadrangle maps, drillers' logs, state well inventory data, and, in the case of on-base monitor wells, surveyors' data. Data obtained from topographic maps were considered as reliable but not confirmed.

14) **HIGHEST 1,1-DICHLOROETHYLENE CONCENTRATION - Z_{12}**

The highest historical concentration of 1,1-Dichloroethylene is specified by this variable.

15) **MOST RECENT 1,1-DICHLOROETHYLENE CONCENTRATION - Z_{13}**

The most recent 1,1-Dichloroethylene concentration for a well is specified by this variable.

16) **HIGHEST 1,2-DICHLOROETHANE CONCENTRATION - Z_{14}**

The highest 1,2-Dichloroethane concentration is expressed by this variable.

17) **MOST RECENT 1,2-DICHLOROETHANE CONCENTRATION - Z_{15}**

The most recent 1,2-Dichloroethane concentration is expressed by this variable.

Pertinent specific data not included in the variables were listed in the general information summary section of the site-specific information form. Sources and dates for information entered on the site-specific forms were referenced on the forms, where necessary. All supporting documentation for the summary forms are provided in the Site-Specific Data File Sets.

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APPENDIX 2-C

General Information for McClellan AFB
Ground-Water Monitoring Wells

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Pre-Phase II Monitor Wells

Monitor Wells 1 through 4 were installed by the Base during June 1980 as a preliminary effort for evaluating potential impacts to ground-water quality (Brunner and Zipfel, 1981). Monitor Wells 1, 2 and 4 are completed to a depth of about 250 feet below land surface to receive ground water from water-bearing strata extending from the water table to total depth. Monitor Well 3 was completed to a depth of about 200 feet.

Monitor Wells 1 and 2 penetrate several water-bearing strata. Because Monitor Wells 1 and 2 are located in areas of significant ground-water contamination, they were plugged or filled to prevent migration of contaminants within the wells. Monitor Well 1 was filled from total depth to land surface. Monitor Well 2 was filled from total depth to 60 feet.

During drilling, boreholes for Monitor Wells 1 through 4 were extended to a depth of about 400 feet. Based on well completion records, each well borehole was backfilled from a depth of about 400 feet to the well depth. A concrete plug was placed above the backfilled portion of the boreholes, just below the bottom of the well casing. Completion records do not specify the materials used for backfilling monitor well borings 1 through 4. The backfilled portions of these wells may serve as a pathway for vertical movement of contaminants.

Monitor Wells 5 through 9 were installed by the base between September and November 1980. The wells were installed under an expanded ground-water monitoring and soil sampling program conducted on the base (Brunner and Zipfel, 1981). These wells extend to depths of between 120 and 140 feet below land surface. Monitor Wells 5 through 9 are perforated from a depth of about 20 feet to total depth. Gravel packs installed in these wells extend from a depth of about three or four feet to total depth. A concrete seal was emplaced above the gravel packs to the surface.

Water level records indicate that ground-water exists at depths of approximately 80 to 100 feet in Monitoring Wells 5 through 9. Because of the extended perforated length of these wells, they may serve as conduits for vertical movement of contaminants. Contaminants possibly contained within unsaturated strata or perched ground-water zones may also travel through the vertically extensive gravel packs of these wells.

Base personnel reported that Monitor Well 5 has been lost and abandoned since its emplacement. According to Lt. Col Myers, formerly of the Base Bioenvironmental Engineering at McClellan AFB, the riser for Monitor Well 5 has been broken off and the remainder buried. Because this well is located in an area of industrial activity, it may allow rapid infiltration of surface contaminants to ground water.

Monitor Wells 10 through 15 were installed by the base as a further expansion of the monitor well network under the guidance of the United States Geological Survey during July 1981. Each of these wells were completed to a depth of approximately of 100 feet. Completion records obtained for these wells do not include detailed completion specifications (I.E. interval(s) of perforation, grouting etc.).

Phase - II Monitoring

Monitoring Wells 16 through 29 (shallow and deep completions), 30, 31, 33 through 50 were installed under the supervision of Engineering-Science in 1982 for Phase II, Stage 1 McClellan AFB IRP. The majority of these wells were installed in and around Waste Areas A, B, C, and D to determine the effects, if any, of base operations on ground-water quality. Well 32D was scheduled for installation in Phase II but was not installed (Engineering-Science, 1983).

Monitor wells 16 through 29 are multiple completion wells. These wells contain two separate sets of casing and screen to obtain ground water from the first and second water-bearing zones. The remainder of the Phase II

wells are single completion. All of the remaining Phase II monitor wells, except monitor well 38D, were designed to obtain ground water from the first significant water-bearing zone. Monitor well 38D was constructed to obtain ground water from the second or "deep" water- bearing zone. In addition to the monitoring wells, two piezometers were installed during Phase II for the pump test conducted at Monitor Well 44S. The two piezometers (44S-A and 44S-B) are reportedly located 20-to-40 feet "downgradient" from Well 44S. The exact locations and specifications for these wells are unknown. Because of the proximity of these wells to past waste disposal sites, their locations, specifications, and status should be determined.

Gravel packs for several of the monitor wells emplaced in Phase II extend through as much as 50 feet of sediments. Where these extended gravel packs encounter two or more water-bearing zones they may serve to connect shallow contaminated strata with deeper previously uncontaminated units. Of particular concern is the method used for the completion of monitor well 38D. During drilling, the borehole for monitor well 38D was extended to about 225 feet below land surface. The borehole was then backfilled with gravel to a depth of about 135 feet. A five-foot layer of bentonite was placed above the backfilled portion of the hole as a seal. Casing, screen, gravel pack and sealing materials were then emplaced in the hole to complete the well. Based on the geologic log for Monitor Well 38D, the 90 foot section of gravel backfill below the bentonite plug penetrates more than one water-bearing zone. The gravel backfill may serve as a conduit for vertical migration of contaminants. This is an important consideration given the proximity of Monitor Well 38D to Waste Area D.

Phase III/IV Monitor Wells

Monitor Wells 51 through 57 were emplaced in the area of Waste Area D under the supervision of CH2M Hill. The wells were installed in the early part of 1984 for Phase III/IV site characterization study for Area D to develop more information on hydrogeologic conditions in the vicinity of Area D (CH2M Hill, 1984b). Monitor Wells 51 through 57 were completed to depths

ranging between 107 and 185 feet for the characterization of "shallow" and "deep" water-bearing zones.

One perched aquifer monitor well was emplaced within area D as part of Phase III/IV Site Characterization Study for Area D (CH2M HILL, 1984a). This well was installed during January, 1984, when perched conditions were encountered in Auger Boring A-5 at an approximate depth of 39 feet. The screen for this monitor well was set between 35 and 45 feet below ground surface. Following completion activities, the perched-zone well could not be sampled due to the limited amount of water produced to the well. For the purpose of the Site-Specific Database, this well will be referred to as Monitor Well 58P.

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APPENDIX 3

This appendix provides information regarding Task 3, as discussed in text Section 3.3.

Appendix Contents

3-A Listing of Wells Identified During the Comprehensive Well Inventory

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EXPLANATION OF APPENDIX 3-A - DATABASE WELL LISTING

Appendix 3-A is a printout of the wells listed in the Site-Specific database. Plate 3 is the corresponding representation of the database showing well usage and location.

An explanation of the database printout is given below:

Grid Column

This is the grid-cell number, from 1-to-19, representing the columns of grid-cells counting from the lower-left corner of the grid to the right (x-direction). For a few wells, the grid column number may be greater than 19 which indicates a well outside of the study area but included in the database.

Grid Row

This is the grid-cell number, from 1-to-25, representing the rows of grid-cells counting from the lower-left corner of the grid to the top (y-direction).

Column Coordinate

This is the x-coordinate, in feet, from the grid origin (lower-left corner).

Row Coordinate

This the the y-coordinate, in feet, from the grid origin (lower-left corner).

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Current Use

These integers represent well usage where:

1 = Domestic Supply
2 = Municipal Supply
3 = Industrial Supply
4 = Irrigation
5 = Monitoring Well
6 = Piezometer
7 = Inactive (abandoned)
8 = Reconnaissance Boring (Radian)
9999 = Unknown usage

Address

Addresses of wells located in study area. Some wells (and reconnaissance borings) do not have addresses listed. These are either unknown or are on McClellan AFB.

5	8	5240	7990	9999	[illegible]
5	8	5250	7B75	9999	[illegible]
5	9	5010	8F90	7	[illegible]
5	9	5070	8400	7	[illegible]
5	9	5120	8740	7	[illegible]
5	10	5100	9700	6	
5	10	5520	9410	7	[illegible]
5	11	5070	10C00	7	[illegible]
5	11	5100	10C20	7	[illegible]
5	11	5160	10920	7	[illegible]
5	11	5200	10360	7	[illegible]
5	11	5200	10300	7	[illegible]
5	11	5710	10460	7	[illegible]
5	12	5050	11650	7	[illegible]
5	12	5060	11475	9999	[illegible]
5	12	5120	11100	7	[illegible]
5	12	5145	11115	7	[illegible]
5	12	5140	11135	7	[illegible]
5	12	5220	11150	7	[illegible]
5	12	5240	11290	7	[illegible]
5	12	5440	11620	7	[illegible]
5	12	5500	11C00	7	[illegible]
5	13	5050	12E20	1	[illegible]
5	13	5090	12300	7	[illegible]
5	13	5100	12200	1	[illegible]
5	13	5200	12550	1	[illegible]
5	13	5200	12760	1	[illegible]
5	13	5240	12750	1	[illegible]
5	13	5200	12410	9999	[illegible]
5	13	5460	12340	1	[illegible]
5	13	5510	12500	1	[illegible]
5	14	5150	12B90	7	[illegible]
5	14	5150	12920	1	[illegible]
5	14	5180	12750	7	[illegible]
5	14	5.90	12500	1	[illegible]
5	14	5900	12900	5	

[illegible]	16	5975	14625	9	
[illegible]	17	5020	16780	1	1570 48CCT
[illegible]	17	5180	16360	7	5519 RALE*
[illegible]	17	5180	16670	7	5525 RALE*
[illegible]	17	5200	16760	7	5519 RALE*
[illegible]	17	5210	16600	7	5521 RALE*
[illegible]	17	5660	16500	9	
[illegible]	18	5080	17380	1	5695 16 ST
[illegible]	18	5100	17800	1	5705 16 ST
[illegible]	18	5225	17600	9999	5647 16 ST
[illegible]	18	5280	17700	1	5706 16 ST.
[illegible]	18	5400	17900	1	5710 16 ST.
[illegible]	18	5420	17980	7	5712 16 ST.
[illegible]	18	5550	17275	1	1617 48CCT
[illegible]	18	5560	17400	9999	5624 16 ST
[illegible]	18	5680	17980	1	5714 16 ST
[illegible]	18	5700	17210	1	1621 48CCT
[illegible]	18	5820	17200	9999	1617 48CCT
[illegible]	18	5950	17275	1	1617 48CC
[illegible]	19	5020	18540	1	5815 16 ST
[illegible]	19	5060	18130	1	1570 0 ST.
[illegible]	19	5080	18720	1	5829 16 ST.
[illegible]	19	5120	18500	.	5822 16 ST.
[illegible]	19	5160	18860	.	5841 16 ST.
[illegible]	19	5180	19100	1	1554 0 ST.
[illegible]	19	5220	18950	7	5845 16 ST
[illegible]	19	5400	19100	.	5 16 ST
[illegible]	19	5400	19130	1	5741 16 ST
[illegible]	19	5402	19250	1	5736 16 ST
[illegible]	19	5520	18700	1	5824 16 ST
[illegible]	19	5520	19500	1	5835 16 ST
[illegible]	19	5520	18940	1	5844 16 ST
[illegible]	19	5660	18455	.	1617 48CC
[illegible]	19	5720	19150	4994	1614 48CC
[illegible]	19	5860	18540	.	1617 48CC
[illegible]	19	5920	18740	.	1617 48CC
[illegible]	20	5120	[illegible]	[illegible]	[illegible]
[illegible]	20	5160	[illegible]	[illegible]	[illegible]

5	19	5100	19010	1	5940 16 ST.
5	19	5200	19140	9999	5905 16 ST
5	20	5120	19530	.	5945 16 ST.
5	20	5450	19950	1	5070 16 ST.
5	20	5520	19005	4	5944 16 ST.
5	20	5550	19350	1	1610 E ST.
5	20	5550	19540	1	1617 E ST.
5	20	5600	19800	8	
5	20	5650	19475	9999	1618 E ST.
5	20	5700	19400	1	1670 E ST.
5	20	5950	19350	1	1640 E ST
5	21	5440	20940	1	1612 E ST.
5	21	5620	20925	1	1622 E ST.
5	21	5650	20910	1	1632 E ST
5	21	5700	20320	1	1627 14 ST.
5	22	5240	21920	9999	1710 14 ST
5	22	5350	21800	1	1711 14 ST.
5	22	5350	21900		1715 14 ST
5	22	5360	21220	.	1611 E ST
5	22	5300	21620	9999	1720 14 ST
5	22	5360	21670	9999	1745 14 ST
5	22	5350	21275	.	1675 E ST
5	23	5350	22000	9999	1714 14 ST
5	23	5350	22050	1	1740 14 ST
5	23	5350	22120	9999	1745 14 ST
5	23	5640	22020		1675 E ST
5	23	5940	22150	9999	1648 E ST
7	1	6000	450	2	
7	2	6490	1580	9999	1201 1ST PARK
7	2	6920	1500	7	1201 3RD PARK
7	3	6010	1740	7	1214 MONTROSE
7	3	6075	2275	3	1710 3RD MONTROSE
	3	6075	2620	7	1715 MONTROSE
7	3	6030	2750	7	1719 MONTROSE
7	3	6060	2950	7	1685 MONTROSE
7	3	6120	3040	7	1707 MONTROSE

7	19	6120	18450	1	1727 E ST.
7	19	6130	18080	1	1740 E ST.
7	19	6460	18180	1	1730 E ST.
7	19	6625	18525	1	1732 E ST.
7	19	6680	18450	1	1901 E ST.
7	19	6750	18120	1	1812 E ST.
7	19	6775	18400	1	1724 E ST.
7	19	6800	18550	1	1907 E ST.
7	19	6900	18390	9999	1720 E ST
7	19	6950	18120	1	1920 E ST.
7	19	6950	18330	1	1739 E ST.
7	20	6080	19340	1	1712 E ST.
7	20	6380	19960	9999	1749 E ST.
7	20	6440	19280	1	1740 E ST.
7	20	6670	19960	7	1749 E ST.
7	20	6720	19760	9999	1811 E ST.
7	20	6780	19430	9999	1746 E ST.
7	20	6860	19900	1	1827 E ST.
7	21	6040	20610	9999	1709 E ST
7	21	6150	20670	1	1715 E ST
7	21	6350	20425	9999	1750 E ST.
7	21	6350	20435	9999	1750 E ST.
7	21	6350	20450	9999	1750 E ST.
7	21	6750	20600	1	1744 E ST
7	21	6460	20840	7	1731 E ST
7	21	6530	20850	1	1910 E ST
7	21	6626	20950	1	1910 E ST
7	21	6626	20870	7	1920 E ST.
7	21	6810	20880	1	1911 E ST.
7	22	6120	21120	9999	1717 E ST
7	22	6320	21140	1	1733 E ST
7	22	6383	21140	1	1737 E ST
7	22	6470	21140	1	1910 E ST
7	22	6466	21140	9999	1737 E ST
7	22	6549	21140	1	1749 E ST
7	22	6760	21140	9999	1909 E ST
7	23	6040	21260	1	1711 E ST
7	23	6150	21260	1	1715 E ST

8	5	7350	5990	7	1917 NATOMA ave
8	6	7380	5860	7	1901 NATOMA ave
8	6	7840	5850	1	1950 GRAND
8	7	7040	6080	7	1921 MAHOGANY
8	7	7220	6050	9999	1926 MAHOGANY
8	7	7800	6950	8	
8	9	7400	8980	7	1930 BELL
8	11	7060	10430	7	
8	11	7220	10950	7	1844 REYNOLDS ave
8	12	7060	11455	7	1816 MAIN
8	12	7200	11250	7	1941 REYNOLDS ave
8	12	7250	11150	7	1845 REYNOLDS ave
8	13	7240	12950	5	
8	14	7425	13550	9	
8	18	7060	17150	1	1941 ASCOT
8	18	7230	17180	1	1845 ASCOT
8	18	7400	17200	1	1901 ASCOT
8	18	7540	17250	1	1915 ASCOT
8	18	7740	17200	1	1917 ASCOT
8	18	7740	17580	1	5645 20 ST.
8	18	7780	17420	1	5637 20 ST.
8	18	7780	17500	7	5501 20 ST.
8	19	7795	17730	7	5701 20 ST.
8	18	7800	17870	9999	1919 ASCOT
8	19	7900	17410	9999	5629 20 ST
8	19	7800	17520	1	5501 20 ST
8	18	7800	17740	9999	5701 20 ST
8	18	7840	17220	1	5601 20 ST.
8	19	7200	18650	1	1821 C ST
8	19	7120	18850	1	1844 C ST
8	19	7160	18860	1	1846 C ST
8	19	7275	18625	1	1825 C ST

8	19	7150	18700	7	5622 20 ST.
8	19	7200	18720	1	5622 20 ST.
8	19	7320	18520	1	1901 C ST.
8	19	7440	18500	1	1904 C ST.
8	19	7450	18650	1	1909 C ST.
8	19	7450	18600	1	1905 C ST.
8	19	7500	18200	1	1925 C ST.
8	19	7520	18620	1	1913 C ST.
8	19	7600	18600	1	1919 C ST.
8	19	7660	18620	1	1923 C ST.
8	19	7740	18200	1	1946 C ST.
8	19	7830	18940	4	5917 20 ST.
8	20	7120	19500	1	1847 E ST.
8	20	7250	19225	1	1840 E ST.
8	20	7500	19420	1	1916 E ST.
8	20	7620	19780	1	1919 E ST
8	20	7650	19500	1	1970 E ST.
8	20	7740	19780	1	1929 E ST
8	20	7800	19280	4	5933 20 ST
8	20	7840	19500	1	1979 E ST.
8	20	7850	19780	1	1949 E ST.
8	20	7860	19460	1	5945 20 ST.
8	21	7010	20100	1	1827 E ST.
8	21	7600	20480	1	5701 20 ST.
8	21	7750	20000	1	5819 20 ST.
8	21	7780	20340	1	1980 E ST.
8	21	8120	20860	0000	1979 E ST.
8	22	7400	21175	7	1837 E ST
8	22	7420	21340	0000	1835 E ST.
8	22	7650	21120	1	1919 E ST.
8	22	7675	21200	0000	1979 E ST.
8	22	7750	21950	1	1929 E ST
8	22	7760	21840	1	5749 20 ST.
8	22	7760	21960	1	5725 20 ST.
8	22	7775	21100	0000	1975 E ST.
8	22	7930	21910	0000	5716 20 ST
8	22	8150	21420	1	5705 20 ST
8	23	7550	22050	0000	1925 E ST
8	23	7740	22000	0000	5741 20 ST

4	25	8160	24820	1	2070 [illegible]
4	25	8680	24900	1	2100 [illegible]
4	25	8760	24900	1	2120 [illegible]
4	25	8840	24800	7	2130 [illegible]
4	25	8925	24800	4	2140 [illegible]
10	1	9700	190	2	
6	4	9075	3960	7	2044 [illegible]
10	4	9140	3600	7	2481 [illegible]
6	4	9440	3700	7	2520 [illegible]
10	4	9760	3910	7	2221 SOUTH
6	5	9030	4700	7	2132 [illegible]
6	5	9080	4850	7	2725 [illegible]
6	5	9160	4100	7	2235 [illegible]
6	5	9280	4200	7	2624 [illegible]
6	5	9400	4175	7	2217 [illegible]
6	5	9400	4200	7	2225 [illegible]
6	5	9400	4200	0000	2140 [illegible]
6	5	9575	4650	7	2225 [illegible]
6	5	9660	4700	7	2229 [illegible]
6	5	9770	4175	0000	2671 [illegible]
6	5	9770	4200	7	2625 [illegible]
6	5	9775	4300	7	2649 [illegible]
4	5	9800	4700	7	2617 [illegible]
4	5	9800	4775	7	2649 [illegible]
3	5	9425	4820	7	2724 [illegible]
4	5	9950	4840	7	2724 [illegible]
10	6	9400	5990	1	2981 [illegible]
6	6	9365	5940	7	2217 [illegible]
10	6	9540	5950	7	2229 [illegible]
4	6	9590	5930	7	2721 [illegible]
10	6	9720	6190	0000	2245 [illegible]
6	6	9720	6210	0000	2245 [illegible]
10	6	9760	6000	7	2227 [illegible]
6	7	9015	5250	1	2975 [illegible]
10	7	9085	5050	7	2547 [illegible]
6	7	9100	5420	7	2044 [illegible]

18	9	9240	8360	7	1244 [illegible]
18	9	9250	8750	8	
18	9	9260	9130	7	4200 [illegible]
18	9	9260	8740	7	1115 [illegible]
18	9	9440	8020	7	1131 [illegible]
18	9	9510	8040	7	4200 [illegible]
18	9	9530	8040	7	4200 [illegible]
18	9	9530	8940	7	4200 [illegible]
18	9	9640	8820	7	1229 [illegible]
18	9	9650	8250	8	
18	9	9900	8620	7	1145 [illegible]
18	9	9940	8920	7	1249 [illegible]
18	9	9960	8280	1	1245 [illegible]
18	10	9625	9440	7	
18	10	9750	9010	7	1229 [illegible]
18	10	9900	9020	7	1223 [illegible]
18	10	9960	9400	5	
18	11	9540	11890	5	
18	11	9540	11990	5	
18	12	9400	12600	5	
18	12	9440	12940	7	
18	12	9970	12100	5	
18	14	9720	13290	5	
18	14	9720	13280	5	
18	14	9720	13720	5	
18	15	9970	14120	7	
18	15	9970	14140	7	
18	15	9970	14150	5	
18	16	9700	15260	5	
18	16	9610	15720	7	
18	17	9150	15970	5	
18	17	9150	14470	5	
18	17	9410	16590	5	

[illegible]	[illegible]	[illegible]	[illegible]	5	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

11	7	10000	6550	7	2701 NORTH
11	7	10060	6550	7	2701 NORTH
11	7	10100	6750	7	2700 MOSAN
11	7	10120	6720	7	2700 MOSAN
11	7	10160	6770	7	2704 MOSAN
11	7	10190	6720	7	2704 MOSAN
11	7	10240	6740	7	2708 MOSAN
11	7	10290	6760	9999	2712 MOSAN
11	7	10330	6290	7	2722 PIESO
11	7	10380	6690	7	2722 MOSAN
11	7	10510	6570	7	2765 NORTH
11	7	10530	6930	1	2729 MOSAN
11	7	10580	6700	7	4000 WINTERS
11	7	10600	6700	7	4000 WINTERS
11	7	10710	6210	9999	2416 NORTH
11	7	10725	6925	7	
11	7	10740	6510	5	
11	7	10840	6240	7	2416 NORTH

11	8	10220	7640	7	2719 BEND
11	8	10280	7720	7	2722 BEND
11	8	10540	7080	7	4025 WINTERS
11	8	10560	7140	7	4027 WINTERS
11	8	10580	7580	9999	4141 WINTERS
11	8	10550	7120	7	2715 WINTERS

11	9	10100	6520	7	2709 [illegible]
11	9	10120	6550	9999	2705 [illegible]
11	9	10240	6550	7	2722 [illegible]
11	9	10280	6620	7	4027 [illegible]
11	9	10300	6620	7	4027 [illegible]
11	9	10340	6780	7	2735 [illegible]
11	9	10350	6640	7	2727 [illegible]
11	9	10420	6740	7	2722 [illegible]
11	9	10415	6550	7	2711 [illegible]
11	9	10500	6040	7	4027 [illegible]
11	9	10560	6180	7	4027 WINTERS
11	9	10590	6120	7	4035 [illegible]
11	9	10620	6520	7	4027 [illegible]
11	9	10610	6550	4	
11	9	10620	6550	7	

11	9	10700	8670	7	
11	9	10770	8500	7	
11	9	10910	8550	5	
11	10	10560	9425	7	
11	10	10500	9210	7	
11	10	10600	9360	7	
11	10	10870	9950	2	
11	15	10850	14920	7	
11	18	10820	17820	1	5740 24 ST.
11	19	10200	13940	7	5801 24 ST.
11	19	10210	16800	7	5901 24 ST.
11	19	10400	19500	1	5901 24 ST.
11	19	10650	16960	1	5900 24 ST.
11	19	10800	13100	1	5749 24 ST.
11	20	10120	19720	7	2401 5 ST
11	20	10150	19720	1	2401 5 ST
11	20	10340	19020	1	5915 24 ST.
11	20	10750	19540	1	2405 5 ST
11	20	10870	19550	1	2420 5 ST.
11	20	10900	19550	9999	2472 5 ST.
11	21	10270	20550	9999	4647 11 ST
11	21	10280	20620	1	5141 24 ST
11	21	10400	20660	1	5145 24 ST
11	21	10420	20045	9999	5100 11 ST
11	21	10420	20470	1	5115 24 ST.
11	21	10440	20470	7	5115 24 ST
11	21	10600	20600	1	5122 24 ST
11	21	10620	20600	7	5122 24 ST.
11	21	10660	20900	1	5149 24 ST
11	21	10660	20920	1	5104 24 ST.
11	21	10700	20900	1	5140 24 ST
11	21	10720	20150	1	5141 24 ST.
11	21	10720	20540	1	5 20 24 ST
11	21	10760	20400	1	5105 24 ST
11	21	10790	20400	1	5155 24 ST.

11	22	12250	21650	5	
11	22	10760	21680	1	5215 24 ST.
11	22	10640	21020	1	5204 24 ST.
11	22	10640	21640	1	5200 24 ST.
11	22	10640	21720	7	5200 24 ST.
11	22	10680	21220	1	5204 24 ST.
11	22	10740	21540	1	5244 24 ST.
11	22	10800	21720	1	5300 24 ST.
11	22	10800	21900	1	5310 24 ST.
11	23	12060	22320	1	2321 1 ST.
11	23	10210	22320	9999	2321 1 ST.
11	23	10150	22340	1	2331 1 ST.
11	23	10280	22850	1	5445 24 ST.
11	23	10375	22440	1	2347 1 ST.
11	23	10460	22720	9999	5433 24 ST.
11	23	10460	22720	1	5433 24 ST.
11	23	10625	22525	9999	5411 24 ST.
11	23	10630	22200	1	1420 1 ST.
11	23	10630	22270	9999	2430 1 ST.
11	23	10680	22220	1	1425 1 ST.
11	23	10690	22500	1	5440 24 ST.
11	23	10710	22500	7	5440 24 ST.
11	23	10750	22140	1	1412 1 ST.
11	23	10760	22850	1	5434 24 ST.
11	23	10880	22250	1	5432 24 ST.
11	23	10880	22420	1	5432 24 ST.
11	23	12720	22480	1	2427 1 ST.
11	23	10980	22470	1	2417 1 ST.
11	24	10360	23360	1	5541 24 ST.
11	24	12780	23550	1	5551 24 ST.
11	24	10780	23840	1	5537 24 ST.
11	24	10400	23550	1	5501 24 ST.
11	24	12425	23600	1	5507 24 ST.
11	24	10440	23640	1	5521 24 ST.
11	24	10440	23660	1	5529 24 ST.
11	24	10450	23600	1	5507 24 ST.
11	24	10450	23650	1	5517 24 ST.
11	24	10460	23680	1	5527 24 ST.
11	24	10460	23740	1	5541 24 ST.
11	24	10460	23740	1	5521 24 ST.
11	24	10460	23440	9999	5525 24 ST.
11	24	10460	23660	1	5529 24 ST.
11	24	10520	23820	1	5534 24 ST.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

12	23	11180	22220	1	2440 1 ST.
12	23	11200	22160	9999	2419 1 ST
12	23	11325	22120	7	2512 1 ST.
12	23	11440	22360	1	2517 1 ST.
12	23	11440	22380	7	2517 1 ST.
12	23	11440	22520	7	2517 1 ST.
12	23	11440	22540	7	2517 1 ST.
12	23	11440	22560	7	2517 1 ST.
12	23	11500	22375	1	25.9 . ST
12	23	11500	22355	7	2519 1 ST
12	23	11520	22180	1	2520 1 ST.
12	23	11600	22220	1	2526 1 ST
12	23	11760	22210	1	2611 1b ST.
12	23	11775	22540	9999	2441 1b ST
12	23	11800	22150	1	2544 1 ST
12	23	11800	22180	1	2424 1 ST
12	24	11520	22320	9999	2521 1b ST
12	25	11625	24525	1	2580 2L+GRN
13	5	12990	4160	4	HARDEN DWG SELF TAPPE
13	6	12960	5400	4	
13	7	12120	6220	5	
13	7	12120	6220	5	
13	8	12990	7480	5	
13	9	12900	8750	2	
13	11	12760	10350	5	
13	11	12760	10350	5	
13	14	12460	13640	5	
13	17	12120	16220	1	

14	23	13260	14750	5	
14	25	13260	14750	5	
15	4	14500	3100	2	
15	5	14600	4850	9999	[illegible]
15	10	14460	9840	5	
15	10	14460	9840	5	
15	11	14650	10150	5	
15	12	14495	11470	1	
15	15	14770	14850	5	
5	21	14470	18500	1	
15	22	14825	21250	1	
1	15	14850	24150	5	
15	5	15510	4170	4	
15	1	15140	5550	4	[illegible]
15	1	15170	7940	5	
1	1	15440	9840	5	
15	1	15450	9770	5	[illegible]
15	3	15740	9770	5	

[illegible]	15	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	15	[illegible]	[illegible]		[illegible]
[illegible]	14	[illegible]	[illegible]	[illegible]	
[illegible]	15	[illegible]	[illegible]	[illegible]	
[illegible]	15	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	14	[illegible]	[illegible]	[illegible]	
[illegible]	14	[illegible]	[illegible]	[illegible]	
[illegible]	20	[illegible]	[illegible]	[illegible]	
[illegible]	20	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	20	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	22	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	22	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	22	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	14	[illegible]	[illegible]	[illegible]	
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[illegible]	25	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	25	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	5	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

[illegible]	[illegible]	19430	19620	2	
[illegible]	[illegible]	16900	17250	2	
[illegible]	[illegible]	18220	21300	2	[illegible]
[illegible]	[illegible]	18260	21660	2	[illegible]
[illegible]	[illegible]	18310	21460	1	[illegible]
[illegible]	[illegible]	18345	21705	1	[illegible]
[illegible]	[illegible]	19350	19400	2	
[illegible]	[illegible]	19200	21375	2	
[illegible]	[illegible]	20350	20450	2	

RADIAN
CORPORATION

APPENDIX 4

This appendix provides information regarding Task 4, as discussed in text Section 3.4.

Appendix Contents

4-A Agency Correspondence Regarding Proposed Reconnaissance Boring Program

STATE OF CALIFORNIA
GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
CENTRAL VALLEY REGION
3201 S STREET
SACRAMENTO CALIFORNIA 95816-7090
PHONE (916) 445-0270

21 June 1984

Captain Ieradi
U.S.A.F. Clinic McClellan/SGB
McClellan Air Force Base
Sacramento, cA 95652

RADIAN CORPORATION'S PROPOSED RECONNAISSANCE BORINGS PLAN

Enclosed are the Regional Board's recommended changes to the Radian Corporation's reconnaissance borings proposal as discussed at the 21 June 1984 meeting.

I urge you to incorporate these changes into your contract with Radian Corporation as expeditiously as possible so as not to significantly delay this project.

Larry F. Nash

LARRY F. NASH
Senior Engineer

JJT/gs

Enclosure

cc: Mr. Jeff Rosenbloom, U.S. Environmental Protection Agency, T-4-1
Mr. John Wesnousky, Department of Health Services, Toxic Substances Control Division, Sacramento
Mr. Carl Lischeski, Department of Health Services, Sanitary Engineering Section, Sacramento
Mr. Ken Knight, Sacramento County Health Dept.
Mr. Lee Harry, City of Sacramento

Memorandum

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD • CENTRAL VALLEY REGION
3201 S Street Sacramento, California 95816 Phone: 445-0270

TO: Larry F. Nash
Senior Engineer

FROM: John J. Tomko
Area Engineer

DATE: 22 June 1984

SIGNATURE: JJT

SUBJECT: RADIAN PROPOSAL ON RECONNAISSANCE BORINGS OFF-BASE AT MC CLELLAN AIR FORCE BASE

I met with the Air Force, Radian Corporation, the Department of Health Services, and the City and County of Sacramento on 21 June 1984 at McClellan on the proposed reconnaissance boring plan for off-base areas at McClellan.

I recommended the following changes be made to the proposal:

1. Additional borings be drilled at the following locations:
    a. One boring between 'G' and 'I' Streets along 24th Street.
    b. One boring at the intersection of Dry Creek and Ascot Avenue, near City Well 154.
    c. At least 2 additional borings within the central off-base area bounded by Ascot Avenue, Raley Boulevard, Main Avenue and the Webster Property Line of the Base.
    d. Additional borings, south of the Base, to identify and locate the buried channel bed described in Department of Water Resources Bulletin No. 118. At least 3 may be required.
    e. The consultant should consider additional upgradient borings per the Department of Health Services' recommendation.
2. All borings should be to a maximum depth of 200 feet, not 150 feet.
3. Four water samples per boring should be taken instead of three because of the increase in boring depth and the distinct possibility of encountering a deeper water bearing zone below the 150 foot level.
4. HNU's readings should be taken and correlated with boring depths at those borings drilled adjacent to Base boundaries.

JJT/gs

RADIAN
CORPORATION

APPENDIX 5

This appendix provides information regarding Task 5, as discussed in text Section 3.5.

Appendix Contents

5-A City of Sacramento Encroachment Permit

5-B Sacramento County Department of Health - Drilling Permit

5-C Reconnaissance Boring Drilling Logs

5-D Results of Grain-Size Distribution Analyses of Soil Samples

5-E Results of Laboratory Analyses of Water Samples

5-F Raw Laboratory Data for Selected Water Samples (Volatile Organic Analysis - EPA 601)

RADIAN
CORPORATION

APPENDIX 5-A

City of Sacramento Encroachment Permit

...of Sacramento Public Works Department

APPLICATION FOR ENCROACHMENT/EXCAVATION PERMIT

FILE NUMBER

PERMIT NUMBER 072784-E

START DATE

COMPLETION DATE

U.S.A. NUMBER

APPLICANT: Radian Corporation

ADDRESS: 3401 La Grande Blvd. ZIP: 95823

Application is hereby made for an Encroachment/Excavation Permit to perform the following:

1. Applicant's work order or job number: _____

2. Location of work: S & W side McClellan AFB

3. General description of work to be done: Exploration borings 5 1/8" diameter for soil & water testing. (See attachment)

4. Estimated start of work: 7/30/84. Estimated time needed, 42 days.

5. Name and phone number of person familiar with details: E. Wayne Pearce (916)421-8700

NOTE: Submit application (2 copies) - Attach sketch (2 copies) showing plan and cross-section, indicating clearly location of work with respect to face of curb, edge of pavement or property line.

SIGNED: E Wayne Pearce DATE: 7/26/84

ROUTING AS NECESSARY:

DEPARTMENT:	INITIALS:
Engineering	
Traffic Eng.	RC.T.
Water & Sewer	
Street Maint	JWL

TRAFFIC COMMANDER

(YES) (NO)

Approval and issuance of this permit subject to a $120.00 fee in compliance with ordinance #83070.

REMARKS:

$120.00 paid 7/26/84 [illegible]

For Official Use Only 101-3820-3221

Application approved as indicated on reverse. Call City Street Maintenance Division, telephone 449-5236 or 449-5386, for permit number, not less than 24 hours prior to starting work. Permit will thereupon be issued.

[signature] 7/26/84

Supervising Engineer

Street Maintenance Superintendent

Name and telephone number of caller: [illegible]

Name and telephone number of agency inspector, contractor, [illegible] or supervisor, as appropriate: [illegible]

All work is subject to the requirements of City Ordinance #4250 and the supplements thereto. Your attention is particularly directed to the following:

1. Permit good for 42 days from date of issuing permit number.
2. Unless otherwise indicated, working hours are 8:30 a.m. to 4:00 p.m. Mon. - Fri.
3. Adequate barricading and/or flagging shall be provided.
4. Trench backfill in street section to have relative compaction of 95% and shall be brought up in lifts of not over 8 inches. Upper 12 inches of trench backfill to have 8 inches of Class II compaction road rock and 4 inches of asphaltic concrete. Trench backfill off paved area to have relative compaction of 90%.
5. All concrete to be saw cut according to Section 4 of the "Standard Operating Procedures".
6. All asphaltic concrete repaving in the street right of way shall be accomplished by City forces. Compensation shall be at the established rate.
7. All "Cal-Osha" safety regulations shall be complied with.
8. "Underground Service Alert" (USA) 800-642-2444 and City Electrical Division, 449-5287 shall be notified 48 hours prior to beginning work.

"SPECIAL PROVISIONS"

EXCAVATION PERMIT - CITY OF SACRAMENTO

Date July 26, 1984 Permit No. p-072784-1

The City Engineer of the City of Sacramento, under provisions of, and in accordance with, Ordinance No. 4250, 4th Series, adopted by the City Council of the City of Sacramento on the 10th day of July, 1979 does hereby grant permission to:

Agency Radian Corporation Job No.
3401 La Grande Blvd. 95823
to make excavations as follows: (Location and description)

S & W side McClellan AFB

Exploration borings 5 1/8" diameter for siol & water testing.

RESTRICTIONS: See general provisions on reverse side of application for encroachment permit.

M. Johnson, Public Works Director
~~J. F. Varozza, City Engineer~~

BY
Street Maintenance Superintendent

Eng. Dept. St. Maint
Form 3 (revised) 10/82

RADIAN
CORPORATION

APPENDIX 5-B

Sacramento County Department of Health -
Drilling Permit

APPLICATION & WATER WELL JOB PERMIT

SACRAMENTO COUNTY
Department of Health

(916) 366-2101

ENVIRONMENTAL HEALTH BRANCH
3701 Branch Center Road
Sacramento, CA 95827

FOR OFFICE USE ONLY

Approved: ☑ Disapproved: ☐
By: _____ Date: _____

Receipt #: 06747 Permit #: 007409
Total Fee: $90.- Date Issued: 6-26-84
(Permit expires 1 year from date issued)

Grout Inspection by: _____
Date: _____

Final Inspection By: _____
Date: _____

COMMENTS: _____

Application is hereby made to the County of Sacramento Health Officer for a permit to perform work at the location as indicated below:

JOB LOCATION: Area Surrounding McClellan AFB PARCEL #: _____

NEAREST CROSS STREET: _____

OWNER'S NAME _____ PHONE #: _____

OWNER'S ADDRESS _____ CITY: _____

CONTRACTOR'S NAME Water Development Corporation LICENSE #: 203326

ADDRESS: 220 N. East St. CITY: Woodland, CA PHONE #: (916) 662-2829

WORK TO BE PERFORMED:

- ☐ Construct well (new)
- ☐ Deepen well
- ☐ Repair well (state work)
- ☐ Install new pump
- ☐ Repair pump
- ☐ Replace pump
- ☐ Abandon well
- ☒ Other (state) 20 exploratory borings

COMMENTS: _____

DISTANCE TO NEAREST:
_____ Septic Tank system _____ Sewer line _____ Property line _____ Other well

INTENDED USE:
- ☐ Domestic/private
- ☐ Domestic/public
- ☐ Irrigation
- ☐ Industrial
- ☒ Other (state) Exploratory

TYPE OF WELL
- ☐ Cable
- ☒ Drilled
- ☐ Driven
- ☒ Rotary Dual Tube Air
- ☐ Other (state)

CONSTRUCTION SPECIFICATIONS
Well depth 150 ft Diameter 5 1/8"
Gage of casing none Depth _____
Grout depth 150 ft. Type neat cement
Gravel Pack: Yes ☐ No ☒
Conductor: Yes ☐ No ☒
OTHER INFO: Solid Grout Seal

COMMENTS: Exploratory borings-will be cemented bottom to top after drilling

PUMP INSTALLATION/REPAIR: N/A
CONTRACTOR: _____
TYPE OF PUMP: _____ HP _____

WELL ABANDONMENT: _____ Diameter: 5 1/8" Depth: 150 ft Material to be used: neat cement
COMMENTS Cemented bottom to top after drilling

I hereby agree to comply to all Codes, Rules and Regulations of State of California and the County of Sacramento pertaining to or regulating well construction. Within ten (10) days after completion of work on a new well, I will furnish the County of Sacramento Community Health Agency a Well Driller's Log Report and will notify them before putting the well in use. I WILL CALL FOR A GROUT INSPECTION PRIOR TO GROUTING AND FOR A FINAL INSPECTION.

SIGNED W. Wayne Pierce TITLE Hydrogeologist-Project Director Radian Corporation

DRAW PLOT PLAN ON REVERSE SIDE

SHOW: parcel dimensions, adjacent streets, location of nearest septic tank system, location of nearest well, location of structures or any other information that would be pertinent.

APPLICATION & WATER WELL JOB PERMIT

SACRAMENTO COUNTY
Department of Health

(916) 366-2101

ENVIRONMENTAL HEALTH BRANCH
3701 Branch Center Road
Sacramento, CA 95827

FOR OFFICE USE ONLY

Approved: ☒ Disapproved: ☐
By: [illegible] Date: 6-26-87

Receipt # 26147 Permit # 007403
Total Fee: $96.— Date Issued: 6-26-87
(Permit expires 1 year from date issued)

Grout Inspection by: _____
Date: _____

Final Inspection By: _____
Date: _____

COMMENTS: _____

Application is hereby made to the County of Sacramento Health Officer for a permit to perform work at the location as indicated below:

JOB LOCATION: Area Surrounding McClellan AFB PARCEL #: _____

NEAREST CROSS STREET: _____

OWNER'S NAME _____ PHONE #: _____

OWNER'S ADDRESS _____ CITY: _____

CONTRACTOR'S NAME Water Development Corporation LICENSE #: 283326

ADDRESS: 220 N. East St. CITY: Woodland, CA PHONE #: (916) 662-2829

WORK TO BE PERFORMED:

- ☐ Construct well (new)
- ☐ Deepen well
- ☐ Repair well (state work)
- ☐ Install new pump
- ☐ Repair pump
- ☐ Replace pump
- ☐ Abandon well
- ☒ Other (state)

COMMENTS: ~~20~~ 29 exploratory borings K.K.

DISTANCE TO NEAREST:
_____ Septic Tank system _____ Sewer line _____ Property line _____ Other well

INTENDED USE:
- ☐ Domestic/private
- ☐ Domestic/public
- ☐ Irrigation
- ☐ Industrial
- ☒ Other (state) Exploratory

TYPE OF WELL:
- ☐ Cable
- ☒ Drilled
- ☐ Driven
- ☒ Rotary Dual Tube Air
- ☐ Other (state)

CONSTRUCTION SPECIFICATIONS:
Well depth ~~150~~ ft Diameter 5 1/8"
Gage of casing none Depth _____
Grout depth ~~150~~ ft. Type neat cement
Gravel Pack: Yes ☐ No ☒
Conductor: Yes ☐ No ☒
OTHER INFO: Solid Grout Seal

COMMENTS: Exploratory borings-will be cemented bottom to top after drilling

PUMP INSTALLATION/REPAIR:
CONTRACTOR: N/A
TYPE OF PUMP: _____ HP _____

WELL ABANDONMENT: _____ Diameter: 5 1/8" Depth ~~150~~ ft Material to be used: neat cement
COMMENTS: Cemented bottom to top after drilling K.K.

I hereby agree to comply to all Codes, Rules and Regulations of State of California and the County of Sacramento pertaining to or regulating well construction. Within ten (10) days after completion of work on a new well, I will furnish the County of Sacramento Community Health Agency a Well Driller s Log Report and will notify them before putting the well in use. I WILL CALL FOR A GROUT INSPECTION PRIOR TO GROUTING AND FOR A FINAL INSPECTION

SIGNED [signature] TITLE Hydrogeologist-Project Director
Radian Corporation

DRAW PLOT PLAN ON REVERSE SIDE

SHOW parcel dimensions, adjacent streets, location of nearest septic tank system, location of nearest well, location of structures or any other information that would be pertinent.

RADIAN
CORPORATION

NOTE ACCOMPANYING DEPARTMENT OF HEALTH DRILLING PERMIT

Radian Corporation, under contract to the U.S. Air Force, is requesting a permit to drill ~~20~~ 29 RK reconnaissance (exploratory) borings in the area surrounding McClellan Air Force Base. The borings will be drilled by our subcontractor, Water Development Corporation, by dual-tube air rotary methods and will be cemented from total depth (~~~150~~ 200 K.K. feet) to the surface as the drill stem is extracted.

An attached map shows the initial boring site locations. The actual locations will be dependent upon field conditions and property access.

At the completion of this drilling program, Radian will submit to the Health Department the locations of each boring, drillers logs, and information regarding the abandonment of each hole.

Signed: [signature] Date: 19 June 1984

Title: Hydrogeologist - Project Director, Radian Corporation

3401 LaGrande Blvd Sacramento California 95823/(916)421-8700

SACRAMENTO COUNTY HEALTH DEPARTMENT

RECEIPT FOR FEES AND REPAYMENTS

DATE ~~6/21/84~~ 6/21/84 19___ RECEIPT NO. E 03747

RECEIVED FROM Radian Corp ($ 90.—)

Ninety 0 AND no 100 DOLLARS

☒ CASH ☐ BY MONEY ORDER ☐ BY CHECK ☒ CHECK NO 1997 LOCATION McClellan AFB

FOR: _____ ACCT. NO. _____

9290	ENVIRONMENTAL HEALTH	9790	9698
PDF - DISPOSAL SITE	☐ STC - SEPTIC TANK CLEANER	☐ MIS - MISCELLANEOUS	☐ RCX - GRADE A DAIRIES
AHX - FARM LABOR CAMP	☐ ABX - SEWAGE SYSTEM	9613	☐ REX - MILK PROCESSORS
TEX - FOOD ESTABLISHMENT	☐ SWS - SMALL WATER SYSTEM	☐ SWF - WITNESS FEE	☐ RHX - MFG MILK DAIRIES
IWC - INFECTIOUS WASTE	☒ ADX - WATER WELLS / PUMPS		☐ RKX - SOFT SERVE
AEX - LOAN CERTIFICATIONS	9643		☐ RNX - NON-DAIRY DESSERT
PHM - PERM OCCUPANCY HOTEL	☐ TPX - FOOD PLAN CHECK		
ACX - POOL SERVICE CO.	☐ ZBX - POOL PLAN CHECK		
SCX - PUBLIC POOL	9644		
GEX - REFUSE EXEMPTION	☐ NSE - NOISE ASSESSMENT		
	☐ MPR - MAP REVIEW		

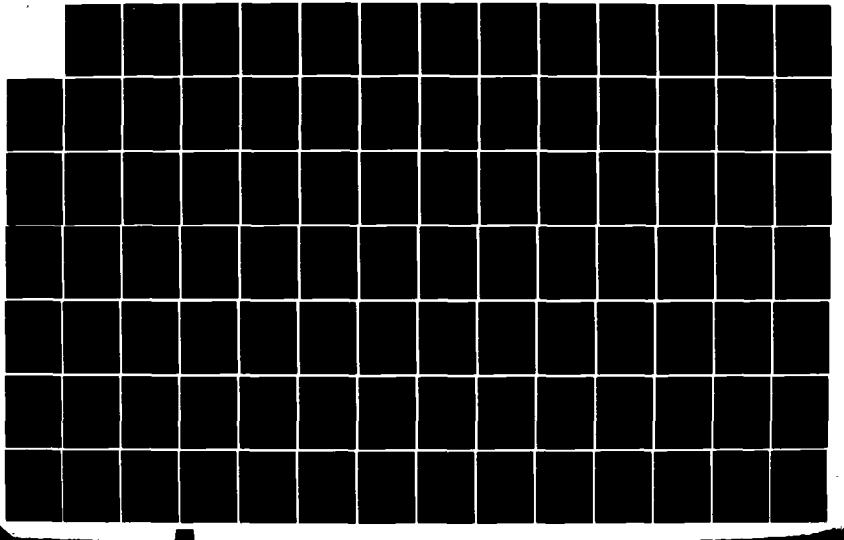
SACRAMENTO COUNTY HEALTH DEPARTMENT
DIRECTOR OF HEALTH

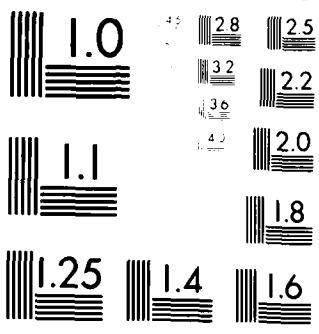
BY R. Fowler

FORM ACCTG HD-22 E (REV 9-83)

AD-A156 283 INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1) 02/10
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

UNCLASSIFIED F/G 13/2 NL





MICROCOPY RESOLUTION TEST CHART

RADIAN
CORPORATION

APPENDIX 5-C

Reconnaissance Boring Drilling Logs

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-1
Sheet 1 of 5

Location Northeast of I and 34th St.
Grid Cell 18:24
Coordinates x 17,450'
y 23,230'

Project McClellan AFB IRP Phase II
Beginning 9/5/84 and end 9/6/84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.82 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0	G			SAND, SILT and CLAY: brown, smells organic, unconsolidated	Drilled by the dual tube air rotary method. OVM (ppm) 70
5	C			SAND and SILT: VF, tan dry, unconsolidated	12.5
10	C			CLAY: brown, dry (?), unconsolidated	66
15	C			SAND: Md-Fn, tan, uncondolidated	8.0
20	C			CLAY and SAND: brown, unconsolidated, dry, Cs-Fn	1.7
25	C			SAND: minor clay, tan, dry, unconsolidated	0.7
30	C			CLAY: plastic, brown, unconsolidated	0.8
35	C			CLAY: plastic, brown, unconsolidated	1.5
40					

484 16.5.6

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-1
Sheet 2 of 5

Location Northeast of I and 34th St.
Grid Cell 18:24
Coordinates x 17,450'
y 23,230'

Project McClellan AFB IRP Phase II
Beginning 9/5/84 and end 9/6/84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.82 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			CLAY: brown, plastic, unconsolidated	
45					
	C			CLAY: brown, plastic, unconsolidated	Driller cut w/water 13
50					
	C			CLAY: sand	41.9
55					
	C			CLAY: same	71.4
60					
	C			CLAY: same	64.0
65					
	C			CLAY: same	70.0
70					
	C			CLAY: same	12.0
75					
	C			CLAY: same	6.0
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-1
Sheet 3 of 5

Location Northeast of I and 34th St.
Grid Cell 18:24
Coordinates x 17,450'
y 23,230'

Project McClellan AFB IRP Phase II
Beginning 9/5/84 and end 9/6/84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.82 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY and SAND: brown, interbedded, unconsolidated	83
85					
	C			CLAY and SAND: same, gravel and sand at 89'	26.6
90					
	C			CLAY and SAND: same	50.5
95					
	C			CLAY and SAND: same	14.0
100					
	C			CLAY and SAND: same	19.8
105					
	C			GRAVEL, CLAY and SAND: brown, no free water, unconsolidated	Driller cut w/water 22.3
110					
	C			CLAY and SAND: brown, unconsolidated	Driller cut w/water 7.4
115					
	C			CLAY and SAND: same	WL: ~97', T°C=23°C, C: 270, pH: 7.5
120					

484 1656

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-1
Sheet 4 of 5

Location Northeast of I and 34th St.
Grid Cell 18:24
Coordinates x 17,450'
y 23,230'

Project McClellan AFB IRP Phase II
Beginning 9/5/84 and end 9/6/84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.82 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					-0.2 (background)
	C			CLAY and SAND: interbedded, tan to brown, FN-VF, unconsolidated, no free water	
125					
	C			SAND: FN-VF, dry (?), unconsolidated	0.1
130					
	C			SAND and CLAY: same	0.1
135					
	C			SAND and CLAY: interbedded	No obvious water from cuttings. WL: 110'BGL, T=23°C, C: 160, pH: 7.4
140					
	C			CLAY and SILT: interbedded, tan, dry(?) unconsolidated, no free water	
145					
	C			CLAY and SAND: tan, hard, dry (?), unconsolidated	Driller cut w/water 1.4
150					
	C			CLAY: brown, hard, unconsolidated	Driller cut w/water 3.0
155					
	C			CLAY and SAND: interbedded, brown, unconsolidated	5.7 No obvious water WL: 127'BGL, T=23°C, C: 230, pH: 7.5
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-1
Sheet 5 of 5

Location Northeast of I and 34th St.
Grid Cell 18:24
Coordinates x 17,450'
y 23,230'

Project McClellan AFB IRP Phase II
Beginning 9/5/84 and end 9/6/84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.82 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					0.3 (background)
	C			SILT and SAND: minor clay, tan, dry(?) no visible water, unconsolidated	2.4
165					
	C			CLAY: brown, dry, hard, unconsolidated	Driller cut w/water 1.5
170					
	C			CLAY: brown, hard, dry, unconsolidated	1.7
175					
					2.6
	C	RB-1-4		CLAY: brown, hard, dry, unconsolidated	Driller cut w/water WL: 122'BGL, T: 21°C, C: 170, pH: 7.4
180					
	C			SAND: Cs-Md, mottled, black to tan, water produced, ang-subang, clear quartz grains, white grains (shells?)	30.5
185					
	C			SAND: same	2.1
190					
	C			CLAY: brown, hard, dry, unconsolidated	4.4
					23.6
195				SAND and CLAY: interbedded, brown, water, unconsolidated	WL: 132'BGL, T=21°C, C: 180, pH: 7.8
	C				Grouted hole through dual tubes w/ sacks Portland Cement Type I & II
200		RB-1-5		Total Depth: 200 Feet	

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-2
Sheet 1 of 5

Location
Grid Cell 9, 20
Coordinates x 8075
y 19750

Project McClellan AFB IRP Phase II
Beginning 8-14-84 and end
8-15-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters L. Holtort

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0				Surface Casing	Drilled by the dual tube air rotary method.
5					0.0
	C			SILT: Moist, brown, fine grained	
10					0.0
	C			Same as above	
15					0.0
	C			SILT: Fine, yellow-brown, powder	
20					0.5
	C			CLAY: Silty, poor plasticity	Injecting H_2O
25					2.5
	C			CLAY: Silty, yellow, poor plasticity	
30					1.7
	C			SILT: With minor clay, yellow-brown	
35					0.4
	C			CLAY: Silty, brown, poor plasticity	
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-2
Sheet 2 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end
of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters L. Holtort

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SILT: Sandy, unconsolidated, poorly sorted, sand 25%	0.4
45					0.3
	C			SAND: Silty, poorly sorted, brown unconsolidated	
50					0.5
	C			SAND: Micaceous, with brown clay, interbedded	
55					0.6
	C			CLAY: Silty, good plasticity, brown	
60					0.5
	C			SAND: Silty, moist, possible perched water, 60'-61'	
65					0.6
	C			SAND: Silty, with minor clay, out of perched zone	
70					0.9
	C			CLAY: Silty, fair plasticity	
75					2.1
	C			SAND: Clayey, clay 10%, brown, sand medium grained, cemented	
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-2
Sheet 3 of 5

Location _____
Grid Cell _____
Coordinates x _____
y _____

Project McClellan AFB IRP Phase II
Beginning _____ and end
_____ of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters \ L. Holtort

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Hard, cemented, clay matrix	2.2
85					
	C			SILT: Sandy, losing circulation and cutting into formation	0.9 Lost circulation
90					
	C			No return, lost circulation	Lost circulation
95					
	C			No return, lost circulation	Water sample 3.2 pH = 6.0 Conductivity = 230 Temperature = 23°C
100					
	C			SAND: Clayey with some coarse gravel stringers	
105					
	C			No sample	
110					
	C			SAND: Silty, poorly sorted quartz, subangular, clear-yellow	0.9
115					
	C			SAND: fine-medium grained, poorly sorted	±25 gpm 0.4
120					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-2
Sheet 4 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end
of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters / L. Holtort

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					0.9
	C			SAND: Clayey, sand is fine grained, moderately sorted	Lost circulation 125'
125					1.0
	C			CLAY: Yellow-brown, very good plasticity	
130					0.3
	C			SAND: Coarse, poorly sorted with clay stringer 134'-135'	±25 gpm
135					0.4
	C			CLAY: Sandy, water bearing	Water sample pH = 7.5 Conductivity = 200 Temperature = 19°C Water clear
140					0.7
	C			SAND: Very coarse, poorly sorted with minor gravel	±25 gpm
145					0.8
	C			SAND: Coarse, poorly sorted with clay stringer 149'-150'	
150					0.6
	C			SAND: Fine-medium grained, quartz subangular, clear-yellow, clay 154'	
155					0.6
	C			SAND: Cemented - 155'-159'; Clay - 159'-160'; Sand - 160'	Water sample pH = 7.8 Conductivity = 210 Temperature = 18°C
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring & Well No. RB-2
Sheet 5 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end
of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters L. Holtort

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					
	C			CLAY: Silty, silt 25%, clay, brown poor plasticity	0.1
165					0.2
	C			SAND and CLAY: Interbedded, water bearing, clay is conforming at 170'	±50 gpm
170					--
	C			SAND: Cemented, red, fairly well sorted, good aquifer	±50 gpm
175					0.6
					sieve=silt
	C			SAND: Medium grained, fairly well sorted	Water sample pH = 7.8 Conductivity = 190 Temperature = 18°C
180					
	C			CLAY and SAND: Interbedded, 50% each, decrease in sand with depth	0.1
185					0.6
	C			CLAY: Sandy, interbedded	
190					0.1
	C			SAND and CLAY: Interbedded	Lost circulation 194'
195					Grout hole through dual tubes w/ sacks Portland Cement Type I & II
	C			SAND: Silty with minor clay Total Depth: 200 Feet	
200					0.6

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 3
Sheet 1 of 5

Location
Grid Cell 6, 20
Coordinates x 5600
y 19800

Project McClellan AFB IRP Phase II
Beginning and end of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner / B. Herst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			SILT: Sandy, fine to very fine, angular to subangular, tan	0.0
5					
	C			SAND: Silty, clayey, fine grain, tan to brown	0.0
10					
	C			SILT: Sandy, clayey, fine to very fine, red brown	0.04
15					
	C			SAND: Silty, clayey, fine to very fine grain, subangular to subrounded, clay increasing with depth, brown	0.0
20					
	C			SAND: Clayey, fine to very fine grain, subangular to subrounded, clay increasing with depth, brown	0.0
25					
	C			SAND: Clayey, fine to medium grain, subangular to subrounded, brown	0.0
30					
	C			SAND: silty, medium to course grain, brown	0.0
35					
	C			SAND: Medium grain, trace of silt, clay, brown	0.0
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 3
Sheet 2 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end
of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner B. Horst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Silty, clayey, medium to fine grain, brown	0.0
45					
	C			SAND: Silty, gravelly, medium to coarse grain, subrounded to rounded, brown	0.0
50					
	C			SAND: Medium grain, clean	0.0
55					
	C			SAND: Clayey, fine to medium grain, dark brown	0.0
60					
	C			CLAY: Silty, micaceous, brown	0.0
65					
	C			CLAY: Silty, micaceous, brown	0.0
70					
	C			CLAY: Silty, micaceous, brown	0.0
	C			CLAY: Silty, sandy, highly plastic	0.0
80					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 3
Sheet 3 of

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end
of drilling operation
Sampling Interval (Estimated) Composite (ft)
Type Drill Rig and Operator Chicago Pneumatic CP-[illegible]
Log Recorded By W. Boettner

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Silty, clayey, fine to very fine grain, brown	0.0
85					
	C			SAND: Gravelly, clayey, silty, medium to coarse grain, subround to round	0.0
90					
	C			SAND: Silty, fine to very fine grain, brown	0.0
95					
	C			SAND: Silty, fine to very fine, tan water	0.0 Water sample at 100' pH=4.3 Cond. = 200 Temperature = 22°C
100					
	C			SAND: Silty, water	0.0
105					
	C			SAND: Silty, very fine grain, tan	0.0
110					
	C			GRAVEL: Sandy, silty, tan to brown	0.0
115					
	C			SAND: Gravelly, silty, medium to coarse grain, brown	0.0
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 3
Sheet 4 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP300
Log Recorded By N. Boettner B. Horst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			SAND: Silty, very fine grain, brown	0.0
125					
	C			SAND: Gravelly, silty, fine to medium grain, brown	0.0
130					
	C			CLAY: Gravelly, sandy, high plasticity, brown	0.0
135					
	C			SAND: Clayey, FeO_x staining, Red brown	0.04
140					
	C			SAND: Silty, fine to very fine grain	0.04
145					
	C			SAND: Silty, fine to very fine grain	0.02
150					
	C			SAND: Silty, sparse gravels, fine to very fine	0.01
155					
	C			SAND: Silty, medium to fine grain, brown	0.01 Water sample at 160 pH = 4.7 Temperature = 18°C Conductivity = 200
160					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 3
Sheet 5 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end
of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner B. Horst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					
	C			SAND: Medium to coarse grain, FeO_x staining, brown	0.02
165					
	C			SAND: Clayey, silty, fine to medium grain, plastic, brown	0.02
170					
	C			SAND: Silty, Clayey, fine to medium grain, somewhat plastic, brown	0.04
175					
	C			SAND: Silty, medium to coarse grain	0.02 Water sample at 180' pH = 5.6 Temperature = 20°C Conductivity = 190
180					
	C			SAND: Clayey, micaceous, fine to very fine grain, red brown	0.04
185					
	C			SAND: Micaceous, fine to very fine grain, reddish brown	0.02
190					
	C			SAND: Micaceous, clayey, fine grain, clay increasing with depth, red brown	0.01
195				CLAY: Sandy, fine to very fine, slightly micaceous, brown	0.01 0-200' 4½" hole Grouted hole through dual tubes w/ 29 sacks Portland Cement Type I & II
	C				
200				Total Depth: 200 Feet	

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-4
Sheet 1 of 5

Location
Grid Cell 9:19
Coordinates x 8535'
y 18875'

Project McClellan AFB IRP Phase II
Beginning and end of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters L. Holtort

Ground Level Elevation: 53 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
				Surface, plaster from blow-out preventer	0.1
5					
	C			SILT: Brown, with minor clay	0.1
10					
	C			SILT: Clayey, dark brown	0.1
15					
	C			CLAY: Silty, dark brown, moist, becoming siltier with depth	0.1
20					
	C			SAND: Fine-coarse, poorly sorted, dark brown	0.1
25					
	C			CLAY: Silty, with several sand stringers, cuttings grey-brown, possible contamination	0.1
30					7.5
	C			SILT: Clayey, cemented	
35					
	C			SAND: Fine-medium grained, micaceous	Contact, sharp
40					0.1

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-4
Sheet 2 of 5

Location
Grid Cell 9:19
Coordinates x 8535'
y 18875'

Project McClellan AFB IRP Phase II
Beginning and end
of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters L. Holtort

Ground Level Elevation: 53 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SILT: Yellow-brown, cemented	0.2
45					
					0.2
	C			SILT: Hard (cemented) with clay, 25% yellow-brown	
50					
					0.1
	C			SILT: Sandy, fine grained, yellow-brown, sand 25%	
55					
					0.1
	C			SAND: Fine grained, coffee brown, oxidized, distinct unit	
60					
					0.2
	C			CLAY: Tan-brown, very good plasticity	
65					
					0.2
	C			SAND: Silty, poorly sorted, fine-medium grained	
70					
					0.1
	C			CLAY: Grey, good plasticity	
75					
	C			No sample	--
80					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-4
Sheet 3 of 5

Location
Grid Cell 9:19
Coordinates x 8535'
y 18875'

Project McClellan AFB IRP Phase II
Beginning and end of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem .000 CSR/
Log Recorded By T. Walters \ L. Heltort

Ground Level Elevation: 53 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY: Brown, good plasticity	0.1
85					
	C			Same as above	0.3
90					
	C			CLAY: Silty, dark brown, silt 25%	0.3
95					
	C			SAND: Fine-medium grained, micaceous, poorly sorted, quartz subangular	0.2 Water sample at 98' pH = 9.5 Conductivity = 300 Temperature = 23°C
100					
	C			CLAY: With gravel, gravel poorly sorted, subangular, clay very plastic, fining downward	0.1
105					
	C			CLAY: With coarse sand, silt 106', interbedded, sand, subangular, poorly sorted	0.4
110					
	C			CLAY: Dark brown, very good plasticity	2.0
115					
	C			CLAY: Silty, brown, sand stringer 119'	1.1
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-4
Sheet 1 of 2

Location
Grid Cell 9:19
Coordinates x 8535'
y 18875'

Project McClellan AFB IRP Phase II
Beginning _____ and end _____ of drilling operation
Sampling Interval (Estimated) Composite (ft)
Type Drill Rig and Operator Drillsystem 2000 CSR/
Log Recorded By J. Walters L. [illegible]rt

Ground Level Elevation: 53 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			SAND: Clayey, clay 15%, interbedded	0.1
125					
	C			No sample	--
130					
	C			CLAY: Silty, light brown, fair plasticity	--
135					
	C			SAND: Silty with minor clay, water-bearing	0.0 Water sample ±10gpm pH 9.0 Conductivity-210 Temperature-19°C
140					
	C			SAND: Coarse, with clay, clay 25%, sand poorly sorted	0.0
145					
	C			SAND: Coarse, with minor clay, sand, poorly sorted, clay zone fairly confining	0.0
150					
	C			SAND: Clayey, interbedded, sand is water-bearing, clay confining, sand stringer 153'-154', confining clay 155'	0.0 Lost circulation 154'
155					
	C			SAND: Fine-medium grained, some clay not plastic, making water	0.0 Water sample-V. Muddy pH = 7.8 Conductivity = 200 Temperature = 18°C
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring & Well No. RB-4
Sheet 5 of 5

Location
Grid Cell 9:19
Coordinates x 8535'
y 18875'

Project McClellan AFB IRP Phase II
Beginning and end of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters / L. Holtort

Ground Level Elevation: 53 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					0.0
	C			SAND: Micaceous, quartz, clear-yellow, fine-medium grained, subrounded	Major aquifer ±100 gpm
165					
	C			Same as above	0.0
170					
	C			Same as above	0.0
175					
	C			Same as above	0.0
180					
	C			SAND and CLAY: interbedded, clay fairly plastic, sand, fine-medium grained	0.0
185					
	C			SAND and CLAY: increase in clay 50% each, clay brown, plastic, sand fine-coarse grained, coarse sand 190'	0.0 Lost circulation 187
190					
	C			SAND with CLAY: Sand 80%, Clay 20%, clay yellow-brown	0.0 ±100 gpm Water sample pH = 7.5 Conductivity = 210 Temperature = 18°C
195				SAND and CLAY	Grout hole through dual tubes w sacks Portland Cement Type I & II
	C			Total Depth: 200 Feet	0.0
200					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-5
Sheet 1 of 6

Location
Grid Cell 9,18
Coordinates x 8500
y 17900

Ground Level Elevation: 57 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 8-10-84 and end 8-11-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters L. Holtort

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0				Surface plaster, from blow-out preventer	Drilled by the dual tube air rotary method.
5	C			SILT: Unconsolidated, tan-brown	0.2
10	C			CLAY: Silty, tan, silt fine grain	0.2
15	C			SILT: Sandy, poorly sorted, brown, with stringers of clay	0.3
20	C			SILT: Sandy, poorly sorted, brown, sand is fine-medium grained 25%	0.4
25	C			CLAY: Silty, good plasticity, clay balling up, silt 25%	0.4 Injecting H_2O, losing circulation
30	C			CLAY: Silty, brown, silt 25%, inter-bedded	0.4
35	C			CLAY: Silty, brown, silt 25%, same as above	0.7
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-5
Sheet 2 of 6

Location _____
Grid Cell _____
Coordinates x _____
y _____

Project McClellan AFB IRP Phase II
Beginning _____ and end
_____ of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters L. Holtert

Ground Level Elevation: 57 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					0.3
	C			CLAY: Silty, same as above, silt 25%, coarsening downward	
45					0.3
	C			CLAY: Silty, silt brown, 25% clay, dark brown, good plasticity	Very slow drilling
50					0.3
	C			SAND: Silty, poorly sorted, yellow-brown, fine-medium grained	
55					0.3
	C			CLAY: Silty, with minor sand, poorly sorted sand, interbedded with clay and silt	
60					0.3
	C			SILT: Yellow-brown, no clay visible	
65					0.2
	C			SILT: Same as above, with trace clay, fining downward	
70					0.2
	C			CLAY: Silty, brown	
75					0.2
	C			SAND: Micaceous, fine-medium grained, moderately sorted, moist	Dropped waterline, dry
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-5
Sheet 3 of 6

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end
of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters \L. Holtort

Ground Level Elevation: 57 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY: Silty, brown, silt 25%	0.3
85					
	C			CLAY: Silty, yellow, silt 35%	0.3
90					
	C			CLAY: Grey-brown, good plasticity	0.3
95					
	C			CLAY: Silty, dark grey, stained with petroleum, very strong odor in cuttings	Water 98' pH = 6.9 Conductivity = 910 Temperature = 21°C AID 17.0 ppm
100					
	C			CLAY: Same as above	0.4
105					
	C			CLAY: Silty	0.4
110					
	C			CLAY: Sandy	0.4
115					
	C			CLAY: Silty, yellow, silt 25%, clay fair plasticity	Water 120' pH = 7.5 Conductivity = 210 Temperature = 19°C
120					75.0

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-5
Sheet 4 of 6

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters / L. Bolliger

Ground Level Elevation: 57 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			CLAY: Silty, same as above, yellow, strong petroleum odor in cuttings	0.6
125					
	C			CLAY: Silty, yellow-brown, fair plasticity	0.1
130					
	C			Same as above	0.1
135					
	C			SAND: Silty, poorly sorted, fine-medium grained, water bearing	Water sample Water 140' pH = 7.5 0.1 Conductivity = 400 Temperature = 18°C
140					
	C			SAND: Coarse, subangular, quartz clear and yellow, Biotite 5%, lithic frag. 10%	0.1
145					
	C			SAND and GRAVEL: Same as above, coarsening downward	0.1
150					
	C			Same as above	0.1
155					
	C			Same as above	0.1
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring / Well No. RB-5
Sheet 1 of 6

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end
of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 2000 CSR/
Log Recorded By T. Walters \ L. Holtort

Ground Level Elevation: 57 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					
	C			CLAY: Silty, confining, fair plasticity	0.5
165					
	C			CLAY: Silty, with minor sand, inter-bedded, silt 20%, sand 10%	±10 gpm 0.5
170					
	C			SAND: Medium grained, with clay, brown, clay 10%	±50 gpm 0.5
173					Sieve = silt
	C			SAND: Medium-coarse grained, poorly sorted with clay matrix, 10%. Lithic fragments 10%	Water sample 0.5 pH 7.8 Conductivity = 210 Temperature = 18°C
180					
	C			CLAY: Yellow, confining, fair plasticity, gummy	0.3
185					
	C			Same as above. Coarsening downward, increase in silt w/depth	0.4
190					
	C			CLAY: Sandy, light brown	0.3 Water sample Good contact 195' pH = 8.9 Conductivity = 300 Temperature = 18°C
197					
	C			SAND: Coarse, poorly sorted, micaceous, highly oxidized, quartz clean, sub-angular	0.3
200					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-5
Sheet 6 of 6

Location _____
Grid Cell _____
Coordinates x _____
y _____

Project McClellan AFB IRP Phase II
Beginning _____ and end _____ of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 2000 CSR/
Log Recorded By E. Walters / L. Holtzer

Ground Level Elevation: 57 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
200					
	C			SAND: Course grained, poorly sorted, same as above	±150 gpm 0.3
205					
	C			CLAY: Yellow brown, confining, good plasticity, out of water	0.3 Grout hole through dual tubes with 35 sacks Portland Type I-II cement.
210				Total Depth - 210'.	
	C				
	C				
	C				
	C				
	C				
	C				

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-6
Sheet 1 of 6

Location
Grid Cell 9, 18
Coordinates x 8375
y 17375

Ground Level Elevation: 57 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 8-9-84 and end 8-9-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters \ L. Holtort

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
	C			SOIL: Unconsolidated	0.5
5					0.5
	C			CALICHE: White, with topsoil	
10					0.5
	C			SAND: Silty, brown, poorly sorted	
15					0.5
	C			SAND: Silty, loosely consolidated, poorly sorted, medium - coarse grained, moist, fining downward	0.5
20					
	C			SAND: Silty, light brown, fine grained, fining downward	
25					0.5
	C			SAND: Silty, dark brown, very fine	
30					0.5
	C			SAND: Silty, fine-medium grained, mod-well sorted	
35					0.6
	C			SAND: Silty, poorly sorted	

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-6
Sheet 2 of 6

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end
of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters L. Holtort

Ground Level Elevation: 57 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Poorly sorted, fine-medium grained, brown	0.6
45					
	C			SAND: Fine-medium grained, grading down to yellow silt, 46-50 fining downward	0.5
50					
	C			SILT: Yellow, extremely fine "flour" texture	0.5
55					
	C			CLAY: Silty, slightly moist, "flour"	0.5
60					
	C			CLAY: Silty, red-brown, more oxidized than above unit	0.5
65					
	C			CLAY: Red, silty, same as above	0.5
70					
	C			SILT: Tan, similar to silt from above 46-50	0.5
75					
	C			SILT: Dark brown, cemented, with clay stringers	
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-6
Sheet 3 of 6

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end
of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 2000 CSR
Log Recorded By T. Walters / L. Holtzer

Ground Level Elevation: 57 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY: Dark brown, fairly plastic, slightly moist	0.6
85					0.6
	C			SILT and CLAY: Mixed, yellow	
90					0.6
	C			CLAY: Sandy, sand is water-bearing, clay is confining	
95					0.6
	C			SAND: Clayey, water at 95', sand fine-medium grained, clay red-brown	Water sample Water 95' pH = 6.9 Conductivity = 210 Temperature = 24°C
100					0.6
	C			CLAY: Yellow, very good plasticity, confining	
105					0.6
	C			CLAY: Yellow, same as above	
110					0.6
	C			CLAY: Yellow, grading to sandy clay 114'-115'	
115					0.6
	C			CLAY: Silty, brown	Lost circulation
120					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-6
Sheet 1 of 6

Location _____
Grid Cell _____
Coordinates x _____
y _____

Project McClellan AFB IRP Phase II
Beginning _____ and end _____ of drilling operation
Sampling Interval (Estimated) Composite (ft)
Type Drill Rig and Operator Drillsystem, 300 CSR
Log Recorded By [illegible]

Ground Level Elevation: 57 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			CLAY and SAND: Interbedded, poorly sorted, sand producing ±10 gpm	0.4
125					0.4
	C			CLAY: Yellow, silty, poor plasticity	
130					0.4
	C			SAND and GRAVEL: Coarse grained, poorly sorted, subangular quartz	
135					0.4
	C			GRAVEL: Poorly sorted, subangular quartz, lithic 10%	Water sample pH = 7.9 Conductivity = 300 Temperature = 18°C
140					
	C			SAND: Coarse, dark brown, micaceous, poorly sorted	0.3
145					0.3
	C			SAND and GRAVEL: Poorly sorted, lithic fragments 10-15%, quartz clear, yellow	
150					0.3
	C			CLAY: Grey, confining, sharp contact with above unit	
155					
	C			SAND: Brown, fine-medium grained with clay matrix, muddy	0.3
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring & Well No. RB-6
Sheet 5 of 6

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters L. Holtort

Ground Level Elevation: 57 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					0.3
	C			CLAY: Silty, brown, fair plasticity	±25 gpm
165					
					0.1
	C			SAND: Micaceous, fine-medium grained, moderately sorted with oxidized water	
170					
					0.3
	C			SAND: Micaceous, finer than above unit, highly oxidized	
175					
					0.3
	C			CLAY: Yellow, fair plasticity	Water sample pH = 9.0 Conductivity = 200 Temperature = 19°C
180					
	C			CLAY: Yellow-grey, confining, out of water	0.3
185					
					0.3
	C			SAND: Fine-medium, muddy, 25% clay matrix	
190					
					0.3
	C			CLAY: Yellow, confining, out of water	±10 gpm
195					
					Water sample pH = 9.8 0.8
	C			SAND: Coarse, poorly sorted, fine-coarse grained	Conductivity = 210 Temperature = 18°C
200					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-6
Sheet 6 of 6

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning and end of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters J. Seltert

Ground Level Elevation: 57 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
200					0.3
	C			SAND: Fine-medium grained, poorly sorted, quartz, clear, lithics 10%	±100 gpm
205					0.3
	C			CLAY: Yellow, with stringers of fine sand	Grout hole through dual tubes using Ready-Mix cement truck and Portland type I-II cement.
210				Total Depth - 210'.	

Total Depth: 210 feet

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-7
Sheet 1 of 3

Location
Grid Cell 9, 17
Coordinates x 8635
y 16,810

Ground Level Elevation: 55 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 5 August 1984 and end 6 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters L. Heitert

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
	C			SILT; light brown, w/2' topsoil.	0.2
5					
	C			SILT; light brown, moist, some unconsolidated rock fragments.	0.2
10					
	C			SAND; poorly sorted, loosely consolidated, 10% lithic fragments.	0.2
15					
	C			SAND; silty with gray clay galls, lt. brown, moderately sorted.	0.1
20					
	C			CLAY; silty, with stringers of sand, brown, clay 75%, sand 25%.	0.1
25					
				CLAY; silty, trc. sand becoming sandy clay with depth.	0.0
				Increase sand 30-35'.	0.0
				CLAY; sandy, dark brown, sand poorly sorted, clay red-brown.	0.0

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-7
Sheet 2 of 3

Location
Grid Cell 9, 17
Coordinates x 8635
y 16,810

Project McClellan AFB IRP Phase II
Beginning 5 August 1984 and end 6 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters M. Seifert

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			CLAY; tan, slightly moist very little sand, fine grained.	0.2
45					
	C			SAND; very well sorted, well rounded, brown, quartz 70% lithics 30%.	0.2
50					0.4
	C			SAND; clayey, interbedded, clay 55-56'; sand 56-60' clay dark brown, fair plasticity.	
55					0.2
	C			CLAY; red silty, fining downward.	
60					0.8
	C			CLAY; light tan, good plasticity, gummy, very little sand.	
65					
	C			CLAY; tan, fair plasticity, trace sand, fine grained.	0.8
70					
	C			SAND; silty, brown, with silt 35%, clay 10%.	0.8
75					
	C			CLAY; brown silty, silt 20%, clay 80%.	0.8
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-7
Sheet 3 of 5

Location
Grid Cell 9, 17
Coordinates x 8635
y 16,810

Ground Level Elevation: 55 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 5 August 1984 and end 6 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters / L. Holtort

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY; brown silty silt 15%, clay poor plasticity.	0.8
85					0.1
	C			CLAY; silty, silt 30%, fine-grained.	Slow drilling.
90					0.1
	C			CLAY; same as above, with silt stringer 94-95'.	
95					0.1
	C			SILT; light-brown, with clay clasts water-bearing.	Water sample Depth to water 78' SC 400 Temp 20° pH 6.8
100					0.1
	C			CLAY; brown, confining, no cuttings return.	Lost circulation.
105					0.1
	C			CLAY; tan-yellow, plugged bit lost surface seal.	
110					0.1
	C			CLAY; yellow- trc. silt, fine-grained.	
115					
	C			SAND; fine-med. grained with clay stringers, brown.	0.1
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-7
Sheet 4 of 5

Location
Grid Cell 9, 17
Coordinates x 8635
y 16,810

Project McClellan AFB IRP Phase II
Beginning 5 August 1984 and end 6 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 2000 CSR/
Log Recorded By D. Walters / L. Holtort

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			SAND; fine-med. grained, micaceous, moderately sorted, oxidized.	0.1
125					
	C			SAND; fine-grained, gray-brown, with clay, clay 25%, sand 75%.	0.0
130					
	C			SAND; brown, oxidized, poorly sorted, with minor clay.	0.0
135					
	C			CLAY; tan, confining with trace silt.	0.0 Lost circulation water sample pH 7.0 Cond. 410 Temp. 18°C
140					
	C			SAND; silty with stringers of red clay.	0.0
145				GRAVEL; 144'.	
	C			CLAY; sandy, no return.	0.0
150					
	C			SAND; coarse, poorly sorted, brown, cemented.	0.0
155					
	C			GRAVEL; with sand, very poorly sorted, water bearing.	Sieve analysis = sand Water sample pH 8.5 0.0 Cond. 400 Temp. 19°C
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring / Well No. RB-7
Sheet 3 of 3

Location
Grid Cell 9, 17
Coordinates x 8635
y 16,810

Ground Level Elevation: 55 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 5 August 1984 and end 6 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 2000 CSR/
Log Recorded By T. Walters / L. Holtort

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160				Lost Circulation 160'.	
	C				0.0
165					TD 165'.
	C				
170					
	C				
175					
	C				
180					
	C				
185					
	C				
190					
	C				
195					
	C				
200				Total Depth: 165 Feet	Grout hole thr ugh dual tubes w 75 sacks Portland Cement Type I & II

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-8
Sheet 1 of 6

Location
Grid Cell 6, 17
Coordinates x 5880
y 16,500

G.L. Elevation 53 ft, msl (topo.)

Project McClellan Phase II
Beginning 30 July 1984 and end
31 July 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D.Richmann/T.Walters

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
					ovm(ppm)
	G			TOPSOIL	
5					
	C			SAND; silty, fine-grained, dry, tan.	0.7
10					
	C			SAND; similar to above with traces of fine gravel.	0.7
15					
	C			SAND; as above.	2.5 (unstable)
20					
	C			SAND; similar to above, coarsening with depth.	
25					
	C			GRAVEL; fine-grained with some fine sand and silt, slightly damp, tan.	
30					
	C			SILT; with some fine sand; slightly damp, tan.	
35					
	C			SILT; as above.	
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-8
Sheet 2 of 6

Location
Grid Cell 6, 17
Coordinates x 5880
y 16,500

G.L. Elevation 53 ft, msl (topo.)

Project McClellan Phase II
Beginning 30 July 1984 and end 31 July 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D.Richmann /T.Walters

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					ovm (ppm)
	C			SILT; as above.	1.3
45					
	C			SAND; fine-grained with some silt; slightly damp, tan.	
50					
	C			SILT; sandy, fine-grained; slightly damp, tan.	
55					
	C			SILT; similar to above with minor fine gravel.	
60					
	C			SILT; as above.	27 (meter very unstable; battery low; discontinued measurements)
65					
	C			SAND; fine-grained, silty; slightly damp, tan.	
70					
	C			SAND; similar to above with trace fine gravel and clay.	Thin clay stringer at 73.0-73.5'.
75					
	C			CLAY; sandy, with minor fine gravel; sticky, plastic, wet, tan.	
80					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-8
Sheet 3 of 6

Location
Grid Cell 6, 17
Coordinates x 5880
y 16,500

G.L. Elevation 53 ft, msl (topo.)

Project McClellan Phase II
Beginning 30 July 1984 and end 31 July 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D. Richmann /T.Walters

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND; fine-grained, silty, micaceous; slightly damp, red-brown.	
85					
	C			SAND; similar to above; wet.	
90					
	C			SAND; coarse-grained with minor fine gravel; damp.	
95					
	C			SAND; medium to coarse-grained, moderately sorted, damp.	RB-8-1 (100') T = 25°C pH = 6 C = 200 µmhos
100		RB-8-1			
	C			SILT; clayey; water-bearing, yellow-brown.	
105					
	C			SILT; as above.	
110					
	C			SILT; similar to above, increasing clay with depth.	
115					
	C			SILT; as above.	
120					Lost circulation

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-8
Sheet 4 of 6

Location
Grid Cell 6, 17
Coordinates x 5880
y 16,500

G.L. Elevation 53 ft, msl (topo.)

Project McClellan Phase II
Beginning 30 July 1984 and end
31 July 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual Tube Rotary
Log Recorded By D.Richmann/T.Walters

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					OVM (ppm)
	C			SAND: silty, moderately sorted; slightly damp, tan to brown.	0.04
125					
	C			SAND; similar to above; wet.	0.0
130					
	C			SAND: as above.	0.0
135					RB-8-2 (140') T = 18°C pH = 8 C = 200 µmhos
	C			SILT; with some clay; saturated, tan to brown.	0.04
140		RB-8-2			
	C			CLAY; hard, dry to slightly damp, tan to brown.	
145					
	C			SAND; medium to coarse-grained, water-bearing, brown.	
150					
	C			SAND; as above.	
155					RB-8-3 (160') T = 18°C pH = 7.2 C = 210 µmhos
	C			SAND; as above.	0.09
160					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-8
Sheet 5 of 9

Location
Grid Cell 6, 17
Coordinates x 5880
y 16,500

G.L. Elevation 53 ft, msl (topo.)

Project McClellan Phase II
Beginning 30 July 1984 and end 31 July 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual Tube Rotary
Log Recorded By D.Richmann/T.Walters

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160		RB-8-3			OVM (ppm)
	C			SAND; as above.	0.2
165					
	C			SAND; similar to above, slightly finer-grained.	
170					
	C			SAND; fine to medium-grained; minor silt; water-bearing, brown.	0.017
175					
	C			CLAY; some sand; plastic, saturated, brown.	
180					
	C			SAND; coarse-grained, some fine gravel; highly productive aquifer.	
185					
	C			SAND; as above.	
190					
	C			SAND; as above.	
195					
	C			SAND; as above.	RB-8-4 (200') T = 17°C pH = 7.6 C = 215 µmhos
200					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No RB-8
Sheet 6 of 9

Location
Grid Cell 6, 17
Coordinates x 5880
y 16,300

G.L. Elevation 53 ft, msl (topo.)

Project McClellan Phase II
Beginning 30 July 1984 and end
31 July 1984 of drilling operation
Sampling Interval (Estimated) (ft)
Type Drill Rig and Operator Dual [illegible]
Log Recorded By D.Richmann / T.Walters

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
200		RB-8-4			Lost circulation
	C			SAND; as above.	
205					
	C			SAND; as above.	
210					
	C			SAND; as above.	
215					
	C			GRAVEL; fine-grained, with some coarse sand; red-brown; high production aquifer.	
220					TD = 220' Hole grouted with Portland Type I-II neat cement. Cement delivered through drill stem from bottom of hole up to surface.
225					
230					
235					
240					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-9
Sheet 1 of 5

Location
Grid Cell 9, 15
Coordinates x 8240
y 14,790

G.L. Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 8 August 1984 and end 9 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
					OVM (ppm)
	G			TOPSOIL.	
5					
	C			CLAY; silty; slightly damp, brown.	0.0
10					
	C			CLAY; as above to approx. 13'; well sorted, tan silt below; damp.	0.0
15					
	C			SILT; well sorted with minor clay; slightly damp, tan.	0.0
20					
	C			SILT; well sorted, slightly damp, red-brown.	0.0
25					
	C			SILT; similar to above; clay increasing with depth.	0.0
30					
	C			SILT; clayey; slightly damp, brown.	0.0
35					
	C			SILT; as above.	0.0
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-9
Sheet 2 of 5

Location
Grid Cell 9, 15
Coordinates x 8240
y 14,790

G.L. Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 8 August 1984 and end 9 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D.Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					OVM (ppm)
	C			SILT; clayey, similar to above, but red-brown.	0.0
45					
	C			SILT; with minor clay; slightly damp; red-brown.	0.0
50					
	C			SILT; similar to above, but light tan.	0.0
55					Injected water.
	C			CLAY; silty, red-brown.	0.0
60					
	C			CLAY; as above.	0.0
65					
	C			CLAY; as above to 68'; then changes color to light tan.	0.0
70					
	C			CLAY; as above to approx. 74'; then silty fine sand, slightly damp.	0.0
75					
	C			CLAY; plastic, dry; gray-brown.	0.0
80					Injected water.

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-9
Sheet 3 of 5

Location
Grid Cell 9, 15
Coordinates x 8240
y 14,790
G.L. Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 8 August 1984 and end
9 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					OVM (ppm)
	C			SAND; fine-grained with some silt; slightly damp, brown.	0.0
85					
	C			CLAY; silty, moderately plastic; damp, brown.	0.0
90					
	C			SILT; with clay content increasing with depth; slightly damp; brown.	0.0
95					
	C			SAND; fine-grained, silty, minor clay; moist to saturated at base; brown.	0.0
100		RB-9-1			RB-9-1 (100') T = 23°C pH = 8.2 C = 300 µmhos
	C			SAND; clayey, water-bearing to approx. 103'; silty; moist - 103-105'; brown.	
105					
	C			CLAY; silty; moist, brown.	0.0
110					
	C			CLAY; as above.	
115					
	C			CLAY; silty; moist, red-brown to approx. 118'; 118-120' - silt; well sorted; moist; light brown.	0.0
120		RB-9-2			

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-9
Sheet 4 of 5

Location
Grid Cell 9, 15
Coordinates x 8240
y 14,790

G.L. Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 1984 and end
1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual Tube Rotary
Log Recorded By D.Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks OVM (ppm)
120					0.0
	C			SAND; coarse-grained with silt matrix, poorly sorted; saturated to approx. 127'; brown.	RB-9-2 (120') T = 21°C pH = 6.2 C = 26 µmhos
125					
	C			CLAY; sandy, plastic; moist; brown.	0.0
130					
	C			CLAY; silty, moist, brown to approx. 132', silt, well-sorted, dry, tan from 132-135.	0.0
135					
	C			SAND; fine-grained; with some silt; moderately sorted; dry, tan to approx. 138'; clayey silt; damp, tan to base of interval.	0.0
140					
	C			SAND; coarse-grained in clay matrix; poorly sorted; water-bearing, brown.	0.0
145					RB-9-3 (160') T = 21°C pH = 6.4 C = 240 µmhos
	C			SAND; as above.	0.0
150					
	C			SAND; as above.	0.0
155					
	C			SAND; as above.	0.0
160		RB-9-3			

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-9
Sheet 5 of 5

Location
Grid Cell 9, 15
Coordinates x 8240
y 14,790
G.L. Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 1984 and end 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual Tube Rotary
Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					OVM (ppm)
	C			CLAY; plastic, very moist, brown.	0.0
165					
	C			SAND; coarse-grained in clay matrix; poorly sorted; water-bearing; brown.	0.0
170					
	C			SAND; as above.	0.0
175					
	C			SAND; as above.	0.0 Lost circulation at 180'. RB-9-4 (180') T = 20°C pH = 6.8 C = 235 µmhos
180					
	C			SAND; as above.	0.0
185					
	C			SAND; as above; thin red-brown, plastic clay lens, approx. 187-188.5'.	0.0
190					Hole grouted with Portland Type I-II neat cement. Cement delivered through drill stem from bottom of hole up to surface.
	C			SAND; as above; plastic clay layer approx. 193.5-195'.	
195					0.0
	C			SAND; similar to above, becoming better sorted and finer-grained with depth; 198'-200' medium sand; clean, saturated.	
200					TD = 200'.

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-10
Sheet 1 of 4

Location
Grid Cell 6, 15
Coordinates x 5875
y 14,625

Ground Level Elevation: 43 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 13 July 1984 and end 1 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR
Log Recorded By T. Walters

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0	G			TOPSOIL, unconsolidated tan-brown, poorly sorted.	Drilled by the dual tube air rotary method. 0.0
5	C			SAND; unconsolidated, mod. well sorted, damp from creek nearby.	0.0 Injected water 10'.
10	C			CLAY and SILT; with minor clay clasts light-dark brown, clay 25%.	0.0
15	C			SAND; CLAYEY 25% clay; tan, sand is coarse, unconsolidated.	0.0
20	C			Same as above.	1.0
25	C			SAND; silty, fine-coarse grained poorly sorted, coffee brown, uncon.	0.0
30	C			SAND and GRAVEL; poorly sorted coffee-brown.	0.0
35	C			SAND; silty very well sorted, micaceous low energy fluvial system.	0.0
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-10
Sheet 2 of 5

Location
Grid Cell 1, 15
Coordinates x 5875
y 14,625

Ground Level Elevation: 43 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 13 July 1984 and end
1 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 (SK)
Log Recorded By T. Winters

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40	C			SAND; fine grained micaceous, moderately to well sorted, silt matrix 20%, sand is moist.	0.2
45	C			SAND and CLAY; interbedded, brick red, fine grained, well sorted.	0.2
50	C			SAND; silty with 20% lithic fragments, well sorted, subrounded quartz grains, biotic 5%.	0.2
55	C			SAND; silty, fine-medium grained, micaceous, smokey quartz 70%, lithic frag. 20%, biotite, 10%.	0.3
60	C			SILT; eolian, extremely well sorted, yellow, slightly moist.	0.2
65	C			CLAY; silty fiar plasticity.	0.1
70	C			SILT; por plasticity, light brown, water bearing.	Water sample Water - 78' pH - 6.9 0.1 Cond. 210 Temp. - 20°
75	C			SILT; brown, water bearing, moderately to well sorted, with 5-10% brown clay.	0.1
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. [illegible]
Sheet [illegible]

Location
Grid Cell 1, 15
Coordinates x 5875
y 14,625

Project McClellan AFB IRP Phase II
Beginning 13 July 1984 and end
1 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 2000 CSR
Log Recorded By T. Walters [illegible]

Ground Level Elevation: 43 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SILT; fine-grained, brown, some stringers of clay 1' thick.	0.1
85					
	C			SAND; fine-coarse grained, poorly sorted, quartz, subangular, water-bearing.	Water sample Temp. 19°C pH - 7.0 Water 98' ± 5 gpm 0.1
90					
	C			SAND; moderately sorted, quartz, sub-angular.	0.1
95					
	C			SAND; poorly sorted, medium to coarse grained.	0.1
100					
	C			CLAY; silty good plasticity, coffee brown.	0.5
105					
	C			SAND; fine-medium grained, sub-angular quartz, moderately sorted, coarsening with depth.	0.1
110					
	C			SAND; medium to coarse grained poorly sorted, quartz is angular, lithic frag-ments 10%.	0.1
115					
	C			CLAY; silty, coffee-brown, poor plasti-city, trace water at upper contact with sand.	0.1
120					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-10
Sheet 1 of 5

Location
Grid Cell 1, 15
Coordinates x 5875
y 14,625

Ground Level Elevation: 43 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 13 July 1984 and end 1 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 2000 CSR
Log Recorded By [illegible]

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120				SILT; sandy.	0.5
	C			CLAY; good plasticity, light brown, becoming silty clay 128-130'.	Trc. water at contact injecting water. Trc. water 128-130'.
125					
	C			CLAY; silty silt fraction increasing with depth, coarsening downward.	0.5
130				SAND; moist. Sand moderately sorted medium to coarse grained, dropped probe, bore hole dry.	
	C				0.6
135					
	C			CLAY; brown, good plasticity	Water sample 1st major water bearing sand Temp. 18°C 0.5 pH 7.1 Cond. 490
140					
	C			SAND; poorly sorted, tan, med-coarse grained.	
145				SAND; med-coarse grained, poorly sorted, 145'-148'.	0.6
	C			SAND; coarse, poorly sorted, 148'-150'.	0.5
150					Water ± 5 gpm.
	C			CLAY; good plasticity, tan with 10' sand interbedded, trc. water.	0.5
155					Sieve = sand
	C			CLAY; red, with sand stringers.	Water sample Temp. 18°C pH 7.2 Cond. 200 0.6
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring / Well No. RB-10
Sheet 5 of 5

Location
Grid Cell 1, 15
Coordinates x 5875
y 14,625

Ground Level Elevation: 43 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 13 July 1984 and end
1 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR,
Log Recorded By T. Walters / L. Holtort

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160				SAND; clayey, fine-coarse grained, poorly sorted with stringers of red clay.	Water ± 5 gpm.
	C				0.6
165					
	C			CLAY; sandy with white gypsum minerals, tan.	0.6
170					
	C			SAND; cemented, rusty red w/gyp. minerals, may be volcanic in origin.	0.6
175					
	C			CLAY; good plasticity, gray with gypsum streaks.	0.6
180					
	C			SAND; fine-medium grained with 5% magnetite, oxidized, micaceous water blood-red.	± 100 gpm. 0.5
185					
	C			SAND; medium grained, moderately sorted quartz clear-yellow, highly oxidized.	0.6
190					
	C			SAND and CLAY; interbedded, poor plasticity, clay does not contain water, sand producing ± 50 gpm.	0.5
195					
	C			CLAY, confining with sand stringers 1" thick, tan.	Grout with tremie dual tubes w/Ready Mix Portland Cement Type I & II 0.6
200				Total Depth: 200 Feet	

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-11
Sheet 1 of 5

Location
Grid Cell 9, 17
Coordinates x 8400
y 13,350
Ground Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 6 August 1984 and end 7 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
					OVM (ppm)
	G			TOPSOIL.	
5					
	C			SAND; very fine-grained; minor clay, dry to slightly damp; tan.	0.0
10					
	C			SILT; well sorted; minor clay increasing with depth; gray brown to brown; slightly damp.	0.0
15					
	C			SILT; same as above.	0.0
20					
	C			SILT; fining downward to silty clay; slightly damp; gray brown to brown.	0.0
25					
	C			SILT; well sorted; slightly damp; tan to red-brown.	0.0
30					
	C			SILT; fine sandy; moderately sorted; slightly damp; tan.	0.0
35					
	C			SAND; medium-grained, silty to approx. 36.5'; red-brown, well sorted silt below	0.0
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-11
Sheet 2 of 5

Location
Grid Cell 9, 14
Coordinates x 8400
y 13,350
Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 6 August 1984 and end 7 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D.Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					OVM (ppm)
	C			SAND and SILT; interbedded, slightly damp; red-brown to gray.	0.0
45					
	C			SILT; very fine powder; with some clay; moist; red-brown to gray-brown color-banded.	0.0 Color banding suggests alternating oxidized and reduced zones.
50					
	C			SILT; with clay increasing with depth; hard; brown.	0.0
55					Injected water.
	C			SAND; fine-grained with some clay and silt; poorly sorted; damp; red-brown.	0.0
60					
	C			CLAY; silty, hard; brown.	0.0
65					Injected water.
	C			CLAY; similar to above, grading down-ward to well-sorted silt.	0.0
70					
	C			SILT; well sorted, gray brown to approx. 72'; brown silty caly to base of inter-val, damp.	0.0
75					
	C			SILT; well sorted to approx. 77'; poorly sorted medium-grained sand below; damp; brown.	0.0
80					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-11
Sheet 3 of 5

Location
Grid Cell 9, 14
Coordinates x 8400
y 13,350

G.L. Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 6 August 1984 and end
7 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					OVM (ppm)
	C			SILT; some fine sand; minor clay near top of interval; damp; gray-brown.	0.0
85					
	C			CLAY; silty; damp; brown.	0.0
90					
	C			CLAY; silty to very plastic; minor sand lenses; damp; brown.	0.0
95					
	C			SAND; with some silt; moderately sorted; grading downward to well sorted silt; moist; gray brown.	0.0
100		RB-11-1			RB-11-1 (100') T = 20°C pH = 6.4 C = 215 umhos
	C			SAND; medium grained, water-bearing; grading to well-sorted silt, moist, below approx 103.5'; brown.	0.3
105					
	C			CLAY; silty; hard; damp; brown.	0.0
110					
	C			CLAY; as above.	0.0
115					
	C			CLAY; as above to approx. 118.5'; sandy clay below.	0.0
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-11
Sheet 4 of 5

Location
Grid Cell 9, 14
Coordinates x 8400
y 13,350

G.L. Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 6 August 1984 and end 7 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual Tube Rotary
Log Recorded By D.Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					OVM (ppm)
	C			CLAY; wet from approx. 124'-125'; brown.	0.0
125					
	C			CLAY; as above.	0.0 Injected water.
130					
	C			SAND; coarse grained; silty; poorly-sorted; saturated; brown.	RB-11-2 (140') T = 20°C pH = 6.8 C = 420 µmhos
135				CLAY; hard, dry - 135'-138'.	
	C			SAND; as above - 138'-140'.	
140		RB-11-2			
	C			CLAY; sandy; poorly sorted; damp; brown.	0.0
145					RB-11-3 (160') T = 19°C pH = 6.7 C = 425 µmhos
	C			SAND; with some clay; poorly sorted, very moist; red-brown.	0.0
150					
	C			SAND; coarse; and fine gravel in clay matrix; poorly sorted; water-bearing, red-brown.	0.2
155					
	C			SAND; as above to approx. 158'; sandy clay below.	
160					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-11
Sheet 5 of 5

Location
Grid Cell 9, 14
Coordinates x 8400
y 13,350

G.L. Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 6 August 1984 and end 7 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual Tube Rotary
Log Recorded By D. Fichmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160		RB-11-3			OVM (ppm)
	C			CLAY; hard; brown.	0.0 Injected water.
165					
	C			GRAVEL; well sorted, water-bearing to approx. 168'; then clay, as above.	0.3
170					
	C			CLAY; hard; dry, brown to approx. 172'; then micaceous gravel; saturated.	0.3 No Sample (interconnection assumed)
175					
	C			SAND; fine-grained; with some silt; water-bearing; brown.	0.3
180					
	C			SAND; similar to above; micaceous, alternating with lenses of clay.	0.3
185					
	C			SAND; as above.	0.3
190					
	C			CLAY; hard; brown.	0.3 TD = 192'. Hole grouted with Portland Type I-II neat cement. Cement delivered through drill stem from bottom of hole up to surface.
195					
	C				
200					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-12
Sheet 1 of 5

Location
Grid Cell 6, 14
Coordinates x 5800
y 13,900

G.L. Elevation 47 ft, msl (topo.)

Project McClellan Phase II
Beginning 3 August 1984 and end
3 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
					HNU (ppm)
	G			TOPSOIL.	
5					
	C			SAND; poorly sorted; damp; brown.	.
10					
	C			CLAY; some silt and fine sand; hard; brown.	.
15					
	C			SILT; interbedded with hard clay; slightly damp; medium to dark brown.	.
20					
	C			SILT; well sorted, grading to fine sand at base; slightly damp; brown to reddish brown.	
25					
	C			SAND; fine-grained, some clay; slightly damp; brown.	0.0
30					
	C			CLAY; silty, interbedded with silt; minor sand; slightly damp; brown.	0.0
35					
	C			SILT; grading to fine sand; slightly damp; brown.	0.0
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No RB-12
Sheet 2 of 5

Location
Grid Cell 6, 14
Coordinates x 5800
y 13,900

G.L. Elevation 47 ft, msl (topo.)

Project McClellan Phase II
Beginning 3 August 1984 and end
3 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D.Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					OVM (ppm)
	C			SILT; some silty fine sand; damp; brown.	0.0
45					
	C			CLAY; gray-brown; some silt and fine sand; damp; red-brown to brown.	0.0
50					
	C			SILT and fine sand; damp; yellow-brown.	0.0
55					
	C			CLAY; silty and plastic with hard clay layer near base; damp; dark brown.	0.0 Fine sand in basal 6".
60					
	C			SAND; fine-grained, silty grading to clayey; damp; brown.	0.0
65					
	C			SAND; fine-grained; damp; brown.	0.0
70					0.0
	C			SILT; well-sorted; damp; gray-brown to oxidized red-brown at approx. 72'.	Silty clay, red-brown below approx. 73'.
75					
	C			CLAY; silty, plastic; moist; brown.	0.0
80					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-12
Sheet 3 of 5

Location
Grid Cell 6, 14
Coordinates x 5800
y 13,900
G.L. Elevation 47 ft, msl (topo.)

Project McClellan Phase II
Beginning 3 August 1984 and end
3 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					OVM (ppm)
	C			CLAY; silty, hard; slightly damp; gray-brown.	Injected water. 0.0
85					
	C			CLAY; sandy, slightly damp, brown; wet at 89'.	0.0
90					I No sample.
	C			SAND; fine to medium-grained; moist but not saturated; brown.	0.0
95					
	C			SAND; as above; trace clay; water at 98'	RB-12-1 (100') T = 16°C pH = 6.8 C = 520 µmhos
100		RB-12-1			
	C			CLAY; hard, dry; brown.	0.0
105					
	C			CLAY; silty, grading to silty fine sand; slightly damp; brown.	0.0
110					
	C			CLAY; silty, damp; brown.	0.0
115					
	C			CLAY; as above.	0.0
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-12
Sheet 4 of 5

Location
Grid Cell 6, 14
Coordinates x 5800
y 13,900

G.L. Elevation 47 ft, msl (topo.)

Project McClellan Phase II
Beginning 3 August 1984 and end
3 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual Tube Rotary
Log Recorded By [illegible]

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					OVM (ppm)
	C			CLAY; as above.	0.0
	C			CLAY; as above.	0.0
	C			CLAY; as above.	0.0
	C			CLAY; as above; wet at 138'.	0.0
		RB-12-2			RB-12-2 (140') T = 18°C pH = 6.8 C = 265 µmhos
	C			SILT; with some sand; water-bearing; brown.	0.0
	C			CLAY; silty, grading to clayey silt and fine sand; slightly damp; alternating gray-brown to red-brown.	0.0
150					
	C			CLAY; as above.	0.0
	C			SILT; with some clay alternating with silty clay; slightly damp; brown.	0.0

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-12
Sheet 5 of 5

Location
Grid Cell 6, 14
Coordinates x 5800
y 13,900

Project McClellan Phase II
Beginning 3 August 1984 and end
3 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual Tube Rotary
Log Recorded By D. Richmann

S.L. Elevation 47 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					OVM (ppm)
	C			CLAY; silty, plastic; moist; light gray	Injected water. 0.0
165					0.0 Possible water zone at approx. 168', but too thin to sample.
	C			CLAY; similar to above; wet.	
170					Lithologic contact at approx. 172'.
	C			CLAY; silty overlying clayey gravel; brown to red brown.	0.02
175					RB-12-3 (180') T = 19°C pH = 7.3 C = 310 µmhos
	C			GRAVEL; poorly sorted, clay matrix, water-bearing; red brown.	0.04
		RB-12-3			
				GRAVEL; similar to above; fining downward to clayey sand; poorly sorted; water-bearing; red-brown.	0.0
185					
				SAND; with clay matrix; poorly sorted; moist; red-brown.	
190					0.0 TD = 200'. Hole grouted with Portland Type I-II neat cement. Cement delivered through drill stem from bottom of hole up to surface.
				SILT; with some clay; damp; red-brown.	
195					
				SILT; well sorted; slightly damp; yellow-brown.	
200					0.0

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 13
Sheet 1 of 5

Location
Grid Cell 5, 14
Coordinates x 4100
y 13580

Project McClellan AFB IRP Phase II
Beginning 8-15-84 and end 8-17-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner B. Horst

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm (ppm)
	C			SAND: Silty, clayey, fine to medium grain, brown	
5					
	C			SAND: Silty, fine to medium grain, brown	0.1
10					
	C			CLAY: Silty, sandy, fine to very fine grain, tan	0.5
15					
	C			SAND: Clayey, silty, fine to very fine grain, brown	0.3
20					
	C			SAND: Clean, medium grain to fine grain, poorly sorted, tan	0.3
25					
	C			SAND: Silty, fine to medium grain, poorly sorted, tan	0.25
30					
	C			SAND: Silty, fine to very fine grain, tan to brown	0.15
35					
	C			CLAY: Silty, sandy, fine to very fine grain, tan	0.15
40					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 13
Sheet 1 of 2

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-15-84 and end
8-17-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner W. Forest

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Clayey, fine to medium grain, brown	0.4
45					
	C			SILT: Clayey, sandy, fine to very fine grain, tan	0.2
50					
	C			SILT: Clayey, sandy, very fine grain, tan	0.15
55					
	C			SILT: Clayey	0.23
60					
	C			SAND: Silty, micaceous, fine to very fine	0.21
65					
	C			SAND: Clayey, medium to coarse grain, plastic, dark brown	0.01
70					
	C			CLAY: Silty, sandy, fine to medium grain, brown	0.02
75					
	C			SILT: Clayey, sandy, tan	0.01
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 13
Sheet 2 of 3

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-15-84 and end
8-17-84 of drilling operation
Sampling Interval (Estimated) Composite (ft)
Type Drill Rig and Operator Chicago Pneumatic CP200
Log Recorded By W. Boettner W. Hurst

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Clayey, fine to medium grain, brown	0.1
85					
	C			SAND: Clayey, fine to medium, brown	0.2
90					
	C			SAND: Silty, clayey, cemented, brown	0.1
95					
	C			SAND: Fine to medium grain, brown	0.2 Water sample at 100' ph = 5.0 Temperature = 22° Conductivity = 260
100					
	C			CLAY: Silty, sandy, micaceous, hard	0.15
105					
	C			SAND: Silty, medium to coarse grain	0.2
110					
	C			SAND: Micaceous, fine to medium grain	0.1 Water sample at 115' ph = 5.0 Temperature = 20°C Conductivity = 220
115					
	C			SAND: Fine to medium grain, brown	0.1
120					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 13
Sheet ___ of ___

Location ___
Grid Cell ___
Coordinates x ___
y ___

Project McClellan AFB IRP Phase II
Beginning 8-15-84 and end 8-17-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP-650
Log Recorded By A. Poettner

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			SAND: Clayey, silty, plastic, brown	0.25
125					
	C			SILT: Clayey, brown to tan	0.1
130					
	C			CLAY: Silty, sandy, brown	0.1
135					
	C			SAND: Silty fine to medium grain with sparse clay clasts	0.15 Water sample at 140 pH = 5.4 Temperature = 20°C Conductivity = 260
140					
	C			SAND: Silty fine to medium grain, brown, water	0.01
145					
	C			SAND: Clayey, fine to medium grain, brown, water	.01
150					
	C			SAND: Silty, medium to coarse grain, abundant water	0.1
155					
	C			SAND: Clean, medium to coarse, abundant water	0.1
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. [illegible]
Sheet [illegible] of [illegible]

Location [illegible]
Grid Cell [illegible]
Coordinates x [illegible]
y [illegible]

Project McClellan AFB [illegible]
Beginning 8-15-84 and end
8-17-84 of drilling operation
Sampling Interval (Estimated) [illegible] (ft)
Type Drill Rig and Operator [illegible]
Log Recorded By [illegible]

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
100					
	C			GRAVEL: . Sandy, coarse, brown and white	0.15
125					
	C			SAND: Medium to coarse	0.10
150					
	C			SAND: Medium to coarse, cemented, FeO_x staining	0.50
175					
	C			SAND: Clayey, fine to medium grain, clay increasing with depth	0.1
200					
	C			SAND: Clayey, medium to coarse grains, brown	0.0
225					
	C			SAND: Clayey, fine to medium grain, brown, clay increases with depth	0.0
250					
	C			SAND: Clayey, fine to medium grain, micaceous	0.1
275				SAND: Fine to medium grain, very micaceous, brown	0.0
	C				0-200' [illegible]
300				Total Depth: 200 Feet	

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 14
Sheet 1 of 5

Location
Grid Cell 6, 10
Coordinates x 5100
y 9700

Ground Level Elevation: 45 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 8-27-84 and end
8-28-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP200
Log Recorded By W. Boettner B. Herst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm/ppm
	C			SAND: Clayey, medium to very fine grained quartz, brown	0.0
5					
	C			SAND: silty, clayey, fine to medium grained, FeO_x staining	0.0
10					
	C			SAND: Silty, clayey, coarse to very fine grained, light tan	0.0
15					
	C			SAND: Silty with clay, very fine grained, tan	0.0
20					
	C			SAND: Clayey, fine to very fine grained, tan to brown	0.02
25					
	C			SAND: Clayey, silty, sand, fine to very fine grained, clay, plastic	0.01
30					
	C			SAND: Fine to very fine grained, tan to light gray	0.02
35					
	C			SAND: Fine to very fine grained, tan to light brown	0.01
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 14
Sheet 2 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-27-84 and end
8-28-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By K. Boettner W. Murat

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Clayey, silty, fine to very fine grained, tan to light brown	0.01
45					
	C			SAND: Silty, clayey, fine to very fine grained, reddish brown	0.02
50					
	C			SAND: Silty, clayey, fine to very fine grained, red brown	0.01
55					
	C			SAND: Silty, clayey, fine to very fine grained, brown to tan	0.02
60					
	C			SAND: Clayey, silty, fine to very fine grained, tan to brown	0.01
65					
	C			SAND: Clayey, silty, fine to very fine grained	0.02
70					
	C			SAND: Silty, clayey, very fine grained, tan to brown	0.01
75					
	C			SAND: Clayey, silty, fine to very fine grained, brown	0.01
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 14
Sheet 3 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB ISP Phase II
Beginning 8-27-84 and end 8-28-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP200
Log Recorded By W. Boettner W. Hurst

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			SILT: Sandy, clayey, sandy, brown	0.0 Water sample at 80' pH = 5.7 Conductivity = 250 Temperature = 22°C
85	C			SILT: Clayey, sandy	0.0
90	C			SAND: Silty with trace of clay, fine grained, brown	0.0
95	C			SAND: Clayey, sandy, micaceous, brown	0.02
100	C			CLAY: Silty, sandy, dark brown	0.03
105	C			SILT: Clayey, sandy, tan to gray	0.04
110	C			SAND: Clayey, silty, fine to very fine grained	0.02
115	C			SAND: Clayey, silty, fine to very fine grained, 10-15% dark grains	0.01
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 14
Sheet 2 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-27-84 and end
8-28-84 of drilling operation
Sampling Interval (Estimated) Composite (ft)
Type Drill Rig and Operator Chicago Pneumatic CP300
Log Recorded By S. Boettner W. Hurst

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND: Clayey, silty, gravelly, dark brown	0.03 Water sample at 120' pH = 6.0 Conductivity = 220 Temperature = 20°C
125	C			SAND: Silty, clayey, gravelly, very fine grained	0.01
130	C			SAND: Silty, gravelly, clayey, brown to gray	0.02
135	C			SAND: Clayey, silty, brown	0.03
140	C			SAND: Clayey, coarse to medium grained	0.01
145	C			SAND: Gravelly, clayey, silty	0.05
150	C			SAND: Gravelly, clayey	0.01
155	C			SAND: Clay, silty, fine to very fine grained	0.02
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 14
Sheet 5 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-27-84 and end
8-28-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Failing Formatic CP2000
Log Recorded By Boettner Ver. Horst

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					
	C			SAND: Gravelly, clean, coarse grained	0.02
163					
	C			SAND and GRAVEL: Clean, coarse grained	0.01
170					
	C			SAND and GRAVEL: Clean, coarse grained	0.02
173					
	C			SAND and GRAVEL: trace of clay	0.01
180					
	C			SAND and GRAVEL: Clayey	0.03
183					
	C			SAND and GRAVEL: Coarse grained, some clay	0.01
190					
	C			SAND and GRAVEL: Very coarse grained, increasing clay content	0.01 Water sample at 200' pH = 5.6 Conductivity = 240 Temperature = 22°C
193				SAND: Coarse grained, clayey	0-200' 4½" hole Grouted hole through drill tubes w/ 31 sacks Portland Cement Pen. 2 & 11
	C				0.01
200				Total Depth: 200 Feet	

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 15
Sheet 1 of 5

Location
Grid Cell 9,10
Coordinates x 8350
y 9950

Project McClellan AFB IRP Phase II
Beginning 8-20-84 and end 8-21-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner / B. Horst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			SILT: Clayey, red brown	0.0
5					
	C			SILT: Clayey, tan to brown	0.04
10					
	C			SAND: Clayey, silty, red brown	0.06
15					
	C			SAND: Silty, fine to very fine grained, subangular to subrounded, trace of clay	0.04
20					
	C			SAND: Clayey, medium to fined grained, angular to subangular, brown	0.08
25					
	C			SAND: Clayey, silty, fine to very fine, red brown	0.02
30					
	C			SILT: Clayey, sandy, micaceous, clay content increases with depth, red brown	0.02
35					
	C			CLAY, Silty, sandy, micaceous, red brown	0.02
40					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 15
Sheet 2 of 3

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-20-84 and end
8-21-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2100
Log Recorded By K. Boettner

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			CLAY: Sandy, silty, brown	0.02
45					
	C			CLAY: Silty, sandy, micaceous, clay somewhat plastic, reddish brown	0.0
50					
	C			SAND: Silty, clayey, fine to medium grained, hard, reddish brown	0.0
55					
	C			SAND: Clayey, silty, fine to very fine grained, reddish brown	0.0
60					
	C			GRAVEL: Sandy, silty, clayey, brown	0.04
65					
	C			SAND: Clayey, silty, medium to coarse, angular to subangular, poorly sorted	0.06
70					
	C			SAND: Clayey, silty, fine to very fine grained, subangular to subrounded, tan	0.02
75					
	C			SAND: Clayey, silty, brown	0.2
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No 15
Sheet 3 of 3

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-20-84 and end 8-21-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP200
Log Recorded By K. Boettner W. Hirst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY: Plastic, silty, sandy, fine grained, brown	0.04
85					
	C			CLAY: Plastic, sandy, fine to very fine grained, brown	0.02
90					
	C			SAND: Clayey, silty, medium to coarse grained	0.02
95					
	C			CLAY: Silty, sandy, plastic, fine to very fine grained, subangular to subrounded, dark brown	0.01
100					
	C			SAND: Silty, fine to very fine, subangular to subrounded, tan	0.06
105					
	C			SILT: Sandy, hard, tan to brown	0.04
110					
	C			SILT: Sandy, clayey, fine to very fine and medium grained, brown	0.04
115					
	C			SAND: Gravelly, silty, clayey, fine to medium grained, brown	0.02
120					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 15
Sheet ___ of ___

Location ___
Grid Cell ___
Coordinates x ___
y ___

Project McClellan AFB IRP Phase II
Beginning 8-20-84 and end 8-21-84 of drilling operation
Sampling Interval (Estimated) Composite (ft)
Type Drill Rig and Operator Chicago Pneumatic CP-30
Log Recorded By K. Boettner W. Grist

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND: Micaceous, medium to coarse, Muscovite, Biotite, Hornblende	0.0 Water sample at 120' pH = 5.5 Temperature = 22°C Conductivity = 230
125	C			CLAY: Silty, sandy, fine to medium grain, dark brown	0.06
130	C			CLAY: Silty, plastic, scattered gravels, dark brown	0.0
135	C			CLAY: Sandy, silty, medium grain, dark brown	0.01
140	C			SAND and GRAVEL: Clayey, medium to coarse	0.0
145	C			SAND: Clayey, medium to coarse grain, plastic clay, dark brown	0.02
150	C			SAND: Clayey, fine to coarse grain, poorly sorted, subangular to sub-rounded, clay decreases with depth	0.02
155	C			SAND: Silty, fine to very fine grain, brown - moist	0.02
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 15
Sheet 1 of 2

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-20-84 and end
8-21-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Failing Pneumatic CP2000
Log Recorded By J. Poettner

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					
	C			SAND: Gravelly, micaceous, medium to coarse grain, red brown - water	0.02 Water sample at 160' pH = 6.2 Temperature = 18°C Conductivity = 215
	C			SAND: Gravelly, micaceous, medium to coarse grain, red brown - water	0.02
	C			SAND: Gravelly, micaceous, medium to coarse grain, red brown	0.02
	C			SAND: Micaceous, medium to coarse grain, red brown, dark minerals = 40%	0.03
	C			SAND: Silty, clayey, micaceous, clay increasing with depth	0.02
	C			SAND: Silty, clayey, medium to coarse grain, dark minerals = 25%, red brown	0.01
	C			CLAY: Silty, sandy, brown SAND: Micaceous, angular to sub-angular, poorly sorted	0.04 Water sample at 200' pH = 5.7 Temperature = 18°C Conductivity = 210
	C			Total Depth: 200 Feet	0.04 0-200' 4½" hole Set 4" PVC casing and screen Type I sand

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-16
Sheet 1 of 5

Location
Grid Cell 8, 7
Coordinates x 7800
y 6950
T.O. Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 10 August 1984 and end 10 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
					OVM (ppm)
	G			TOPSOIL.	
5					
	C			SAND; poorly sorted with some fine gravel; fining downwards to dry yellow-brown silt at approx. 8'.	0.0
10					
	C			SILT; slightly damp; tan; with occasional lenses of sand and gravel.	0.0
15					
	C			SAND; fine-grained, coarsening with depth, some silt; poorly to moderately sorted; dry, tan.	0.0
20					
	C			SAND; medium-grained; silt in upper approx. 1' of interval; dry; tan.	0.0
25					
	C			SAND; medium-grained, silty; poorly sorted; dry; tan.	0.0
30					
	C			SILT; minor silty clay; slightly damp; tan.	0.0
35					
	C			SAND; and CLAY; interbedded; silty; moist; brown.	0.0
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RS-10
Sheet 2 of 3

Location
Grid Cell 8, 7
Coordinates x 7800
y 6950

Project McClellan Phase II
Beginning 10 August 1984 and end 10 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D. Richman

Surface Elevation 52 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					OVM (ppm)
	C			CLAY; silty, wet in upper approx. 1' of interval; damp below; brown.	0.0
45					
	C			SILT; some fine sand; slightly damp; brown.	0.0
50					
	C			SILT; as above.	0.0
55					
	C			SILT; similar to above; some clay, red-brown, near base of interval.	0.0
60					
	C			SILT; minor hard clayey silt; damp; tan to rust-brown.	0.0
65					
	C			SILT; as above.	0.0
70					
	C			SILT; very fine, color-banded rust-brown to cream; clay, stiff and hard below approx. 72'.	Inserted water.
75					
	C			CLAY; stiff, hard; brown; minor coarse sandy clay zone approx. 77-78'.	[illegible]
80					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-16
Sheet 1 of 1

Location
Grid Cell 8, 7
Coordinates x 7800
y 6950
G.L. Elevation 52 ft msl (topo.)

Project McClellan Phase II
Beginning 10 August 1984 and end 10 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual tube rotary
Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
50					OVM (ppm)
	C			CLAY; as above; silty to sandy clay zone at base.	0.0
55					
	C			CLAY; as above to approx. 80'; then coarse sand zone, brown, damp.	0.0
60					
	C			SAND; coarse-grained; poorly sorted; damp; brown.	0.0
					RB-16-1 (100')
	C	RB-16-1		SAND; silty; poorly sorted; wet, tan.	T = 21°C pH = 5.2 C = 220 µmhos 0.0
	C			CLAY; silty, hard, slightly damp; brown.	0.0
	C			SILT; thin gravel zone approx. 107-109', wet but insufficient water to sample.	0.
	C			CLAY; silty, wet; tan.	0.
120	C	RB-16-2		SILT; with some clay; slightly damp; tan.	0.0

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No RB-16
Sheet 4 of 5

Location
Grid Cell 8, 7
Coordinates x 7800
y 6950

G.L. Elevation 52 ft, msl (topo.)

Project McClellan Phase II
Beginning 10 August 1984 and end
10 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual Tube Rotary
Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					OVM (ppm)
	C			SILT; as above; water-bearing in thin zones.	0.0
125					
	C			SILT; as above.	0.0 RB-16-2 (120') T = 19°C pH = 5.4 C = 210 µmhos
	C			CLAY; silty, plastic; very moist to saturated in thin zones; tan.	0.0
				CLAY; similar to above with minor coarse sand lenses, silt increasing with depth.	0.0
	C			SILT; gradational to above; minor water-bearing gravel approx. 140-141.5'.	0.0
					No sample.
	C			SILT; similar to above; minor water-bearing gravel approx. 145-147'.	0.0
	C			SILT; with minor sand, damp.	0.0
	C	RB-16-3		SAND; coarse-grained, silty to clayey, with some fine gravel; poorly-sorted; damp.	0.0

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-16
Sheet 5 of 5

Location
Grid Cell 8, 7
Coordinates x 7800
y 6930
T.I. Elevation 32 ft, msl (topo.)

Project McClellan Phase II
Beginning 10 August 1984 and end 10 August 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)
Type Drill Rig and Operator Dual Tube Rotary
Log Recorded By D. Eichmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND; as above.	OVM (ppm) 0.0 RB-16-3 (160') T = 18°C pH = 5.6 C = 200 µmhos
165	C			GRAVEL; poorly-sorted with clay matrix; wet; red-brown.	0.0
170	C			GRAVEL; similar to above, containing fewer fines with increasing depth.	0.0 Distinctive rounded white clasts in gravel below approx. 173'.
175	C			GRAVEL; moderately well sorted, few fines; highly productive aquifer.	0.0
180	C			SAND; fine to medium-grained; moderately sorted; micaceous; very high water production.	0.0
185	C			SAND; as above.	0.0
190	C			SAND; as above.	TD = 200'. Hole grouted with Portland Type I-II cement. Cement delivered through drill stem from bottom of hole up to surface.
195	C			SAND; as above.	

484 1666

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 17
Sheet 1 of 5

Location
Grid Cell 10, 9
Coordinates x 9250
y 8750

Ground Level Elevation: 55 ft.MSL (topo).

Project McClellan AFB ISP Phase II
Beginning 8-29-84 and end 8-30-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP200
Log Recorded By W. Boettner / B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0	C			SAND: Clayey, medium to coarse grained, dark red brown	0.01
5	C			SAND: Silty, medium to fine grained, brown	0.14
10	C			SAND: Silty, fine to very fine grained, tan	0.12
15	C			SAND: Silty, gravelly, fine to very fine grained, tan to brown	0.06
20	C			SAND: Clayey, silty, fine to very fine, tan	0.12
25	C			SAND: Silty, clayey, fine to medium grained, reddish brown	0.12
30	C			SAND: Silty, trace of clay, fine to medium grained, reddish brown	0.14
35	C			SAND: Clayey, silty, fine to medium grained, reddish brown	0.08
40					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 17
Sheet 2 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-29-84 and end
8-30-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2100
Log Recorded By K. Gaettner W. Morse

Ground Level Elevation: 55 ft MSL (topo).

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Clayey, fine to medium grained, reddish brown	0.1
45					
	C			SAND: Clayey, plastic, fine to very fine grained, reddish brown	0.2
50					
	C			SAND: Clayey, plastic, fine to very fine grained, brown	0.14
55					
	C			CLAY: Sandy, silty, fine to very fine grained.	0.16
60					
	C			SILT: Sandy, clayey, light tan	0.0
65					
	C			SAND: Clayey, silty, very fine grained, dark brown	0.0
70					
	C			SAND: Clayey, plastic, silty, very fine grained, tan to brown	0.1
75					
	C			SAND: Clayey, silty, plastic, fine grained, reddish brown	0.02
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 17
Sheet 3 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-29-84 and end
8-30-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner / B. Herst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SILT/CLAY: Sandy, dark brown	0.01
85					
	C			SAND: Clayey, silty, very fine grained, tan to brown	0.02
90					
	C			CLAY: Sandy, silty, very fine grained, tan to brown	0.01 Trace of water - not recoverable
95					
	C			CLAY: Sandy, tan to brown	0.02
100					
	C			CLAY: Silty, sandy	0.00
105					
	C			SAND: Clayey, silty, fine to very fine grained	0.02
110					
	C			SAND: Clayey, fine grained	0.01
115					
	C			SAND: Clayey, plastic, brown	0.0
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 17
Sheet 4 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-29-84 and end 8-30-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP300
Log Recorded By A. Boettner W. Horst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			CLAY: Silty, sandy, fine to very fine grained, tan	0.01
125					
	C			CLAY: Silty, sandy, plastic, fine to very fine grained, tan	0.00
130					
	C			SILT: Sandy, clayey, fine to very fine grained, brown	0.01
135					
	C			SILT: Sandy, clayey, fine to very fine grained, brown	0.02
140					
	C			SILT: Sandy, fine to very fine grained	0.02 Water sample at 140' pH = 6.4 Conductivity = 230 Temperature = 16°C
145					
	C			CLAY: Sandy, plastic, silty, dark brown	0.01
150					
	C			CLAY: Sandy, plastic, silty, dark brown	0.02
155					
	C			SAND: Clayey, plastic, silty, fine to very fine grained, dark brown	0.12
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 17
Sheet 1 of 1

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-29-84 and end 8-30-83 of drilling operation
Sampling Interval (Estimated) composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Poettner

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			CLAY: Plastic, silty, sandy, brown	0.10
165	C			SAND: Silty, clayey, brown	0.1
170	C			SAND: Silty, clayey, fine to very fine grained, brown	0.2
175	C			SAND: Clayey, silty, micaceous, brown	0.1
180	C			SAND: Silty, micaceous, clayey	0.14
185	C			SAND: Silty, micaceous, clayey, brown	0.12 Water Sample at 190' pH = 6.4 Conductivity = 250 Temperature = 18°C
190	C			CLAY: Sandy, plastic, brown	0.0
195	C			CLAY: Sandy, plastic, brown Total Depth: 200 Feet	0-200' 4½" hole Grouted hole through mud tubes w/ 35 sacks Portland Cement Type I & II 0.0
200					

4-84 bcf/b

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 18
Sheet 1 of 5

Location
Grid Cell 10, 9
Coordinates x 9650
y 8250

Project McClellan AFB IRP Phase II
Beginning 8-30-84 and end 8-31-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner / B. Horst

Ground Level Elevation: 60 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			SAND: Clayey, silty, medium to coarse grained	0.0
5					
	C			SAND: Medium to coarse, reddish brown	0.0
10					
	C			SAND: Clayey, fine to coarse grained, reddish brown	0.01
15					
	C			SAND: Clayey, fine to coarse grained, reddish brown	0.0
20					
	C			SAND: Silty, clayey, fine to coarse grained, reddish brown	0.0
25					
	C			SAND: Clayey, fine to medium grained, reddish brown	0.0
30					
	C			SAND: Clayey, plastic, fine to medium grained, reddish brown	0.02
35					
	C			SAND: Silty, clayey, fine to medium grained	0.00
40					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 18
Sheet 2 of 3

Location
Grid Cell 10, 9
Coordinates x 9650
y 8250

Project McClellan AFB IRP Phase II
Beginning 8-30-84 and end
8-31-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner W. Boettner

Ground Level Elevation: 60 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Silty, clayey, fine to very fine grained, reddish brown	0.26
45					
	C			SAND: Silty, clayey, fine to very fine grained, reddish brown	0.18
50					
	C			CLAY: Silty, sandy, fine to very fine brown	0.16
55					
	C			CLAY: Plastic, silty, sandy, fine to very fine grained, brown	0.24
60					
	C			SAND: Clayey, fine to very fine grained brown	0.02
65					
	C			SAND: Clayey, plastic, fine to very fine grained, reddish brown	0.14
70					
	C			SAND: Clayey, fine to very fine grained brown to tan	0.12
75					
	C			SILT: Sandy, clayey, very fine to medium grained, brown	0.08
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 18
Sheet 1 of

Location
Grid Cell 10, 9
Coordinates x 9650
y 8250

Project McClellan AFB IRP Phase II
Beginning 8-30-84 and end 8-31-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP-200
Log Recorded By W. Boettner M. Horst

Ground Level Elevation: 60 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			SAND: Clayey, silty (moist)	0.02
85	C			CLAY: Silty, sandy, plastic, brown	0.02
90	C			SAND: Clayey, fine to medium grained, brown	0.04
93	C			SAND: Silty	0.12
100	C			GRAVELS: Sandy, medium to coarse grained	0.04
105	C			GRAVEL: Sandy, medium to coarse grained	0.18
110	C			CLAY: Sandy, plastic	0.02
115	C			CLAY: Silty, sandy, dark brown	0.06
120					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No 18
Sheet 1 of 2

Location
Grid Cell 10, 9
Coordinates x 9650
y 8250

Project McClellan AFB IRP Phase II
Beginning 8-30-84 and end
8-31-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP700
Log Recorded By W. Boettner W. Berst

Ground Level Elevation: 60 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
115	C			CLAY: Silty, sandy dark brown	0.18
120	C			CLAY: Sandy, silty	0.10
130	C			CLAY: Sandy, silty, dark brown	0.08
135	C			SILT: Sandy, clayey, dark tan	0.02 Water sample at 140' pH = 6.4 Conductivity = 240 Temperature = 20°C
140	C			CLAY: Silty, sandy, dark brown	0.01
145	C			CLAY: Plastic, silty, sandy	0.04
150	C			CLAY: Plastic, gravelly, sandy, fine to coarse grained, dark brown	0.04
155	C			CLAY: Sandy, gravelly	0.02
160					

4-84 BCW

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 18
Sheet 1 of 1

Location
Grid Cell 10, 9
Coordinates x 9650
y 8250

Project McClellan AFB IRP Phase II
Beginning 8-30-84 and end 8-31-84 of drilling operation
Sampling Interval (Estimated) Composite (ft)
Type Drill Rig and Operator Mobile Pneumatic CP2000
Log Recorded By W. Bortner D. Forst

Ground Level Elevation: 60 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
150					
	C			CLAY: Sandy, fine to coarse grained, dark brown	0.2
155					
	C			CLAY: Plastic, sandy, gravelly	0.22
170					
	C			CLAY: Sandy, micaceous, brown	0.18
175					
	C			CLAY: Plastic, sandy, micaceous, brown	0.14
180					
	C			SAND: Micaceous, clayey, brown	0.08
185					
	C			SAND: Micaceous, clayey, brown	0.06
190					
	C			SAND: Clayey, micaceous, increasing clay with depth	0.02
195					0.04
				SAND: Clayey, micaceous (moist)	0-200' ½" hole Grouted with bentonite pellets & slurry 2' ft and cement [illegible]
	C				
200				Total Depth: 200 Feet	

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-19
Sheet 1 of 5

Location 3030 Orange Grove
Gric Cell 16:09
Coordinates x 15,500'
y 8,040'

Project McClellan AFB IRP Phase II
Beginning 27 August 1984 and end 28 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D-50 S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx. 63ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
	G			SILT, sand, gravels and clay, brown, unconsolidated, dry.	OVM (ppm) 0.4
5					
	C			SAND, FN to VF, some coarse sand, tan, unconsolidated, dry.	
10					
	C			SILT and SAND, VF, dark tan, unconsolidated, dry.	0.5
15					
	C			SILT, minor clay, light tan, unconsolidated, dry. Sample difficult to catch.	
20					
	C			SAND, FN to VF, minor silt, tan, unconsolidated, dry.	0.2
25					
	C			SAND, FN to VF, minor silt, tan, unconsolidated, dry.	0.2
30					
	C			SAND, FN to VF, minor silt, grayish tan, unconsolidated, dry. Trace mica at 33', and turned golden brown.	
35					
	C			SILT, unconsolidated, fresh cut looks golden brown, trace mica (gold), dry.	0.2
40					

RADIAN CORPORATION

Log of Drilling Operations

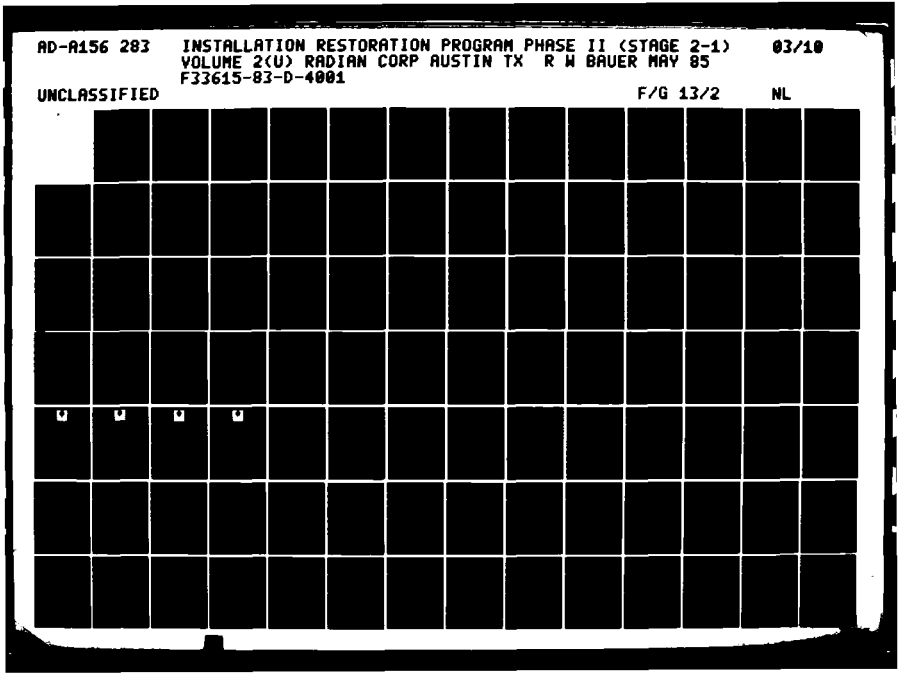
Boring or Well No. RB-19
Sheet 1 of 2

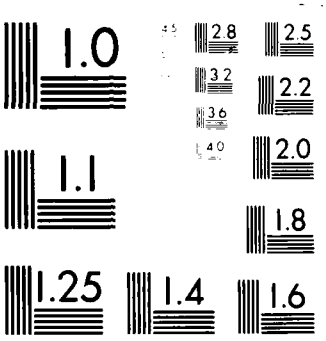
Location 3030 Orange Grove
Grid Cell 16:09
Coordinates x 15,400'
y 8,040'

Ground Level Elevation: apx. 63 ft. MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 27 August 1984 and ending 28 August 1984 of drilling operation
Sampling Interval (Estimated) [illegible] ft
Type Drill Rig and Operator Drill Tech [illegible]
Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			CLAY; semi-plastic, brown.	0
45					
	C			SAND and CLAY, brown, slight moisture, sand VF, clay begins at 48 ft.	0
50					
	C			CLAY, minor sand, light brown.	0.5
55					
	C	RB-19A		CLAY, minor sand, light brown, some moisture.	10
60					
	C			SAND, VF, and silt, unconsolidated, slight moisture.	1.0
65					
	C			SAND and CLAY; FN to VF, unconsolidated, Tan (sand), brown (clay).	1.1
70					
	C			SAND and SILT, FN to VF, tan and brown, unconsolidated.	1.2
75					
				SILT, tan, unconsolidated, dry, hard to [illegible] sample.	1.1


AD-A156 283 INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1) 03/10
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001
UNCLASSIFIED F/G 13/2 NL



MICROCOPY RESOLUTION TEST CHART

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-19
Sheet 3 of 5

Location 3030 Orange Grove
Grid Cell 16:09
Coordinates x 15,400'
y 8,040'

Ground Level Elevation: apx. 63ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 27 August 1984 and end 28 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			SAND and SILT, VF, unconsolidated, tan, slight moisture.	4.0
85	C			SILT, unconsolidated, dry, tan.	0.4
90	C			SILT and SAND, VF, tan, slight moisture, unconsolidated.	6.0
95	C			SILT, tan, unconsolidated, some moisture.	Drill pipe got stuck. Water appears to be from about 95-105'. 21
100	C			SAND and GRAVEL, Med. to VF, tan (sand) dark brown almost black (fine gravels), unconsolidated, dry.	2.0
105	C			CLAY; brown, slight moisture.	1.2
110	C			CLAY; brown (sample wet as driller had to add some water to cut it).	8/28/84-Took water sample at 120'. W.L.:95' BGL; T:21°C; C: 485; pH: 4.5. (Water may be from approx. 105'.)
115	C			CLAY; same (no sample).	
120	G	RB-19-1			

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-19
Sheet 4 of 5

Location
Grid Cell 16:09
Coordinates x 15,400'
y 8,040'

Project McClellan AFB IRP Phase II
Beginning 27 August 1984 and end 28 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx. 63 ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND, FN to VF, unconsolidated, tan and brown, slight moisture (no free water).	0.8
125	C			CLAY, sandy, reddish brown, slight moisture (no free water).	0.6
130	C			CLAY and SILT, light brown, unconsolidated, silt dry, clay plastic.	1.2
135	C			CLAY and SILT, light brown, unconsolidated clay feels damp. No free water.	3.6 Sieve analysis indicates sands.
140	G	RB-19-2		GRAVEL (approx. 1'); med-coarse, angular to subangular, unconsolidated, water, mottled brown.	Water came up to 111'. T: 23°C; C: 210; pH: 6.4.
	C				
145	-			CLAY; brown, moist (no sample).	
	C			CLAY and SAND, clay brown moist w/sand stringers, FN-VF, unconsolidated.	5.0
150	C			CLAY and SAND, same.	9.5
155	C			CLAY, brown, moist.	18.0
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-19
Sheet 5 of 5

Location
Grid Cell 16:09
Coordinates x 15,400'
y 8,040'

Project McClellan AFB IRP Phase II
Beginning 27 August 1984 and end 28 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.63 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			CLAY and SILT; brown, moist.	39.0 water felt cooler at 160'. Could not get a temperature.
165	C			SILT and CLAY, minor sand, VF, unconsolidated, brown, some moisture.	18.0
170	C			SAND and SILT, FH-VF, unconsolidated (silt white and dry) some clay; gravel @ 173', stringers, water, trace mica (gold).	10.0
175	C			CLAY; brown, stringers (VF), unconsolidated.	WL: 122' BGL; T: 27°C; pH: 7.2.
180	C	RB-19-3		SAND, FN-VF, small gravel, slightly golden brown, unconsolidated.	Lots of water, probably from 180-185'.
185	C			CLAY and SILT @ 187-191', some moisture, golden brown, unconsolidted (silt).	80
190	C			SAND, Med-FN, mottled brown w/black, moderate amount of mica (gold flakes) lots of water, unconsolidated.	Temperature of running water: 27°C.
195	C			SAND, same.	Water from 190-200'. Grouted hole through dual tubes w/~38 sacks Portland Cement Type I & II
200		RB-19-4		Total Depth: 200 Feet	

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-20
Sheet 1 of 5

Location McClellan AFB SE Corner
Grid Cell 16:10
Coordinates x 15,740'
y 9,710'

Project McClellan AFB IRP Phase II
Beginning 29 August 1984 and end 29 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.68 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0	G			SILT and CLAY, tan.	Drilled by the dual tube air rotary method. OVM (ppm) 0.1 (background)
5	C			SAND and CLAY, VF, tan, unconsolidated.	1.0
10	C			SILT, tan, unconsolidated, dry.	2.5
15	C			CLAY and SILT, tan, unconsolidated.	3.0 (sample is wet will drill water)
20	C			SAND, FN-VF, tan, unconsolidated, dry.	1.8
25	C			SILT and SAND, VF, light brown, unconsolidat d, some moisture.	1.5 0.5 (background)
30	C			CLAY, light brown, damp.	Driller cut w/water 15.0
35	C			CLAY, light brown.	
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-20
Sheet 2 of 5

Location McClellan AFB SE Corner
Grid Cell 16:10
Coordinates x 15,740'
y 9,710'

Project McClellan AFB IRP Phase II
Beginning 29 August 1984 and end
29 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.68 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40	C			SAND and SILT, VF-FN, reddish brown, unconsolidated, some moisture.	3.0
45	C			SAND and SILT, VF, reddish brown and tan, unconsolidated, some moisture.	3.8
50	C			SAND and SILT, FN-VF, tan, unconsolidated, dry.	3.8
55	C			SAND and SILT, FN-VF, tan, unconsolidated.	3.8 0.7 (background)
60	C			CLAY and SAND, VF, tan, unconsolidated, dry.	2.9
65	C			CLAY and SAND, VF, brown, unconsolidated, dry.	
70	C			CLAY and SAND, VF, brown, unconsolidated, dry.	
75	C			CLAY and GRAVEL, FN-Med, unconsolidated, dark brown (almost black), dry.	3.2
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-20
Sheet 3 of 5

Location McClellan AFB SE Corner
Grid Cell 16:10
Coordinates x 15,740'
y 9,710'

Project McClellan AFB IRP Phase II
Beginning 29 August 1984 and end 29 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx. 68 ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			SAND and SILT, VF, unconsolidated, dry, tan.	0.8
85	C			CLAY and SAND, VF, unconsolidated, light brown.	Driller cut/water.
90	C			CLAY and SAND, VF, unconsolidated, light brown.	Driller cut w/water.
95	C			CLAY and SAND, VF, unconsolidated, clay is hard, light brown.	Drilling slow due to hard clay, cut w/water. 0.2 (background)
100	C			CLAY, hard, brown.	9.0
105	C			SAND and CLAY, VF, unconsolidated, brown.	Driller cut w/ water.
110	C			CLAY; brown, some sand, unconsolidated.	
115	C			SAND, Med-FN, unconsolidated, light brown.	Driller cut w/water.
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-20
Sheet 4 of 5

Location McClellan AFB SE Corner
Grid Cell 16:10
Coordinates x 15,740'
y 9,710'

Project McClellan AFB IRP Phase II
Beginning 29 August 1984 and end 29 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx. 68 ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			CLAY, SAND, GRAVEL; light brown.	
125					
	C			CLAY, SAND, and GRAVEL; brown, unconsolidated.	Trace water @ 130'.
130					
	C			CLAY, SAND, GRAVEL; brown, unconsolidated.	Water
135					
	C			Same	Obvious water from about 30-140'. Fluid level: 103' BGL; T: 23°C; C: 185; pH: 7.4.
140		RB-20-1			
	C			SILT and CLAY, unconsolidated, tan to brown, silt, dry, clay slight moisture.	1.5
145					
	C			Same, no sample.	
150					
	C			SAND, Med., mottled brown, unconsolidated.	No free water. 1.5
155					
	C			CLAY and SAND, VF, brown, plastic.	Fluid level: 103'; T: 23°C; C: 320; pH: 7.4.
160		RB-20-2			

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-20
Sheet 5 of 5

Location McClellan AFB SE Corner
Grid Cell 16:10
Coordinates x 15,740'
y 9,710'

Project McClellan AFB IRP Phase II
Beginning 29 August 1984 and end 29 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.68 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					
	C			CLAY; hard, brown.	Driller cut w/water.
165					
	C			CLAY and SAND, brown, hard.	Driller cut w/water.
170					
	C			CLAY and SAND; brown, hard, water, some gravel.	
175					
	C	RB-20-3		CLAY and SAND, brown, FN-VF, unconsolidated.	Fluid level: 106' BGL; T: 23°C; C: 300; pH: 7.6.
180					
	C			CLAY and SAND, brown FN-VF, unconsolidated, turned golden @ approx. 83'.	
185					
	C			Same.	Water feels colder when small water zones encountered.
190					
	C	RB-20-4		Same.	
195					Fluid level: 136' BGL. T: 25°C; C: 190; pH: 7.4.
	C	RB-20-5		SAND, Med-FN, angular to sub-angular. mica (gold), unconsolidated.	Grouted hole through dual tubes w/ 39 sacks Portland Cement Type I & II
200				Total Depth: 200 Feet	

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 21
Sheet 1 of 5

Location
Grid Cell 11, 22
Coordinates x 10250
y 21650

Project McClellan AFB IRP Phase II
Beginning 8-17-84 and end
8-17-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner \ B. Horst

Ground Level Elevation: 66 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			SAND: Silty, fine to very fine, brown	0.1
5					
	C			SAND: Silty, fine to very fine, brown	0.1
10					
	C			SAND: Silty, fine to very fine, brown	0.1
15					
	C			SILT: Clayey, sandy, clay somewhat plastic	0.05
20					
	C			SILT: Clayey, silt, brown	0.05
25					
	C			CLAY: Silty, brown	0.05
30					
	C			SILT: Sandy, clayey, tan	0.04
35					
	C			SILT: Sandy, clayey, tan	0.05
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 21
Sheet 2 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-17-84 and end 8-17-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner / B. Horst

Ground Level Elevation: 66 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40	C			SAND: Clayey, medium to coarse grain, FeO_x staining, red brown	0.04
45	C			SILT: Clayey, sandy, fine to very fine grain, brown	0.02
50	C			CLAY: Sandy, silty, brown	0.05
55	C			SILT: Sandy, clayey, reddish brown	0.1
60	C			SILT: Clayey, plastic, dark brown	0.02
65	C			SILT: Clayey, brown	0.03
70	C			CLAY: Silty, sandy, medium to coarse grain, brown	0.1
75	C			CLAY: Silty, brown	0.1
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No 21
Sheet 3 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-17-84 and end 8-17-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner B. Horst

Ground Level Elevation: 66 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY: Silty, hard, brown	0.05
85					
	C			SILT: Clayey, brown	0.12
90					
	C			SAND: Clayey, silty, fine to very fine grain, brown	0.02
95					
	C			SAND: Clayey, silty, fine to very fine grain, brown	0.1
100					
	C			CLAY: Silty, sandy, moist	0.4
105					
	C			SILT: Sandy, fine to very fine grain, brown	0.1
110					
	C			CLAY: Silty, sandy, brown	0.05
115					
	C			SAND: Silty, clayey, fine to medium grain, brown	0.02
120					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 21
Sheet 4 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-17-84 and end 8-17-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP300
Log Recorded By W. Boettner N.B. Horst

Ground Level Elevation: 66 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			SAND: Silty, fine to very fine grain, brown	0.02
125					
	C			SAND: Silty, clayey, fine to very fine grain, brown	0.01
130					
	C			SAND: Silty, clayey, fine to medium grain, brown	0.01
135					
	C			SAND: Silty, medium to coarse grain, abundant water (~250 GPM)	0.01 Water sample at 140' pH = 4.5 Temperature = 21°C Conductivity = 200
140					
	C			SAND: Clayey, fine to medium grain, brown	0.01
145					
	C			SAND: Gravelly, coarse to very coarse clean quartz sand	0.02
150					
	C			SAND: Silty, clayey, medium to coarse grain, clay increases with depth	0.01
155					
	C			SAND: Micaceous, medium to fine grain, brown, small amount of water	0.02
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 21
Sheet 5 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-17-84 and end 8-17-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner \B. Horst

Ground Level Elevation: 66 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND: Silty, fine to very fine grain, brown	0.02 Water sample at 160' pH = 4.5 Temperature = 22°C Conductivity = 200
165	C			SAND: Silty, coarse, trace amount of clay	0.01
170	C			SAND: Silty, medium to coarse, brown	0.02
175	C			SAND: Silty, medium to coarse, clay <10%	0.01
180	C			SAND: Clayey, medium to coarse grain, brown	0.01
185	C			CLAY: Sandy, fine to medium grain, clay, plastic, tan Total Depth: 190 feet	0.02
190	C				0.02 0-190' 4½" hole Grouted hole through dual tubes w 31 sacks Portland Cement Type I & II
195	C				
200					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 22
Sheet 1 of 5

Location
Grid Cell 3,17
Coordinates x 2950
y 16950

Project McClellan AFB IRP Phase II
Beginning 8-22-84 and end 8-22-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner B. Horst

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			SAND: Silty, fine to medium, tan to brown	0.0
5					
	C			SAND: Medium to coarse, brown	0.04
10					
	C			SAND: Silty, clayey, poorly sorted, subangular to subrounded	0.2
15					
	C			SAND: Silty, clayey, fine to medium grained, increasing clay content, tan	0.3
20					
	C			SAND: Clayey, subangular to subrounded grains, Biotite, Hornblende	0.1
25					
	C			SILTY SAND: Clayey, fine to very fine grain, light tan	0.12
30					
	C			SAND: Silty, clayey, fine to medium grain, angular to subangular, micaceous (Muscovite), red brown	0.05
35					
	C			SAND: Trace of silt and clay, medium to coarse grained, poorly sorted, brown	0.02
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 22
Sheet 2 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-22-84 and end 8-22-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP200
Log Recorded By W. Boettner S. Horst

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Clayey, silty, fine to very fine grained, tan to grayish	0.01
45					
	C			SAND: Silty, fine to medium grained, poorly sorted, angular	0.02
50					
	C			SAND: Clayey, plastic, fine to medium grained, brown	0.02
55					
	C			SAND: Clayey, silty, fine to very fine grained, subangular to subrounded, brown	0.08
60					
	C			SAND: Clayey, silty, siltstone, gravels, fine grained, increasing clay with depth	0.06
65					
	C			CLAY: Sandy, fine to very fine grained, plasticity high	0.1
70					
	C			SAND: Clayey, fine to medium grained, subangular to subrounded, poorly sorted, micaceous (Muscovite)	0.04
75					
	C			SAND: Clayey, silty, increasing clay plasticity, dark brown	0.04
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 22
Sheet 3 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-22-84 and end 8-22-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner / B. Horst

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			SAND: Clayey, fine to medium grained, subangular to subrounded	0.01
85	C			CLAY: Silty, sandy, fine to medium grained, high plasticity, dark brown	0.1
90	C			SAND: Clayey, silty, fine to very fine grained, subangular quartz, brown	0.08
95	C			SAND: Silty, clayey, gravelly, fine to medium grained	0.08 Water sample pH = 5.4 Conductivity = 260 Temperature = 22°C
100	C			CLAY: Sandy, plasticity high, brown	0.06
105	C			SAND: Clayey, fine grained, plastic	0.08
110	C			SAND and GRAVEL: Clayey, fine to medium grained, brown	0.02
115	C			SAND: Silty, clayey, fine to very fine grained, subangular to subrounded	0.14
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 22
Sheet 4 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-22-84 and end 8-22-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP300
Log Recorded By W. Boettner \B. Horst

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			CLAY: Plastic changing to fine grained sand	0.06
125					
	C			GRAVEL: Clayey, sandy, brown	0.02
130					
	C			CLAY: Gravelly, brown	0.02
135					
	C			CLAY: Clay and sand, fine to medium grained with some small gravels	0.08
140					
	C			SAND: Coarse sand and gravel, water	0.02 Water sample pH = 5.4 Conductivity = 240 Temperature = 22°C
145					
	C			SAND: Coarse sand and gravel, silty, brown, water	0.02
150					
	C			SAND: Coarse sand and gravel, water	0.01
155					
	C			SAND: Silty, clayey, fine to coarse grained with some gravels	0.01
160					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 22
Sheet 5 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-22-84 and end 8-22-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner / B. Horst

Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					
	C			SAND: Silty, coarse grained, dark grains (Biotite, Hornblende) about 15%	0.0
165					
	C			SAND: Silty, medium to coarse, poorly sorted, brown	0.0
170					
	C			SAND: Silty, clayey, medium grained, poorly sorted	0.06
175					
					0.04
	C			SAND and GRAVEL: Silty, clayey, medium to coarse grained, brown to tan, water	Water sample pH = 6.2 Conductivity = 200 Temperature = 18°C
180					
	C			SAND: Clayey, silty, gravelly, medium to coarse grained	0.02
185					
	C			SAND: Clayey, gravelly, medium to coarse grained	0.1
190					
	C			CLAY: Sandy, gravelly, clay increasing with depth, brown	0.2
					0.1
195					0-200' 4½" hole Grouted hole through dual tubes w/ 39 sacks Portland Cement Type I & II
	C			CLAY: Sandy, gravelly	
200				Total Depth: 200 Feet	

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 23
Sheet 1 of 5

Location
Grid Cell 7, 12
Coordinates x 6400
y 11950

Project McClellan AFB IRP Phase II
Beginning 8-24-84 and end
8-24-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner / B. Horst

Ground Level Elevation: 50 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			SAND: Silty, fine to very fine, tan to brown	0.0
5					
	C			SAND: Clayey, silty, fine to very fine grain, increasing clay with depth, light brown	0.02
10					
	C			SAND: Clayey, gravelly, fine to medium grain, clay highly plastic	0.01
15					
	C			SAND: Silty, clayey, fine to medium grain, subangular to subrounded, brown	0.01
20					
	C			SAND: Silty, fine to coarse grain, subangular to subrounded, brown	0.01
25					
	C			SAND: Clayey, silty, fine to medium grain, subangular to subrounded, tan	0.01
30					
	C			SAND: Clayey, fine to medium grain, plastic, tan to brown	0.01
35					
	C			CLAY: Sandy, silty, fine to very fine grain, plastic, brown	0.01
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 23
Sheet 2 of 3

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-24-84 and end 8-24-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By K. Boettner B. Horst

Ground Level Elevation: 50 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40	C			SAND: Silty, fine to very fine grain, Quartz, Biotite, Horneblende, brown	0.01
45	C			SAND: Fine to very fine, angular to subangular, poorly sorted, tan	0.01
50	C			SAND: Silty, clayey, fine to very fine, angular to subangular, brown	0.01
55	C			SAND: Silty, clayey, fine to very fine grain, brown, clay increasing with depth.	0.01
60	C			SAND: Clayey, trace of silt, medium to very fine grain, poorly sorted, brown	0.01
65	C			SAND: Clayey, silty, fine to very fine grain, subangular to rounded, poorly sorted, dark brown	0.01
70	C			SAND: Silty, clayey, fine to very fine, poorly sorted, brown	0.01
75	C			SAND: Silty, fine to very fine, sub-angular to subrounded, poorly sorted, red brown	0.02
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. _____
Sheet 3 of 5

Location _____
Grid Cell _____
Coordinates x _____
y _____

Project McClellan AFB IRP Phase II
Beginning 8-24-84 and end 8-24-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner / B. Horst

Ground Level Elevation: 50 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Silty fine to very fine, clayey, red brown	0.01
85					
	C			CLAY: Fine to very fine sandy, moist	0.0
90					
	C			CLAY: Fine to medium sandy, plastic, brown	0.02
95					
	C			CLAY: Sandy, fine to very fine, brown	0.01 Water sample at 100' pH = 5.8 Conductivity = 260 Temperature = 18°C
100					
	C			CLAY: Sandy, plastic, brown	0.02
105					
	C			SILTY CLAY: Sandy, fine to medium, gravelly	0.01
110					
	C			SILTY CLAY: Sandy, gravels up to 2 mm, brown	0.0
115					
	C			SILTY CLAY: Sandy, fine to medium, gravels	0.01
120					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 23
Sheet 4 of 5

Location
Grid Cell
Coordinates x
y

Project McClellan AFB IRP Phase II
Beginning 8-24-84 and end 8-24-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP30
Log Recorded By W. Boettner / B. Horst

Ground Level Elevation: 50 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			SAND: Clayey, silty, subangular to subrounded, poorly sorted	0.0
125					
	C			SAND and GRAVEL: Silty, plastic, clayey, tan to brown	0.01
130					
	C			SANDY SILT: Fine to very fine, very hard, dark brown	0.0
135					
	C			SAND: Fine to very fine, silty, tan, small amount of water	0.0
140					
	C			CLAY: Sandy, gravelly, plastic, dark brown	0.02
145					
	C			CLAY: Silty, brown, hard	0.01
150					
	C			CLAY: Silty, sandy, brown	0.0
155					
	C			SILT: Gravelly, water	0.0 Water sample at 160' pH = 9.2 Temperature = 19°C Conductivity = 260
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 23
Sheet _____ of 3

Location _____
Grid Cell _____
Coordinates x _____
y _____

Project: [illegible]
Beginning 8-24-84 and end 8-24-84 of drilling operation
Sampling Interval Estimated: [illegible] (ft)
Type Drill Rig and Operator: [illegible] Pneumatic CP2000
Log Recorded By: [illegible]

Ground Level Elevation: 50 ft. MSL (approx.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					
	C			CLAY: Silty, sandy, hard, brown	0.01
165					
	C			SAND: Medium to coarse, clean, brown	0.02
170					
	C			GRAVEL: Sandy	0.02
175					
	C			SAND: Gravelly, medium to coarse, sandy	0.01 Water sample at 180' pH = 6.0 Temperature = 16°C Conductivity = 220
180					
	C			SAND and GRAVEL: Medium to coarse, water	0.01
185					
	C			SAND: Clayey, fine to very fine, tan	0.02
190					
	C			SAND: Clayey, fine to very fine	0.04
195					
	C			SAND: Slightly clayey, very fine, micaceous Total Depth: 200 Feet	0-200' 4½" hole grouted hole through drill tube w 31 sacks 2 yd and Cement Type I & II 0.02
200					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-24
Sheet 1 of 5

Location
Grid Cell 8, 14
Coordinates x 7425
y 13,550

Project McClellan AFB IRP Phase II
Beginning 2 August 1984 and end 2 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters L. Holtort

Ground Level Elevation: ~~51~~ ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
	C			TOPSOIL; unconsolidated silt, sand and gravel.	0.0
5					
	C			SILT; unconsolidated, sandy from 8-10'.	0.0
10					
	C			CLAY; silty, good plasticity, red, slightly moist.	0.0
15					
	C			SILT; well sorted, brown.	0.0
20					
	C			SILT; fine, yellow, becoming coarser with depth.	0.0
25					
	C			SILT; sandy, fine-med. grained, yellow-brown, micaceous, black 1' thick frag. 10%.	0.0
30					
	C			SILT; fine-grained, well sorted, red, slightly damp.	0.0
35					
	C			SILT; well sorted, red-brown, slightly damp.	0.0
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-2
Sheet 2 of 5

Location
Grid Cell 8, 14
Coordinates x 7425
y 13,550

Project McClellan AFB IRP Phase II
Beginning 2 August 1984 and end 2 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters / J. Boltort

Ground Level Elevation: 51 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND; silty, fine-medium grained, well rounded, light brown.	0.0
45					
	C			CLAY and SILT; interbedded, clay, red brown, oxidized, silt, fine-grained, damp.	0.0
50					
	C			SILT; clayey, dark brown, clay, good plasticity, tan-gray.	0.0
55					
	C			SAND; silty, fine-grained, w/yellow silt, interbedded.	0.0
60					
	C			SILT; well sorted, yellow, powder coarsening downward.	0.0
					0.0
				SAND; silty, fine-medium-grained, mod. sorted, subrounded.	
					0.0
				CLAY; silty, good plasticity, moist, confining, tan-brown, increase in clay 15'.	
				SILT; clayey, tan, slightly moist.	Dropped probe; no water in borehole.
80					0.0

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-24
Sheet 3 of 5

Location
Grid Cell 8, 14
Coordinates x 7425
y 13,550

Ground Level Elevation: 51 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 2 August 1984 and end 2 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 2000 CSR/
Log Recorded By T. Walters \L. Holtort

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80				SAND; fine-grained, well sorted, quartz subangular.	
	C				0.0
85					0.0
	C			SAND; coarse-grained, micaceous, water-bearing.	Water sample Water 87' pH 6.5 Temp. 23°C Cond. 210
90					
	C			SAND and CLAY; interbedded, increasing in clay brown, confining.	0.0
95					
	C				0.0
100				CLAY; gray, good plasticity, sand; fine-coarse poorly sorted, oxidized.	± 5 gpm.
	C				0.0
105				CLAY; silty tan brown, fair plasticity.	
	C			SAND and CLAY; hard, cemented, "pop-corn" waterbearing.	Water sample pH 7.1 Temp. 18°C Cond. 210
110					0.0
	C			CLAY; very good plasticity, gray.	0.0
115					
	C			SAND; hard, cemented, dark brown, pop-corn texture, possible reggolith.	0.0
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-24
Sheet 4 of 5

Location
Grid Cell 8, 14
Coordinates x 7425
y 13,550

Ground Level Elevation: 51 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 2 August 1984 and end 2 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters / L. Holtort

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND; fine-grained, with clay matrix, water-bearing, brown.	0.0
125	C			Same as above.	0.0 Water sample pH 7.5 Temp. 19°C Cond. 250
130	C			CLAY; good plasticity, yellow-gray, confining.	0.0
135	C			Same as above.	0.0
140	C			SAND; clayey, interbedded, yellow-gray, beds 1' thick.	0.0
145	C			CLAY; gray, extremely plastic.	0.0
150	C			SAND and GRAVEL; fine-coarse, poorly sorted, high energy, sharp contact with above unit.	0.0
155	C			GRAVEL; sandy, channel-high energy, poorly sorted, quartz angular, clear-yellow.	0.0 Rig shimmy 157-160' greatest amount of gravel in borehole.
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring & Well No. RB-24
Sheet 5 of 5

Location
Grid Cell 8, 14
Coordinates x 7425
y 13,550

Ground Level Elevation: 51 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 2 August 1984 and end 2 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 2000 CSR/
Log Recorded By T. Walters \ L. Holtort

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160				SAND; hard, cemented, oxidized, w/ gypsum 20% popcorn texture.	
	C				0.0
165					
				SAND; hard, cemented with clay, red.	
	C			Increase in gypsum, 30%.	0.0
170					
	C			SAND; coarse, poorly sorted, clay clasts 15%, black lithoc frag. 10%.	0.0
175					
	C				0.0
180				SAND, fine-med. grained, mica cears, v. well sorted, well rounded, water red, oxidized, black lithic frag. 10%.	± 100 gpm.
	C				0.0
185					
				SAND and GRAVEL; same as above, coarsening downward.	0.0
	C				
190				SAND and GRAVEL; high energy, poorly sorted, lithic 20%, quarts is subangular, clear-yellow, oxidized.	0.0
	C			CLAY; gray, fair plasticity, semi-confining.	
195					0.0
	C				Grout made through dual tubes w/Ready Mix Portland Cement Type I & II.
200				Total Depth: 195 Feet	

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-25
Sheet 1 of 5

Location Far Northeast Corner of Flightline
Grid Cell 15:25
Coordinates x 14,050'
y 24,160'
Ground Level Elevation: apx. 72 ft. MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 31 August 1984 and end 1 September 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0	G			SAND and CLAY; hard, dry, Md-FN, brown to reddish-brown.	Drilled by the dual tube air rotary method. OVM (ppm)
5	C			SILT and CLAY, minor sand, brown, dry, unconsolidated.	35.0
10	C			CLAY; brown, unconsolidated, dry.	Driller cut w/water.
15	C			SAND; FN-VF, tan, unconsolidated.	52.0
20	C			SAND and SILT; FN-VF, tan, unconsolidated, dry.	18.5
25	C			SILT; tan, unconsolidated, dry.	49.0
30	C			CLAY, brown, unconsolidated, dry.	6.0
35	C			CLAY, brown, unconsolidated, dry.	Driller cut w/water. 7.0
40					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-25
Sheet 2 of 5

Location Far Northeast Corner of Flightline
Grid Cell 15:25
Coordinates x 14,050'
y 24,160'

Project McClellan AFB IRP Phase II
Beginning 31 August 1984 and end 1 September 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.72 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SILT, yellowish, brown, unconsolidated, dry.	9.6
45					
	C			SILT and CLAY, brown, unconsolidated, slight moisture.	22.5
50					
	C			SILT and CLAY; same.	
55					
	C			CLAY, brown, dry, unconsolidated.	Driller cut w/water.
60					
	C			SAND and CLAY, FN-VF, tan, unconsolidated, dry.	4.0
65					
	C			CLAY, light tan, unconsolidated, slight moisture.	1.5
70					
	C			SAND and SILT, minor clay, FN-VF, tan, unconsolidate.	0.2
75					Driller cut w/water.
	C			CLAY, brown, unconsolidated.	43.0 All dry so far.
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-25
Sheet 3 of 3

Location Far Northeast Corner of Flightline
Grid Cell 15:25
Coordinates x 14,050'
y 24,160'

Project McClellan AFB IRP Phase II
Beginning 31 August 1984 and end 1 September 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.72 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SILT and CLAY; unconsolidated, brown (clay), off-white (silt), dry to slight moisture.	19.3
85					
	C			CLAY; minor silt, brown, unconsolidated, dry.	Driller cut w/water. 38.9
90					
	C			CLAY; brown, unconsolidated, dry.	3.5
95					
	C			CLAY; brown, minor silt, unconsolidated, dry.	1.2
100					
	C			CLAY, SILT and SAND, minor gravel, brown, unconsolidated Md-FN.	Driller cut w/water. 3.2
105					
	C			CLAY and SAND; brown, Md-FN, unconsolidated, dry.	
110					
	C			CLAY, SAND and GRAVEL; Md-FN, unconsolidated, dry, brown, subangle to angular.	0.7
115					
	C			CLAY, SAND, GRAVEL; same.	Trace water (?) from 115-120'. 2.1 Driller cut w/water.
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-25
Sheet 4 of 5

Location Far Northeast Corner of Flightline
Grid Cell 15:25
Coordinates x 14,050'
y 24,160'
Ground Level Elevation: apx. 72 ft. MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 31 August 1984 and end 1 September 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S. Smith
Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			SILT and CLAY; brown, unconsolidated, slight moisture.	0.5
125					
	C			CLAY and SAND; VF, tan (sand), brown (clay), unconsolidated, dry.	
130					
	C			SAND, SILT and CLAY; Fn-VF, tan (sand), brown (clay), unconsolidated, dry.	4.4
135					
	C			CLAY; brown, unconsolidated, slight moisture.	0 (background) WL: 103' BGL; T: 19°C; C: 210; pH: 7.8.
140		RB-25-1			
	C			CLAY, brown, slight moisture, unconsolidated.	Water (?) from 135-145'. 5.9
145					
	C			CLAY; brown, unconsolidated.	
150					
	C			SAND and CLAY; F, tan (sand), unconsolidated, brown (clay).	No obvious water. 2.3
155					
	C			CLAY and SAND; Cs-VF, minor silt (white), tan (sand) dry, unconsolidated.	Dry at 160'. (Driller blew out hole - no water.) 4.0
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-25
Sheet 5 of 5

Location Far Northeast Corner of Flightline
Grid Cell 15:25
Coordinates x 14,050'
y 24,160'

Ground Level Elevation: apx. 72 ft. MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 31 August 1984 and end 1 September 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160		RB-25-2			WL: 107' BGL. T: 21 1/2°C; C:750; pH: 8.2.
	C			SAND and CLAY; Md-VF, mottled tan-brown, micaceous (gold).	
165					
	C			CLAY and SAND, same, dry.	Driller cut w/water.
170					
	C			CLAY and SAND, same.	Driller cut w/water. 85
175					
	C			CLAY; brown, unconsolidated.	Driller cut w/water.
180					Fluid level: none detected at 180' with E-line.
	C			CLAY; brown, dry, unconsolidated.	Water at approx. 187'.
185					
	C	RB-25-3		SAND, Md-VF, minor clay, mottled tan, micaceous (gold), makes steady water. (187-190' sand).	Fluid level: 118' BGL; T: 21°C; C:330; pH: 8.3.
190					
	C			CLAY, brown, unconsolidated, dry.	Water from 187-195'.
195				Total depth: 195 ft.	
					Grouted hole through dual tubes w/ 43 sacks Portland Cement Type I & II
200					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-26
Sheet 1 of 5

Location South of Bldg. 1440
Grid Cell 17:20
Coordinates x 16,990'
y 19,480'

Project McClellan AFB IRP Phase II
Beginning 30 August 1984 and end 31 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx. 87 ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0	G			SOIL; silt, clay, dry, unconsolidated, tan.	Drilled by the dual tube air rotary method. OVM (ppm) 0.1 (background)
5	C			CLAY; dry, brown (driller cut w/water).	
10	C			SAND; Fn-VF, unconsolidated, dry, brown.	5.0
15	C			SAND and SILT; Fn-VF, unconsolidated, dry, brown.	0.5
20	C			CLAY, slightly moist, unconsolidated, brown.	48.0
25	C			SILT and SAND; Fn-VF, unconsolidated, dry, tan.	12.5
30	C			SILT and SAND, VF, unconsolidated, slight moisture, tan.	3.2
35	C			SILT and CLAY; slight moisture, reddish brown, unconsolidated.	1.5
40					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-26
Sheet 2 of 3

Location South of Bldg. 1440
Grid Cell 17:20
Coordinates x 16,990'
y 19,480'

Project McClellan AFB IRP Phase II
Beginning 30 August 1984 and end 31 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tex D40K S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.87 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			CLAY; hard, unconsolidated, brown.	Driller had to cut w/water. 0.6
45					
	C			CLAY, same.	1.5
50					
	C			CLAY, same.	3.5
55					
	C			CLAY and SAND, VF, unconsolidated, brown.	Driller had to cut w/water. 4.0
60					
	C			CLAY and SAND, same.	
65					
	C			CLAY and SAME, same.	1.0
70					
	C			CLAY and SAND, same.	1.0
75					
	C			CLAY, hard, dry, unconsolidated.	
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-26
Sheet 1 of 5

Location South of Bldg. 1440
Grid Cell 17:20
Coordinates x 16,990'
y 19,480'

Project McClellan AFB IRP Phase II
Beginning 30 August 1984 and end 31 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.87 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND and CLAY, tan, Fn-VF, unconsolidated, dry.	
85					
	C			CLAY; brown, unconsolidated.	4.4 (Background): 4.4, it's been raining. 10.0
90					
	C			CLAY and SAND; VF, unconsolidated, brown.	
95					
	C			CLAY and SAND, same.	
100					
	C			SAND and CLAY; brown, unconsolidated, Med-FN.	
105					
	C			CLAY and SAND, Fn-VF, unconsolidated, clay-hard, brown.	
110					
	C			CLAY, reddish brown, dry.	
115					
	C	RB-26-1		CLAY and SAND; Fn-VF, unconsolidated, brown.	0.8 Water: T: °C; C: 170; pH: 7.3. Very little water produced.
120					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-26
Sheet 4 of 5

Location South of Bldg. 1440
Grid Cell 17:20
Coordinates x 16,990'
y 19,480'

Project McClellan AFB IRP Phase II
Beginning 30 August 1984 and end 31 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40 S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.87 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND; C-F, unconsolidated, mottled, tan.	9.9
125	C			SILT and SAND, VF, unconsolidated, dry.	7.7
130	C			SILT and CLAY; unconsolidated, slight moisture, brown.	12.6 7.9 (background)
135	C			CLAY and SILT, unconsolidated, brown, some moisture.	Water level: 117', T: 23°C; C: 150; pH: 7.4. Little water produced.
140	C	RB-26-2		CLAY and SILT; same.	
145	C			CLAY,: slight moisture, brown.	8.2
150	C			CLAY; dry (?), brown.	8.0
155	C			CLAY and SILT; hard, dry, brown.	No apparent water.
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-26
Sheet 5 of 5

Location South of Bldg. 1440
Grid Cell 17:20
Coordinates x 16,990'
y 19,480'

Project McClellan AFB IRP Phase II
Beginning 30 August 1984 and end 31 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.87 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					
	C			SAND, CLAY and GRAVEL; Md-FN, unconsolidated, no water, brown. Silt (white).	5.0 1.2 (background)
165					
	C			CLAY and SILT; minor sand, Fn, Brown, unconsolidated, dry.	2.5
170					
	C			CLAY; minor sand, Fn-VF, brown, unconsolidated, dry.	
175					
	C			CLAY, same.	
180					
	C			CLAY; same. Possible trace water.	Driller had to use water to cut) 4.0
185					
	C			CLAY; same.	
190					
	C			CLAY; same.	Water level: 122', BGL (rose quickly). T: 21°C; C: 200; pH: 7.5.
195		RB-26-3			
	C			SAND and CLAY; Vf-Fn, brown, water, unconsolidated, micaceous (golden).	Grouted hole through dual tubes w apx. 36 sacks Portland Cement Type I & II
200				Total Depth: 200 Feet	

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 27
Sheet 1 of 5

Location
Grid Cell 14, 7
Coordinates x 13200
y 6000

Project McClellan AFB IRP Phase II
Beginning 9-5-84 and end 9-6-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner B. Horst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			Highway base material	0.0
5					
	C			CLAY: Sandy, reddish brown	0.10
10					
	C			CLAY: Silty, sandy, reddish brown	0.12
15					
	C			CLAY: Silty, sandy, reddish brown	0.08
20					
	C			SAND: Silty, clayey, very fine grained, tan	0.04
25					
	C			SAND: Clayey, medium to very fine grained, reddish brown	0.02
30					
	C			SAND: Clayey, medium to very fine grained, brown	0.01
35					
	C			SAND: Clayey, silty, medium to fine grained, brown	0.02
40					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 27
Sheet 2 of 5

Location
Grid Cell 14,7
Coordinates x 13200
y 6000

Project McClellan AFB IRP Phase II
Beginning 9-5-84 and end 9-6-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By M. Boettner W. Horst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40	C			SAND: Silty, clayey, very fine to medium grained, brown	0.0
45	C			SAND: Gravelly, micaceous, coarse to very fine grained, brown	0.0
50	C			SAND: Micaceous, coarse to very fine grained, brown	0.01
55	C			CLAY: Sandy, micaceous	0.04
60	C			SAND: Silty, fine to very fine grained, brown	0.0
65	C			SAND: Silty, fine to very fine grained, brown	0.0
70	C			SAND: Micaceous, fine to very fine grained, brown	0.04
75	C			SAND: Silty, clayey, fine to very fine grained, brown to tan	0.02
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 27
Sheet 3 of 5

Location
Grid Cell 14,7
Coordinates x 13200
y 6000

Project McClellan AFB IRP Phase II
Beginning 9-5-84 and end
9-6-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner B. Horst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Clayey, gravelly, very fine grained, tan	0.0
85					
	C			SAND: Silty, fine to coarse grained, tan to brown	0.01
90					
	C			SAND: Clayey, very fine to coarse grained, micaceous, tan to gray	0.0
95					
	C			SAND: Clayey, medium to very fine grained, micaceous, brown to gray	0.04
100					
	C			CLAY: Silty, sandy, brown (moist)	0.02
105					
	C			CLAY: Sandy, plastic, brown (moist)	0.0
110					
	C			CLAY: Sandy, gravelly, dark brown	0.02
115					
	C			CLAY: Sandy, plastic, dark brown	0.0
120					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 27
Sheet 4 of 5

Location
Grid Cell 14, 7
Coordinates x 13200
y 6000

Project McClellan AFB IRP Phase II
Beginning 9-5-84 and end 9-6-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Ground Level Elevation: 55 ft.MSL (topo).
Type Drill Rig and Operator Chicago Pneumatic CP300
Log Recorded By W. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			SILT: Sandy, clayey, tan	0.0
125					
	C			SAND: Silty, clayey, fine to very fine grained	0.02
130					
	C			SAND: Silty, clayey (moist)	0.0
135					
	C			SAND: Silty (moist)	0.0
140					
	C			SILT: Clayey, sandy, brown	0.0
145					
	C			SILT: Sandy, clayey, plastic, brown	0.01
150					
	C			SILT: Sandy, clayey, fine to medium grained, brown	0.02
155					
	C			SILT: Sandy, clayey, brown	0.0
160					

Water sample at 160'
pH = 6.2
Conductivity = 280
Temperature = 16°C

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 27
Sheet 5 of 5

Location
Grid Cell 14, 7
Coordinates x 13200
y 6000

Project McClellan AFB IRP Phase II
Beginning 9-5-84 and end 9-6-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By J. Boettner B. Hirst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND: Silty, clayey, fine to medium grained, brown	0.02
165	C			SAND: Silty, clayey, fine to medium grained, brown	0.0
170	C			SAND: Silty, clayey, fine to medium grained, brown	0.0
175	C			SAND: Clayey, silty, fine to medium grained, brown	0.0
180	C			SAND: Silty, clayey, fine to medium grained	0.0
185	C			SAND: Silty, clayey, fine to medium grained	0.01
190	C			SAND: Clean, micaceous, fine to medium grained Total Depth: 195 feet	0.01 Water sample at 190' pH = 6.8 Conductivity = 240 Temperature = 15°C 0-195' 4½" hole Grouted hole through dual tubes w/ 37 sacks Portland Cement Type I & II
195					
200					

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RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-28
Sheet 1 of 3

Location Westside of SAC Horseman Association
Grid Cell 16:08
Coordinates x 15,720'
y 7,040'

Project McClellan AFB IRP Phase II
Beginning 4 September 1984 and end
5 September 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.62 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
	G			SILT and SAND; brown, unconsolidated, dry.	OVM (ppm) 0 (background)
5					
	C			SILT and SAND; Cs-VF, minor gravel, tan, ang-subang, unconsolidated, dry.	
10					
	C			CLAY and SAND; Fn(?), dry, unconsolidated, brown.	Driller cut w/water. 0.5
15					
	C			SAND; Md-Fn, ang-subang, tan, unconsolidated, dry.	1.5
20					
	C			SAND; tan, dry, unconsolidated.	6.6
25					
	C			CLAY and SILT; brown, dry, unconsolidated.	25.0
30					
	C			CLAY; brown, dry, unconsolidated.	Driller cut w/water. 33.0
35					
	C			CLAY; brown, dry, unconsolidated.	
40					

4811670

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-28
Sheet 2 of 3

Location Westside of SAC Horseman Association
Grid Cell 16:08
Coordinates x 15,720'
y 7,040'
Ground Level Elevation: apx.62 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 4 September 1984 and end 5 September 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D-40K/S.Smith
Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40	C			SAND; Cs-Fn, mottled, brown, ang-subang, dry, unconsolidated.	0.4
45	C			CLAY and SILT; brown (clay), tan (silt), dry, unconsolidated.	0.7
50	C			CLAY; hard, dry, grayish brown, unconsolidated.	Driller cut w/water. 0.7
55	C			CLAY; hard, dry, grayish brown, unconsolidated.	Driller cut w/water. 100
60	C			CLAY and SAND; Fn, grayish tan, plastic, dry, unconsolidated.	83
65	C			CLAY, grayish tan, slight moisture, plastic, unconsolidated.	11.0
70	C			CLAY; minor sand, brown, dry, unconsolidated.	54
75	C			CLAY; hard, dry, brown, unconsolidated.	8.8
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No RB-28
Sheet 3 of 3

Location Westside of SAC Horseman Association
Grid Cell 16:08
Coordinates x 15,720'
y 7,040'

Project McClellan AFB IRP Phase II
Beginning 4 September 1984 and end 5 September 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx.62 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY; plastic, slight moisture, brown, unconsolidated.	130
85					
	C			CLAY; plastic, slight moisture, brown, unconsolidated.	60.3
90					
	C			CLAY; same.	12.2
95					
	C			CLAY; same, very small amount of water (not enough to sample).	
100					
	C			SAND and CLAY; Fn-Vf, plastic, unconsolidated.	Driller cut w/water. 8.7
105					
	C			SAND and CLAY; same.	
110					
	C			CLAY; dry, unconsolidated, mottled, reddish-brown (iron oxide color).	
115					
	C	RB-28-1		SAND and CLAY; same, some iron oxide cementing of sand grains (slightly unconsolidated, C-F (sand).	W.L.: 102 1/2' BGL. T: 22°C; C: 250; pH: 7.0. Water murky.
120					

4811/6546

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No RB-28
Sheet 1 of 1

Location Westside of SAC Horseman Association
Grid Cell 16:08
Coordinates x 15,720'
y 7,040'

Project McClellan AFB IRP Phase II
Beginning 4 September 1984 and end
5 September 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K S. Smith
Log Recorded By R.A. Belan

Ground Level Elevation: apx. 62 ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			SAND; Fn-VF, tan, unconsolidated, wet.	Sieve analysis indicates mostly silts.
125					
	C			CLAY and SILT; brown (clay), tan (silt), dry (silt), moist (clay), unconsolidated.	
130					
	C			SILT and CLAY; brown, unconsolidated, slightly moist (no free water).	130
135					
	C			CLAY; brown, unconsolidated, plastic, no free water.	1.0
140					
	C			CLAY; brown, unconsolidated, plastic (no free water).	0.3
145					
	C			CLAY; brown, slightly moist, minor sand (VF), unconsolidated.	
150					
	C			CLAY and SILT; brown and tan, unconsolidated, dry (?).	0.4
155					
	C			CLAY and SAND; brown, Fn-VF, unconsolidated, no obvious water.	WL: 105' BGL; T: 24°C; C: 200; pH: 7.2.
160		RB-28-2			

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB-28
Sheet 5 of 5

Location Westside of SAC Horseman Association
Grid Cell 16:08
Coordinates x 15,720'
y 7,040'

Ground Level Elevation: apx.62 ft.MSL (topo).

Project McClellan AFB IRP Phase II
Beginning 4 September 1984 and end 5 September 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drill Tek D40K/S.Smith
Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					
	C			SILT and SAND; dry, tan, minor clay, unconsolidated.	0.2
165					
	C			CLAY; brown, plastic, unconsolidated, no free water.	0.5
170					
	C			SILT and CLAY; tan, dry, unconsolidated.	No OVM response.
175					
	C			CLAY; brown, some moisture, unconsolidated.	
180		RB-28-		SAND; minor gravel, minor clay, Md-Fn, mica (gold, unconsolidated), lots of water.	WL: 103' BGL; C: 220; pH: 7.0.
	C				
185					
	C			CLAY and SAND; brown, unconsolidated, dry (?).	
190					
	C			CLAY and SAND; brown, unconsolidated, dry (?).	
195					
	C			CLAY and SAND; brown, plastic, unconsolidated. No obvious water.	Grouted hole tar [illegible] dart tubes w 34 sacks Portland Cement Type I & II
200				Total Depth: 200 Feet	

464 [illegible]

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. RB 29
Sheet 1 of 5

Location
Grid Cell 11, 5
Coordinates x 10550
y 4850

Project McClellan AFB IRP Phase II
Beginning 9-4-84 and end
9-5-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP1000
Log Recorded By W. Boettner B. Horst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			Highway base material	0.0
5					
	C			SAND: Silty, clayey, fine to very fine grained, brown	0.22
10					
	C			SAND: Silty, fine to very fine grained, brown	0.16
15					
	C			SAND: Silty, fine to very fine grained, brown	0.2
20					
	C			SAND: Silty, clayey, fine to very fine grained, tan to brown	0.14
25					
	C			SAND: Silty, fine to very fine grained, tan	0.08
30					
	C			SILT: Sandy, fine to very fine grained, tan	0.18
35					
	C			SAND: FeOH+ staining, trace of clay	0.04
40					

484 0446

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 29
Sheet 2 of 5

Location
Grid Cell 11, 5
Coordinates x 10550
y 4850

Project McClellan AFB IRP Phase II
Beginning 9-4-84 and end
9-5-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner B. Hurst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Clayey, fine to medium grained, micaceous, brown	0.08
45					
	C			SAND: Clayey, fine to medium grained, micaceous, brown	0.06
50					
	C			SAND: Clayey, medium to very fine	0.12
55					
	C			CLAY: Sandy, silty, brown	0.10
60					
	C			CLAY: Sandy, silty, brown	0.02
65					
	C			SAND: Clayey, very fine grained, tan	0.04
70					
	C			SILT: Sandy, clayey, tan	0.08
75					
	C			SAND: Silty, clayey, plastic, dark brown	0.04
80					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 29
Sheet 3 of 5

Location
Grid Cell 11, 5
Coordinates x 10550
y 4850

Project McClellan AFB IRP Phase II
Beginning 9-4-84 and end 9-5-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner B. Horst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Clayey, fine to medium grained, dark reddish brown	0.06
85					
	C			SAND: Silty, clayey, medium to very fine grained, tan	0.02
90					
	C			SILT: Clayey, plastic, sandy (moist)	0.04
95					
	C			SAND: Clean, medium to coarse grained, tan	0.01
100					
	C			SILT: Sandy, clayey, plastic, tan to gray	0.0
105					
	C			CLAY: Sandy, fine to very fine grained, brown	0.01
110					
	C			SAND: fine to very fine grained, micaceous, tan	0.02
115					
	C			SAND: Silty, fine to very fine grained, brown to tan	0.04
120					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 29
Sheet 4 of 5

Location
Grid Cell 11, 5
Coordinates x 10550
y 4850

Project McClellan AFB IRP Phase II
Beginning 9-4-84 and end
9-5-84 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Chicago Pneumatic CP200
Log Recorded By W. Boettner B. Horst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			CLAY: Sandy, plastic, micaceous, brown	0.0
125					
	C			SAND: Silty, fine to medium grained, brown	0.01
130					
	C			SAND: Silty, clayey (plastic), fine to very fine grained, tan	0.04
135					
	C			SILT: Sandy, clayey, tan	0.08 Water sample at 140' pH = 6.0 Conductivity = 300 Temperature = 20°C
140					
	C			SAND: Silty, clayey, fine to medium grained	0.02
145					
	C			SAND: Gravelly, clayey (plastic), medium to coarse grained, dark brown	0.02
150					
	C			SILT: Sandy, clayey, reddish brown	0.04
155					
	C			SAND: Gravelly, fine to coarse grained, micaceous	0.0 Water sample at 160' pH = 6.2 Conductivity = 280 Temperature = 20°C
160					

RADIAN CORPORATION

Log of Drilling Operations

Boring or Well No. 29
Sheet 1 of 2

Location
Grid Cell 11, 5
Coordinates x 10550
y 4850

Project McClellan AFB IRP Phase II
Beginning 9-4-84 and end 9-5-84 of drilling operation
Sampling Interval (Estimated): Composite 5 (ft)
Type Drill Rig and Operator: Chicago Pneumatic CP2000
Log Recorded By: E. Bortner W. Hirst

Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND: Silty	0.01
165	C			SAND: Silty, clayey	0.00
170	C			SAND: Clayey (plastic), fine to medium grained, brown	0.02
175	C			CLAY: Sandy, fine to medium grained, brown	0.00
[illegible]	C			SAND: Silty, fine to very fine grained, brown	0.02
185	C			SAND: silty, fine to very fine grained, brown	0.01
[illegible]	C			CLAY: Sandy, silty	0.04
[illegible]				Total Depth: 195 feet	0.02
200					0-195' 4½" hole [illegible] 26 [illegible] Type I & II

4 61 hole

RADIAN
CORPORATION

APPENDIX 5-D

Results of Grain-Size Distribution
Analyses of Soil Samples

ANDERSON
GEOTECHNICAL
CONSULTANTS, INC.

File No. 1604-1
27 August 1984

E. Wayne Pearce
Radian Corp.
3401 La Grande Boulevard
Sacramento, CA 95823

Subject: Grain Size Distribution Test Results

Gentlemen:

Enclosed are the results of the first set of samples (37 in all) submitted to our laboratory on 13 August 1984.

Very truly yours,

ANDERSON GEOTECHNICAL CONSULTANTS, INC.

Gery F. Anderson, P.E., C.E.G.
President

Enclosure: Test Results

Mailing Address: P.O. Box 420878 Sacramento, CA 95842 • Sacramento County: (916) 969-8883
Business Address: 631 Commerce Drive, Roseville, CA 95678 • Placer County: (916) 786-8883

ANDERSON
GEOTECHNICAL
CONSULTANTS, INC.

File No. 1604-1
31 August 1984

E. Wayne Pearce
Radian Corp.
3401 La Grande Boulevard
Sacramento, CA 95823

Subject: Grain Size Distribution Test Results

Gentlemen:

Enclosed are the results of the second set of samples (14 in all) submitted to our laboratory on 20 August 1984.

Very truly yours,

ANDERSON GEOTECHNICAL CONSULTANTS, INC.

Gery F. Anderson, P.E., C.E.G.
President

GFA/dmk

Enclosure: Test Results

Mailing Address: P.O. Box 420878 Sacramento, CA 95842 • Sacramento County: (916) 969-8883
Business Address: 631 Commerce Drive, Roseville, CA 95678 • Placer County: (916) 786-8883

ANDERSON
GEOTECHNICAL
CONSULTANTS, INC.

File No. 1604-1
10 September 1984

E. Wayne Pearce
Radian Corp.
3401 La Grande Boulevard
Sacramento, CA 95823

Subject: Grain Size Distribution Test Results

Gentlemen:

Enclosed are the results of the third set of samples (37 in all) submitted to our laboratory on 27 August 1984.

Very truly yours,

ANDERSON GEOTECHNICAL CONSULTANTS, INC.

Gery F. Anderson, P.E., C.E.G.
President

GFA/dmk

Enclosure: Test Results

Mailing Address: P.O. Box 420878 Sacramento, CA 95842 • Sacramento County: (916) 969-8883
Business Address: 631 Commerce Drive, Roseville, CA 95678 • Placer County: (916) 786-8883

ANDERSON
GEOTECHNICAL
CONSULTANTS, INC.

File No. 1604-1
24 September 1984

Radian Corporation
Attention: Rick Belan
8501 Mopac Boulevard
Austin, TX 78766

Subject: Grain Size Distribution Test Results

Gentlemen:

Enclosed are the results of the final set of samples (29 in all) submitted to our laboratory on 7 September 1984.

Very truly yours,

ANDERSON GEOTECHNICAL CONSULTANTS, INC.

Gery F. Anderson, P.E., C.E.G.
President

GFA/mkb

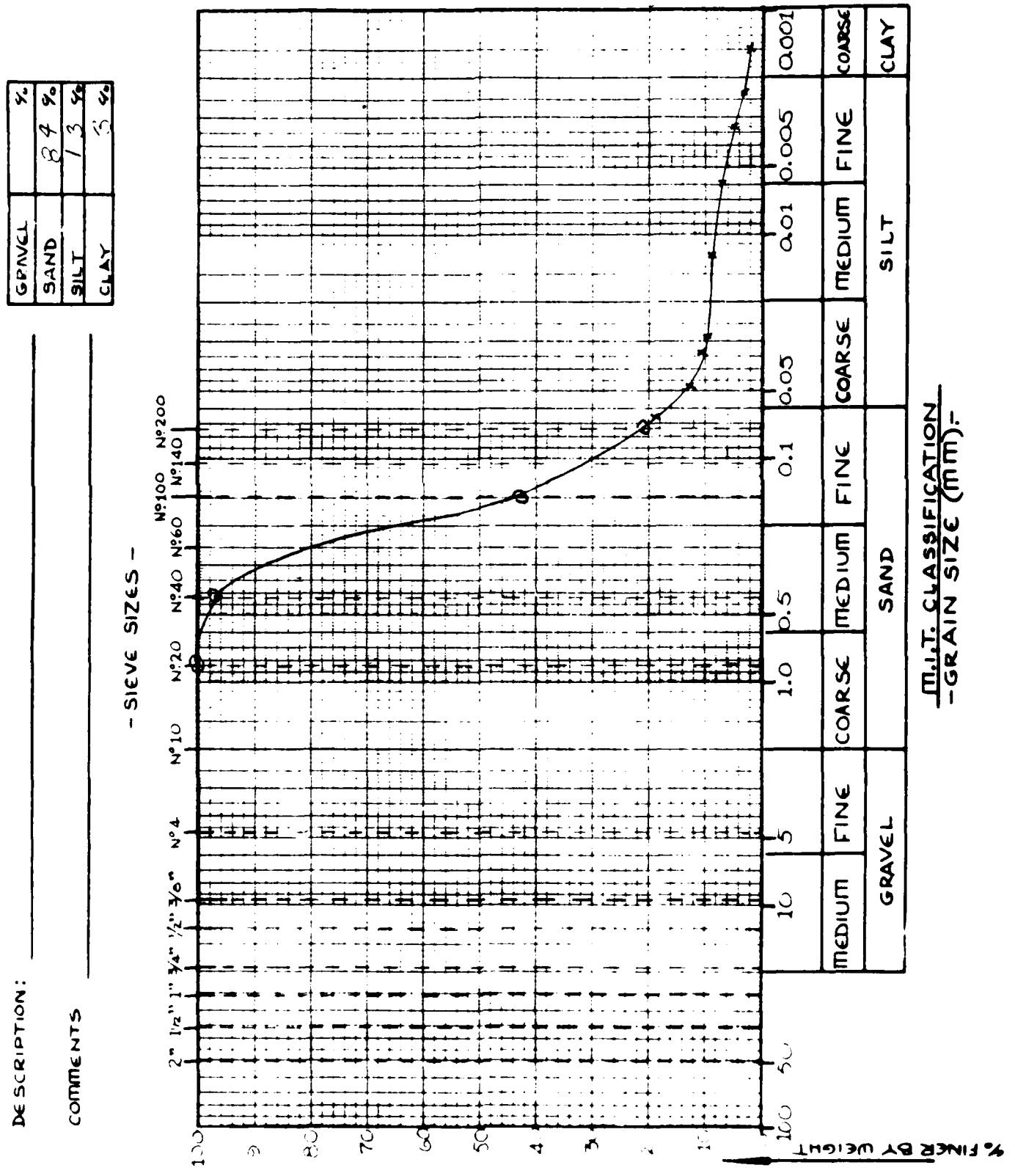
Enclosure: Test Results

Mailing Address: P.O. Box 420878 Sacramento, CA 95842 • Sacramento County: (916) 969-8883
Business Address: 631 Commerce Drive, Roseville, CA 95678 • Placer County: (916) 786-8883

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: KB1-1
DATE: 127-135
BY:

	%
GRAVEL	
SAND	84 %
SILT	13 %
CLAY	3 %



DESCRIPTION:

COMMENTS

RB1-1

127-135

FILE Nº:	
SAMPLE Nº:	
DATE:	
BY:	

HYDROMETER ANALYSIS

A.S.T.M. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	9		9.4	0.067	14.7	.0124	18.8	
		1	6		6.4	0.048	15.2	"	12.8	
		2	5		5.4	0.034	15.3	"	10.8	
		3	4.8	24	5.2	0.028	15.3	"	10.4	
		14	4.5	—	4.7	0.013	15.5	"	9.4	
		70	3.0	24	3.4	0.0059	15.6	"	6.8	
		230	2.5	24.5	2.3	0.0033	15.7	0.0127	4.6	
		470	2.5	25	1.6	0.0024	15.7	.0129	3.2	
		1130	1.0	27	1.0	0.0015	16.0	.0126	2.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB1-1

127-135

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10				
NO. 20	— 0 —			
NO. 40	1.6	7.2		
NO. 60				
NO. 100	22.1	[illegible]		
NO. 140				
NO. 200	10.6	[illegible]		
PAN	10.7	[illegible]		
TOTAL	500	[illegible]		

REMARKS _____

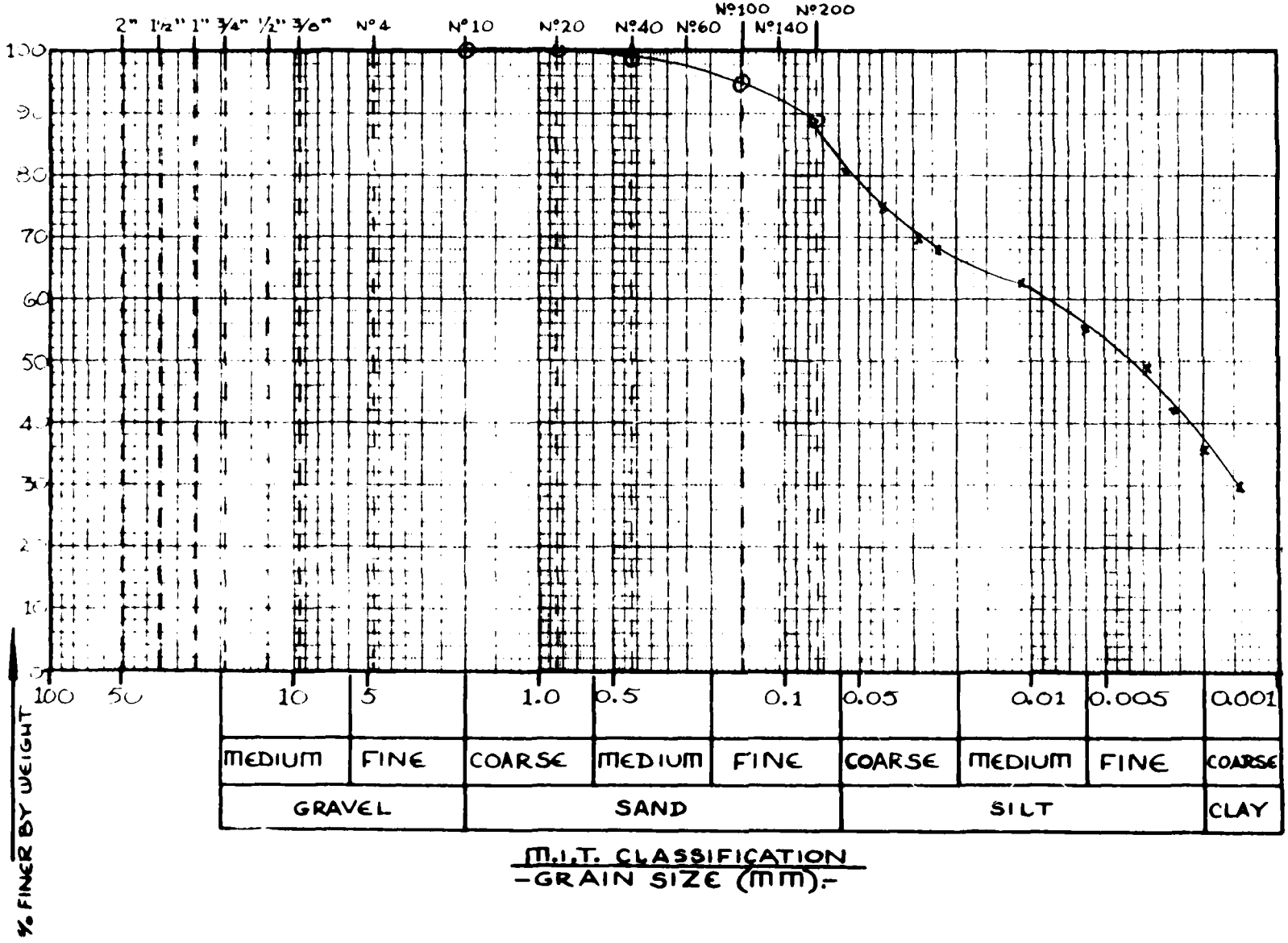
GRAIN SIZE CHART

DESCRIPTION: _____

COMMENTS _____

GRAVEL	%
SAND	28 %
SILT	45 %
CLAY	37 %

FILE Nº: _____
SAMPLE Nº: RB 1-2
DATE: 1/20-165
BY: _____



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm)-

RB 1-2

160-165

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (C_m + C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	40		40.4	0.054	9.6	.0124	80.8	
		1	37		37.4	0.040	10.1	"	74.8	
		2	34.5		34.9	0.028	10.4	"	69.8	
		3	33.5	24	33.9	0.024	10.6	"	67.8	
		14	31	—	31.4	0.011	11.1	"	62.8	
		50	27	—	27.4	0.0060	11.7	"	54.8	
		100	24	24	24.4	0.0043	12.2	"	48.8	
		260	21	26.5	20.8	0.0027	12.7	.0127	41.6	
		500	19	25	18.1	0.0020	13.0	.0129	362	
		1160	15	27	15	0.0014	13.7	.0126	30.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

KB 1-4
120-145

— SIEVE ANALYSIS —

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

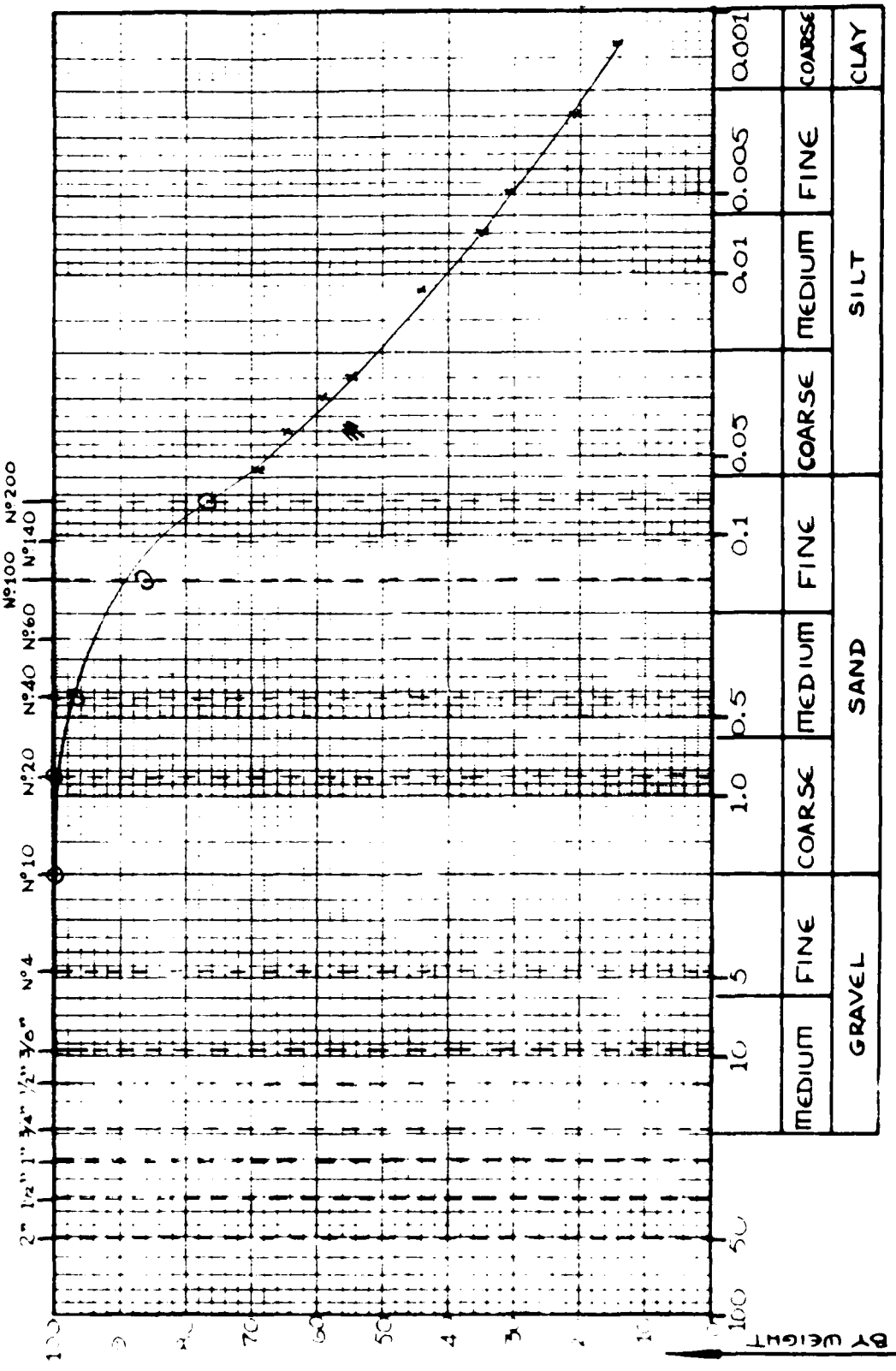
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0			
NO. 20	0.1	0.2		
NO. 40	2.9	6.2		
NO. 60				
NO. 100	1.2	2.6		
NO. 140				
NO. 200	3.1	6.7		
PAN	42.1	89.9		
TOTAL	47.4	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 1-3
DATE: 180-190
BY:

	%
GRAVEL	
SAND	28 %
SILT	53 %
CLAY	19 %



DESCRIPTION:

COMMENTS

RB 1-3

180-190

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19___	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	34		34.3	.0057	10.5	.01275	78.6	
		1	32		32.3	0.0041	10.9	"	64.6	
		2	29		29.3	0030	11.4	"	58.6	
		3	27	27.6	27.3	0.025	11.7	"	54.6	
		14	21.5	—	21.8	0.012	12.6	"	43.6	
		42	17.2	—	17.5	0.0070	13.3	"	35.0	
		88	15	28	15.4	0.0049	13.7	.0124	30.8	
		355	11	26	10.6	0.0025	14.3	.0127	21.2	
		1310	7.0	28	7.4	0.0013	15.0	.0124	14.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\%< Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

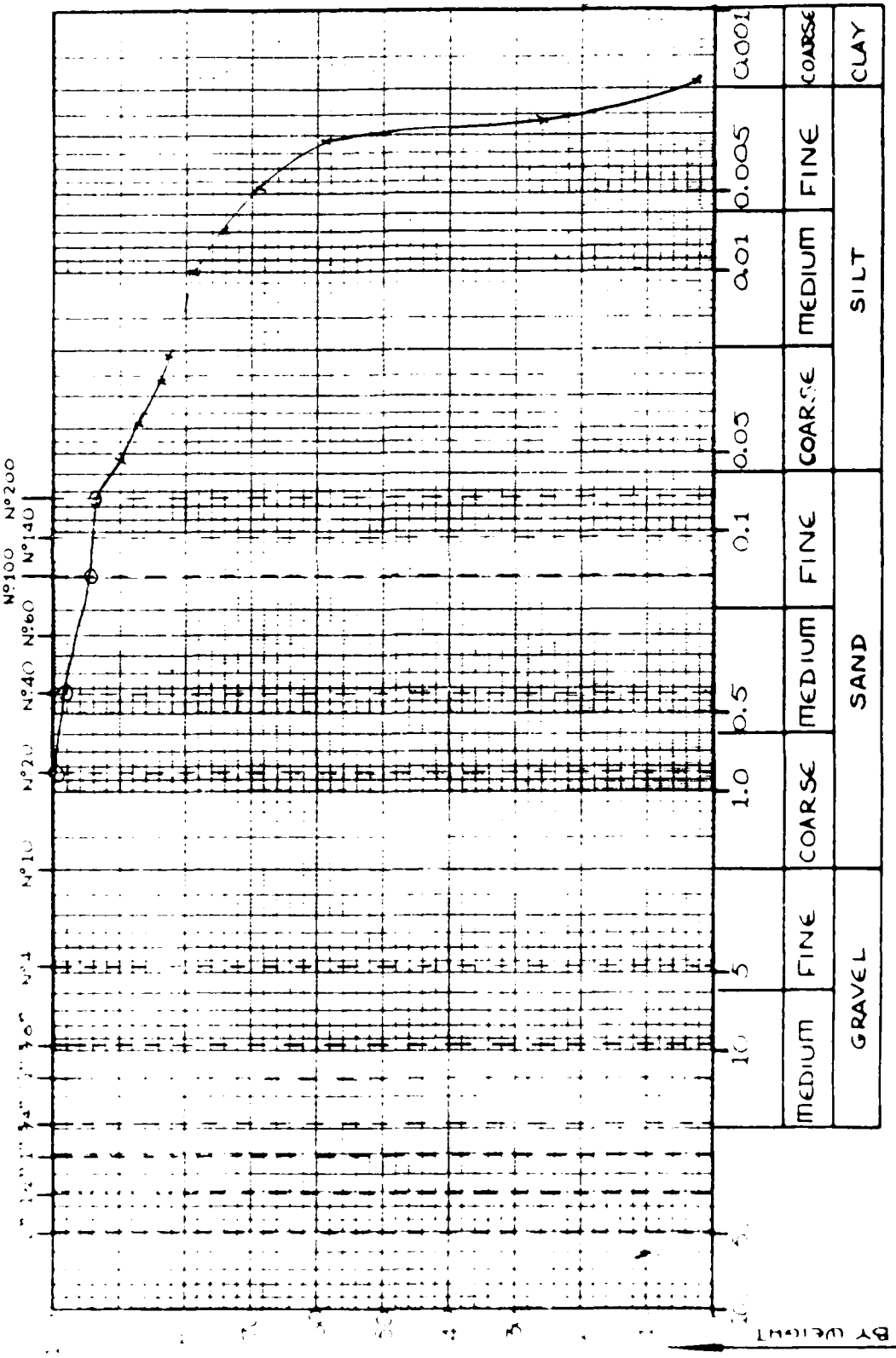
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10				
NO. 20	0.7	6.4		
NO. 40	2.1	22		
NO. 60				
NO. 100	5.7	4		
NO. 140				
NO. 200	1.5			
PAN				
TOTAL	100			

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 2-1
DATE: 90'-100'
BY:

	%
GRAVEL	
SAND	8 %
SILT	86 %
CLAY	6 %



- SIEVE SIZES -

M.I.T. CLASSIFICATION
-GRAIN SIZE (mm)-

DESCRIPTION:

COMMENTS

2-1

90-100

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (C_m + C_d)$	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	45		45	.0053	8.8	.0126	90	
		1	43.5		43.5	.0038	9.0	"	87	
		2	42		42	.0027	9.2	"	84	
		3	41.5		41.5	.0022	9.3	"	83	
		14	39.6	27	39.6	.0010	9.6	"	79.2	
		32	37	—	37	.00071	10.1	"	74	
		76	34.3	27	34.3	.00047	10.5	"	68.6	
		170	30.0	26	29.6	.00033	11.2	.0127	59.2	
		300	13.0	27	13.0	.00027	14.0	.0126	26	
		770	3.0	24	1.7	.00019	15.6	.0130	3.4	
		1130	1.0	27	1.0	.00017	16.0	.0126	2.0	
		1350	0	26		.00014	16.3	.0127		

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

2-1
90-100

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

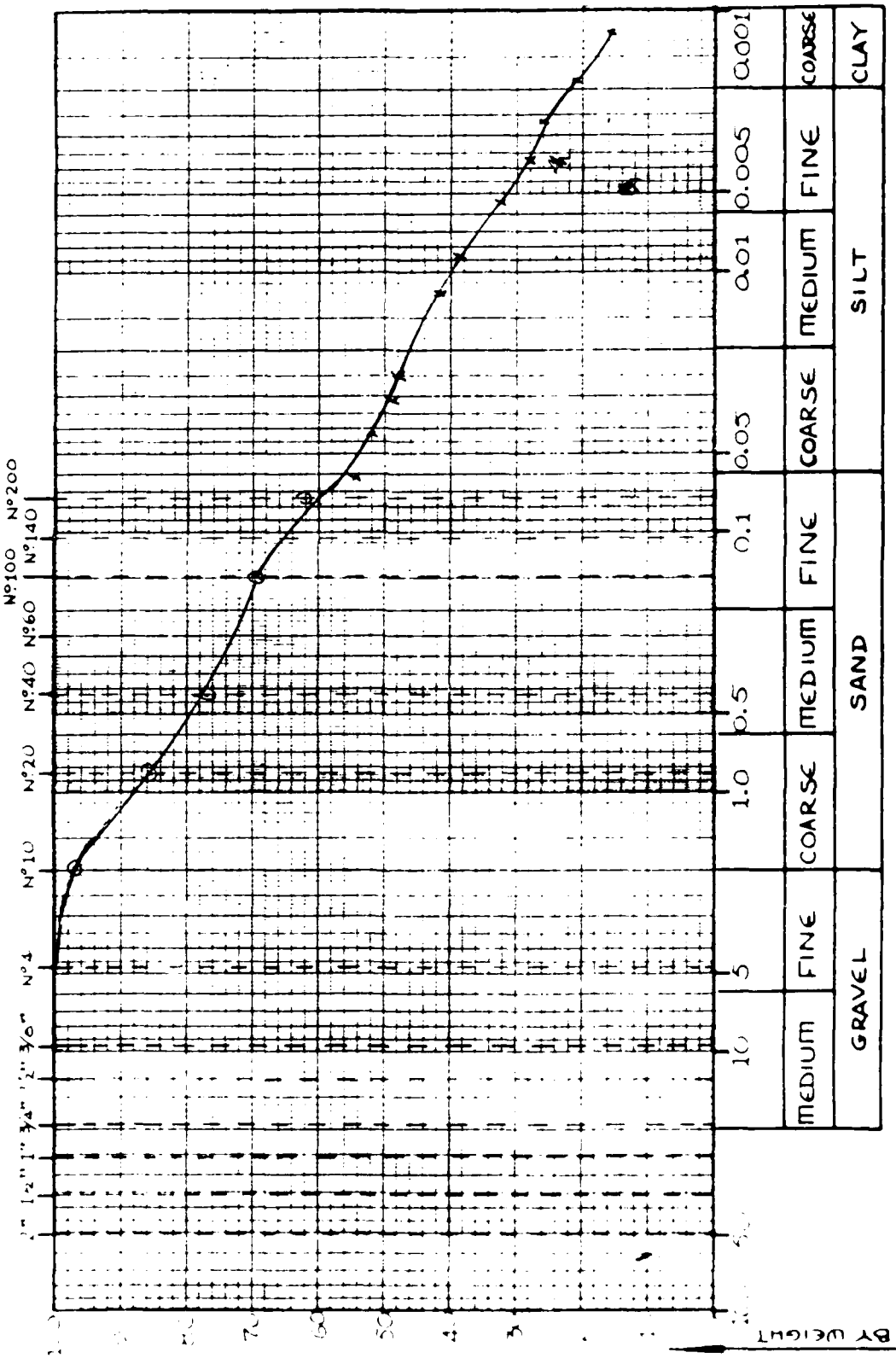
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0			
NO. 20	0.3			
NO. 40	0.7			
NO. 60	4			
NO. 100	1			
NO. 140				
NO. 200	0.8			
PAN				
TOTAL	50.0			

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 2-V
DATE: 135-140
BY:

GRAVEL	3 %
SAND	41 %
SILT	34 %
CLAY	22 %



DESCRIPTION:

COMMENTS

2-2

135'-140'

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	27.5		27.5	0.061	11.6	.0136	55	
		1	26		26	0.043	11.9	"	52	
		2	24.5		24.5	0.031	12.1	"	49	
		3	24		24	0.025	12.2	"	48	
		14	21	27	21	0.012	12.7	"	42	
		27	19.5	-	19.5	0.0087	12.9	"	39	
		72	17	27	17.0	0.0054	13.3	"	34	
		165	14.5	26	14.1	0.0037	13.8	.0137	28.2	
		300	13.0	27	13.0	0.0027	14.0	.0136	26	
		765	11.0	24	10.6	0.0018	14.3	.0130	21.2	
		1125	9.0	27	9.0	0.0014	14.7	.0126	18	
		1345	8.5	26	8.1	0.0013	14.8	.0127	16.2	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_S: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_S: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\%<\text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_S} = R$ _____.

REMARKS: _____

2-2
135-140

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

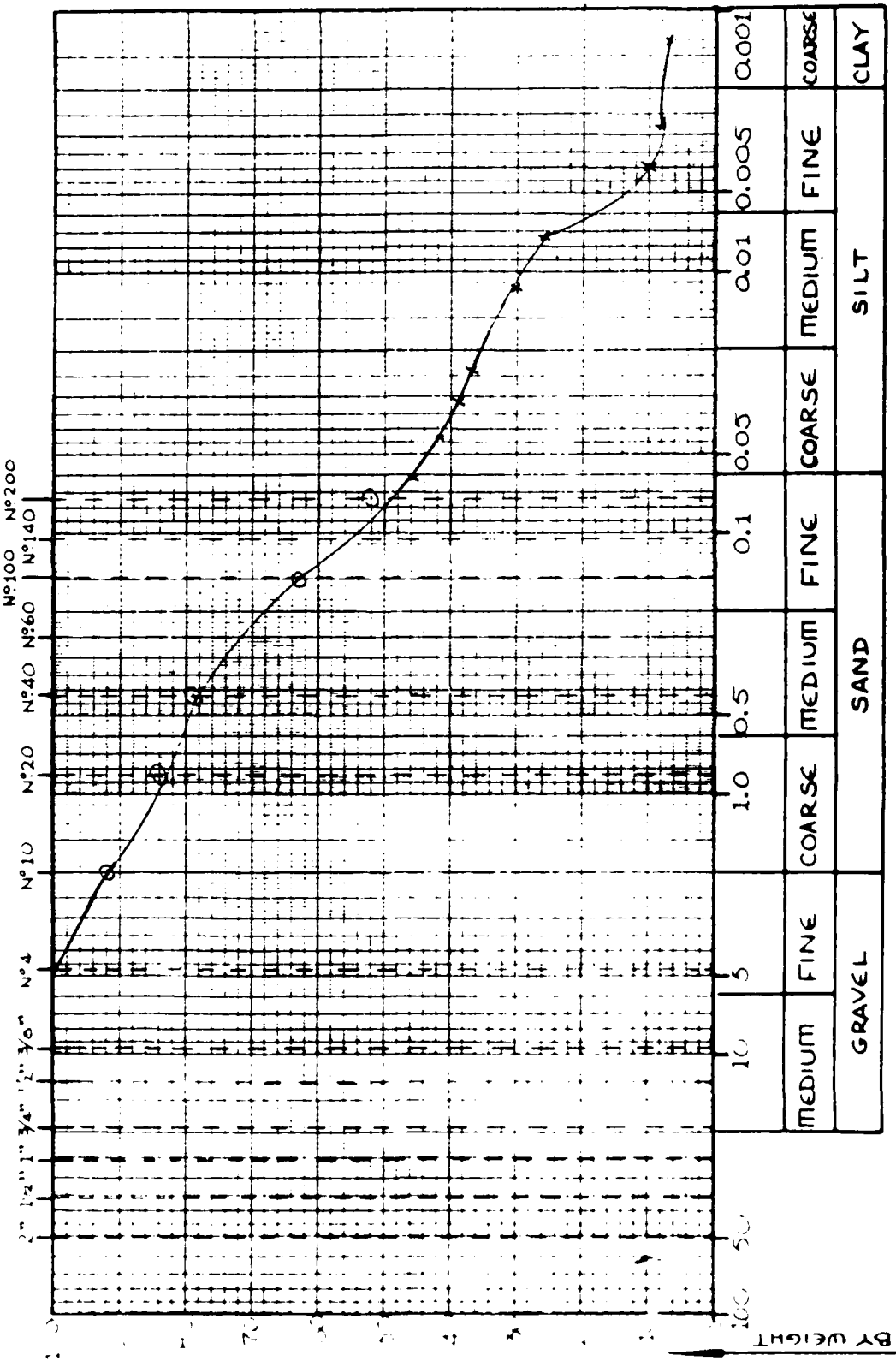
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	1.6			
NO. 20	5.3			
NO. 40	4.8			
NO. 60				
NO. 100	5.1			
NO. 140				
NO. 200	2.3			
PAN				
TOTAL	50.0			

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 2-3
DATE: 156-160
BY:

GRAVEL	8 %
SAND	46 %
SILT	38 %
CLAY	8 %



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

DESCRIPTION:

COMMENTS

2-3

156'-160'

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m + C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1½	22		22.9	0.062	12.5	.0123	45.8	
		1	20		20.9	0.044	12.9	"	41.8	
		¼	18.5		19.4	0.032	13.1	"	38.1	
		3	17.5		18.4	0.026	13.3	"	36.8	
		14	14	24	14.9	0.012	13.8	"	29.8	
		4¼	9	–	8.1	0.0073	14.7	"	16.2	
		15U	5.0	24	4.9	0.0040	15.1	"	9.8	
		39U	4.0	27	3.9	0.0026	15.5	.0126	7.8	
		135U	3	24	3.4	0.0013	15.6	.0124	6.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

2 - 3

150-160

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

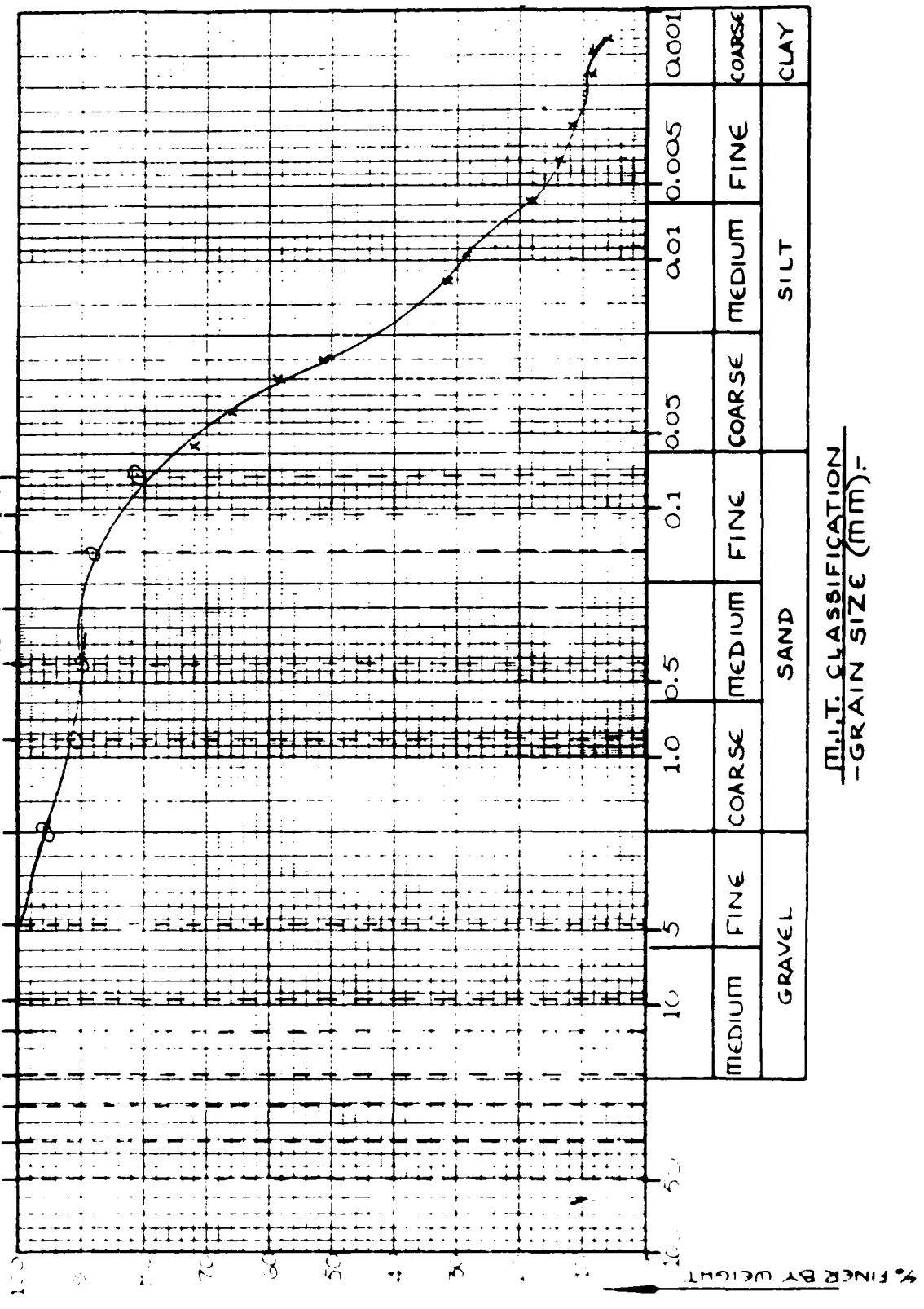
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	4.0	8.0		92
NO. 20	3.8	7.6		84.4
NO. 40	2.7	5.4		79.0
NO. 60				
NO. 100	8.0	16.0		63.0
NO. 140				
NO. 200	5.7	11.4		51.6
PAN	25.8	51.6		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 2-S4
DATE: 13'-18'
BY:

GRAVEL	4 %
SAND	80 %
SILT	17 %
CLAY	1 %



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

DESCRIPTION:

COMMENTS

2-9

135-180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm or Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		½	36		36	0.057	10.2	.0126	72	
		1	33		33	0.041	10.7	"	66	
		2	29		29	0030	11.4	"	58	
		3	25.5		25.5	0025	11.9	"	51	
		14	16		16.	0012	13.5	"	32	
		24	14	27	14	0.0096	13.9	"	28	
		70	9.3	26	9.1	0058	14.6	.0127	18.2	
		160	7.2	26	6.8	0039	15.0	"	13.6	
		300	6.0	27	6.0	0028	15.2	.0126	12.0	
		760	5.5	24	4.2	0018	15.3	.0130	8.4	
		1120	4.0	27	4.0	0015	15.5	.0126	8.0	
		1340	3.5	26	3.1	0014	15.6	.0127	6.2	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

2-9
135-180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

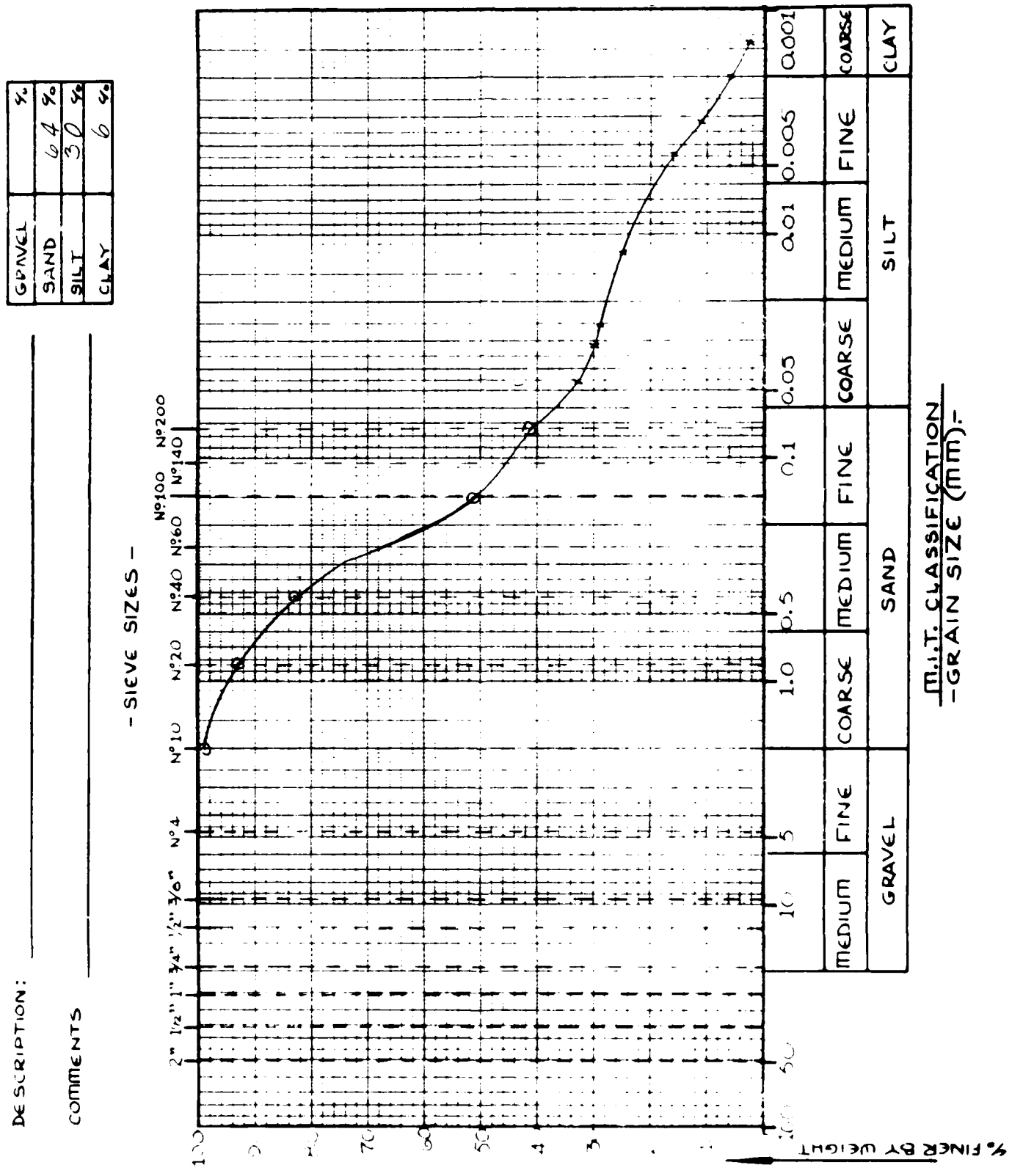
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	2.1			
NO. 20	2.2			
NO. 40	0.7			
NO. 60				
NO. 100	1.2			
NO. 140				
NO. 200	3.2			
PAN				
TOTAL	50.0			

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 16044
SAMPLE Nº: 3-A 1
DATE: 95'-130'
BY:

	%
GRAVEL	
SAND	64 %
SILT	30 %
CLAY	6 %



DESCRIPTION: _____

COMMENTS _____

3-2

95-130

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm±Cd)	DIA-METER (mm)	L	K	N (%)	N_1 (%)
		1/2	18	—	.064	18.4	13.2	.0124	36.8	
		1	16	—	.046	16.4	13.5	"	32.8	
		2	14.5	—	.032	14.9	13.7	"	29.8	
		3	14.0	—	.026	14.4	13.8	"	28.8	
		14	12.0	28	.012	12.4	14.2	"	24.8	
		—	—				1	"		
		114	7.5	28	.0044	7.9	14.9	"	15.8	
	0100	235	5.3	27	.0032	5.3	15.3	.0126	10.6	
	0730	625	4.0	24.5	.0020	3.0	15.5	.0130	6.0	
	1930	1345	1.0	28	.0013	1.4	16.0	.0124	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_S: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_S: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_S} = R$ _____.

REMARKS: _____

3-2

95-130

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	8.9	1.8		98.2
NO. 20	25	5.0		93.2
NO. 40	53	10.6		82.6
NO. 60				
NO. 100	158	31.6		51.0
NO. 140				
NO. 200	44	9.8		41.2
PAN	206	41.2		–
TOTAL	500	100.0		

REMARKS _____

GRAIN SIZE CHART

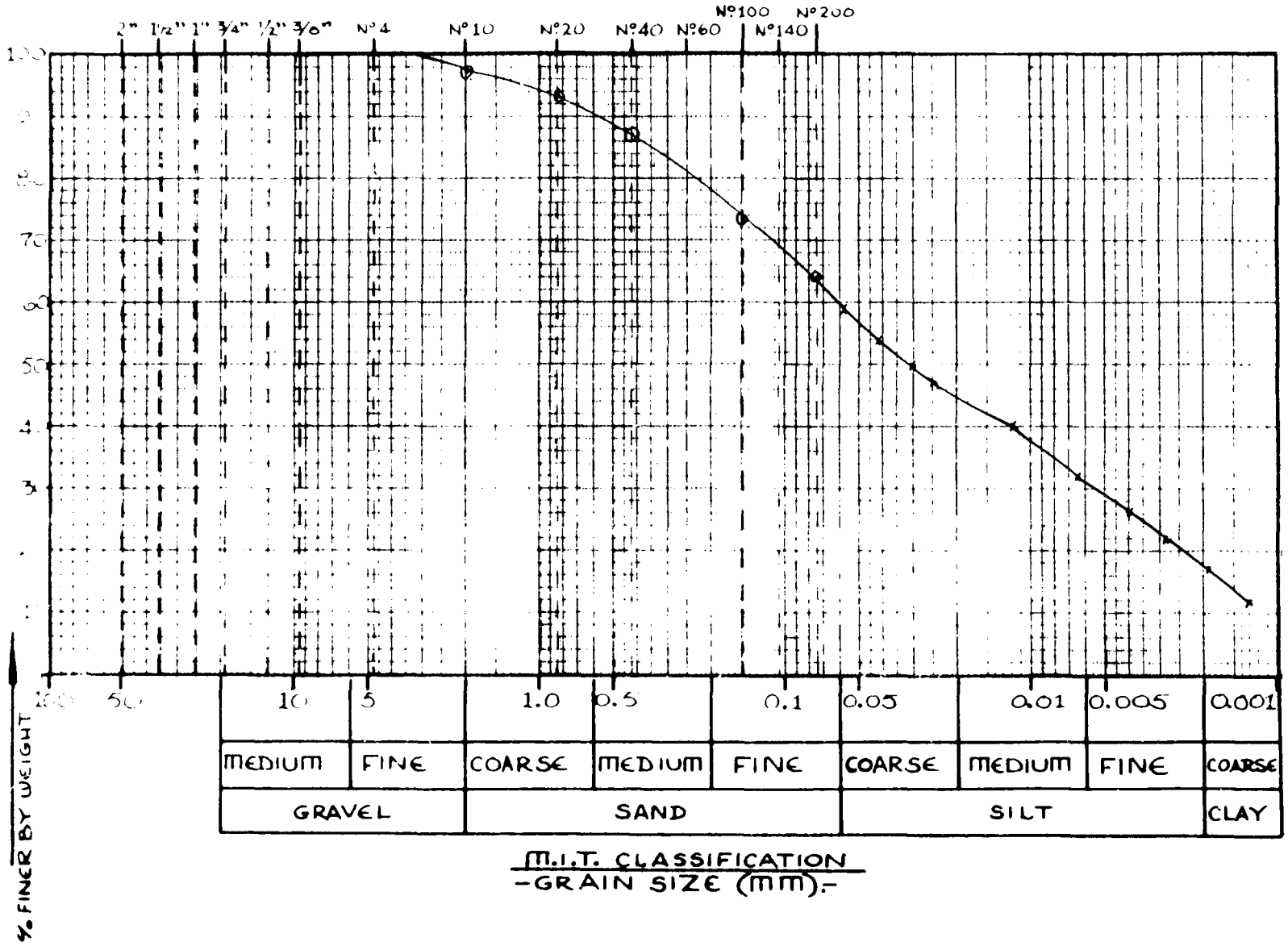
DESCRIPTION: _____

COMMENTS _____

GRAVEL	%
SAND	40 %
SILT	42 %
CLAY	18 %

FILE No: 1604-1
SAMPLE No: 2-2
DATE: 155'-165'
BY:

- SIEVE SIZES -



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm):-

3-2

155-165

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	29	—	29.4	.059	11.4	.0124	58.8	
		1	26.5	—	26.9	.042	11.8	"	53.8	
		2	24.5	—	24.9	.030	12.1	"	49.8	
		3	23	28	23.4	.025	12.4	"	46.8	
		4	19.5	—	19.9	.0112	13.0	"	39.8	
		51	15.5	28	15.9	.0064	13.6	"	31.8	
		138	12.5	28	12.9	.0040	14.1	"	25.8	
	0160	265	11.0	27	11.0	.0029	14.3	.0126	22.0	
	0730	655	9.5	24.5	8.5	.0019	14.6	.0130	17.0	
	1930	1375	5.5	28	5.9	.0013	15.2	.0124	11.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

3-2

15'-16'

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

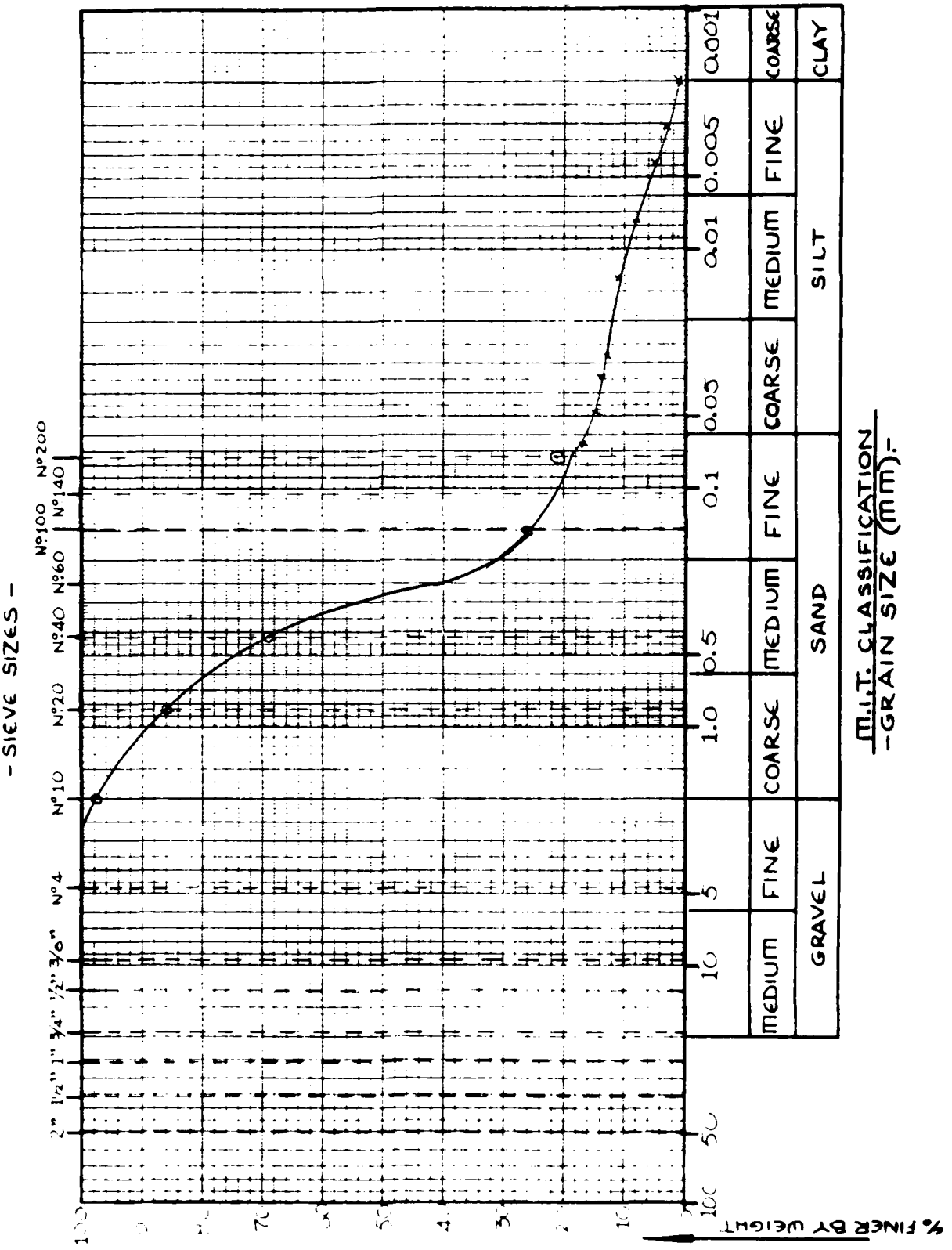
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100-
NO. 10	1.3	2.6		97.4
NO. 20	2.1	4.2		93.2
NO. 40	3.0	6.0		87.2
NO. 60				
NO. 100	7.3	14.6		72.6
NO. 140				
NO. 200	4.-	8.4		64.-
PAN	32.1	64.2		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB3-3
DATE:	170'-180'
BY:	

GRAVEL	2 %
SAND	82 %
SILT	15 %
CLAY	1 %



DESCRIPTION: _____

COMMENTS _____

3-3

170-180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		½	8.0	—	.1067	8.4	14.8	.0124	16.8	
		1	7.0	—	.1048	7.4	15.0	"	14.8	
		2	6.5	—	.1034	6.9	15.1	"	13.8	
		3	6.0	28	.1028	6.4	15.2	"	12.8	
		14	5.0	—	.0973	5.4	15.3	"	10.8	
		40	3.5	28	.0977	3.9	15.5	"	7.8	
		126	2.0	28	.0044	2.4	15.8	"	4.8	
	0600	250	1.5	27	.0031	1.5	15.9	.0126	3.0	
	0730	640	1.5	24.5	.0020	0.5	15.9	.0130	1.0	
	1930	1360	-1.0	28	.0013		16.3	.0124		

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

3-3

170-150

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

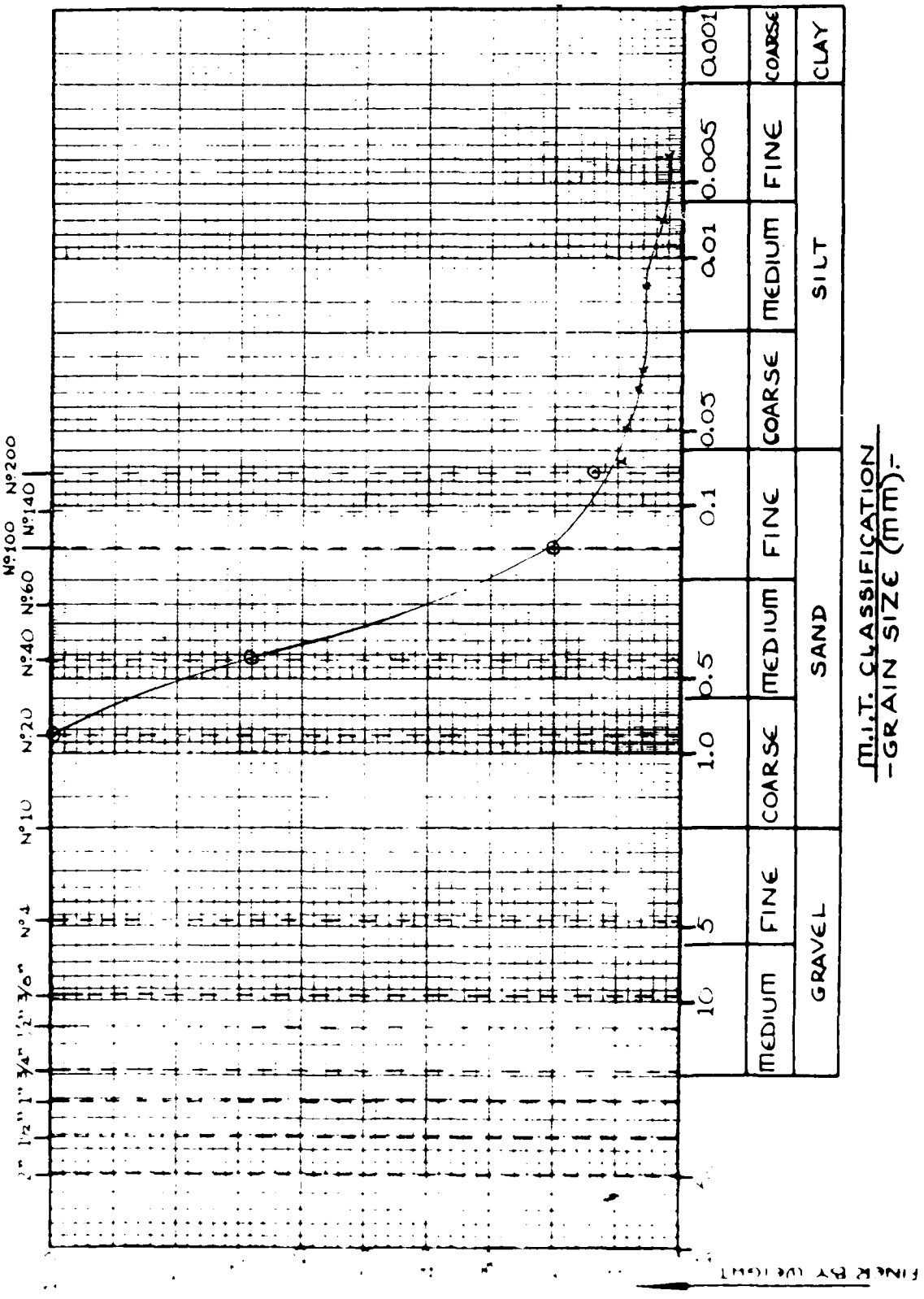
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	1.1	2.2		97.8
NO. 20	6.1	12.2		85.6
NO. 40	5.5	17.0		68.6
NO. 60				
NO. 100	21.1	42.2		26.4
NO. 140				
NO. 200	2.5	5.0		21.4
PAN	10.7	21.4		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 4-1
DATE: 95-10
BY:

	%
GRAVEL	
SAND	10 %
SILT	10 %
CLAY	%



DESCRIPTION:

COMMENTS

4-1

95-100

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm-Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1½	4.0		4.9	0.068	15.5	.0123	9.8	
		1	3.5		4.4	0.049	15.6	"	8.8	
		2	2.5		3.4	0.034	15.7	"	6.8	
		3	2.2		3.1	0.028	15.8	"	6.2	
		14	2.0	29	2.9	0.013 ~~0.0114~~	"	"	5.8	
		50	0.5	—	1.4	0.0070	16.1	"	2.8	
		165	0	29	0.9	0.0039	16.2	"	1.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

4-1

95-100

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

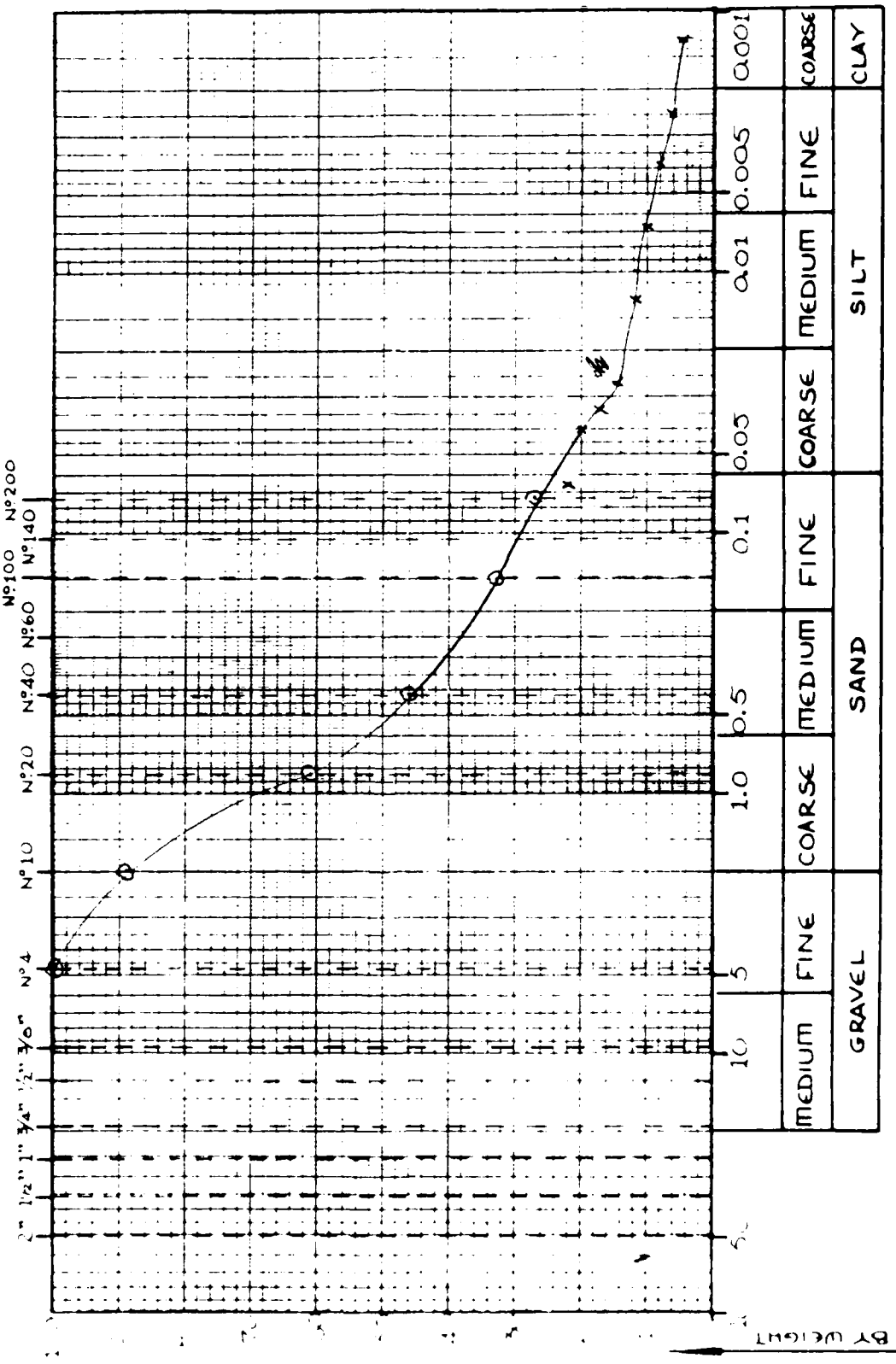
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10				100.0
NO. 20	0.5	1.0		99
NO. 40	15.4	30.8		68.2
NO. 60				
NO. 100	24.0	48.0		20.2
NO. 140				
NO. 200	3.1	6.2		14.0
PAN	7.0	14.0		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: -
SAMPLE Nº: RB 4-2
DATE: 135-141
BY:

	%
GRAVEL	
SAND	66 %
SILT	17 %
CLAY	%



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm)-

DESCRIPTION:

COMMENTS

4-v

135-141

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		½	10		10.9	0.066	14.5	.0123	21.8	
		1	9		9.9	0.047	14.7	"	19.8	
		2	7.5		8.4	0.034	14.9	"	16.8	
		3	6.5		7.4	0.027	14.9	"	14.8	
		14	5.0	29	5.9	0.013	15.3	"	11.8	
		50	4.0	—	4.9	0.0068	15.5	"	9.8	
		160	3.0	29	3.9	0.0039	15.6	"	7.8	
		400	3.0	27	3.0	0.0025	"	.0126	6.0	
		1365	2.0	28	2.4	0.0013	15.8	.0124	4.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____

DISPERSING AGENT CORRECTION, Cd: _____ _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

4-2

125-141

— SIEVE ANALYSIS —

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

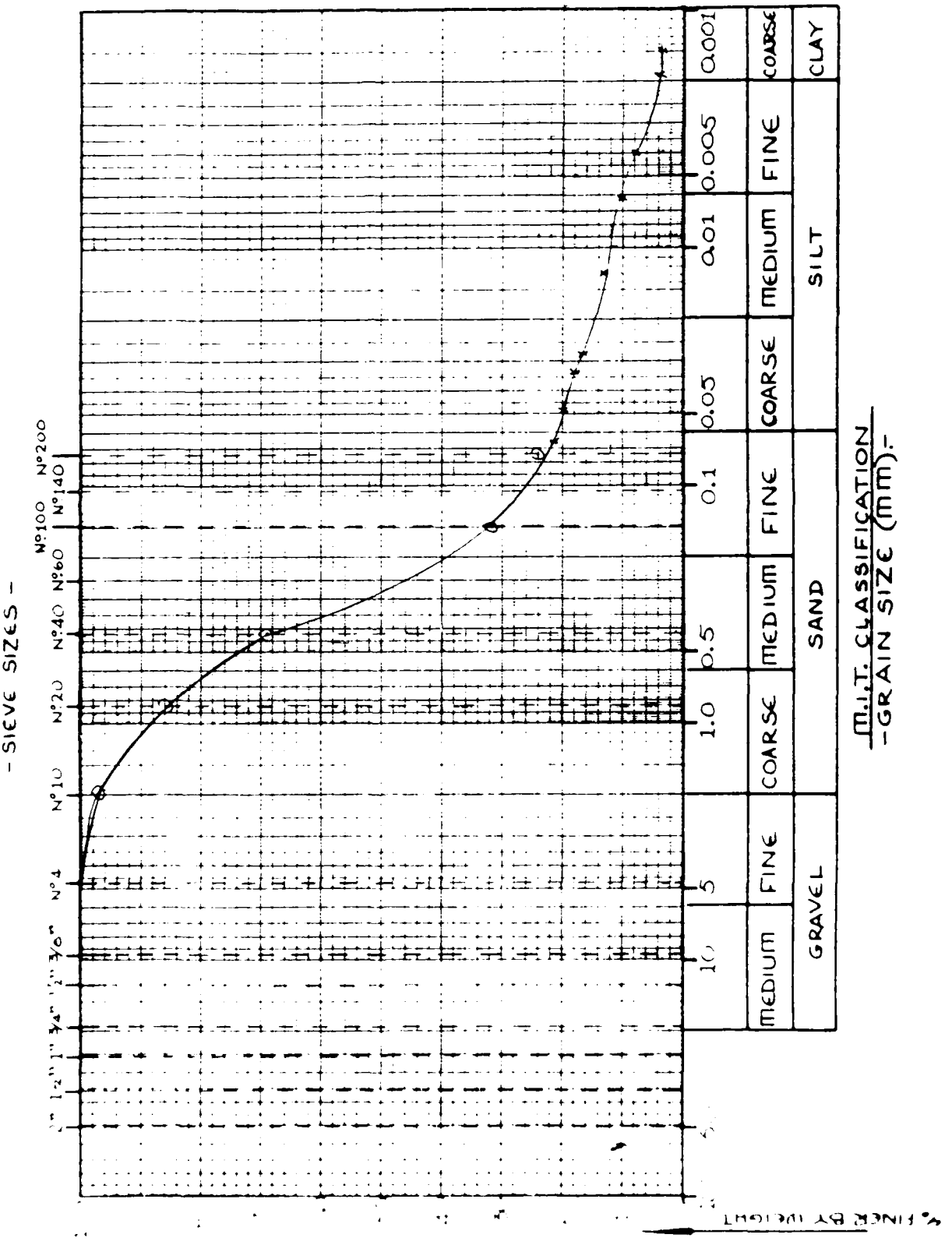
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	57	11.4		88.6
NO. 20	13.8	27.6		61.0
NO. 40	7.4	14.8		46.2
NO. 60				
NO. 100	6.5	13.0		33.2
NO. 140				
NO. 200	3.0	6.0		27.2
PAN	13.6	27.2		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	
SAMPLE Nº:	RB 4-3
DATE:	155-160
BY:	

GRAVEL	3 %
SAND	76 %
SILT	17 %
CLAY	4 %



DESCRIPTION:

COMMENTS

4-3
155'-160'

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (C_m + C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	11		11.0	.0067	14.3	.0126	22	
		1	10		10.0	.0048	14.5	"	20	
		2	9		9.0	.0034	14.7	"	18	
		3	8.5		8.5	.0025	14.8	"	17	
		14	7	27	7.0	.0013	15.0	"	14	
		65	5.2	26	4.8	.00067	15.3	.0127	9.6	
		155	4.5	26	4.1	.00040	15.4	"	8.2	
		755	3.5	24	2.2	.00019	15.5	.0130	4.4	
		1115	2.0	27	2.0	.00015	15.8	.0126	4.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

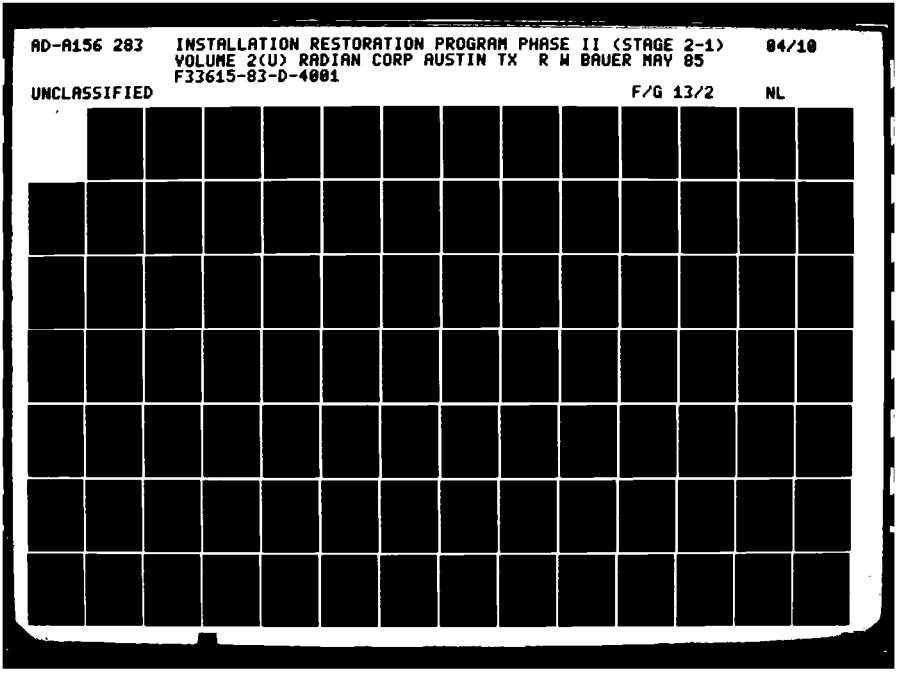
$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

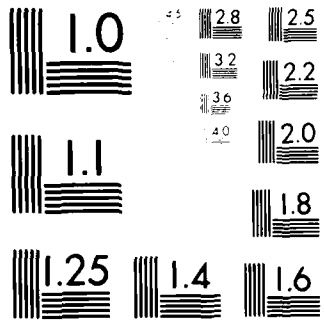
$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

AD-A156 283 INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1) 04/10
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

UNCLASSIFIED F/G 13/2 NL





MICROCOPY RESOLUTION TEST CHART

1-3

155-160

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	1.5			
NO. 20	5.7			
NO. 40	8.3			
NO. 60				
NO. 100	18.5			
NO. 140				
NO. 200	4.1			
PAN				
TOTAL				

REMARKS _____

10

DESCRIPTION: _____

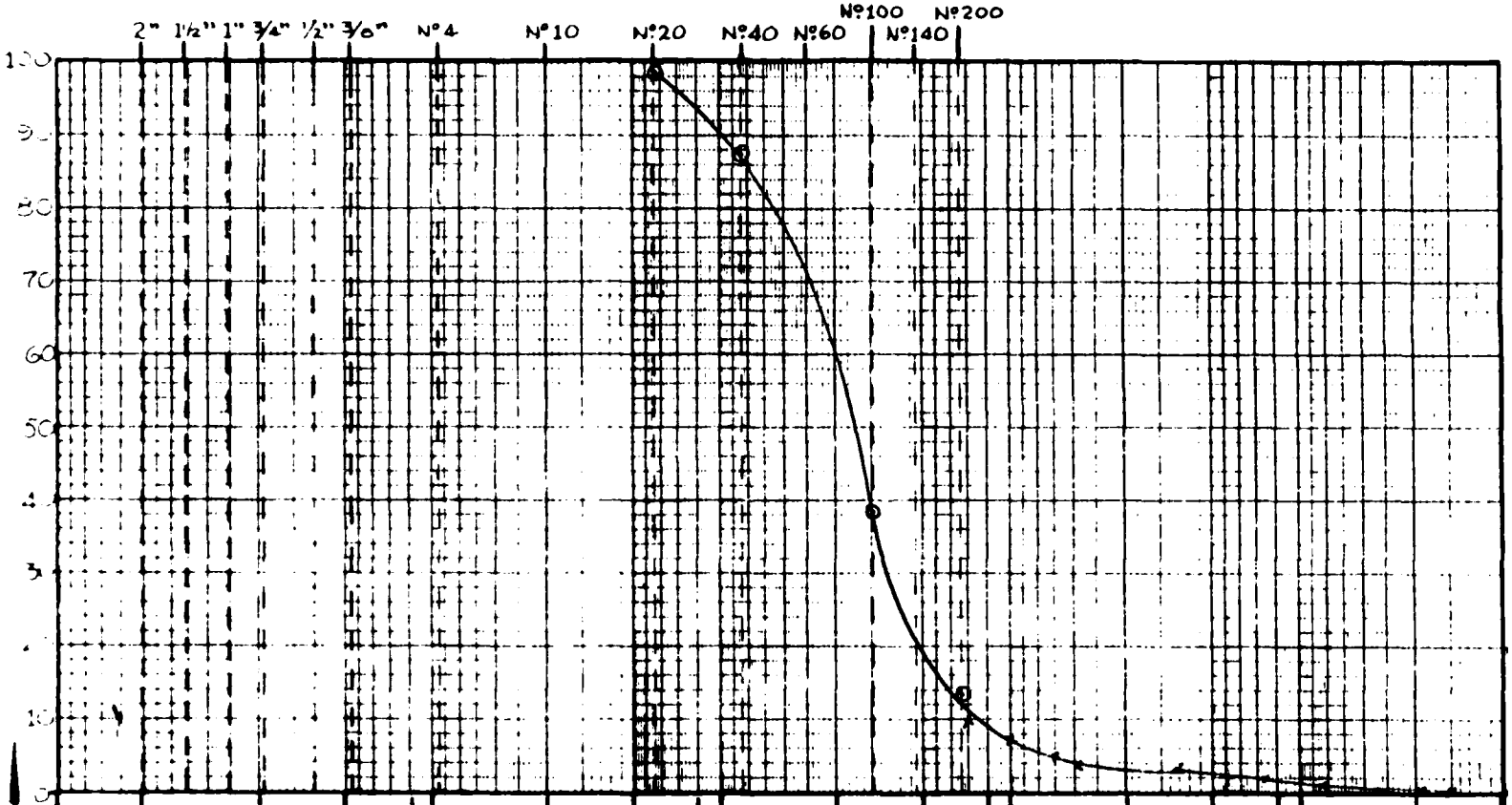
COMMENTS _____

GRAVEL	%
SAND	91 %
SILT	9 %
CLAY	%

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 4-4
DATE:
BY: 190-210

- SIEVE SIZES -



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm)-

4-4

190-226

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	5		5.0	0.070	15.3	.0126	10.0	
		1	3.5		3.5	0.050	15.5	"	7.0	
		2	2.5		2.5	0.035	15.7	"	5.0	
		3	2		2.0	0.029	15.8	"	4.0	
		14	2	27	2.0	0.013	15.8	"	4.0	
		60	1.5	26	1.1	0.0065	15.9	.0127	2.2	
		150	1.0	26	0.6	0.0042	16.0	"	1.2	
		750	1.5	24	0.2	0.0019	16.1	.0130	0.4	
		1110	0.2	27	0.2	0.0015	16.3	.0126	0.4	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____ _____.

DISPERSING AGENT CORRECTION, C_d: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº 60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

4-4

190-220

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

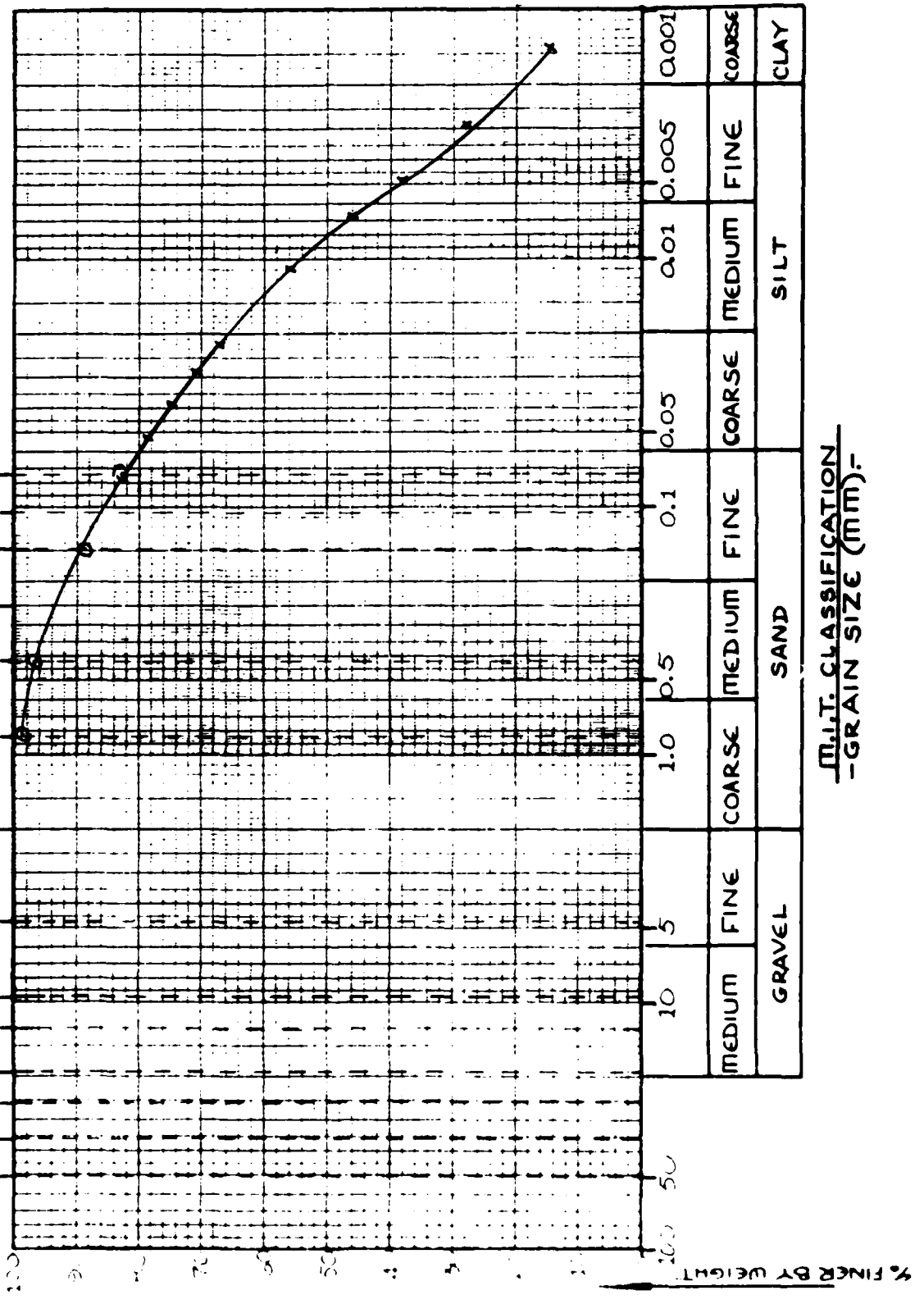
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0			100.0
NO. 20	0.7	1.4		98.6
NO. 40	5.4	10.8		87.8
NO. 60				
NO. 100	24.7	49.4		38.4
NO. 140				
NO. 200	12.4	24.8		13.6
PAN	6.8	13.6		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 5-1
DATE:	90'-100'
BY:	

	%
GRAVEL	
SAND	20 %
SILT	60 %
CLAY	20 %



DESCRIPTION: _____

COMMENTS _____

RB 5-1

90 -100

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

.1200 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (min)	R_H	TEMP. °C	R_H = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		½	38		39.3	0.054	9.9	.0122	78.6	
		1	36		37.3	0.039	10.2	"	74.6	
		2	34		35.3	0.028	10.5	"	70.6	
		3	32.5		33.5	0.023	10.9	"	67.0	
		15	26.5	30	27.8	0.011	11.7	"	55.6	
		40	21.5	—	22.8	0.0068	12.5	"	45.6	
		85	18	29	18.9	0.0048	13.2	.0123	37.8	
	0400	24h	13.5	28	13.9	0.0029	13.8	.0124	27.8	
	0930	27h	11.0	27	11.0	0.0029	14.3	.0126	22.0	
	2030	1235	6.0	30	7.3	0.0014	15.2	.0127	14.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 5 - 1

90 - 100

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

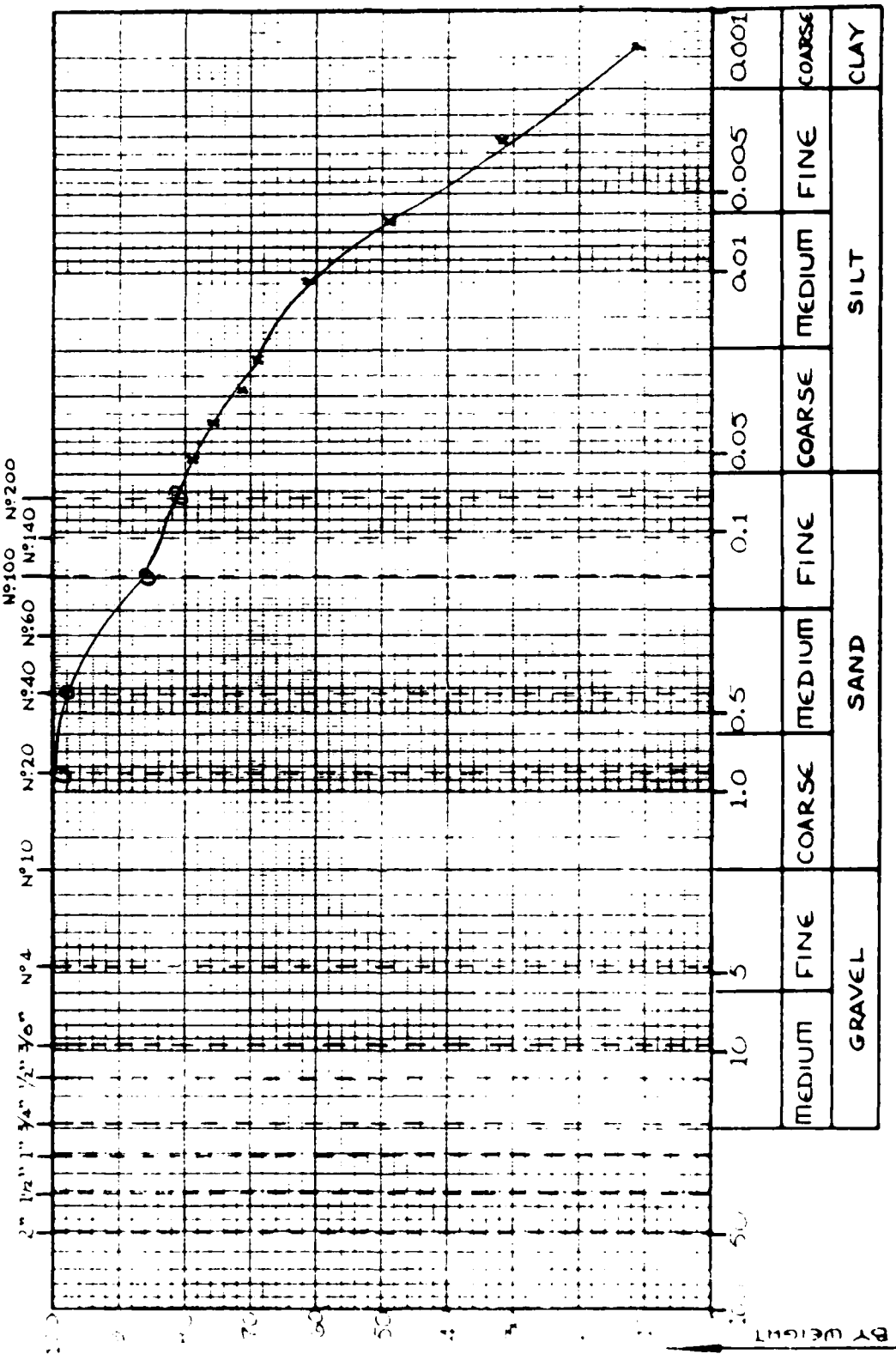
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0			1000
NO. 20	7.7	1.4		986
NO. 40	1.0	2.0		966
NO. 60				
NO. 100	3.9	7.8		915
NO. 140				
NO. 200	3.0	6.0		825
PAN	41.4	82.8		0
TOTAL	500	1000		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 5-2
DATE: 115'-120'
BY:

	%
GRAVEL	
SAND	20 %
SILT	60 %
CLAY	20 %



DESCRIPTION:

COMMENTS

RBS-V
115-120

FILE Nº:
SAMPLE Nº:
DATE:
BY:

HYDROMETER ANALYSIS

1235 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm or Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		½	38		39.3	0.054	9.9	.0122	78.6	
		1	36.5		37.8	0.039	10.1	"	75.6	
		2	34		35.3	0.028	10.5	"	70.6	
		3	33		34.3	0.023	10.7	"	68.6	
		11	29	30	30.3	0.012	11.4	"	60.6	
		44	23	—	24.3	0.0065	12.5	"	48.6	
	0400	240	16	26	16.4	0.0032	13.5	.0127	32.8	
	0901	240	13.5	27	13.5	0.0030	13.8	.0126	27.0	
	2030	1200	9.0	30	10.3	0.0014	14.7	.0122	20.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

KB-2

115 — 120

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

— SIEVE ANALYSIS —

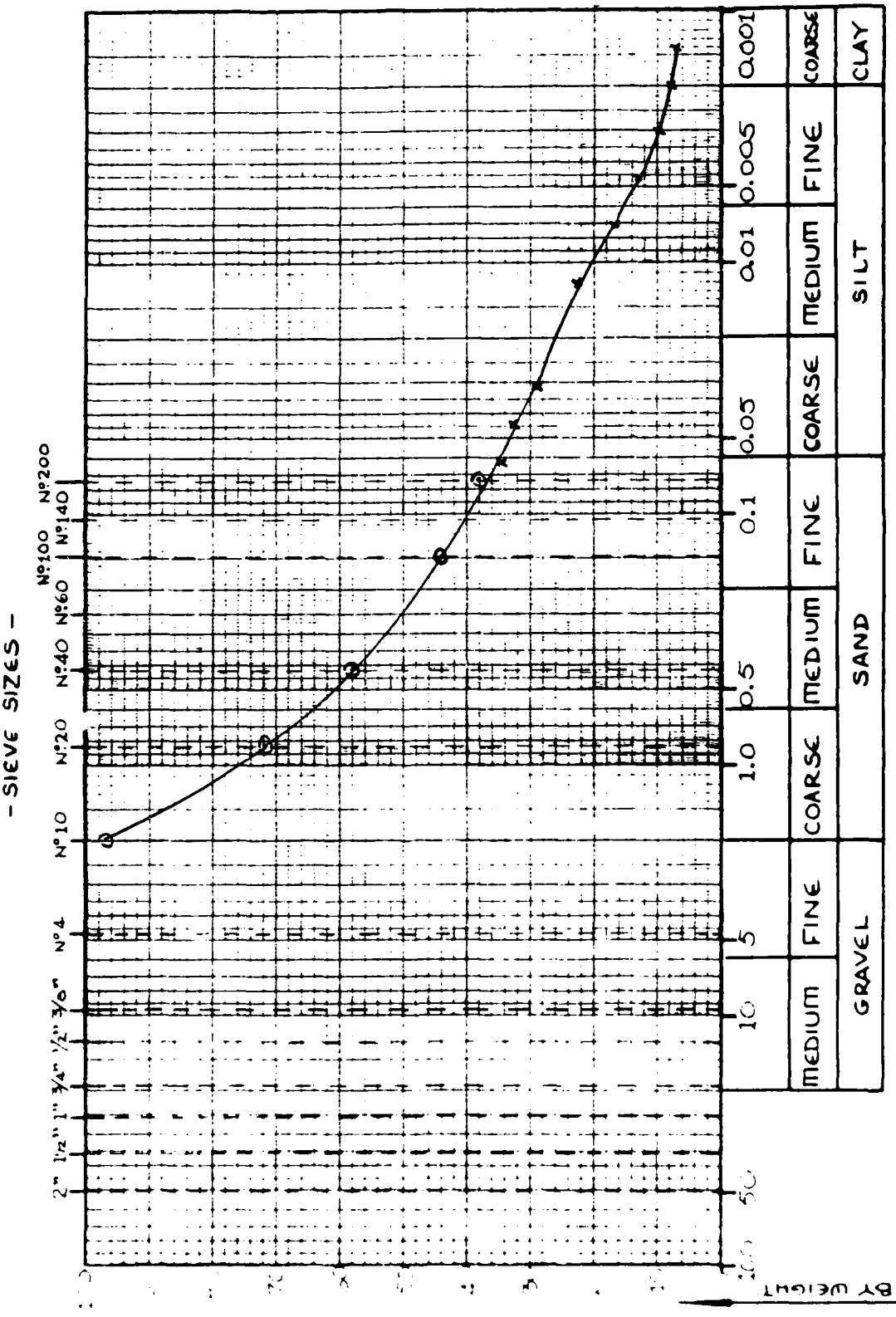
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	0.2	0.4		99.6
NO. 20	0.9	1.8		97.8
NO. 40	1.8	3.6		94.2
NO. 60				
NO. 100	4.3	8.6		85.6
NO. 140				
NO. 200	2.1	4.2		81.4
PAN	40.7	81.4		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB S-3
DATE:	135'-140'
BY:	

GRAVEL	3 %
SAND	62 %
SILT	27 %
CLAY	8 %



DESCRIPTION: _____

COMMENTS _____

RB-5-3

135-140

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY:

1135 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1½	16		17.7	0.063	13.5	.0122	34.6	
		1	15		16.3	0.045	13.7	"	32.6	
		2	13		14.3	0.032	14.0	"	28.6	
		3	12		13.3	0.027	14.2	"	26.6	
		15	10	30	11.3	0.012	14.5	"	22.6	
		44	7	—	8.3	0.0071	15.0	"	16.6	
		106	5.5	29	6.4	0.0047	15.2	.0123	12.8	
	0400	265	4.5	27	4.9	0.0030	15.3	.0124	9.8	
	0930	595	4.0	27	4.0	0.0020	15.5	.0126	8.0	
	2030	1255	2.0	30	3.3	0.0014	15.8	.0122	6.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 5-3

135 – 140

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

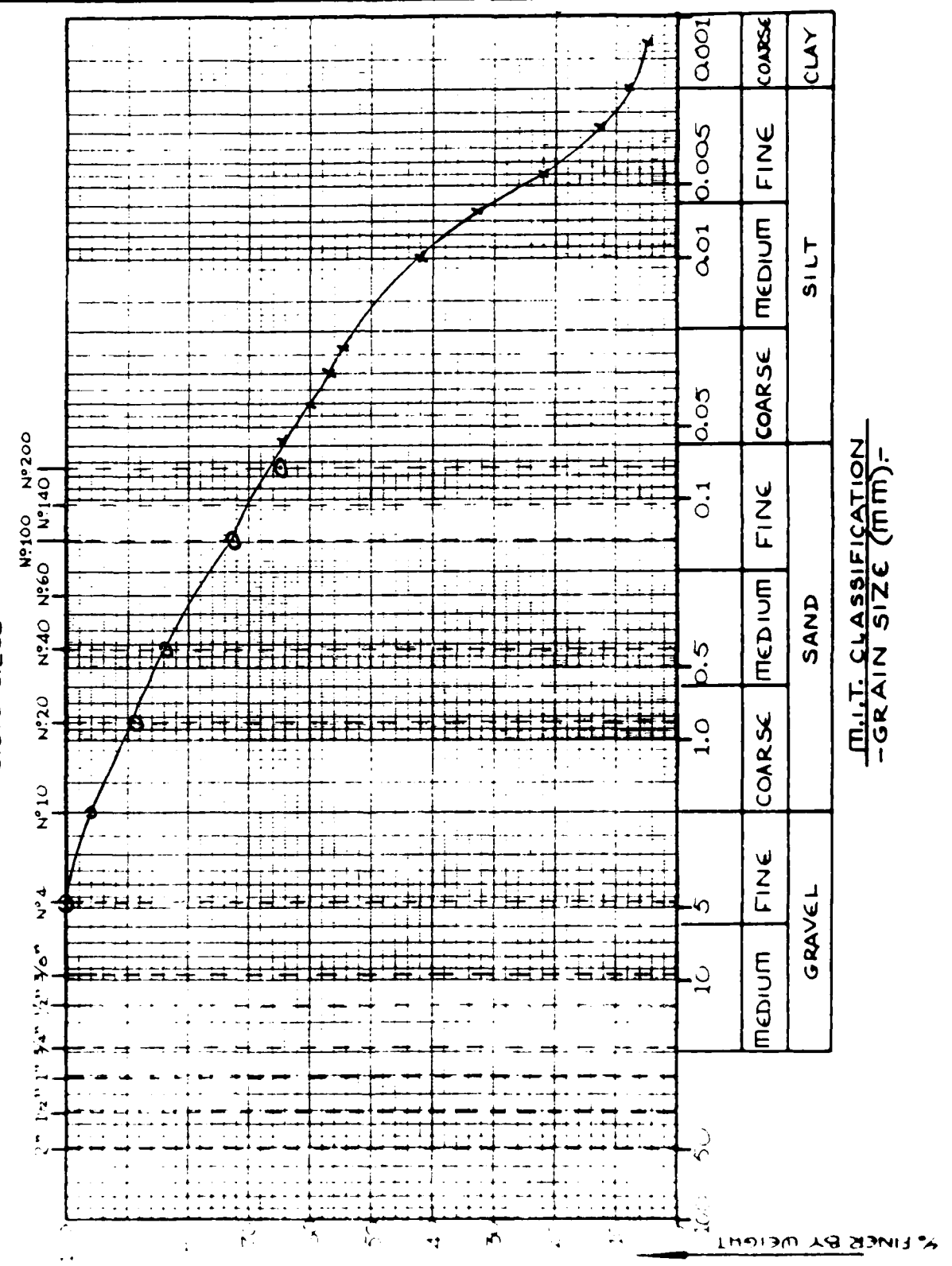
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	1.4	2.8		97.2
NO. 20	12.6	25.2		72
NO. 40	7.1	14.2		57.8
NO. 60				
NO. 100	7.0	14.0		43.8
NO. 140				
NO. 200	3.1	6.2		37.6
PAN	18.8	37.6		0
TOTAL	50.0	100		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB S-4
DATE:	175'-180'
BY:	

GRAVEL	4 %
SAND	32 %
SILT	56 %
CLAY	8 %



DESCRIPTION: _____

COMMENTS _____

RB5-4

175-180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1130 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		½	31	27	32.3	0.057	11.1	.0132	64.6	
		1	29	27	30.3	0.041	11.4	"	60.3	
		2	27	27	28.3	0.030	11.7	"	56.6	
		3	26	27	27.3	0.024	11.9	"	54.6	
		19	19.5	30	20.8	0.010	12.9	"	41.6	
		48	15	27	16.3	0.0065	13.7	"	32.6	
		110	10	29	10.9	0.0045	14.5	.0123	21.8	
	0400	270	6.0	28	6.4	0.0029	15.2	.0124	12.8	
	0930	600	4.0	27	4.0	0.0020	15.5	.0126	8.0	
	2030	1260	1.0	30	2.3	0.0013	16.0	.0132	4.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____ _____.

DISPERSING AGENT CORRECTION, C_d: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 5-4

175 - 180

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

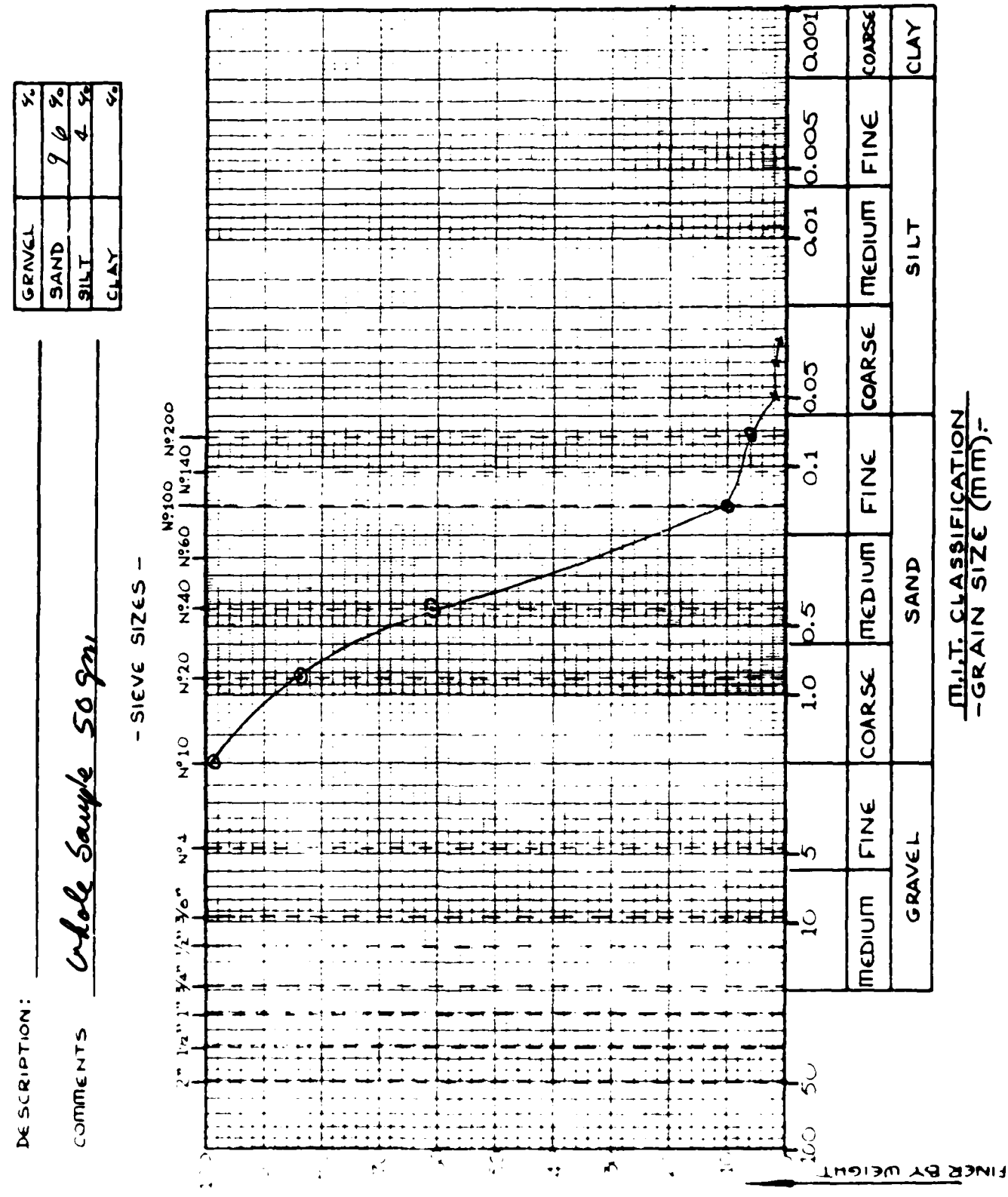
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	2.1	4.2		95.8
NO. 20	3.4	6.8		89.0
NO. 40	2.4	4.8		84.2
NO. 60				
NO. 100	5.7	11.4		72.8
NO. 140				
NO. 200	3.8	7.6		65.2
PAN	32.6	65.2		0
TOTAL	50	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 5-5
DATE: 195'-200
BY:

	%
GRAVEL	
SAND	96 %
SILT	4 %
CLAY	%



DESCRIPTION: Whole Sample 50 gm

COMMENTS

RB 5-5 ✗
195-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

0135 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm or Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	2.0		2.0	0.071	15.8	.026	4.0	
		1	1.0		1.0	0.050	16.0	"	2.0	
		2	1.0		1.0	0.036	16.0	"	2.0	
		3	0.5	27	0.5	0.029	16.0	"	1.0	
	0900	445	1.0	24.5	0	0.0025	16.0	.0130		
	1200	1225	0	28	0.4	0.0014	16.1	.024	0.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: whole sample 50 gm

RB 5-5

195 – 200

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

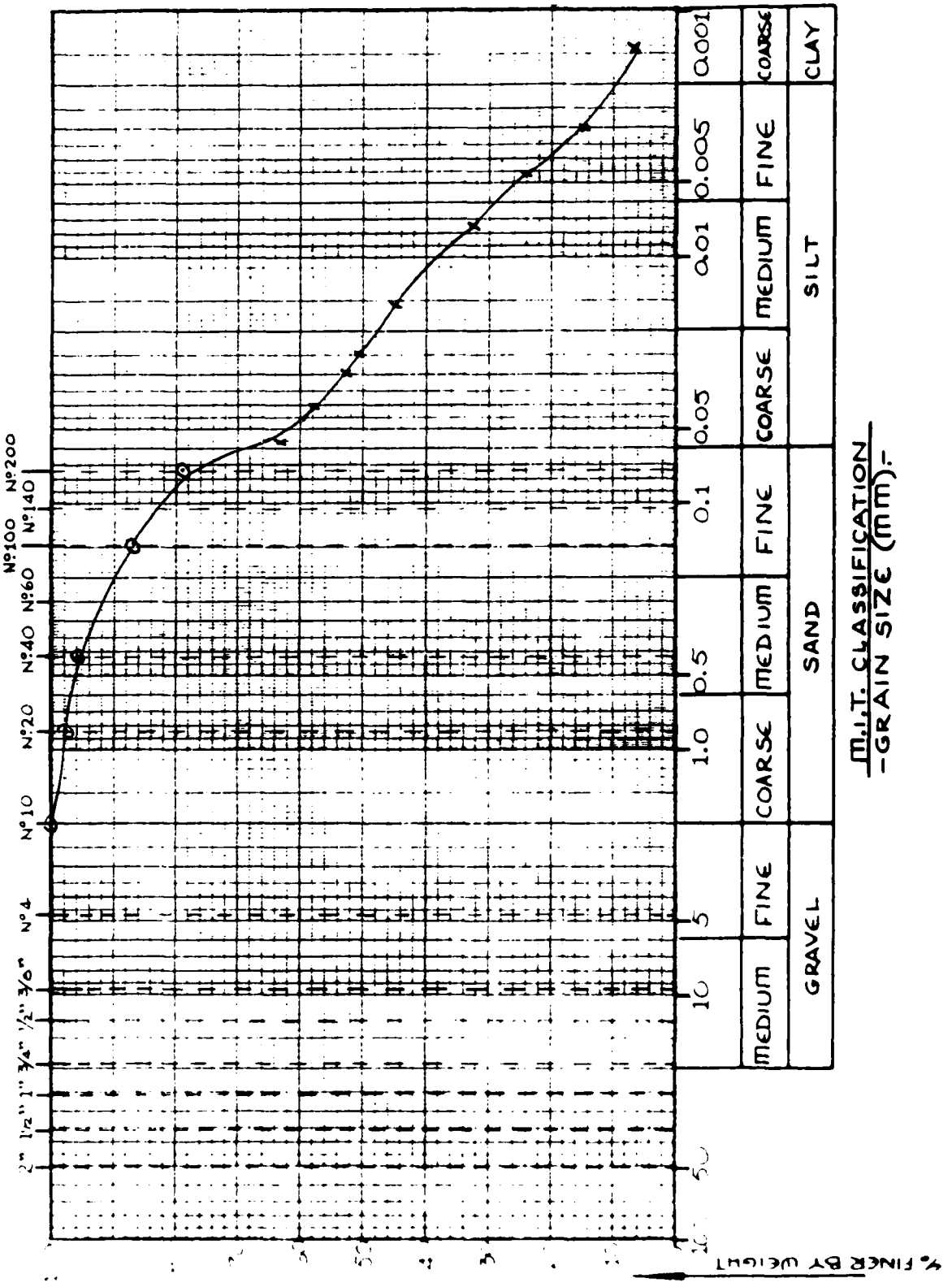
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	0.7	1.4		98.6
NO. 20	7.4	14.8		83.8
NO. 40	11.2	22.4		61.4
NO. 60				
NO. 100	25.5	51.0		10.4
NO. 140				
NO. 200	2.3	4.6		5.8
PAN	2.9	5.8		0
TOTAL	50	100		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 6-1
DATE: 90'-100'
BY:

	%
GRAVEL	
SAND	30 %
SILT	60 %
CLAY	10 %



DESCRIPTION: _____

COMMENTS _____

RB-6-1
90-100

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

.1145 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	30		31.3	0.058	11.2	.0122	62.6	
		1	27.5		28.8	0.041	11.5	"	57.6	
		2	25		26.3	0.030	12.0	"	52.6	
		3	24		25.3	0.025	12.2	"	50.6	
		7	21.0	30	22.3	0.016	12.7	"	44.6	
		36	15	—	16.3	0.0075	13.7	"	32.6	
		98	11.0	24	11.9	0.0047	14.3	.0123	23.8	
	0400	255	7.0	28	7.4	0.0030	15.0	.0124	14.8	
	0930	285	5.5	27	5.5	0.0029	15.2	.0126	11.0	
	2030	1245	2.0	30	3.3	0.0014	15.8	.0132	6.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 6-1

90 - 100

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

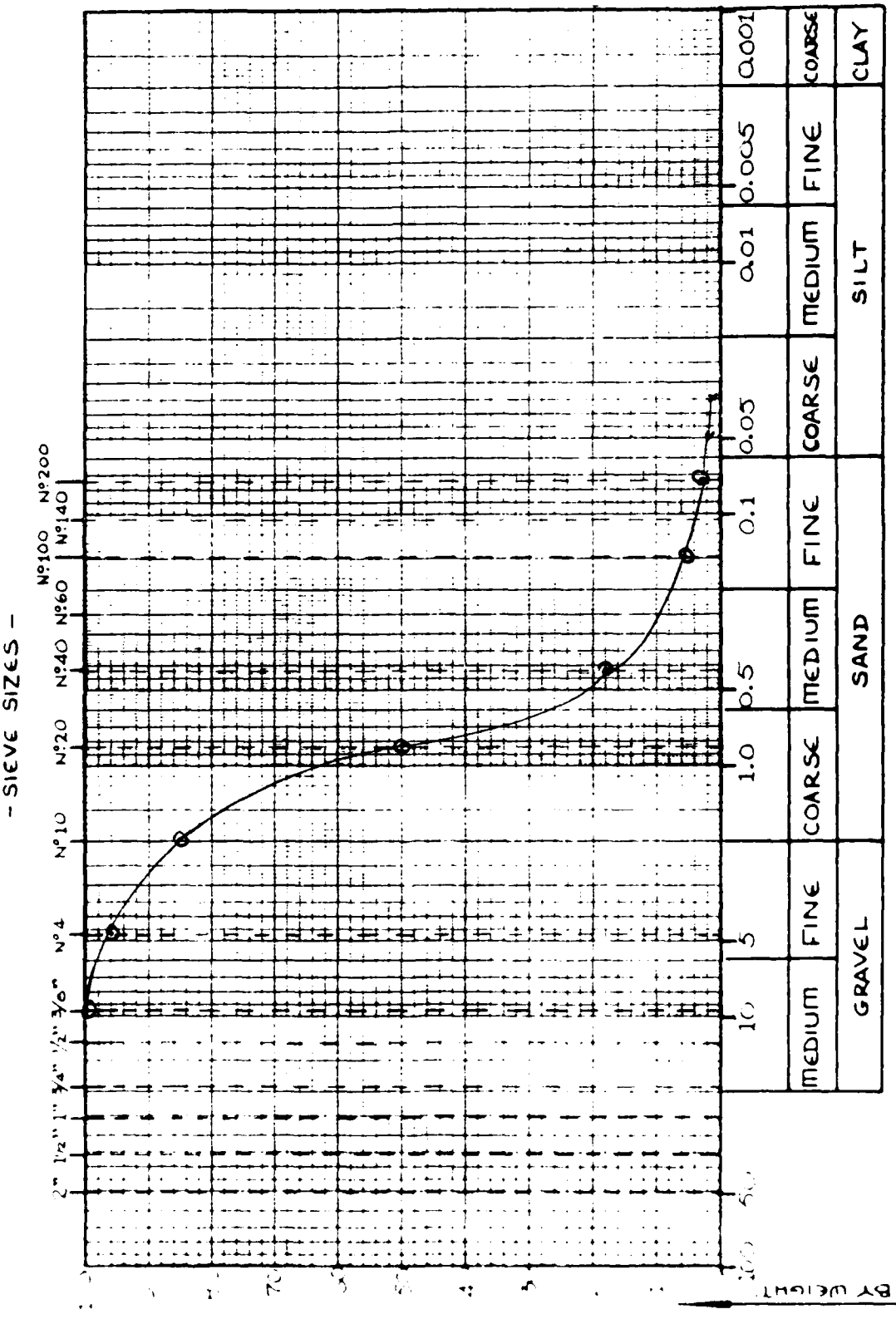
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0			100.0
NO. 20	1.9	3.8		96.2
NO. 40	1.0	2.0		94.2
NO. 60				
NO. 100	4.5	9.0		85.2
NO. 140				
NO. 200	3.9	7.8		77.4
PAN	38.7	77.4		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 6-2
DATE:	135-140
BY:	

GRAVEL	14 %
SAND	84 %
SILT	2 %
CLAY	%



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

DESCRIPTION: _____

COMMENTS _____

RB-6-2

135-140

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

.1225 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = Ru + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1½	1.2		1.6	0.070	16.0	.0134	3.2	
		4	0.5	28	0.9	0.050	16.0	〃	1.8	
		2	0.3	〃	0.7	0.035	16.1	〃	1.4	
		125	0	27	0	0.0045	16.1	.0126		
	0530	305	0	26	1	0.0029	16.1	.0127		

DESCRIPTION: _____

SPECIFIC GRAVITY; G_S: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_S: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_S} = R$ _____.

REMARKS: _____

RB 6-2
135 – 140

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				100.0
NO. 4	13.4	3.9		96.1
NO. 10	38.5	11.3		84.8
NO. 20	117.9	34.5		50.3
NO. 40	111.6	32.7		17.6
NO. 60				
NO. 100	43.4	12.7		4.9
NO. 140				
NO. 200	5.1	1.5		3.4
PAN	11.0	3.4		—
TOTAL	340.9	100.0		

REMARKS _____

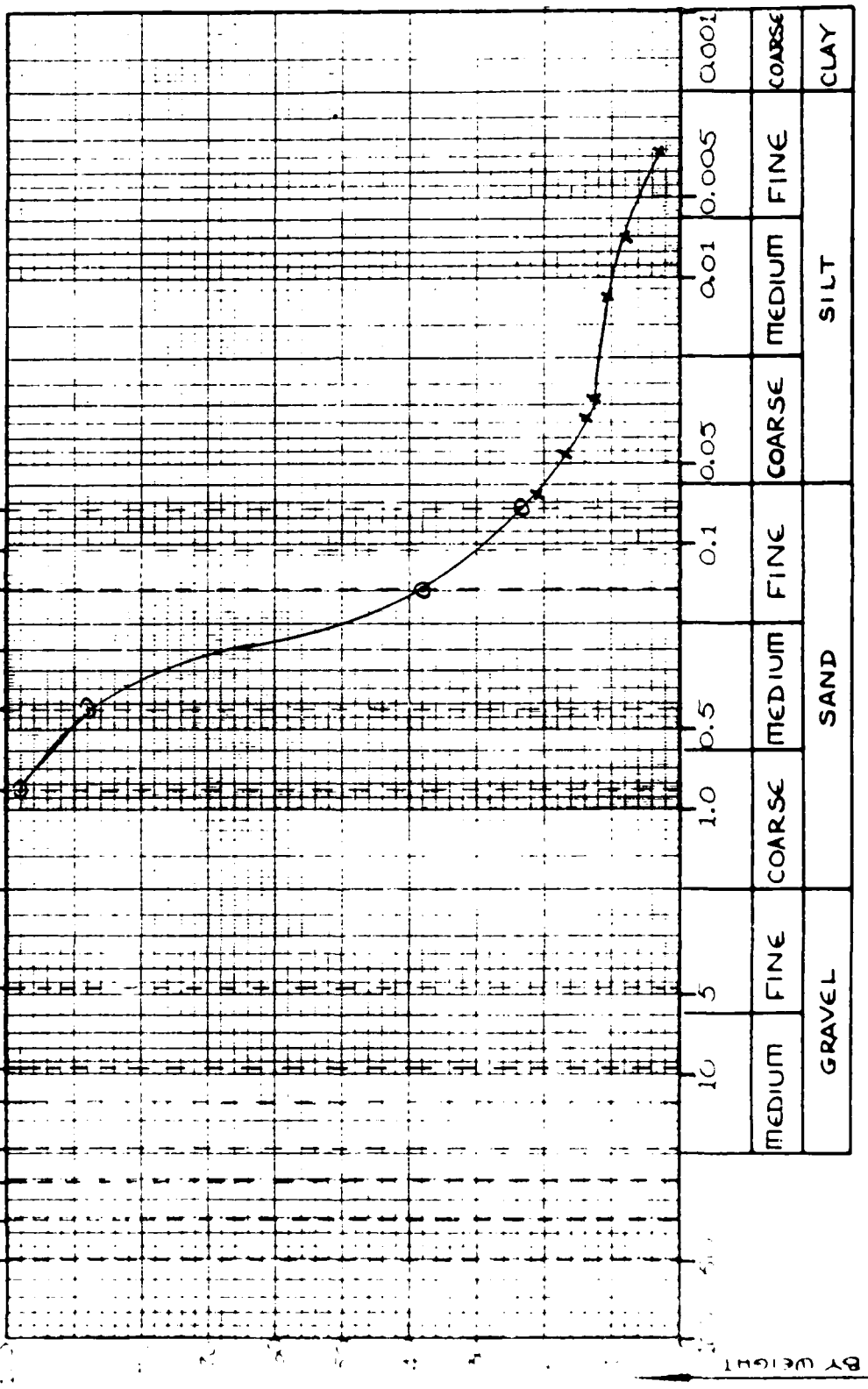
– #10 = 289.0 gm Dry

fines = 5.78

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 6-3
DATE:	170'-180'
BY:	

	%
GRAVEL	
SAND	80 %
SILT	20 %
CLAY	%



DESCRIPTION: _____

COMMENTS _____

RB 6-3
170-180

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

1230 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	9.0		10.3	0.066	14.7	.0122	20.6	
		1	7.0		8.3	0.047	15.0	"	16.6	
		2	5.5		6.8	0.034	15.2	"	13.6	
		3	5.0		6.3	0.028	15.3	"	12.6	
		15	4.0	30	5.3	0.012	15.5	"	10.6	
		47	2.5	—	3.8	0.0070	15.6	"	7.6	
	0400	215	1.2	28	1.6	0.0037	16.0	.0124	3.2	
	0900	245	1.2	27	1.2	0.0032	16.0	.0126	2.4	
	2030	1205	1.0	30	2.3	0.0012	16.0	.0122	4.6	

DESCRIPTION: _____
SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____
MENISCUS CORRECTION, Cm: _____ _____.
DISPERSING AGENT CORRECTION, Cd: _____ _____.
DRY WEIGHT OF SOIL, W_s: _____.
% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 6-3
170 - 180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

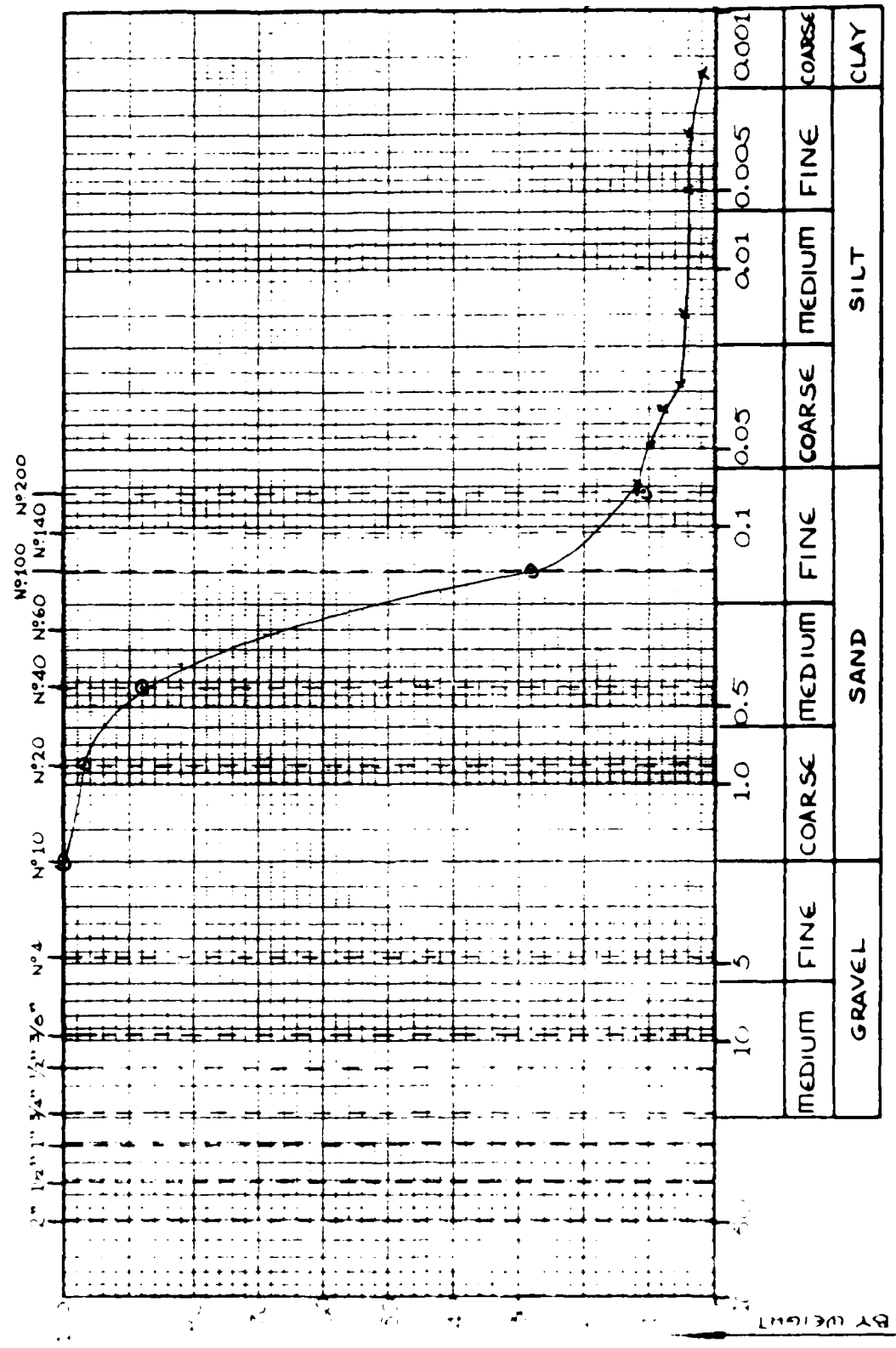
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0			100
NO. 20	1.2	2.4		97.6
NO. 40	4.8	9.6		88.0
NO. 60				
NO. 100	25.2	50.4		37.6
NO. 140				
NO. 200	6.7	13.4		24.2
PAN	12.1	24.2		
TOTAL	50.0			

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 6-4
DATE:	190'-200'
BY:	

	%
GRAVEL	
SAND	89 %
SILT	9 %
CLAY	2 %



DESCRIPTION: _____

COMMENTS _____

RB 6-4

190-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1300 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/4	51.5	—	51.9	0.068	15.2	.0124	11.8	
		1	41.4	—	41.8	0.049	15.5	"	9.6	
		2	33.5	—	33.9	0.035	15.5	"	7.8	
		3	20.0	—	20.4	0.028	15.8	"	4.6	
		11	20.0	28	20.4	0.015	15.8	"	4.6	
		100	20.0	27	20.0	0.0050	15.8	.0126	4.0	
	0530	270	22.5	26	20	0.0030	15.6	.0127	4.0	
	1400	785	10.0	27	10.0	0.0018	16.0	.0126	2.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\%\ <\ Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 6-4

190 - 203

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0			100 0
NO. 20	1.4	2.8		97.2
NO. 40	4.8	9.6		87.6
NO. 60				
NO. 100	30.0	60 0		27.6
NO. 140				
NO. 200	8.3	16.6		11.0
PAN	5.5	11.0		0
TOTAL	50.0	100 0		

REMARKS _____

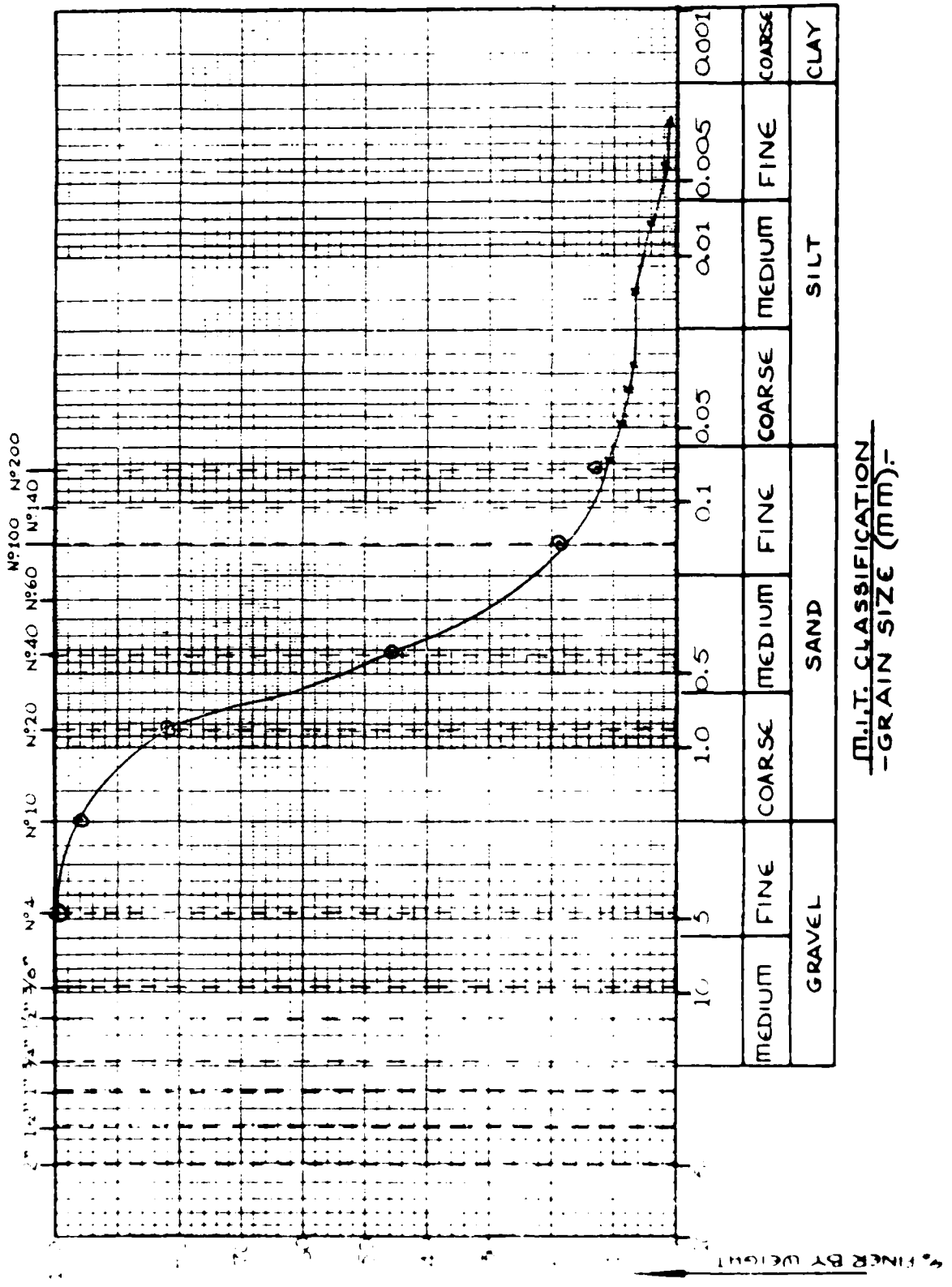
GRAIN SIZE CHART

FILE Nº:	16044
SAMPLE Nº:	RB 7-2
DATE:	135'-140'
BY:	

GRAVEL	4 %
SAND	86 %
SILT	10 %
CLAY	%

DESCRIPTION:

COMMENTS



RB7-2
135-140

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1,220 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	5		5.4	0.069	15.3	.0124	10.8	
		1	4		4.4	0.049	15.5	"	8.8	
		2	3.5		3.9	0.035	15.5	"	7.8	
		3	3.0	28	3.4	0.028	15.6	"	6.8	
		13	3.0	"	3.4	0.014	15.6	"	6.8	
		4V	1.5	"	1.9	0.0076	15.8	"	3.8	
		130	1.0	27	1.0	0.0044	16.0	.0126	2.0	
	0530	310	1.0	26	0.6	0.0029	16.0	.0127	1.2	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

7-2

135 - 140

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	1.8	3.6		96.4
NO. 20	7.2	14.4		82.0
NO. 40	18.0	36.0		46.0
NO. 60				
NO. 100	13.8	27.6		18.4
NO. 140				
NO. 200	2.9	5.8		12.6
PAN	6.3	12.6		
TOTAL	50.0	100.0		

REMARKS _____

10

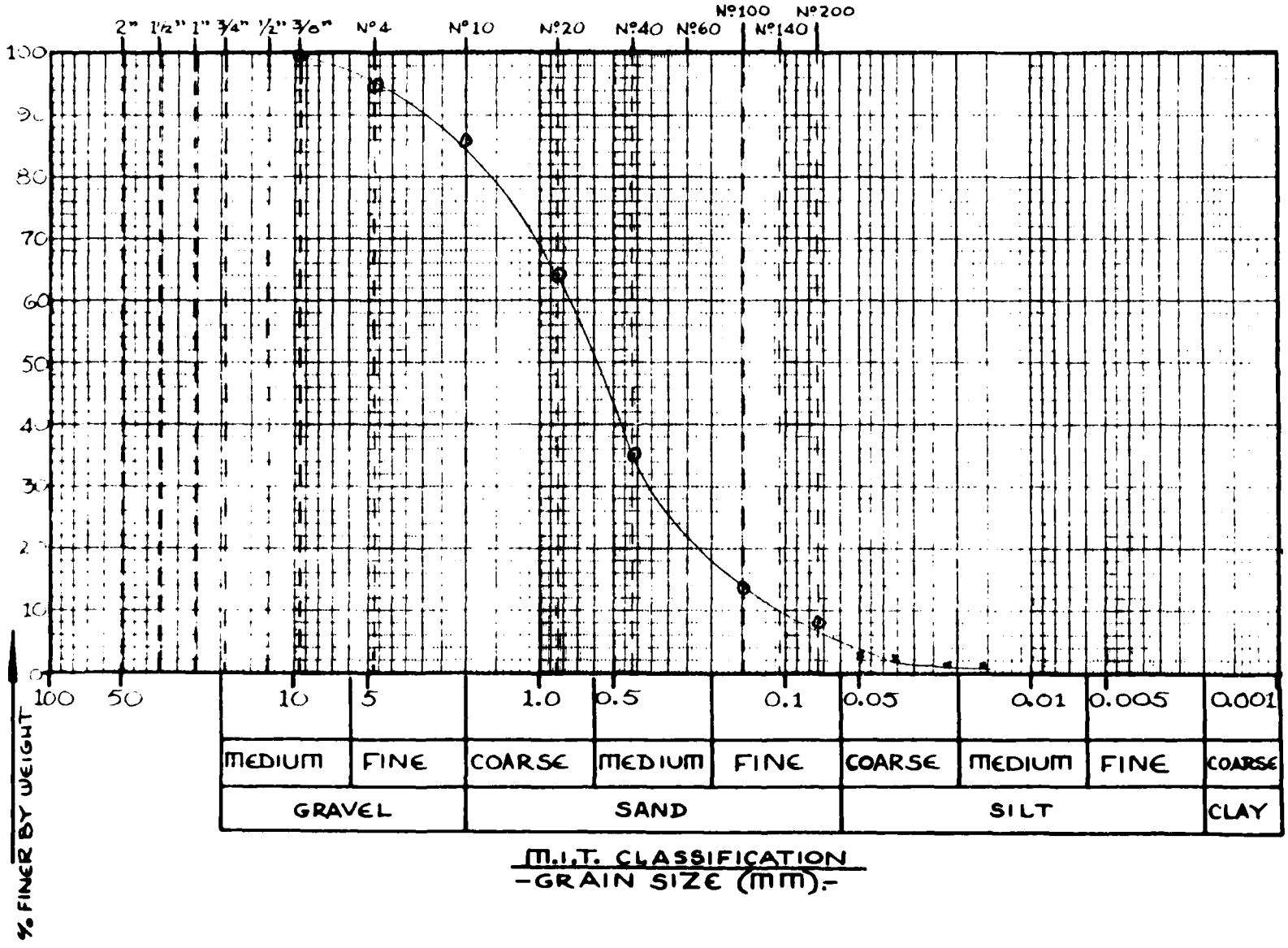
DESCRIPTION: _____

COMMENTS _____

GRAVEL	16	%
SAND	79	%
SILT	5	%
CLAY		%

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 7-3
DATE: 155'-160'
BY:



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

RB 7-3

155-160

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY:

HYDROMETER ANALYSIS

1200 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (C_m + C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	3.0		3.0	.070	15.6	.0126	6.0	5.2
		1	2.0		2.0	.050	15.8	"	4.0	3.4
		2	1.5		1.5	.036	15.9	"	3.0	2.5
		5	1.0	27	1.0	.022	16.0	"	2.0	1.7
		10	1.0	—	1.0	.016	16.0	"	2.0	1.7
	0300	180	0	26			16.3	.0127		
	0800	480	1.0	24						

DESCRIPTION: _____

SPECIFIC GRAVITY; G_S: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_S: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ 85% N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_S} = R$ _____.

REMARKS: _____

RB 7 3

151 - 160

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.		PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.					
2½ IN.					
2 IN.					
1½ IN.					
1 IN.					
¾ IN.					
½ IN.					
⅜ IN.					100
NO. 4	3.3		5.0		95
NO. 10	12.0		7.1		87.9
NO. 20	12.1	40.0	21.5		64.6
NO. 40	17.2	57.0	29.5		34.9
NO. 60					
NO. 100	13.5	40.0	21.4		13.5
NO. 140					
NO. 200	1	9.9	5.3		8.2
PAN	4.3	15.3	8.2		0
TOTAL	54	186.3	100.0		

REMARKS 186.3

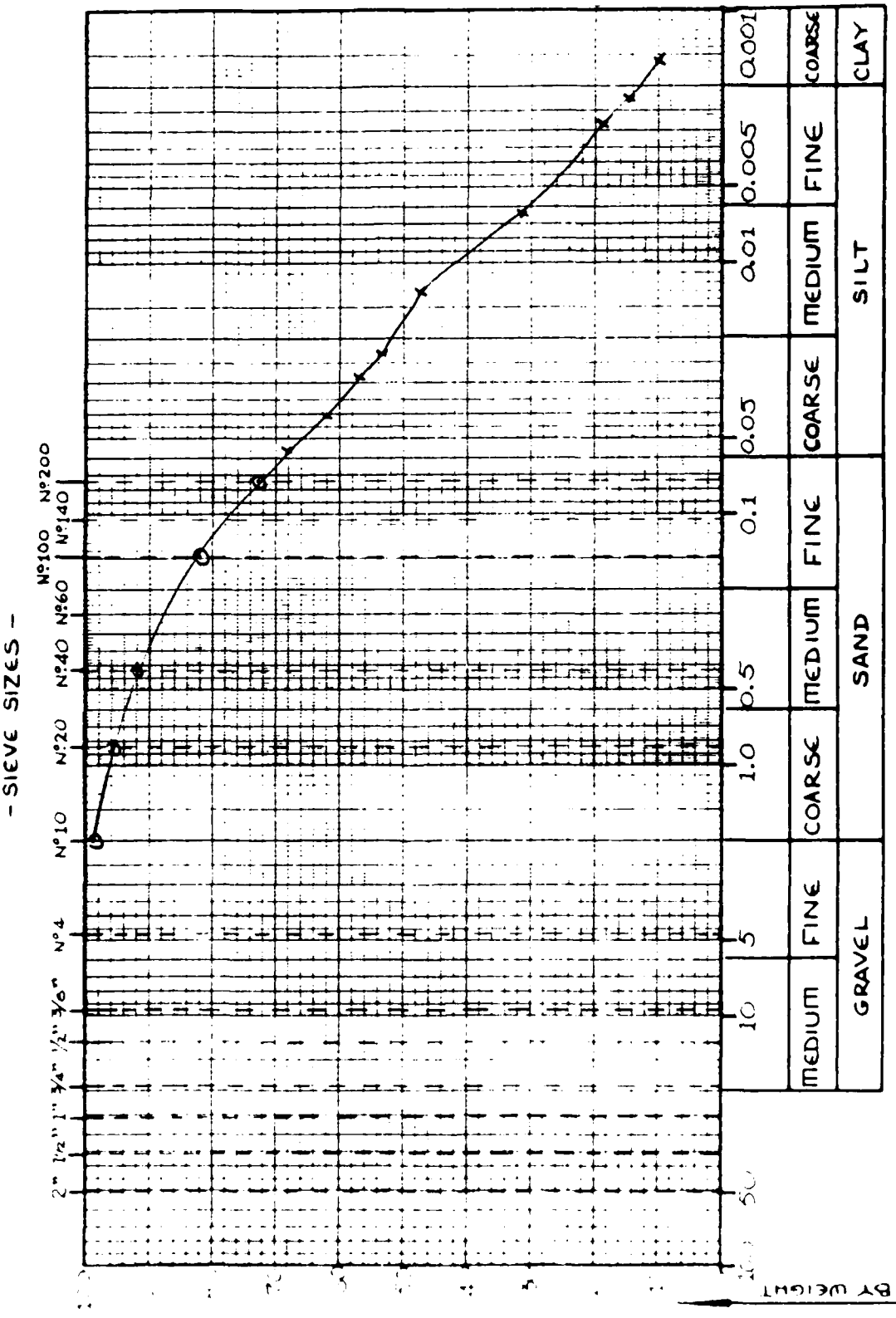
- Tio 160

- Ratio $\frac{160}{50} = 3.2$

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 8
DATE:	100'-120'
BY:	

	%
GRAVEL	
SAND	32 %
SILT	55 %
CLAY	13 %



DESCRIPTION: _____

COMMENTS _____

RB 6

100-120

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

.120 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/4	33		33.9	0.057	10.7	.0123	67.8	
		1	30		30.9	0.041	11.2	"	61.8	
		2	27.5		28.4	0.029	11.5	"	56.8	
		3	26	24	26.9	0.024	11.9	"	53.8	
		11	22.5	—	23.4	0.013	12.4	"	46.8	
	1310	50	15.0	26	15.4	0.0065	13.7	.0124	30.8	
		290	10.0	26	9.6	0.0028	14.5	.0127	19.2	
	0800	460	8.0	26	7.6	0.0023	14.8	"	15.2	
		950	5.0	27	5.0	0.0016	15.3	.0126	10.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB-8

100 – 120

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

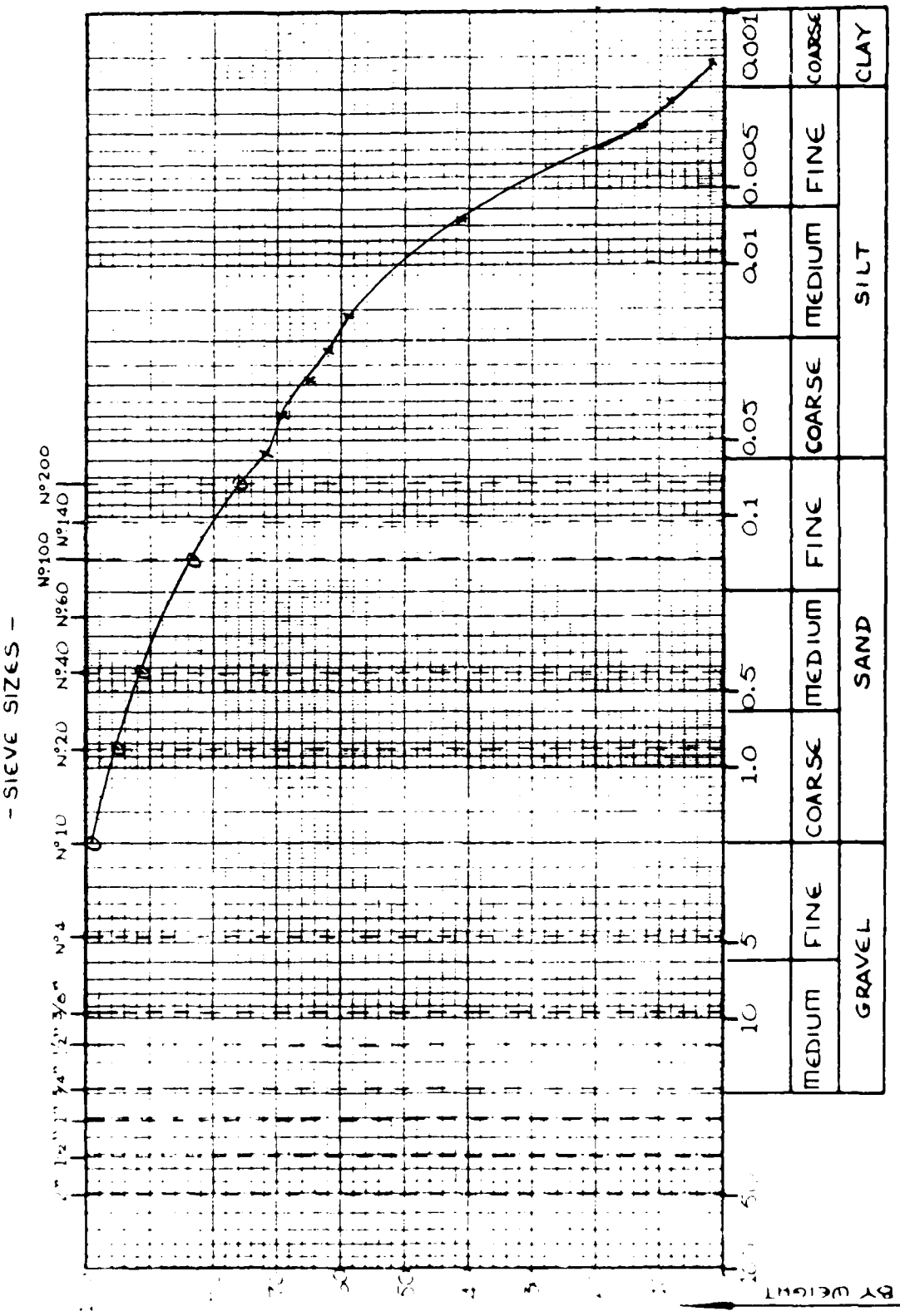
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	0.7	1.4		98.6
NO. 20	1.5	3.0		95.6
NO. 40	1.8	3.6		92.0
NO. 60				
NO. 100	5.1	10.2		81.8
NO. 140				
NO. 200	4.5	9.0		72.8
PAN	36.4	72.8		
TOTAL	50.0	100		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB8
DATE:	135'-140'
BY:	

	%
GRAVEL	
SAND	28 %
SILT	66 %
CLAY	6 %



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm)-

DESCRIPTION: _____

COMMENTS _____

RB 8

135-140

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY:

1 1/2"

A.S.T.M. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1 1/4	35		35.9	0.056	10.4	.0123	71.8	
		1	33.5		34.4	0.040	10.5	"	68.8	
		2	31.5		32.4	0.029	10.9	"	64.8	
		3	30	29	30.9	0.024	11.2	"	61.8	
		7	28.5	—	29.4	0.016	11.4	"	58.8	
	1310	45	20	26	20.4	0.0066	12.9	.0124	40.8	
		285	7.0	26	6.6	0.0029	15.0	.0127	13.2	
	0800	405	4.5	26	4.1	0.0023	15.3	"	8.2	
		945	1.0	27	1.0	0.0016	16.0	.0126	2.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB-8

135-140

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

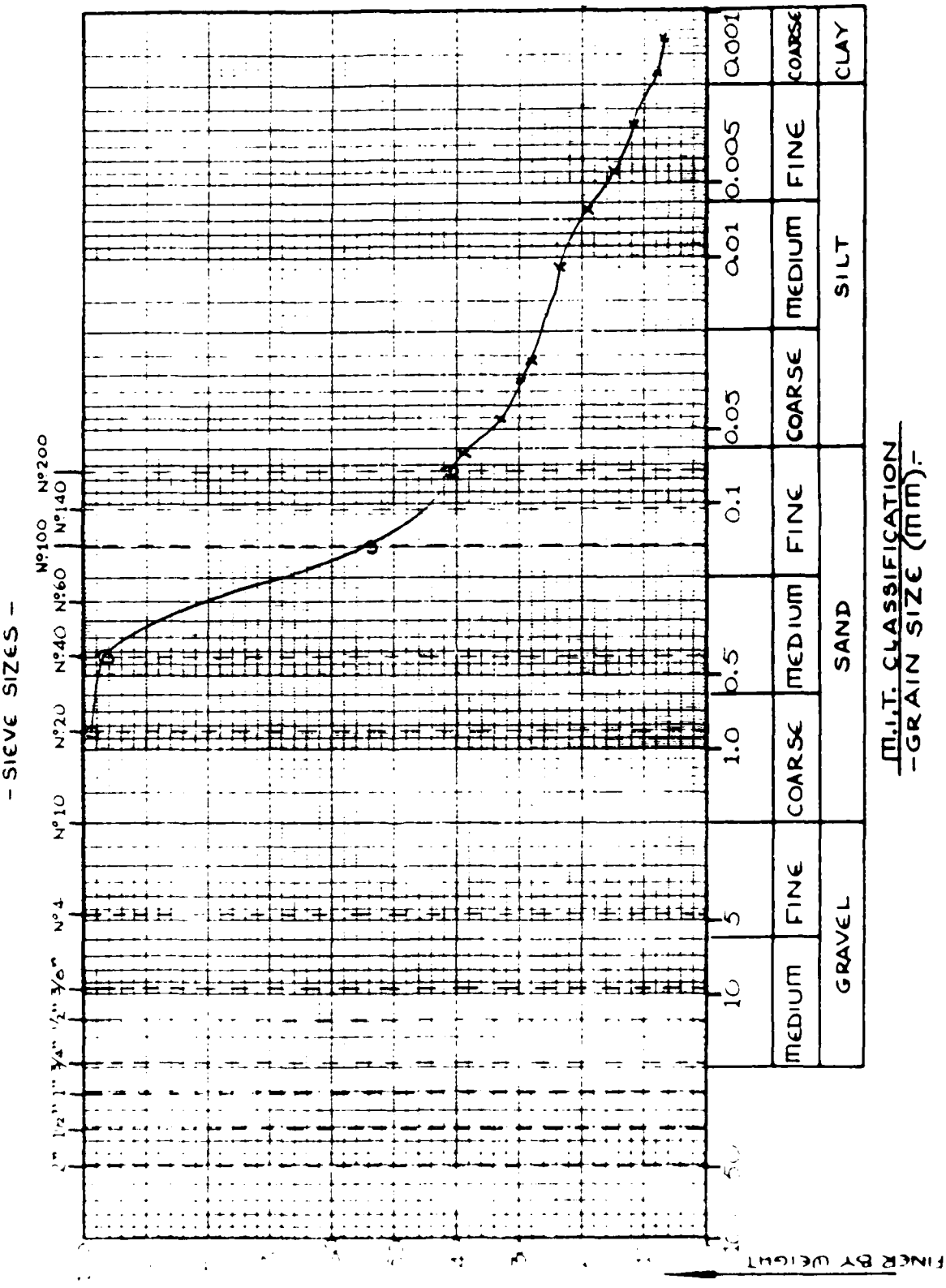
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	2.4	0.8		99.2
NO. 20	2.1	0.7		95.0
NO. 40	2.1	0.7		90.1
NO. 60				
NO. 100	4.1	5.7		82.6
NO. 140				
NO. 200	3.3	6.6		76
PAN	38.0	76.0		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 8
DATE: 155'-165'
BY:

	%
GRAVEL	
SAND	66 %
SILT	26 %
CLAY	8 %



DESCRIPTION:

COMMENTS

RB-8
155-165

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1345 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = Ru + (CmrCd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/4	19	26	19.4	0.063	13.0	.0124	38.8	
		1	16	26	16.4	0.046	13.5	"	32.8	
		✓	14.5	26	14.9	0.032	13.7	"	29.8	
		3	13.5	28	13.9	0.027	13.8	"	27.8	
		19	11.5	26	11.9	0.011	14.2	"	23.8	
		54	9.0	24	9.4	0.0065	14.7	"	18.8	
		110	7.5	27	7.5	0.0045	14.8	.0126	15.0	
	0530	285	6.5	26	6.1	0.0029	15.0	.0127	12.2	
	1400	800	4.0	27	4.0	0.0018	15.5	.0126	8.0	
		1560	3.5	27	3.5	0.0013	15.5	"	7.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB - 6

155 - 165

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

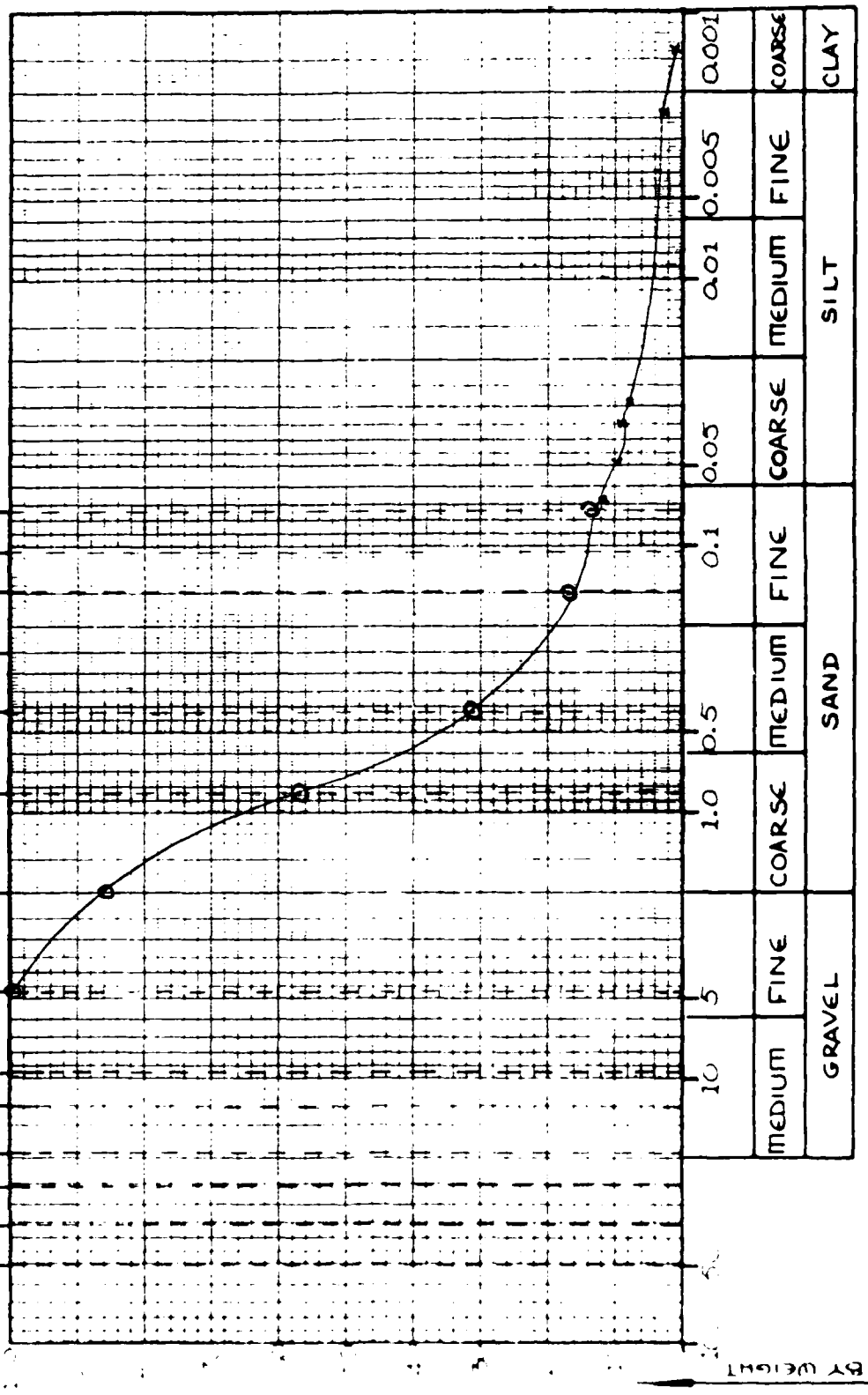
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	2			100.0
NO. 20	1.5	1.0		99
NO. 40	1.2	2.4		96
NO. 60				
NO. 100	21.5	43.0		53
NO. 140				
NO. 200	6.4	12.8		40.2
PAN	20.4	40.8		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB-8
DATE:	170 - 220
BY:	

GRAVEL	14 %
SAND	72 %
SILT	10 %
CLAY	2 %



DESCRIPTION: _____

COMMENTS _____

RB-8
170-220

FILE Nº:
SAMPLE Nº:
DATE:
BY:

HYDROMETER ANALYSIS

0130 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm-Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	6		6	0.069	15.2	.0126	12	
		1	5		5	0.049	15.3	"	10	
		2	4.5		4.5	0.035	15.3	"	9.0	
		3	4.0	27	4.0	0.029	15.5	"	8.0	
	~~1650~~		~~2~~	"	~~2.0~~			.0130		
	0900	450	2.5	24.5	1.4	0.0024	15.6	.0130	2.8	
	2200	1730	0	28	0.4	0.0014	16.1	.0134	0.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB - 8

170 - 220

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

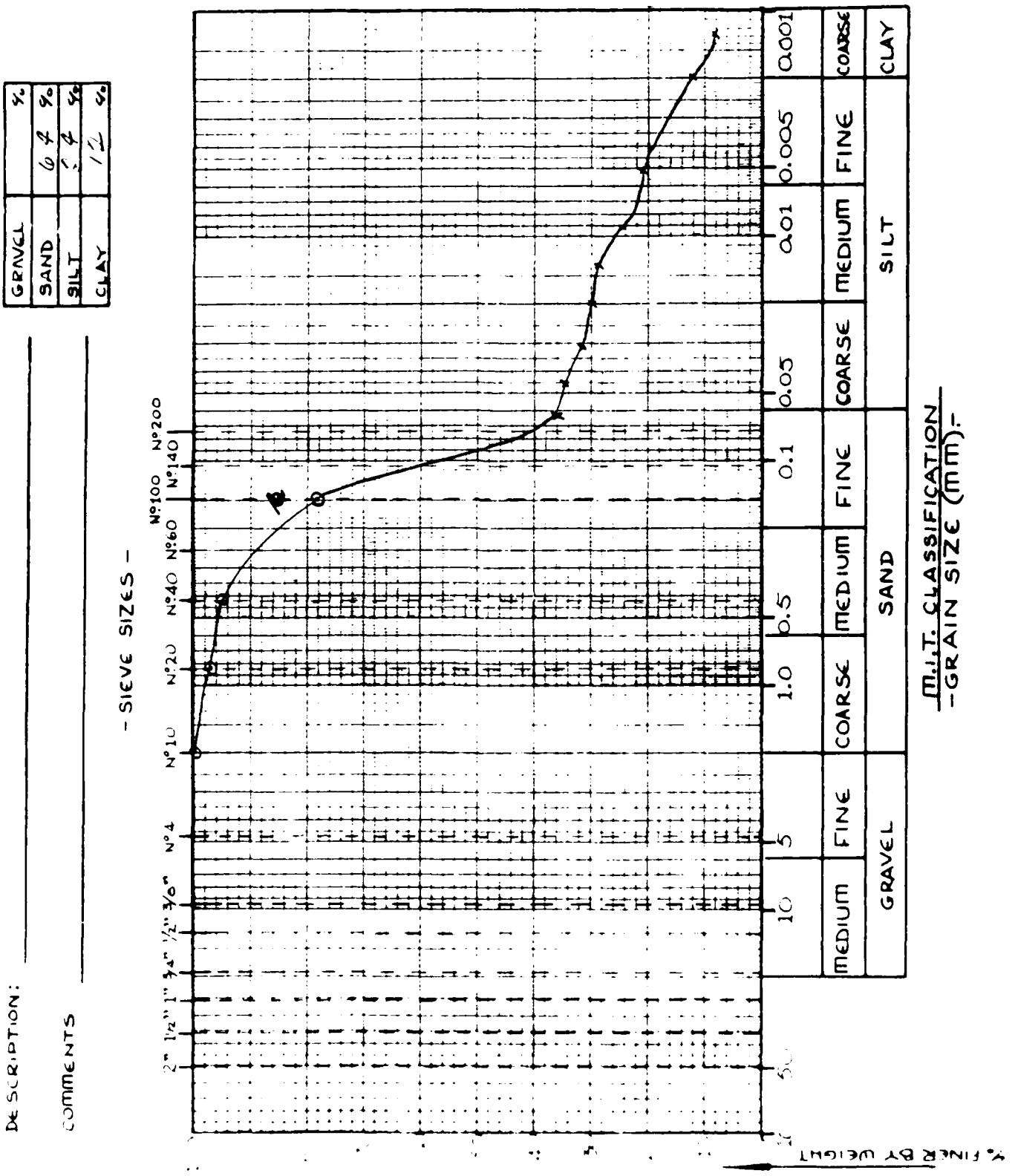
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	6.8	13.6		86.4
NO. 20	14.6	29.2		57.2
NO. 40	13.0	26.0		31.2
NO. 60				
NO. 100	7.1	14.2		17
NO. 140				
NO. 200	1.6	3.2		13.8
PAN	6.9	13.8		0
TOTAL	50	100		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB-9
DATE: 100'-103'
BY:



RB-9
100-103

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

1215

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	17	—	18.3	0.063	13.3	.0122	36.6	
		1	16	—	17.3	0.045	13.5	"	34.6	
		2	15	—	16.3	0.032	13.7	"	32.6	
		5	14	30	15.3	0.020	13.8	"	30.6	
		11	13	—	14.3	0.014	14.0	"	28.6	
	12:34	24	11	—	12.3	0.0094	14.3	"	24.6	
	1:34	84	9	—	10.3	0.0051	14.7	"	20.6	
	0730	455	7	25	6.1	0.0022	15.0	.0129	12.4	
		1440	4	27	4	0.0013	15.5	.0126	8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_S: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_S: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_S} = R$ _____.

REMARKS: _____

RB - 9

108 - 103

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

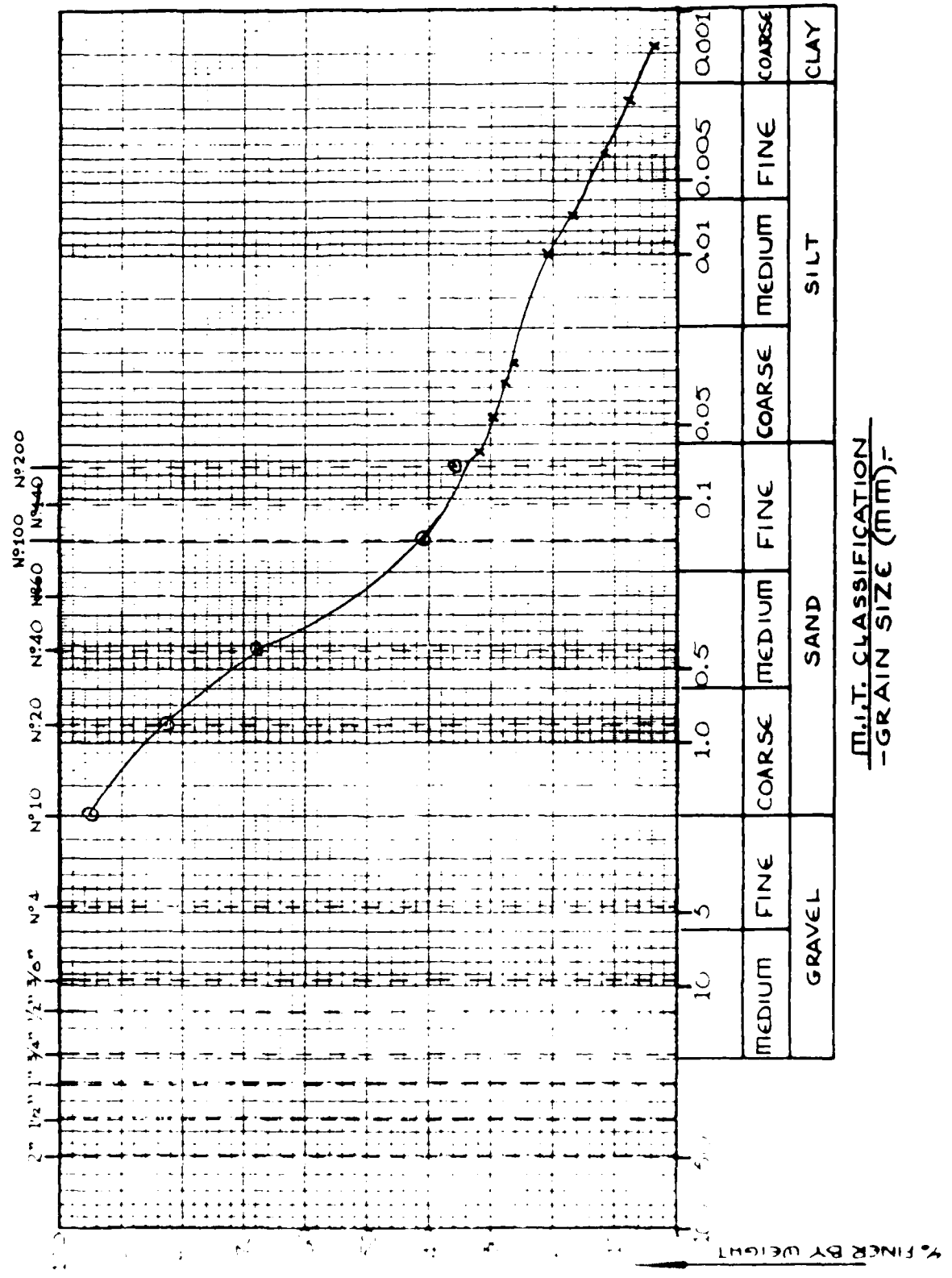
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	0.4	0.8		99.2
NO. 20	1.0	2.0		97.2
NO. 40	0.9	1.8		95.4
NO. 60				
NO. 100	5.3	10.6		84.8
NO. 140				
NO. 200	3.3	6.6		78.2
PAN	39.1	78.2		0
TOTAL	500	1000		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB-9
DATE:	161'-200'
BY:	

	%
GRAVEL	
SAND	69 %
SILT	25 %
CLAY	6 %



DESCRIPTION: _____

COMMENTS _____

KV/1

RB-9
165-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY:

HYDROMETER ANALYSIS

0 hr

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	16	"	16	0.065	13.5	.0136	32	
		1	15.5	"	15.5	0.047	13.7	"	30.4	
		2	14	"	14.0	.033	13.8	"	28.0	
		3	13.3	27	13.3	.027	14.0	"	26.6	
		19	10.5	"	10.5	.010	14.3	"	21.0	
		47	8.5	"	8.5	.0070	14.7	"	17.0	
	0400	155	6.0	"	6.0	.0039	15.2	"	12.0	
	0900	455	5.0	24.5	4.1	.0024	15.3	.0130	8.2	
	2200	1235	1.5	28	1.9	.0014	15.8	.0124	3.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB - 9

165 - 200

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

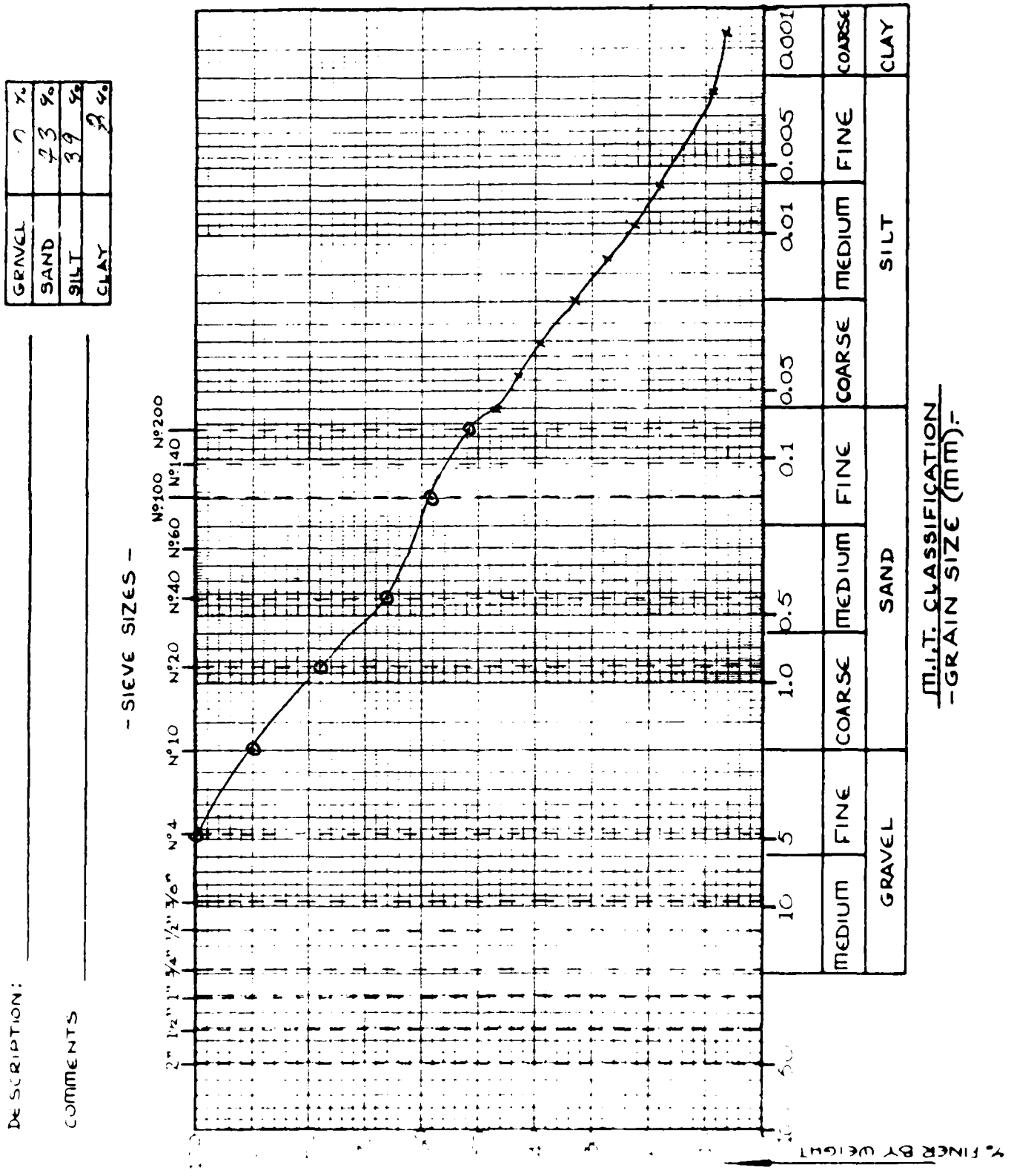
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	2.3	4.6		95.4
NO. 20	6.2	12.4		83
NO. 40	7.3	14.6		68.4
NO. 60				
NO. 100	13.7	27.4		41
NO. 140				
NO. 200	2.4	4.8		36.2
PAN	18.1	36.2		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 9
DATE:	120'-127'
BY:	

GRAVEL	0 %
SAND	23 %
SILT	39 %
CLAY	38 %



DESCRIPTION: _____

COMMENTS _____

RB-9
120-127

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

.1250 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	22	—	23.3	0.061	12.5	.0133	46.6	
		1	20	-	21.3	0.044	12.9	"	42.6	
		2	18	20	19.3	0031	13.2	"	38.6	
		5	15	—	16.3	0.020	13.7	"	32.6	
		13	12	—	13.3	0.013	14.2	"	26.6	
		24	10	30	11.3	0.0091	14.5	"	22.6	
		60	7.5	—	8.8	0.0061	14.8	"	17.6	
	0750	420	5.5	25	4.6	0.0024	15.2	.0129	9.2	
		1440	3.0	27	3.0	00013	15.6	.0127	6.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB-9

120 - 127

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

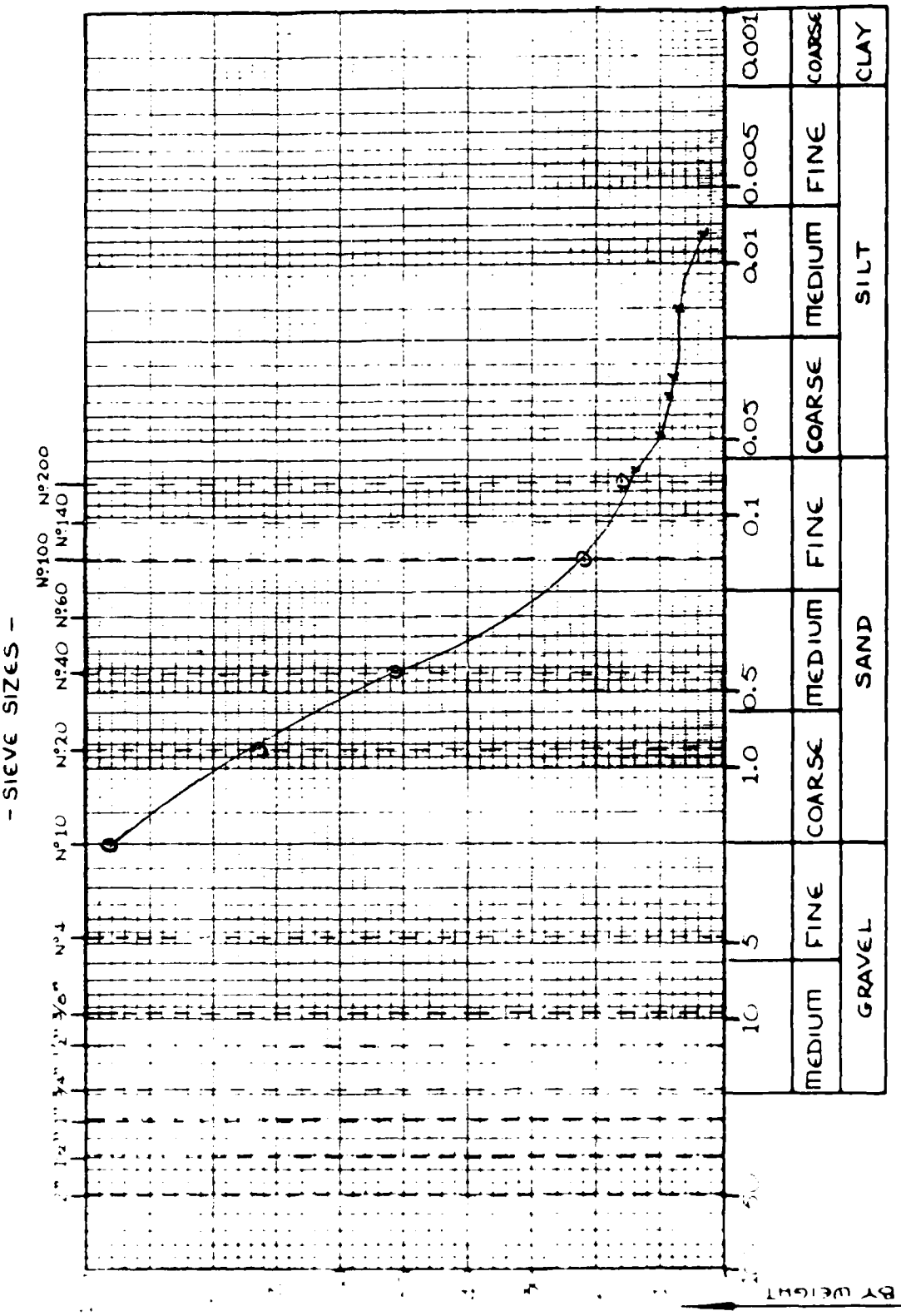
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	4.9	9.8		90.2
NO. 20	6.1	12.2		78.0
NO. 40	6.0	12.0		66.0
NO. 60				
NO. 100	4.1	8.2		57.8
NO. 140				
NO. 200	2.9	5.8		52.0
PAN	26.0	52.0		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 9
DATE: 140'-160'
BY:

GRAVEL	3 %
SAND	85 %
SILT	12 %
CLAY	%



DESCRIPTION:

COMMENTS

RB-9
140-160

FILE Nº:
SAMPLE Nº:
DATE:
BY:

HYDROMETER ANALYSIS

1140 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm or Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/4	5.5		6.8	0.067	15.4	.0132	13.6	
		1	3.5		4.8	0.048	15.5	"	9.6	
		2	3.0		4.3	0.034	15.6	"	8.6	
		3	2.5		3.8	0.028	15.7	"	7.6	
		11	2.0	30	3.3	0.015	15.8	"	6.6	
		40	0	-	1.3	0.0078	16.3	"	2.6	
		10Y	-1	29	0			.0123		
	0400	260	-1	28	0			.0124		
	0930	290	-1	27	0			.0126		
	2030	1250	-2.5	30	-1			.0122		

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB-9

140-160

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

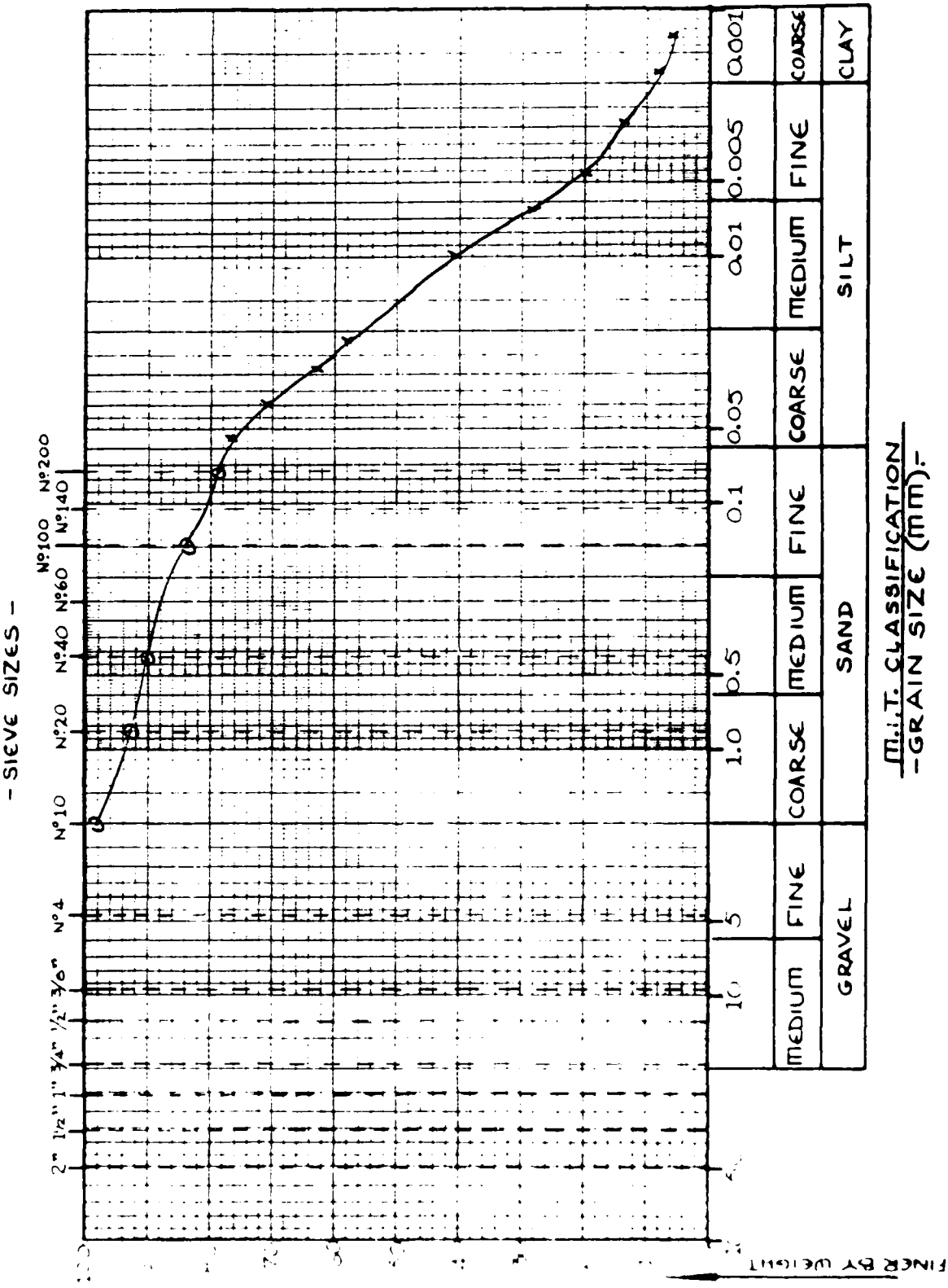
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	1.7	3.4		96.6
NO. 20	11.7	23.4		77.2
NO. 40	10.8	21.6		55.6
NO. 60				
NO. 100	14.7	29.4		22.2
NO. 140				
NO. 200	3.2	6.4		15.8
PAN	7.9	15.8		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 10-1
DATE:	75'-80'
BY:	

GRAVEL	2 %
SAND	21 %
SILT	69 %
CLAY	8 %



DESCRIPTION: _____

COMMENTS _____

EB-10-1
75-80

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1250 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIAMETER (mm)	L	K	N (%)	N_1 (%)
		1½	38	—	38.4	.0055	9.9	.0124	76.8	
		1	35	—	35.4	0.0440	10.4	"	70.8	
		¼	31	—	31.4	.0029	11.1	"	62.8	
		3	28½	28	28.9	0.024	11.4	"	57.8	
		19	20	—	20.4	.0010	12.9	"	40.8	
		56	13.5	28	13.9	0.0065	13.8	"	27.8	
		106	10	27	10.0	.00047	14.5	.0126	20.0	
	0530	280	7.5	26	7.1	0.0029	14.8	.0127	14.2	
	1400	795	4.0	27	4.0	0.0018	15.5	.0126	8.0	
		1560	3.0	27	3.0	.00013	15.6	"	6.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 10-1

"5 - 5'

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

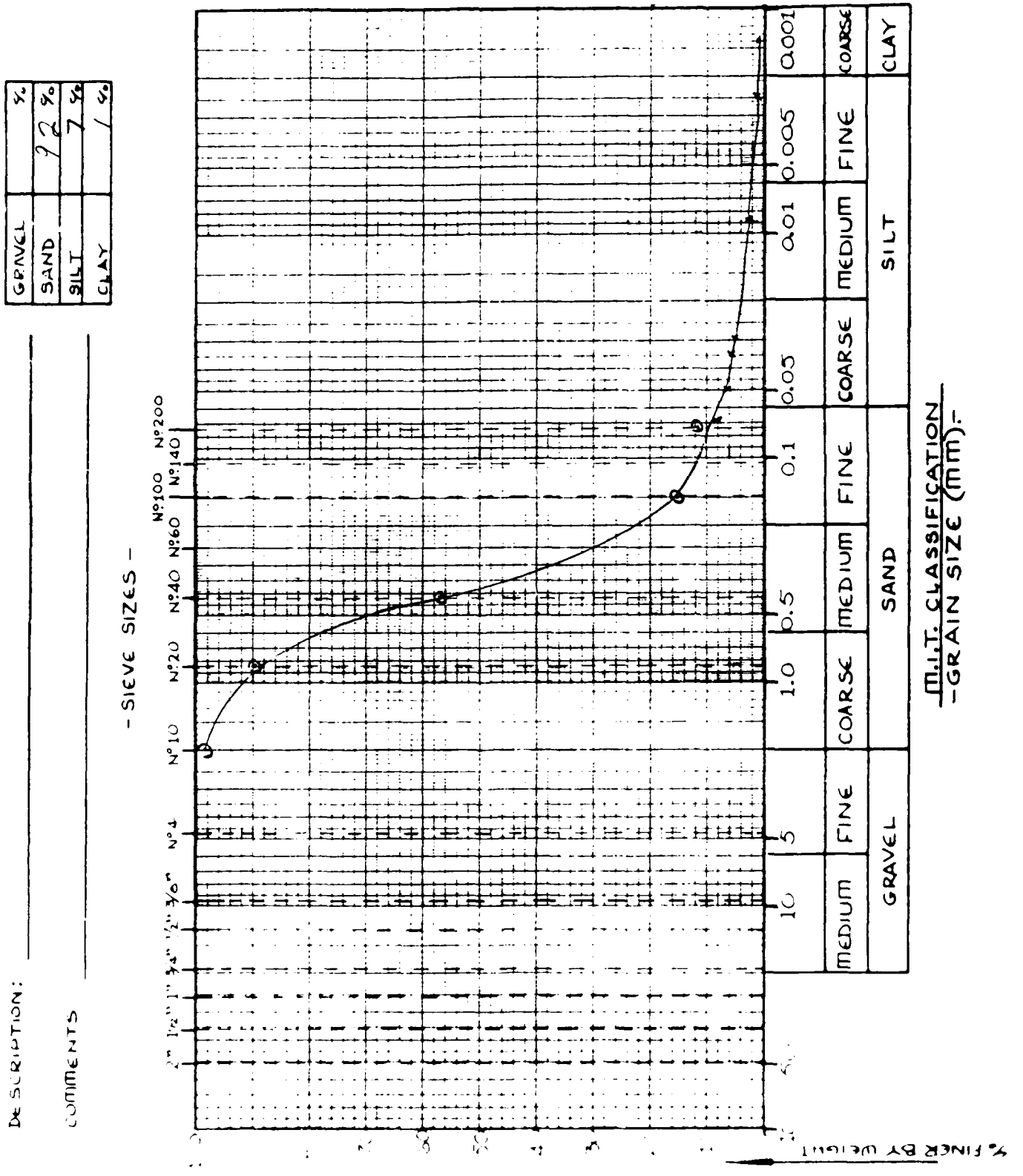
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				[illegible]
NO. 10	1.2	2.4		[illegible]
NO. 20	2.4	4.8		[illegible]
NO. 40	1.3	2.6		[illegible]
NO. 60				
NO. 100	2.9	5.8		[illegible]
NO. 140				
NO. 200	2.5	5.0		[illegible]
PAN	39.7	[illegible]		
TOTAL	50.0	[illegible]		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 10-2
~~DATE~~: 95-100
BY:



RB 10-2
95-100

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

0145 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (C_m + C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1½	4.0		4.0	0.070	15.5	.0126	8.0	
		1	3.5		3.5	0.050	15.6	"	6.4	
		½	3.0		3.0	0.035	15.6	"	6.0	
		3	2.5	27	2.5	0.029	15.6	"	5.0	
		29	1.5	"	1.5	0.0094	16.0	"	3.0	
	0900	435	1.5	24.5	0.4	0.0025	16.0	.0130	0.8	
	2200	1215	0	28	0.4	0.0014	16.3	.0124	0.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 10-2

95 - 100

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

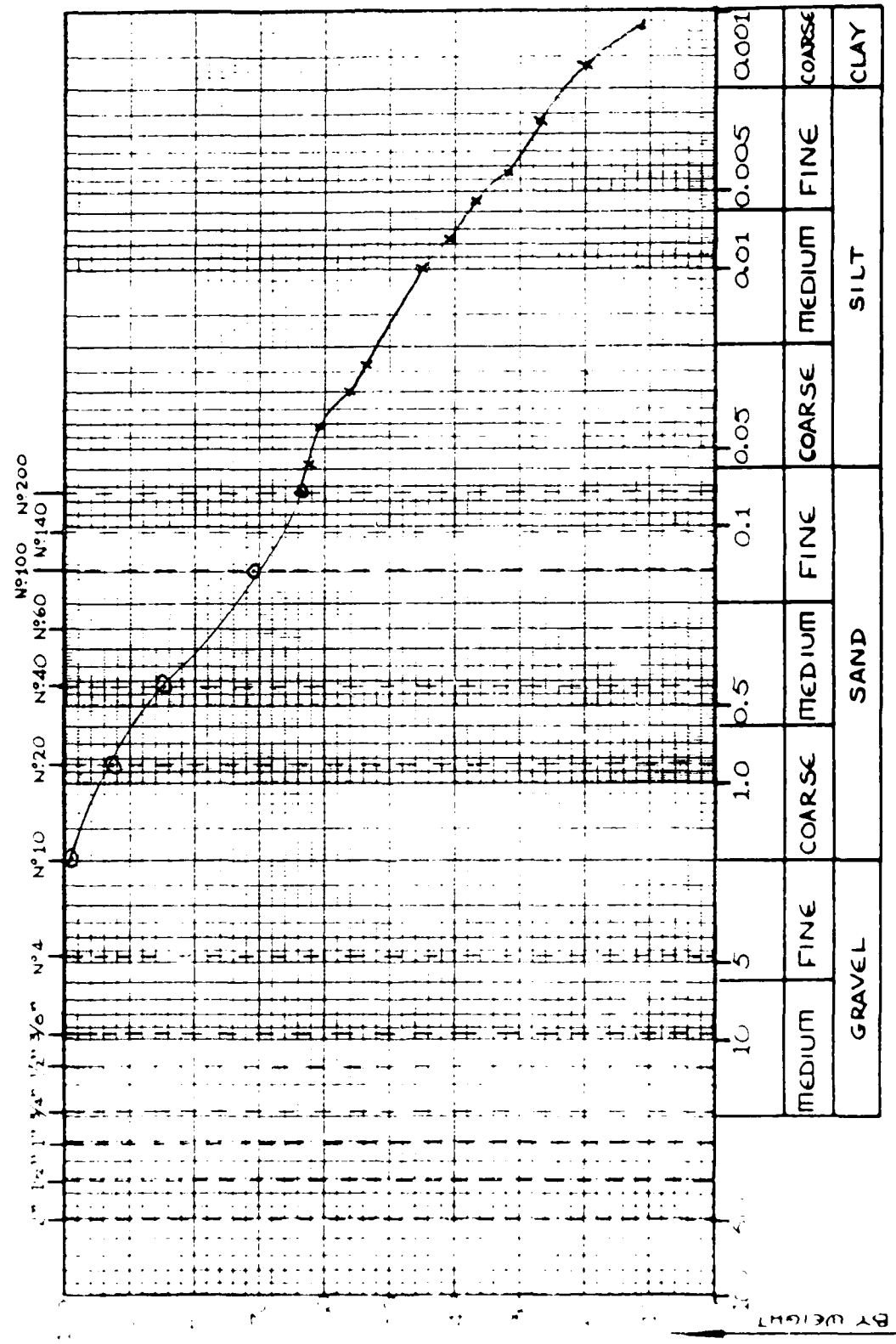
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	0.8	1.6		98
NO. 20	4.4	8.8		91
NO. 40	16.3	32.6		57
NO. 60				
NO. 100	20.9	41.8		15
NO. 140				
NO. 200	1.5	3.0		12
PAN	6.1	12.2		0
TOTAL	50	100		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 10-3
DATE:	135'-140'
BY:	

	%
GRAVEL	
SAND	37%
SILT	40%
CLAY	23%



DESCRIPTION:

COMMENTS

RB-10-3

135-140

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

.1235 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	31	″	31.4	0.058	11.1	.0124	62.8	
		1	30	″	30.4	0.041	11.2	″	60.8	
		2	27.5	″	27.9	0.030	11.5	″	55.8	
		3	26.5	28	26.9	0.024	11.7	″	53.8	
		19	22	″	22.4	0.010	12.5	″	44.8	
		33	20	″	20.4	0.0078	12.9	″	40.8	
		68	18	″	18.4	0.0055	13.2	″	36.8	
		117	16	27	16.0	0.0043	13.5	.0126	32.0	
6	0530	295	14	26	13.6	0.0027	13.8	.0127	27.2	
	1400	810	10	27	10.0	0.0017	14.5	.0126	20.0	
		26hr	5.5	27	5.5	0.0012	15.2	″	11.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_S: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_S: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_S} = R$ _____.

REMARKS: _____

RB-10-3
135-140

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

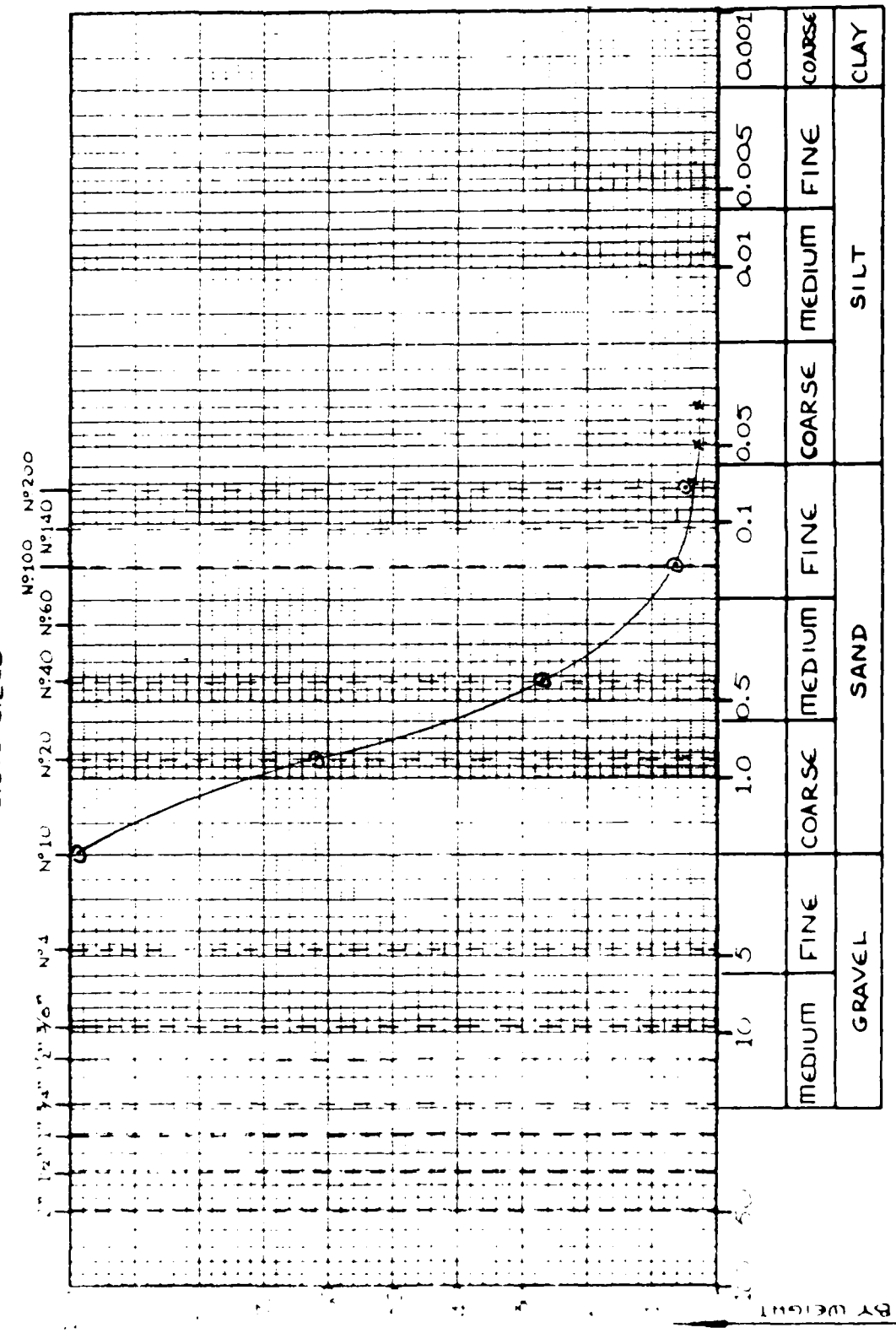
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	0.6	1.2		[illegible]
NO. 20	3.0	[illegible]		[illegible]
NO. 40	4.0	[illegible]		[illegible]
NO. 60				
NO. 100	7.0	14.0		70.0
NO. 140				
NO. 200	3.2	6.4		[illegible]
PAN	[illegible]	[illegible]		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-4
SAMPLE Nº: RB 10-4
DATE: 155'-160'
BY:

	%
GRAVEL	
SAND	97 %
SILT	3 %
CLAY	%



DESCRIPTION:

COMMENTS

RB 10-4
155-160

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1230 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/4	1.5	—	1.9	0.070	15.8	.0124	3.8	
		1	1.2	—	1.6	0.050	16.0	"	3.2	
		4	1.0	24	1.4	0.035	16.0	"	2.8	
		120	0	27	0	0.0046	16.1	.0126		
	0530	360	0.8	26	0	0.0029	16.0	.0127		

DESCRIPTION: _____

SPECIFIC GRAVITY; G_S: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_S: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_S} = R$ _____.

REMARKS: _____

RB 10 - 4

155 - 160

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

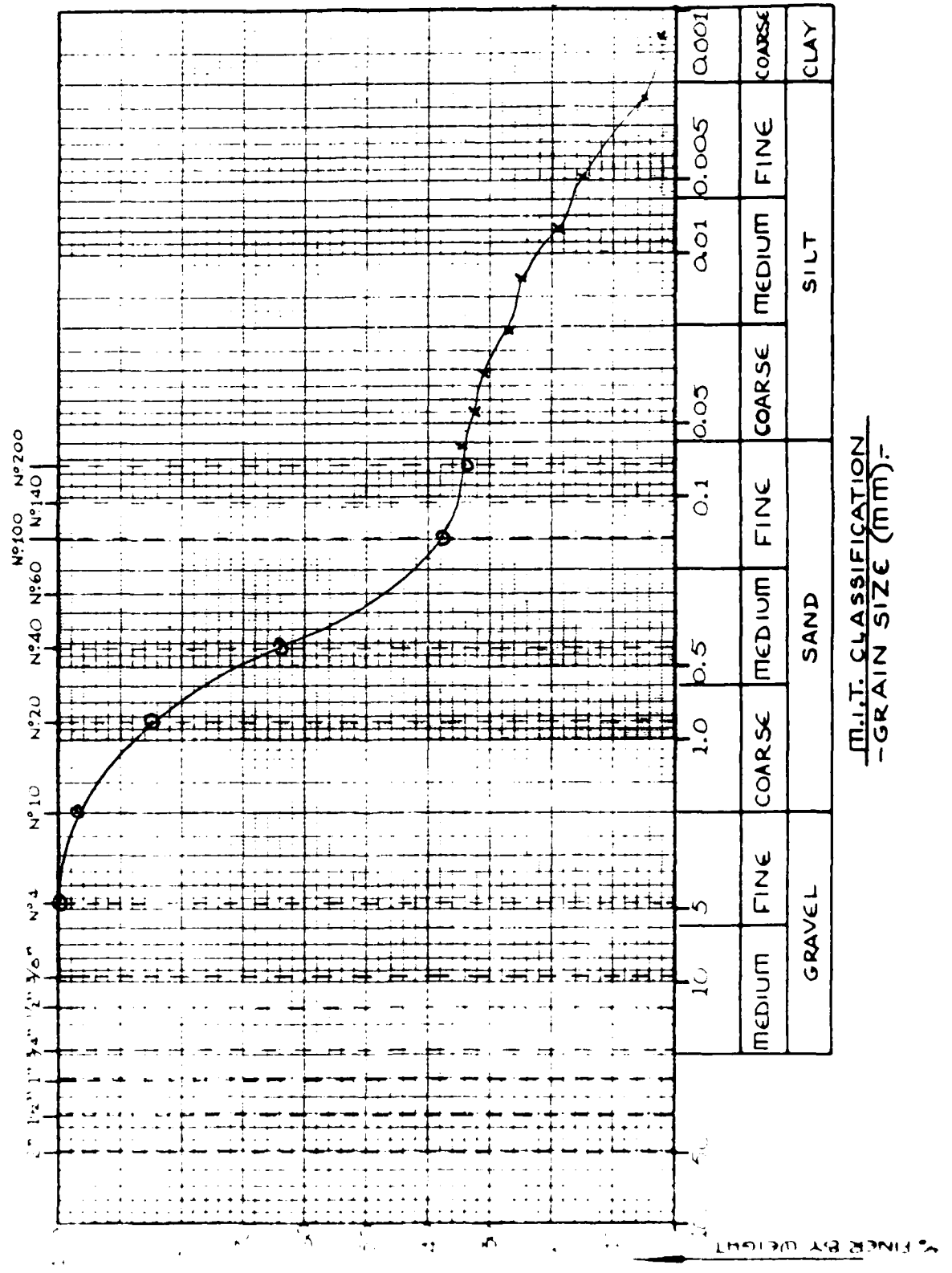
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	0.6	1.2		98.8
NO. 20	18.5	37.0		61.8
NO. 40	17.3	34.6		27.2
NO. 60				
NO. 100	10.5	21.0		6.2
NO. 140				
NO. 200	0.6	1.2		5.0
PAN	2.5	5.0		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB-11
DATE:	100'-105'
BY:	

GRAVEL	3 %
SAND	63 %
SILT	30 %
CLAY	4 %



DESCRIPTION: _____

COMMENTS _____

RB-11

100-105

FILE Nº:
SAMPLE Nº: SB-11
DATE: Aug 15 84
BY: TR

HYDROMETER ANALYSIS

11:50 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIAMETER (mm)	L	K	N (%)	N_1 (%)
		1/2	16	—	17.3	0.063	13.5	.0132	34.6	
		1	15	—	16.3	0.045	13.7	"	32.6	
		2	14	30°C	15.3	0.032	13.8	"	30.6	
		5	12	—	13.3	0.021	14.2	"	26.6	
		13	11	—	12.3	0.013	14.5	"	24.6	
	1224	34	8	30°C	9.3	0.0080	14.8	"	18.6	
	1:24	94	6	—	7.3	0.0049	15.2	"	14.6	
	0750	480	3.5	25	2.6	0.0023	15.5	.0129	5.2	
		1440	1.0	27	1.0	0.0013	16.0	.0126	2.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB - 11

100' - 105'

L H

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

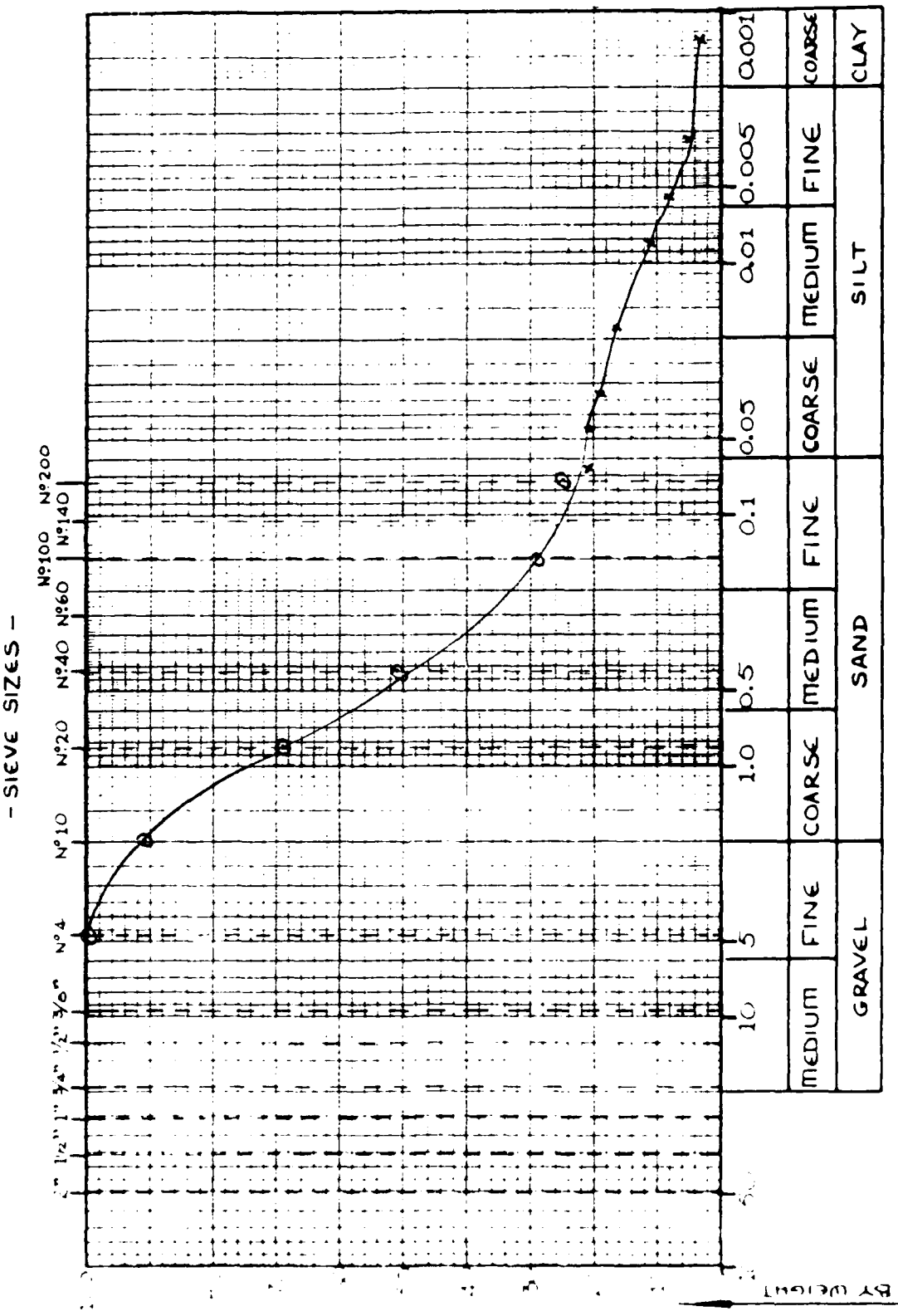
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	1.5	3.0		97
NO. 20	6.1	12.2		54.8
NO. 40	10.5	21.0		33.8
NO. 60				
NO. 100	13.0	26.0		37.8
NO. 140				
NO. 200	1.7	3.4		34.4
PAN	17.2	34.4		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 11
DATE:	130'-135'
BY:	

GRAVEL	9 %
SAND	67 %
SILT	20 %
CLAY	4 %



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

DESCRIPTION:

COMMENTS

RB-11

130 - 135

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

.1210 A.S.T.M. D422-63.

DATE 19___	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (C_m + C_d)$	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/4	9		10.3	0.066	14.7	.0132	20.6	
		1	11		10.3	0.046	14.3	"	20.6	
		4	8		9.3	0.033	14.8	"	18.6	
		3	7		8.3	0.027	15.0	"	16.6	
		7	6.5	30	7.8	0.018	15.0	"	15.6	
		24	4.0	—	5.3	0.0085	15.5	"	10.6	
		77	3.0	29	3.9	0.0055	15.6	.0133	7.8	
	0400	235	2.0	28	2.4	0.0032	15.8	.0134	4.8	
	0900	365	1.5	27	1.5	0.0031	15.8	.0136	3.0	
	2030	1225	0	30	1.3	0.0014	16.1	.0132	2.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB - 11

130 - 135

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

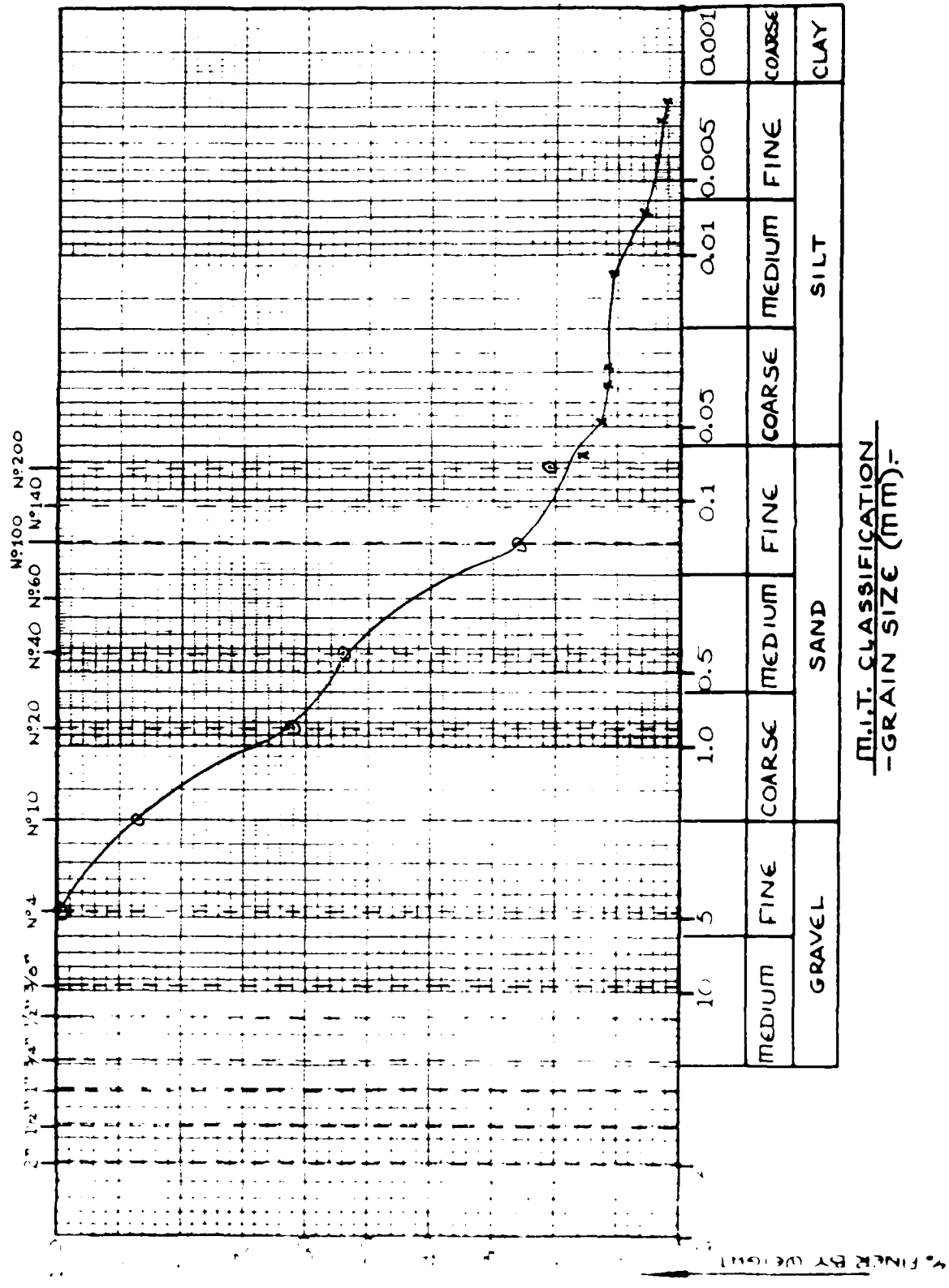
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				15.6
NO. 10	4.3	8.6		91.4
NO. 20	11.4	22.8		68.6
NO. 40	8.7	17.4		51.2
NO. 60				
NO. 100	11.0	22.0		29.2
NO. 140				
NO. 200	2.3	4.6		24.6
PAN	12.3	24.6		0
TOTAL	50.0	100		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 11
DATE:	159'-192'
BY:	

GRAVEL	13 %
SAND	71 %
SILT	10 %
CLAY	0 %



DESCRIPTION: _____

COMMENTS _____

RB-11

159-19V

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1215 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm or Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/4	7	—	7.9	0.067	15	.0123	15.8	
		1	6	—	6.9	0.048	15.2	"	13.8	
		¼	5.5	—	6.4	0.034	15.2	"	12.8	
		3	5.0	29	5.9	0.028	15.3	"	11.8	
		15	4.5	—	5.4	0.012	15.3	"	10.8	
	1310	√5	2.5	28	2.9	0.0086	15.6	.0124	5.8	
		245	2.0	26	1.6	0.0029	15.8	.0127	3.4	
	0810	465	1.0	26	0.6	0.0024	16.0	"	1.4	
		955	1.0	27	1.0	0.0016	16.0	.0126	2.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB-11
150-192
(TD)

– SIEVE ANALYSIS –

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

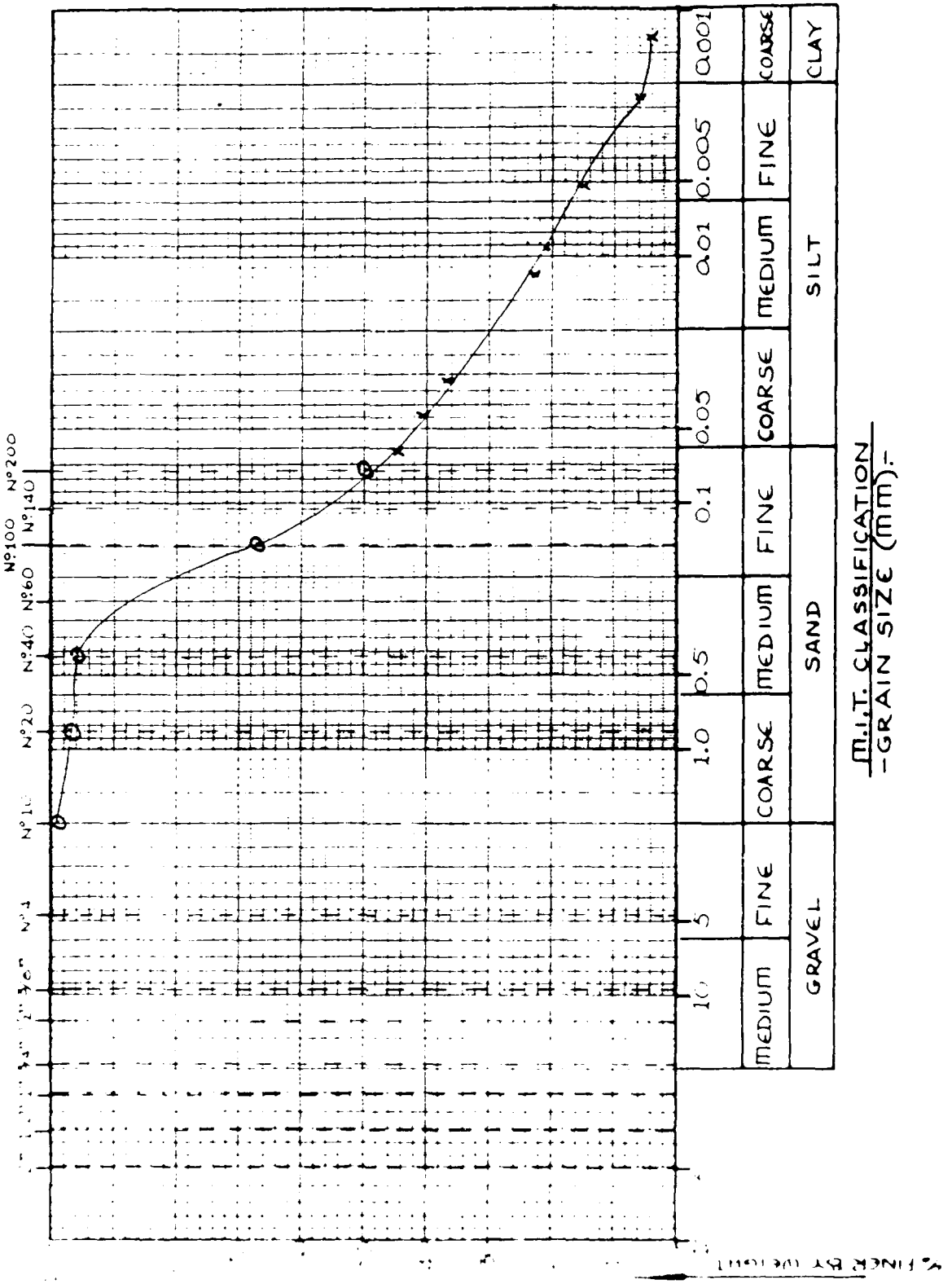
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				[illegible]
NO. 10	6.7	13.4		[illegible]
NO. 20	12.3	24.6		[illegible]
NO. 40	3.8	7.6		[illegible]
NO. 60				
NO. 100	14.0	28.0		[illegible]
NO. 140				
NO. 200	2.8	5.6		[illegible]
PAN	10.4	20.8		[illegible]
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 12
DATE: 90'-100'
BY:

	%
GRAVEL	
SAND	55 %
SILT	40 %
CLAY	5 %



DESCRIPTION:

COMMENTS

KB 15
52-100

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/4	21	—	22.3	0.061	12.7	.0122	44.6	
		1	20	—	20.3	0.044	13.0	"	40.6	
		[illegible]	[illegible]	21	13.3	0.033	14.2	"	26.6	
		[illegible]	—	"	—			"		
		15	15	"	11.3	.0093	14.5	"	22.6	
	[illegible]	25	[illegible]	"	10.3	0.0094	14.7	"	20.6	
	[illegible]	85	[illegible]	"	7.3	0.0052	15.2	"	14.6	
		470	[illegible]	23	3.1	0.0023	15.5	.0129	6.2	
		1440	[illegible]	23	2	0.0013	15.8	.0126	4	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_S: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_S: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_S} = R$ _____.

REMARKS: _____

R -12

90 - 100

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

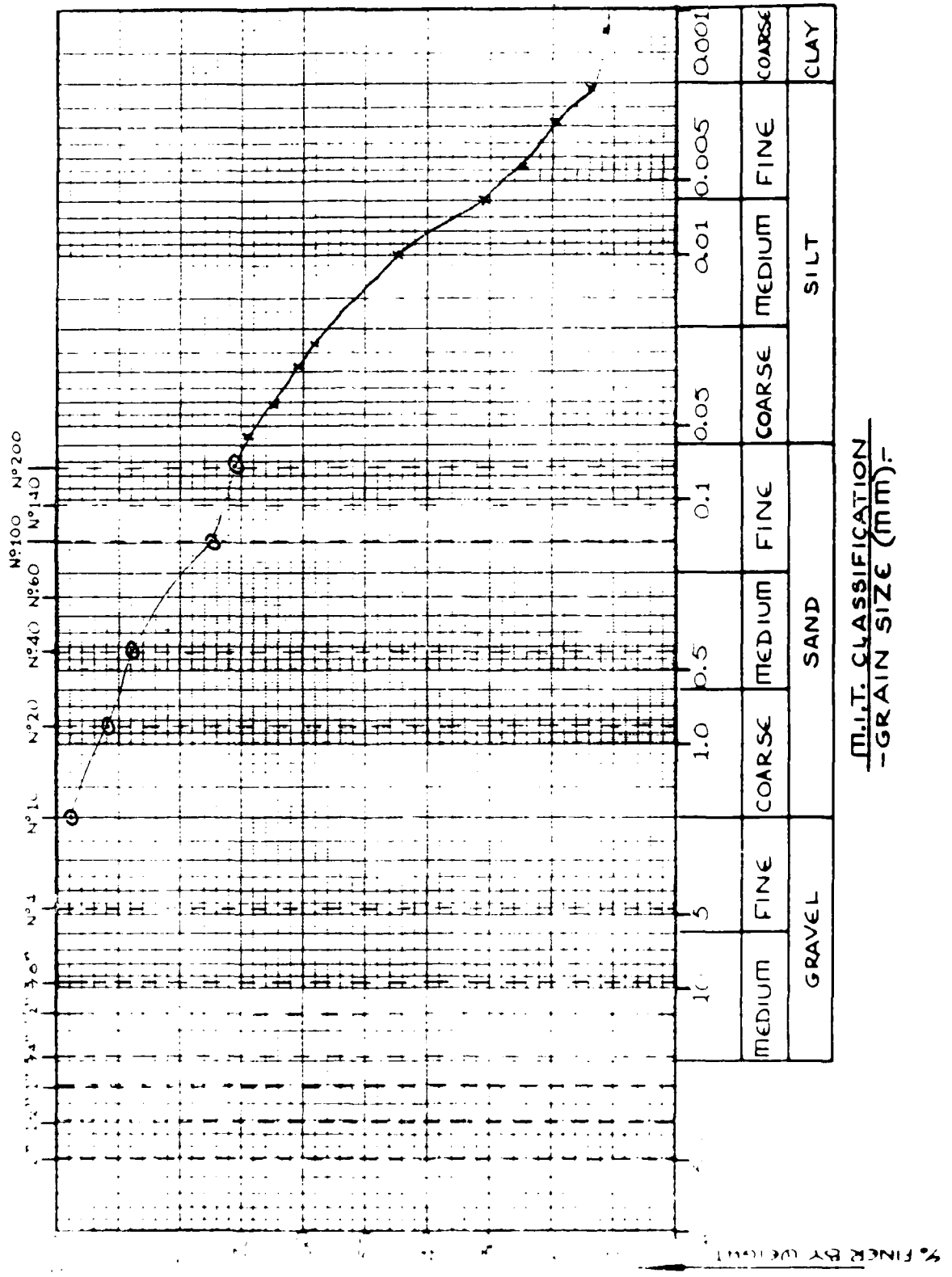
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	0.4	0.8		99.2
NO. 20	1.2	2.4		96.8
NO. 40	0.6	1.2		95.6
NO. 60				
NO. 100	14.4	28.8		66.8
NO. 140				
NO. 200	8.6	17.2		49.6
PAN	24.8	49.6		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 2
DATE: 140-145'
BY:

GRAVEL	2 %
SAND	29 %
SILT	56 %
CLAY	13 %



DESCRIPTION:

COMMENTS

RB-12
140-145

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1240 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/4	34	–	34.4	0.057	10.5	.0124	68.8	
		1	32	–	32.4	0.041	10.9	"	64.8	
		2	30	–	30.4	0.029	11.2	"	60.8	
		3	28.5	28	28.9	0.024	11.4	"	57.8	
		19	22	–	22.4	0.010	12.5	"	44.8	
		57	15	28	15.4	0.0060	13.7	"	30.8	
		113	12.5	27	12.5	0.0044	14.0	.0126	25.0	
	0530	290	10.0	26	9.6	0.0028	14.5	.0127	19.2	
	1400	805	7.0	27	7.0	0.0021	15.0	.0126	14	
		26 hrs	6.0	27	6.0	0.0012	15.2	"	12	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_S: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_S: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_S} = R$ _____.

REMARKS: _____

RB - 12
140 - 145

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

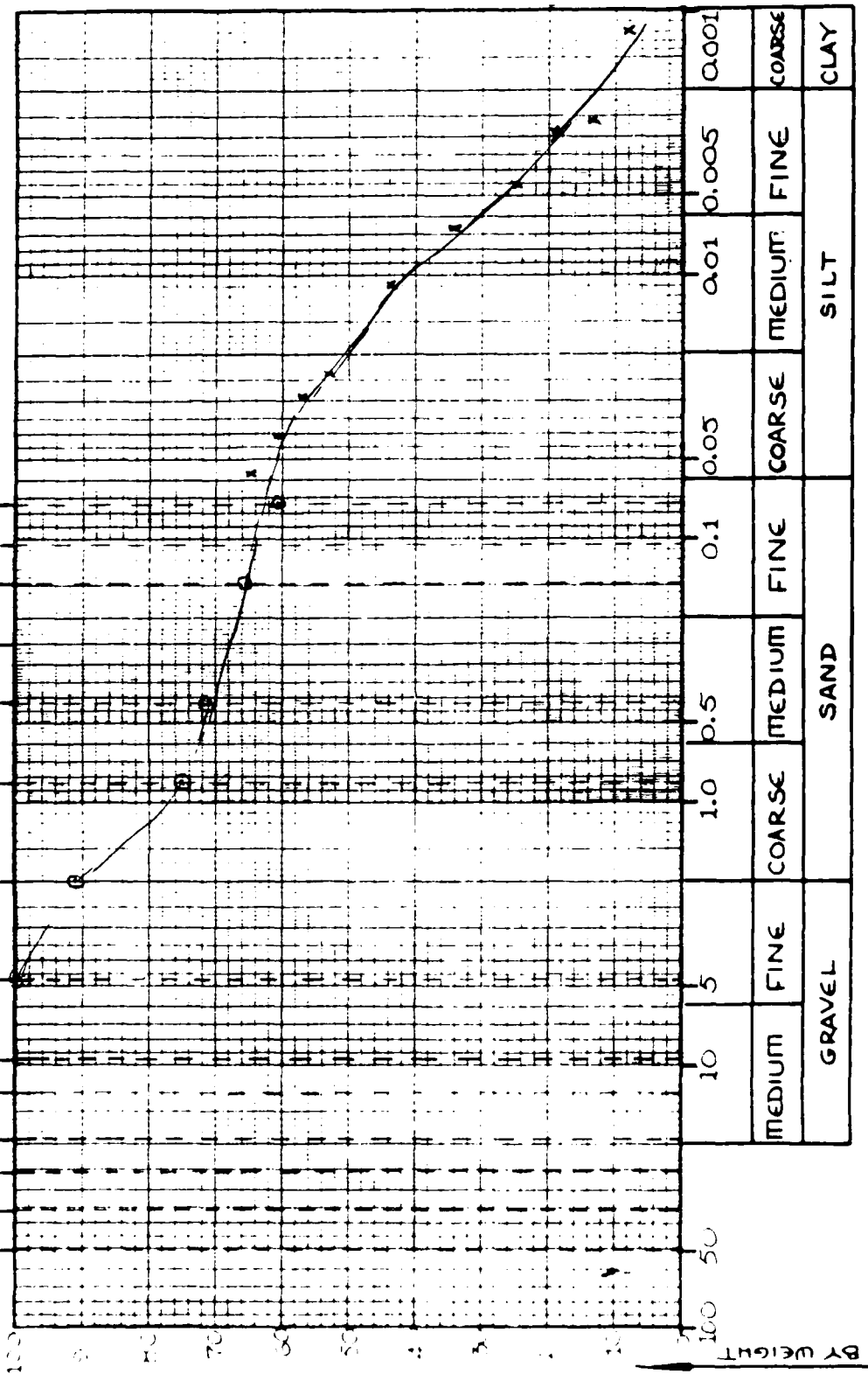
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	1.1	2.2		[illegible]
NO. 20	3.0	6.0		[illegible]
NO. 40	2.0	4.0		[illegible]
NO. 60				
NO. 100	6.2	12.4		75.4
NO. 140				
NO. 200	2.3	4.6		73.?
PAN	35.4	7.?		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB-12
DATE:	170'-180'
BY:	

GRAVEL	%
SAND	%
SILT	%
CLAY	%



DESCRIPTION: _____

COMMENTS _____

RB-1✓

170-180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

.1-.5

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/4	32		32.4	.057	10.9	.0124	64.8	
		1	30		30.4	.041	11.2	"	60.8	
		2	28		28.4	.029	11.5	"	56.8	
		3	26	28	26.4	.024	11.9	"	52.8	
		15	21.8	"	22.2	.011	12.5	"	44.4	
		45	16.5	"	16.9	.0067	13.4	"	33.8	
		103	12.5	27	12.5	.0046	13.9	.0126	25.0	
	0530	275	10.0	26	9.6	.0029	14.5	.0127	19.2	
	1400	790	6.5	27	6.5	.0017	15.1	.0126	13.0	
		26 hr.	4.0	27	4.0	.0012	15.5	.0126	8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB-12
170'-180'

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	[illegible]	8.6		91.4
NO. 20	[illegible]	16.0		75.4
NO. 40	[illegible]	3.6		71.8
NO. 60				
NO. 100	[illegible]	6.4		65.4
NO. 140				
NO. 200	[illegible]	5.4		60.0
PAN	30.0	60.0		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 12
DATE:	180'-190'
BY:	

GRAVEL	4 %
SAND	38 %
SILT	43 %
CLAY	15 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -

3" 1½" 1" ¾" ½" ⅜" Nº4 Nº10 Nº20 Nº40 Nº60 Nº100 Nº140 Nº200

10	MEDIUM	GRAVEL	
5	FINE		
1.0	COARSE	SAND	
0.5	MEDIUM		
0.1	FINE		
0.05	COARSE	SILT	
0.01	MEDIUM		
0.005	FINE		
0.001	COARSE	CLAY	

M.I.T. CLASSIFICATION
-GRAIN SIZE (mm)-

% FINER BY WEIGHT

RB -12
180-190

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

.1240 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		½	27	—	28.3	0.059	11.7	.0122	56.6	
		1	25	—	26.3	0.042	12.0	"	52.6	
		2	23	30	24.3	0.030	12.4	"	48.6	
		√	21	—	22.3	0.019	12.7	"	44.6	
		13	18	—	19.3	0.012	13.2	"	38.6	
	1:0	26	16	30	17.3	0.0088	13.5	"	34.6	
	2:00	86	12	30	13.3	0.0050	14.2	"	26.6	
	0750	430	9	25	8.1	0.0024	14.7	.0124	16.2	
		1440	6	27	6	0.0013	15.2	.0127	12.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB - 12

150 - 190

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

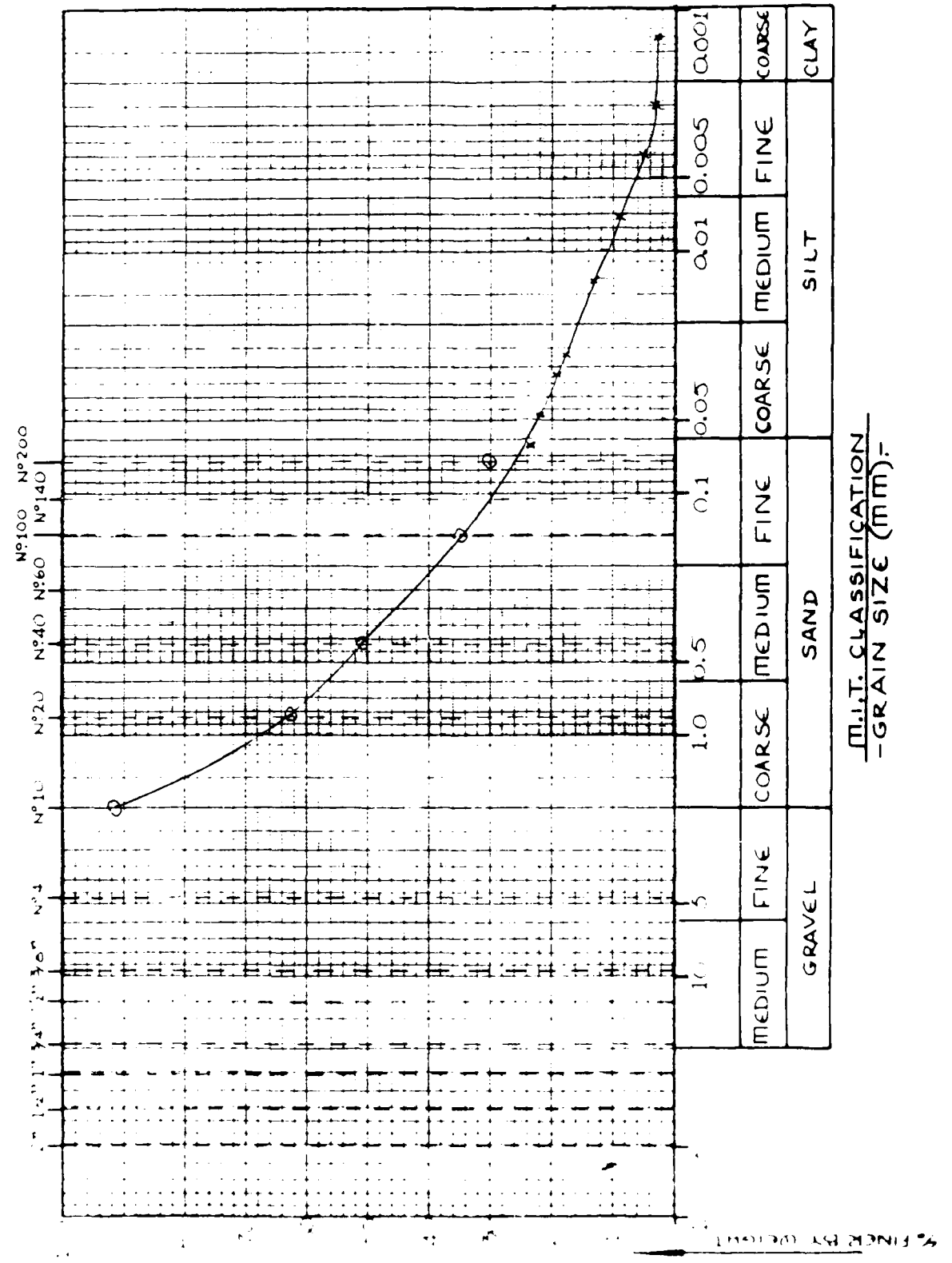
- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				[illegible]
NO. 10	2.9	4 [illegible]		[illegible]
NO. 20	1.7	3.[illegible]		[illegible]
NO. 40	2.9	[illegible]		[illegible]
NO. 60				
NO. 100	7.7	15 [illegible]		72 [illegible]
NO. 140				
NO. 200	4.6	9.2		[illegible]
PAN	31.5	63.2		
TOTAL	50.0	100		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 13-1
DATE: 95-100
BY:



13-1

95-100

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	11		11.9	0.066	14.3	.0123	23.8	
		1	10		10.9	0.047	14.5	"	21.8	
		2	9		9.9	0.033	14.7	"	19.8	
		3	8		8.9	0.027	14.8	"	17.8	
		14	6.0	29	6.9	0.013	15.2	"	13.8	
		46	3.5	-	4.4	0.0071	15.5	"	8.8	
		155	1.5	29	2.4	0.0040	16.0	"	4.8	
		395	1.5	29	1.5	0.0025	16.0	.0126	3.0	
		1356	1	28	1.4	0.0013	16.0	.0124	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____ _____.

DISPERSING AGENT CORRECTION, C_d: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

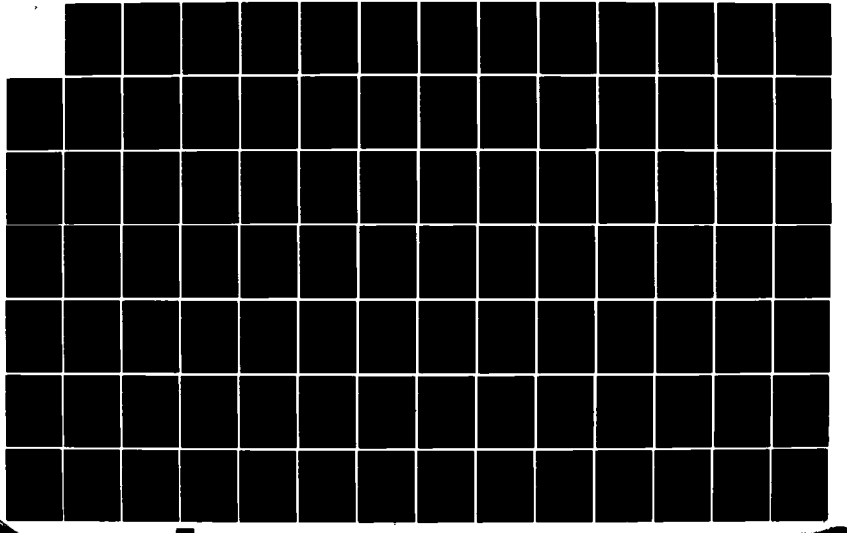
$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

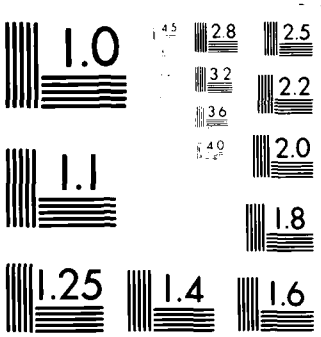
$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

AD-A156 283 INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1) 05/10
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

UNCLASSIFIED F/G 13/2 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

13-1

95-100

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

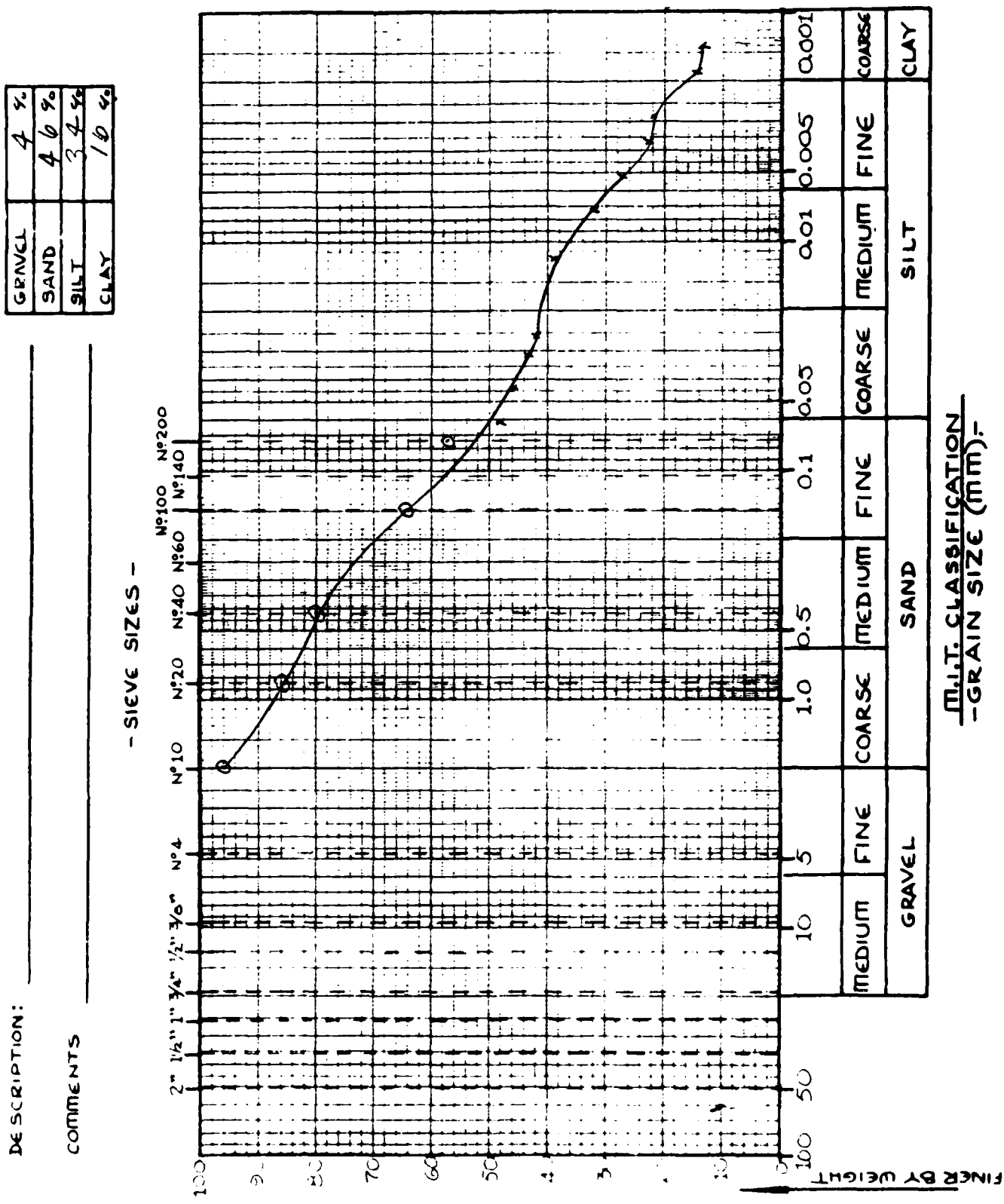
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	3.9	8.5		91.5
NO. 20	13.3	29.0		62.5
NO. 40	5.2	11.3		51.2
NO. 60				
NO. 100	7.4	16.2		35.0
NO. 140				
NO. 200	2.2	4.8		30.2
PAN	13.8	30.2		0
TOTAL	45.8	100.0		

REMARKS Whole Sample Total wt = 45.8 gm

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 13-2
DATE: 115-16
BY:



DESCRIPTION:

COMMENTS

10

13-2

15'-120'

FILE Nº:
SAMPLE Nº:
DATE:
BY:

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1½	24		24	0.062	12.v	.0126	48	
		1	23		23	0.044	12.4	"	46	
		2	22		22	0.032	12.5	"	44	
		3	21		21	0.026	12.7	"	42	
		14	19.5	27	19.5	0.012	12.9	"	39.0	
		40	16	—	16.0	0.0073	13.5	"	32	
		80	13.5	27	13.5	0.0052	13.9	"	27.0	
		160	12.0	26	11.6	0.0036	14.v	.0127	23.2	
		~~300~~ 280	11.0	27	11.0	0.0028	14.3	.0126	22.0	
		780	9.0	24	7.7	0.0018	14.7	.0130	15.4	
		1140	7.0	27	7.0	0.0014	15.0	.0126	14.0	
		1360	6.5	26	6.1	0.0013	15.v	.0127	12.1	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

13-2
115-120
96.30M

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

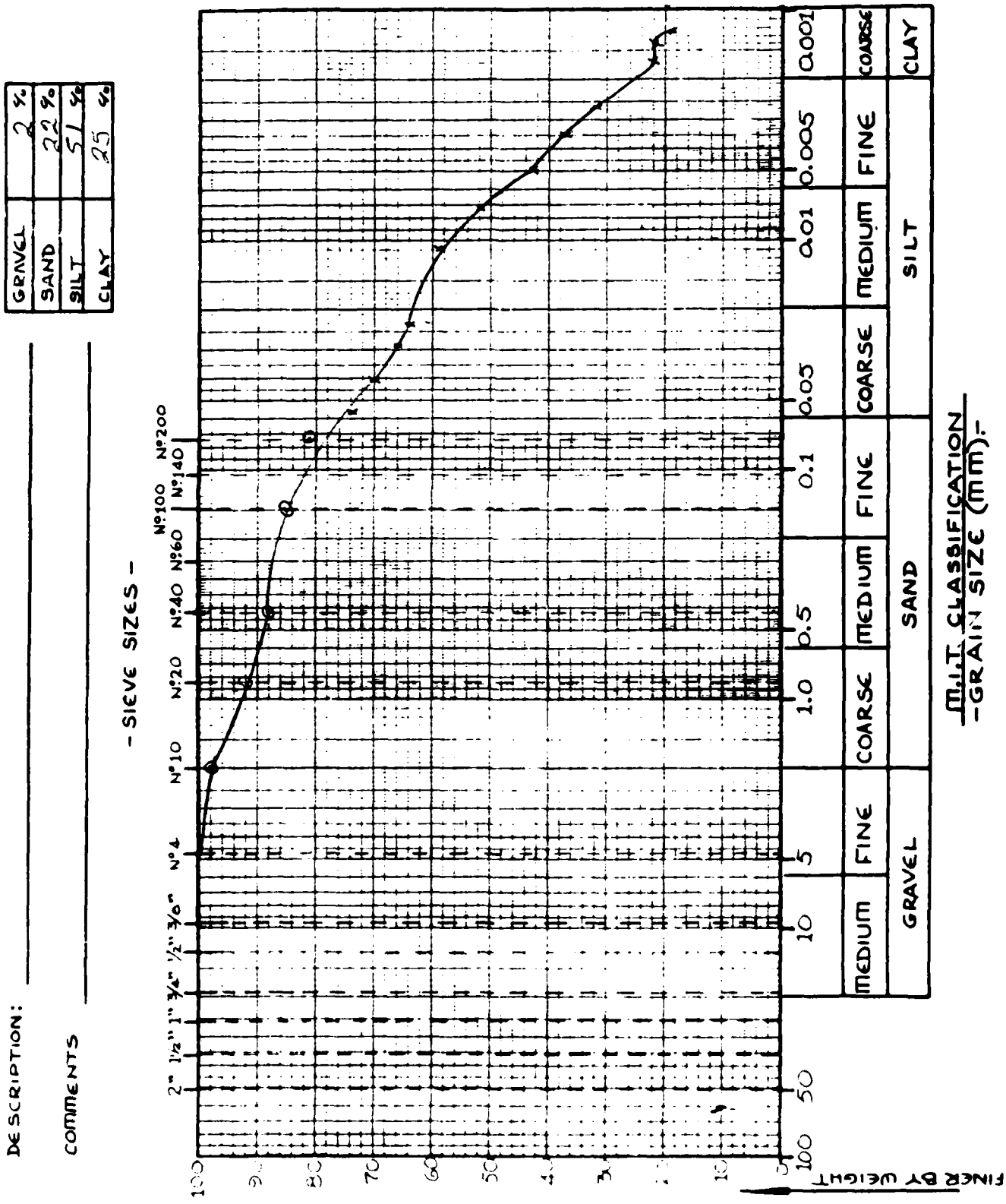
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	1.8	~~2.1~~ 3.9		~~97.9~~ 96.1
NO. 20	4.7	10.1		~~87.8~~ 86
NO. 40	2.7	5.8		~~82.0~~ 80.2
NO. 60				
NO. 100	7.4	16.0		~~66.0~~ 64.2
NO. 140				
NO. 200	3.2	6.9		~~57.2~~ 57.2
PAN	26.5	59.2		0
TOTAL	46.3	100.0		

REMARKS whole Sample

GRAIN SIZE CHART

FILE Nº:	
SAMPLE Nº:	RB13-3
DATE:	135'-145'
BY:	

GRAVEL	2 %
SAND	22 %
SILT	51 %
CLAY	25 %



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

DESCRIPTION: _____

COMMENTS _____

13-3

135'-145'

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	37		37	0.057	10.1	.0126	74	
		1	35		35	0.041	10.4	"	70	
		2	33		33	0.029	10.7	"	66	
		3	32		32	0.024	10.9	"	64	
		14	29.5	27	29.5	0.011	11.2	"	59	
		36	26	—	26	0.0072	11.9	"	52	
		80	22.5	27	22.5	0.0050	12.4	"	43	
		175	19	26	18.6	0.0035	13.0	.0127	37.2	
		300	16	27	16	0.0027	13.5	.0126	32	
		775	13.5	24	12.2	0.0017	13.9	.0130	24.4	
		1135	11.0	27	11.0	0.0014	14.3	.0126	22.0	
		1355	10.0	26	9.6	0.0013	14.5	.0127	19.2	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____ _____.

DISPERSING AGENT CORRECTION, C_d: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

13-3
135'-145'

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

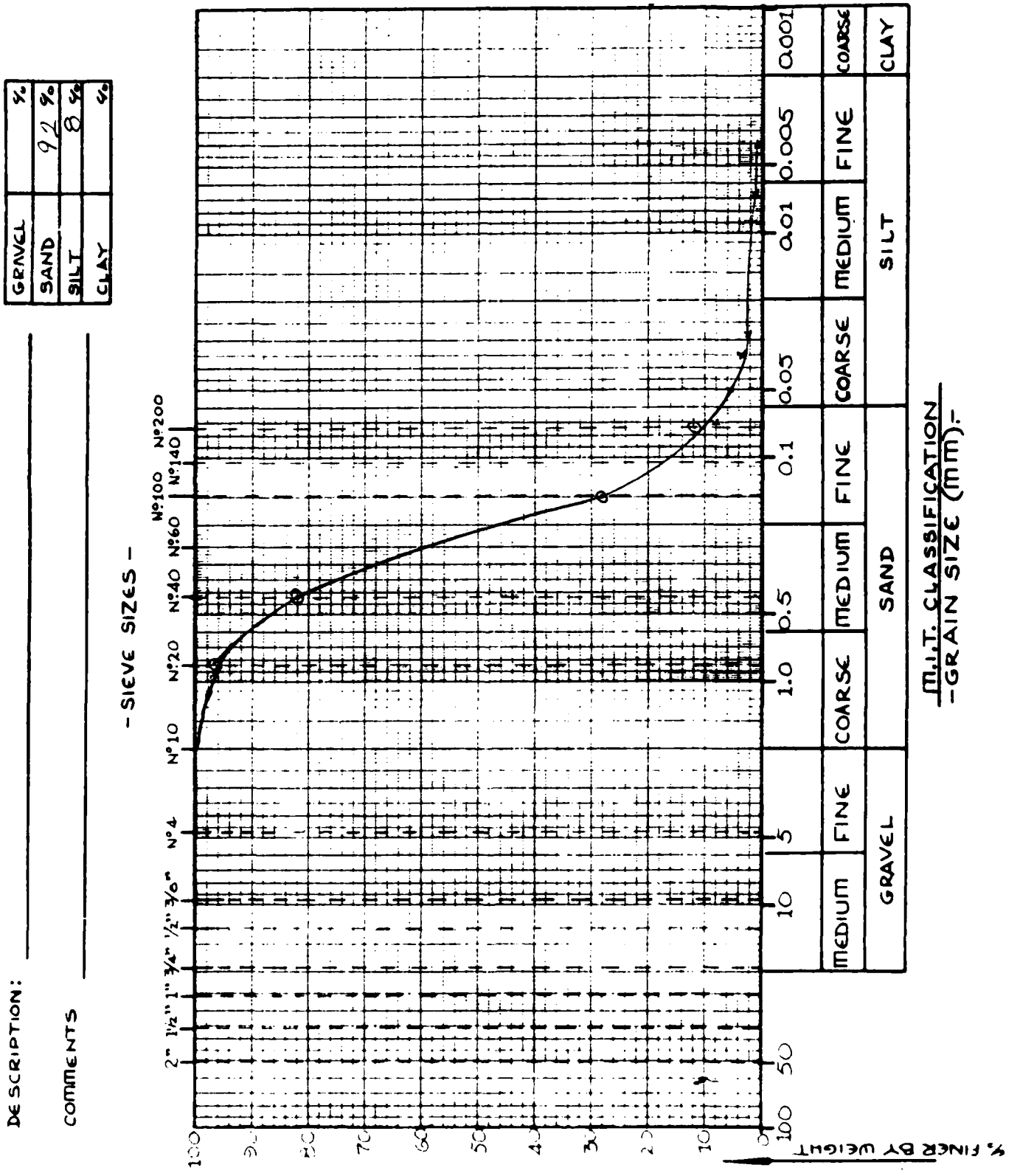
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	1.2			
NO. 20	3.0			
NO. 40	2.0			
NO. 60				
NO. 100	1.5			
NO. 140				
NO. 200	2.0			
PAN				
TOTAL	50.0			

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 13-4
DATE: 1/15-20
BY:

	%
GRAVEL	
SAND	92 %
SILT	8 %
CLAY	%



DESCRIPTION:

COMMENTS

13-4

145-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = Rw + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	4		4.0	0.071	15.5	.0126	8.0	
		1	3		3.0	0.050	15.6	"	6.0	
		2	2		2.0	0.035	15.8	"	4.0	
		3	1.7	27	1.7	0.029	15.9	"	3.4	
		57	1.0	26	0.6	0.0067	16.0	.0129	1.2	
		145	0.7	26	0.3	0.0042	16.1	"	0.6	
		745	1.5	24	0.2	0.0019	15.9	.0130	0.4	
		1105	0	27	0	0.0015	16.3	.0126	0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

13-4

195-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

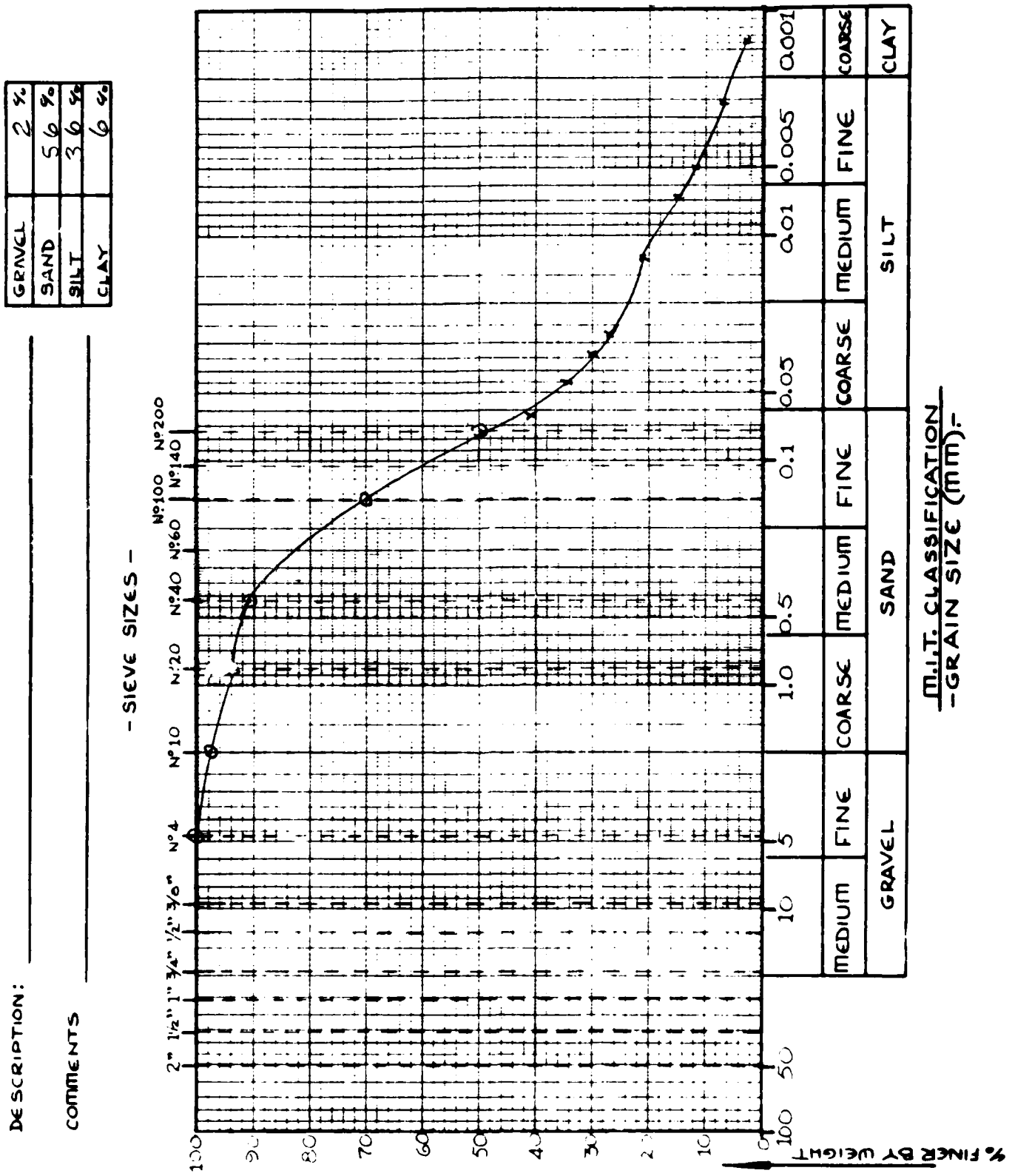
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0	0		100.0
NO. 20	1.3	2.6		97.4
NO. 40	7.5	15.0		82.4
NO. 60				
NO. 100	27.2	54.4		28.0
NO. 140				
NO. 200	8.2	16.4		11.6
PAN	5.8	11.6		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 14-1
DATE: 80-85
BY:



RB14-1
80-85

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY:

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = Rh + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	20		20.7	0.063	12.9	.01275	40.6	
		1	17		17.3	0.046	13.3	"	34.6	
		2	14.5		14.8	0.033	13.7	"	29.6	
		3	13.0	27.6	13.3	0.027	14.0	"	26.6	
		14	10	"	10.3	0.013	14.5	"	20.6	
		50	7	"	7.3	0.0068	15.0	"	14.6	
		90	5.5	28	5.9	0.0051	15.2	.0124	11.8	
		325	4.0	26	3.6	0.0026	15.5	.0127	7.2	
		1320	1.0	28	1.4	0.0014	16.0	.0124	2.8	

DESCRIPTION: _____
SPECIFIC GRAVITY; G_S: ASSUMED = _____; CALCULATED = _____
MENISCUS CORRECTION, Cm: _____.
DISPERSING AGENT CORRECTION, Cd: _____.
DRY WEIGHT OF SOIL, W_S: _____.
% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\%\ < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_S} = R$ _____.

REMARKS: _____

– SIEVE ANALYSIS –

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10		1.8		98.2
NO. 20		3.9		94.3
NO. 40		3.7		90.6
NO. 60				
NO. 100	7.5	20.8		69.8
NO. 140				
NO. 200		20.1		49.7
PAN	22.7	49.7		
TOTAL	45.7	100.0		

REMARKS _____

GRAIN SIZE CHART

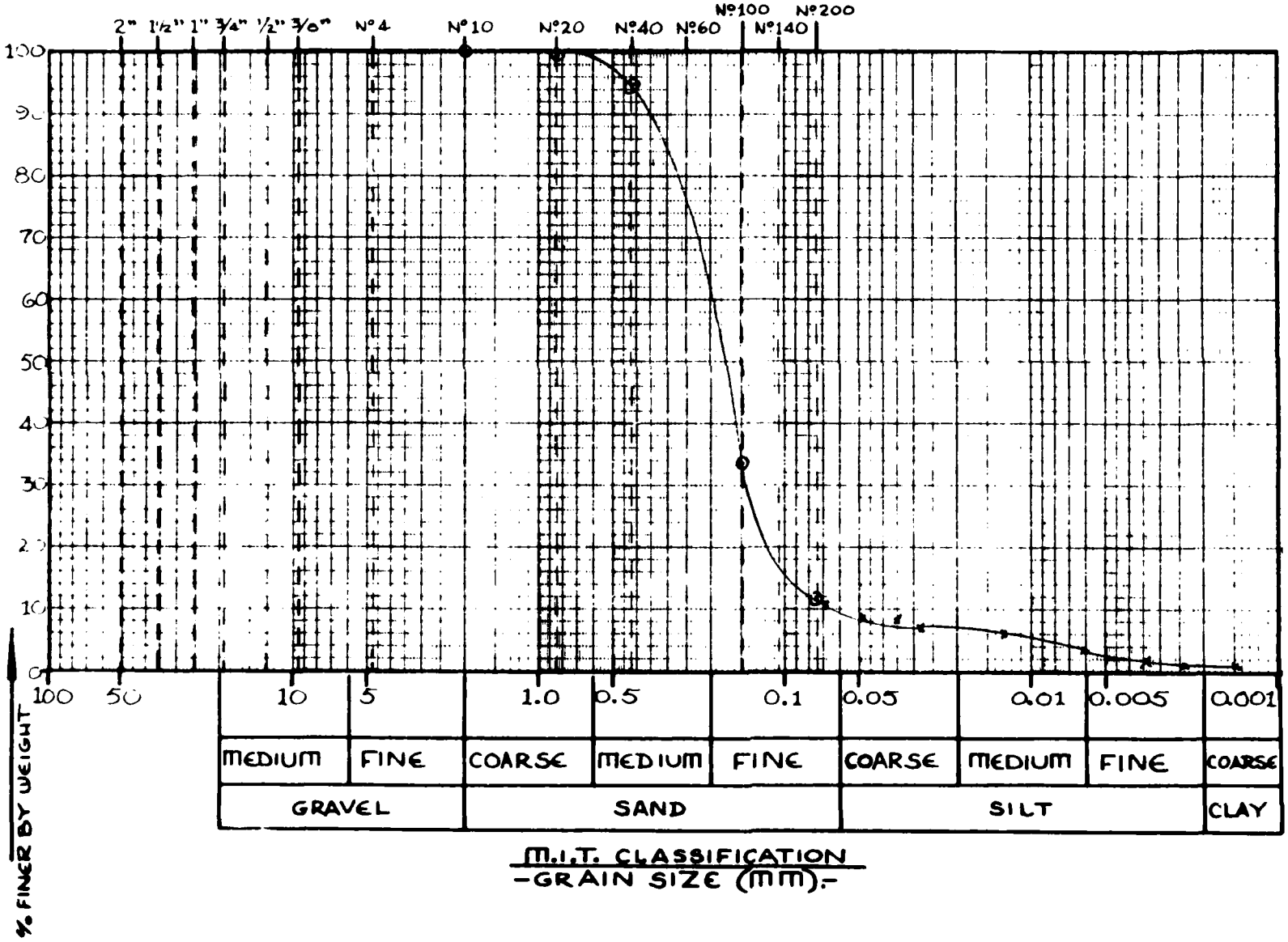
DESCRIPTION: _____

COMMENTS _____

GRAVEL	%
SAND	91 %
SILT	8 %
CLAY	1 %

FILE Nº:
SAMPLE Nº: RB 14-2
DATE:
BY: 120-140

- SIEVE SIZES -



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm)-

RB14-2

120-140

FILE Nº:	
SAMPLE Nº:	
DATE:	
BY:	

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1¼	5		5.4	0.069	15.3	.0124	10.8	
		1	4		4.4	0.049	15.5	"	8.8	
		2	3.5		3.9	0.035	15.6	"	7.8	
		3	3	28	3.4	0.028	15.6	"	6.8	
		14	2.7	—	3.1	0.013	15.6	"	6.2	
		65	1.5	28	1.9	0.0061	15.9	"	3.8	
		225	1.2	26.5	1.0	0.0034	16.0	.0127	2.0	
		465	1.5	25	0.6	0.0024	15.9	.0129	1.2	
		1125	0.5	27	0.5	0.0015	16.0	.0126	1.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

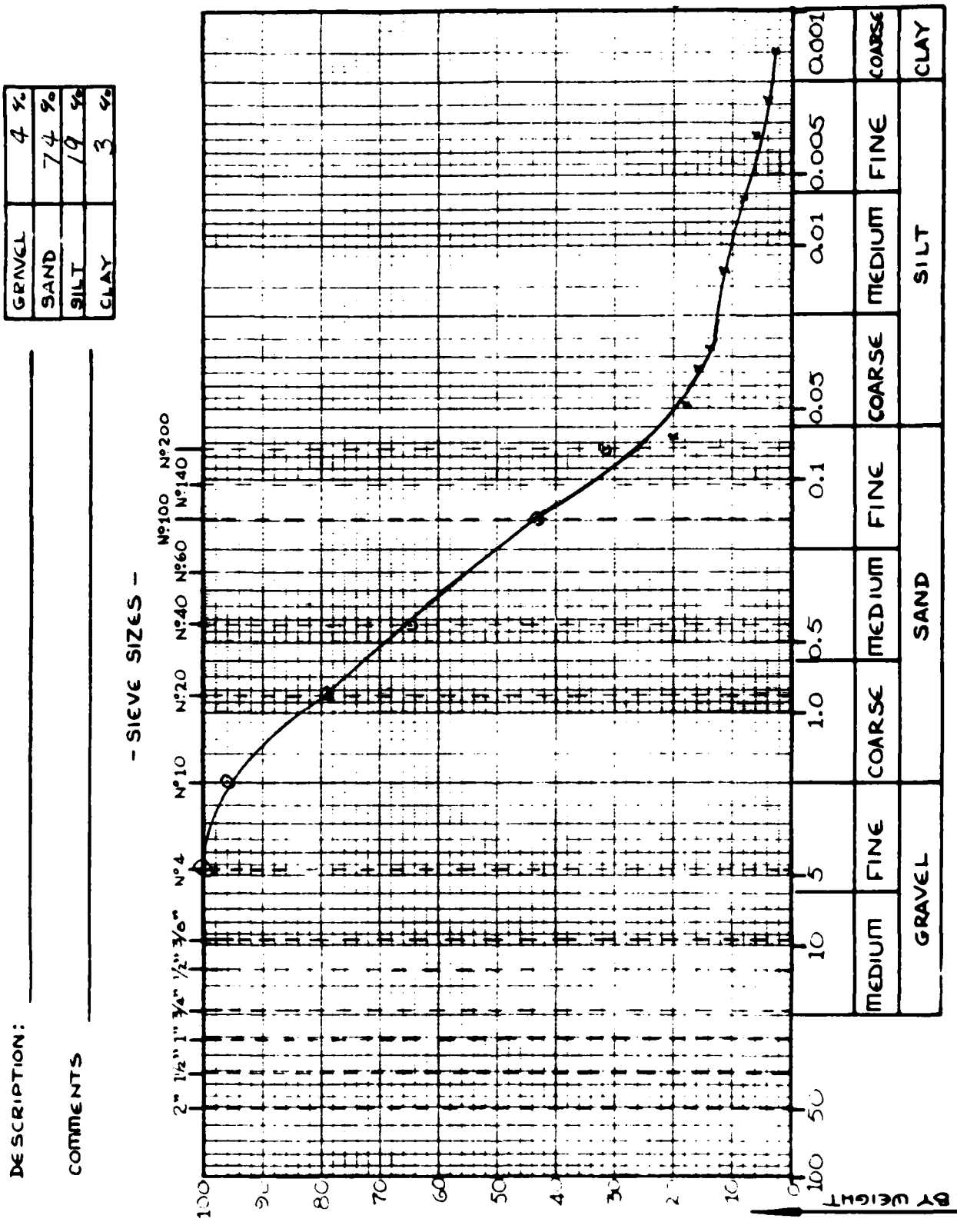
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	[illegible]			100.0
NO. 20	[illegible]	[illegible]		[illegible]
NO. 40	[illegible]	[illegible]		[illegible]
NO. 60				
NO. 100	20.5	6.0		33.6
NO. 140				
NO. 200	[illegible]	[illegible]		[illegible]
PAN	10.9	[illegible]		
TOTAL	[illegible]	[illegible]		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB14-3
DATE: 180-200
BY:



DESCRIPTION: _____

COMMENTS _____

RB 14-3

180-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	9		9.4	0.067	14.7	.0124	19.8	
		1	8		8.4	0.048	14.8	"	17.8	
		2	7		7.4	0.034	15.0	"	15.8	
		3	6.5	28	6.9	0.028	15.1	"	13.8	
		14	5.5	—	5.9	0.013	15.2	"	11.8	
		60	3.5	28	3.9	0.0063	15.5	"	7.8	
		220	3.0	26.5	2.8	0.0034	15.6	.0127	5.6	
		460	3.0	25	2.1	0.0024	15.6	.0129	4.2	
		1120	1.5	27	1.5	0.0015	15.9	.0126	3.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

EB 14-3
180-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

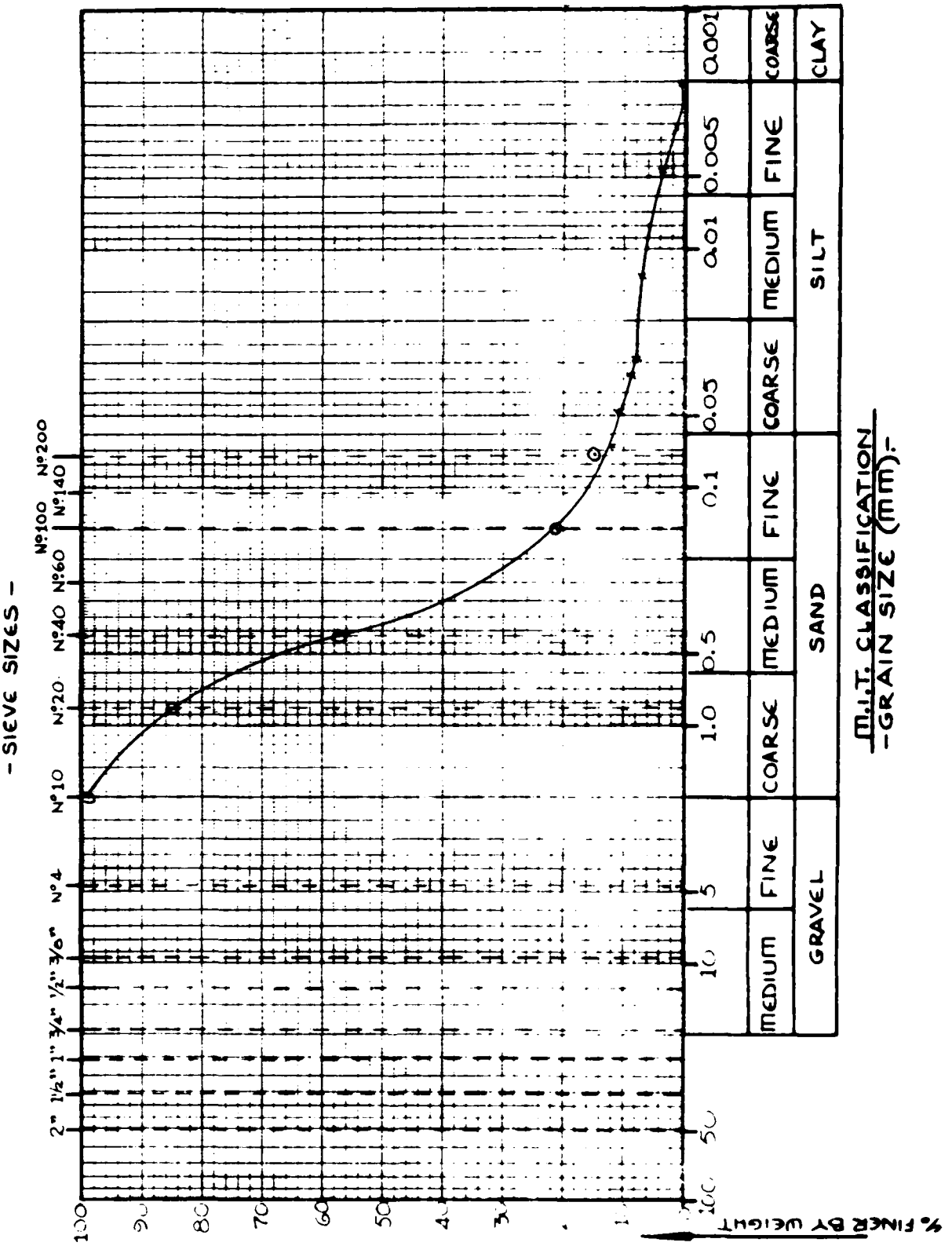
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	1.1	3.8		96.2
NO. 20	5.1	17.6		78.6
NO. 40	4.0	14.0		64.6
NO. 60				
NO. 100	6.2	21.6		43.0
NO. 140				
NO. 200	3.1	10.8		32.2
PAN	9.3	32.2		
TOTAL	28.8	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 15-1
DATE:	115'-120'
BY:	

	%
GRAVEL	
SAND	88 %
SILT	12 %
CLAY	0 %



DESCRIPTION: _____

COMMENTS _____

15-1

115-120

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + C_m - C_d$	DIA-METER (mm)	L	K	N (%)	N_1 (%)
		1/2	5.5	—	.068	5.9	15.2	.0124	11.8	
		1	5.0	—	.048	5.4	15.3	"	10.8	
		2	4.0	—	.034	4.4	15.5	"	8.8	
		3	3.5	28	.028	3.9	15.6	"	7.8	
		14	3.0	—	.013	3.4	15.6	"	6.8	
		110	1.5	28	.0047	1.9	15.9	"	3.8	
	0100	230	0.7	27	.0033	0.7	16.0	.0126	1.4	
	0730	620	1.2	24.7	.0021	0.2	"	.0130	0.4	
	1930	1340	-1.0	28	.0013		16.3	.0124		

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

15-1

115-120

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

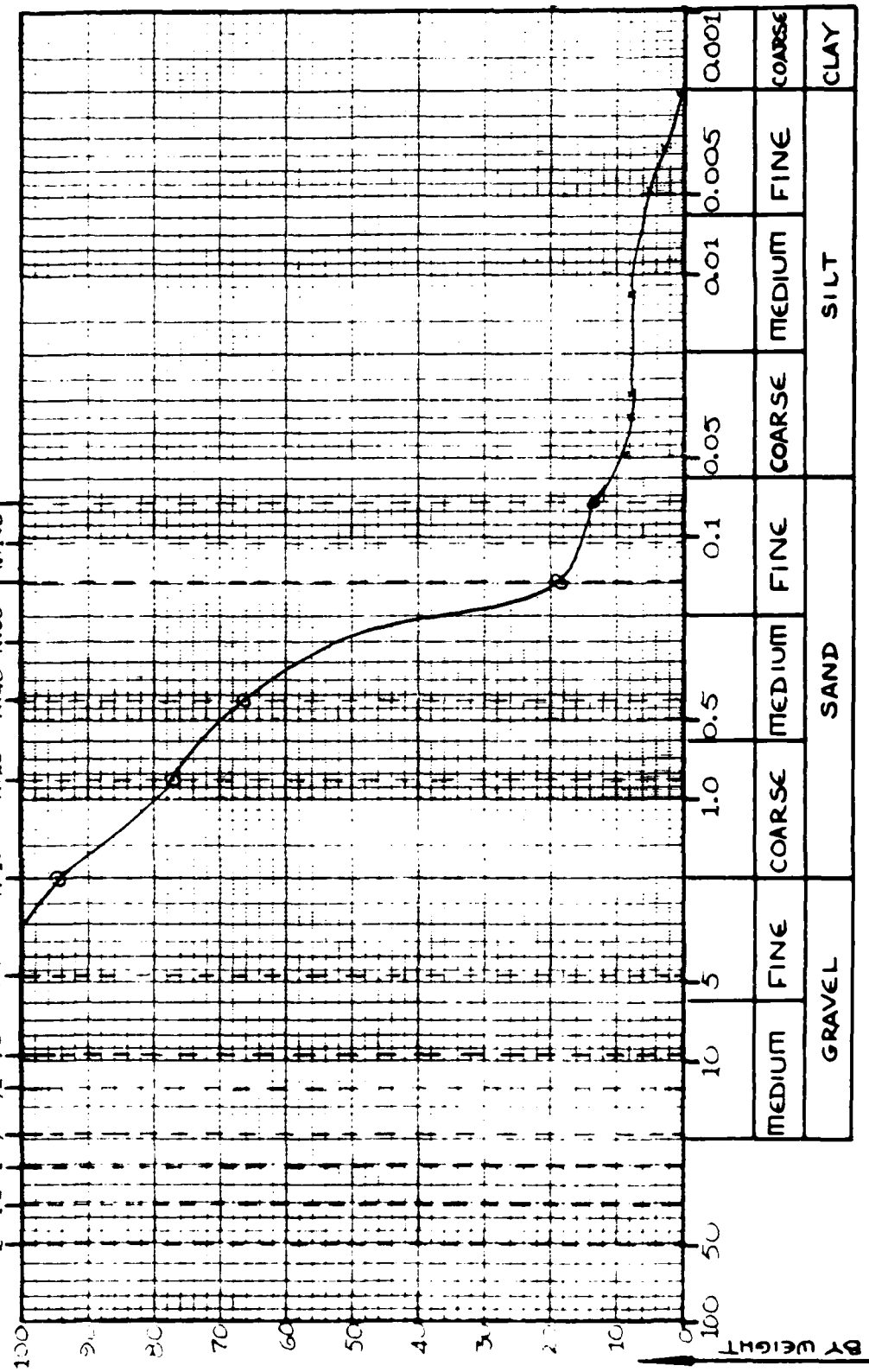
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4	– 0 –			100.0
NO. 10	0.6	1.2		98.8
NO. 20	7.0	14.0		84.8
NO. 40	13.8	27.6		57.2
NO. 60				
NO. 100	18.0	36.0		21.2
NO. 140				
NO. 200	3.0	6.0		15.2
PAN	7.6	15.2		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 15-2
DATE: 180'-198'
BY:

GRAVEL	5 %
SAND	84 %
SILT	11 %
CLAY	0 %



DESCRIPTION: _____

COMMENTS _____

15-2

180-198

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = Ru + (Cm+Cd)	DIA-METER (mm)	L	K	N (%)	N_1 (%)
		1/2	51.0	—	.064	5.4	15.3	.0124	10.8	
		1	41.0	—	.049	4.4	15.5	"	8.8	
		2	36.5	—	.035	3.9	15.6	"	7.8	
		3	36.5	28	.028	3.9	15.6	"	7.8	
		17	36.5	—	.012	3.9	15.6	"	7.8	
		106	22.0	28	.0048	2.4	15.8	"	4.8	
	0100	225	15.5	27	.0033	1.5	15.9	.0126	3.0	
	0730	615	11.2	24.7	.0021	0.2	16.0	.0130	0.4	
	1930	1335	−1.0	28				.0124		

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

15-2

150-191

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4	— 0 —			100.0
NO. 10	2.3	4.6		95.4
NO. 20	9.3	18.6		76.8
NO. 40	5.5	11.0		65.8
NO. 60				
NO. 100	23.7	47.4		18.4
NO. 140				
NO. 200	2.3	4.6		13.8
PAN	6.9	13.8		0
TOTAL	50.0	100.0		

REMARKS _____

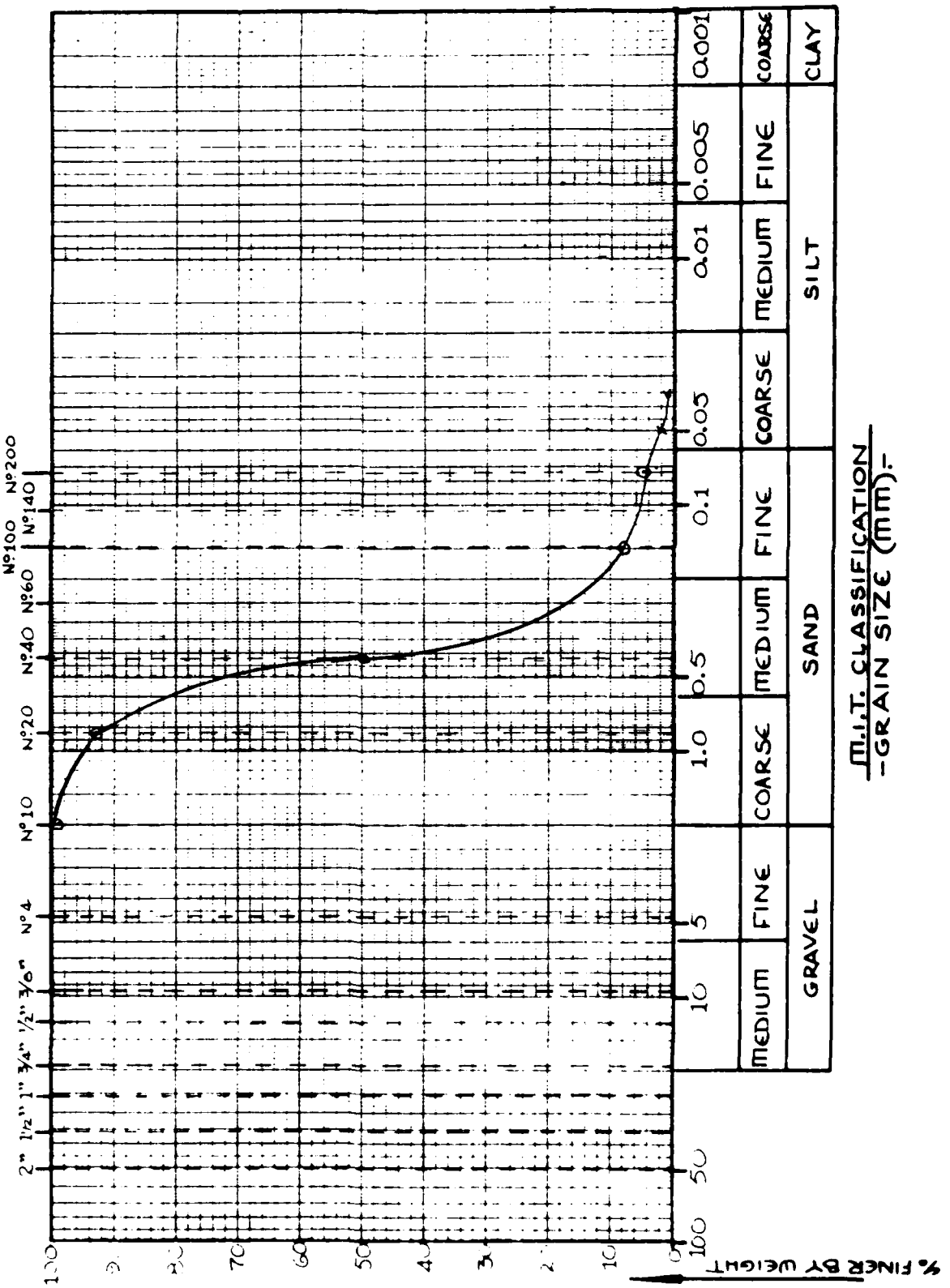
GRAIN SIZE CHART

FILE Nº:	16047
SAMPLE Nº:	KB 15-3
DATE:	198'-200'
BY:	

	%
GRAVEL	
SAND	96 %
SILT	4 %
CLAY	%

DESCRIPTION: _____

COMMENTS _____



15-3
198-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	1.6	—	1.4	.070	16.0	.0124	2.8	
		1	0.5	—	0.9	.050	16.1	"	1.8	
		2	0.2	—	0.6	.035	16.1	"	1.2	
		3	0	28	0.4	.029	16.3	"	0.8	
		10	0	"	0.4	.0049	"	"	0.8	
	0100	220	0	27	0	.0034	"	.0126	0	
	0730	610	1.6	24.7		.0021	16.1	.0130		
	1930	1330	-1.0	28				.0124		

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

IS-3

195-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

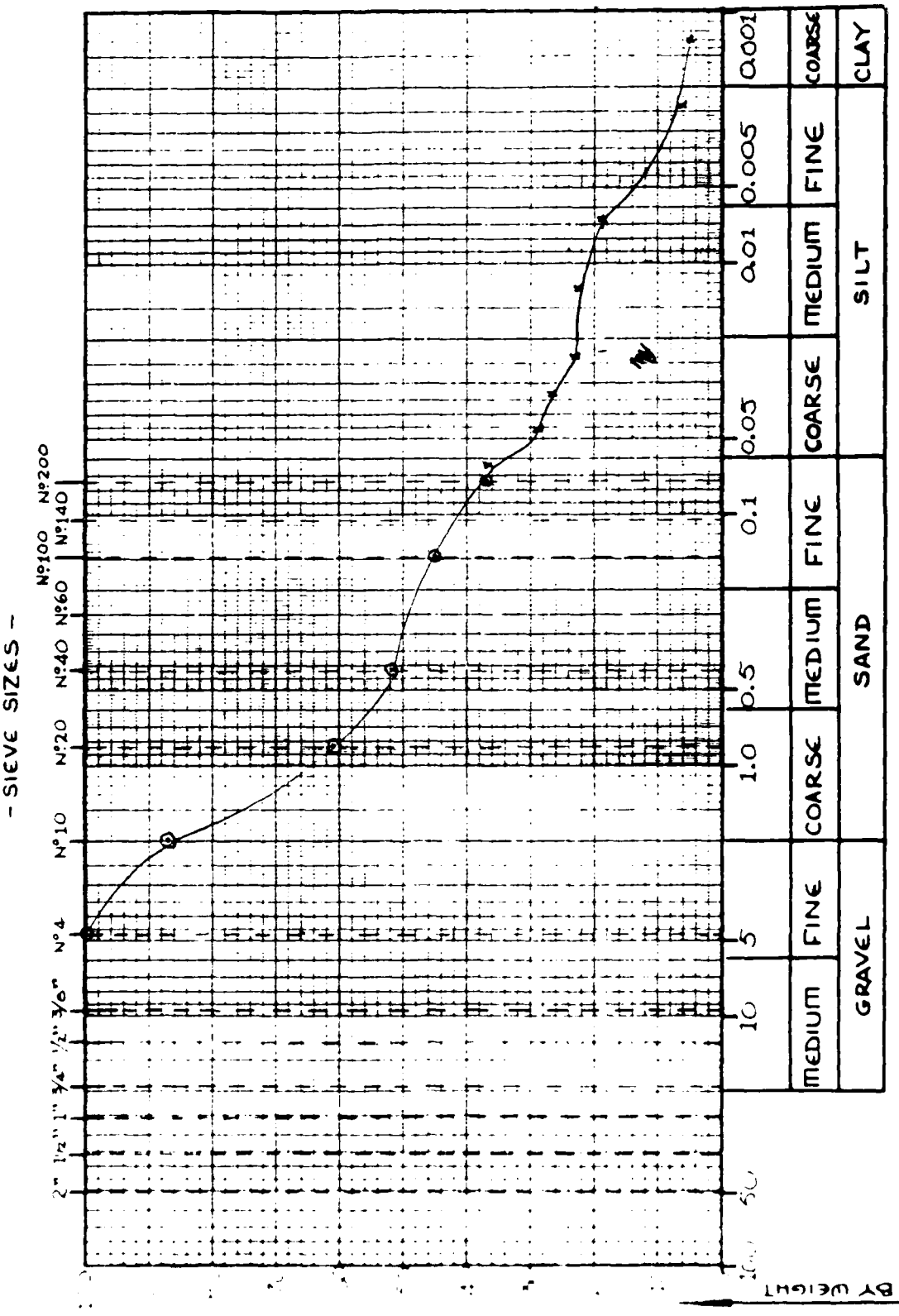
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	0.4	0.8		99.2
NO. 20	3.0	6.0		93.2
NO. 40	21.6	43.2		50.0
NO. 60				
NO. 100	20.8	41.6		8.4
NO. 140				
NO. 200	1.8	3.6		4.8
PAN	2.4	4.8		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB16-1
~~DATE~~:	90'-102'
BY:	AR

GRAVEL	13 %
SAND	65 %
SILT	28 %
CLAY	6 %



DESCRIPTION: _____

COMMENTS _____

RB16-1
90-102

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1210 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIAMETER (mm)	L	K	N (%)	N_1 (%)
		1/2	17	—	18.3	0.063	13.3	.0132	36.6	
		1	13	—	14.3	0.166	14.0	"	28.6	
		2	12	—	13.3	0.033	14.2	"	26.6	
		4		—				"		
		13	10	30	11.3	0.013	14.5	"	22.6	
		27	8	—	9.3	0.0067	14.8	"	18.6	
		60	5	—	6.3	0.0048	15.3	"	12.6	
	0750	460	4	25	3.1	0.0024	15.5	.0129	6.2	
		1440	2.5	27	2.5	0.0013	15.6	.0126	5.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

R3 16-' ✱

90 – 102

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

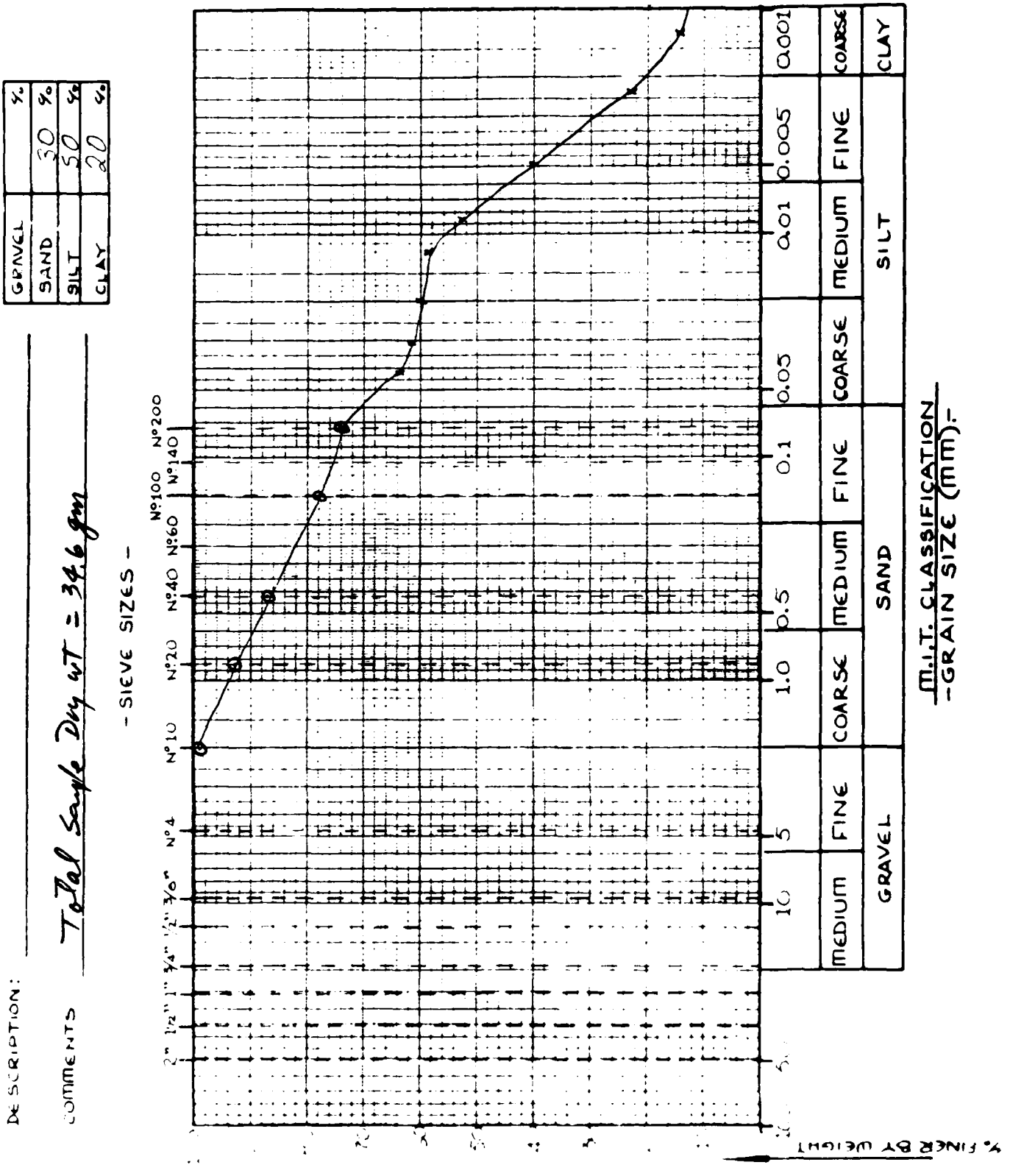
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	6.6	13.2		86.8
NO. 20	12.8	25.6		61.2
NO. 40	4.4	8.8		52.4
NO. 60				
NO. 100	3.6	7.2		45.2
NO. 140				
NO. 200	4.1	8.2		37.0
PAN	18.5	37.0		
TOTAL	50.0	100.0		

REMARKS Wash Sample Tab. 50 gm.

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RA 16-1
DATE: 120'-123'
BY:



R1316-1 *
120-123

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1230 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	—	—	—			.0132		
		1	21	—	22.3	0.043	12.7	4	64.4	
		2	20	—	21.3	0.031	12.9	4	61.5	
		5	19.5	30	20.8	0.020	12.9	4	60.1	
		13	19	—	20.3	0.012	13.0	4	58.7	
	1256	26	17	30	18.3	0.0087	13.3	4	54.9	
	1:56	86	12.5	30	13.8	0.0049	14.0	11	40.0	
	0750	440	9	25	8.1	0.0024	14.7	.0124	23.4	
	—	1440	5	27	5	0.0013	15.3	.0126	14.4	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____ _____.

DISPERSING AGENT CORRECTION, C_d: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ 2.89.

REMARKS: Whole sample Total 34.6 gm

RB 16 A

120' – 123

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

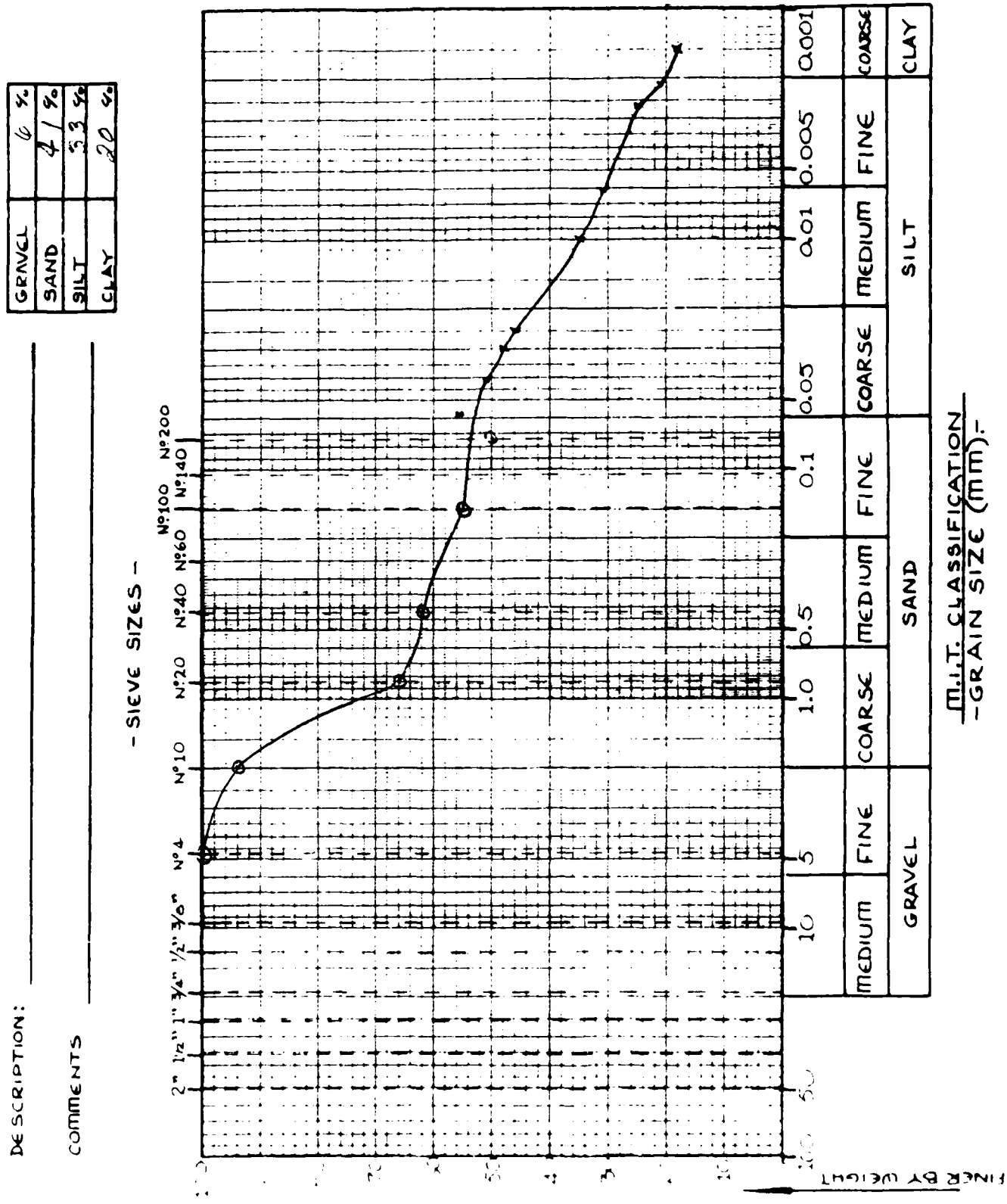
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	0.6	1.7		98.3
NO. 20	1.8	5.2		93.1
NO. 40	2.0	5.8		87.3
NO. 60				
NO. 100	3.1	8.9		78.4
NO. 140				
NO. 200	1.4	4.0		74.4
PAN	25.7	74.4		0
TOTAL	34.6			

REMARKS Whole Sample Total 34.6 gm.

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 16
DATE:	140'-160'
BY:	

GRAVEL	6 %
SAND	41 %
SILT	33 %
CLAY	20 %



DESCRIPTION: _____

COMMENTS _____

RB-16
140-160

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

.1210 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/4	27		27.9	.059	11.7	.0123	√57.8	
		1	25		25.9	.042	12.0	"	√7.8	
		4	23		23.9	.030	12.4	"	47.8	
		3	22	29	22.9	.025	12.5	"	45.8	
		19	18.5	—	17.4	.010	13.0	"	34.8	
	1310	60	15	28	15.4	.0061	13.7	.0124	30.8	
	"	240	13	26	12.6	.0027	14.0	.0127	25.2	
	0800	470	11	26	10.6	.0022	14.3	"	21.2	
		960	9	27	9.0	.0015	14.7	.0126	18.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB - 16

140 - 160

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

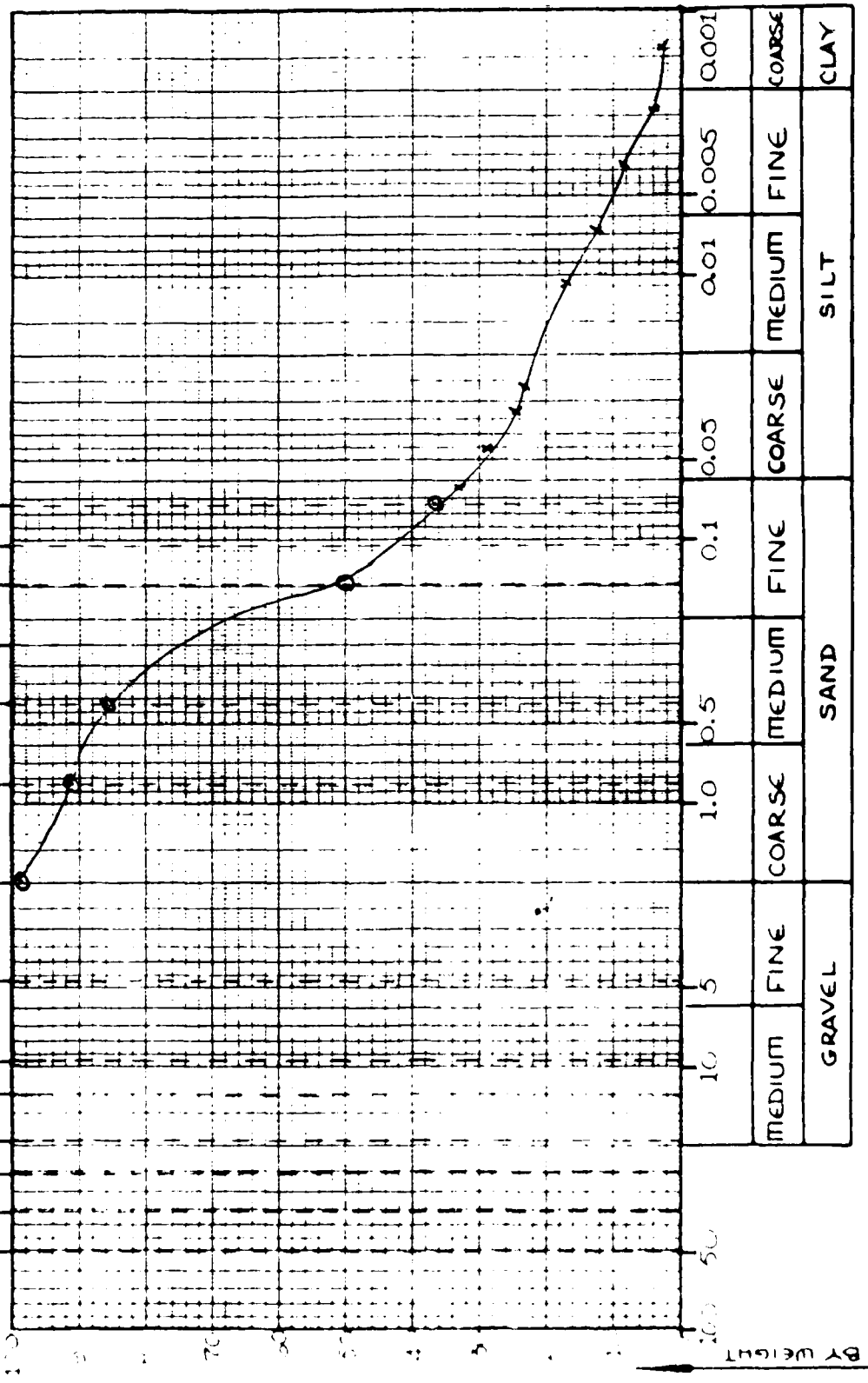
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	3.2	6.4		93.6
NO. 20	13.6	27.2		66.4
NO. 40	2.2	4.4		62
NO. 60				
NO. 100	3.3	6.6		55.4
NO. 140				
NO. 200	2.5	5.0		50.4
PAN	25.2	50.4		0
TOTAL	50.0	106.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	16047
SAMPLE Nº:	RB 16
DATE:	160-220
BY:	

	%
GRAVEL	
SAND	68 %
SILT	29 %
CLAY	3 %



DESCRIPTION: _____

COMMENTS _____

RB-16

160-220

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

0/20 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/4	16	—	16.4	0.064	13.5	.0124	32.8	
		1	14	—	14.4	0.046	13.8	"	28.8	
		2	12	26	12.4	0.033	14.2	"	24.8	
		3	11.5	27	11.5	0.027	14.2	.0126	23.0	
		19	8.5	"	8.5	0.011	14.7	"	17.0	
		50	6.0	"	6.0	0.0069	15.2	"	12.0	
	0400	160	4.0	"	4.0	0.0039	15.5	"	8.0	
	0900	460	3.0	24.5	2.1	0.0024	15.6	.0130	4.2	
	2200	1240	1.0	28	1.4	0.0014	16.0	.0124	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____

DISPERSING AGENT CORRECTION, Cd: _____ _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB - 16

150 - 200

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	0.3	0.6		99.4
NO. 20	4.4	8.8		90.6
NO. 40	2.3	4.6		86
NO. 60				
NO. 100	18.9	36.4		49.6
NO. 140				
NO. 200	6.9	12.4		37.2
PAN	18.6	37.2		
TOTAL	50	100		

REMARKS _____

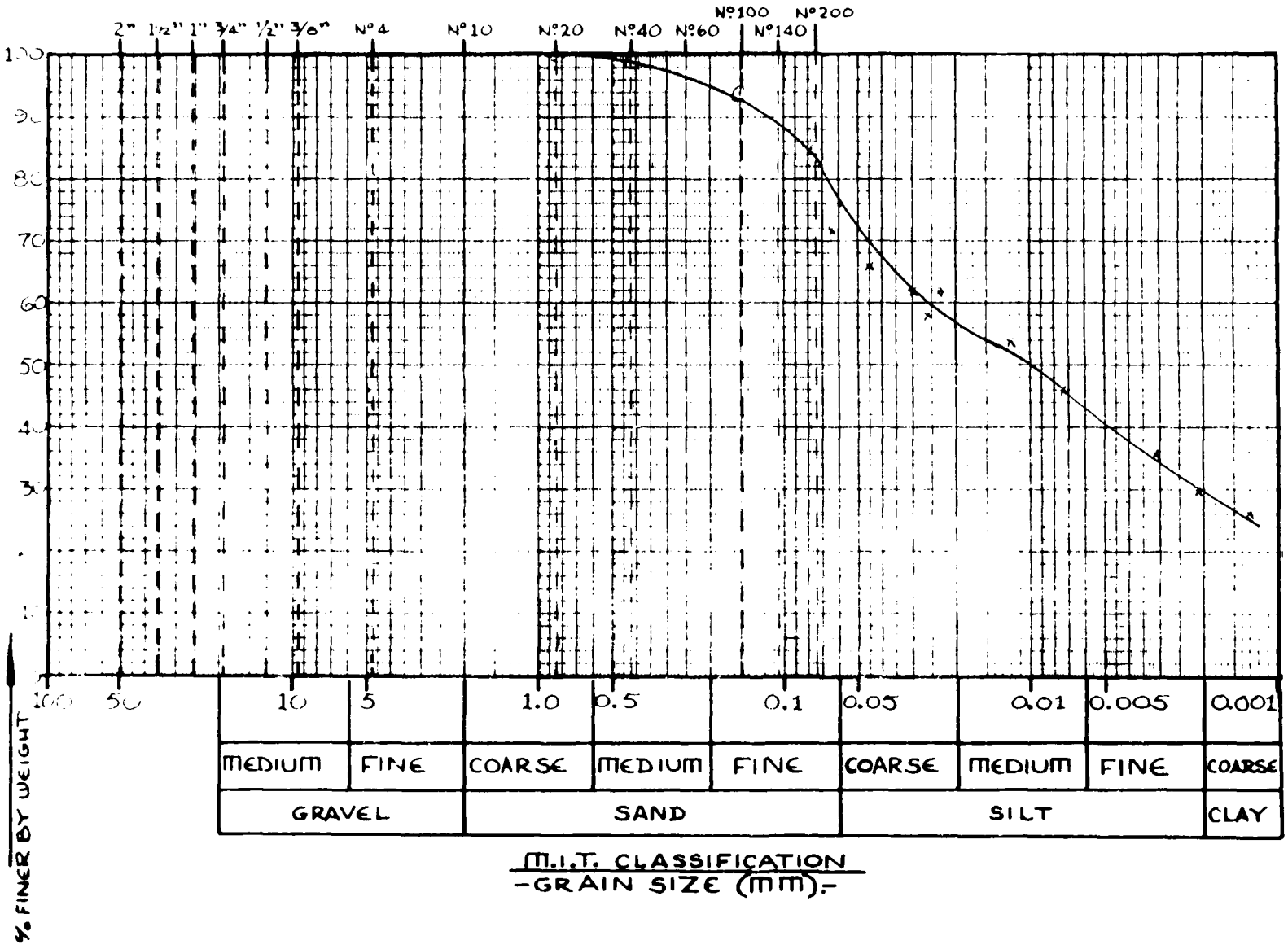
GRAIN SIZE CHART

DESCRIPTION: _____

COMMENTS _____

GRAVEL	%
SAND	24 %
SILT	46 %
CLAY	30 %

FILE Nº:
SAMPLE Nº: SB 17-1
DATE:
BY:



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm)-

RB 17-1

80-90

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	16.5		14.0	0.063	13.4	.0122	72	
		1	15		16.5	0.045	13.7	"	66	
		2	14		15.5	0.032	13.8	"	62	
		3	13	30.5	14.5	0.026	14.0	"	58	
		14	12	—	13.5	0.012	14.2	"	54	
		41	10	—	11.5	0.0073	14.5	"	46	
		215	8	29.5	9.1	0.0032	14.8	.0123	36.4	
		530	7	28.5	7.6	0.0021	15.0	.0124	30.4	
		1340	6	28	6.4	0.0013	15.2	.0124	25.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: Total Sample 247gm

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10				
NO. 20				
NO. 40	0.2	0.8		
NO. 60				
NO. 100	1.3	5.3		
NO. 140				
NO. 200	2.1	8.5		
PAN		85.4		
TOTAL		100.0		

REMARKS _____

GRAIN SIZE CHART

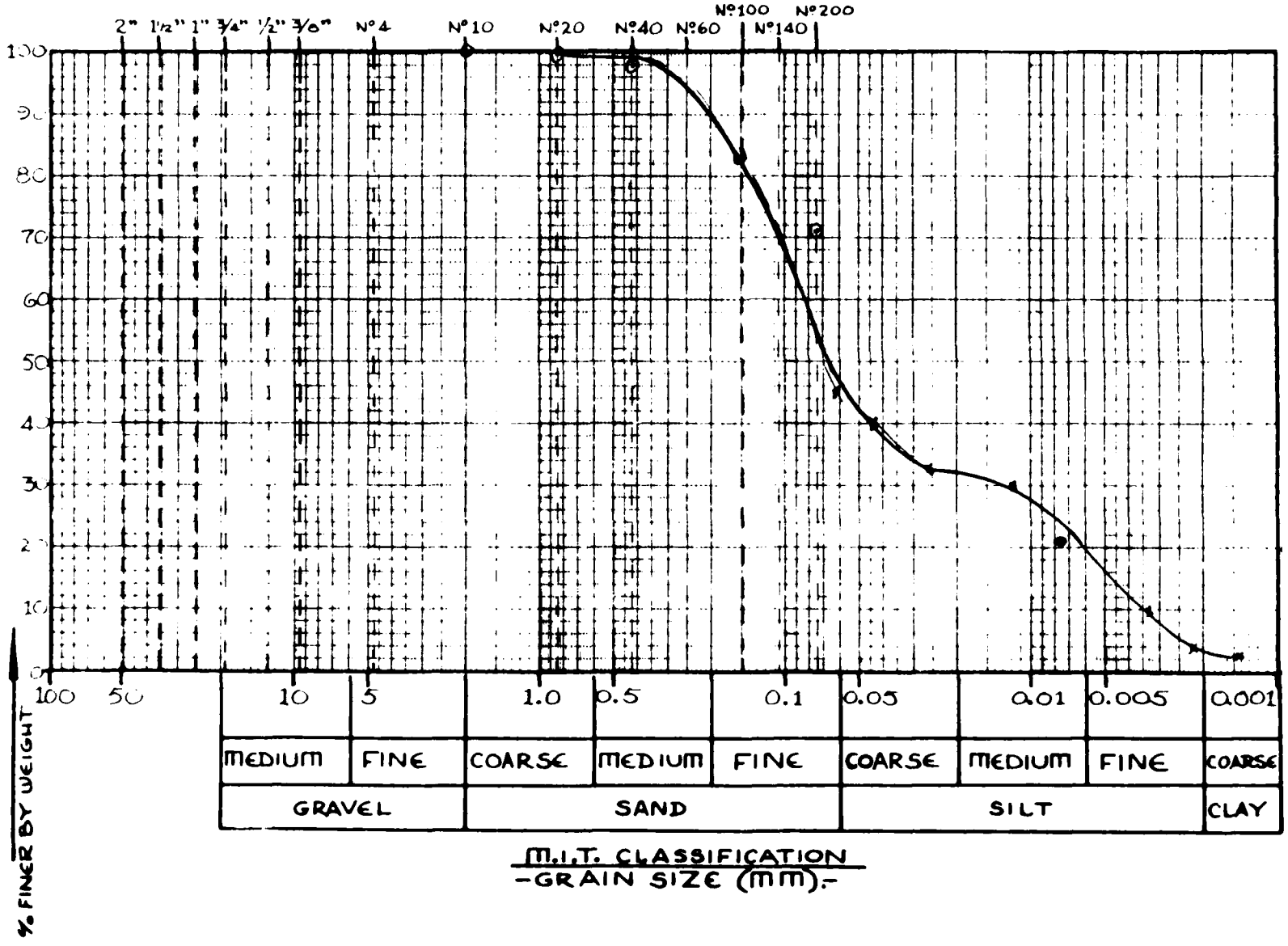
DESCRIPTION: _____

COMMENTS _____

GRAVEL	%
SAND	54%
SILT	42%
CLAY	4%

FILE Nº:
SAMPLE Nº: RB 17-3
DATE:
BY: 180-190

- SIEVE SIZES -



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

RB17-3

180-190

FILE Nº.
SAMPLE Nº:
DATE:
BY:

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19___	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	24		22.5	0.062	12.7	.0122	45.0	
		1	18.5		20.0	0.044	13.1	"	40.0	
		2	16.2		17.7	0.032	13.5	"	35.4	
		3	15	30.5	16.5	0.026	13.7	"	33.0	
		14	13.3	—	14.8	0.012	14.0	"	29.6	
		37	9.2	—	10.7	0.0077	14.7	"	21.4	
		210	4.0	29.5	5.1	0.0033	15.5	.0123	10.2	
		525	1.5	28.5	2.1	0.0022	15.9	.0124	4.2	
		1335	1	28	1.4	0.0014	16.0	"	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

KE [illegible]-3

[illegible])

– SIEVE ANALYSIS –

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

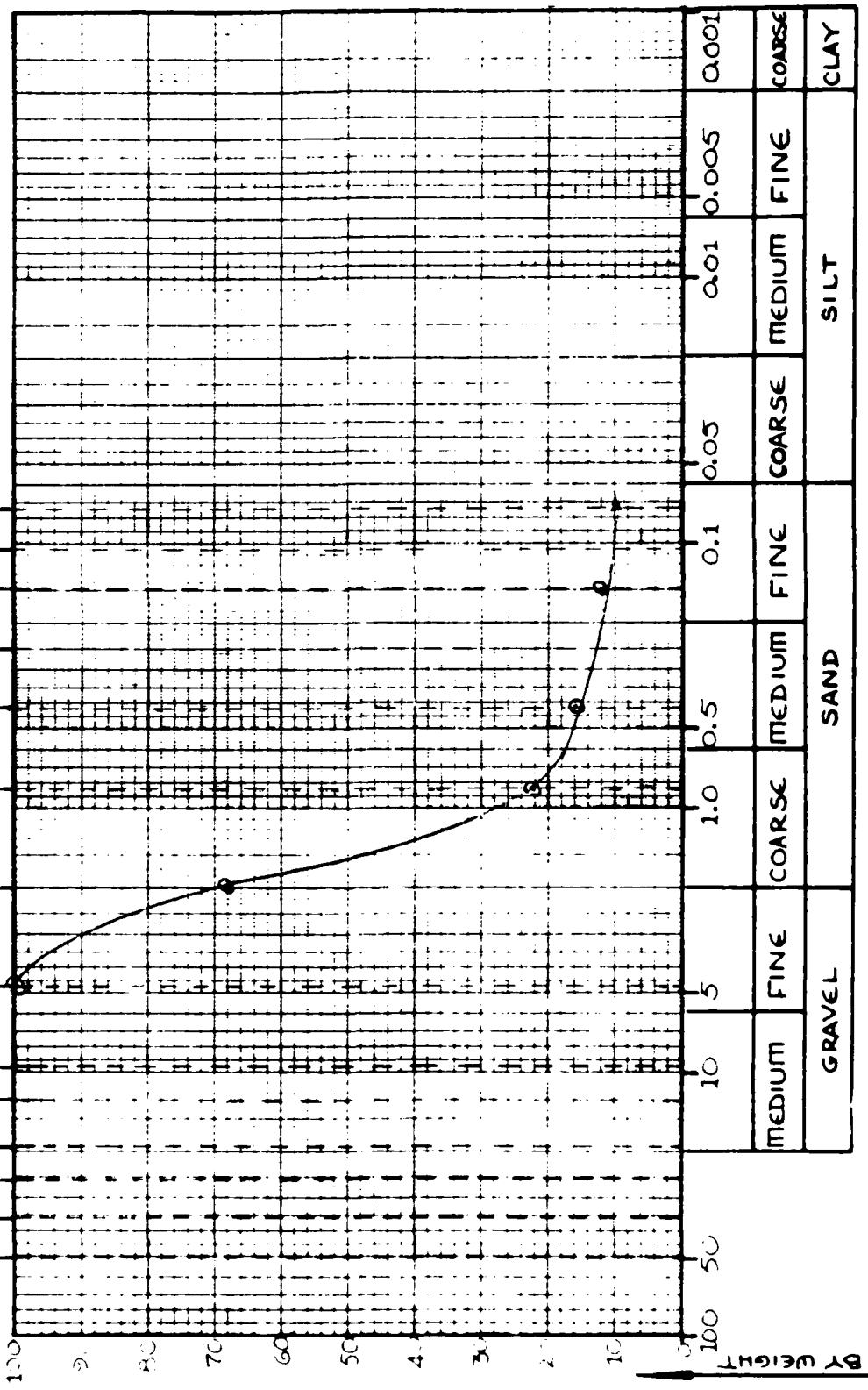
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	[illegible]			[illegible]
NO. 20	[illegible]	0.2		[illegible]
NO. 40	[illegible]	2		[illegible]
NO. 60				
NO. 100	[illegible]	[illegible]		[illegible]
NO. 140				
NO. 200	[illegible]	2.6		[illegible]
PAN	[illegible]	[illegible]		
TOTAL	[illegible]	[illegible]		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 19-1
DATE: 140-145
BY:

GRAVEL	32 %
SAND	58 %
SILT	10 %
CLAY	%



DESCRIPTION:

COMMENTS

10

RB 19-1

140-145

FILE Nº:	
SAMPLE Nº:	
DATE:	
BY:	

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (C_m + C_d)$	DIA-METER (mm).	L	K	X 13,16 N (%)	N_1 (%)
		1/2	-1		0.5			.0122		
		1	"		0.5			"		
		2	"		0.5			"		
		3	"	30.5	0.5			"		
		4 70	0	28.5	0.6			.0124		
		1300	0	28	0.7			"		

Not used

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 19-1
140-145
10.9 g/11

– SIEVE ANALYSIS –

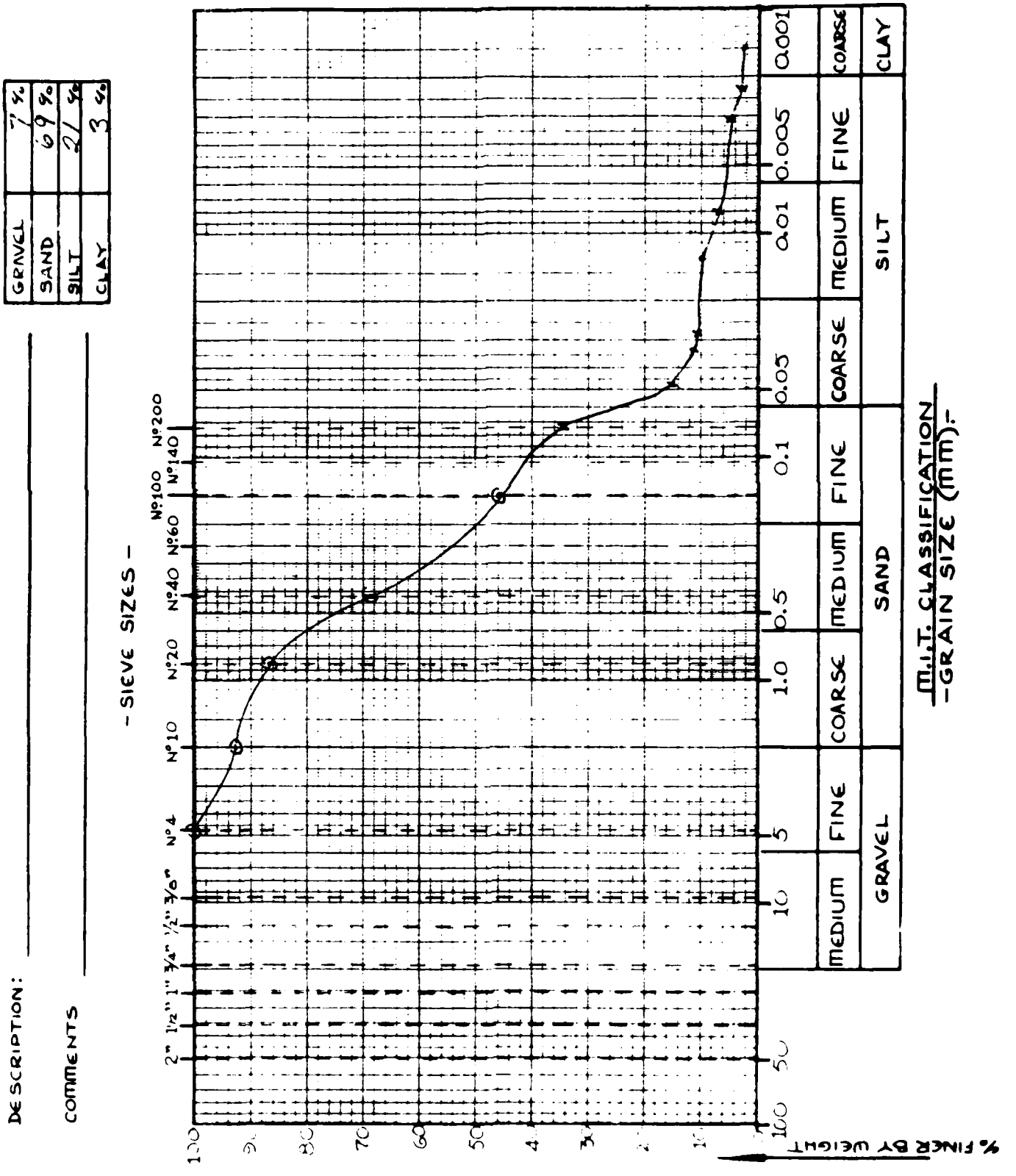
FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	3.5	32.3		67.7
NO. 20	5.0	45.8		21.9
NO. 40	0.7	6.4		15.5
NO. 60				
NO. 100	0.4	3.7		11.8
NO. 140				
NO. 200	0.2	1.8		10.0
PAN	1.1	10.0		
TOTAL	10.9	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 19-2
DATE: 170-173
BY:



DESCRIPTION:

COMMENTS

RB19-2

170-173

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm or Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/4	9		9.4	0.068	14.7	.0125	18.4	
		1	7.5		7.7	0.049	14.9	"	15.4	
		4	6.0		6.4	0.034	15.4	"	12.4	
		9	5.5	27.5	5.7	0.028	15.3	"	11.4	
		14	5.0	—	5.4	0.013	15.3	"	10.4	
		38	3.5	—	3.7	0.0080	15.5	"	7.4	
		85	3.0	28	3.4	0.0071	15.6	.0124	6.8	
		245	2.5	26.5	2.3	0.0032	15.7	.0127	4.6	
		485	2.5	25	1.6	0.0023	15.7	.0129	3.2	
		1145	1.0	27	1.0	0.0015	16.0	.0126	2.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

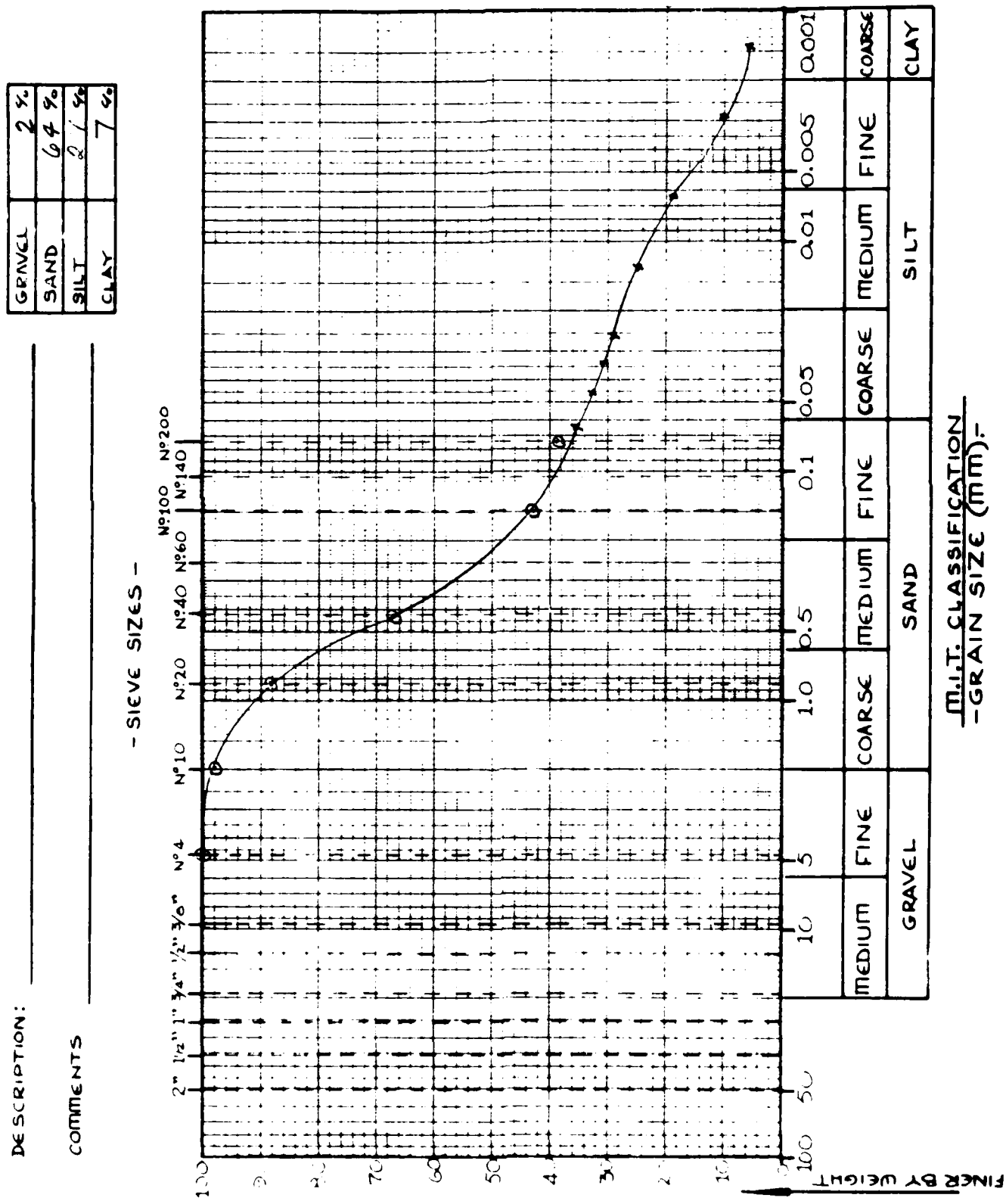
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10				
NO. 20				
NO. 40				
NO. 60				
NO. 100				
NO. 140				
NO. 200	5.2			
PAN				
TOTAL				

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 19-3
DATE: 18 Oct-15
BY:



DESCRIPTION:

COMMENTS

RB 19-3
180-185

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	17.5		17.8	0.064	13.2	.0175	35.6	
		1	16		16.3	0.046	13.5	"	32.6	
		2	15		15.3	0.033	13.7	"	30.6	
		3	14	27.6	14.3	0.027	13.8	"	28.6	
		14	12	—	12.3	0.013	14.2	"	24.6	
		58	9	28	9.4	0.0063	14.7	.0174	18.8	
		330	5.5	26	5.1	0.0027	15.2	.0127	10.2	
		1265	2.5	28	2.9	0.0014	15.7	.0124	5.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____

DISPERSING AGENT CORRECTION, Cd: _____ _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB19-3

18'-18.5'

u-hole Sample

– SIEVE ANALYSIS –

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

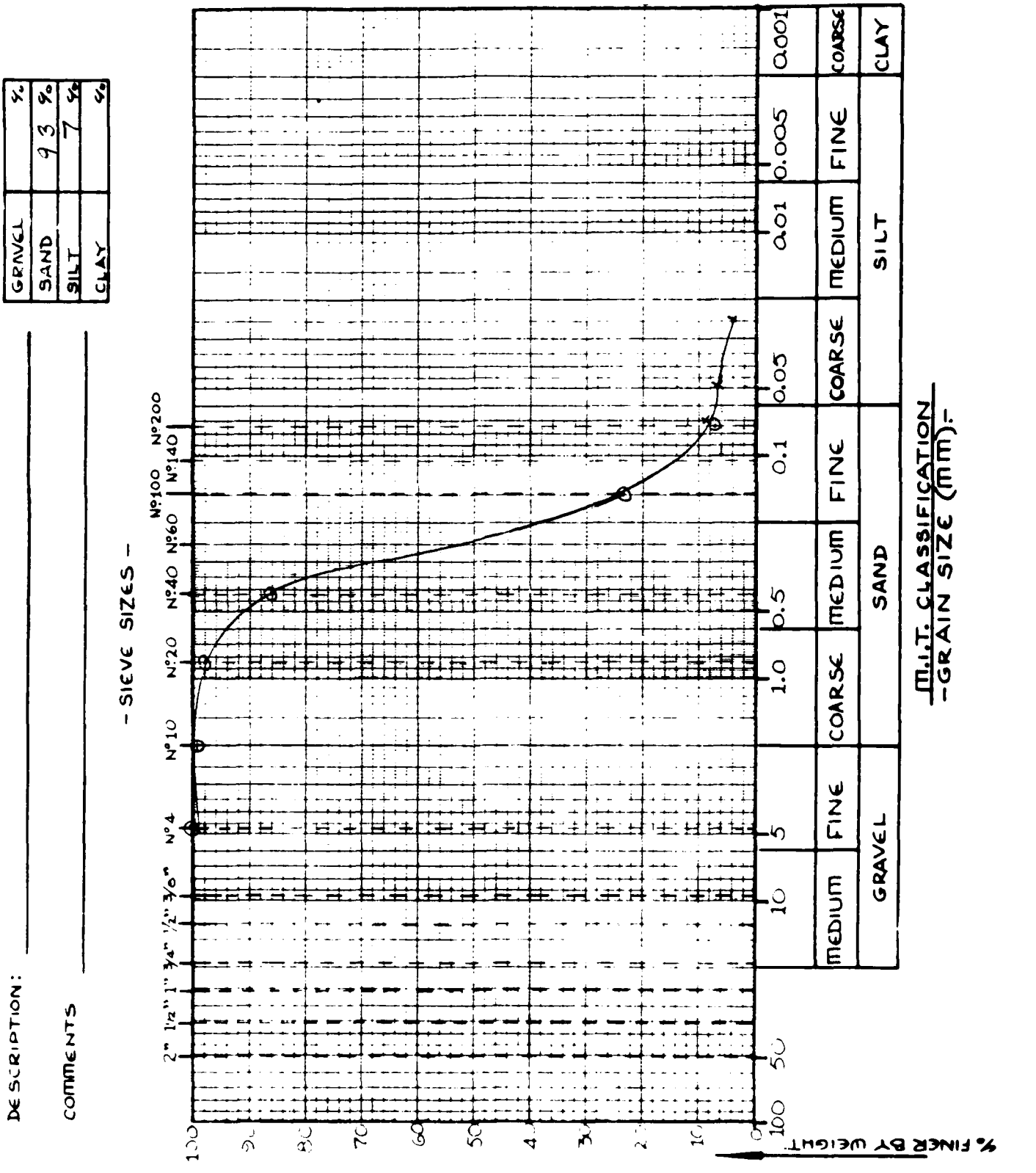
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0.8			
NO. 20	5.0			
NO. 40	10.4			
NO. 60				
NO. 100	12.1			
NO. 140				
NO. 200	2.2			
PAN				
TOTAL				

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 19-4
DATE: 19-1-20
BY:



DESCRIPTION:

COMMENTS

RB 19-4
141-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	4		4.3	0.070	15.5	.0175	8.6	
		1	3		3.3	0.049	15.6	"	6.6	
		2	1.5	27.6	1.8	0.035	15.9	"	3.6	
		3	1.5	—	1.8	0.029	15.9	"	3.6	
		16	1.5	—	1.8	0.012	15.9	"	3.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

R319-4

191-200

-SIEVE ANALYSIS-

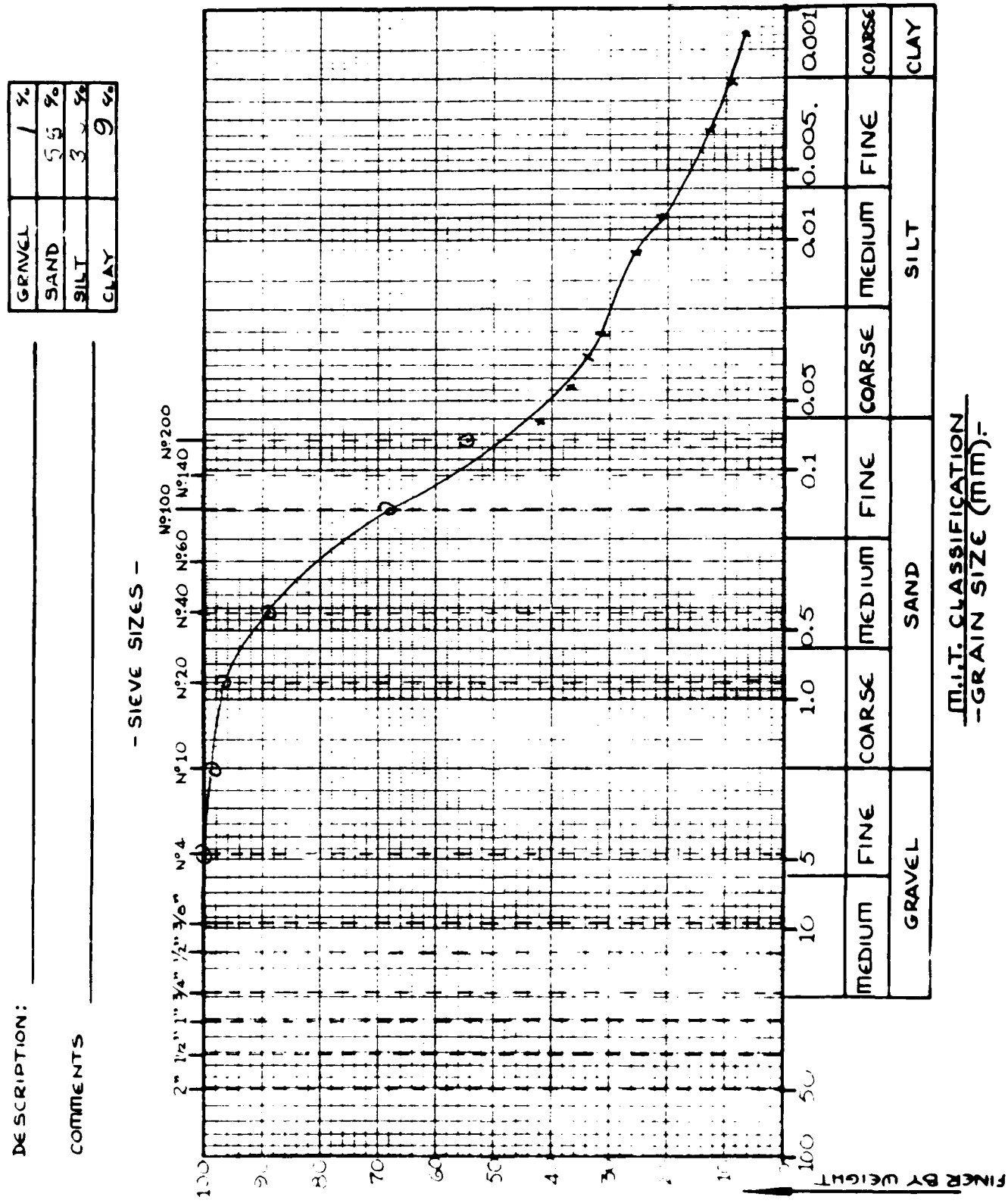
FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	0.2	0.4		99.6
NO. 20	1.0	2.0		97.6
NO. 40	5.7	11.2		86.4
NO. 60				
NO. 100	31.3	62.6		23.8
NO. 140				
NO. 200	8.1	16.2		7.6
PAN	3.7	7.4		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 20-1
DATE: 140-145
BY:



DESCRIPTION:

COMMENTS

RB 20-1

140-145

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19___	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1½	19.5	.	21.0	0.062	13.0	.0122	42	
		1	17		18.5	0.044	13.3	"	37	
		2	15.5		17.0	0.032	13.6	"	34.0	
		3	14.5	30.5	16.0	0.026	13.8	"	32.0	
		14	11.0	—	12.5	0.012	14.3	"	25	
		33	9	—	10.5	0.0081	14.7	"	21.0	
		205	5.5	29.5	6.6	0.0033	15.2	.0123	13.2	
		√20	4.0	28.5	4.6	0.0021	15.0	.0124	9.2	
		1330	3	28	3.4	0.0013	15.6	"	6.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

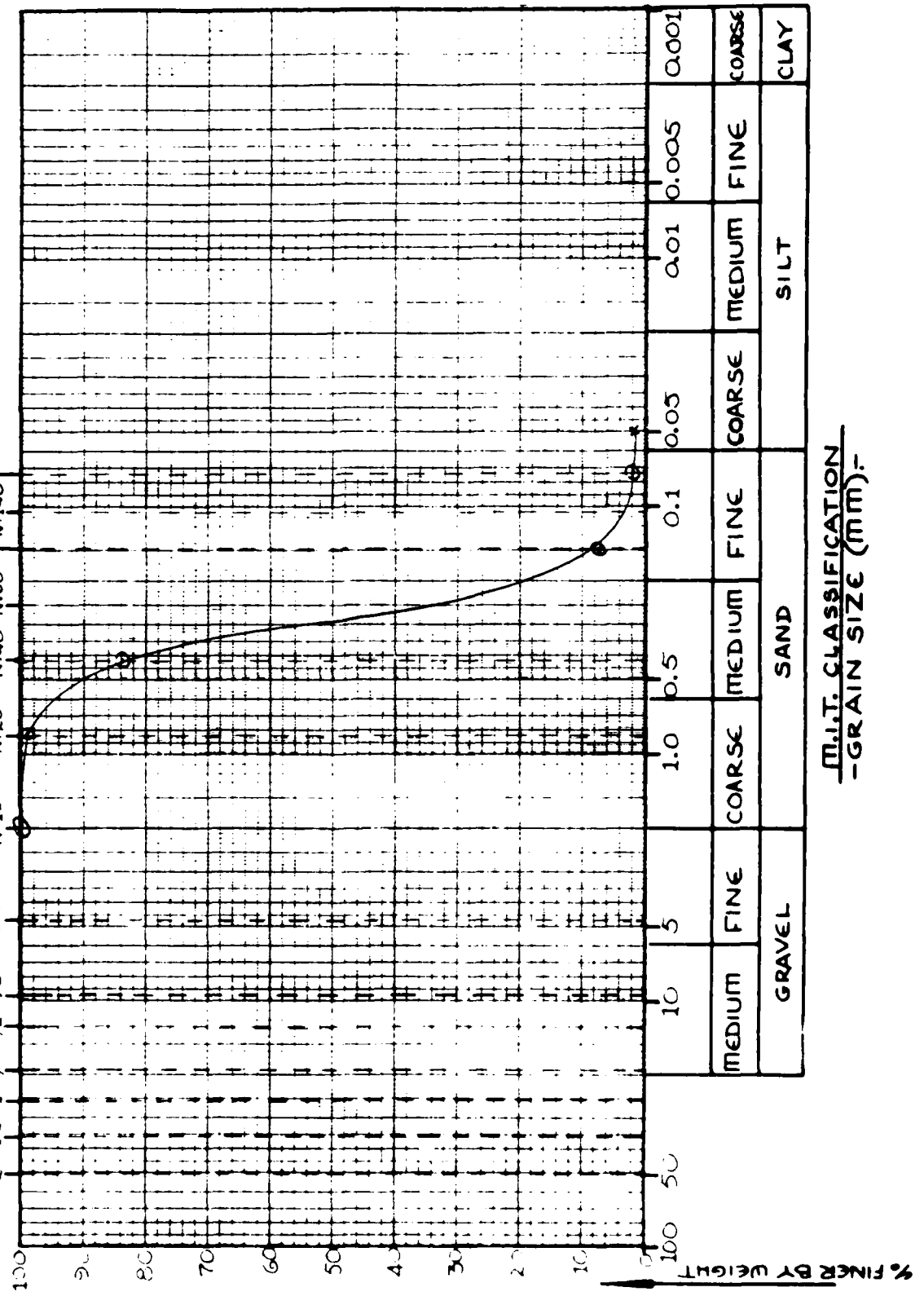
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	.4	0.8		99
NO. 20	1.1	2.2		[illegible]
NO. 40	4	8		[illegible]
NO. 60				
NO. 100	10.5	21.0		68.0
NO. 140				
NO. 200	6.7	13.4		[illegible]
PAN	27.3	[illegible]		
TOTAL	[illegible]	[illegible]		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 20-2
DATE: 150-155
BY:

	%
GRAVEL	
SAND	98 %
SILT	2 %
CLAY	%



DESCRIPTION:

COMMENTS

RB20-V
150-155

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	1.0		1.4	0.070	16.0	.0124	2.8	
		1	0.5		0.9	0.050	16.1	"	1.8	
		✓	0.5	28	0.9	0.035	16.1	"	1.8	
		√5	0.5	28	0.9	0.0067	16.1	"	1.8	
		2.5	0.5	26.5	0.3	0.0035	16.1	.0127	0.6	
		4.5	1.0	25	0.1	0.0024	16.0	.0129	0.2	
		11.5	0	27	0	0.0015	16.3	.0126	0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

C 330-2

150-155

Cobalt Silica

– SIEVE ANALYSIS –

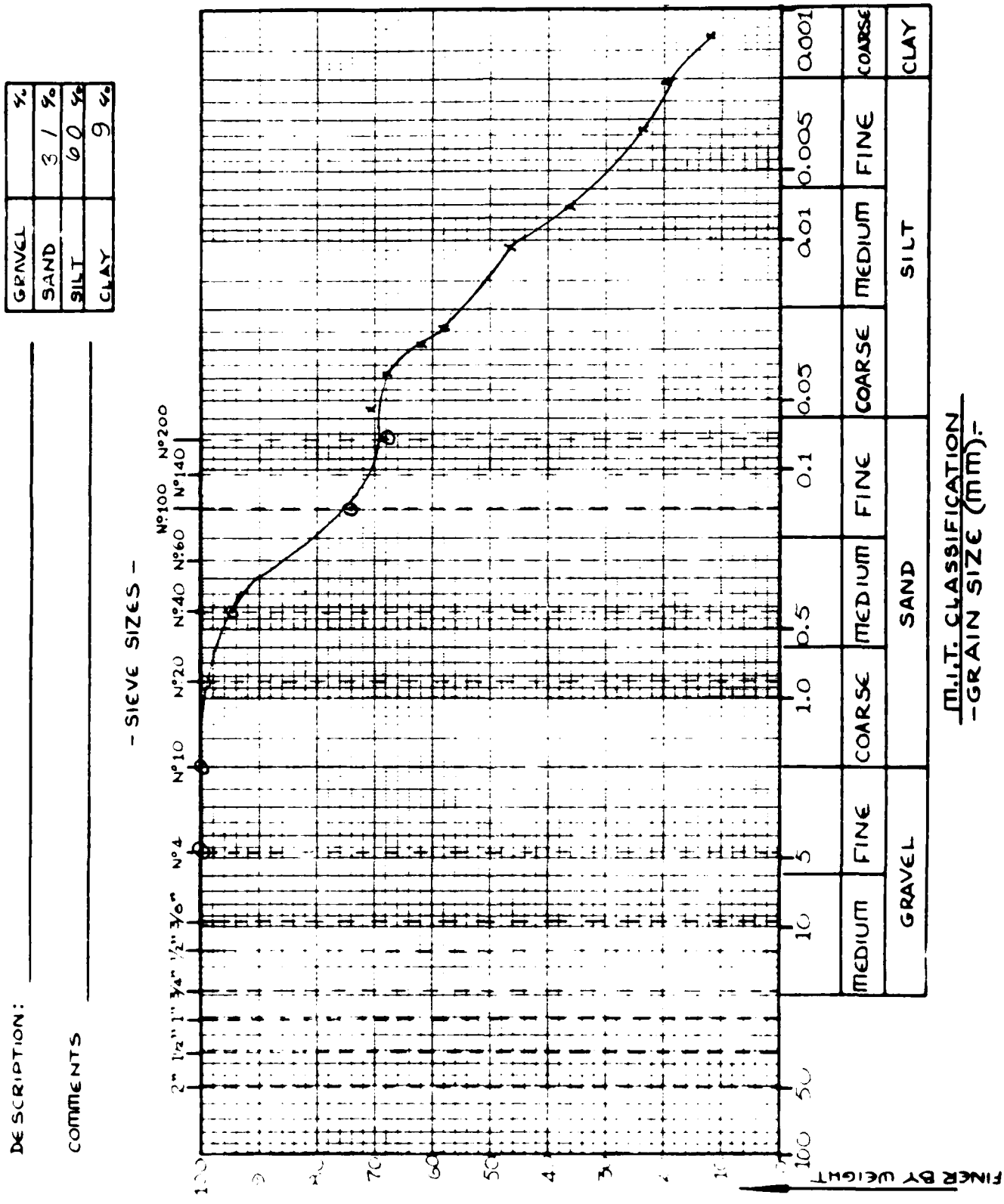
FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	– 0 –			
NO. 20	0.3	0.6		
NO. 40	2.5	5.6		
NO. 60				
NO. 100	35.3	70.5		
NO. 140				
NO. 200	2.0	4.0		
PAN	1.2	2.4		
TOTAL	50.0			

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 20-3
DATE: 130-180
BY:



DESCRIPTION:

COMMENTS

10

RB20-3
170-180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (C_m + C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	35		36.5	0.056	10.4	.0122	73	
		1	32.5		34.0	0.040	10.8	"	68	
		2	29.5		31.0	0.029	11.3	"	62	
		3	27.5	30.5	29.0	0.026	11.6	"	58	
		14	22	—	23.5	0.011	12.5	"	47	
		41	17	—	18.5	0.0069	13.3	"	37	
		195	11	29.0	11.9	0.0033	14.3	.0123	23.8	
		510	9.5	28.5	10.1	0.0021	14.6	.0124	20.2	
		1320	6	28	6.4	0.0013	15.2	"	12.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____ _____.

DISPERSING AGENT CORRECTION, C_d: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	3.	6 2		
NO. 20	1	2		
NO. 40		2		
NO. 60				
NO. 100	0. 3	2 0 6		
NO. 140				
NO. 200	2	6		
PAN				
TOTAL				

REMARKS _____

10

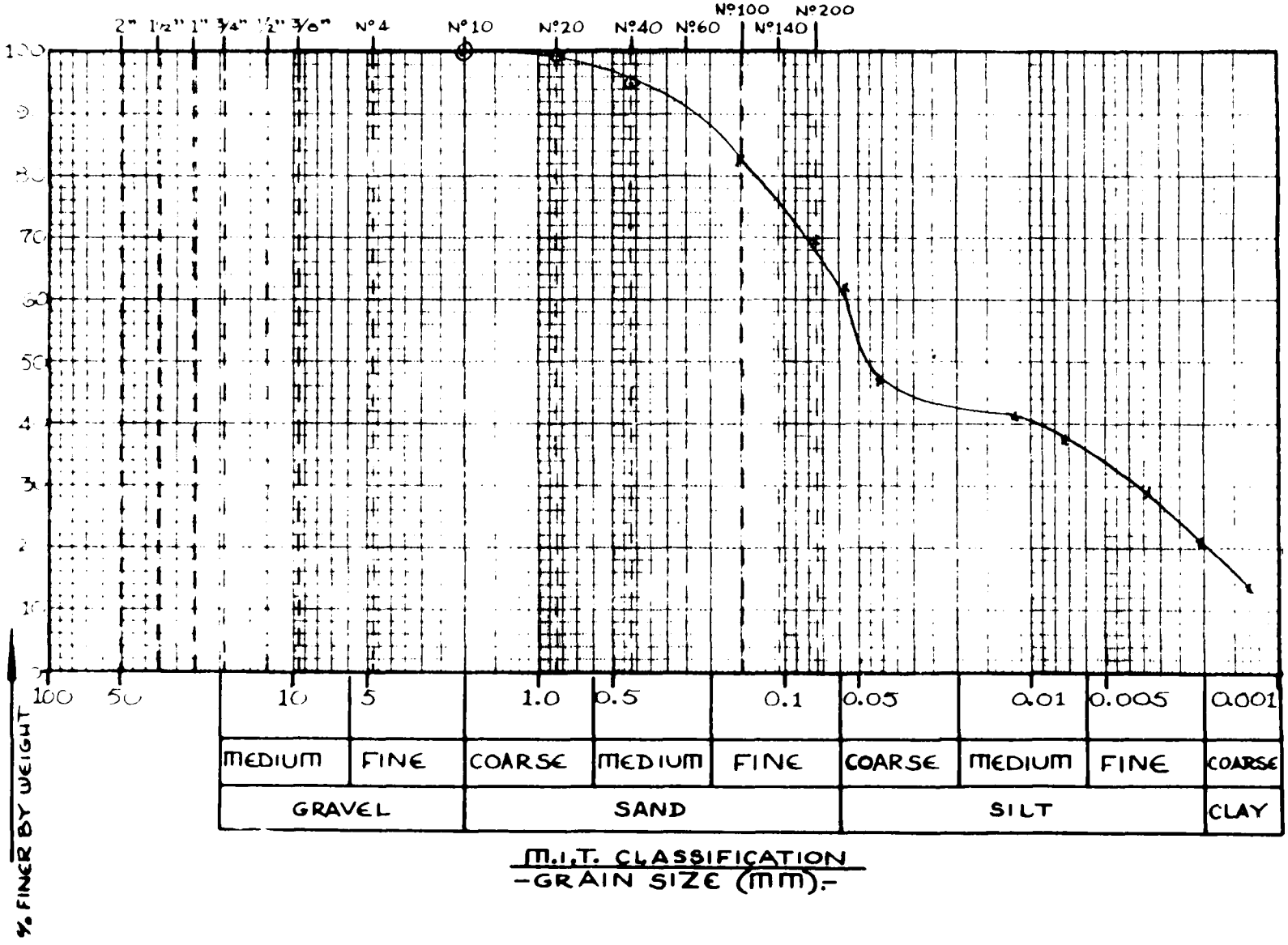
GRAIN SIZE CHART

DESCRIPTION: _____

COMMENTS _____

GRAVEL	%
SAND	38 %
SILT	51 %
CLAY	11 %

FILE Nº:
SAMPLE Nº: RB-20-4
DATE: 190-190
BY:



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

RB204
180-190

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (Cm + Cd)$	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1½	29		30.5	0.058	11.4	.0122	61.0	
		1	27		28.5	0.042	11.7	"	57.0	
		2	25		26.5	0.030	12.0	"	53.0	
		3	24	30.5	25.5	0.025	12.2	"	51.0	
		14	21	–	22.5	0.012	12.7	"	43.0	
		37	17.5	–	19.0	0.0073	13.2	"	38.0	
		190	13	29.	14.5	0.0033	14.0	.0123	29.0	
		505	10	28.5	10.6	0.0021	14.5	.0124	21.2	
		1315	7	28	7.4	0.0013	15.0	.0124	14.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\%< \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

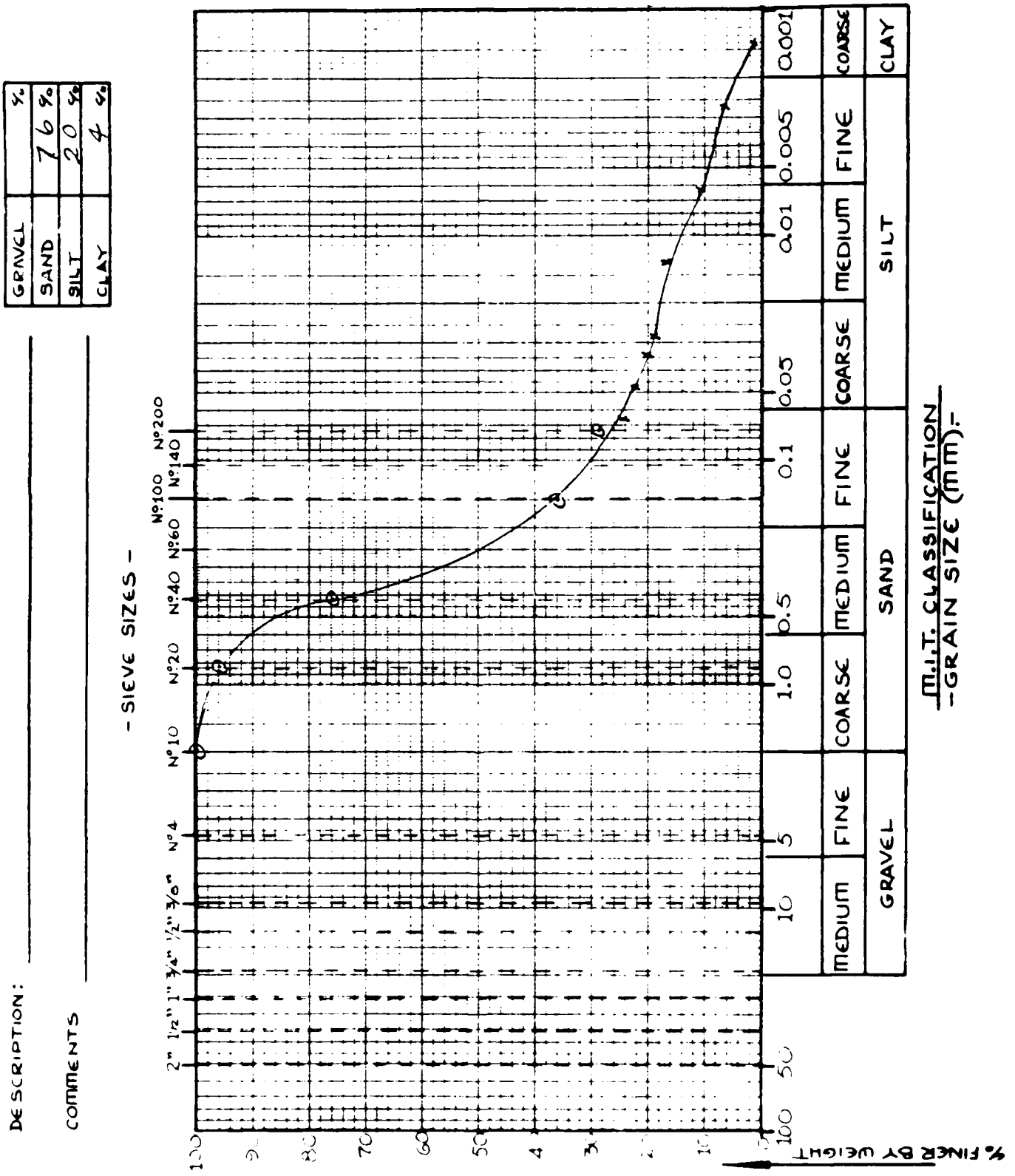
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	[illegible]			[illegible]
NO. 20	[illegible]	1.2		[illegible]
NO. 40	[illegible]	3.4		[illegible]
NO. 60				
NO. 100	[illegible]	12.6		[illegible]
NO. 140				
NO. 200	6.5	13.0		[illegible]
PAN	[illegible]	[illegible]		
TOTAL	[illegible]	[illegible]		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 20-5
DATE: 195-100
BY:

	%
GRAVEL	
SAND	76 %
SILT	20 %
CLAY	4 %



DESCRIPTION:

COMMENTS

RB 20-5
195-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/4	12		12.3	0.067	14.2	.0125	24.6	
		1	11		11.3	0.047	14.3	"	22.6	
		2	9.5		9.8	0.034	14.6	"	19.6	
		3	9	27.6	9.3	0028	14.7	"	18.6	
		14	8	—	8.3	0013	14.8	"	16.6	
		60	5	28	5.4	00063	15.3	.0124	10.8	
		335	3.5	26	3.1	00027	15.5	.0127	6.2	
		1290	0.2	28	0.6	0.0014	16.1	.0124	1.2	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\%<\text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 20-5

125-200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

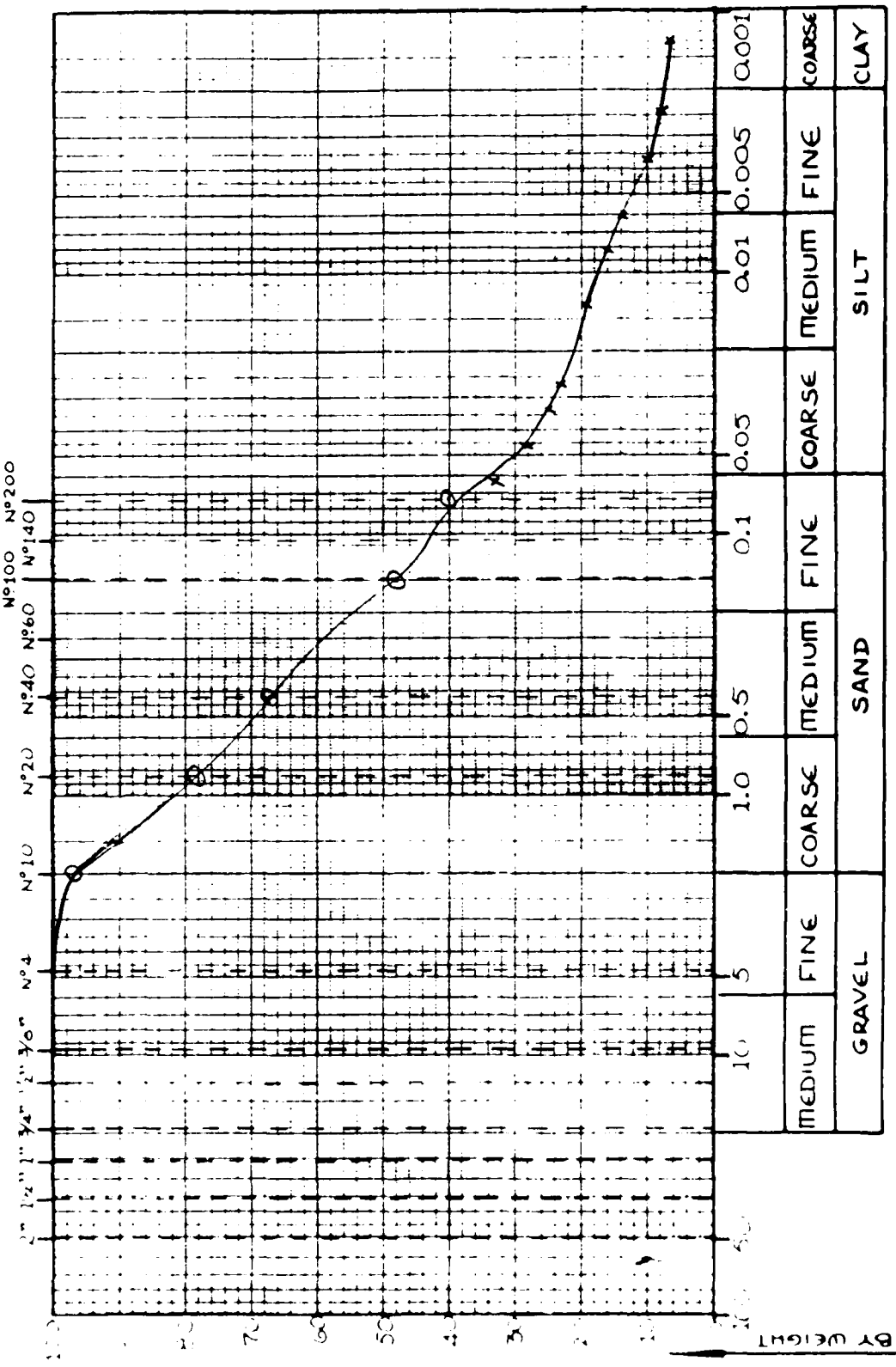
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	1			
NO. 20	2	4		
NO. 40	10.1	20.2		
NO. 60				
NO. 100	20.1	40.2		35
NO. 140				
NO. 200	3.8	7.6		
PAN				
TOTAL	50.0			

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 21-1
DATE: 130-140
BY:

GRAVEL	4 %
SAND	62 %
SILT	26 %
CLAY	8 %



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm)-

DESCRIPTION:

COMMENTS

21-1

130-140

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	15.5		16.4	0.064	13.6	.0123	32.8	
		1	13.0		13.9	0.046	14.0	"	27.8	
		~	12.0		12.9	0.033	14.1	"	25.8	
		3	11.0		11.9	0.027	14.3	"	23.8	
		14	8.5	29	9.4	0.013	14.7	"	18.8	
		35	7.0	-	7.9	0.0088	15.0	"	15.8	
		60	6.0	-	6.9	0.0061	15.1	"	13.8	
		175	4	29	4.9	0.0037	15.5	"	9.8	
		415	4	27	4.0	0.0024	15.5	.0126	8.0	
		1375	3	28	3.4	0.0013	15.6	.0124	6.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

21-1

130-140

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

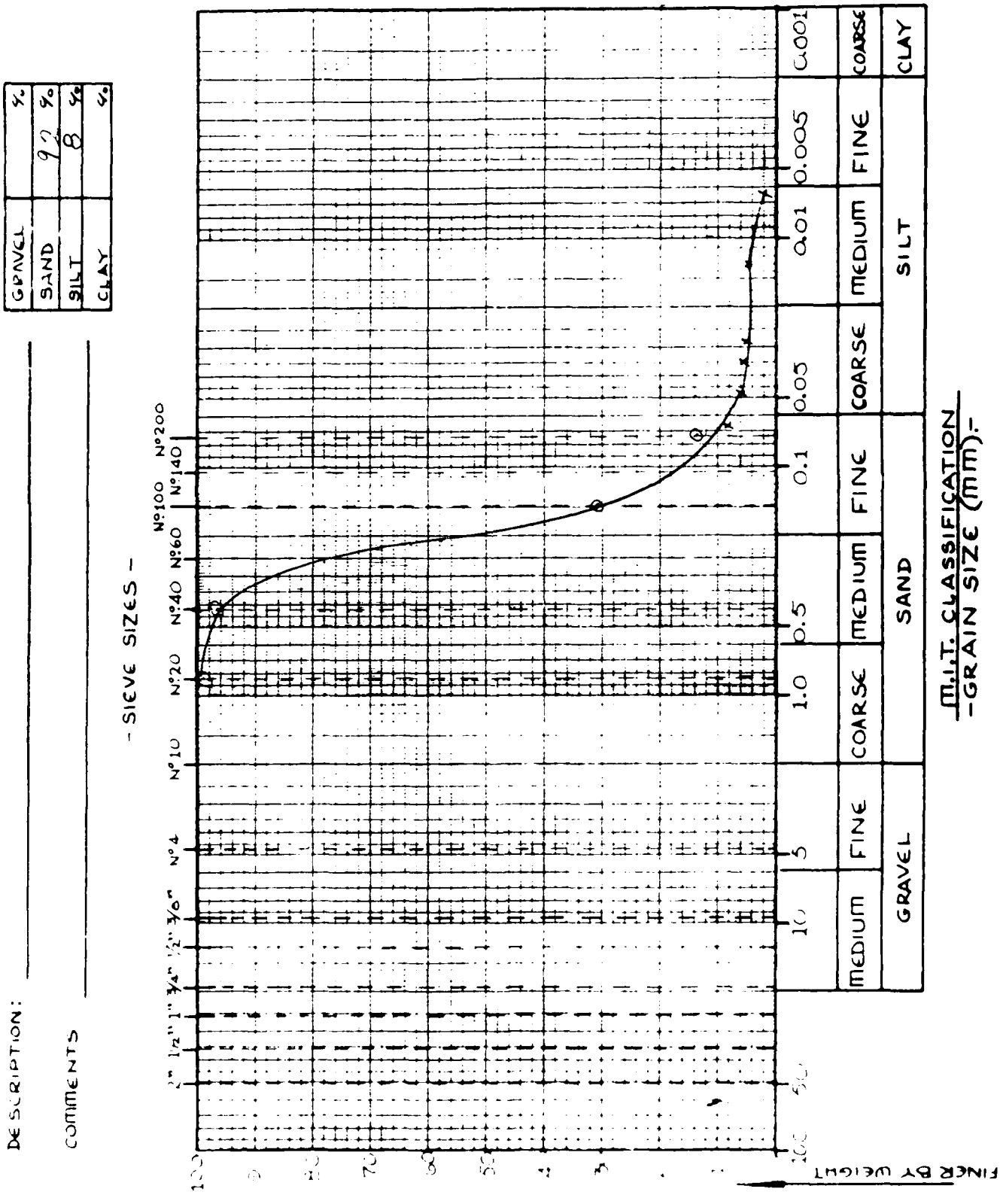
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	1.7	3.4		96.6
NO. 20	9.3	18.6		78.0
NO. 40	5.5	11.0		67.0
NO. 60				
NO. 100	9.3	18.6		48.4
NO. 140				
NO. 200	4.3	8.6		39.8
PAN	19.9	39.8		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 21-V
DATE: 170-180
BY:

	%
GRAVEL	
SAND	92 %
SILT	8 %
CLAY	%



DESCRIPTION:

COMMENTS

21-V

170-180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19___	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm-Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/4	3.0		3.9	0.069	15.6	.0123	7.8	
		1	2.0		2.9	0.049	15.8	"	5.8	
		2	2.0		2.9	0.035	"	"	5.8	
		3	1.5		2.4	0.028	16.0	"	4.8	
		14	1.5	29	2.4	0.013	16.0	"	4.8	
		58	0	—	0.9	0.0065	16.3	"	1.8	
		170	-0.2	29	0.7			"	1.4	
		440								

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

21-2

170-180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

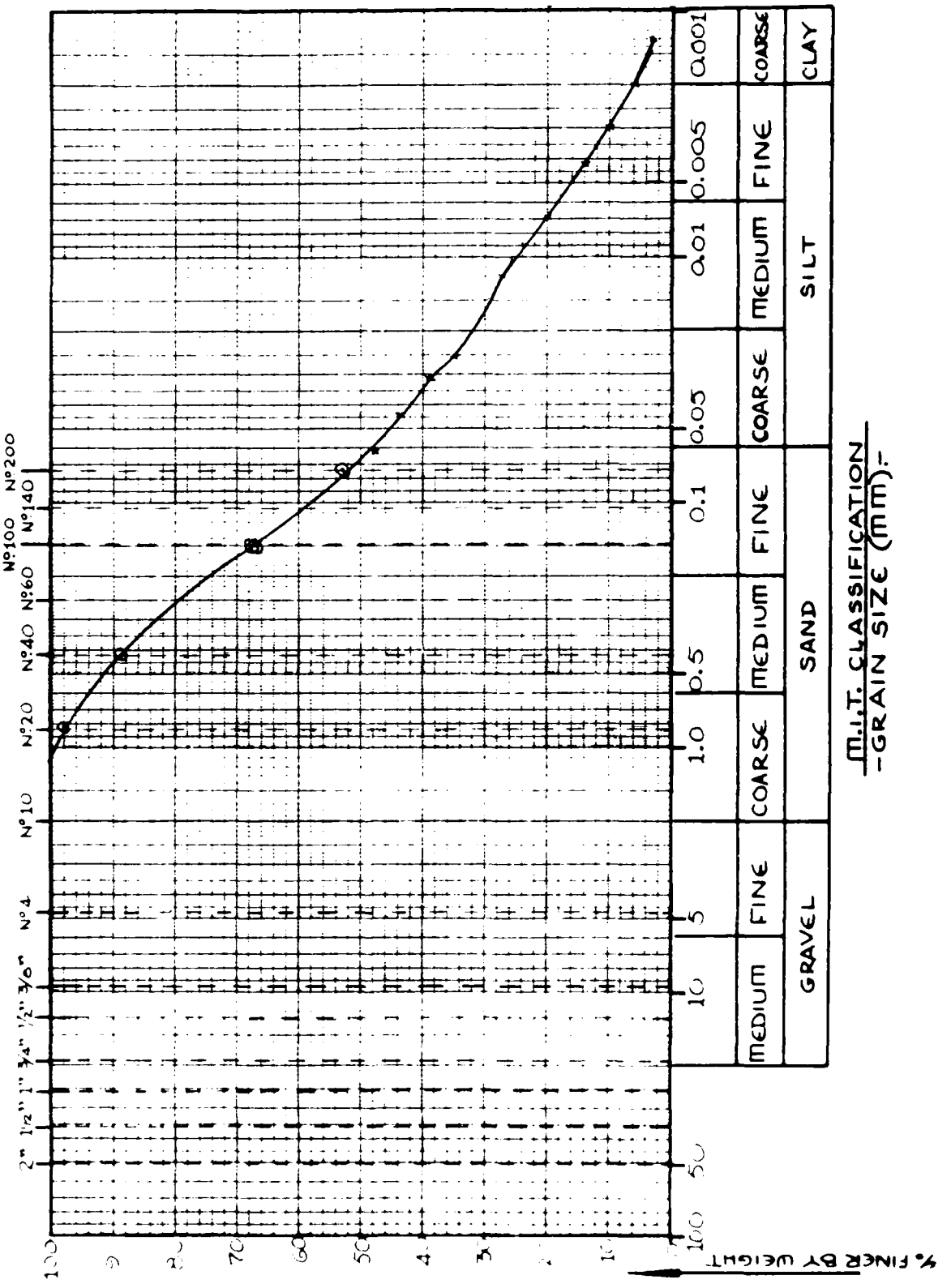
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0			100.0
NO. 20	0.5	1.0		99.0
NO. 40	0.8	1.6		97.4
NO. 60				
NO. 100	33.0	66.0		31.4
NO. 140				
NO. 200	8.5	17.0		14.4
PAN	7.2	14.4		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 22-1
DATE: 9'-10.5'
BY:

	%
GRAVEL	
SAND	52%
SILT	42%
CLAY	6%



DESCRIPTION: _____

COMMENTS _____

22-1

95-105

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	23.5	—	23.9	.061	12.3	.0124	47.8	
		1	21.5	—	21.9	.044	12.6	"	43.8	
		2	19	—	19.4	.031	13.0	"	38.8	
		3	17	28	17.4	.026	13.3	"	34.8	
		14	13	—	13.4	.012	14.0	"	26.8	
		47	9.5	28	9.9	.0069	14.6	"	19.8	
		133	6.5	28	6.9	.0047	15.1	"	13.8	
	0107	260	5.0	27	5.0	.0030	15.3	.0126	10.0	
	0730	650	4.0	24.5	3.0	.0020	15.5	.0130	6.0	
	1930	1370	1.0	28	1.4	.0013	16.0	.0124	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\%< \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

92-1

95-105

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

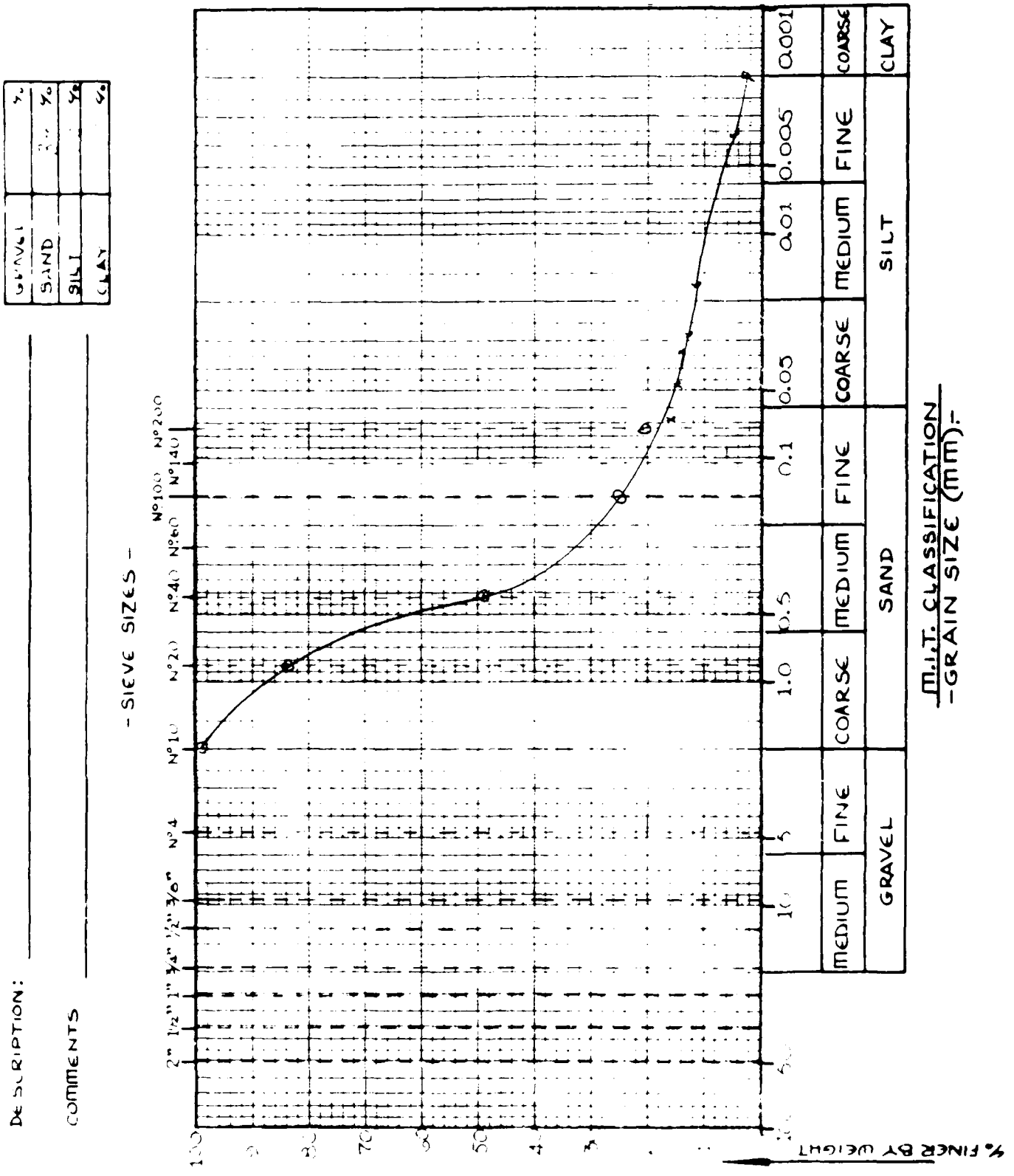
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	~~0~~ –0–			100
NO. 20	1.0	2.0		98.0
NO. 40	4.7	9.4		88.6
NO. 60				
NO. 100	10.0	20.0		68.6
NO. 140				
NO. 200	8.0	16.0		52.6
PAN	26.3	52.6		0
TOTAL	50.0	102.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	16041
SAMPLE Nº:	RB 22-2
DATE:	140'-145'
BY:	



72-2

140-145

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	8	—	8	.068	14.8	.0126	16	
		1	7.5	—	7.5	.048	14.9	"	15	
		2	7.0	—	7.0	.034	15.0	"	14	
		3	6.5	27	6.5	.028	15.1	"	13	
		8	6.2	—	6.2	.017	15.2	"	12.4	
		180	3.0	26	2.6	.0037	15.6	.0127	5.2	
		600	2.0	26	1.6	.0020	15.8	"	3.2	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 22-2
140'-145'

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

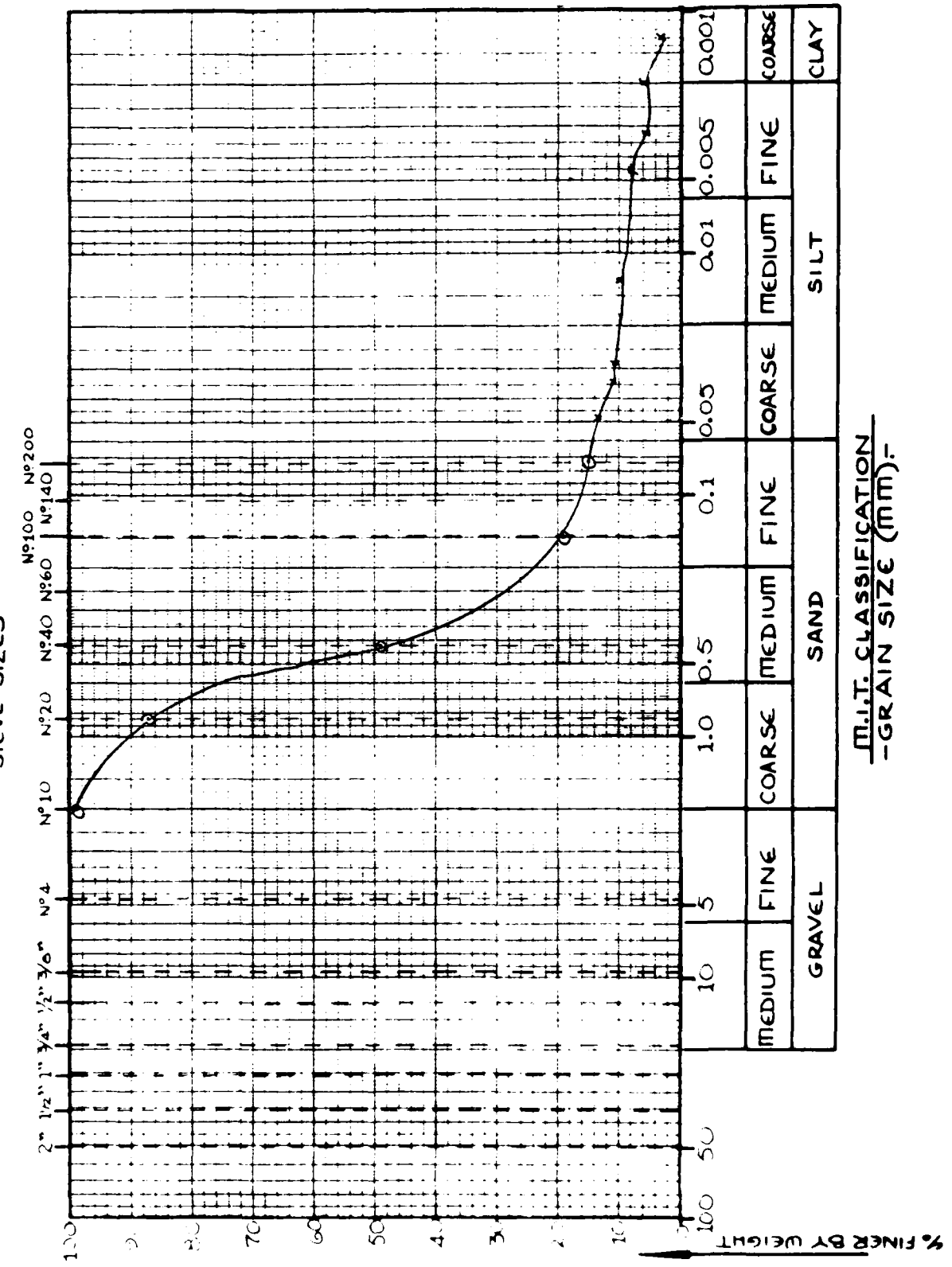
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.7	1.4		98.6
NO. 20	7.3	14.6		84.0
NO. 40	17.3	34.6		49.4
NO. 60				
NO. 100	12.1	24.2		25.2
NO. 140				
NO. 200	2.2	4.4		20.8
PAN	10.4	20.8		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 22-3
DATE:	175' - 180'
BY:	

	%
GRAVEL	
SAND	86 %
SILT	8 %
CLAY	6 %



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

DESCRIPTION: _____

COMMENTS _____

22-3

175-180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H + (Cm-Cd)	DIA-METER (mm)	L	K	N (%)	N_1 (%)
		1/2	6.5	—	1068	6.9	15.1	.0124	13.8	
		1	6.0	—	1048	6.4	15.2	"	12.8	
		2	5.0	—	1034	5.4	15.3	"	10.8	
		3	5.0	28	1028	5.4	15.3	"	10.8	
		14	4.5	—	1013	4.9	15.4	"	9.8	
		21	4.5	—	1011	4.9	15.4	"	9.8	
		118	3.5	28	1005	3.9	15.5	"	7.8	
	0150	240	3.1	27	1003	3.1	15.6	.0126	6.2	
	0730	630	2.8	24.5	1002	2.8	15.5	.0130	5.6	
	1930	1350	1.0	28	1001	1.4	16.0	.0124	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

22-3

175-150

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

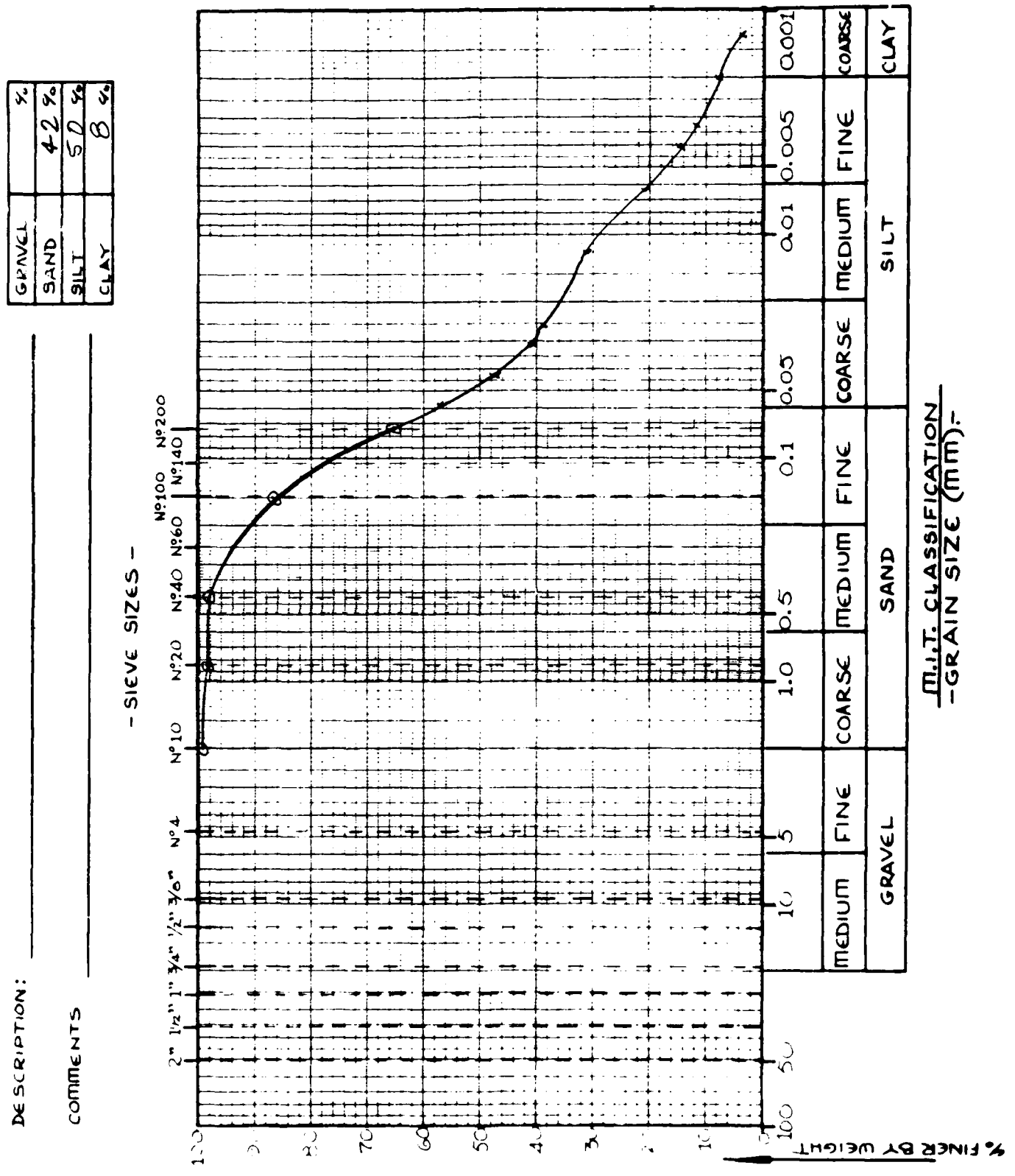
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	0.3	0.6		99.4
NO. 20	5.4	10.8		88.6
NO. 40	20.0	40.0		48.6
NO. 60				
NO. 100	14.8	29.6		19.0
NO. 140				
NO. 200	1.8	3.6		15.4
PAN	7.7	15.4		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 23-1
DATE:	80-90'
BY:	



DESCRIPTION: _____

COMMENTS _____

23-1
80-90

FILE Nº:
SAMPLE Nº:
DATE:
BY:

HYDROMETER ANALYSIS

1230

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	28	—	28.4	.059	11.5	.0124	56.8	
		1	24	—	24.4	1043	12.2	"	48.4	
		2	20	—	20.4	.031	12.9	"	40.8	
		3	19	28	19.4	.026	13.0	"	38.8	
		14	15	—	15.4	.012	13.7	"	30.8	
		15	10	28	10.4	.0063	14.5	"	20.8	
		140	7	28	7.4	.0040	15.0	"	14.8	
	0100	240	6	27	6.0	.0033	15.2	.0126	12.0	
	0730	660	5.0	24.5	4.0	.0020	15.3	.0130	8.0	
	1930	1380	1.5	28	1.9	.0013	15.9	.0124	3.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

23-1

50-90

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

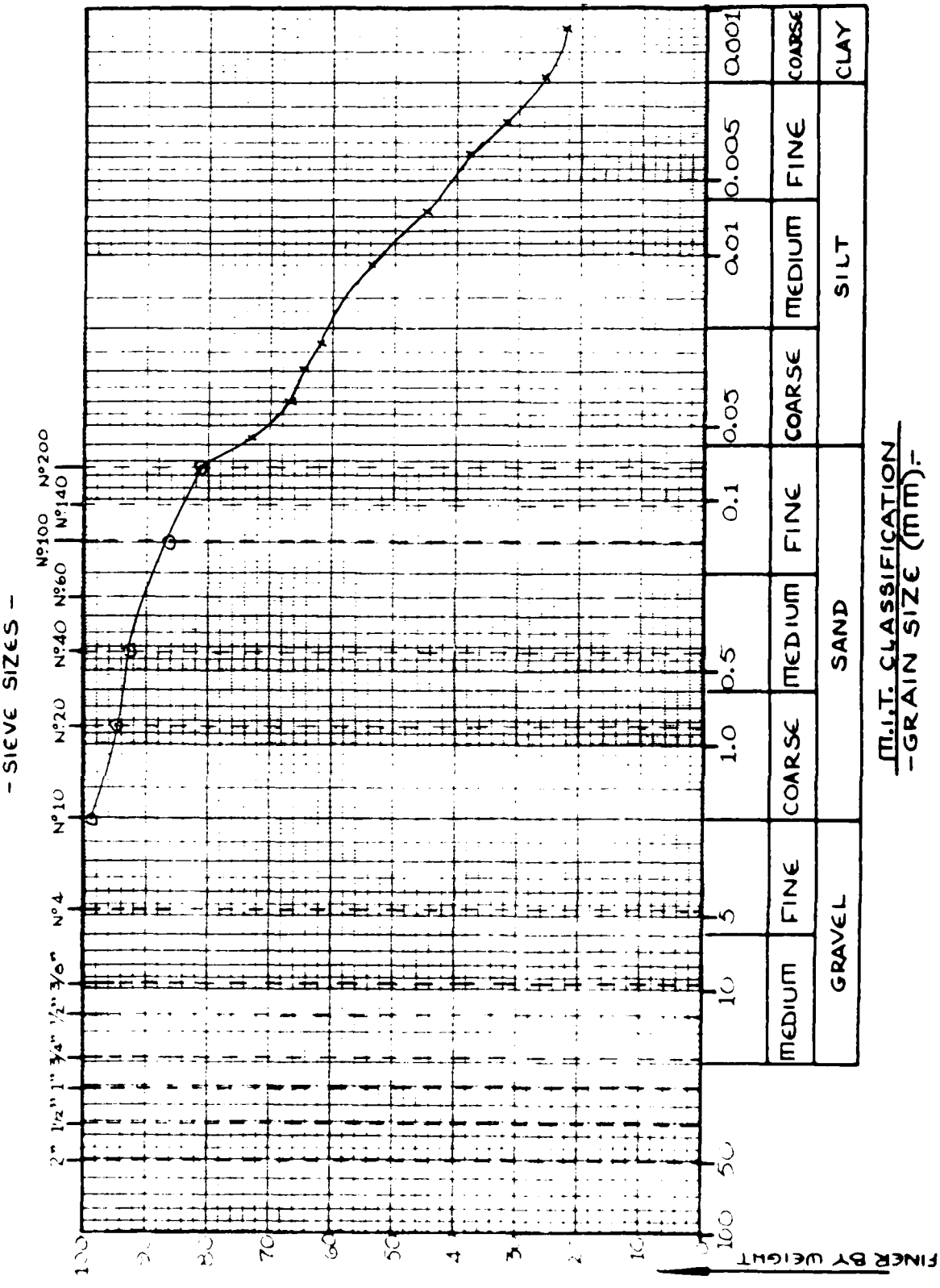
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	0.3	0.6		99.4
NO. 20	0.3	0.6		98.8
NO. 40	0.5	1.0		97.8
NO. 60				
NO. 100	5.2	10.4		87.4
NO. 140				
NO. 200	11.3	22.6		64.8
PAN	32.4	64.8		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 23-2
DATE: 155'-160'
BY:

	%
GRAVEL	
SAND	26%
SILT	48%
CLAY	26%



DESCRIPTION: _____

COMMENTS _____

10

23-2

155-160

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	36	—	36.4	.1056	10.2	.0124	72.8	
		1	34	—	34.4	.1040	10.5	"	68.8	
		2	32	—	32.4	~~.0406~~ .1029	10.9	"	64.8	
		3	30.5	28	30.9	~~.0041~~ .1023	11.1	"	61.8	
		14	26.5	—	26.9	.0916	11.8	"	53.8	
		43	22	28	22.4	.0067	12.5	"	44.8	
		129	18.5	28	18.9	.0039	13.1	"	37.8	
	0100	255	16.0	27	16.0	.0029	13.5	.0126	32.0	
	0730	645	14.0	24.5	13.0	.0019	13.8	.0130	26.0	
	1930	1365	14.0	28	14.4	.0012	13.8	.0124	28.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____

DISPERSING AGENT CORRECTION, Cd: _____ _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

23-2

155-160

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

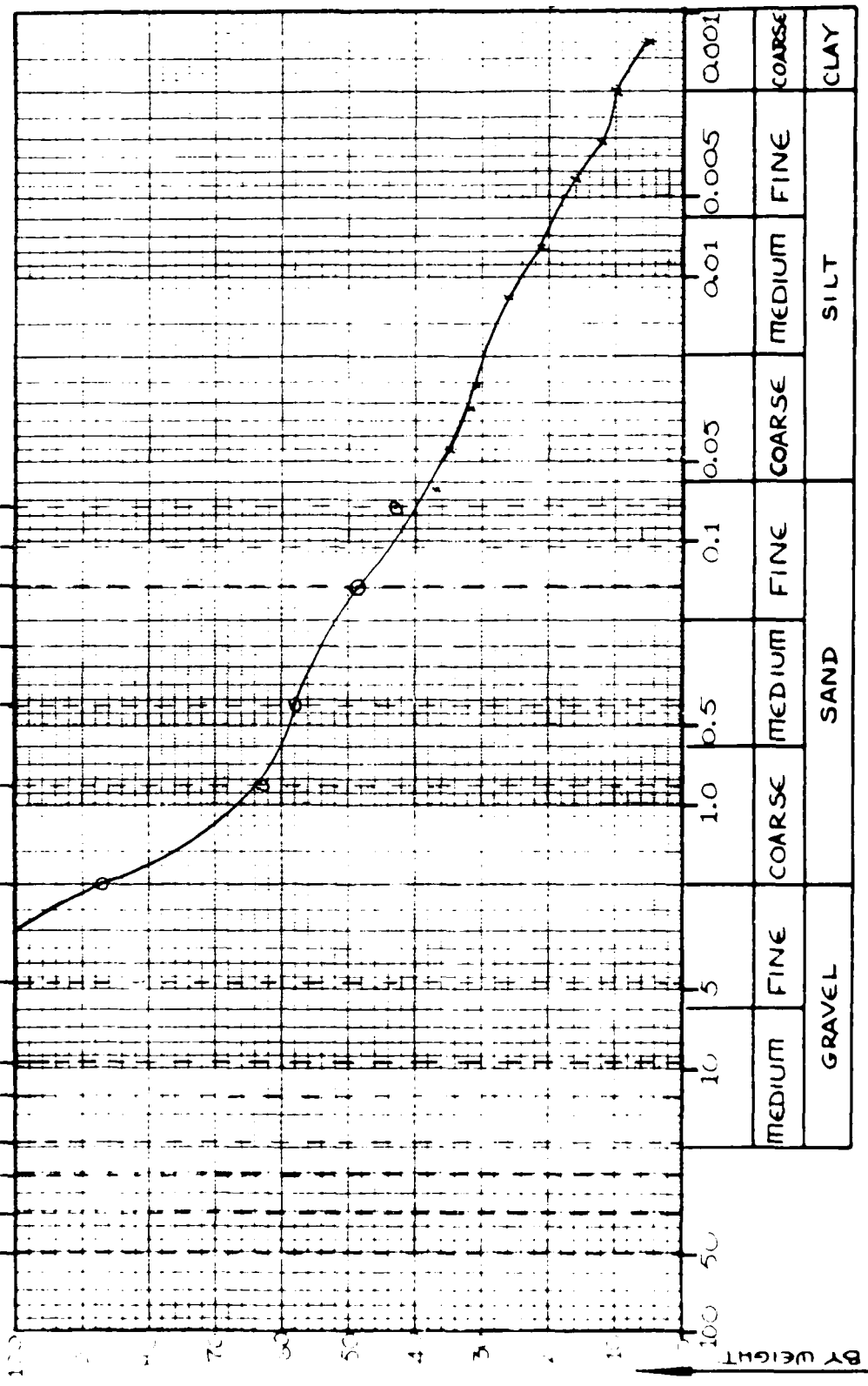
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	0.6	1.2		98.8
NO. 20	1.7	3.4		95.4
NO. 40	1.3	2.6		92.8
NO. 60				
NO. 100	3.3	6.6		86.2
NO. 140				
NO. 200	2.5	5.0		81.2
PAN	40.6	81.2		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 23-3
DATE: 175'-180'
BY:

	%
GRAVEL	
SAND	62 %
SILT	28 %
CLAY	10 %



DESCRIPTION: _____

COMMENTS _____

23-3
175-180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIA-METER (mm)	L	K	N (%)	N_1 (%)
		1½	18	—	.1064	18.4	13.2	.0124	36.8	
		1	17	—	.1045	17.4	13.3	"	34.8	
		2	16	—	.1032	16.4	13.5	"	32.8	
		3	15	28	.1026	15.4	13.7	"	30.8	
		14	12.5	—	.1012	12.9	14.1	"	25.8	
		35	10.0	28	.0078	10.4	14.5	"	20.8	
		12h	7.5	28	.0043	7.9	14.9	"	15.8	
	6/02	245	6.0	27	.0031	6.0	15.2	.0126	12.0	
	0730	635	6.0	24.5	.0020	5.0	15.2	.0130	10.0	
	1930	1355	2.0	28	.0013	2.4	15.8	.0124	4.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

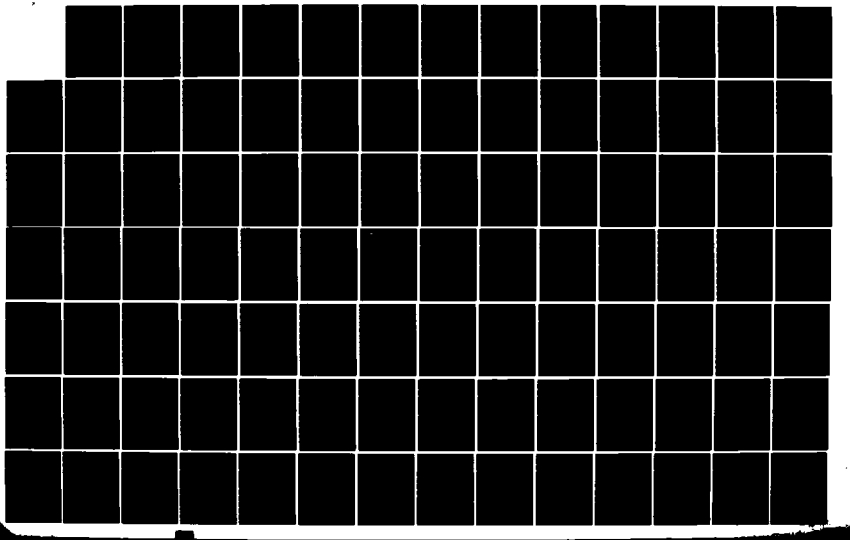
$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

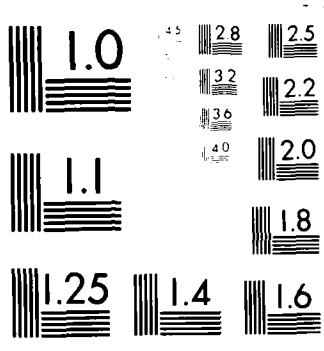
$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

AD-A156 283 INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1) 06/10
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

UNCLASSIFIED F/G 13/2 NL





MICROCOPY RESOLUTION TEST CHART

23-3

175-180

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

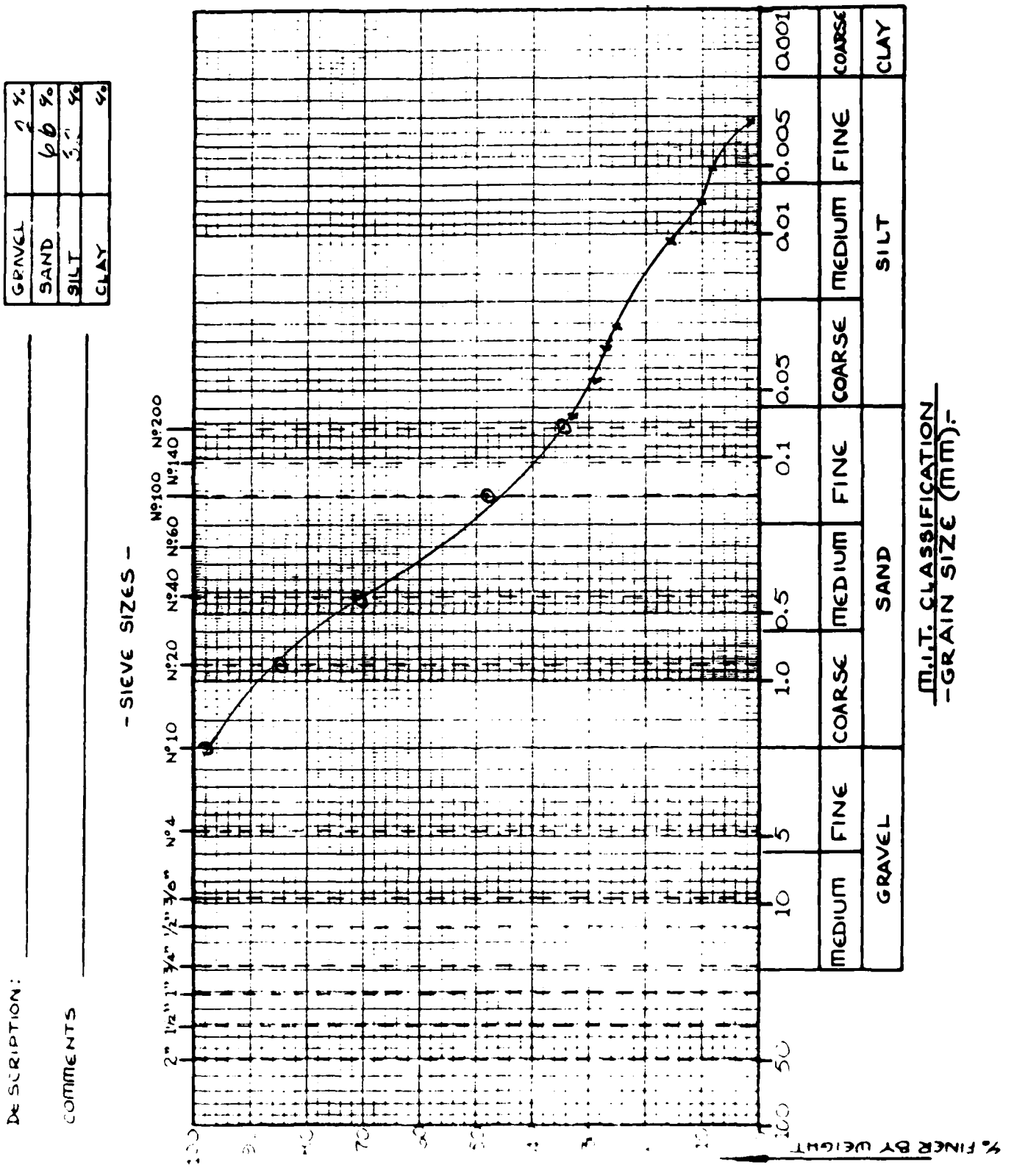
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	6.6	13.2		86.8
NO. 20	12.1	24.2		62.6
NO. 40	2.3	4.6		58.0
NO. 60				
NO. 100	5.0	10.0		48.0
NO. 140				
NO. 200	2.4	4.8		43.2
PAN	21.6	43.2		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 24
DATE: 55'-90'
BY:

GRAVEL	2 %
SAND	66 %
SILT	32 %
CLAY	%



DESCRIPTION:

COMMENTS

RB-24
SS-90

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1155 ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm or Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1¼	15		16.3	0.064	13.8	.0122	32.6	
		1	13		14.3	0.046	14	"	28.6	
		½	12		13.3	0.033	14.½	"	26.6	
		3	11		12.3	0.027	14.3	"	24.6	
		19	6.5	30	7.8	0.011	15.1	"	15.6	
		44	3.5	—	4.8	0.0072	15.5	"	9.6	
		90	3.0	29	3.9	0.0051	15.6	.0123	7.8	
	0400	250	0	24	0.4	0.0032	16.3	.0124	0.8	
	0930	280	0	27	0	0.0030	16.3	.0126	0	
	2030	1240	−1	30	0.3			.0122		

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 24

85-90

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

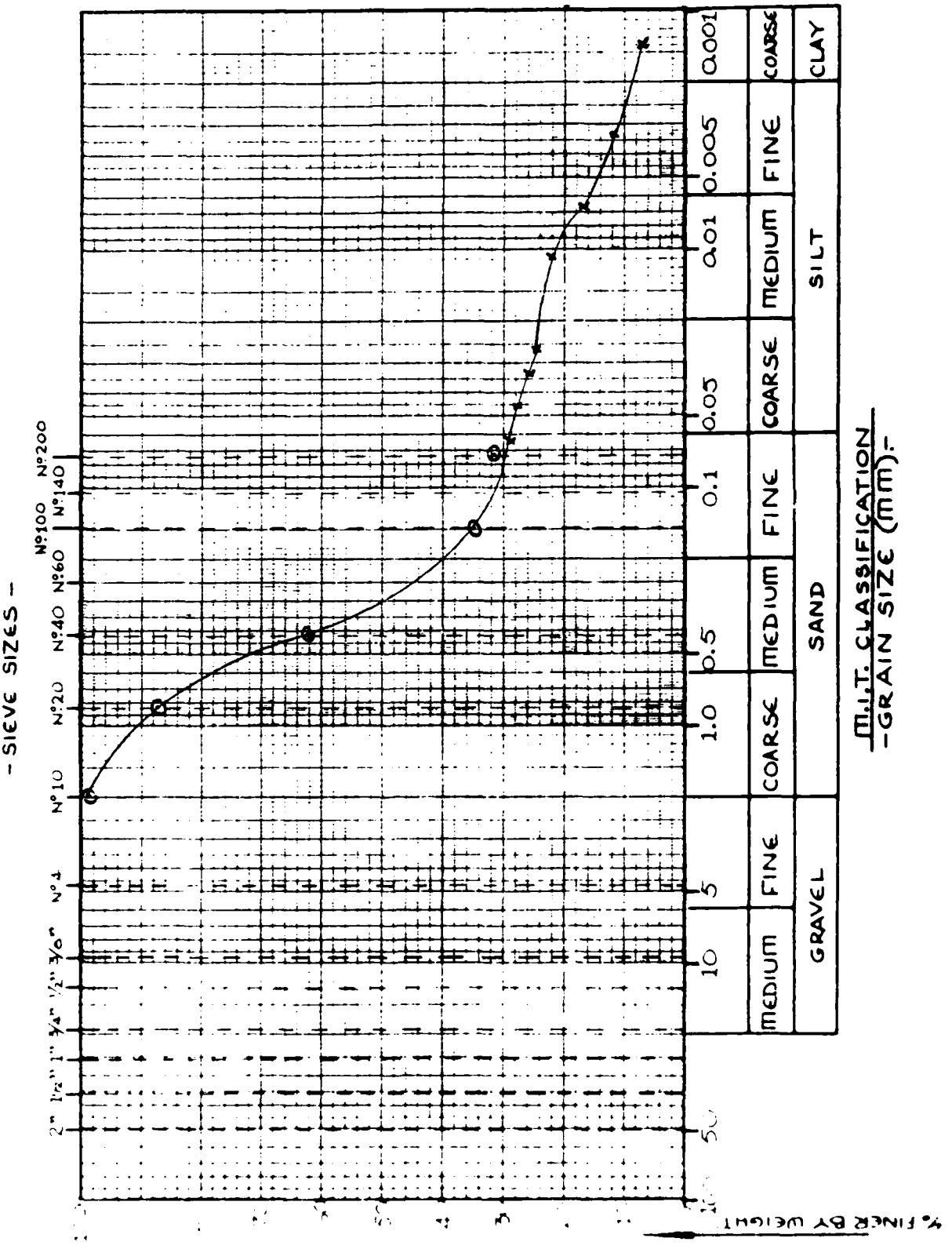
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	1.2	2.4		97.6
NO. 20	6.2	12.4		85.2
NO. 40	7.3	14.6		70.6
NO. 60				
NO. 100	11.2	22.4		48.2
NO. 140				
NO. 200	6.7	13.4		34.8
PAN	17.4	34.8		0
TOTAL	50.0	100		

REMARKS _____

GRAIN SIZE CHART

FILE Nº: 1604-1
SAMPLE Nº: RB 24-2
DATE: 95'-160'
BY:

	%
GRAVEL	
SAND	71 %
SILT	21 %
CLAY	8 %



DESCRIPTION: _____

COMMENTS _____

RB 24-2

95-110

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1225 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	13		14.3	0.165	14.0	.0122	28.6	
		1	12.5		13.8	0.046	14.0	"	27.6	
		2	12		13.3	0.033	14.2	"	26.6	
		3	11		12.3	0.027	14.3	"	24.6	
		19	9.5	30	10.8	0.011	14.5	"	21.6	
		50	7.0	—	8.3	0.0067	15.0	"	16.6	
	0400	220	5.4	24	5.8	0.0033	15.3	.0124	11.6	
	0900	250	5.0	27	5.0	0.0031	15.3	.0126	10.0	
	2030	1210	2.0	30	3.3	0.0014	15.8	.0122	6.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 24 - 2

95 - 110

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

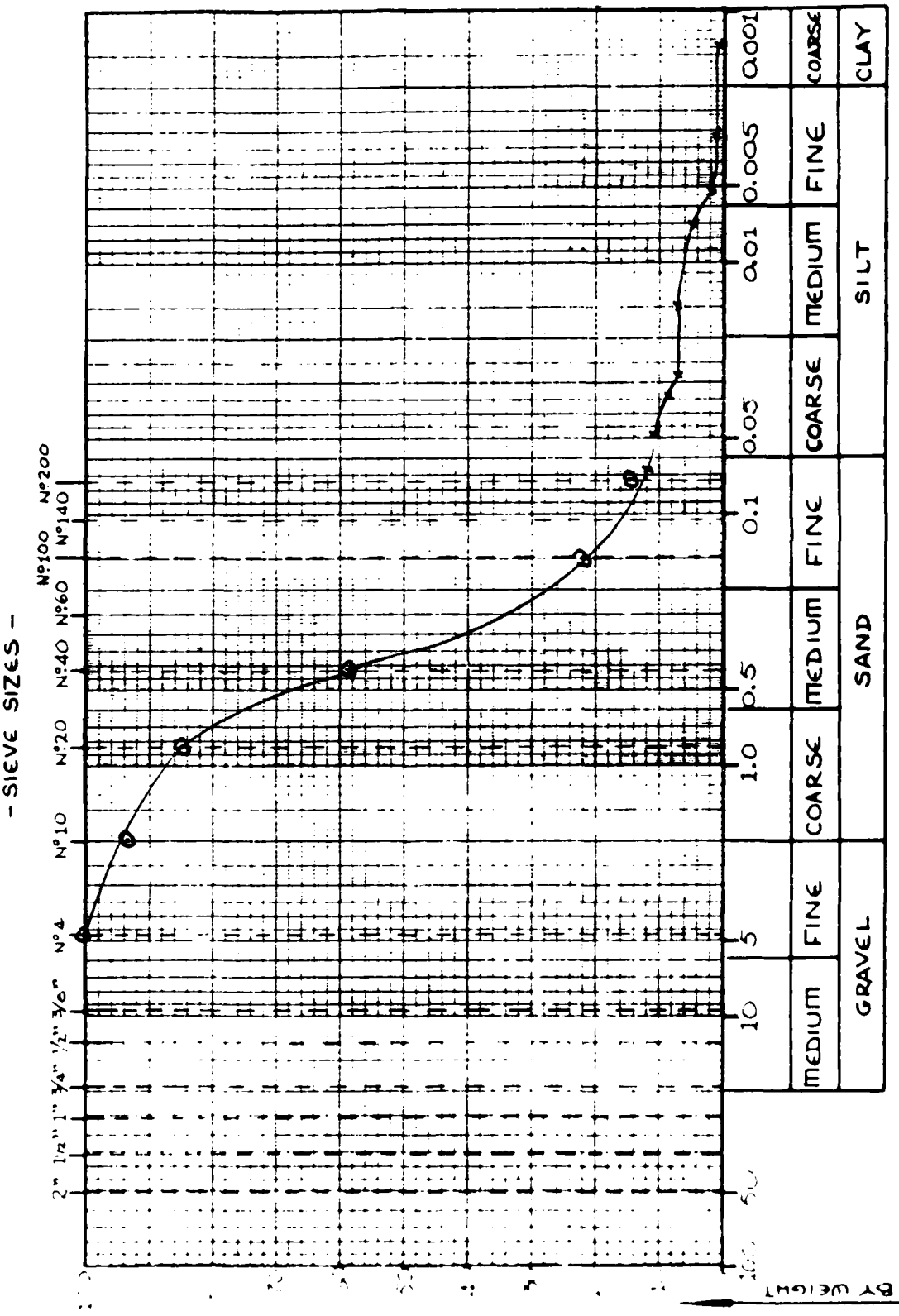
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	0.6	1.2		98.8
NO. 20	5.8	11.6		87.2
NO. 40	12.4	24.8		62.4
NO. 60				
NO. 100	13.6	27.2		35.2
NO. 140				
NO. 200	1.7	3.4		31.8
PAN	15.9	31.8		
TOTAL	50.0	100		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	1604-1
SAMPLE Nº:	RB 24-3
DATE:	120'-130'
BY:	

GRAVEL	0 %
SAND	83 %
SILT	10 %
CLAY	7 %



DESCRIPTION: _____

COMMENTS _____

RB 24-3

120 - 130

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1205 A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/4	4.5		5.8	0.067	15.3	.0122	11.6	
		1	4.0		5.3	0.048	15.5	"	10.6	
		4	3.0		4.3	0.034	15.6	"	8.6	
		9	2.0		3.3	0.028	15.8	"	6.6	
		16	2.0	30	3.3	0.015	15.8	"	6.6	
		36	1.0	/	2.3	0.0081	16.0	"	4.6	
		80	0	29	0.9	0.0055	16.1	.0123	1.8	
	0400	240	0	28	0.4	0.0032	16.1	.0124	0.8	
	0930	270	0	27	0	0.0031	16.1	.0126	0	
	2030	1230	-1	30	0.3	0.0014	16.3	.0122	0.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 24-3

120 - 130

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

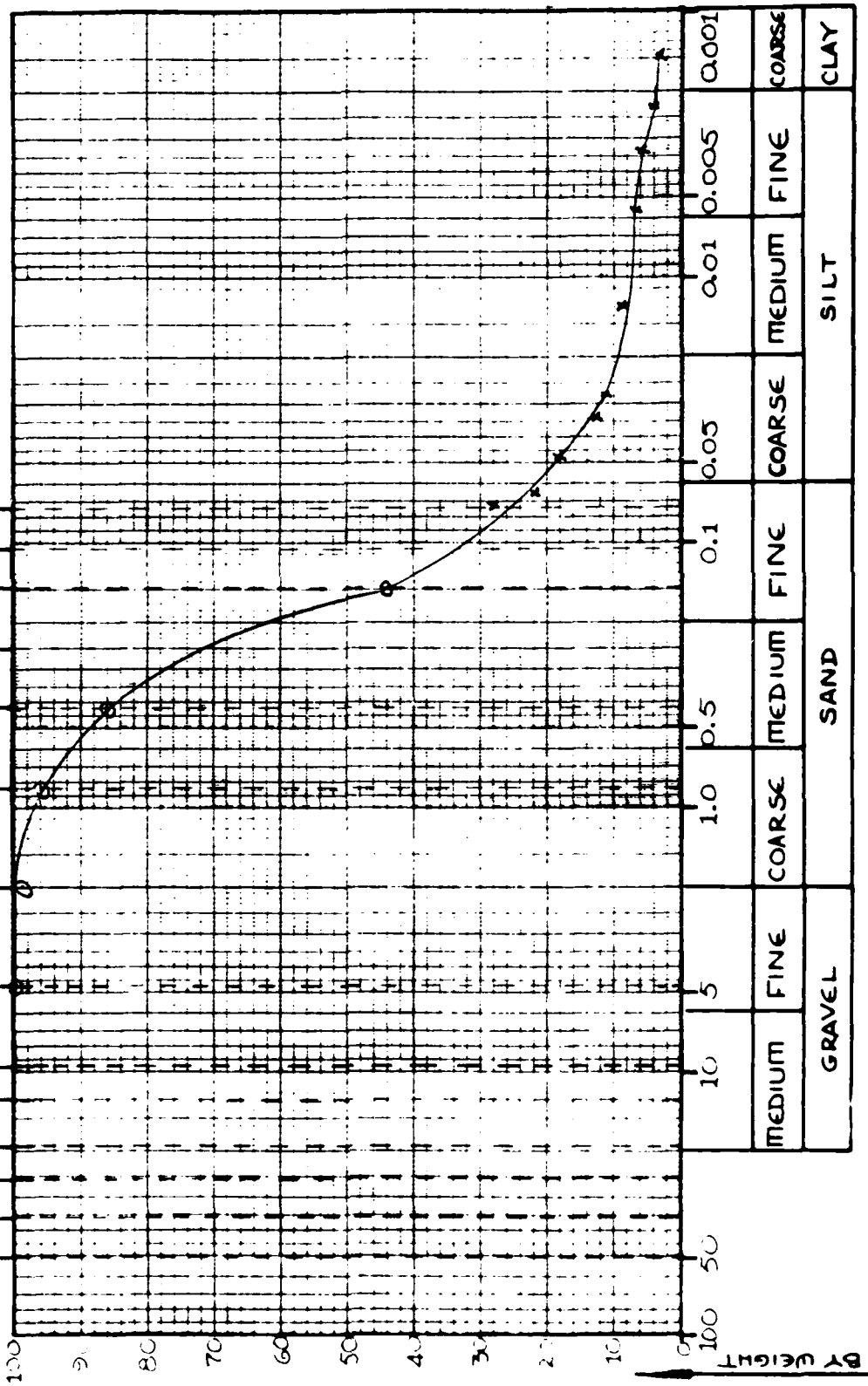
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	2.9	[illegible]		94.2
NO. 20	4.8	9.6		[illegible]
NO. 40	12.8	25.6		[illegible]
NO. 60				
NO. 100	18.5	37.0		[illegible]
NO. 140				
NO. 200	3.3	[illegible]		15.6
PAN	7.7	[illegible]		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 25-1
DATE: 150-160
BY:

GRAVEL	1 %
SAND	77 %
SILT	18 %
CLAY	4 %



DESCRIPTION: _____

COMMENTS _____

RB25-1

150-160

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	10.5		10.9	0.067	14.4	.0124	21.8	
		1	8.5		8.9	0.048	14.7	"	17.8	
		2	6.0		6.4	0.034	15.2	"	12.8	
		3	5.2	28	5.6	0.028	15.3	"	11.2	
		14	4.0	—	4.4	0.013	15.5	"	8.8	
		75	3	28	3.4	0.0057	15.6	"	6.8	
		235	3	26.5	2.8	0.0033	15.6	.0127	5.6	
		475	3	25	2.1	0.0023	15.6	.0129	4.2	
		1135	1.5	27	1.5	0.0015	15.9	.0126	3.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____ _____.

DISPERSING AGENT CORRECTION, C_d: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 25-1

150-160

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

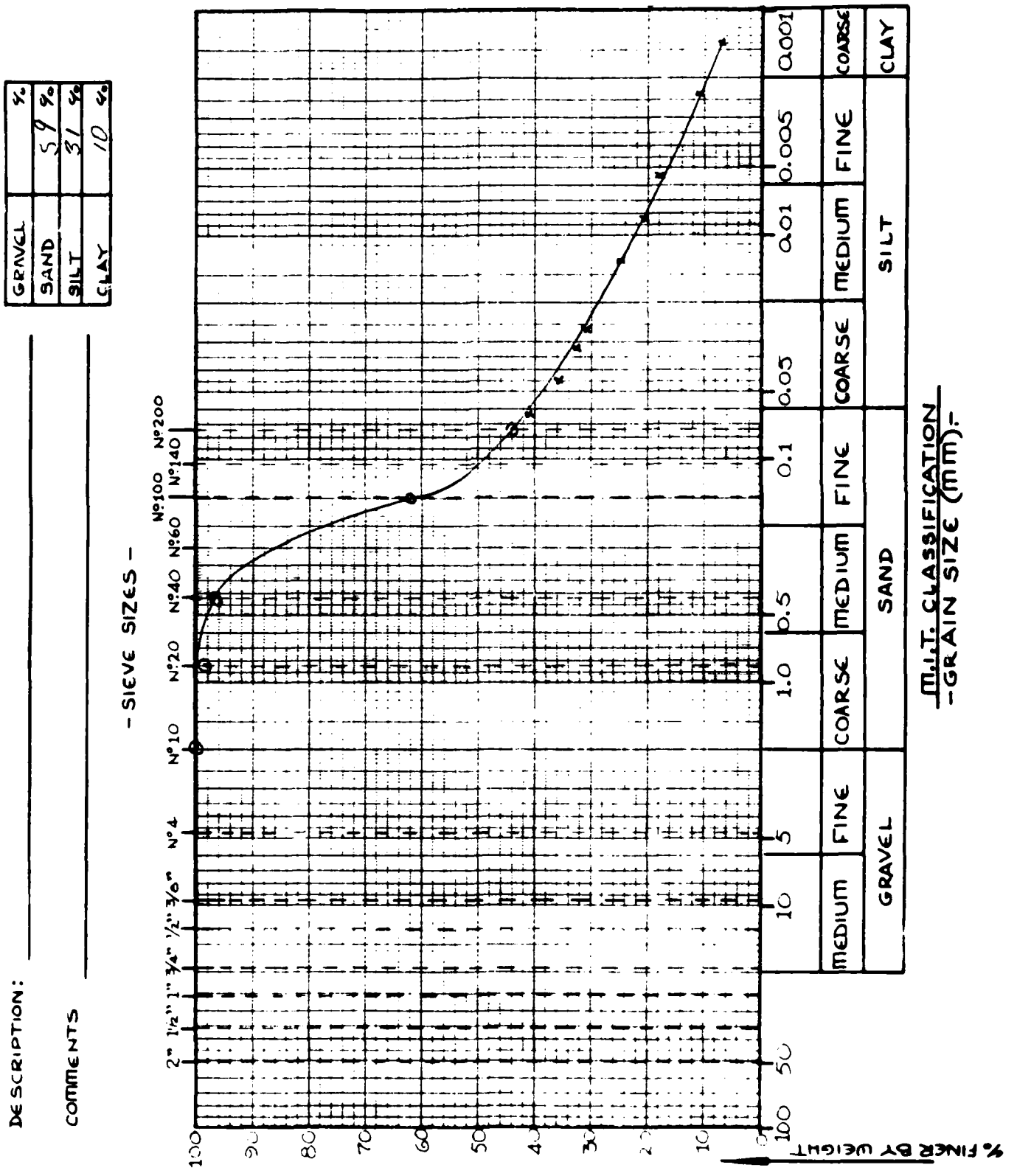
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100
NO. 10	0.4	0.8		99.2
NO. 20	1.7	3.4		95.8
NO. 40	5.0	10.0		85.8
NO. 60				
NO. 100	21.0	42.0		43.8
NO. 140				
NO. 200	7.8	15.6		28.2
PAN	14.1	28.2		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 25-3
DATE: 1-27-94
BY:



RBx5-3

187-190

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (CmrCd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/4	20		20.3	0.064	12.9	.0135	40.6	
		1	17.5		17.8	0.045	13.2	"	35.6	
		2	16		16.3	0.032	13.5	"	32.6	
		3	15	27.6	15.3	0.027	13.7	"	30.6	
		14	12	—	12.3	0.013	14.2	"	24.6	
		34	10	—	10.3	0.0082	14.5	"	20.6	
		76	8.5	28	8.9	0.0055	14.7	.0124	17.8	
		345	6.0	26	5.6	0.0024	15.2	.0127	11.2	
		1300	3.0	28	3.4	0.0012	15.6	.0124	6.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 25-3

187-190

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	– 0 –			
NO. 20	0.3	0.6		
NO. 40	1.4	2.8		
NO. 60				
NO. 100	17.4	34.8		
NO. 140				
NO. 200	9.0	18.0		
PAN	2.9	5.8		
TOTAL	50.0			

REMARKS _____

GRAIN SIZE CHART

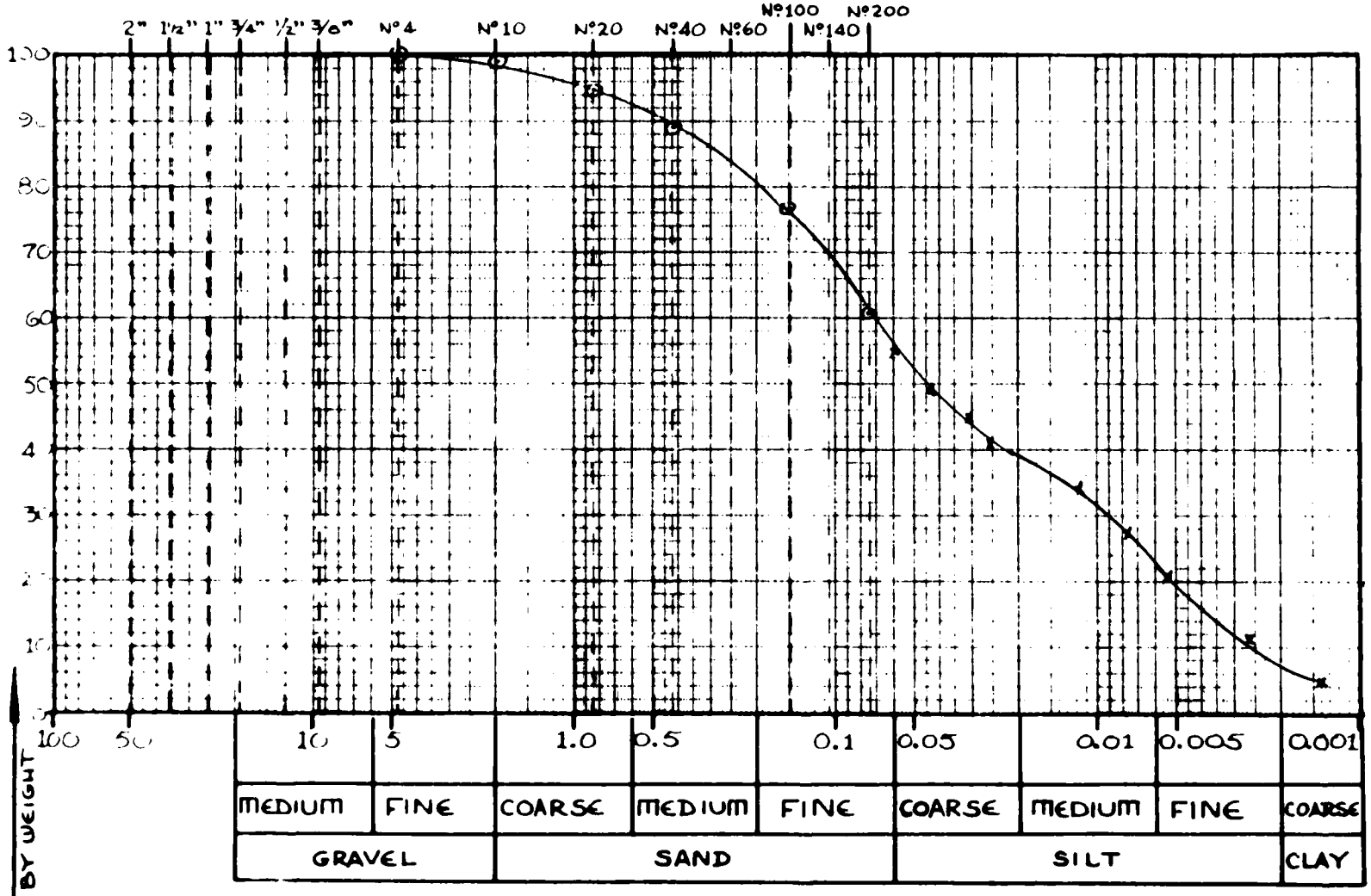
DESCRIPTION: _____

COMMENTS _____

GRAVEL	1 %
SAND	43 %
SILT	49 %
CLAY	7 %

FILE Nº:
SAMPLE Nº: RB 26-2
DATE: 140-150
BY:

- SIEVE SIZES -



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

RB 26-2
140-150

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY:

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	27		27.3	0.060	11.7	.0175	54.6	
		1	24		24.3	0.044	12.2	"	48.6	
		2	22		22.3	0.031	12.5	"	44.6	
		3	20	27.6	20.3	0.026	12.9	"	40.6	
		14	17.5	—	17.8	0.012	13.2	"	35.6	
		38	13.2	—	13.5	0.0076	14.0	"	27.0	
		80	10	28	10.4	0.0053	14.5	.0124	20.8	
		350	6.5	28	6.1	0.0026	15.1	.0127	12.2	
		1305	2.0	28	2.4	0.0014	15.8	.0124	4.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 26-2

140-150

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				1[illegible]
NO. 10	0.4	0.8		99.2
NO. 20	1.9	3.8		[illegible]
NO. 40	3.3	6.6		[illegible]
NO. 60				
NO. 100	6.0	12.0		7[illegible]
NO. 140				
NO. 200	7.8	15.6		51.2
PAN	30.6	61.2		
TOTAL	50.0	1[illegible]		

REMARKS _____

10

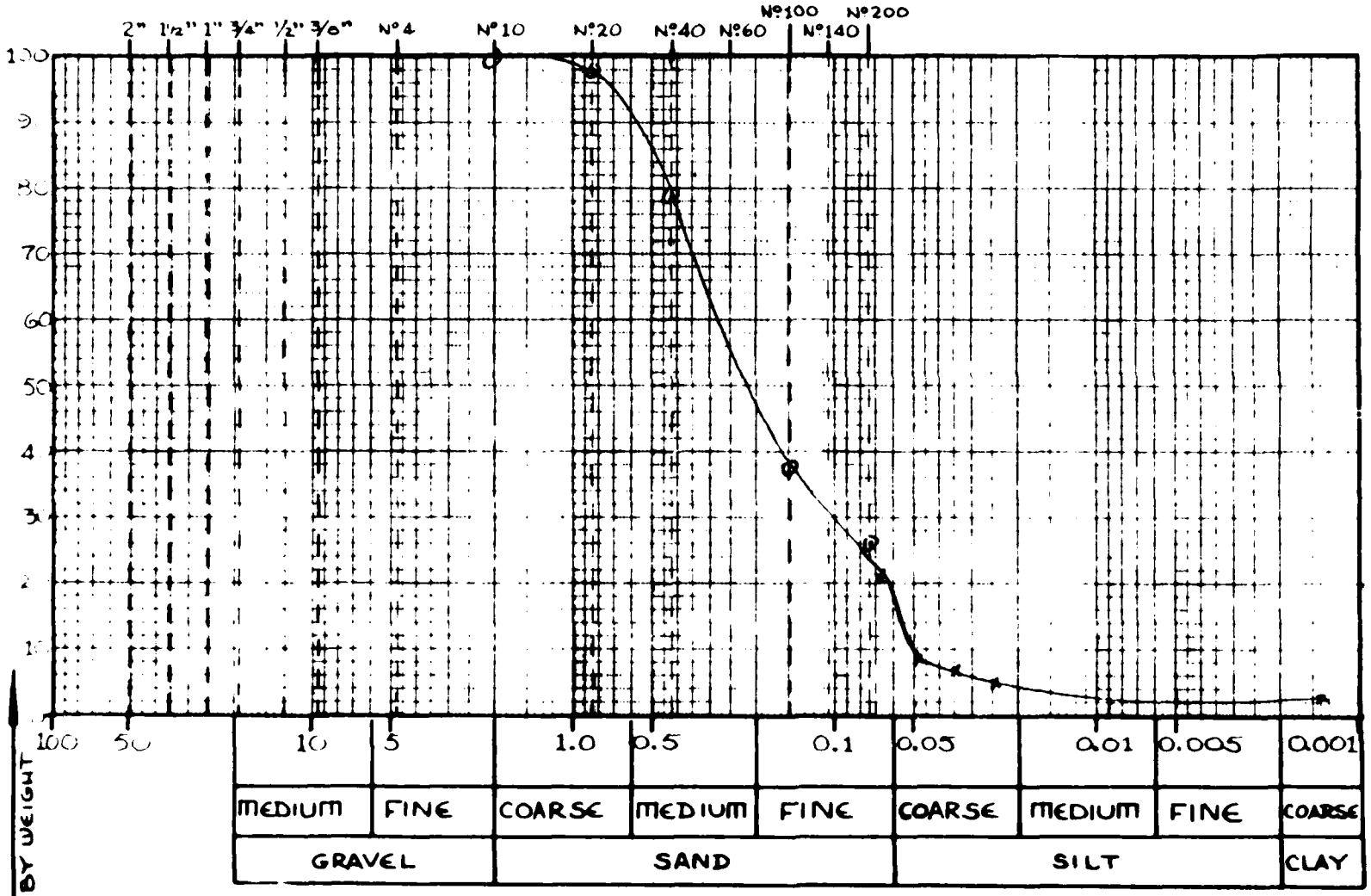
GRAIN SIZE CHART

DESCRIPTION: _____

COMMENTS _____

GRAVEL	%
SAND	82 %
SILT	16 %
CLAY	2 %

FILE Nº:
SAMPLE Nº: RB 26-3
DATE:
BY:



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm):-

RB 26-3
200

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_{H_1} = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/4	5		5.3	0.069	15.3	.0135	10.6	
		1	4		4.3	0.049	15.5	"	8.6	
		2	3	27.4	3.3	0.035	15.6	"	6.6	
		3	2	-	2.3	0.029	15.4	"	4.6	
		14	1.5	-	1.8	0.014	15.9	"	2.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 26-3

200

— SIEVE ANALYSIS —

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0			100 0
NO. 20	2.1	1.8		[illegible]
NO. 40	21.7	19.4		[illegible]
NO. 60				
NO. 100	[illegible]	41.4		[illegible]
NO. 140				
NO. 200	5.5	11.0		[illegible]
PAN	13.2	26.4		
TOTAL	50.0	100 0		

REMARKS _____

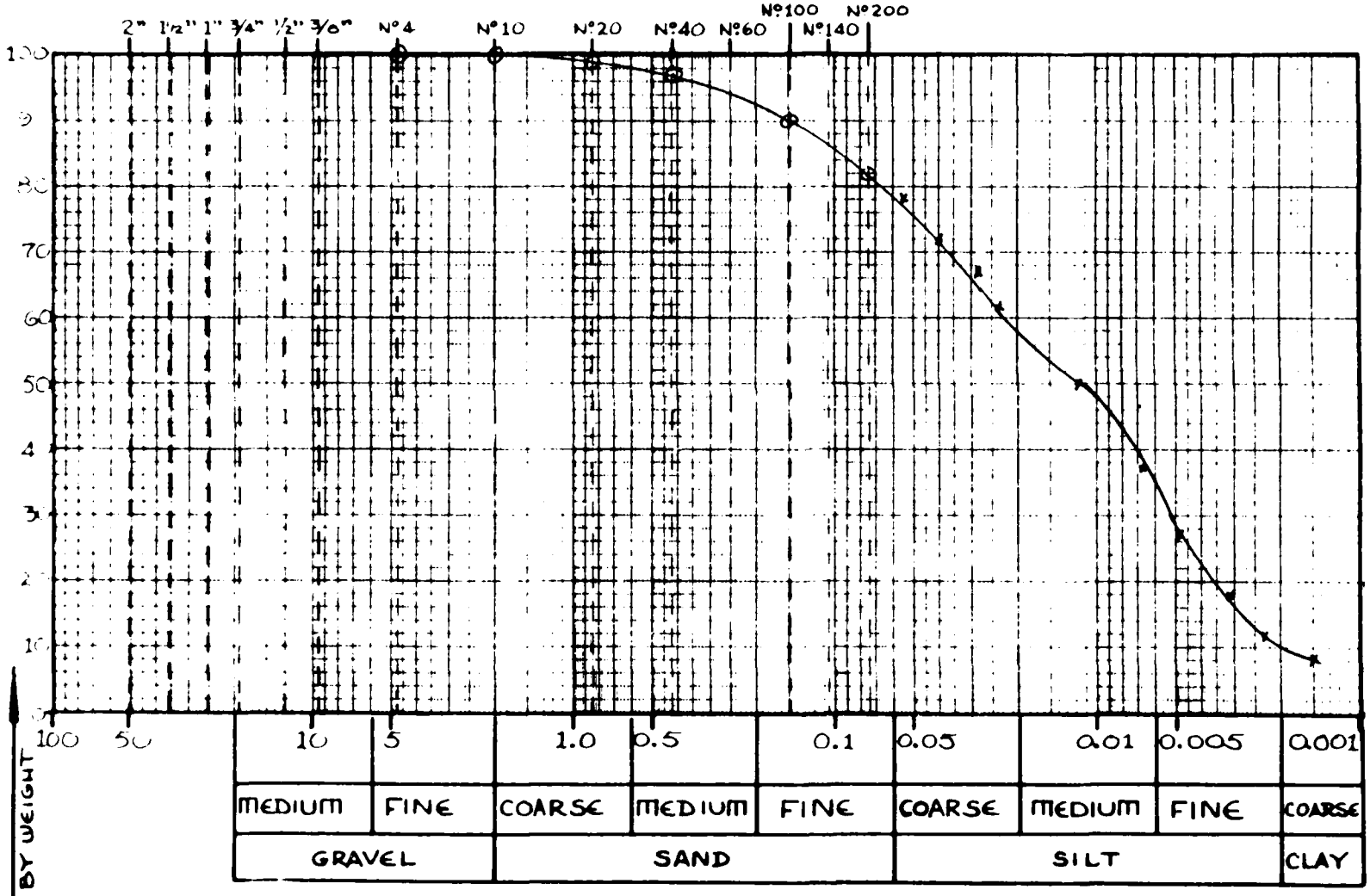
GRAIN SIZE CHART

DESCRIPTION: _____

COMMENTS _____

GRAVEL	%
SAND	22 %
SILT	68 %
CLAY	10 %

FILE Nº: RB 27-1
SAMPLE Nº: 150-160
DATE:
BY:



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

RB271
150-160

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY:

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = Ru + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1½	34		39.2	0.055	9.7	.0165	78.4	
		1	36		36.2	0.040	10.2	"	72.4	
		2	33.5		33.7	0.029	10.7	"	67.4	
		3	31	27.5	31.2	0.024	11.1	"	62.4	
		4	25	–	25.2	0.012	12.0	"	50.4	
		4 2	18.5	–	18.7	0.0070	13.1	"	37.4	
		90	13.5	28	13.7	0.0049	13.9	.0124	27.4	
		250	9	26.5	8.8	0.0031	14.7	.0127	17.6	
		490	7	25	6.1	0.0023	15.0	.0129	12.2	
		1150	4	27	4.0	0.0015	15.5	.0126	8.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10				
NO. 20				
NO. 40				
NO. 60				
NO. 100				
NO. 140				
NO. 200				
PAN				
TOTAL				

REMARKS _____

IC

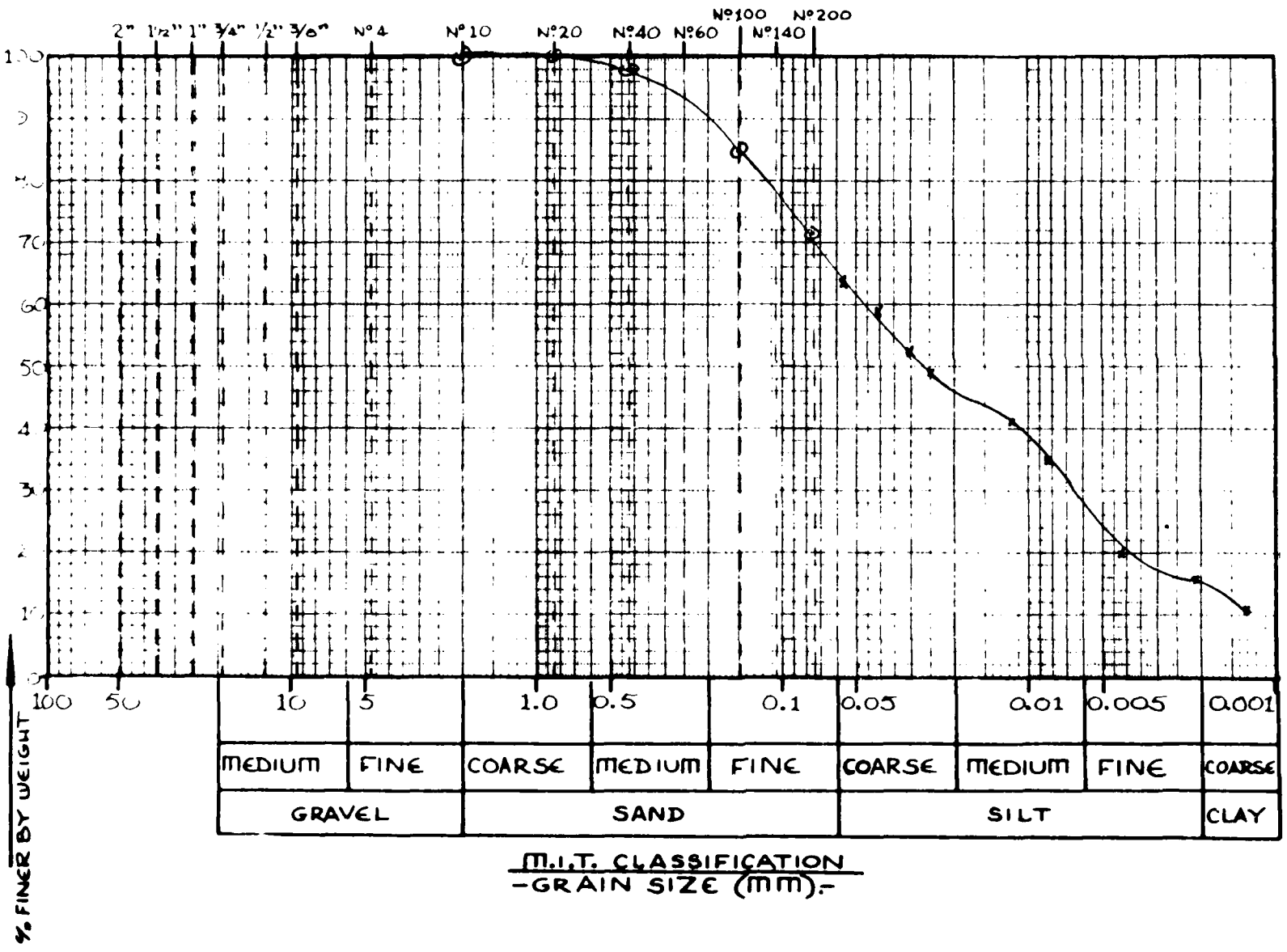
GRAIN SIZE CHART

DESCRIPTION: _____

COMMENTS _____

GRAVEL	%
SAND	34 %
SILT	50 %
CLAY	16 %

FILE Nº: _____
SAMPLE Nº: RB23-2
DATE: _____
BY: LLo-190



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

RB 27-2

180-190

FILE Nº:
SAMPLE Nº:
DATE:
BY:

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	$R_H = R_H + (C_m - C_d)$	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	30.5		32	0.057	11.1	.0122	64	
		1	28		29.5	0.041	11.5	"	59	
		2	25		26.5	0.030	12.0	"	53	
		3	23	30.5	24.5	0.025	12.4	"	49	
		14	19	—	20.5	0.012	13.0	"	41.0	
		29	16	—	17.5	0.0083	13.5	"	35	
		200	9	29.5	10.1	0.0033	14.7	.0123	20.2	
		515	7.5	28.5	8.1	0.0021	14.9	.0124	16.2	
		1325	5	28	5.4	0.0013	15.3	"	10.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB27-2

180-190

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

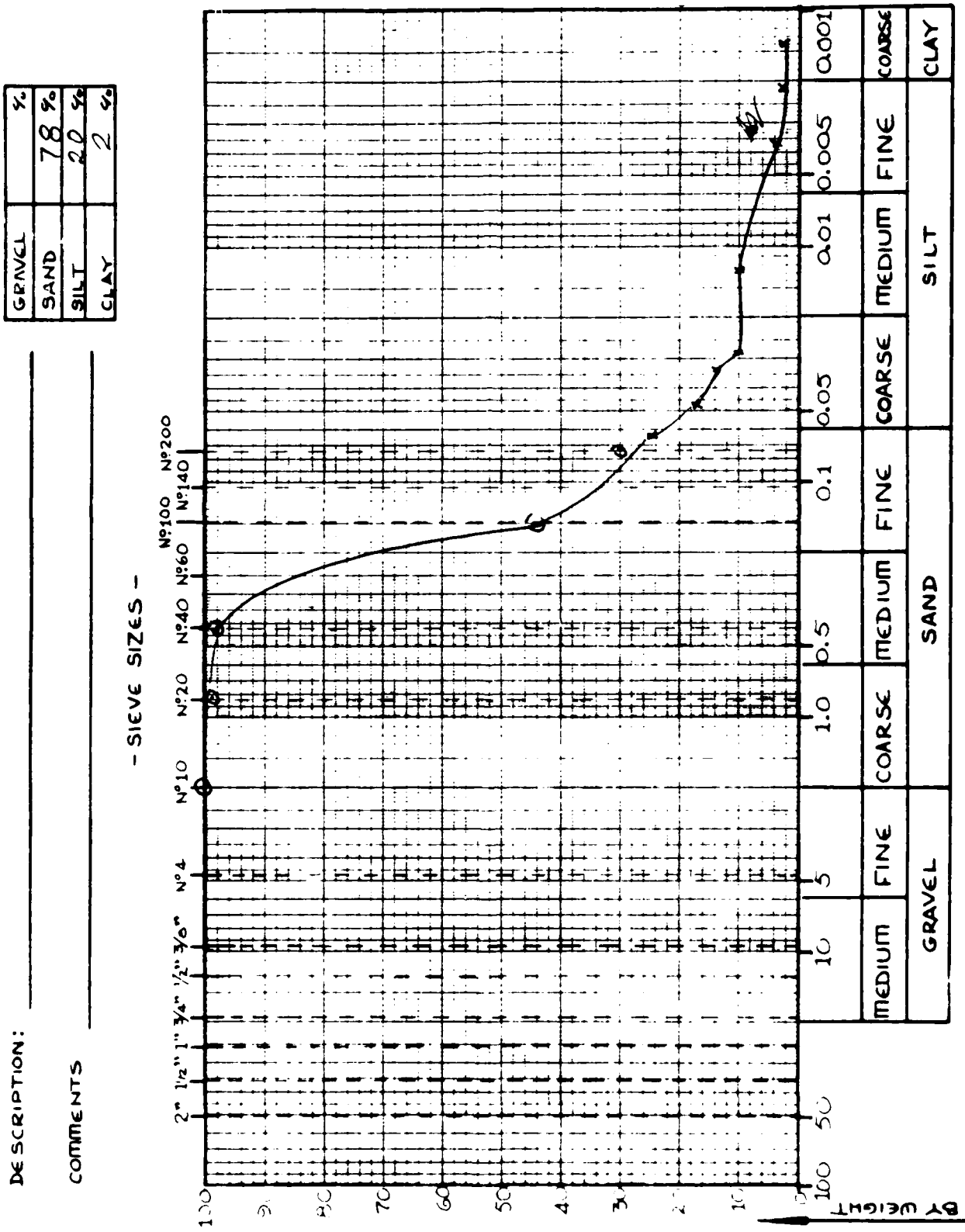
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10				[illegible]
NO. 20	0.2	0.4		[illegible]
NO. 40	0.6	1.2		[illegible]
NO. 60				
NO. 100	6.8	3.6		[illegible]
NO. 140				
NO. 200	6.4	[illegible]		[illegible]
PAN	[illegible]	[illegible]		
TOTAL	500	[illegible]		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: KB 27-3
DATE: 190-195
BY:



DESCRIPTION:

COMMENTS

RB 77-3

190-195

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	11		12.5	0.065	14.3	.0122	25.0	
		1	7		8.5	0.047	15.0	"	17.0	
		2	5.5		7.0	0.034	15.2	"	14.0	
		3	3.5	30.5	5.0	0.028	15.5	"	10.0	
		14	3.5	—	5.0	0.013	15.6	"	10.0	
		185	1.0	29.0	1.9	0.0036 0.0027	16.6	.0123	3.8	
		500	1.0	28.5	1.6	0.0022	16.0	.0124	3.2	
		1310	1.0	28	1.4	0.0014	16.0	.0124	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

B-3,27-2

90-105

– SIEVE ANALYSIS –

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10				
NO. 20	0.7	0.6		
NO. 40	0.9			
NO. 60				
NO. 100	21.8			5
NO. 140				
NO. 200	12.7			29
PAN		32.4		
TOTAL	50.0			

REMARKS _____

GRAIN SIZE CHART

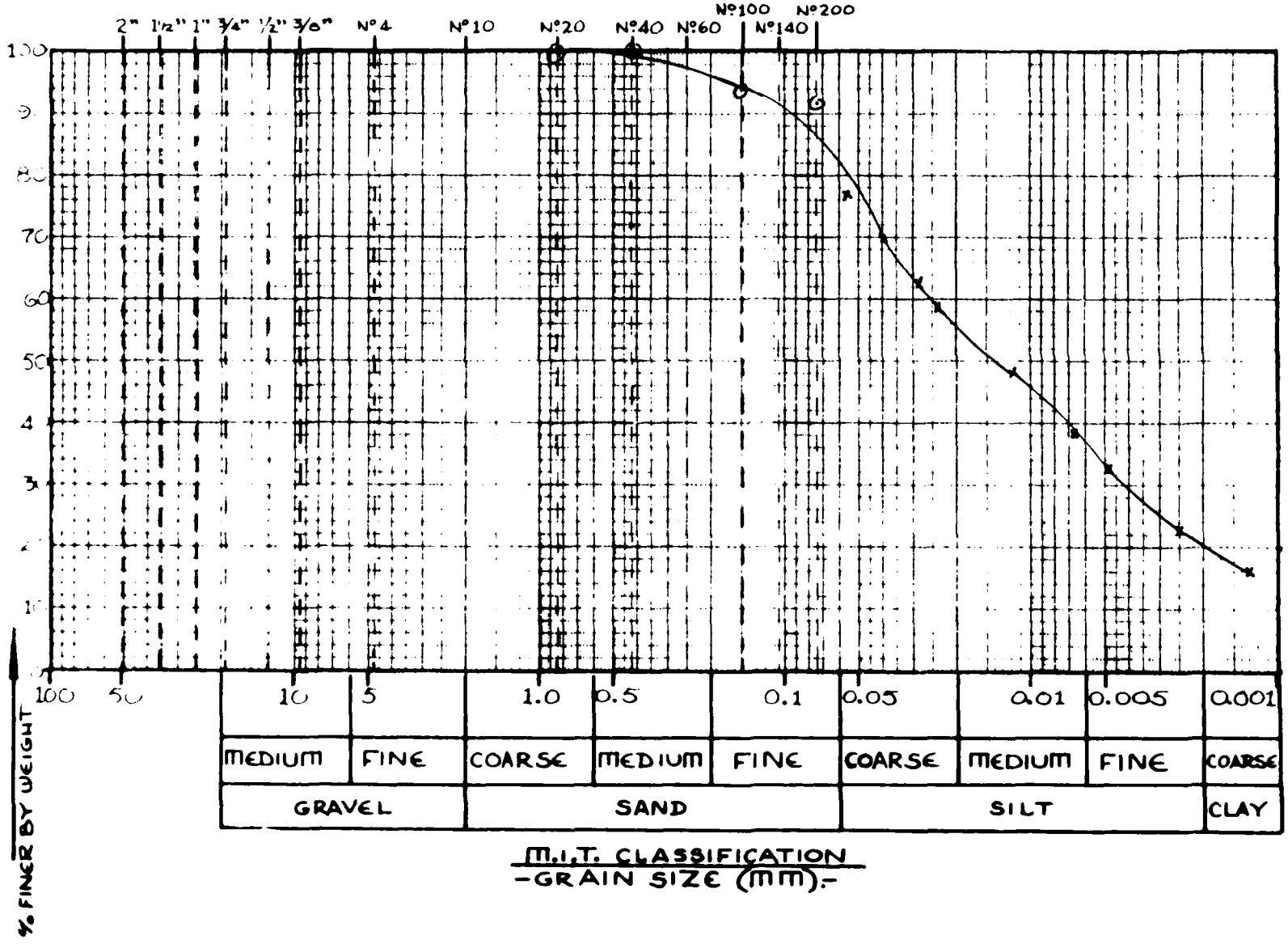
DESCRIPTION: _____

COMMENTS _____

GRAVEL	%
SAND	18 %
SILT	62 %
CLAY	20 %

FILE Nº:
SAMPLE Nº: RB 28-1
DATE: 12-15
BY:

- SIEVE SIZES -



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

RB28-1

124-125

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	38		38.7	0.056	9.9	.0125	78.6	
		1	34.5		34.8	0.040	10.4	"	69.6	
		2	31		31.3	0.029	11.1	"	62.6	
		3	29	27.6	29.3	0.024	11.4	"	58.6	
		14	23.5	—	23.8	0.012	12.3	"	47.6	
		46	18.8	—	19.1	0.0066	13.0	"	38.2	
		90	16.2	28	16.6	0.0048	13.5	.0124	33.2	
		360	12	26	11.6	0.0025	14.2	.0127	23.2	
		1315	7.5	28	7.9	0.0013	14.9	.0124	15.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____

DISPERSING AGENT CORRECTION, Cd: _____ _____

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < Nº60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

C2,78-1

130 - 135

Wahali Sample for Sieve

– SIEVE ANALYSIS –

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10				
NO. 20	– 0 –			
NO. 40	0.2	0.4		
NO. 60				
NO. 100	7.9	15.8		
NO. 140				
NO. 200	6.0	12.0		
PAN	1.9	3.8		
TOTAL	50.0			

REMARKS _____

GRAIN SIZE CHART

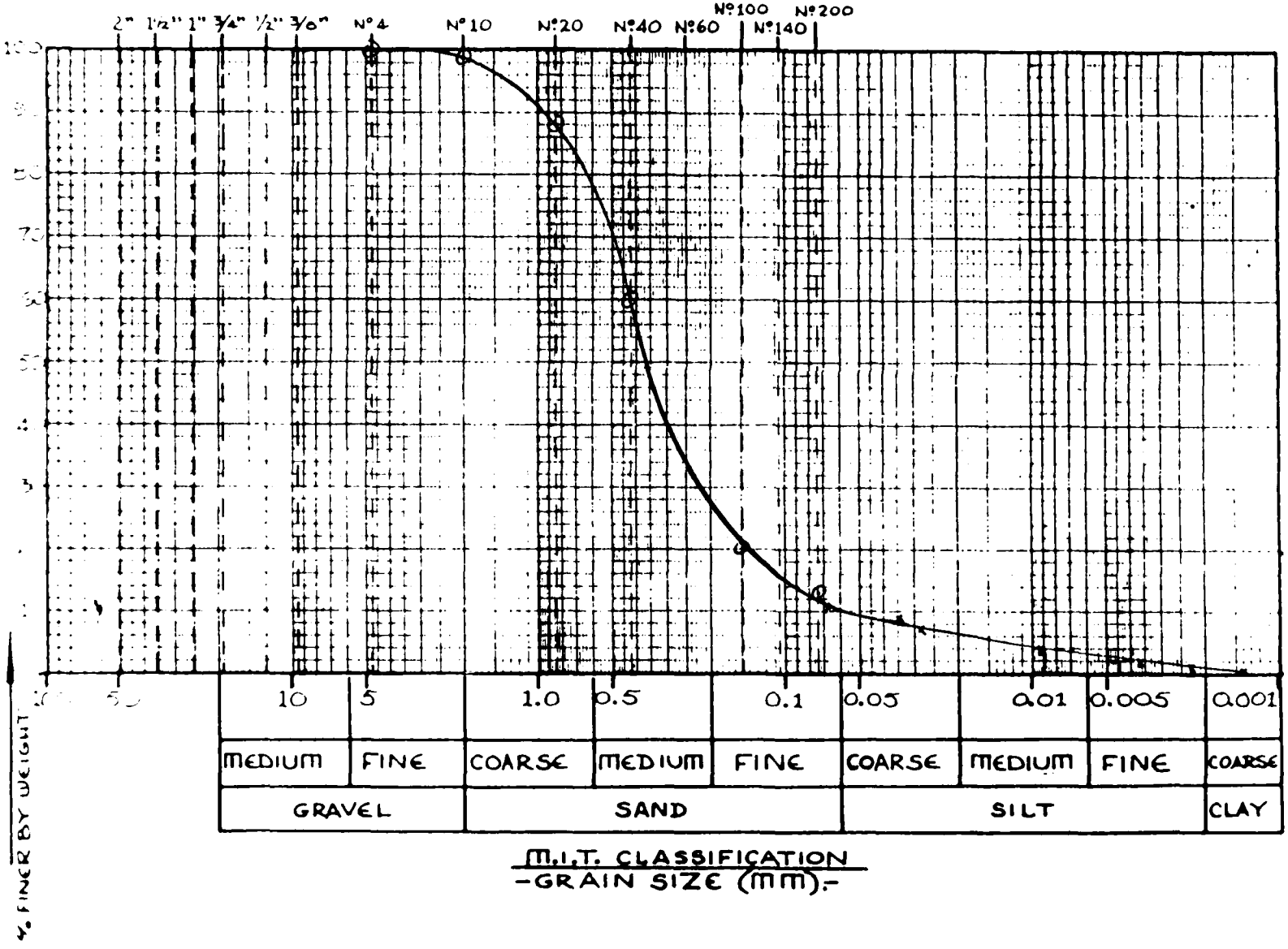
DESCRIPTION: _____

COMMENTS _____

GRAVEL	1 %
SAND	89 %
SILT	9 %
CLAY	1 %

FILE Nº:
SAMPLE Nº: RB 28-2
DATE:
BY: 180-165

- SIEVE SIZES -



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

RB 28-V

180-185

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIA-METER (mm)	L	K	N (%)	N_1 (%)
		1½	4		5.5	0.068	15.5	.0112	11.0	
		1	—		—	—	—	"	—	
		2	3		4.5	0.034	15.6	"	9.0	
		3	2	30.5	3.5	0.028	15.8	"	7.0	
		28	0.5	—	2.0	0.0092	16.0	"	4.0	
		180	0	29	0.9	0.0037	16.3	.0123	1.8	
		495	0	28.5	0.6	0.0023	16.3	.0124	1.2	
		1305	0	28	0.4	0.0016	16.3	"	0.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_S: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_S: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\%\ < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_S} = R$ _____.

REMARKS: _____

R13 28.2

180-185

– SIEVE ANALYSIS –

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	0.6	1.2		98.8
NO. 20	5.2	10.4		88.4
NO. 40	14.2	28.4		60.0
NO. 60				
NO. 100	20.0	40.0		20.0
NO. 140				
NO. 200	3.6	7.2		12.8
PAN	6.4	12.8		0.0
TOTAL	50.0	100.0		

REMARKS _____

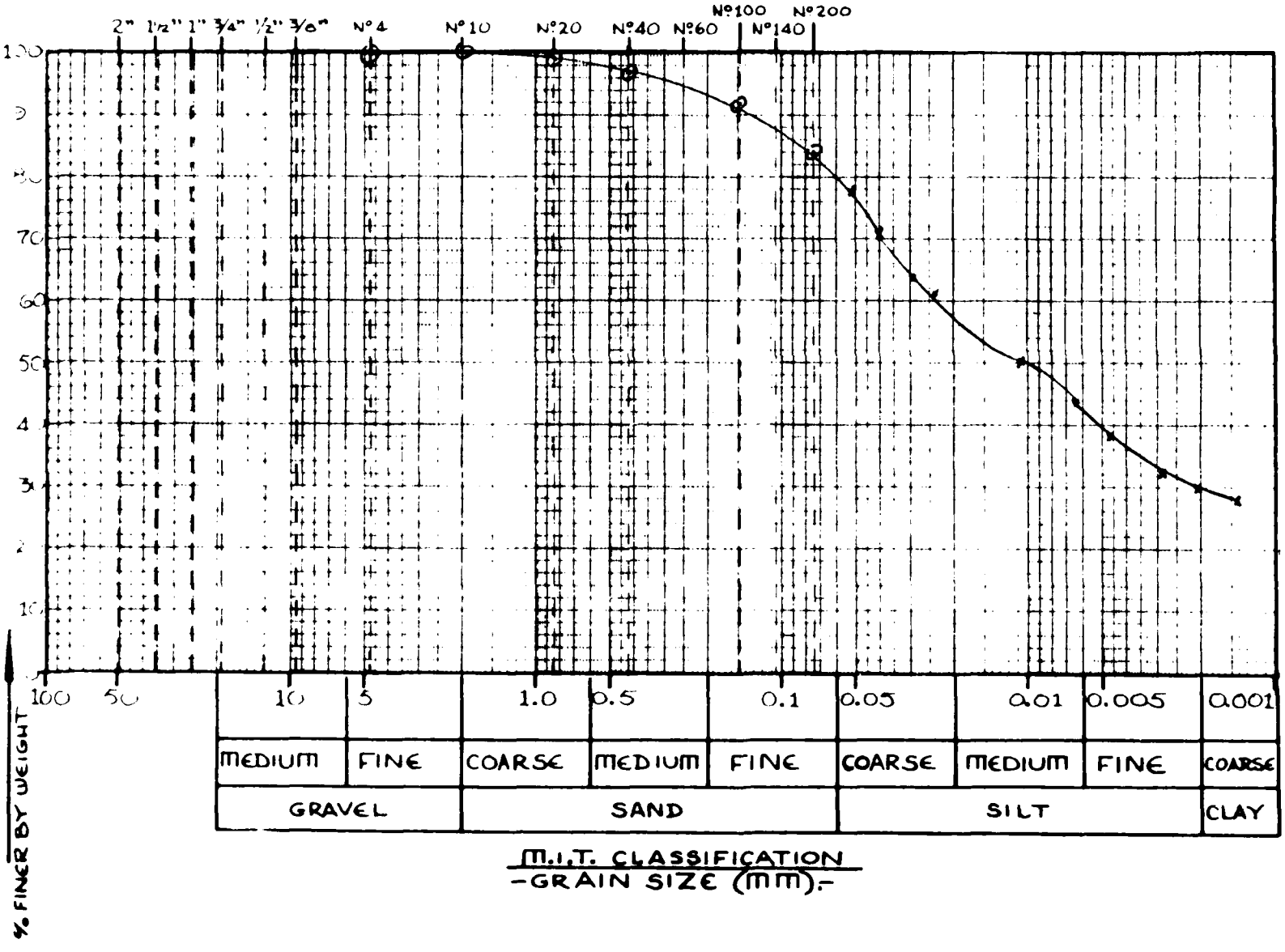
GRAIN SIZE CHART

DESCRIPTION: _____

COMMENTS _____

GRAVEL	%
SAND	20 %
SILT	50 %
CLAY	30 %

FILE Nº: RB 29-1
SAMPLE Nº:
DATE:
BY: BSL/MC



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm).-

RB29-1

135-145

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY:

A.S.T.M. D422-63.

DATE 19___	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_H = R_H + (Cm-Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	37		36.8	0.052	10.1	.0122	77.6	
		1	33.5		35.3	0.040	10.6	"	70.6	
		~	30		31.8	0.029	11.~	"	63.6	
		3	28.5	31	30.3	0.024	11.4	"	60.6	
		14	23	—	24.8	0.011	12.4	"	49.6	
		45	20	—	21.8	0.0065	12.9	"	43.6	
		95	18	29	18.9	0.0046	13.~	.0123	37.8	
		255	17	26.5	16.8	0.0029	13.3	.0127	33.6	
		495	16	25	15.1	0.0021	13.5	.0129	30.2	
		1155	14	27	14.0	0.0014	13.8	.0126	28.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

– SIEVE ANALYSIS –

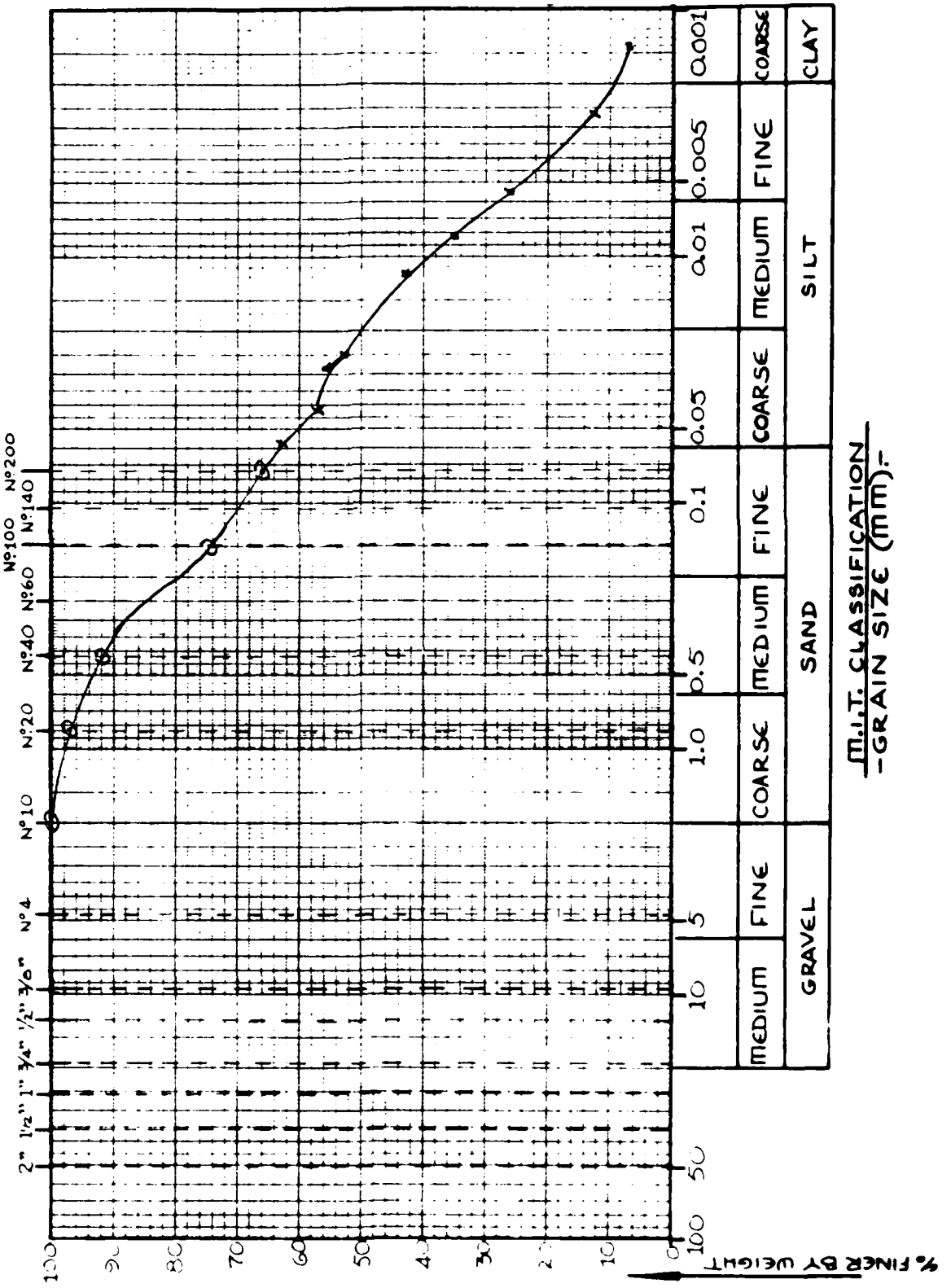
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	[illegible]	[illegible]		[illegible]
NO. 20	[illegible]	[illegible]		[illegible]
NO. 40	[illegible]	[illegible]		[illegible]
NO. 60				
NO. 100	[illegible]	[illegible]		[illegible]
NO. 140				
NO. 200	[illegible]	[illegible]		[illegible]
PAN	[illegible]	[illegible]		
TOTAL	[illegible]	[illegible]		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:	
SAMPLE Nº:	RB 29-2
DATE:	150-160
BY:	

	%
GRAVEL	
SAND	37 %
SILT	54 %
CLAY	9 %



DESCRIPTION: _____

COMMENTS _____

RB 29-2

150-160

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm+Cd)	DIA-METER (mm).	L	K	N (%)	N_1 (%)
		1/2	31		31.3	0.059	11.1	.015	62.6	
		1	28		28.3	0.043	11.5	"	56.6	
		2	27.5		27.8	0.030	11.6	"	55.6	
		3	26	27.6	26.3	0.025	11.9	"	52.6	
		14	21	—	21.3	0.012	12.7	"	42.6	
		30	17.5	—	17.8	0.0083	13.2	"	35.6	
		72	12.5	28	12.9	0.0055	14.1	.0124	25.8	
		340	7.0	26	6.6	0.0027	15.0	.0127	13.2	
		1295	3.0	28	3.4	0.0014	15.6	.0124	6.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\% < \text{Nº60}}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

RB 21-2
15'-17'

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

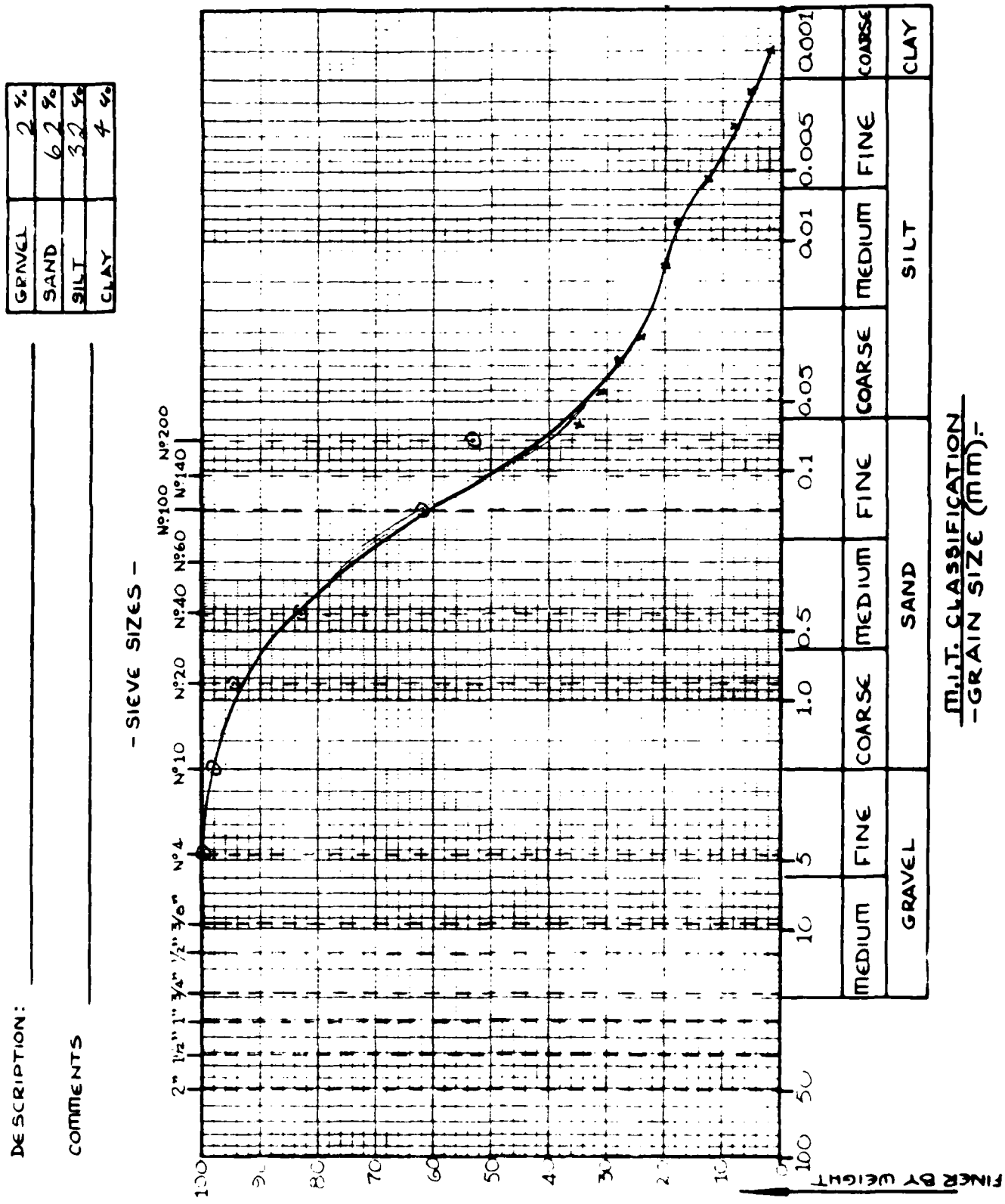
– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				
NO. 10	0			[illegible]
NO. 20	1.5	3.0		[illegible]
NO. 40	2.5	[illegible]		[illegible]
NO. 60				
NO. 100	8.5	17.0		[illegible]
NO. 140				
NO. 200	4.4	8.8		[illegible]
PAN	33.1	66.2		
TOTAL	[illegible]	[illegible]		

REMARKS _____

GRAIN SIZE CHART

FILE Nº:
SAMPLE Nº: RB 29-3
DATE: 180-185
BY:



DESCRIPTION: _____

COMMENTS _____

10

RB 29-3

180-185

HYDROMETER ANALYSIS

FILE Nº: _____
SAMPLE Nº: _____
DATE: _____
BY: _____

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R_H	TEMP. °C	R_{H_1} = R_H + (Cm-Cd)	DIAMETER (mm).	L	K	N (%)	N_1 (%)
		1/2	17.5		17.5	0.065	13.2	.0126	35.0	
		1	15.5		15.5	0.046	13.6	"	31.0	
		2	14.0		14.0	0.033	13.8	"	28.0	
		3	12.5	27	12.5	0.027	13.9	"	25.0	
		14	10	—	10.0	0.013	14.5	"	20.0	
		34	9	—	9.0	0.0083	14.7	"	18.0	
		80	6	28	6.4	0.0054	15.2	.0124	12.8	
		240	4	26.5	3.8	0.0032	15.5	.0127	7.6	
		480	3.5	25	2.6	0.0023	15.5	.0129	5.2	
		1140	1	27	1	0.0015	16.0	.0126	2	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, Cm: _____ _____.

DISPERSING AGENT CORRECTION, Cd: _____ _____.

DRY WEIGHT OF SOIL, W_s: _____.

% < Nº60 SIEVE: _____.

$N_1 = \left(\frac{\%\ < \text{Nº}60}{100}\right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{W_s} = R$ _____.

REMARKS: _____

EB 21-3

30 - 32

FILE Nº: _____

SAMPLE Nº: _____

DATE: _____

BY: _____

– SIEVE ANALYSIS –

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	CUMULATIVE PERCENT PASSING
3 IN.				
2½ IN.				
2 IN.				
1½ IN.				
1 IN.				
¾ IN.				
½ IN.				
⅜ IN.				
NO. 4				100.0
NO. 10	1.-	[illegible]		[illegible]
NO. 20	1.3	[illegible]		[illegible]
NO. 40	5.1	[illegible]		[illegible]
NO. 60				
NO. 100	10.3	[illegible]		[illegible]
NO. 140				
NO. 200	4.5	[illegible]		[illegible]
PAN	[illegible]	[illegible]		
TOTAL	[illegible]	[illegible]		

REMARKS _____

RADIAN
CORPORATION

APPENDIX 5-E

Results of Laboratory Analyses of Water Samples

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-09-033

RECEIVED: 09/06/84 09/26/84 11:44:34

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 3
COMPANY: McClellan AFB
FACILITY:

WORK ID: Reconn Boring
TAKEN: 9/5/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	RB-1-1, 120
02	RB-1-2, 140
03	RB-1-3, 160

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-09-033

RECEIVED: 09/06/84 RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units) RB-1-1	Sample 02 (entered units) RB-1-2	Sample 03 (entered units) RB-1-3
CA_E ug/ml	35	26	34
CL_IC mg/L	16	23	18
CO3_A mg/L as CaCO3	<1	<1	<1
FE_E ug/ml	5.9	44	74
HCO3_A mg/L as CaCO3	76	79	78
MG_E ug/ml	21	23	35
NA_E ug/ml	30	21	23
SO4_IC mg/L	114	3.5	33

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-09-033
RECEIVED: 09/06/84 Results by Sample

SAMPLE ID RB-1-1, 120 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/05/84 Category

DATA FILE A DATE INJECTED 09/24/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 5

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
1	Methylene Chloride	80.3
2	Trichlorofluoromethane	0.8
3	1,1-Dichloroethene	2.0
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND
4	Trichloroethene	0.5
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
5	1,1,2,2-Tetrachloroethane #	2.5
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-09-033
RECEIVED: 09/06/84 Results by Sample Continued From Above

SAMPLE ID RB-1-1, 120 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/05/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-09-033
RECEIVED: 09/06/84 Results by Sample

SAMPLE ID RB-1-2, 140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/05/84 Category

DATA FILE A DATE INJECTED 09/24/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-09-033
RECEIVED: 09/06/84 Results by Sample Continued From Above

SAMPLE ID RB-1-2, 140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/05/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-09-033
RECEIVED: 09/06/84 Results by Sample

SAMPLE ID RB-1-3, 160 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/05/84 Category

DATA FILE A DATE INJECTED 09/24/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
1	Methylene Chloride	1.7
2	Trichlorofluoromethane	0.9
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-09-033
RECEIVED: 09/06/84 Results by Sample Continued From Above

SAMPLE ID RB-1-3, 160 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/05/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-09-051

RECEIVED: 09/07/84 09/26/84 11:31:01

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 2
COMPANY: McClellan AFB
FACILITY:

WORK ID: Reconn Boring
TAKEN: 9/6/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 RB-1-4, 180
02 RB-1-5, 200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-09-051

RECEIVED: 09/07/84 RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units) RB-1-4	Sample 02 (entered units) RB-1-5
CA_E ug/ml	15	14
CL_IC mg/L	14	12
CO3_A mg/L as CaCO3	<1	<1
FE_E ug/ml	6.1	11
HCO3_A mg/L as CaCO3	93	87
MG_E ug/ml	12	12
NA_E ug/ml	17	14
SO4_IC mg/L	1	1

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-09-051
RECEIVED: 09/07/84 Results by Sample

SAMPLE ID RB-1-4, 180 FRACTION Q1C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/06/84 Category

DATA FILE A DATE INJECTED 09/11/84 ANALYST KS VERIFIED BY JSG
CONC FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-09-051
RECEIVED: 09/07/84 Results by Sample Continued From Above

SAMPLE ID RB-1-4, 180 FRACTION Q1C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/06/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-09-051
RECEIVED: 09/07/84 Results by Sample

SAMPLE ID RB-1-5, 200 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/06/84 Category

DATA FILE A DATE INJECTED 09/11/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-09-051
RECEIVED: 09/07/84 Results by Sample Continued From Above

SAMPLE ID RB-1-5, 200 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/06/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601

RADIAN
CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-159
RECEIVED: 08/15/84 08/30/84 16:21:48

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 4
COMPANY: McClellan AFB
FACILITY:

WORK ID: Recon. Boring
TAKEN: 8/14/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01 RB-2-1, 95-100
02 RB-2-2, 135-140
03 RB-2-3, 155-160
04 RB-2-4, 175-180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

SAMPLE ID RB-2-1, 95-100 SAMPLE # 01 FRACTIONS: A, B, C, D
Date & Time Collected 08/14/84 Category

CA_E 18 ug/ml	CL_IC 20 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 1.2 ug/ml	HCO3_A 96 mg/L as CaCO3	MG_E 11 ug/ml	
NA_E 22 ug/ml	SO4_IC 7 mg/L					

Analytical Serv REPORT LAB # 84-08-159

RECEIVED: 08/15/84

Results by Sample

SAMPLE ID RB-2-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/14/84 Category

DATA FILE B DATE INJECTED 08/23/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-2-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/14/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN
CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-08-159
RECEIVED: 08/15/84 Results by Sample

SAMPLE ID RB-2-2, 135-140 SAMPLE # 02 FRACTIONS: A,B,C,D
Date & Time Collected 08/14/84 Category

CA_E	21	ug/ml	CL_IC	21	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	6.7	ug/ml
HCO3_A	96	mg/L as CaCO3	MG_E	13	ug/ml	NA_E	22	ug/ml	SO4_IC	6	mg/L

Analytical Serv REPORT

LAB # 84-08-159

RECEIVED: 08/15/84

Results by Sample

SAMPLE ID RB-2-2, 135-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/14/84 Category

DATA FILE B DATE INJECTED 08/23/84 ANALYST MCL VERIFIED BY JSQ

CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

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CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-159
RECEIVED: 08/15/84 Results by Sample Continued From Above

SAMPLE ID RB-2-2, 135-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/14/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-08-159
RECEIVED: 08/15/84 Results by Sample

SAMPLE ID RB-2-3, 155-160 SAMPLE # 03 FRACTIONS: A,B,C,D
Date & Time Collected 08/14/84 Category

CA_E 20 ug/ml	CL_IC 18 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 2.7 ug/ml	HCO3_A 85 mg/L as CaCO3	MG_E 9.6 ug/ml	
NA_E 25 ug/ml	SO4_IC 6 mg/L					

RADIAN
CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-08-159
RECEIVED: 08/15/84 Results by Sample

SAMPLE ID RB-2-3, 155-160 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/14/84 Category

DATA FILE B DATE INJECTED 08/23/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 84-08-159
RECEIVED: 08/15/84 Results by Sample Continued From Above

SAMPLE ID RB-2-3, 155-160 FRACTION Q3C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/14/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN
Corporation

PAGE 11 Analytical Serv REPORT LAB # 84-08-159
RECEIVED: 08/15/84 Results by Sample

SAMPLE ID RB-2-4, 175-180 SAMPLE # 04 FRACTIONS: A,B,C,D
Date & Time Collected 08/14/84 Category

CA_E	15	CL_IC	18	CO3_A	<1	FE_E	0.90	HCO3_A	84	MG_E	9.5
	ug/ml		mg/L		mg/L as CaCO3		ug/ml		mg/L as CaCO3		ug/ml
NA_E	22	SO4_IC	6								
	ug/ml		mg/L								

SAMPLE ID RB-2-4, 175-180 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/14/84 Category

DATA FILE B DATE INJECTED 08/23/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN
CORPORATION

PAGE 13 Analytical Serv REPORT LAB # 84-08-159
RECEIVED: 08/15/84 Results by Sample Continued From Above

SAMPLE ID RB-2-4, 175-180 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/14/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601
04D	:	DUP601

RADIAN
CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-194
RECEIVED: 08/21/84 08/30/84 16:34:57

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 3
COMPANY: McClellan AFB
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

WORK ID: Reconn Boring
TAKEN: 8/20/84
TRANS: hand
TYPE: H2O
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01 RB-3-1, 95-100
02 RB-3-2, 155-160
03 RB-3-3, 175-180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

RADIAN CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-08-194
RECEIVED: 08/21/84 Results by Sample

SAMPLE ID RB-3-1, 95-100 SAMPLE # 01 FRACTIONS: A, B, C, D
Date & Time Collected 08/20/84 Category

CA_E	16	ug/ml	CL_IC	18	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	0.010	ug/ml
HCO3_A	95	mg/L as CaCO3	MG_E	12	ug/ml	NA_E	26	ug/ml	SO4_IC	15	mg/L

RADIAN CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-194
RECEIVED: 08/21/84 Results by Sample

SAMPLE ID RB-3-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/20/84 Category

DATA FILE A DATE INJECTED 08/23/84 ANALYST KWK VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	1.1		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

SAMPLE ID RB-3-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/20/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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PAGE 5 Analytical Serv REPORT LAB # 84-08-194
RECEIVED: 08/21/84 Results by Sample

SAMPLE ID RB-3-2, 155-160 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/20/84 Category

CA_E	14	ug/ml	CL_IC	13	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	2.3	ug/ml
HCO3_A	104	mg/L as CaCO3	MG_E	10	ug/ml	NA_E	19	ug/ml	SO4_IC	1.3	mg/L

RADIAN CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-194
RECEIVED: 08/21/84 Results by Sample

SAMPLE ID RB-3-2, 155-160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/20/84 Category

DATA FILE A DATE INJECTED 08/23/84 ANALYST KWK VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

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CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-194
RECEIVED: 08/21/84 Results by Sample Continued From Above

SAMPLE ID RB-3-2, 155-160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/20/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-08-194
RECEIVED: 08/21/84 Results by Sample

SAMPLE ID RB-3-3, 175-180 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 08/20/84 Category

CA_E	26	ug/ml	CL_IC	13	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	73	ug/ml
HCO3_A	84	mg/L as CaCO3	MG_E	26	ug/ml	NA_E	24	ug/ml	SO4_IC	1.6	mg/L

SAMPLE ID RB-3-3, 175-180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/20/84 Category

DATA FILE A DATE INJECTED 08/23/84 ANALYST KWK VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

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PAGE 10 Analytical Serv REPORT LAB # 84-08-194
RECEIVED: 08/21/84 Results by Sample Continued From Above

SAMPLE ID RB-3-3, 175-180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/20/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	!	DUP601
02D	!	DUP601
03D	!	DUP601

RADIAN CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-134

RECEIVED: 08/14/84 09/05/84 09:51:14

REPORT TO: Radian
B1 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 4
COMPANY: McClellan AFB
FACILITY:

please send one copy of the report to Toby Walters in Austin
Note: second column confirmation performed on split 4C.

WORK ID: Recon. Boring
TAKEN: 8/13/84
TRANS: hand carried
TYPE: H20
P O # 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01 RB-4-1, 105-110
02 RB-4-2, 135-140
03 RB-4-3, 155-160
04 RB-4-4, 195-200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

SAMPLE ID RB-4-1, 105-110 SAMPLE # 01 FRACTIONS: A, B, C, D
Date & Time Collected 08/13/84 Category

CA_E 27 ug/ml	CL_IC 29 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 2.0 ug/ml	HCO3_A 143 mg/L as CaCO3	MG_E 21 ug/ml	
NA_E 28 ug/ml	SO4_IC 9 mg/L					

Analytical Serv REPORT

LAB # 84-08-134

RECEIVED: 08/14/84

Results by Sample

SAMPLE ID RB-4-1, 105-110 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/13/84 Category

DATA FILE A DATE INJECTED 08/27/84 ANALYST MCL VERIFIED BY JSG

CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 4

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
1	1,1-Dichloroethene	0.1
2	1,1-Dichloroethane	0.6
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
3	1,1,1-Trichloroethane	0.6
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
4	Dibromochloromethane *	0.1
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-4-1, 105-110 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/13/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-4-2, 135-140 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/13/84 Category

CA_E 18 ug/ml	CL_IC 21 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 0.13 ug/ml	HCO3_A 92 mg/L as CaCO3	MG_E 13 ug/ml	
NA_E 26 ug/ml	SO4_IC 7.9 mg/L					

SAMPLE ID RB-4-2, 135-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/13/84 Category

DATA FILE A DATE INJECTED 08/27/84 ANALYST MCL VERIFIED BY JSG
CONC FACTOR INSTRUMENT a COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
1	Trichlorofluoromethane	0.3
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-4-2, 135-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/13/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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CORPORATION

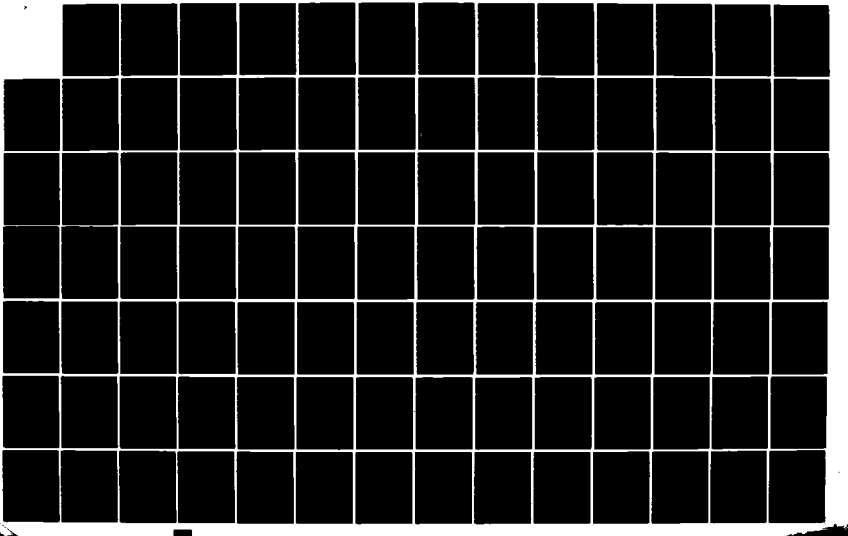
PAGE 9 Analytical Serv REPORT LAB # 84-08-134
RECEIVED: 08/14/84 Results by Sample

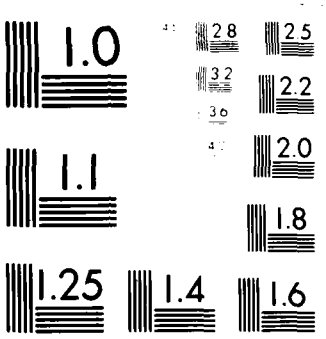
SAMPLE ID RB-4-3, 155-160 SAMPLE # 03 FRACTIONS: A,B,C,D
Date & Time Collected 08/13/84 Category

CA_E	20	ug/ml	CL_IC	21	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	5.6	ug/ml	HCO3_A	95	mg/L as CaCO3	MG_E	14	ug/ml
NA_E	23	ug/ml	SO4_IC	7.7	mg/L												

AD-A156 283 INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1) 07/10
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

UNCLASSIFIED F/G 13/2 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

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PAGE 10 Analytical Serv REPORT LAB # 84-08-134
RECEIVED: 08/14/84 Results by Sample

SAMPLE ID RB-4-3, 155-160 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/13/84 Category

DATA FILE A DATE INJECTED 08/27/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-4-3, 155-160 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/13/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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 Analytical Serv REPORT LAB # 84-08-134
RECEIVED: 08/14/84 Results by Sample

SAMPLE ID RB-4-4, 195-200 SAMPLE # 04 FRACTIONS: A, B, C, D
Date & Time Collected 08/13/84 Category

CA_E 24 ug/ml	CL_IC 24 mg/L	CO3_A 34 mg/L as CaCO3	FE_E 4.0 ug/ml	HCO3_A 89 mg/L as CaCO3	MG_E 15 ug/ml	
NA_E 26 ug/ml	SO4_IC 11 mg/L					

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PAGE 13 Analytical Serv REPORT LAB # 84-08-134
RECEIVED: 08/14/84 Results by Sample

SAMPLE ID RB-4-4, 195-200 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/13/84 Category

DATA FILE A DATE INJECTED 08/27/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

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PAGE 14 Analytical Serv REPORT LAB # 84-08-134
RECEIVED: 08/14/84 Results by Sample Continued From Above

SAMPLE ID RB-4-4, 195-200 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/13/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
+Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601
04D	:	DUP601

RADIAN
CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-129
RECEIVED: 08/13/84 10/22/84 13:56:11

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 5
COMPANY: McClellan AFB
FACILITY:

WORK ID: Recon. Boring
TAKEN: 8/10/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INV. #: 4101

2nd column confirmation performed on 01,02,03. Corrected values for 1,2-dichlorobezene (01,02) & vinyl chloride (02) reported here as result of reexamination of data. 1,2- & 1,4-dichlorobenzene coeluted here;reported as 1,2-dichlorobenzene.

Duplicate of report of 10/19/84.

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	RB-5-1, 95-100
02	RB-5-2, 115-120
03	RB-5-3, 135-140
04	RB-5-4, 175-180
05	RB-5-5, 195-200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

RADIAN CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-08-129

RECEIVED: 08/13/84 RESULTS BY TEST

TEST CODE default units	RB-5-1 Sample 01 (entered units)	RB-5-2 Sample 02 (entered units)	RB-5-3 Sample 03 (entered units)	RB-5-4 Sample 04 (entered units)	RB-5-5 Sample 05 (entered units)
CA_E ug/ml	110	330	36	22	25
CL_IC mg/L	57	140	35	18	19
CO3_A mg/L as CaCO3	<1	<1	<1	<1	29
FE_E ug/ml	0.94	2.5	5.2	1.7	3.7
HCO3_A mg/L as CaCO3	240	1045	191	92	110
MG_E ug/ml	78	190	30	12	15
NA_E ug/ml	43	61	26	20	22
SO4_IC mg/L	4.1	290	6.7	7.5	18

RADIAN CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-129
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-5-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

DATA FILE B DATE INJECTED 08/21/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 10

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
1	Vinyl Chloride	747
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
2	1,1-Dichloroethene	517
3	1,1-Dichloroethane	586
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
4	1,2-Dichloroethane	15.9
5	1,1,1-Trichloroethane	16.3
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND
6	Trichloroethene	2.3
7	Dibromochloromethane *	23.2
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
8	1,1,2,2-Tetrachloroethane #	1.8
	Tetrachloroethylene #	ND
9	Chlorobenzene	3.9
	1,3-Dichlorobenzene	ND
10	1,2-Dichlorobenzene	6.6
	1,4-Dichlorobenzene	ND

RADIAN
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PAGE 4 Analytical Serv REPORT LAB # 84-08-129
RECEIVED: 08/13/84 Results by Sample Continued From Above

SAMPLE ID RB-5-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-08-129
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-5-2, 115-120 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

DATA FILE B DATE INJECTED 08/21/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 9

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND	6	Trichloroethene	1.7
	Bromomethane	ND		Dibromochloromethane *	ND
1	Vinyl Chloride	686		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
2	1,1-Dichloroethene	268	7	1,1,2,2-Tetrachloroethane #	1.7
3	1,1-Dichloroethane	330		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
4	1,2-Dichloroethane	48.2	8	1,2-Dichlorobenzene	20.0
5	1,1,1-Trichloroethane	25.4		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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PAGE 6 Analytical Serv REPORT LAB # 84-08-129
RECEIVED: 08/13/84 Results by Sample Continued From Above

SAMPLE ID RB-5-2, 115-120 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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CORPORATION

Analytical Serv REPORT LAB # 84-08-129
RECEIVED: 08/13/84
Results by Sample

SAMPLE ID RB-5-3, 135-140 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

DATA FILE B DATE INJECTED 08/21/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 4

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
1	1,1-Dichloroethene	77.6
2	1,1-Dichloroethane	57.0
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
3	1,2-Dichloroethane	4.1
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
5	Trichloroethene	2.2
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-08-129
RECEIVED: 08/13/84 Results by Sample Continued From Above

SAMPLE ID RB-5-3, 135-140 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-08-129
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-5-4, 175-180 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

DATA FILE B DATE INJECTED 08/22/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
1	1,1,1-Trichloroethane	0.9
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN
CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 84-08-129
RECEIVED: 08/13/84 Results by Sample Continued From Above

SAMPLE ID RB-5-4, 175-180 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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PAGE 11 Analytical Serv REPORT LAB # 84-08-129
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-5-5, 195-200 FRACTION OSC TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

DATA FILE B DATE INJECTED 08/22/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
1	1,2-Dichloroethane	0.5		1,2-Dichlorobenzene	ND
2	1,1,1-Trichloroethane	1.6		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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CORPORATION

PAGE 12 Analytical Serv REPORT LAB # 84-08-129
RECEIVED: 08/13/84 Results by Sample Continued From Above

SAMPLE ID RB-5-5, 195-200 FRACTION 05C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/13/84 NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601
04D	:	DUP601
05D	:	DUP601

RADIAN CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-105

RECEIVED: 08/10/84 08/28/84 09:14:26

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8. MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 4
COMPANY: McClellan AFB
FACILITY:

Note: second column confirmation performed on all four samples. Only 1,2-dichloroethane and trichloroethene confirmed for OIC due to 1:50 dilution required.

WORK ID: Recon. Boring
TAKEN: 8/9/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01	RB-6-1, 95-100
02	RB-6-2, 135-140
03	RB-6-3, 175-180
04	RB-6-4, 195-~~200~~ 200 cap

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

RADIAN CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-08-105

RECEIVED: 08/10/84 RESULTS BY TEST

TEST CODE default units	RB-6-1 Sample 01 (entered units)	RB-6-2 Sample 02 (entered units)	RB-6-3 Sample 03 (entered units)	RB-6-4 Sample 04 (entered units)
CA_E ug/ml	49	24	26	30
CL_IC mg/L	69	29	21	24
CO3_A mg/L as CaCO3	<1	<1	55	50
FE_E ug/ml	1.2	2.6	0.36	0.88
HCO3_A mg/L as CaCO3	240	140	86	84
MG_E ug/ml	36	18	12	12
NA_E ug/ml	31	24	20	21
SO4_IC mg/L	87	10	7.7	8.4

RADIAN CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-105
RECEIVED: 08/10/84 Results by Sample

SAMPLE ID RB-6-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/09/84 Category

DATA FILE A DATE INJECTED 08/16/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 6

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
1	1,1-Dichloroethene	19.7
2	1,1-Dichloroethane	5.1
3	trans-1,2-Dichloroethene	2.3
	Chloroform	ND
4	1,2-Dichloroethane	110
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
5	Trichloroethene	242
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
6	1,3-Dichlorobenzene	41.6
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-08-105
RECEIVED: 08/10/84 Results by Sample Continued From Above

SAMPLE ID RB-6-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/09/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-08-105
RECEIVED: 08/10/84 Results by Sample

SAMPLE ID RB-6-2, 135-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/09/84 Category

DATA FILE A DATE INJECTED 08/16/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 4

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
1	1,1-Dichloroethene	1.3
2	1,1-Dichloroethane	0.1
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
3	1,2-Dichloroethane	5.8
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
4	Trichloroethene	7.7
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-105
RECEIVED: 08/10/84 Results by Sample Continued From Above

SAMPLE ID RB-6-2, 135-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/09/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-105
RECEIVED: 08/10/84 Results by Sample

SAMPLE ID RB-6-3, 175-180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/09/84 Category

DATA FILE A DATE INJECTED 08/16/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
1	1,2-Dichloroethane	0.2
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-08-105
RECEIVED: 08/10/84 Results by Sample Continued From Above

SAMPLE ID RB-6-3, 175-180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/09/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-08-105
RECEIVED: 08/10/84 Results by Sample

SAMPLE ID RB-6-4, 195-260 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/09/84 Category

DATA FILE A DATE INJECTED 08/16/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 84-08-105
RECEIVED: 08/10/84 Results by Sample Continued From Above

SAMPLE ID RB-6-4, 195-260 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/09/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601

PAGE 1 Analytical Serv REPORT LAB # 84-08-068
RECEIVED: 08/07/84 08/21/84 12:30:10

REPORT TO: Radian
B1 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 4
COMPANY: McClellan AFB
FACILITY:

WORK ID: Recon. Boring
TAKEN: 8/5/84 & 8/6/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

Lonnie Newma
CERTIFIED BY

CONTACT: CONOVER

SAMPLE IDENTIFICATION

~~01 RB-11-1, 98-100~~
~~02 RB-11-2, 130-140~~
~~03 RB-11-3~~
04 RB-7-1, 95-100

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

PAGE 11 Analytical Serv REPORT LAB # 84-08-068
RECEIVED: 08/07/84 Results by Sample

SAMPLE ID RB-7-1, 95-100 SAMPLE # 04 FRACTIONS: A,B,C,D
Date & Time Collected 08/05/84 Category

CA_E	21	ug/ml	CL_IC	14	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	8.9	ug/ml
HCO3_A	78	mg/L as CaCO3	MG_E	13	ug/ml	NA_E	24	ug/ml	SO4_IC	6	mg/L

CORPORATION

PAGE 12 Analytical Serv REPORT LAB # 84-08-068
RECEIVED: 08/07/84 Results by Sample

SAMPLE ID RB-7-1, 95-100 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/05/84 Category

DATA FILE B DATE INJECTED 08/10/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-7-1, 95-100 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/05/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
+Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601
04D	:	DUP601

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-071
RECEIVED: 08/07/84 08/21/84 12:35:25

REPORT TO: Radian
Bl 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

Louise Newman
CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 2
COMPANY: McClellan AFB
FACILITY:

WORK ID: Recon. Boring
TAKEN: 8/7/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01 RB-7-2, 135-140
02 RB-7-3, 155-160

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-08-071
RECEIVED: 08/07/84 Results by Sample

SAMPLE ID RB-7-2, 135-140 SAMPLE # 01 FRACTIONS: A, B, C, D
Date & Time Collected 08/07/84 Category

CA_E 18 ug/ml	CL_IC 18 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 1.8 ug/ml	HCO3_A 99 mg/L as CaCO3	MG_E 11 ug/ml	
NA_E 21 ug/ml	SO4_IC 5 mg/L					

PAGE 3 Analytical Serv REPORT LAB # 84-08-071
RECEIVED: 08/07/84 Results by Sample

SAMPLE ID RB-7-2, 135-140 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/07/84 Category

DATA FILE A DATE INJECTED 08/10/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-08-071
RECEIVED: 08/07/84 Results by Sample Continued From Above

SAMPLE ID RB-7-2, 135-140 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/07/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-7-3, 155-160 SAMPLE # 02 FRACTIONS: A,B,C,D
Date & Time Collected 08/07/84 Category

CA_E	18 ug/ml	CL_IC	11 mg/L	CO3_A	<1 mg/L as CaCO3	FE_E	3.1 ug/ml	HCO3_A	128 mg/L as CaCO3	MG_E	11 ug/ml
NA_E	18 ug/ml	SO4_IC	2 mg/L								

PAGE 6 Analytical Serv REPORT LAB # 84-08-071
RECEIVED: 08/07/84 Results by Sample

SAMPLE ID RB-7-3, 155-160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/07/84 Category

DATA FILE A DATE INJECTED 08/10/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-071
RECEIVED: 08/07/84 Results by Sample Continued From Above

SAMPLE ID RB-7-3, 155-160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/07/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601

RADIAN
CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-07-180
RECEIVED: 07/30/84 08/14/84 12:39:06

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 1
COMPANY: McClellan AFB
FACILITY:

GC-601/DUP-601 broken 7/31/84.

WORK ID: Reconnaissance Boring
TAKEN: 7/30/84, Toby
TRANS: hand carried, Toby
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01 McClellan RB-8-1, 100'

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

Note: VOA Vials Broken During Handling -
No EPA 601 Could be Performed

KAISER
CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-07-180
RECEIVED: 07/30/84 Results by Sample

SAMPLE ID McClellan RB-8-1, 100' SAMPLE # 01 FRACTIONS: A, B
Date & Time Collected 07/30/84 Category

CA_E	13	ug/ml	CL_IC	14	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	4.4	ug/ml	
HCO3_A	69	mg/L as CaCO3	MG_E	9.5	ug/ml	NA_E	17	ug/ml	SO4_IC	4	mg/L	

RADIAN

PAGE 1 | Analytical Serv REPORT | LAB # 84-08-011

RECEIVED: 07/31/84 | 08/14/84 12:31:43

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: CONOVER

CLIENT: MCCLELLAN AF SAMPLES: 6
COMPANY: McClellan AFB
FACILITY:

WORK ID: Recon. Boring
TAKEN: 7/31/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

~~01 RB-10-1, 70-80~~
~~02 RB-10-2, 70-100~~
~~03 RB-10-3, 130-140~~
04 RB-8-2, 130-135
05 RB-8-3, 150-160
06 RB-8-4, 185-200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

SAMPLE ID RB-8-2, 130-135 SAMPLE # 04 FRACTIONS: A, B, C, D
Date & Time Collected 07/31/84 Category

CA_E	15	ug/ml	CL_IC	22	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	1.7	ug/ml
HCO3_A	99	mg/L as CaCO3	MG_E	11	ug/ml	NA_E	21	ug/ml	SO4_IC	7	mg/L

RECEIVED: 07/31/84 Results by Sample

SAMPLE ID RB-8-2, 130-135 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 07/31/84 Category

DATA FILE A DATE INJECTED 08/09/84 ANALYST RGS VERIFIED BY JSG

CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RECEIVED: 07/31/84

Analytical Serv REPORT
Results by Sample

LAB # 84-08-011
Continued From Above

SAMPLE ID RB-8-2, 130-135 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 07/31/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-8-3, 150-160 SAMPLE # 05 FRACTIONS: A,B,C,D
Date & Time Collected 07/31/84 Category

CA_E 14 ug/ml	CL_IC 18 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 2.8 ug/ml	HCO3_A 80 mg/L as CaCO3	MG_E 11 ug/ml	
NA_E 20 ug/ml	SO4_IC 5 mg/L					

SAMPLE ID RB-8-3, 150-160 FRACTION 05C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 07/31/84 Category

DATA FILE A DATE INJECTED 08/09/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-8-3, 150-160 FRACTION 05C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 07/31/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-8-4, 185-200 SAMPLE # 06 FRACTIONS: A,B,C,D
Date & Time Collected 07/31/84 Category

CA_E 15 ug/ml	CL_IC 18 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 2.0 ug/ml	HCO3_A 83 mg/L as CaCO3	MG_E 11 ug/ml
NA_E 22 ug/ml	SO4_IC 6 mg/L				

SAMPLE ID RB-8-4, 185-200 FRACTION 06C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 07/31/84 Category

DATA FILE A DATE INJECTED 08/09/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-8-4, 185-200 FRACTION 06C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 07/31/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601
04D	:	DUP601
05D	:	DUP601
06D	:	DUP601

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-088
RECEIVED: 08/08/84 08/20/84 16:18:35

REPORT TO: Radian
Bl 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

Lonnie Newman
CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 4
COMPANY: McClellan AFB
FACILITY:

WORK ID: Recon. Boring
TAKEN: 8/8/84, D. Rickmann
TRANS: hand carried
TYPE: H20
P O #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01 RB-9-1, 99-100
02 RB-9-2, 120
03 RB-9-3, 140-160
04 RB-9-4, 165-180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

SAMPLE ID RB-9-1, 99-100 SAMPLE # 01 FRACTIONS: A,B,C,D
Date & Time Collected 08/08/84 Category

CA_E 32 ug/ml	CL_IC 21 mg/L	CO3_A 54 mg/L as CaCO3	FE_E 0.51 ug/ml	HCO3_A 88 mg/L as CaCO3	MG_E 11 ug/ml	
NA_E 26 ug/ml	SO4_IC 20 mg/L					

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-088
RECEIVED: 08/08/84 Results by Sample

SAMPLE ID RB-9-1, 99-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/08/84 Category

DATA FILE A DATE INJECTED 08/14/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
1	Trichlorofluoromethane	0.3
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-08-088
RECEIVED: 08/08/84 Results by Sample Continued From Above

SAMPLE ID RB-9-1, 99-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/08/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 5 Analytical Serv REPORT LAB # 84-08-088
RECEIVED: 08/08/84 Results by Sample

SAMPLE ID RB-9-2, 120 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/08/84 Category

CA_E 20 ug/ml	CL_IC 18 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 4.2 ug/ml	HCO3_A 99 mg/L as CaCO3	MG_E 14 ug/ml	
NA_E 21 ug/ml	SO4_IC 11 mg/L					

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-088
RECEIVED: 08/08/84 Results by Sample

SAMPLE ID RB-9-2, 120 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/08/84 Category

DATA FILE A DATE INJECTED 08/14/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-088
RECEIVED: 08/08/84 Results by Sample Continued From Above

SAMPLE ID RB-9-2, 120 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/08/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-9-3, 140-160 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 08/08/84 Category

CA_E	22 ug/ml	CL_IC	20 mg/L	CO3_A	<1 mg/L as CaCO3	FE_E	3.7 ug/ml	HCO3_A	98 mg/L as CaCO3	MG_E	17 ug/ml
NA_E	21 ug/ml	SO4_IC	7.5 mg/L								

CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-08-088
RECEIVED: 08/08/84 Results by Sample

SAMPLE ID RB-9-3, 140-160 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/08/84 Category

DATA FILE A DATE INJECTED 08/14/84 ANALYST MCL VERIFIED BY JSG
CONC FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 84-08-088
RECEIVED: 08/08/84 Results by Sample Continued From Above

SAMPLE ID RB-9-3, 140-160 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/08/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 11 Analytical Serv REPORT LAB # 84-08-088
RECEIVED: 08/08/84 Results by Sample

SAMPLE ID RB-9-4, 165-180 SAMPLE # 04 FRACTIONS: A, B, C, D
Date & Time Collected 08/08/84 Category

CA_E 19 ug/ml	CL_IC 21 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 2.3 ug/ml	HCO3_A 93 mg/L as CaCO3	MG_E 13 ug/ml	
NA_E 24 ug/ml	SO4_IC 7.0 mg/L					

CORPORATION

PAGE 12 Analytical Serv REPORT LAB # 84-08-088
RECEIVED: 08/08/84 Results by Sample

SAMPLE ID RB-9-4, 165-180 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/08/84 Category

DATA FILE A DATE INJECTED 08/14/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 13 Analytical Serv REPORT LAB # 84-08-088
RECEIVED 08/08/84 Results by Sample Continued From Above

SAMPLE ID RB-9-4, 165-180 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/08/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601
04D	:	DUP601

RADIAN CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-011
RECEIVED: 07/31/84 08/14/84 12:31:43

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 6
COMPANY: McClellan AFB
FACILITY:

WORK ID: Recon. Boring
TAKEN: 7/31/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01 RB-10-1, 78-80
02 RB-10-2, 98-100
03 RB-10-3, 138-140
~~04 RB-8-2, 130-135~~
~~05 RB-8-3, 150-180~~
~~06 RB-8-4, 185-200~~

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

Analytical Serv REPORT LAB # 84-08-011

RECEIVED: 07/31/84

Results by Sample

SAMPLE ID RB-10-1, 78-80 SAMPLE # 01 FRACTIONS: A, B, C, D

Date & Time Collected 07/31/84 Category

CA_E	24	CL_IC	26	CO3_A	<1	FE_E	4.7	HCO3_A	120	MG_E	19
	ug/ml		mg/L		mg/L as CaCO3		ug/ml		mg/L as CaCO3		ug/ml
NA_E	26	SO4_IC	10								
	ug/ml		mg/L								

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-011
RECEIVED: 07/31/84 Results by Sample

SAMPLE ID RB-10-1, 78-80 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 07/31/84 Category

DATA FILE A DATE INJECTED 08/09/84 ANALYST RGS VERIFIED BY JSG
CONC FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-08-011
RECEIVED: 07/31/84 Results by Sample Continued From Above

SAMPLE ID RB-10-1, 78-80 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 07/31/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-10-2, 98-100 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 07/31/84 Category

CA_E 22 ug/ml	CL_IC 24 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 2.2 ug/ml	HCO3_A 110 mg/L as CaCO3	MG_E 18 ug/ml	
NA_E 25 ug/ml	SO4_IC 10 mg/L					

SAMPLE ID RB-10-2, 98-100 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 07/31/84 Category

DATA FILE A DATE INJECTED 08/09/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

Analytical Serv REPORT

LAB # 84-08-011

RECEIVED: 07/31/84

Results by Sample

Continued From Above

SAMPLE ID RB-10-2, 98-100 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 07/31/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-10-3, 138-140 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 07/31/84 Category

CA_E 120 ug/ml	CL_IC 21 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 47 ug/ml	HCO3_A 77 mg/L as CaCO3	MG_E 110 ug/ml	
NA_E 25 ug/ml	SO4_IC 6 mg/L					

SAMPLE ID RB-10-3, 138-140 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 07/31/84 Category

DATA FILE A DATE INJECTED 08/09/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
1	Trichlorofluoromethane	0.4
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 84-08-011
RECEIVED: 07/31/84 Results by Sample Continued From Above

SAMPLE ID RB-10-3, 138-140 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 07/31/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN
CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-015
RECEIVED: 08/02/84 08/14/84 12:23:31

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES: 1
COMPANY: McClellan AFB
FACILITY:

WORK ID: Recon. Boring
TAKEN: 8/1/84, Toby Walters
TRANS: hand carried
TYPE: H20
P O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01 RB-10-4, 159-160

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

SAMPLE ID RB-10-4, 159-160 SAMPLE # 01 FRACTIONS: A,B,C,D
Date & Time Collected 08/01/84 Category

CA_E 14 ug/ml	CL_IC 17 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 1.7 ug/ml	HCO3_A 75 mg/L as CaCO3	MG_E 10 ug/ml
NA_E 20 ug/ml	SO4_IC 5 mg/L				

Analytical Serv REPORT LAB # 84-08-015

RECEIVED: 08/02/84

Results by Sample

SAMPLE ID RB-10-4, 159-160 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/01/84 Category

DATA FILE A DATE INJECTED 08/09/84 ANALYST RAM VERIFIED BY JSG

CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND			

01D : DUP601

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-08-015
RECEIVED: 08/02/84 Results by Sample Continued From Above

SAMPLE ID RB-10-4, 159-160 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/01/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601

PAGE 1 Analytical Serv REPORT LAB # 84-08-068

RECEIVED: 08/07/84 08/21/84 12:30:10

REPORT TO: Radian
Bl 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

Lance Newma
CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 4
COMPANY: McClellan AFB
FACILITY:

WORK ID: Recon. Boring
TAKEN: 8/5/84 & 8/6/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01 RB-11-1, 98-100
02 RB-11-2, 130-140
03 RB-11-3
~~04 RB-7-1, 95-100~~

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

 Analytical Serv REPORT LAB # 84-08-068

RECEIVED: 08/07/84 Results by Sample

SAMPLE ID RB-11-1, 98-100 SAMPLE # 01 FRACTIONS: A, B, C, D

Date & Time Collected 08/06/84 Category

CA_E 15 ug/ml	CL_IC 20 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 1.1 ug/ml	HCO3_A 90 mg/L as CaCO3	MG_E 11 ug/ml	
NA_E 21 ug/ml	SO4_IC 7 mg/L					

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-068
RECEIVED: 08/07/84 Results by Sample

SAMPLE ID RB-11-1, 98-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/06/84 Category

DATA FILE B DATE INJECTED 08/10/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
1	Trichlorofluoromethane	0.2
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

PAGE 4 Analytical Serv REPORT LAB # 84-08-068
RECEIVED: 08/07/84 Results by Sample Continued From Above

SAMPLE ID RB-11-1, 98-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/06/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-08-068
RECEIVED: 08/07/84 Results by Sample

SAMPLE ID RB-11-2, 130-140 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/06/84 Category

CA_E	19	CL_IC	19	CO3_A	<1	FE_E	1.3	HCO3_A	104	MG_E	14
	ug/ml		mg/L		mg/L as CaCO3		ug/ml		mg/L as CaCO3		ug/ml
NA_E	19	SO4_IC	6								
	ug/ml		mg/L								

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-068
RECEIVED: 08/07/84 Results by Sample

SAMPLE ID RB-11-2, 130-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/06/84 Category

DATA FILE B DATE INJECTED 08/10/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-068
RECEIVED: 08/07/84 Results by Sample Continued From Above

SAMPLE ID RB-11-2, 130-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/06/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-08-068
RECEIVED: 08/07/84 Results by Sample

SAMPLE ID RB-11-3 SAMPLE # 03 FRACTIONS: A,B,C,D
Date & Time Collected 08/06/84 Category

CA_E 20 ug/ml	CL_IC 18 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 7.5 ug/ml	HCO3_A 101 mg/L as CaCO3	MG_E 17 ug/ml	
NA_E 19 ug/ml	SO4_IC 5 mg/L					

CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-08-068
RECEIVED: 08/07/84 Results by Sample

SAMPLE ID RB-11-3 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/06/84 Category

DATA FILE B DATE INJECTED 08/10/84 ANALYST RGS VERIFIED BY JSG
CONC FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

SAMPLE ID RB-11-3 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/06/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-047

RECEIVED 08/06/84 08/21/84 12:25:50

REPORT TO: Radian
B1 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 3
COMPANY: McClellan AFB
FACILITY:

WORK ID: Recon Boring
TAKEN: 8/3/84, D Rickmann
TRANS: hand carried
TYPE: H20
P O #: 212-027-16
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P O Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

Louise Newman
CERTIFIED BY

CONTACT CONOVER

SAMPLE IDENTIFICATION

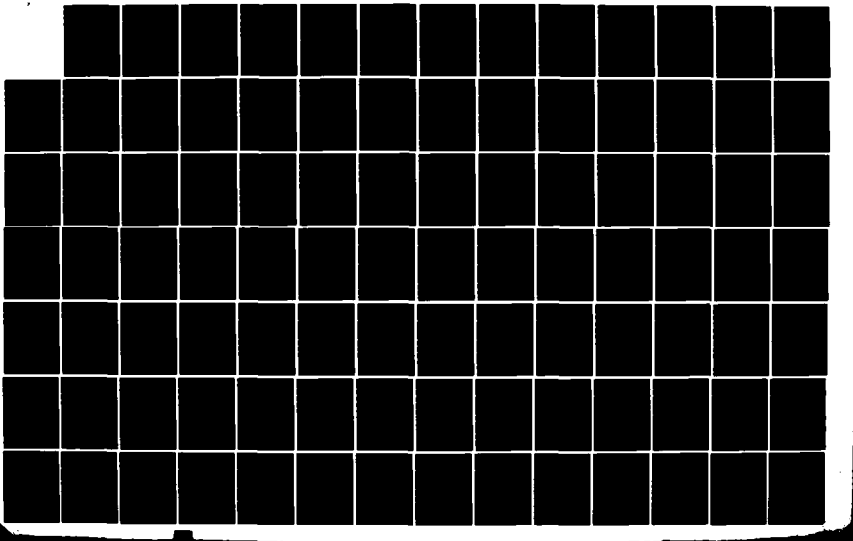
01 RB-12-1, 89'
02 RB-12-2, 135-140
03 RB-12-3, 170-180

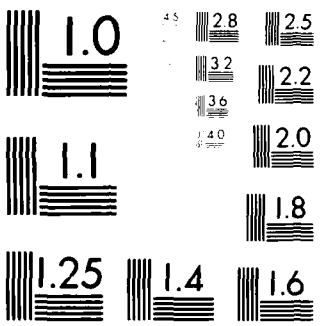
Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

AD-A156 283 INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1) 08/10
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

UNCLASSIFIED F/G 13/2 NL





MICROCOPY RESOLUTION TEST CHART

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-08-047

RECEIVED: 08/06/84 Results by Sample

SAMPLE ID RB-12-1, 89' SAMPLE # 01 FRACTIONS: A,B,C,D

Date & Time Collected 08/03/84 Category

CA_E	26	ug/ml	CL_IC	24	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	11	ug/ml
HCO3_A	76	mg/L as CaCO3	MG_E	20	ug/ml	NA_E	27	ug/ml	SO4_IC	8	mg/L

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-047
RECEIVED: 08/06/84 Results by Sample

SAMPLE ID RB-12-1, 89' FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/03/84 Category

DATA FILE A DATE INJECTED 08/10/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 5

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
1	1,1-Dichloroethane	1.2
2	trans-1,2-Dichloroethene	1.3
3	Chloroform	0.1
4	1,2-Dichloroethane	0.1
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND
5	Trichloroethene	0.7
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-12-1, 89' FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/03/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-08-047
RECEIVED: 08/06/84 Results by Sample

SAMPLE ID RB-12-2, 135-140 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/03/84 Category

CA_E	25	ug/ml	CL_IC	22	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	13	ug/ml
HCO3_A	97	mg/L as CaCO3	MG_E	22	ug/ml	NA_E	25	ug/ml	SO4_IC	7	mg/L

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-047
RECEIVED: 08/06/84 Results by Sample

SAMPLE ID RB-12-2, 135-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/03/84 Category

DATA FILE B DATE INJECTED 08/10/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
1	1,1-Dichloroethene	0.1
2	1,1-Dichloroethane	0.2
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-047
RECEIVED: 08/06/84 Results by Sample Continued From Above

SAMPLE ID RB-12-2, 135-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/03/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-08-047
RECEIVED: 08/06/84 Results by Sample

SAMPLE ID RB-12-3, 170-180 SAMPLE # 03 FRACTIONS: A,B,C,D
Date & Time Collected 08/03/84 Category

CA_E 22 ug/ml	CL_IC 22 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 1.3 ug/ml	HCO3_A 122 mg/L as CaCO3	MG_E 16 ug/ml	
NA_E 25 ug/ml	SO4_IC 7 mg/L					

CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-08-047
RECEIVED: 08/06/84 Results by Sample

SAMPLE ID RB-12-3, 170-180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/03/84 Category

DATA FILE A DATE INJECTED 08/10/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
1	1,1-Dichloroethane	0.3
2	trans-1,2-Dichloroethene	0.2
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND
3	Trichloroethene	0.2
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-12-3, 170-180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/03/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601

RADIAN
CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 06/30/84 16:26:56

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 4
COMPANY: McClellan AFB
FACILITY:

WORK ID: Reconn Boring
TAKEN: 8/16/84
TRANS: hand
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

PREP RED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

Louise Newman
CERTIFIED BY

CONTACT: CONOVER

SAMPLE IDENTIFICATION

01 RB-13-1, 95-100
02 RB-13-2, 115-120
03 RB-13-3, 135-140
04 RB-13-4, 195-200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

RADIAN
CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample

SAMPLE ID RB-13-1, 95-100 SAMPLE # 01 FRACTIONS: A, B, C, D
Date & Time Collected 08/16/84 Category

CA_E	24	CL_IC	29	CO3_A	<1	FE_E	2.0	HCO3_A	133	MG_E	17
	ug/ml		mg/L		mg/L as CaCO3		ug/ml		mg/L as CaCO3		ug/ml
NA_E	25	SO4_IC	7								
	ug/ml		mg/L								

RADIAN
CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample

SAMPLE ID RB-13-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/16/84 Category

DATA FILE B DATE INJECTED 08/23/84 ANALYST MCL VERIFIED BY JSQ
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

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CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample Continued From Above

SAMPLE ID RB-13-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/16/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample

SAMPLE ID RB-13-2, 115-120 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/16/84 Category

CA_E 20 ug/ml	CL_IC 23 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 6.1 ug/ml	HCO3_A 98 mg/L as CaCO3	MG_E 14 ug/ml	
NA_E 22 ug/ml	SO4_IC 8 mg/L					

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CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample

SAMPLE ID RB-13-2, 115-120 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/16/84 Category

DATA FILE B DATE INJECTED 08/23/84 ANALYST KWK VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

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CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample Continued From Above

SAMPLE ID RB-13-2, 115-120 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/16/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN
CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample

SAMPLE ID RB-13-3, 135-140 SAMPLE # 03 FRACTIONS: A,B,C,D
Date & Time Collected 08/16/84 Category

CA_E 21 ug/ml	CL_IC 24 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 5.6 ug/ml	HCO3_A 105 mg/L as CaCO3	MG_E 15 ug/ml
NA_E 23 ug/ml	SO4_IC 9 mg/L				

RADIAN
CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample

SAMPLE ID RB-13-3, 135-140 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/16/84 Category

DATA FILE B DATE INJECTED 08/23/84 ANALYST KWK VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
1	1,1,1-Trichloroethane	1.3
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

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PAGE 10 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample Continued From Above

SAMPLE ID RB-13-3, 135-140 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/16/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN
CORPORATION

PAGE 11 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample

SAMPLE ID RB-13-4, 195-200 SAMPLE # 04 FRACTIONS: A, B, C, D
Date & Time Collected 08/16/84 Category

CA_E 21 ug/ml	CL_IC 24 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 26 ug/ml	HCO3_A 91 mg/L as CaCO3	MG_E 12 ug/ml	
NA_E 29 ug/ml	SO4_IC 9 mg/L					

RADIAN CORPORATION

PAGE 12 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample

SAMPLE ID RB-13-4, 195-200 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/16/84 Category

DATA FILE B DATE INJECTED 08/27/84 ANALYST KWK VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

PAGE 13 Analytical Serv REPORT LAB # 84-08-180
RECEIVED: 08/17/84 Results by Sample Continued From Above

SAMPLE ID RB-13-4, 195-200 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/16/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN
CORPORATION

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601
04D	:	DUP601

PAGE 1 Analytical Serv REPORT LAB # 84-08-269

RECEIVED 08/28/84 09/10/84 20:23:31

REPORT TO: Radian
Bl 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES 3
COMPANY: McClellan AFB
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

Louise Newman
CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

WORK ID: Reconn Boring
TAKEN: 8/27/84, WB
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01	RB-14-1, 80-85
02	RB-14-2, 120-130
03	RB-14-3, 180-200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

PAGE 2 Analytical Serv REPORT LAB # 84-08-269

RECEIVED: 08/28/84 Results by Sample

SAMPLE ID RB-14-1, 80-85 SAMPLE # 01 FRACTIONS: A, B, C, D

Date & Time Collected 08/27/84 Category

CA_E	20	ug/ml	CL_IC	22	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	4.8	ug/ml
HCO3_A	88	mg/L as CaCO3	MG_E	16	ug/ml	NA_E	18	ug/ml	SO4_IC	5	mg/L

PAGE 3 Analytical Serv REPORT LAB # 84-08-269
RECEIVED: 08/28/84 Results by Sample

SAMPLE ID RB-14-1, 80-85 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/27/84 Category

DATA FILE B DATE INJECTED 08/31/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

PAGE 4 Analytical Serv REPORT LAB # 84-08-269
RECEIVED: 08/28/84 Results by Sample Continued From Above

SAMPLE ID RB-14-1, 80-85 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/27/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-14-2, 120-130 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/27/84 Category

CA_E 18 ug/ml	CL_IC 21 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 11 ug/ml	HCO3_A 88 mg/L as CaCO3	MG_E 15 ug/ml	
NA_E 18 ug/ml	SO4_IC 5 mg/L					

Analytical Serv REPORT LAB # 84-08-269

RECEIVED: 08/28/84

Results by Sample

SAMPLE ID RB-14-2, 120-130 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/27/84 Category

DATA FILE A DATE INJECTED 08/31/84 ANALYST KS VERIFIED BY JSG

CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-14-2, 120-130 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/27/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-14-3, 180-200 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 08/27/84 Category

CA_E	21 ug/ml	CL_IC	21 mg/L	CO3_A	<1 mg/L as CaCO3	FE_E	14 ug/ml	HCO3_A	103 mg/L as CaCO3	MG_E	19 ug/ml
NA_E	18 ug/ml	SO4_IC	5 mg/L								

Analytical Serv REPORT LAB # 84-08-269
RECEIVED: 08/28/84
Results by Sample

SAMPLE ID RB-14-3, 180-200 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/27/84 Category

DATA FILE B DATE INJECTED 08/31/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

SAMPLE ID RB-14-3, 180-200 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/27/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601

RADIAN CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-217

RECEIVED: 08/22/84 09/05/84 09:28:26

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 3
COMPANY: McClellan AFB
FACILITY:

please send one copy of the report to Toby Walters in Austin
Note: Second column confirmation performed on Split 01C.

WORK ID: Reconn Boring
TAKEN: 8/21/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01	RB-15-1, 115-120
02	RB-15-2, 155-160
02	RB-15-2, 155-160
03	RB-15-3, 195-200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

RADIAN CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-217
RECEIVED: 08/22/84 Results by Sample

SAMPLE ID RB-15-1, 115-120 SAMPLE # 01 FRACTIONS: A, B, C, D
Date & Time Collected 08/21/84 Category

CA_E	42 ug/ml	CL_IC	17 mg/L	CO3_A	<1 mg/L as CaCO3	FE_E	60 ug/ml	HCO3_A	87 mg/L as CaCO3	MG_E	39 ug/ml
NA_E	28 ug/ml	SO4_IC	8.9 mg/L								

RADIAN CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-08-217
RECEIVED: 08/22/84 Results by Sample

SAMPLE ID RB-15-1, 115-120 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/21/84 Category

DATA FILE A DATE INJECTED 08/27/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
1	Methylene Chloride	1.8
2	Trichlorofluoromethane	0.2
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
3	1,1,1-Trichloroethane	0.5
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

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CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-08-217
RECEIVED: 08/22/84 Results by Sample Continued From Above

SAMPLE ID RB-15-1, 115-120 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/21/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-217
RECEIVED: 08/22/84 Results by Sample

SAMPLE ID RB-15-2, 155-160 (cut) SAMPLE # 02 FRACTIONS: B, C, D
Date & Time Collected 08/21/84 Category

CA_E	FE_E	MG_E	NA_E
20 ug/ml	13 ug/ml	17 ug/ml	18 ug/ml

RADIAN CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-217
RECEIVED: 08/22/84 Results by Sample

SAMPLE ID RB-15-2, 155-160 (RW8) FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/21/84 Category

DATA FILE A DATE INJECTED 08/27/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
1	Methylene Chloride	0.5
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
2	1,1,1-Trichloroethane	0.5
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

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CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-08-217
RECEIVED: 08/22/84 Results by Sample Continued From Above

SAMPLE ID RB-15-2, 155-160 (comp) FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/21/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-08-217
RECEIVED: 08/22/84 Results by Sample

SAMPLE ID RB-15-2, 155-160 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 08/21/84 Category

CL_IC	CO3_A	HCO3_A	SO4_IC
8.0 mg/L	<1 mg/L as CaCO3	98 mg/L as CaCO3	1.6 mg/L

SAMPLE ID RB-15-3, 195-200 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 08/21/84 Category

CA_E	CL_IC	CO3_A	FE_E	HCO3_A	MG_E
21 ug/ml	16 mg/L	<1 mg/L as CaCO3	27 ug/ml	88 mg/L as CaCO3	20 ug/ml

NA_E	SO4_IC
21 ug/ml	3.7 mg/L

RADIAN CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 84-08-217
RECEIVED: 08/22/84 Results by Sample

SAMPLE ID RB-15-3, 195-200 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/21/84 Category

DATA FILE A DATE INJECTED 08/27/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN
CORPORATION

PAGE 11 Analytical Serv REPORT LAB # 84-08-217
RECEIVED: 08/22/84 Results by Sample Continued From Above

SAMPLE ID RB-15-3, 195-200 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/21/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601

RADIAN
CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 09/05/84 07:27:38

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

Louise Newman
CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 4
COMPANY: McClellan AFB
FACILITY:

please send one copy of the report to Toby Walters in Austin
Note: Second column confirmation performed on Split 03C.

WORK ID: Recon. Boring
TAKEN: 8/10/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01	RB-16-1, 90-100
02	RB-16-2, 120
03	RB-16-3, 160
04	RB-16-4, 180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

RADIAN
CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-16-1, 90-100 SAMPLE # 01 FRACTIONS: A,B,C,D
Date & Time Collected 08/10/84 Category

CA_E	51	CL_IC	14	CO3_A	<1	FE_E	70	HCO3_A	80	MG_E	52
	ug/ml		mg/L		mg/L as CaCO3		ug/ml		mg/L as CaCO3		ug/ml
NA_E	24	SO4_IC	9.5								
	ug/ml		mg/L								

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PAGE 4 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-16-1, 90-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

DATA FILE A DATE INJECTED 08/22/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN
CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample Continued From Above

SAMPLE ID RB-16-1, 90-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN
CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-16-2, 120 SAMPLE # 02 FRACTIONS: A, B, C, D, E
Date & Time Collected 08/10/84 Category

CA_E	18 ug/ml	CL_IC	14 mg/L	CO3_A	<1 mg/L as CaCO3	FE_E	3.7 ug/ml	HCO3_A	80 mg/L as CaCO3	MG_E	11 ug/ml
NA_E	26 ug/ml	SO4_IC	5 mg/L								

RADIAN CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-16-2, 120 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

DATA FILE B DATE INJECTED 08/22/84 ANALYST KWK VERIFIED BY JSC
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN
CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample Continued From Above

SAMPLE ID RB-16-2, 120 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-16-3, 160 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 08/10/84 Category

CA_E	130	ug/ml	CL_IC	13	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	54	ug/ml
HCO3_A	89	mg/L as CaCO3	MG_E	130	ug/ml	NA_E	25	ug/ml	SO4_IC	5	mg/L

RADIAN CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-16-3, 160 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

DATA FILE B DATE INJECTED 08/22/84 ANALYST KWK VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN
CORPORATION

PAGE 11 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample Continued From Above

SAMPLE ID RB-16-3, 160 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN
CORPORATION

PAGE 12 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-16-4, 180 SAMPLE # 04 FRACTIONS: A, B, C, D
Date & Time Collected 08/10/84 Category

CA_E 21 ug/ml	CL_IC 15 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 8.9 ug/ml	HCO3_A 93 mg/L as CaCO3	MG_E 15 ug/ml	
NA_E 18 ug/ml	SO4_IC 5 mg/L					

RADIAN CORPORATION

PAGE 13 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample

SAMPLE ID RB-16-4, 180 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

DATA FILE B DATE INJECTED 08/22/84 ANALYST KWK VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN
CORPORATION

PAGE 14 Analytical Serv REPORT LAB # 84-08-130
RECEIVED: 08/13/84 Results by Sample Continued From Above

SAMPLE ID RB-16-4, 180 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/10/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601			
02D	:	DUP601	02E	:	LOG_IN
03D	:	DUP601			
04D	:	DUP601			

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-288

RECEIVED: 08/30/84 09/26/84 11:53:35

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 3
COMPANY: McClellan AFB
FACILITY:

WORK ID: Reconn Boring
TAKEN: 8/29/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	RB-17-1, 115-120
02	RB-17-2, 135-140
03	RB-17-3, 180-190

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-08-288

RECEIVED: 08/30/84 RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units) RB-17-1	Sample 02 (entered units) RB-17-2	Sample 03 (entered units) RB-17-3
CA_E ug/ml	8.1	8.6	8.3
CL_IC mg/L	16	16	20
CO3_A mg/L as CaCO3	<1	<1	<1
FE_E ug/ml	2.1	2.3	2.6
HCO3_A mg/L as CaCO3	112	96	95
MG_E ug/ml	6.3	6.1	6.1
NA_E ug/ml	7.7	7.6	7.4
SO4_IC mg/L	5	9.2	6.7

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-288
RECEIVED: 08/30/84 Results by Sample

SAMPLE ID RB-17-1, 115-120 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/29/84 Category

DATA FILE
CONC. FACTOR
DATE INJECTED 09/24/84
ANALYST MCL
INSTRUMENT A
VERIFIED BY JSG
COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
1	Methylene Chloride	1.7
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-17-1, 115-120 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/29/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-08-288
RECEIVED: 08/30/84 Results by Sample

SAMPLE ID RB-17-2, 135-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/29/84 Category

DATA FILE DATE INJECTED 09/24/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
1	Methylene Chloride	1.1
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-288
RECEIVED: 08/30/84 Results by Sample Continued From Above

SAMPLE ID RB-17-2, 135-140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/29/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-288
RECEIVED: 08/30/84 Results by Sample

SAMPLE ID RB-17-3, 180-190 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/30/84 Category

DATA FILE B DATE INJECTED 09/05/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT b COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-08-288
RECEIVED: 08/30/84 Results by Sample Continued From Above

SAMPLE ID RB-17-3, 180-190 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/30/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-09-011
RECEIVED: 09/04/84 09/26/84 10:21:42

REPORT TO: Radian
B1 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 1
COMPANY: McClellan AFB
FACILITY:

WORK ID: Reconn Boring
TAKEN: 8/31/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin
2nd column confirmation performed on EPA 601.

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 R3-18-1, 120-140

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-09-011

RECEIVED: 09/04/84 RESULTS BY TEST

RB-18-1

TEST CODE default units	Sample 01 (entered units)
CA_E ug/ml	19
CL_IC mg/L	17
CO3_A mg/L as CaCO3	<1
FE_E ug/ml	26
HCO3_A mg/L as CaCO3	88
MG_E ug/ml	22
NA_E ug/ml	15
SO4_IC mg/L	4.5

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-09-011
RECEIVED: 09/04/84 Results by Sample

SAMPLE ID RB-18-1, 120-140 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/31/84 Category

DATA FILE A DATE INJECTED 09/07/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
1	trans-1,2-Dichloroethene	1.6
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND
2	Trichloroethene	3.9
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-09-011
RECEIVED: 09/04/84 Results by Sample Continued From Above

SAMPLE ID RB-18-1, 120-140 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/31/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601

PAGE 1 Analytical Serv REPORT LAB # 84-08-281

RECEIVED 08/29/84 09/10/84 20:39:08

REPORT TO: Radian
B1 4
Austin
or Sacramento
ATTEN Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN
PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CLIENT MCCLELLAN AF SAMPLES 4
COMPANY McClellan AFB
FACILITY

please send one copy of the report to Toby Walters in Austin

WORK ID Reconn Boring
TAKEN 8/28/84
TRANS hand carried
TYPE H20
P.O. # 212-027-16
INVOICE under separate cover

SAMPLE IDENTIFICATION

01 RB-19-1, 120
02 RB-19-2, 140
03 RB-19-3, 180
04 RB-19-4, 200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

SAMPLE ID RB-19-1, 120 SAMPLE # 01 FRACTIONS: A,B,C,D
Date & Time Collected not specified Category

CA_E 21 ug/ml	CL_IC 23 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 0.95 ug/ml	HCO3_A 108 mg/L as CaCO3	MG_E 13 ug/ml	
NA_E 19 ug/ml	SO4_IC 5 mg/L					

RECEIVED: 08/29/84 Results by Sample

SAMPLE ID RB-19-1, 120 FRACTION Q1C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected not specified Category

DATA FILE A DATE INJECTED 06/31/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-19-1, 120 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected not specified Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-19-2, 140 SAMPLE # 02 FRACTIONS: A,B,C,D
Date & Time Collected not specified Category

CA_E 21 ug/ml	CL_IC 17 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 22 ug/ml	HCO3_A 96 mg/L as CaCO3	MG_E 17 ug/ml	
NA_E 21 ug/ml	SO4_IC 3 mg/L					

SAMPLE ID RB-19-2, 140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected not specified Category

DATA FILE B DATE INJECTED 08/31/84 ANALYST KS VERIFIED BY JSG
CONC FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-19-2, 140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected not specified Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-19-3, 180 SAMPLE # 03 FRACTIONS: A,B,C,D
Date & Time Collected not specified Category

CA_E	17	ug/ml	CL_IC	12	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	1.5	ug/ml
HCO3_A	103	mg/L as CaCO3	MG_E	12	ug/ml	NA_E	16	ug/ml	SO4_IC	3	mg/L

SAMPLE ID RB-19-3, 180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected not specified Category

DATA FILE B DATE INJECTED 08/31/84 ANALYST KS VERIFIED BY JSG
CONC FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-19-3, 180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected not specified Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-19-4, 200 SAMPLE # 04 FRACTIONS: A,B,C,D
Date & Time Collected not specified Category

CA_E	17 ug/ml	CL_IC	10 mg/L	CO3_A	<1 mg/L as CaCO3	FE_E	3.7 ug/ml	HCO3_A	110 mg/L as CaCO3	MG_E	11 ug/ml
NA_E	17 ug/ml	SO4_IC	2 mg/L								

RECEIVED: 08/29/84 Results by Sample

SAMPLE ID RB-19-4, 200 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected not specified Category

DATA FILE A DATE INJECTED 08/31/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-19-4, 200 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected not specified Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-287

RECEIVED: 08/30/84 09/24/84 11:23:44

REPORT TO: Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 4
COMPANY: McClellan AFB
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

WORK ID: Reconn Boring
TAKEN: 8/29/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01	RB-20-1, 140
02	RB-20-2, 160
03	RB-20-3, 180
04	RB-20-4, 200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

RECEIVED: 08/30/84 Results by Sample

SAMPLE ID RB-20-1, 140 SAMPLE # 01 FRACTIONS: A,B,C,D
Date & Time Collected 08/29/84 Category

CA_E 14 ug/ml	CL_IC 11 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 14 ug/ml	HCO3_A 77 mg/L as CaCO3	MG_E 10 ug/ml	
NA_E 10 ug/ml	SO4_IC 4.5 mg/L					

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-287
RECEIVED: 08/30/84 Results by Sample

SAMPLE ID RB-20-1, 140 FRACTION QIC TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/29/84 Category

DATA FILE B DATE INJECTED 09/05/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-08-287
RECEIVED: 08/30/84 Results by Sample Continued From Above

SAMPLE ID RB-20-1, 140 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/29/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-20-2, 160 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/29/84 Category

CA_E 21 ug/ml	CL_IC 9.9 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 0.69 ug/ml	HCO3_A 82 mg/L as CaCO3	MG_E 14 ug/ml	
NA_E 10 ug/ml	SO4_IC 200 mg/L					

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-287
RECEIVED: 08/30/84 Results by Sample

SAMPLE ID RB-20-2, 160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/29/84 Category

DATA FILE A DATE INJECTED 09/05/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
1	Methylene Chloride	1.5
2	Trichlorofluoromethane	2.2
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
3	1,1,1-Trichloroethane	2.4
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-20-2, 160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/29/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

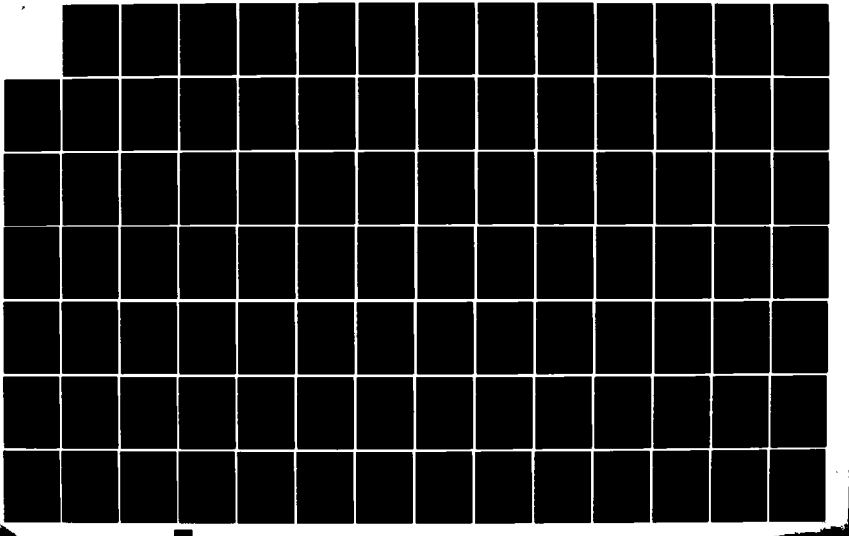
SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

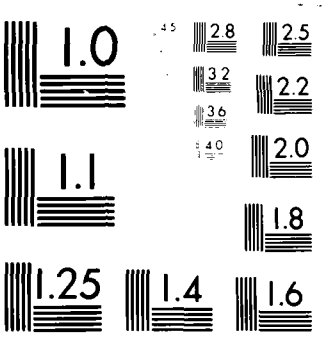
SAMPLE ID RB-20-3, 180 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 08/29/84 Category

CA_E	16 ug/ml	CL_IC	9.5 mg/L	CO3_A	<1 mg/L as CaCO3	FE_E	15 ug/ml	HCO3_A	92 mg/L as CaCO3	MG_E	13 ug/ml
NA_E	9.6 ug/ml	SO4_IC	55 mg/L								

AD-A156 283 INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1) 09/10
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

UNCLASSIFIED F/G 13/2 NL





MICROCOPY RESOLUTION TEST CHART

Analytical Serv REPORT LAB # 84-08-287

RECEIVED: 08/30/84

Results by Sample

SAMPLE ID RB-20-3, 180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/29/84 Category

DATA FILE B DATE INJECTED 09/05/84 ANALYST KS VERIFIED BY JSG

CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

COMPUTATION

PAGE 10 Analytical Serv REPORT LAB # 84-08-287
RECEIVED: 08/30/84 Results by Sample Continued From Above

SAMPLE ID RB-20-3, 180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/29/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-20-4, 200 SAMPLE # 04 FRACTIONS: A, B, C, D
Date & Time Collected 08/29/84 Category

CA_E 17 ug/ml	CL_IC 9.4 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 33 ug/ml	HCO3_A 88 mg/L as CaCO3	MG_E 23 ug/ml
NA_E 9.6 ug/ml	SO4_IC 4.8 mg/L				

CORPORATION

PAGE 12 Analytical Serv REPORT LAB # 84-08-287
RECEIVED: 08/30/84 Results by Sample

SAMPLE ID RB-20-4, 200 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/29/84 Category

DATA FILE A DATE INJECTED 09/05/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 13 Analytical Serv REPORT LAB # 84-08-287
RECEIVED: 08/30/84 Results by Sample Continued From Above

SAMPLE ID RB-20-4, 200 FRACTION 04C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/29/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601
04D	:	DUP601

RADIAN
CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-186
RECEIVED: 08/20/84 08/30/84 16:32:05

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 2
COMPANY: McClellan AFB
FACILITY:

WORK ID: Reconn Boring
TAKEN: 8/17/84
TRANS: hand
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

SAMPLE IDENTIFICATION

01 RB-21-1, 130-140
02 RB-21-2, 175-180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

RADIAN
CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-08-186
RECEIVED: 08/20/84 Results by Sample

SAMPLE ID RB-21-1, 130-140 SAMPLE # 01 FRACTIONS: A,B,C,D
Date & Time Collected 08/17/84 Category

CA_E	14	CL_IC	14	CO3_A	<1	FE_E	0.84	HCO3_A	83	MG_E	9.2
	ug/ml		mg/L		mg/L as CaCO3		ug/ml		mg/L as CaCO3		ug/ml
NA_E	22	SO4_IC	6								
	ug/ml		mg/L								

RADIAN
CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-186
RECEIVED: 08/20/84 Results by Sample

SAMPLE ID RB-21-1, 130-140 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/17/84 Category

DATA FILE A DATE INJECTED 08/23/84 ANALYST KWK VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN
CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-08-186
RECEIVED: 08/20/84 Results by Sample Continued From Above

SAMPLE ID RB-21-1, 130-140 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/17/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN
CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-08-186
RECEIVED: 08/20/84 Results by Sample

SAMPLE ID RB-21-2, 175-180 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/17/84 Category

CA_E	25	ug/ml	CL_IC	14	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	28	ug/ml
HCO3_A	81	mg/L as CaCO3	MG_E	20	ug/ml	NA_E	30	ug/ml	SO4_IC	5	mg/L

RADIAN CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-186
RECEIVED: 08/20/84 Results by Sample

SAMPLE ID RB-21-2, 175-180 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/17/84 Category

DATA FILE A DATE INJECTED 08/27/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
1	1,1,1-Trichloroethane	0.7
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

LYCADIAN
CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-186
RECEIVED: 08/20/84 Results by Sample Continued From Above

SAMPLE ID RB-21-2, 175-180 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/17/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN
CORPORATION

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	!	DUP601
02D	!	DUP601

PAGE 1 Analytical Serv REPORT LAB # 84-08-219

RECEIVED: 08/22/84 09/10/84 20:33:55

REPORT TO: Radian
Bl 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES 3
COMPANY: McClellan AFB
FACILITY:

WORK ID: Reconn Boring
TAKEN: 8/22/84
TRANS: hand carried
TYPE: H20
P.O #: 212-027-16
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

Louise Newman
CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin
Note: Second column confirmation performed on Split 01C.

SAMPLE IDENTIFICATION

01 RB-22-1, 95-100
02 RB-22-2, 140-145
03 RB-22-3, 175-180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

SAMPLE ID RB-22-1, 95-100 SAMPLE # 01 FRACTIONS: A,B,C,D
Date & Time Collected 08/22/84 Category

CA_E 20 ug/ml	CL_IC 25 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 2.3 ug/ml	HCO3_A 107 mg/L as CaCO3	MG_E 17 ug/ml
NA_E 24 ug/ml	SO4_IC 7.5 mg/L				

PAGE 3 Analytical Serv REPORT LAB # 84-08-219
RECEIVED: 08/22/84 Results by Sample

SAMPLE ID RB-22-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/22/84 Category

DATA FILE A DATE INJECTED 08/27/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
1	1,1-Dichloroethene	0.8
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
2	1,1,1-Trichloroethane	0.3
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
3	Trichloroethene	0.3
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-22-1, 95-100 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/22/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

Analytical Serv REPORT

LAB # 84-08-219

RECEIVED: 08/22/84

Results by Sample

SAMPLE ID RB-22-2, 140-145 SAMPLE # 02 FRACTIONS: A, B, C, D

Date & Time Collected 08/22/84 Category

CA_E 16 ug/ml	CL_IC 22 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 6.1 ug/ml	HCO3_A 86 mg/L as CaCO3	MG_E 13 ug/ml	
NA_E 21 ug/ml	SO4_IC 5.1 mg/L					

PAGE 6 Analytical Serv REPORT LAB # 84-08-219
RECEIVED: 08/22/84 Results by Sample

SAMPLE ID RB-22-2, 140-145 FRACTION O2C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/22/84 Category

DATA FILE A DATE INJECTED 08/27/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-22-2, 140-145 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/22/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-22-3, 175-180 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 08/22/84 Category

CA_E 14 ug/ml	CL_IC 16 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 3.0 ug/ml	HCO3_A 77 mg/L as CaCO3	MG_E 11 ug/ml	
NA_E 19 ug/ml	SO4_IC 2.7 mg/L					

RECEIVED: 08/22/84 Results by Sample

SAMPLE ID RB-22-3, 175-180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/22/84 Category

DATA FILE A DATE INJECTED 08/27/84 ANALYST KS VERIFIED BY JSG

CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

SAMPLE ID RB-22-3, 175-180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/22/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601

PAGE 1 Analytical Serv REPORT LAB # 84-08-247

RECEIVED: 08/27/84 09/10/84 20:28:43

REPORT TO: Radian
Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 3
COMPANY: McClellan AFB
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

WORK ID: Reconn Boring
TAKEN: 8/23/84
TRANS: hand carried
TYPE: H20
P.O. #: /12-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01	RB-23-1, 75-85
02	RB-23-2, 155-160
03	RB-23-3, 175-180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

SAMPLE ID RB-23-1, 75-85 SAMPLE # 01 FRACTIONS: A, B, C, D
Date & Time Collected 08/24/84 Category

CA_E 21 ug/ml	CL_IC 18 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 30 ug/ml	HCO3_A 83 mg/L as CaCO3	MG_E 21 ug/ml	
NA_E 22 ug/ml	SO4_IC 10 mg/L					

 Analytical Serv REPORT LAB # 84-08-247
RECEIVED: 08/27/84 Results by Sample

SAMPLE ID RB-23-1, 75-85 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/24/84 Category

DATA FILE A DATE INJECTED 08/31/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-23-1, 75-85 FRACTION OIC TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/24/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-23-2, 155-160 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/23/84 Category

CA_E 17 ug/ml	CL_IC 17 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 1.3 ug/ml	HCO3_A 88 mg/L as CaCO3	MG_E 13 ug/ml
NA_E 19 ug/ml	SO4_IC 4 mg/L				

 Analytical Serv REPORT LAB # 84-08-247
RECEIVED: 08/27/84 Results by Sample

SAMPLE ID RB-23-2, 155-160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/23/84 Category

DATA FILE B DATE INJECTED 08/31/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

SAMPLE ID RB-23-2, 155-160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/23/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RECEIVED: 08/27/84 Results by Sample

SAMPLE ID RB-23-3, 175-180 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 08/23/84 Category

CA_E 19 ug/ml	CL_IC 17 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 4.0 ug/ml	HCO3_A 96 mg/L as CaCO3	MG_E 16 ug/ml	
NA_E 20 ug/ml	SO4_IC 5 mg/L					

RECEIVED: 08/27/84 Results by Sample

SAMPLE ID RB-23-3, 175-180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/23/84 Category

DATA FILE A DATE INJECTED 08/31/84 ANALYST KS VERIFIED BY JSG
CONC FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

SAMPLE ID RB-23-3, 175-180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/23/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601

RADIAN CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-031

RECEIVED: 08/03/84 08/22/84 14:23:38

REPORT TO: Radian
Bl 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

Louise Newman
CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 3
COMPANY: McClellan AFB
FACILITY:

WORK ID: Reconn. Boring
TAKEN: 8/2/84, T. Walters
TRANS: hand carried
TYPE: H20
P O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01 RB-24-1 85-90 (EWP)
02 RB-24-2, 105-110
03 RB-24-3, 120-130

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

RADIAN CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-08-031
RECEIVED: 08/03/84 Results by Sample

SAMPLE ID RB-24-1 SAMPLE # 01 FRACTIONS: A,B,C,D
Date & Time Collected 08/02/84 Category

CA_E	19 ug/ml	CL_IC	21 mg/L	CO3_A	<1 mg/L as CaCO3	FE_E	7.9 ug/ml	HCO3_A	100 mg/L as CaCO3	MG_E	13 ug/ml
NA_E	24 ug/ml	SO4_IC	7.1 mg/L								

RADIAN CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-031
RECEIVED: 08/03/84 Results by Sample

SAMPLE ID RB-24-1 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/02/84 Category

DATA FILE A DATE INJECTED 08/10/84 ANALYST MCL VERIFIED BY JSG
CONC FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-08-031
RECEIVED: 08/03/84 Results by Sample Continued From Above

SAMPLE ID RB-24-1 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/02/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RESOURCE CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-08-031
RECEIVED: 08/03/84 Results by Sample

SAMPLE ID RB-24-2, 105-110 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/02/84 Category

CA_E	19	ug/ml	CL_IC	21	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	8.4	ug/ml
HCO3_A	98	mg/L as CaCO3	MG_E	16	ug/ml	NA_E	22	ug/ml	SO4_IC	7	mg/L

RADIAN CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-031
RECEIVED: 08/03/84 Results by Sample

SAMPLE ID RB-24-2, 105-110 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/02/84 Category

DATA FILE B DATE INJECTED 08/10/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
1	Trichlorofluoromethane	0.4
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-031
RECEIVED: 08/03/84 Results by Sample Continued From Above

SAMPLE ID RB-24-2, 105-110 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/02/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-08-031
RECEIVED: 08/03/84 Results by Sample

SAMPLE ID RB-24-3, 120-130 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 08/02/84 Category

CA_E	19	ug/ml	CL_IC	20	mg/L	CO3_A	<1	mg/L as CaCO3	FE_E	0.18	ug/ml
HCO3_A	<1	mg/L as CaCO3	MG_E	15	ug/ml	NA_E	22	ug/ml	SO4_IC	8	mg/L

RADIAN CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-08-031
RECEIVED: 08/03/84 Results by Sample

SAMPLE ID RB-24-3, 120-130 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/02/84 Category

DATA FILE A DATE INJECTED 08/10/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

RADIAN CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 84-08-031
RECEIVED: 08/03/84 Results by Sample Continued From Above

SAMPLE ID RB-24-3, 120-130 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/02/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-09-012

RECEIVED: 09/04/84 09/26/84 11:26:07

REPORT TO: Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 3
COMPANY: McClellan AFB
FACILITY:

WORK ID: Reconn Boring
TAKEN: 9/1/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	RB-25-1, 140
02	RB-25-2, 160
03	RB-25-3, 190

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-09-012

RECEIVED: 09/04/84 RESULTS BY TEST

TEST CODE default units	RB-25-1 Sample 01 (entered units)	RB-25-2 Sample 02 (entered units)	RB-25-3 Sample 03 (entered units)
CA_E ug/ml	23	110	24
CL_IC mg/L	13	15	14
CO3_A mg/L as CaCO3	<1	<1	<1
FE_E ug/ml	28	81	4.1
HCO3_A mg/L as CaCO3	89	78	90
MG_E ug/ml	22	61	18
NA_E ug/ml	18	26	20
SO4_IC mg/L	12	350	76

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-09-012
RECEIVED: 09/04/84 Results by Sample

SAMPLE ID RB-25-1, 140 FRACTION OIC TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/01/84 Category

DATA FILE A DATE INJECTED 09/07/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-09-012
RECEIVED: 09/04/84 Results by Sample Continued From Above

SAMPLE ID RB-25-1, 140 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/01/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-09-012
RECEIVED: 09/04/84 Results by Sample

SAMPLE ID RB-25-2, 160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/01/84 Category

DATA FILE A DATE INJECTED 09/07/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
1	Trichlorofluoromethane	0.3
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-09-012
RECEIVED: 09/04/84 Results by Sample Continued From Above

SAMPLE ID RB-25-2, 160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/01/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-09-012
RECEIVED: 09/04/84 Results by Sample

SAMPLE ID RB-25-3, 190 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/01/84 Category

DATA FILE A DATE INJECTED 09/07/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-09-012
RECEIVED: 09/04/84 Results by Sample Continued From Above

SAMPLE ID RB-25-3, 190 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/01/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-08-299

RECEIVED: 08/31/84 09/24/84 11:30:20

REPORT TO: Bl. 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES: 3
COMPANY: McClellan AFB
FACILITY:

WORK ID: Reconn Boring
TAKEN: 8/30/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

SAMPLE IDENTIFICATION

01 RB-26-1, 120
02 RB-26-2, 140
03 RB-26-3, 200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

RECEIVED: 08/31/84 Results by Sample

SAMPLE ID RB-26-1, 120 SAMPLE # 01 FRACTIONS: A,B,C,D
Date & Time Collected 08/30/84 Category

CA_E 12 ug/ml	CL_IC 13 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 14 ug/ml	HCO3_A 67 mg/L as CaCO3	MG_E 9.7 ug/ml	
NA_E 10 ug/ml	SO4_IC 3.7 mg/L					

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-08-299
RECEIVED: 08/31/84 Results by Sample

SAMPLE ID RB-26-1, 120 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/30/84 Category

DATA FILE A DATE INJECTED 09/05/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
1	1,1,1-Trichloroethane	0.9
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-08-299
RECEIVED: 08/31/84 Results by Sample Continued From Above

SAMPLE ID RB-26-1, 120 FRACTION QIC TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/30/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

SAMPLE ID RB-26-2, 140 SAMPLE # 02 FRACTIONS: A, B, C, D
Date & Time Collected 08/30/84 Category

CA_E	5.6 ug/ml	CL_IC	13 mg/L	CO3_A	<1 mg/L as CaCO3	FE_E	1.9 ug/ml	HCO3_A	67 mg/L as CaCO3	MG_E	4.1 ug/ml
NA_E	8.5 ug/ml	SO4_IC	3.9 mg/L								

CONFIRMATION

PAGE 6 Analytical Serv REPORT LAB # 84-08-299
RECEIVED: 08/31/84 Results by Sample

SAMPLE ID RB-26-2, 140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/30/84 Category

DATA FILE B DATE INJECTED 09/05/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
1	Trichlorofluoromethane	2.2
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-08-299
RECEIVED: 08/31/84 Results by Sample Continued From Above

SAMPLE ID RB-26-2, 140 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/30/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RECEIVED: 08/31/84 Results by Sample

SAMPLE ID RB-26-3, 200 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 08/30/84 Category

CA_E 8.7 ug/ml	CL_IC 14 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 0.35 ug/ml	HCO3_A 86 mg/L as CaCO3	MG_E 6.4 ug/ml	
NA_E 10 ug/ml	SO4_IC 6.3 mg/L					

CORPORATION

PAGE 9 Analytical Serv REPORT LAB # 84-08-299
RECEIVED: 08/31/84 Results by Sample

SAMPLE ID RB-26-3, 200 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/30/84 Category

DATA FILE A DATE INJECTED 09/05/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
1	1,1,1-Trichloroethane	0.9
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
2	Chlorobenzene	0.4
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 10 Analytical Serv REPORT LAB # 84-08-299
RECEIVED: 08/31/84 Results by Sample Continued From Above

SAMPLE ID RB-26-3, 200 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/30/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-09-050
RECEIVED 09/07/84 09/26/84 11:22:17

REPORT TO: Radian
B1 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES 2
COMPANY: McClellan AFB
FACILITY:

WORK ID: Reconn Boring
TAKEN: 9/6/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin
2nd column confirmation performed on split 02C.

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 RB-27-1, 150-160
02 RB-27-2, 180-190

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-09-050

RECEIVED: 09/07/84 RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units) RB-27-1	Sample 02 (entered units) RB-27-2
CA_E ug/ml	19	16
CL_IC mg/L	44	14
CO3_A mg/L as CaCO3	<1	<1
FE_E ug/ml	2.1	1.6
HCO3_A mg/L as CaCO3	112	99
MG_E ug/ml	15	13
NA_E ug/ml	17	16
SO4_IC mg/L	7	2

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-09-050
RECEIVED 09/07/84 Results by Sample

SAMPLE ID RB-27-1, 150-160 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/06/84 Category

DATA FILE A DATE INJECTED 09/11/84 ANALYST RAA VERIFIED BY JSG
CONC FACTOR INSTRUMENT a COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
1	Trichlorofluoromethane	1.9
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-09-050
RECEIVED: 09/07/84 Results by Sample Continued From Above

SAMPLE ID RB-27-1, 150-160 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/06/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-09-050
RECEIVED: 09/07/84 Results by Sample

SAMPLE ID RB-27-2, 180-190 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/06/84 Category

DATA FILE A DATE INJECTED 09/11/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
1	Trichlorofluoromethane	0.6
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
2	1,2-Dichloroethane	0.6
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
3	Bromodichloromethane	0.2
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-09-050
RECEIVED: 09/07/84 Results by Sample Continued From Above

SAMPLE ID RB-27-2, 180-190 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/06/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-09-023

RECEIVED: 09/05/84 09/26/84 09:31:43

REPORT TO: Radian
B1 4
Austin
or Sacramento
ATTEN: Wayne Pearce

CLIENT: MCCLELLAN AF SAMPLES 3
COMPANY: McClellan AFB
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

WORK ID: Reconn Boring
TAKEN: 9/4/84
TRANS: hand carried
TYPE: H20
P.O. #: 212-027-16
INVOICE: under separate cover

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	RB-28-1, 120
02	RB-28-2, 160
03	RB-28-3, 180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-09-023
RECEIVED: 09/05/84
RESULTS BY TEST

TEST CODE default units	RB-28-1 Sample 01 (entered units)	RB-28-2 Sample 02 (entered units)	RB-28-3 Sample 03 (entered units)
CA_E ug/ml	22	15	19
CL_IC mg/L	18	13	13
CO3_A mg/L as CaCO3	<1	<1	<1
FE_E ug/ml	1.2	2.3	5.7
HCO3_A mg/L as CaCO3	116	109	112
MG_E ug/ml	14	10	14
NA_E ug/ml	18	16	18
SO4_IC mg/L	4.8	3.2	3.4

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-09-023
RECEIVED: 09/05/84 Results by Sample

SAMPLE ID RB-28-1, 120 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/04/84 Category

DATA FILE A DATE INJECTED 09/10/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-09-023
RECEIVED: 09/05/84 Results by Sample Continued From Above

SAMPLE ID RB-28-1, 120 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/04/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-09-023
RECEIVED: 09/05/84 Results by Sample

SAMPLE ID RB-28-2, 160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/04/84 Category

DATA FILE A DATE INJECTED 09/10/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-09-023
RECEIVED: 09/05/84 Results by Sample Continued From Above

SAMPLE ID RB-28-2, 160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/04/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-09-023
RECEIVED: 09/05/84 Results by Sample

SAMPLE ID RB-28-3, 180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/04/84 Category

DATA FILE A DATE INJECTED 09/10/84 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT a COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 84-09-023
RECEIVED: 09/05/84 Results by Sample Continued From Above

SAMPLE ID RB-28-3, 180 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/04/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601
02D	:	DUP601
03D	:	DUP601

CORPORATION

PAGE 1 Analytical Serv REPORT LAB # 84-09-020

RECEIVED 09/05/84 09/24/84 11 35 28

REPORT TO: Radian
B1 4
Austin
or Sacramento
ATTEN: Wayne Pearce

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd
P O Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CLIENT: MCCLELLAN AF SAMPLES 2
COMPANY: McClellan AFB
FACILITY:

please send one copy of the report to Toby Walters in Austin

WORK ID: Reconn Boring
TAKEN: 8/4/84
TRANS: hand carried
TYPE: H20
P O. #: 212-027-16
INVOICE: under separate cover

SAMPLE IDENTIFICATION

01 RB-29-1, 135-145
02 RB-29-2, 150-160

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

PAGE 2 Analytical Serv REPORT LAB # 84-09-020

RECEIVED: 09/05/84 Results by Sample

SAMPLE ID RB-29-1, 135-145 SAMPLE # 01 FRACTIONS: A,B,C,D

Date & Time Collected 09/04/84 Category

CA_E 22 ug/ml	CL_IC 20 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 1.2 ug/ml	HCO3_A 100 mg/L as CaCO3	MG_E 17 ug/ml	
NA_E 18 ug/ml	SO4_IC 6.2 mg/L					

CORPORATION

PAGE 3 Analytical Serv REPORT LAB # 84-09-020
RECEIVED: 09/05/84 Results by Sample

SAMPLE ID RB-29-1, 135-145 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/04/84 Category

DATA FILE A DATE INJECTED 09/07/84 ANALYST KS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
	Methylene Chloride	ND
	Trichlorofluoromethane	ND
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 84-09-020
RECEIVED: 09/05/84 Results by Sample Continued From Above

SAMPLE ID RB-29-1, 135-145 FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/04/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 84-09-020

RECEIVED: 09/05/84 Results by Sample

SAMPLE ID RB-29-2, 150-160 SAMPLE # 02 FRACTIONS: A, B, C, D

Date & Time Collected 09/04/84 Category

CA_E 19 ug/ml	CL_IC 20 mg/L	CO3_A <1 mg/L as CaCO3	FE_E 1.3 ug/ml	HCO3_A 122 mg/L as CaCO3	MG_E 14 ug/ml	
NA_E 17 ug/ml	SO4_IC 5.1 mg/L					

CORPORATION

PAGE 6 Analytical Serv REPORT LAB # 84-09-020
RECEIVED: 09/05/84 Results by Sample

SAMPLE ID RB-29-2, 150-160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/04/84 Category

DATA FILE A DATE INJECTED 09/10/84 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT
	Chloromethane	ND
	Bromomethane	ND
	Vinyl Chloride	ND
	Chloroethane	ND
1	Methylene Chloride	1.1
2	Trichlorofluoromethane	0.8
	1,1-Dichloroethene	ND
	1,1-Dichloroethane	ND
	trans-1,2-Dichloroethene	ND
	Chloroform	ND
	1,2-Dichloroethane	ND
	1,1,1-Trichloroethane	ND
	Carbon Tetrachloride	ND
	Bromodichloromethane	ND
	1,2-Dichloropropane	ND
	trans-1,3-Dichloropropene	ND

SCAN	COMPOUND	RESULT
	Trichloroethene	ND
	Dibromochloromethane *	ND
	1,1,2-Trichloroethane *	ND
	cis-1,3-Dichloropropene *	ND
	2-Chloroethylvinyl Ether	ND
	Bromoform	ND
	1,1,2,2-Tetrachloroethane #	ND
	Tetrachloroethylene #	ND
	Chlorobenzene	ND
	1,3-Dichlorobenzene	ND
	1,2-Dichlorobenzene	ND
	1,4-Dichlorobenzene	ND

CORPORATION

PAGE 7 Analytical Serv REPORT LAB # 84-09-020
RECEIVED: 09/05/84 Results by Sample Continued From Above

SAMPLE ID RB-29-2, 150-160 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 09/04/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

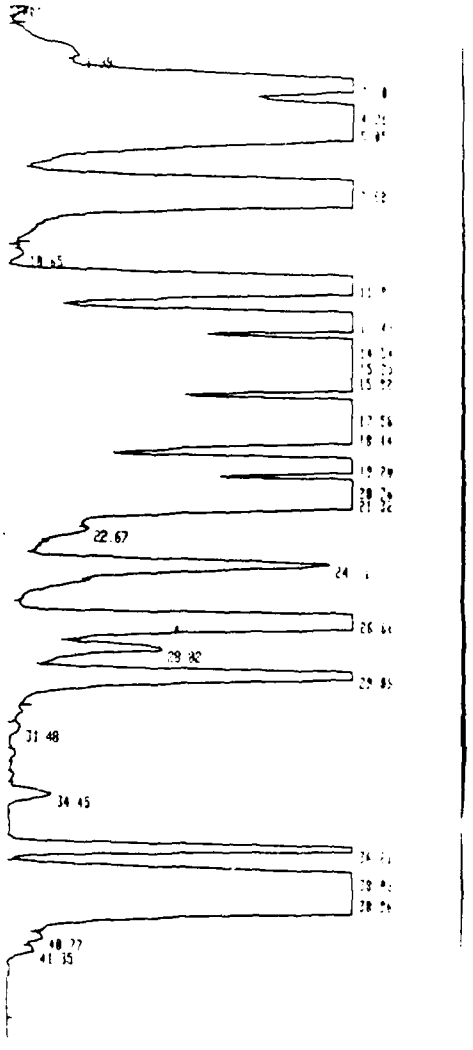
FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601

RADIAN
CORPORATION

APPENDIX 5-F

Raw Laboratory Data for Selected Water Samples
(Volatile Organic Analysis - EPA 601)



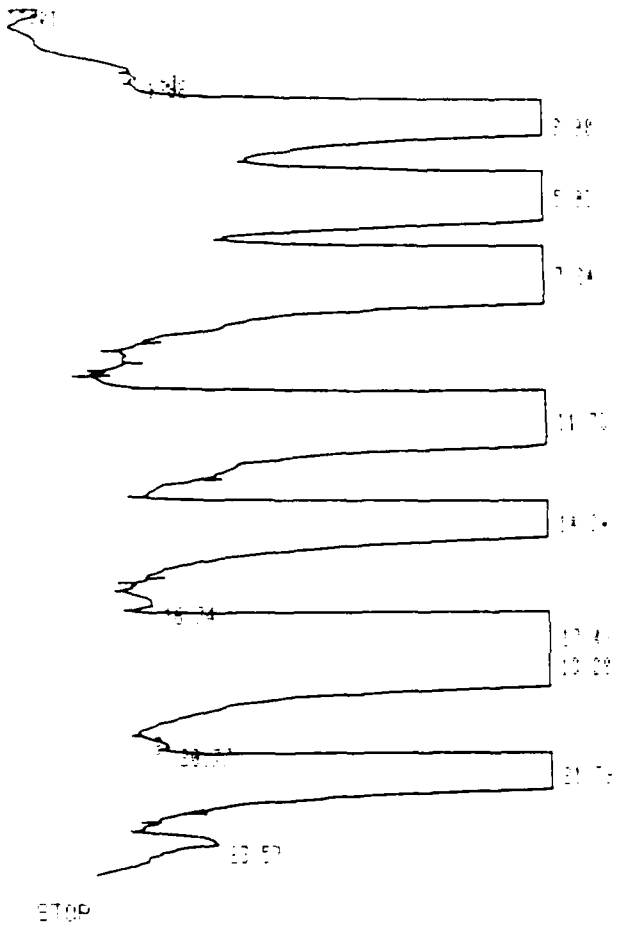
STOP

RUN # 554 SLP/24/84 10 2[illegible]

AREA%

RT		AREA	TYPE	AREA%	[illegible]
1 99		1208700	BV	0 469	[illegible]
3 10	1	1001E+07	VV	0 809	[illegible]
4 26		9221300	VV	0 791	[illegible]
5 85	1	5074E+07	VV	0 839	[illegible]
7 68	2	4514E+07	VB	1 865	[illegible]
10 65		98008	VP	0 385	[illegible]
11 87	1	7402E+07	PV	0 258	[illegible]
13 43	1	9403E+07	VV	0 646	[illegible]
14 54	1	2837E+07	VV	0 442	[illegible]
15 25	5	7024E+07	VV	0 679	[illegible]
15 92	2	512[illegible]E+07	VV	0 [illegible]	[illegible]
17 56	3	5642E+07	VV	0 321	[illegible]
18 44	1	7637E+07	VV	0 632	[illegible]
19 80	1	3949E+07	VV	0 574	[illegible]
20 76	1	2097E+07	VV	0 [illegible]	[illegible]
21 32	1	2225E+07	VV	0 614	[illegible]
22 67		1955[illegible]0	VV	0 [illegible]	[illegible]
24 21		4529000	VV	0 [illegible]	[illegible]
26 66	1	665[illegible]E+07	VV	0 [illegible]	[illegible]
28 82		1923500	VV	0 590	[illegible]
29 85		[illegible]4[illegible]06000	VB	0 [illegible]	[illegible]
31 48		3[illegible]559	BP	0 445	[illegible]
34 45		[illegible]846[illegible]0	VV	0 [illegible]	[illegible]
36 41		455[illegible]300	PV	0 359	[illegible]
38 93		98[illegible]000	VV	0 [illegible]	[illegible]
39 96	2	6[illegible]66E+07	VV	1 143	[illegible]
40 27		4[illegible]0000	VV	0 469	[illegible]
41 35		46[illegible]000	VV	0 579	[illegible]

EPA 601
Calibration Standard
10 ppb



RUN # 955

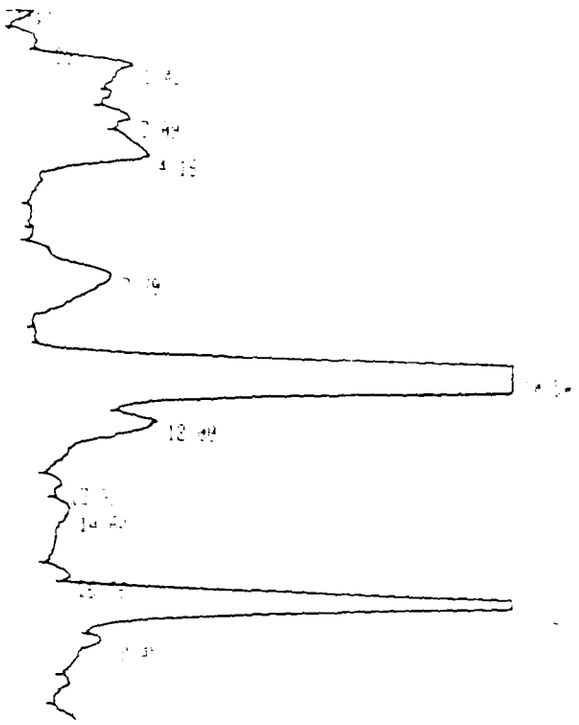
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.61	821070	BV	0.526	0.[illegible]
1.82	381080	VV	0.234	0.[illegible]
2.98	2.4331E+07	VV	0.930	[illegible]
[illegible]	3.7802E+07	VV	1.0[illegible]	[illegible]
[illegible]	[illegible]	VB	1.[illegible]	[illegible]
11.35	9.8716E+07	PB	0.830	[illegible]
14.24	2.2971E+07	BB	0.[illegible]	[illegible]
16.74	130380	PP	0.747	0.[illegible]
[illegible]	1.0595E+08	BPH	0.552	[illegible]
19.28	[illegible].7434E+07	BHB	0.823	[illegible]
[illegible]	[illegible]	BV	1.[illegible]	[illegible]
21.79	[illegible].5429E+07	VE	0.551	[illegible]
23.57	[illegible]	[illegible]	0.[illegible]	[illegible]

TOTAL AREA= [illegible]

MUL FACTOR= 1.0000E+00

A.C. Spike
10 ppb



STOP

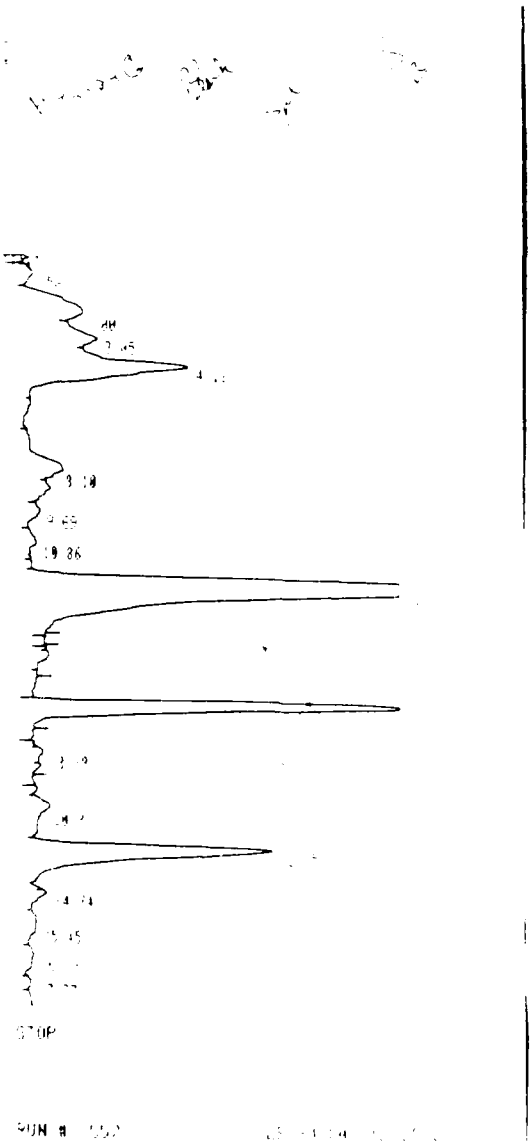
Second Q.C. Spike
10 ppb

RUN # 556 SEP 24 84 11 57 2

AREAS

RT	AREA	TYPE	BC/HT	
0 85	17615	PV	0 413	
1 49	1627200	VV	0 952	
3 49	11[illegible]000	VV	0 552	
4 16	3709200	VV	1 101	
[illegible]	1[illegible]000	VV	1 220	
10 50	1.372E+07	VV	0 900	
12 00	1927200	VV	0 950	
13 96	132750	VV	0 414	
14 64	4[illegible]460	VV	1 110	
15 60	1230120	PV	0 364	
17 25	5[illegible]9500	VV	0 596	
18 45	447560	VV	0 [illegible]	

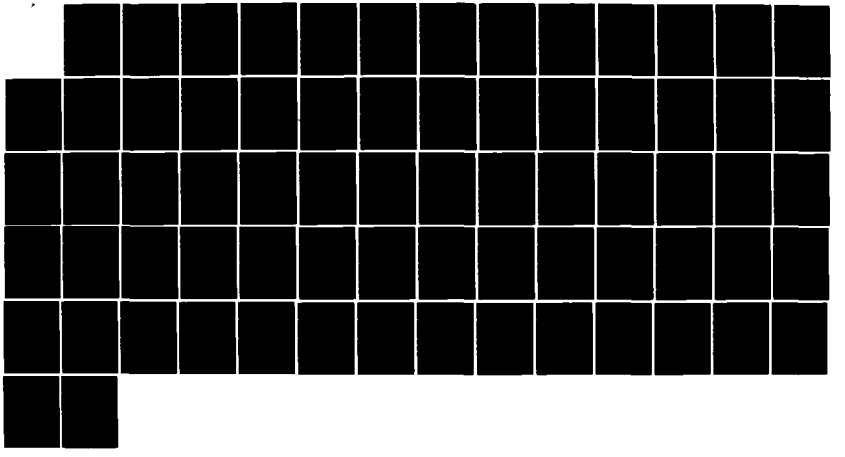
TOTAL AREA= 2 [illegible]
MUL FACTOR= 1 [illegible]

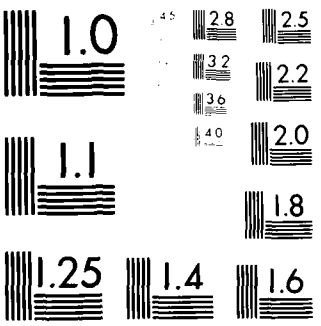


Blank
(with surrogates)

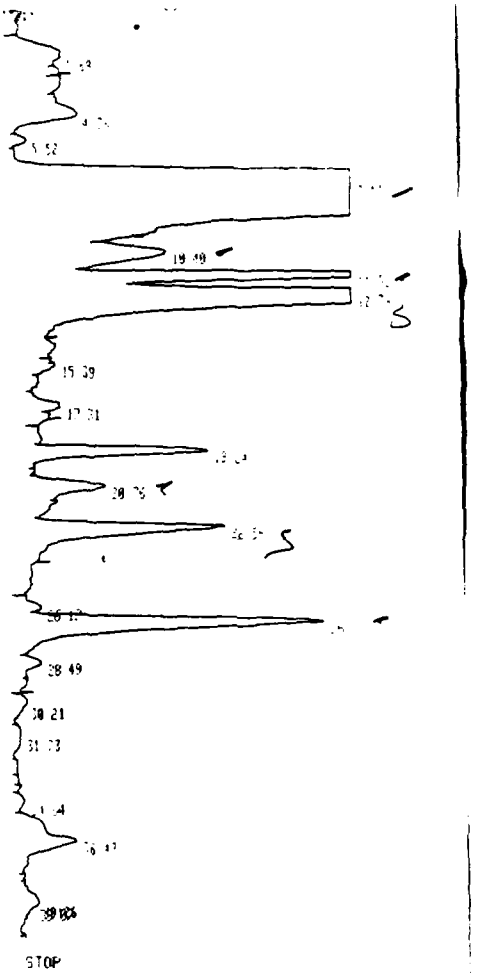
AD-A156 283 INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1) 10/10
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

UNCLASSIFIED F/G 13/2 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS



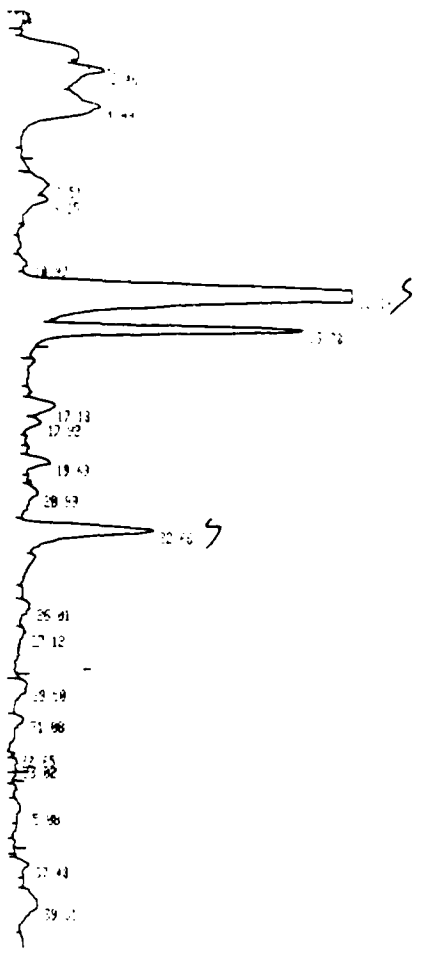
Sample
RB-1-1

RUN # 558

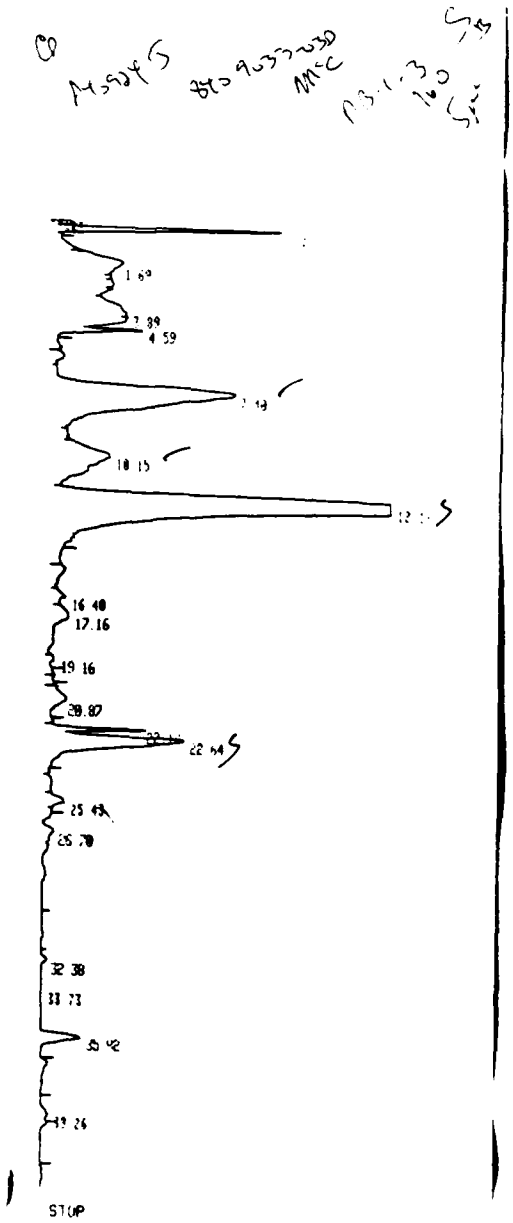
AREA%

RT	AREA	TYPE	AMOUNT	
1 63	416444	PV		
4 38	953270	VP		
5 52	1327914	PP		
7 51	1.3626E+08	PB		
10 49	11[illegible]	PP		
11 52	751[illegible]	PV		
12 39	[illegible]	VB		
15 39	[illegible]	VB		
17 31	[illegible]	PV		
[illegible]	[illegible]	VV		
[illegible]	[illegible]	VV		
[illegible]	[illegible]			
[illegible]	[illegible]			
[illegible]	[illegible]	VV		
[illegible]	[illegible]			
[illegible]	[illegible]			
[illegible]	[illegible]	VV		
[illegible]	[illegible]	VV		
[illegible]	[illegible]	VB		

TOTAL AREA= [illegible]



Sample
RB-1-2



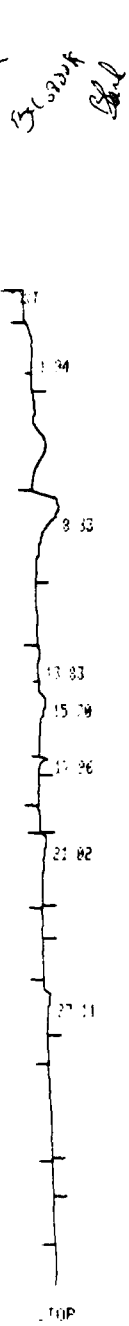
Sample
RB-1-3

RUN # 568

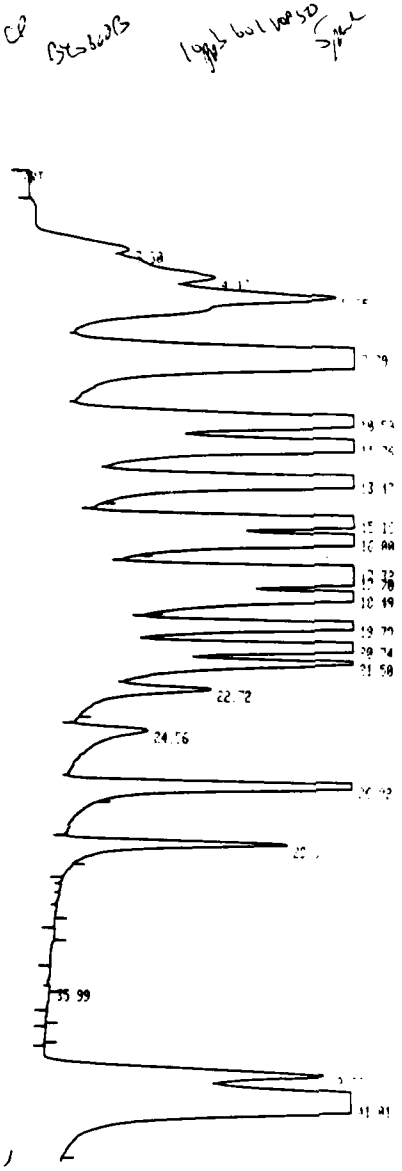
AREA%

RT	AREA			
0.21	652618	PP		
1.69	9344MM	BV		
3.89	106[illegible]MM	VV		
4.59	322398	D VB		
7.40	412308M	PV		
10.15	1297788	VP		
12.18	9825.MM	PB		
16.40	29511	PV		
17.16	[illegible]978	VP		
19.16	[illegible]994	PB		
20.87	[illegible]MM	PB		
22.18	[illegible]MM	PV		
22.64	[illegible]MM	VB		
25.43	124398	VV		
26.18	[illegible]20	PV		
32.38	[illegible]18	BV		
33.73	141111M	VP		
35.82	3951[illegible]	PB		
39.26	[illegible]	PB		

TOTAL AREA= [illegible]
MUL FACTOR= 1 [illegible]



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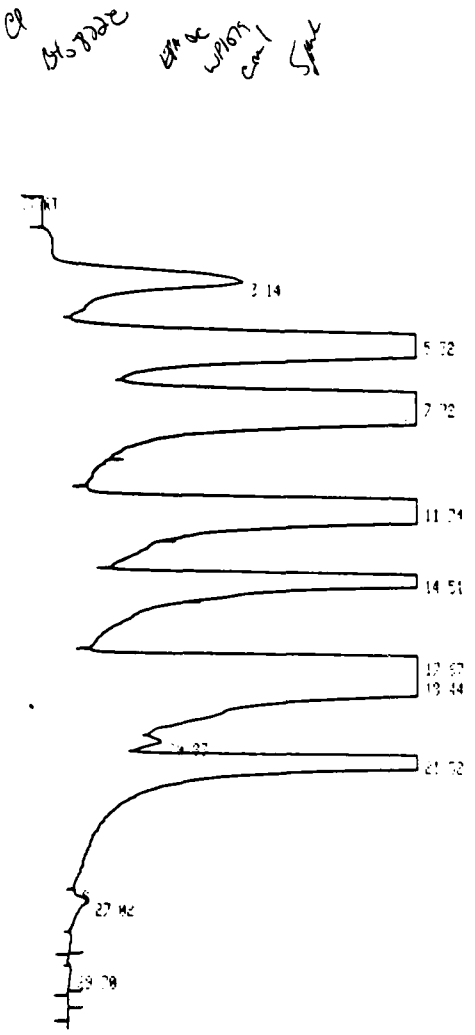
RUN # 295 AUG/22/84 11 53

AREA%

RT	AREA	TYPE	HT	AREA%
3 30	2719000	PV	655	
4 43	7357600	VV	924	
5 25	1 4216E+07	VV	1 056	
7 70	2 7006E+07	VP	2 249	
10 59	1 3561E+07	PV	870	
11 76	1 7743E+07	VV	1 704	
13 43	1 3981E+07	VB	956	
15 16	2 8260E+07	PV	1 374	
16 00	2 8604E+07	VB	1 721	
17 72	1 8944E+07	PV	1 075	
17 90	3 8559E+07	VV	1 882	
19 49	1 4197E+07	VB	1 389	
19 79	1 6529E+07	BV	1 726	
20 74	1 5806E+07	VV	1 717	
21 50	6402500	VV	484	
22 22	2473000	VV	151	
24 56	2526200	BP	19	
25 32	1571000	PB	748	
29 53	4066200	BB	392	
35 99	1250[illegible]	PB	167	
39 36	7272700	PV	562	
41 91	2 612[illegible]	VB	[illegible]	

TOTAL AREA= 2 [illegible]E+08
MUL FACTOR= 1 0000E+00

EPA 601
Calibration Standard
10 ppb



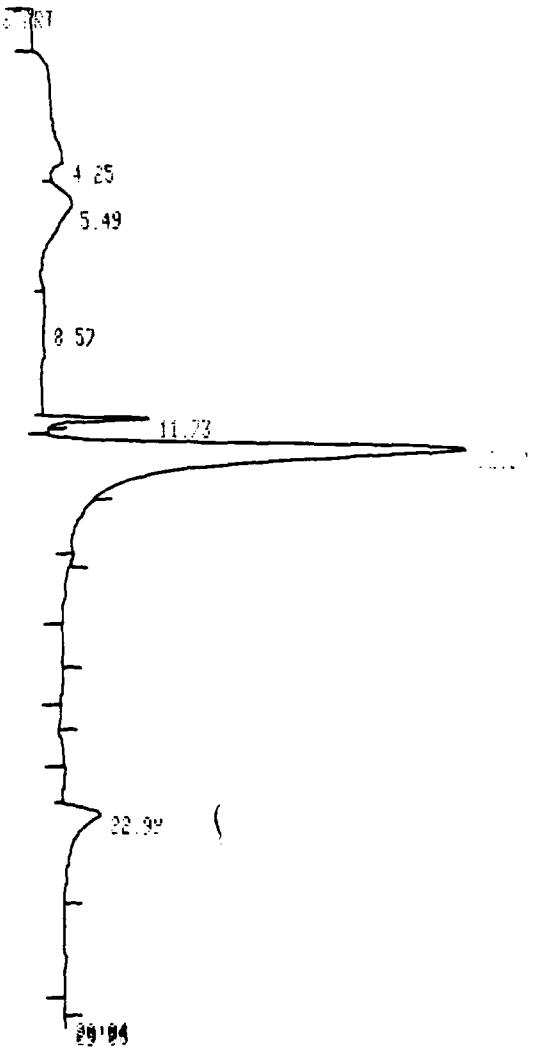
Q.C. Standard

RUN # 296 AUG/22/84 . 05 51

AREA%

RT	AREA	TYPE	HEIGHT	AREA%
3 14	7034500	PV	0 923	1 702
5 32	2 5065E+07	VV	0 920	6 776
7 28	5 7193E+07	VB	0 969	15 160
11 14	6 2167E+07	PB	0 902	18 157
14 51	1 5955E+07	PB	0 423	3 713
17 67	9 3495E+07	BEH	0 894	22 570
18 44	6 3417E+07	BHH	0 889	15 105
20 83	627360	TBB	0 297	0 163
21 52	4 4900E+07	BHB	0 259	12 137
27 02	709253	BP	0 [illegible]	0 198
29 70	[illegible]760	PB	0 518	[illegible]

TOTAL AREA= 3 6993E+08
MUL FACTOR= 1 0000E+00



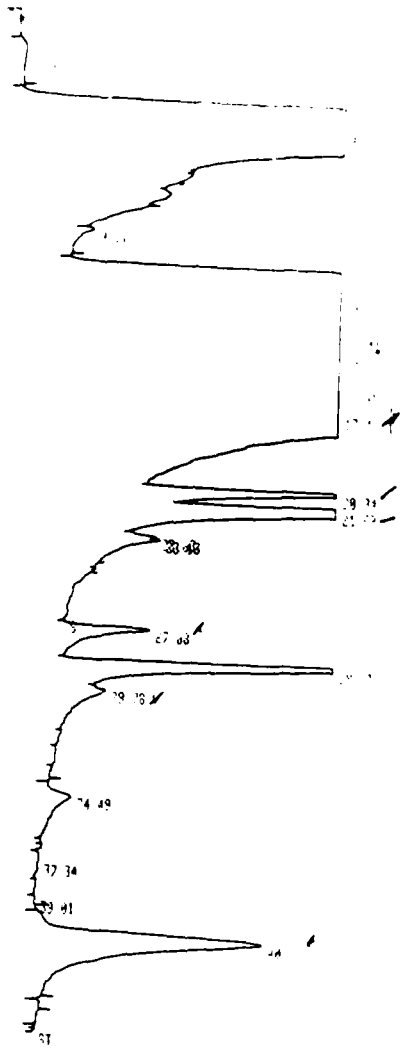
Blank
(with surrogates)

RUN # 297 AUG/22/84 [illegible] 48:01

AREA%

RT	AREA	TYPE	HR/HT	AREA%
4.25	196/190	BV	2.360	15.706
5.49	1572700	VV	1.420	12.577
[illegible]57	517650	VP	1.696	[illegible].172
11.77	390190	PB	0.173	3.036
12.69	7635200	PB	0.616	59.413
22.99	968510	PB	0.930	7.536

TOTAL AREA= 1.2852E+07
*MUL FACTOR= 1.0000E+00



RUN # 286 AUG/21/84 . 55 30

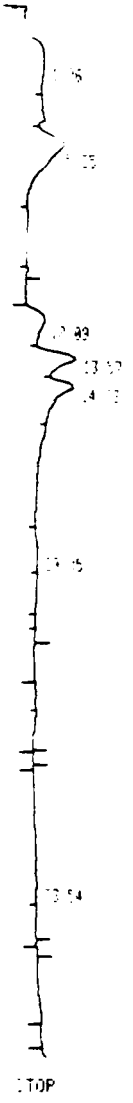
AREA%

RT		AREA	TYPE	HR/HI	AREA%
1 62		284330	PB	0 288	0 [illegible]
4 47	2	5125E+0[illegible]	[illegible]	0 5[illegible]	[illegible]
4 96	1	4235E+08	SHB	0 537	[illegible]
7 91		228520	TPB	0 429	[illegible]
9 51		0	BB	0 000	[illegible]
11 83	2	7191E+03	TVV	0 719	[illegible]
13 41	5	4237E+03	TSHH	0 661	[illegible]
14 49	2	3529E+08	TVHH	0 [illegible]	[illegible]
16 16	[illegible]	3928E+07	VHH	0 [illegible]	[illegible]
17 17	8	5714E+07	VHB	0 [illegible]	[illegible]
20 94		4425780	IDV	0 [illegible]	[illegible]
21 69	1	[illegible]	TVV	0 [illegible]	[illegible]
23 83		1144460	TVV	0 [illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
38 79	1	[illegible]	BB	0 [illegible]	[illegible]

TOTAL AREA= [illegible]
MUL FACTOR= 1 [illegible]

Sample
RB-5-1
(off scale)

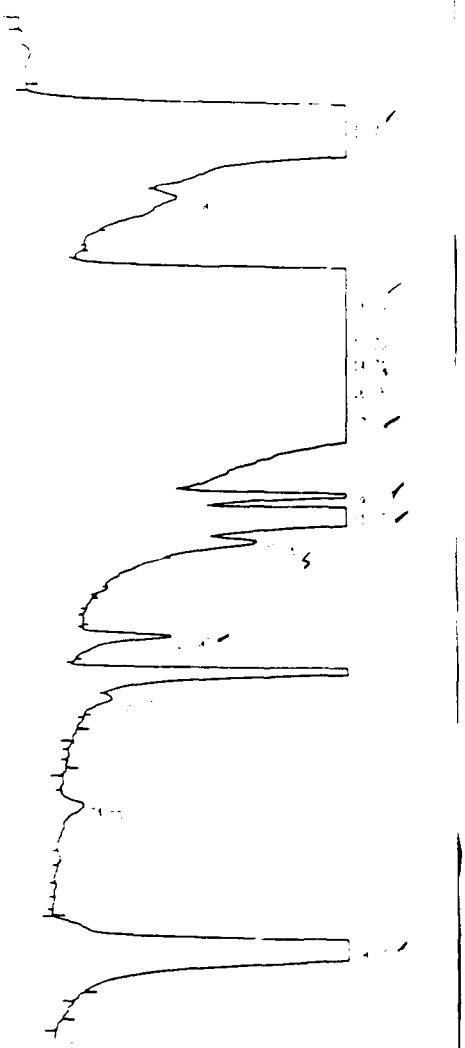
BL0820 M Blank 5 mL



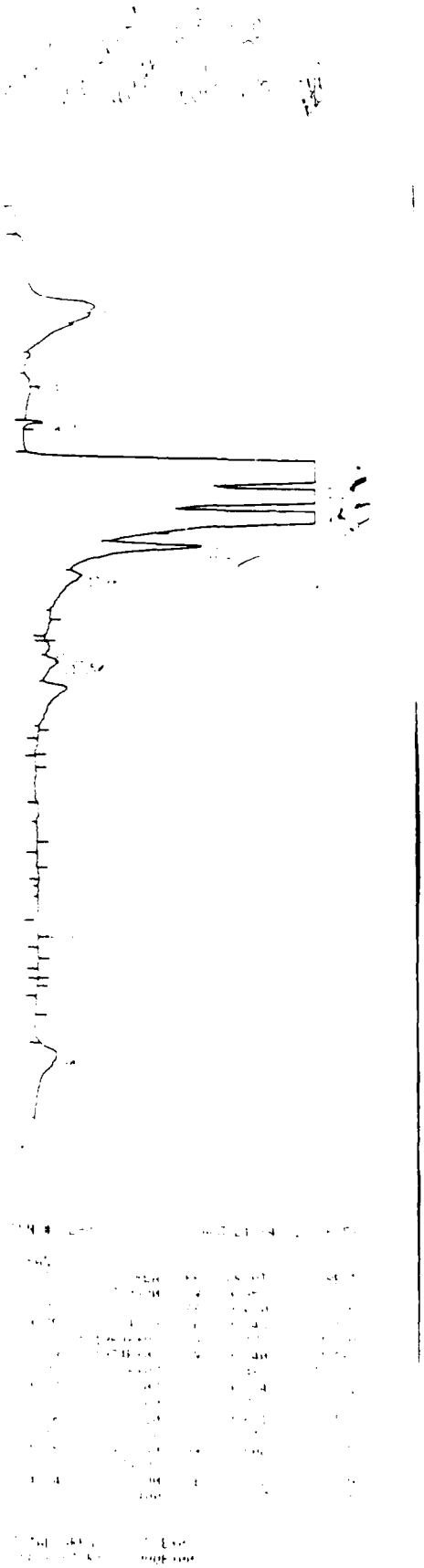
Blank
(after instrument
cleaning)



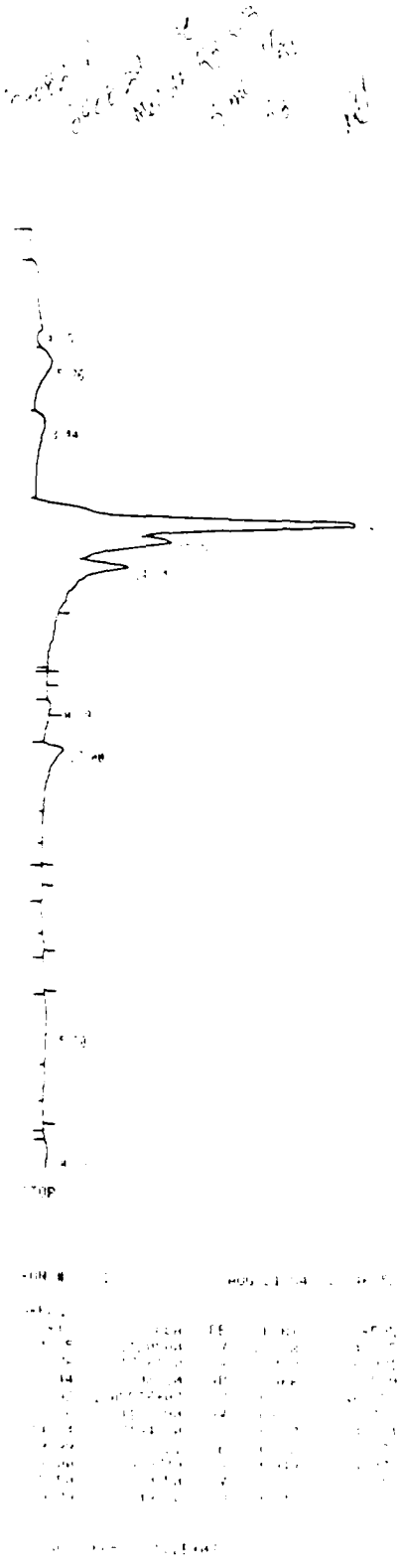
Sample
RB-5-1
1:10 Dilution



Sample
RB-5-2
(off scale)

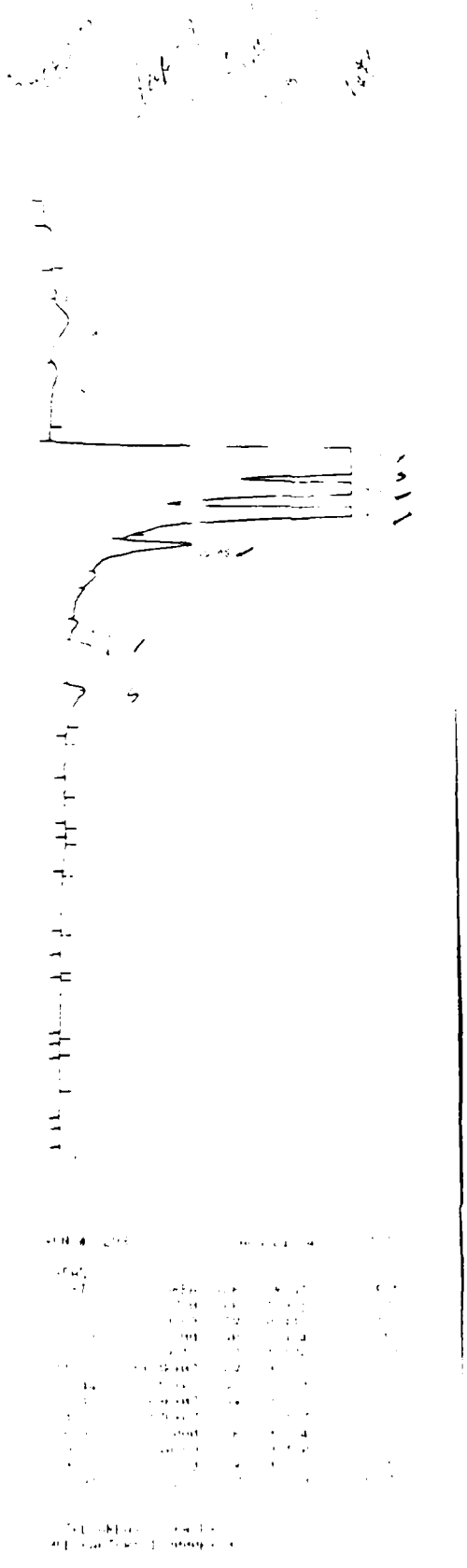


Sample
RB-5-2
1:50 Dilution

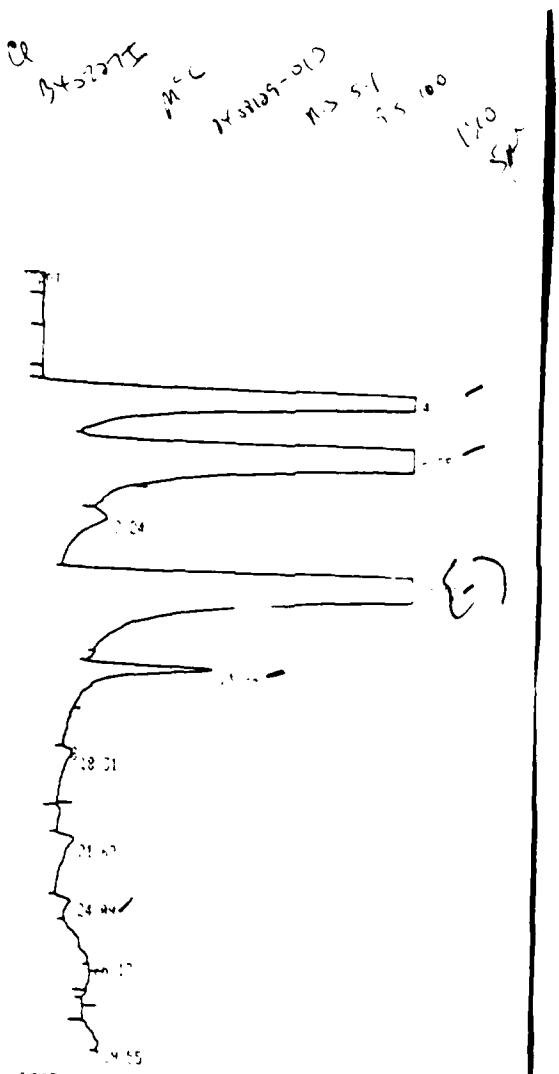


Sample
RB-5-3
1:50 Dilution

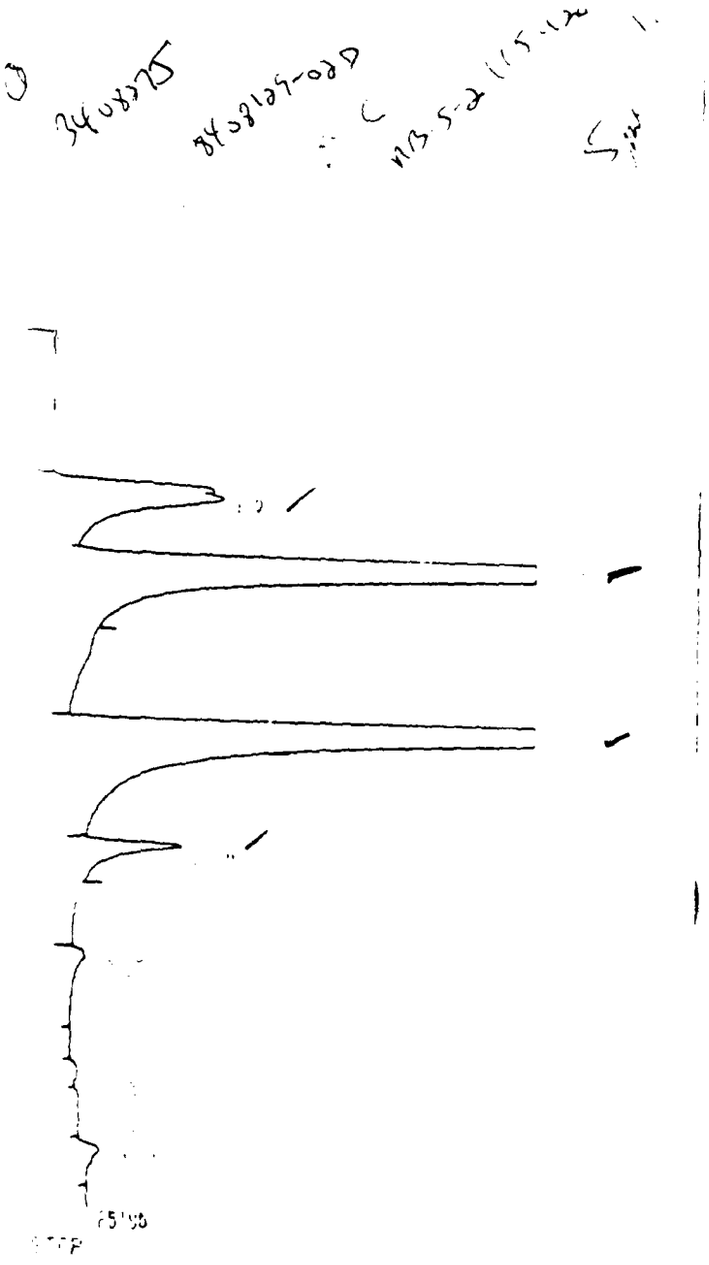
Sample
RB-5-3
[illegible] Dilution
(Purge Valve Failure)



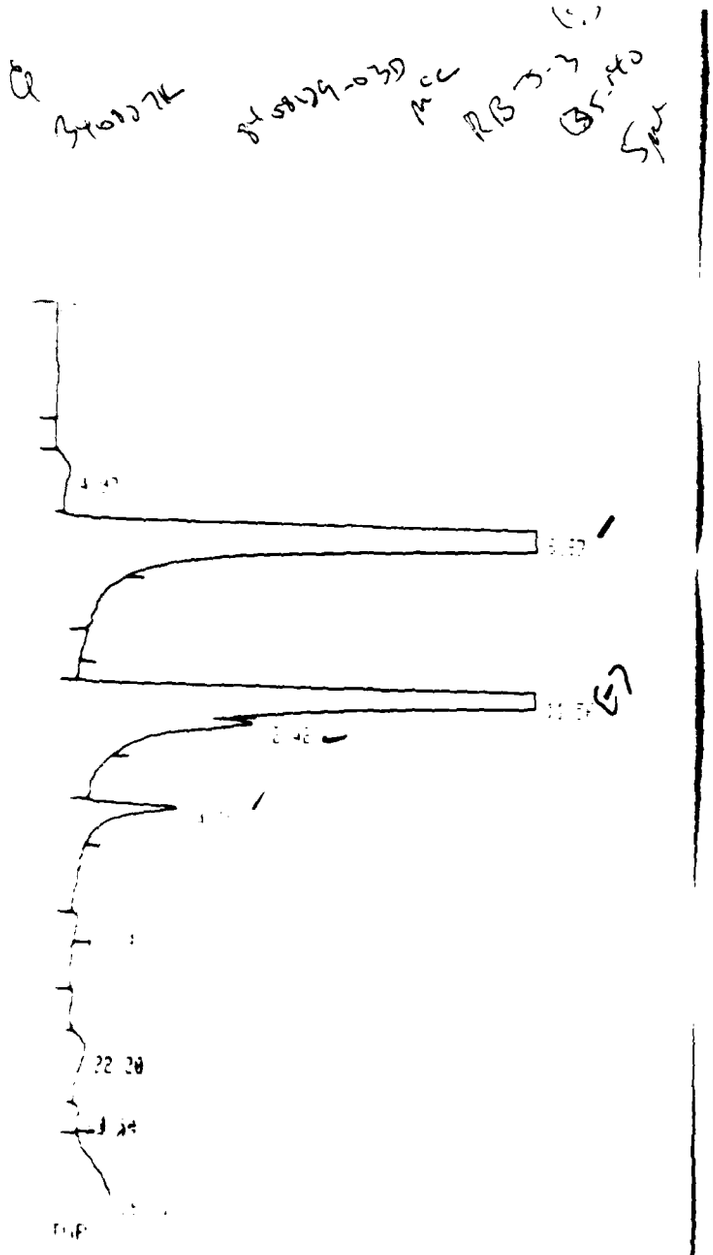
Sample
RB-5-3
1:5 Dilution
Duplicate



Sample
RB-5-1
Second Column
Confirmation



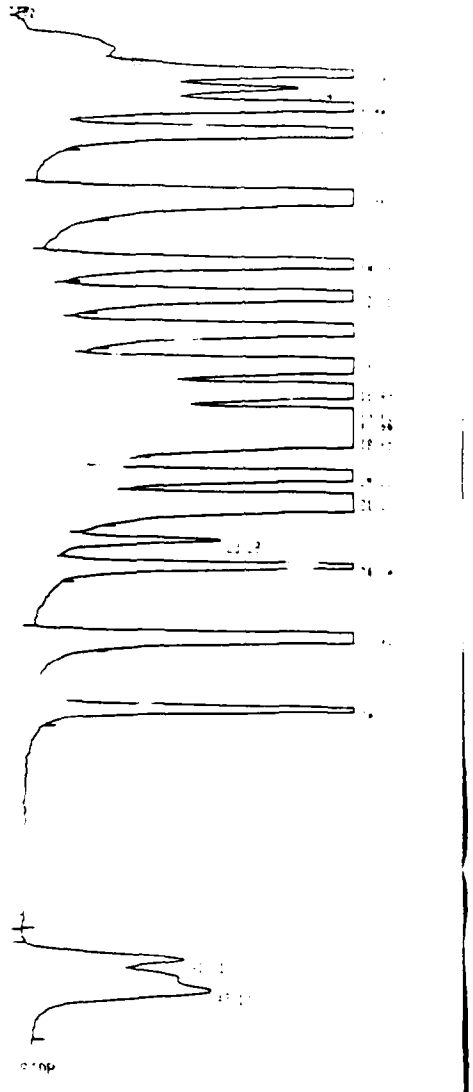
Sample
RB-5-2
Second Column
Confirmation



	AREA TYPE	HEIGHT	AREA%
	1 160	PP	0 564	3 624
	4 [illegible]E+07	BB	0 541	48 [illegible]
	1 [illegible]E+07	PB	0 325	43 155
	0	BB	0 000	0 000
22 99	115 300	BB	0 404	2 [illegible]
23 34	17 [illegible]	BB	0 4e1	0 156
23 80	5[illegible]180	PB	1 [illegible]4	1 [illegible]
24 [illegible]	4[illegible]	BB	0 [illegible]	0 [illegible]

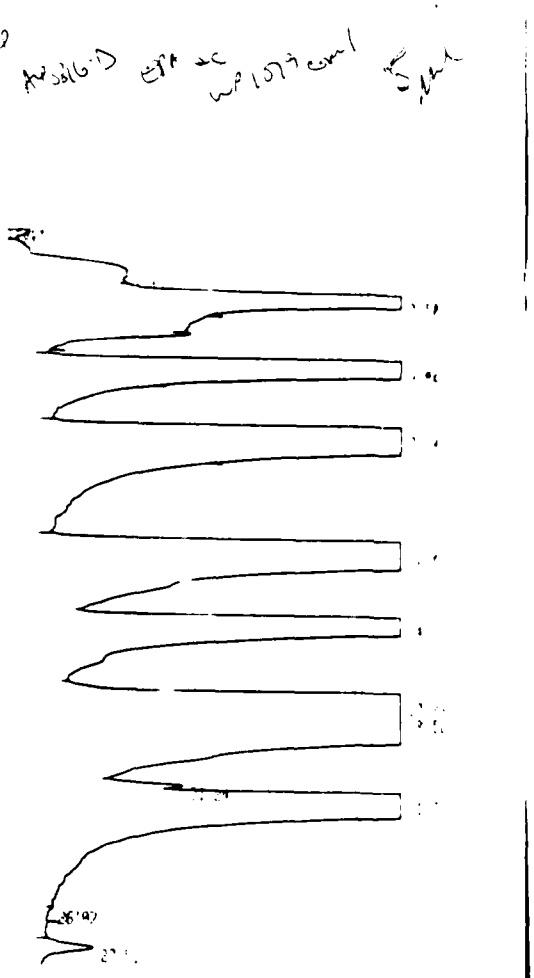
TOTAL AREA= 4 [illegible]E+07
MUL FACTOR= 1 0000E+00

Sample
RB-5-3
Second Column
Confirmation



PEAK#	RT	AREA	TYPE	HT
1	1.67	1299	BV	261
2	2.60	9517	VV	453
3	3.08	2	VV	137
4	4.00	6	VV	453
5	5.15		VD	406
7	7.96		PP	513
10	9.95		PB	429
12	11.35		PB	414
13	12.82		PB	442
15	13.77		VV	485
				118
				109
				340
				224
				1
41	31.31		BV	1
43	32.77		VB	1

EPA 601
Calibration Standard
10 ppb



STOP

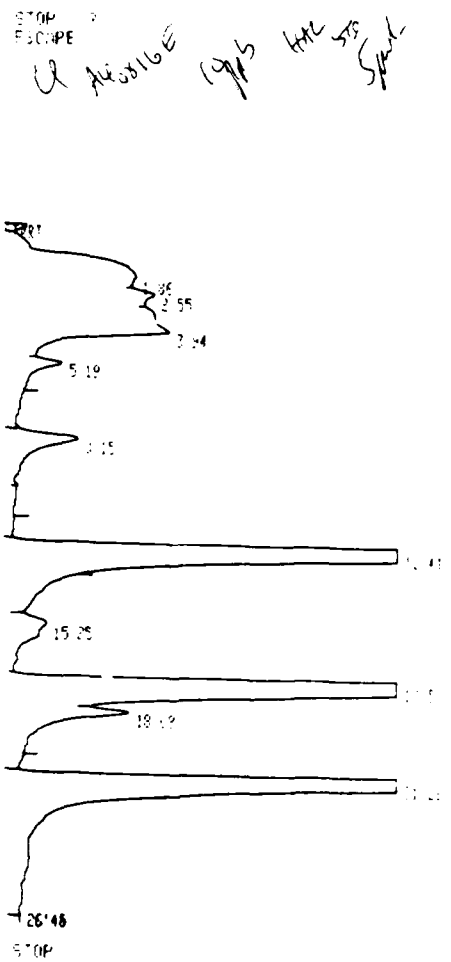
RUN # .04

AREA%

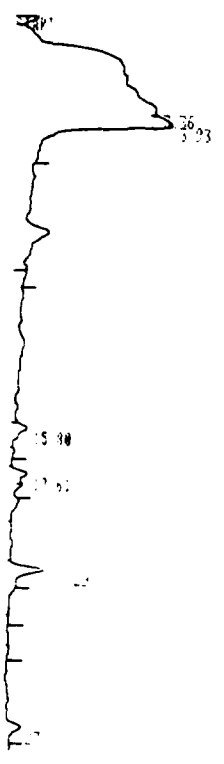
RT	AREA	TYPE	WIDTH	HEIGHT
1 43	[illegible]	PV	[illegible]	[illegible]
2 58	[illegible]	VP	[illegible]	[illegible]
5 82	2.563[illegible]E+07	PP	[illegible]	[illegible]
7 64	4.758[illegible]E+07	PP	[illegible]	[illegible]
12 05	7.057[illegible]E+07	PBV	[illegible]	[illegible]
14 91	1.334[illegible]E+07	VBP	[illegible]	[illegible]
17 09	1.412[illegible]E+07	PVV	[illegible]	[illegible]
18 52	9.423[illegible]E+07	PHH	[illegible]	[illegible]
21 24	[illegible]	VBP	[illegible]	[illegible]
21 72	6.[illegible]E+07	VB	[illegible]	[illegible]
27 51	[illegible]	PP	[illegible]	[illegible]

TOTAL AREA= [illegible]
MUL FACTOR= [illegible]

Q.C. Spike
10 ppb



Second Q.C. Spike
10 ppb



STOP

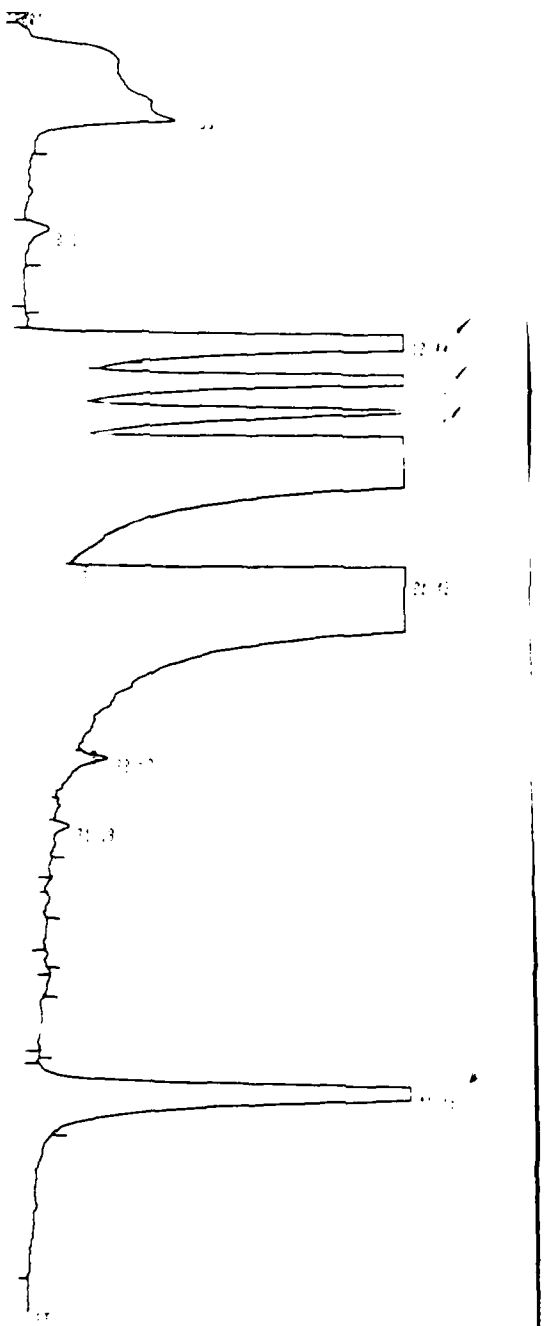
RUN # 0196

AREAS

PT	AREA	TYPE	[illegible]
[illegible]	5311200	BV	[illegible]
[illegible]	2835400	VB	[illegible]
[illegible]	[illegible]	BB	[illegible]
[illegible]	[illegible]	BV	[illegible]
[illegible]	[illegible]	BV	[illegible]
[illegible]	[illegible]	BC	[illegible]

TOTAL AREA= [illegible]
VOL FACTOR= 1 (NAME+NA

Blank



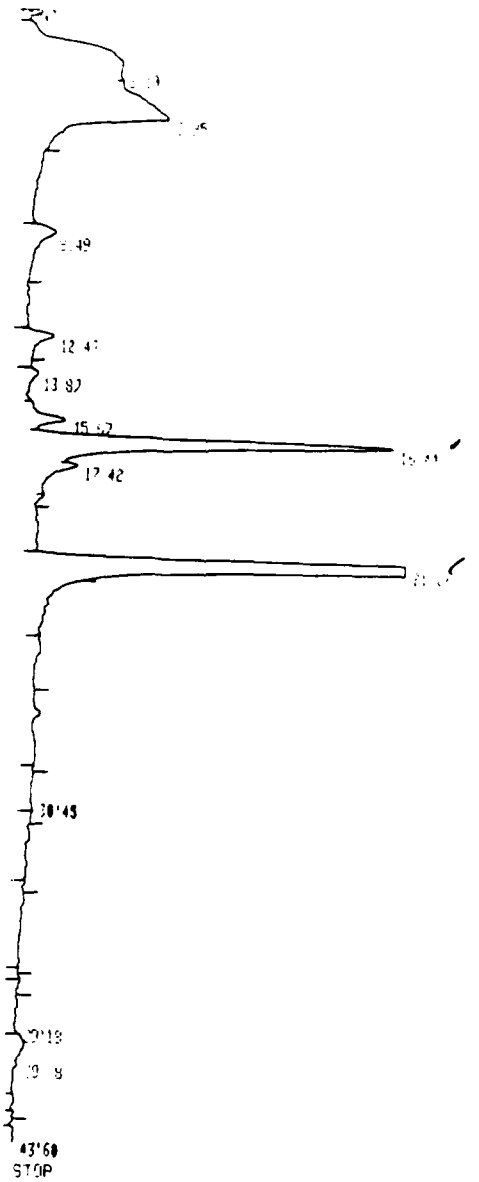
RUN # 007

AREAS

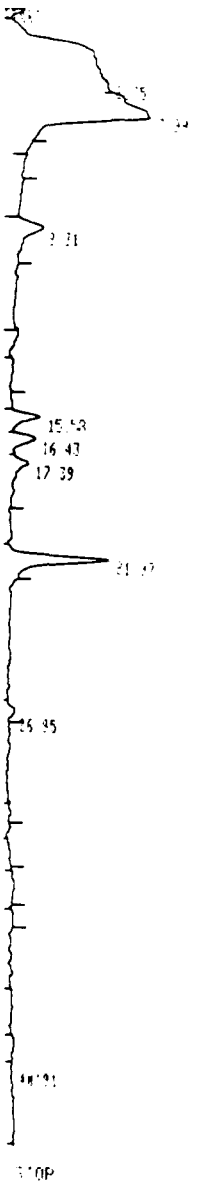
RT	AREA	TYPE	HT	
3.99	7733[illegible]	SV	2.174	
3.15	291[illegible]	BB	0.5[illegible]	
12.44	1.[illegible]E+07	BV	[illegible]	
13.92	5[illegible]	BB	[illegible]	
15.16	[illegible]	BB	[illegible]	
16.32	2.[illegible]E+08	BB	0.561	
[illegible].43	[illegible]E+08	BB	0.[illegible]	
28.52	75755[illegible]	BB	0.561	
31.18	[illegible]	VB	[illegible]	
41.49	9444[illegible]	BB	0.[illegible]	

TOTAL AREA= [illegible]E+08

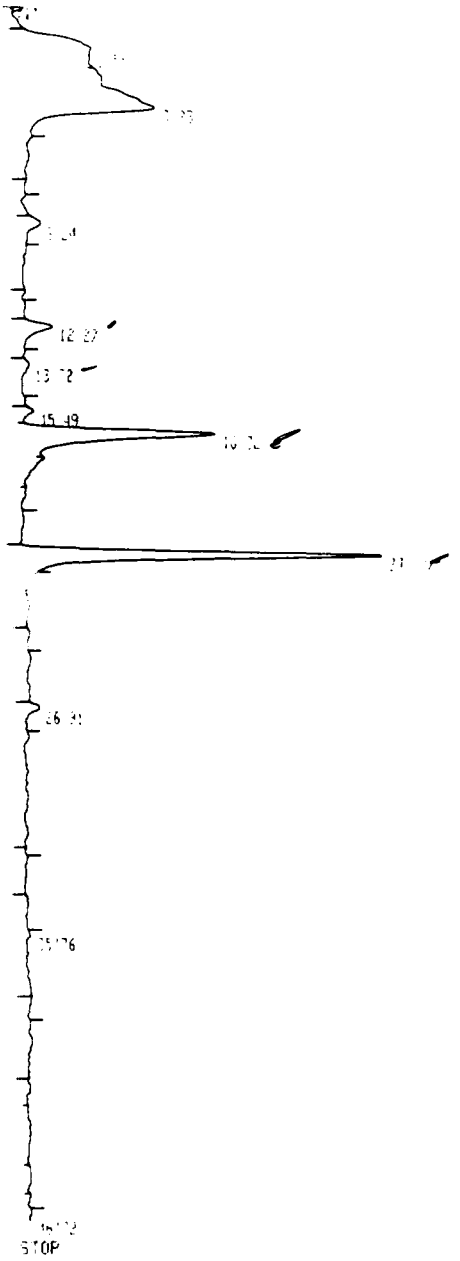
Sample
RB-6-1
(off scale)



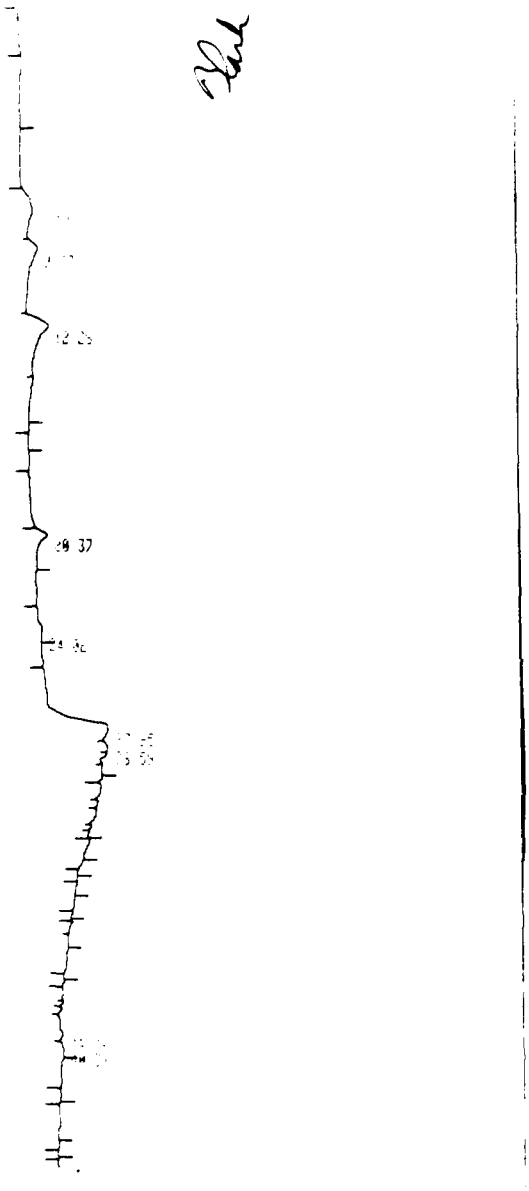
Sample
RB-6-1
1:50 Dilution



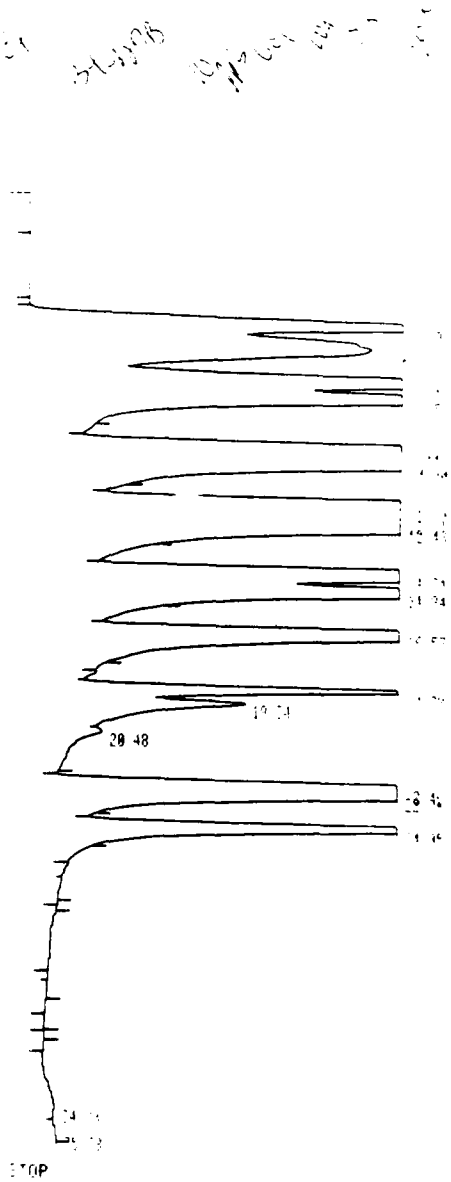
Sample
RB-6-1
1:50 Dilution



Sample
RB-6-2
1:5 Dilution



Blank



STOP

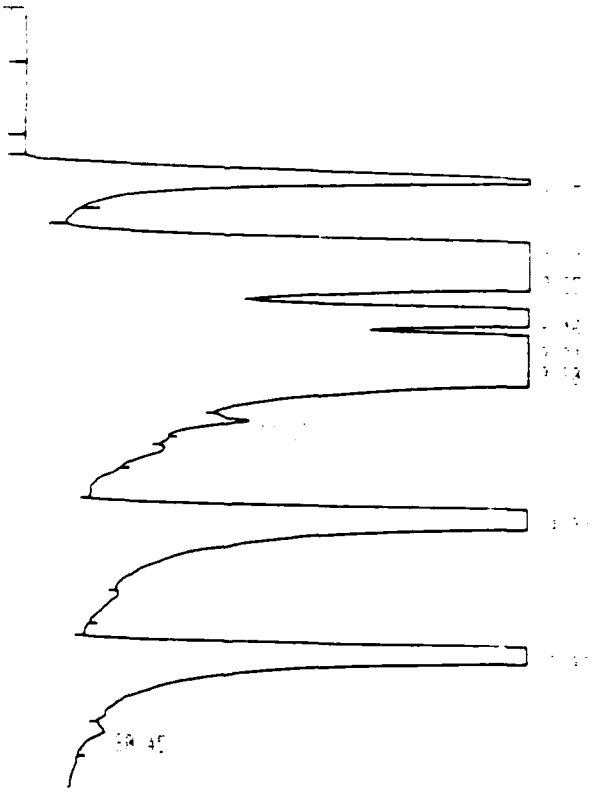
RUN # 338

AREA%

RT		AREA	TYPE	BR/HT	AREA%
4 79	1	8266E+02	PV	9 4504	
5 95	1	2483E+03	VV	4 9443	
6 41	1	8612E+02	VV	9 5-04	
7 55	1	2390E+02	VB	4 4[illegible]	
8 44	1	[illegible]E+02	PV	8 2[illegible]	
10 00	1	6366E+02	VB	6 4[illegible]	
11 30	1	8722E+02	PV	8 5[illegible]	
11	1	[illegible]	VV	[illegible]	
12 43	1	7389E+02	+B	8 [illegible]	
13 24	2	8815E+02	PV	9 [illegible]	
14 44	1	4757E+02	+B	4 [illegible]	
15 57	1	3627E+02	BB	3 [illegible]	
[illegible]		[illegible]	PV	[illegible]	
[illegible]		[illegible]	VV	[illegible]	
18 18		[illegible]	VB	[illegible]	
19 46		[illegible]	PV	[illegible]	
20 76	1	2147E+02	+B	1 [illegible]	
[illegible]		[illegible]	[illegible]	[illegible]	
24 93		[illegible]	PV	[illegible]	
[illegible]		[illegible]	VB	[illegible]	

TOTAL AREA= [illegible]
AREA FACTOR= [illegible]

EPA 601
Calibration Standard
10 ppb



STOP

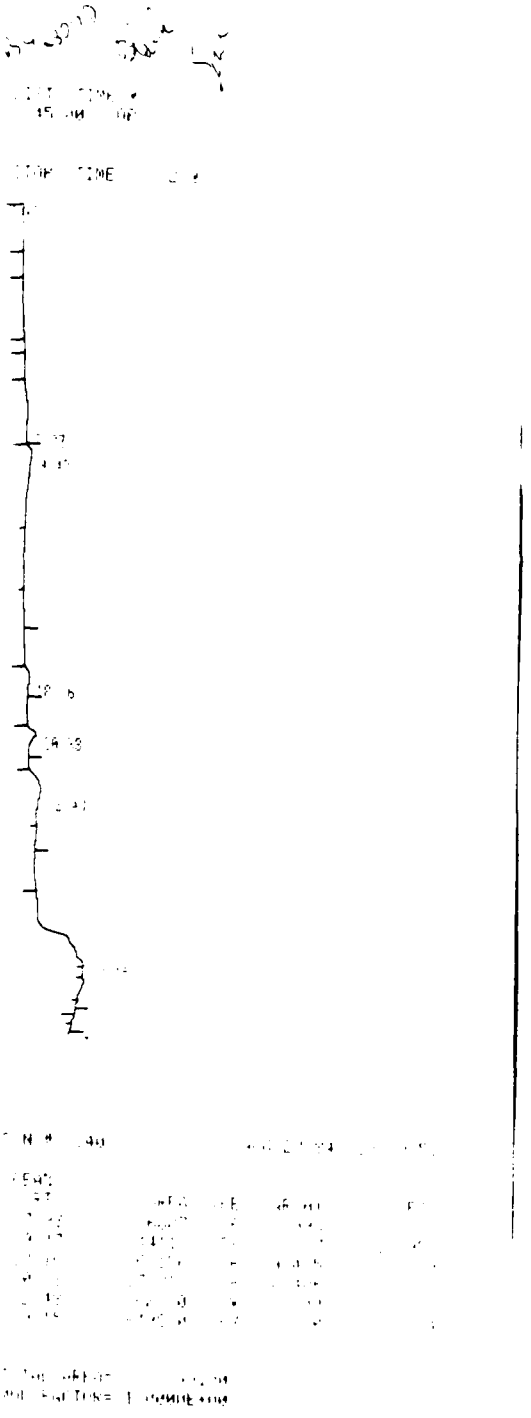
RUN # 339

AREA%

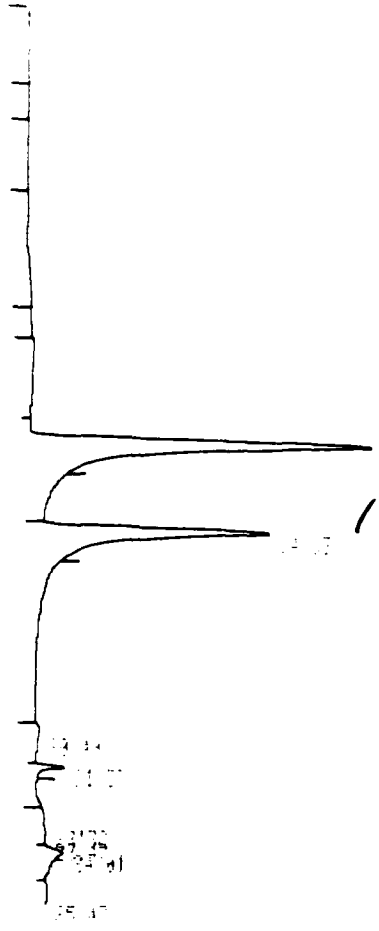
PT	AREA	TYPE	WIDTH	AREA%
1.02	7701600	BB	3.4500	2.3[illegible]
2.56	1.9543E+07	BV	5.5200	14.[illegible]
3.15	1.6243E+07	VV	8.4600	10.[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5.24	1.0201E+07	VBA	5.[illegible]	[illegible]
9.80	1.0[illegible]E+07	VBF	[illegible]	20.[illegible]
[illegible]	[illegible]	VBF	[illegible]	[illegible]
14.09	4.8734E+07	BBA	[illegible]	32.[illegible]
19.02	3.5807E+07	VBA	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TOTAL AREA= 1.51E+08
TOTAL RESPONSE= 1.0000E+00

Q.C. Spike
10 ppb

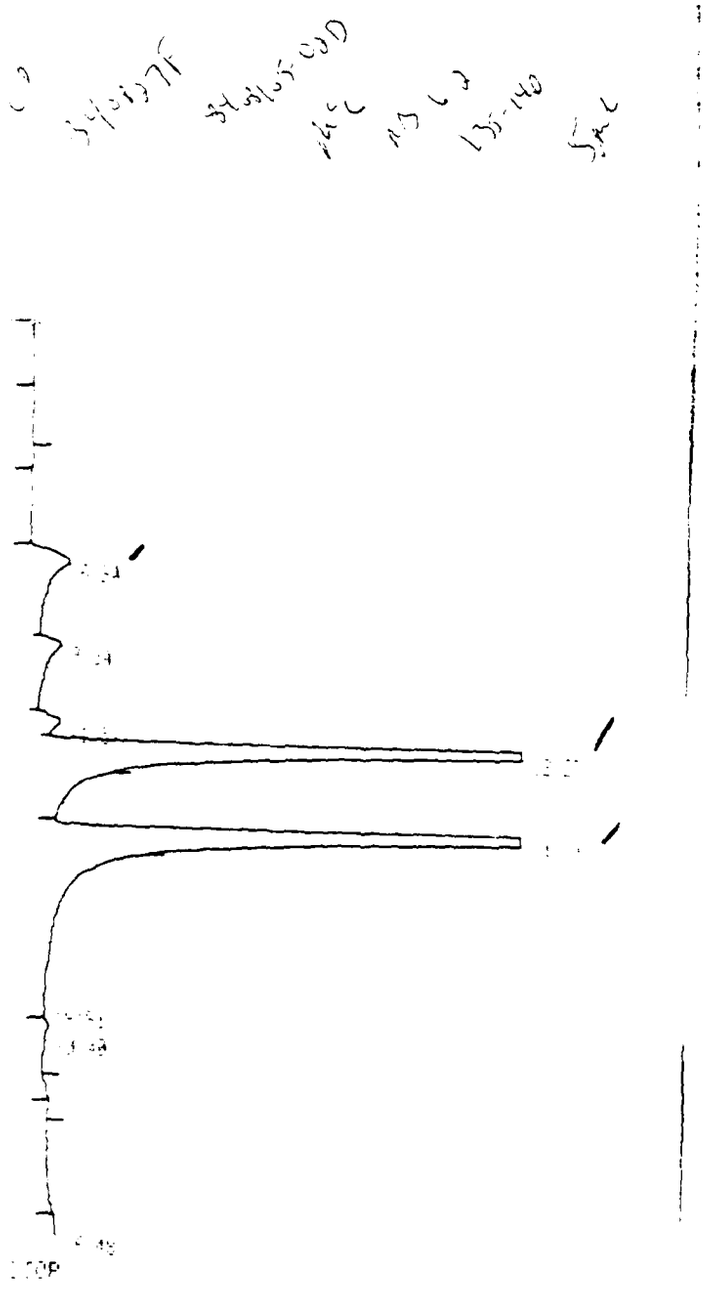


Blank

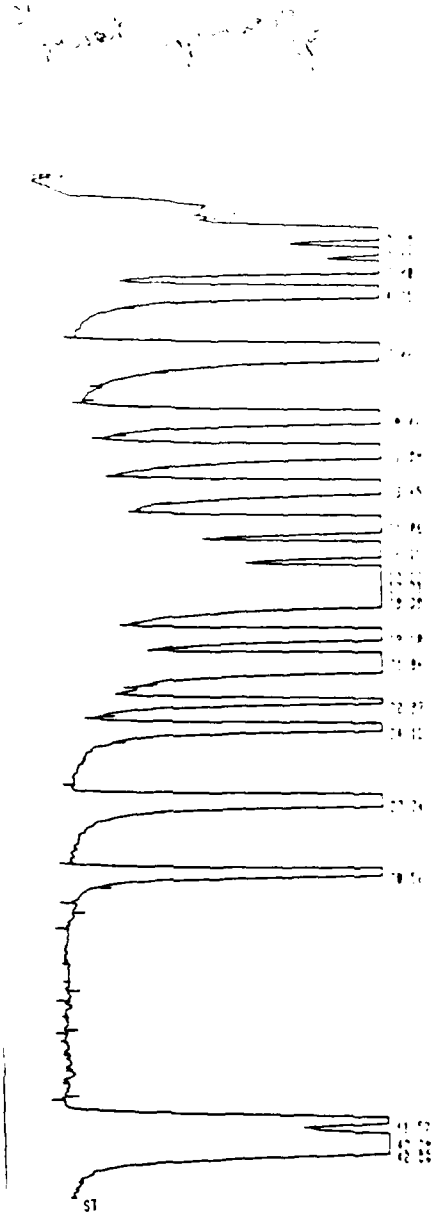


STOP

Sample
RB-6-1
Second Column
Confirmation



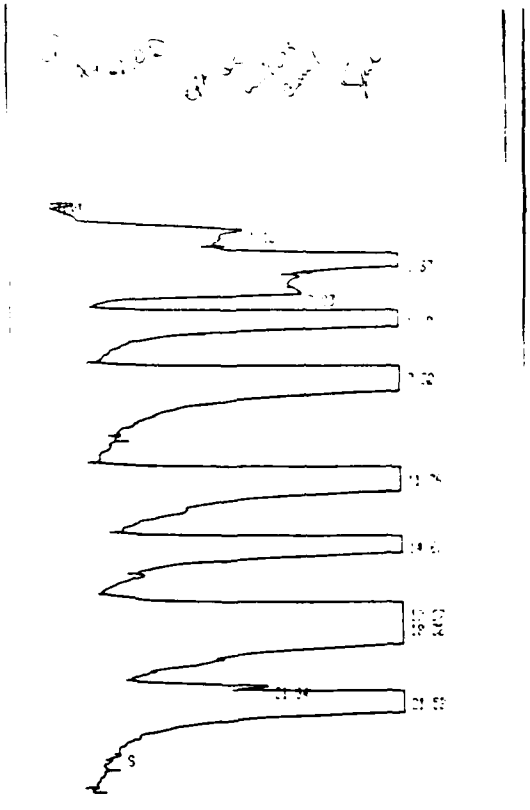
Sample
RB-6-2
Second Column
Confirmation



RUN # 101 AUG/10/84 01 17

	RT		AREA	TYPE	BR	HT	AREA%
1	26		12716	PV	0	598	4
2	33		69822	VV	0	372	3
3	41		24613	VV	0	166	1
3	80		61827	VV	0	412	3
4	85		7276	VB	0	249	3
7	46	1	35A6E+A7	PB	0	445	6
10	42		7703	FB	0	410	3
11	89		8992	PB	0	330	4
13	45	1	0044E+07	LB	0	221	5
15	06	1	4744E+07	PB	0	353	7
16	19	1	0431E+07	FV	0	264	5
17	22	1	1094E+07	VV	0	276	5
17	71	1	8105E+07	VV	0	216	9
19	39	1	1985E+07	VB	0	255	6
19	95	1	0280E+07	FB	0	203	5
21	06	2	3711E+07	PB	0	452	11
22	97		1043300	PB	0	120	0
24	12		3487100	PB	0	226	1
27	34	1	2429E+07	PB	0	260	7
38	56		3500+00	PB	0	230	1
41	57		2532300	PV	0	526	1
42	28		2027100	VV	0	472	1
42	88		2764500	VV	0	269	1

EPA 601
Calibration Standard
10 ppb



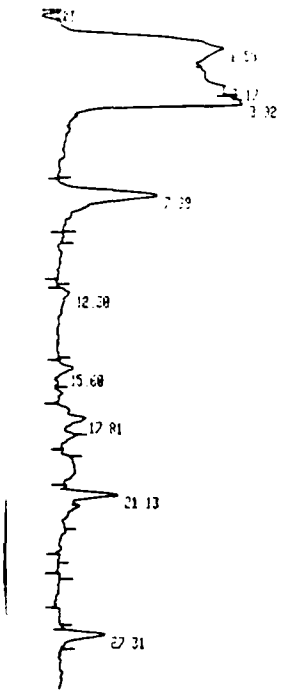
Q.C. Spike
10 ppb

RUN # 104 AUG/10/84 04 41 54

AREA%
RT AREA TYPE AREA

RT	AREA	TYPE	AREA
1.12	408910	PB	0 369
2 37	602930	PB	0 390
3 83	60048	VP	0 404
4 79	1 6670E+07	PB	0 345
7 32	3 3364E+07	PB	0 431
11 76	3 5849E+07	PB	0 377
14 67	1 0760E+07	PB	0 390
17 67	8 0892E+07	SPH	0 388
18 32	5 9852E+07	SHH	0 395
21 04	102560	TPB	0 146
21 52	5 5243E+07	SHB	0 321

TOTAL AREA= 3 9277E+08
WHL FACTOR= 1 0000E+00



STOP

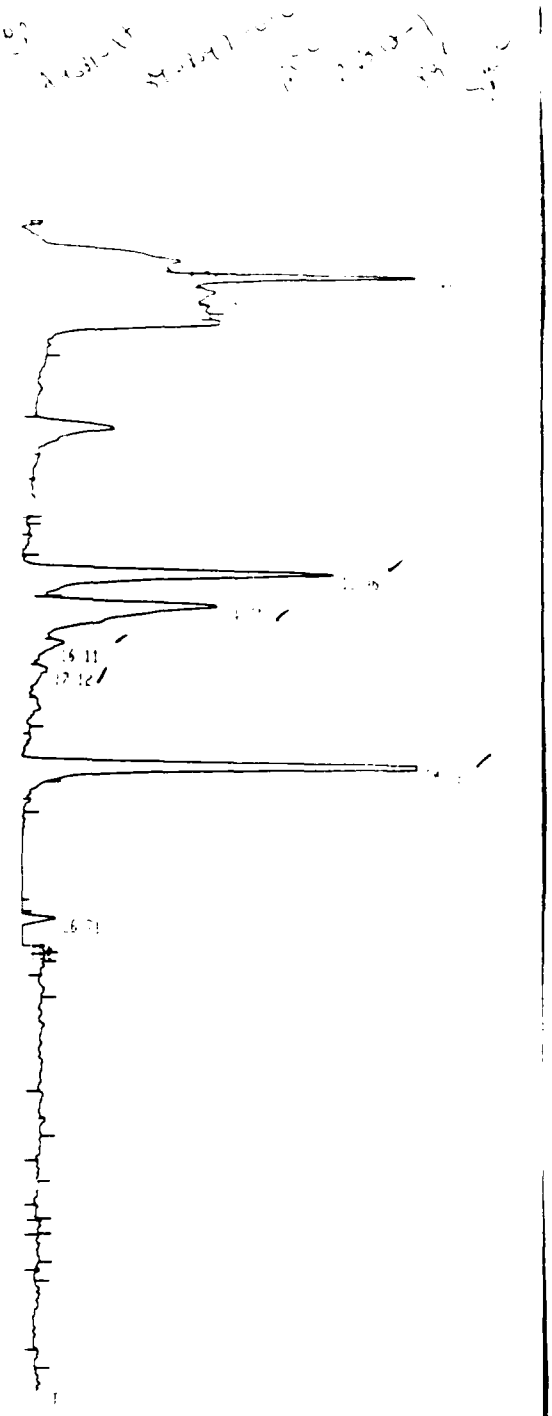
RUN # 105 AUG/10/84 94 40 51

AREA%

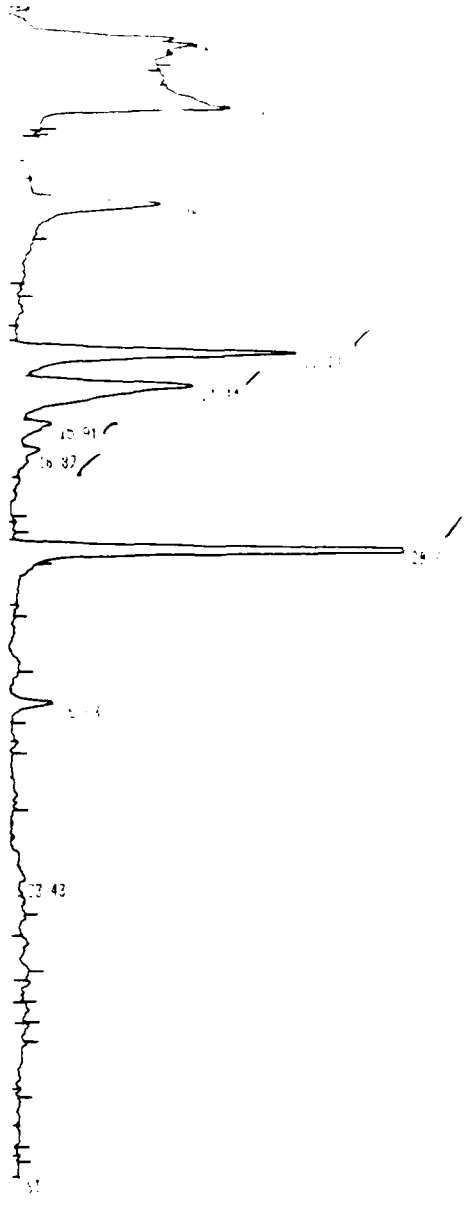
RT	AREA	TYPE	AP/HT	AREA%
1.50	1159580	PV	0.938	41.515
3.17	273790	VB	1.728	9.979
3.32	0	EB	0.000	0.000
7.99	716290	PB	0.625	25.644
12.30	101960	EB	0.679	3.650
15.68	76917	BB	0.399	2.753
17.91	104260	PB	0.305	3.732
21.13	187460	PV	0.291	6.710
27.31	168120	EB	0.231	6.018

TOTAL AREA= 2793680
MUL FACTOR= 1.0000E+00

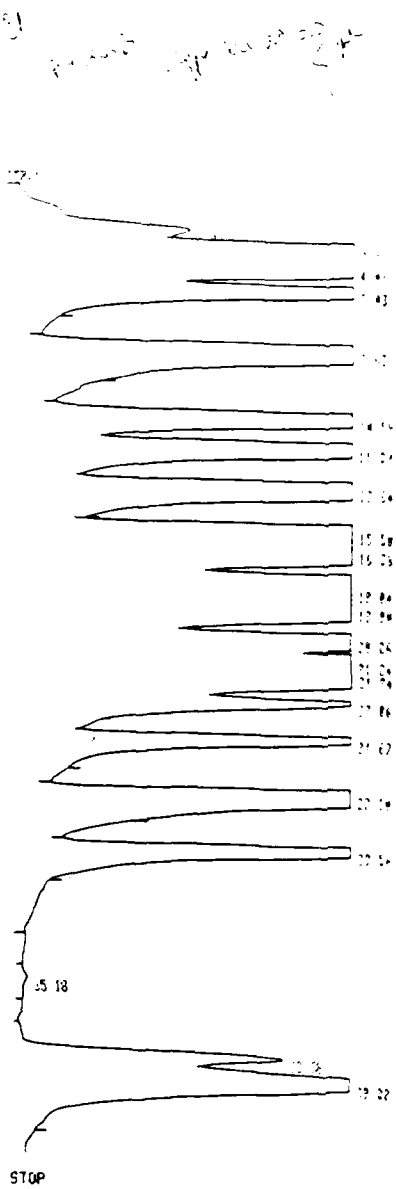
Blank
(with surrogates)



Sample
RB-12-1



Sample
RB-12-1
Replicate



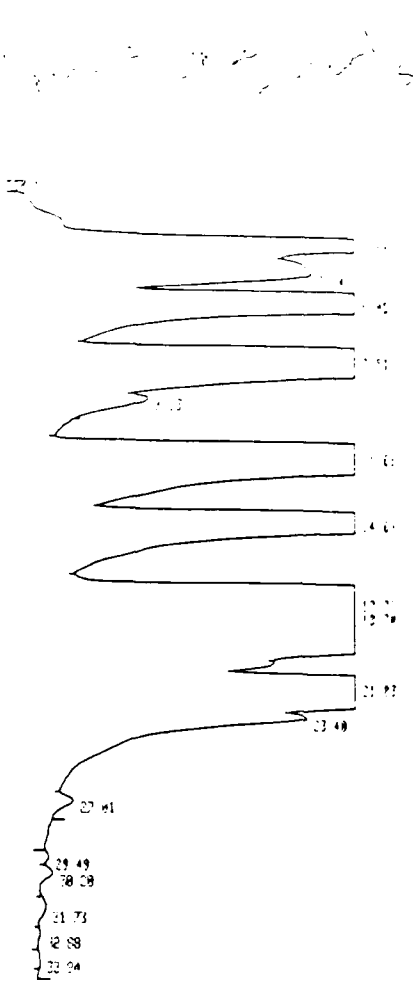
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Calibration Standard
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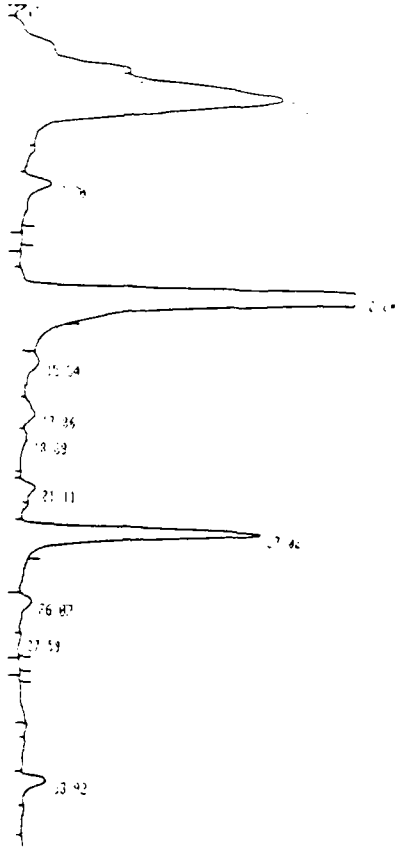
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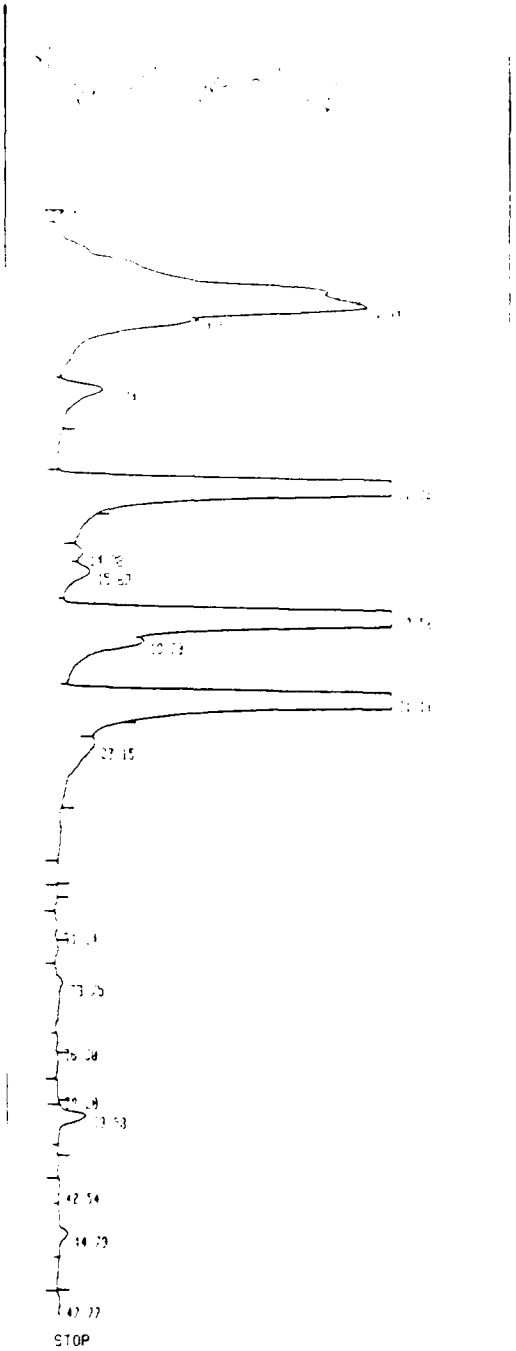
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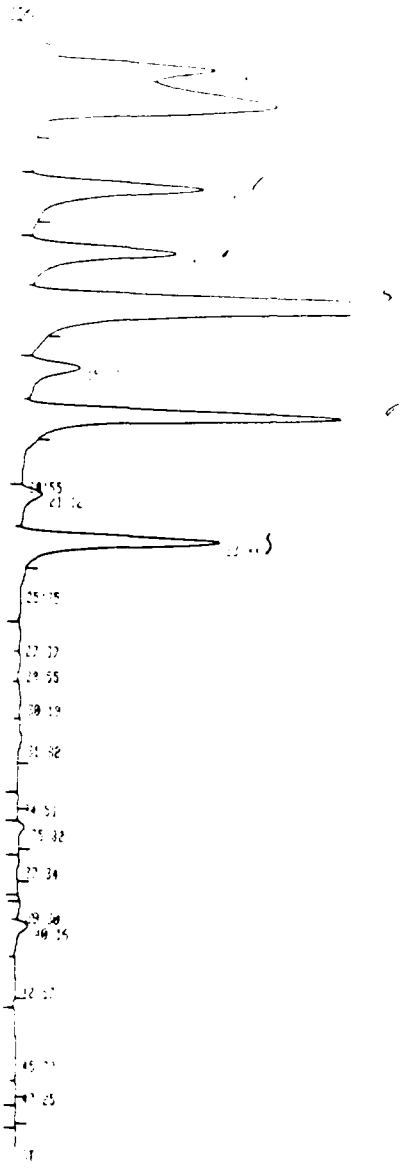
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(with surrogates)



Second Q.C. Spike
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RB-20

APPENDIX 6

This appendix provides information regarding Task 6, as discussed in text Section 3.6.

Appendix Contents

There is no Task 6 Appendix requirement at this time. Appendix 6 was listed in order to maintain numeric order with task numbers.

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APPENDIX 7

This appendix provides information regarding Task 7, as discussed in text Section 3.7.

Appendix Contents

7-A Suggested Monitor Well Drilling and Installation Procedures

SUGGESTED MONITOR WELL DRILLING AND INSTALLATION PROCEDURES

A series of monitor wells are planned to better define hydrogeologic conditions and the nature and extent of ground-water contamination in areas surrounding McClellan AFB. Suggested measures for the installation of the monitor wells are detailed in the following sections.

Supervision of Drawing Activities

All well installation activities should be conducted under the direct supervision of a geologist or geotechnical engineer. Representative geologic samples should be collected, containerized, described, and logged at five-foot intervals during well drilling operations. Samples should also be collected and where significant changes are noted during drilling. The geologist supervising the well installation effort should also ensure that safety procedures and new construction/development specifications described in the Work Plan are adhered to by the drilling contractor.

DRILLING METHODOLOGY

Monitor well drilling should be conducted by two methods. The hollow stem auger (HSA) method should be used in areas where the maximum depth of drilling is less than about 120 feet as conditions allow. The HSA method should be used for the emplacement of 4-inch diameter monitor wells in the first significant waterbearing zone. The direct air rotary with casing drive method should be used to drill wells in excess of 120 feet. Suggested procedures for monitor well drilling are detailed below.

Hollow-Stem Auger

As discussed in Section 7.0, the hollow-stem auger method offers a relatively rapid, efficient drilling method that will result in the timely installation of shallow monitor wells. In areas where the depth to water is

less than about 100 feet, the hollow stem auger method provides an accurate means for determining the characteristics and thickness of the geologic units encountered during drilling. Drilling should be accomplished without the introduction of drilling fluids, thereby permitting the precise determination of water-bearing strata. The acquisition of samples through the hollow center of the augers with a split-spoon or Shelby tube is a rapid and reliable means of obtaining geologic samples.

For emplacement of 4-inch diameter monitor wells, the use of 12-inch outside diameter, 8-inch inside diameter hollow-stem augers is required. The use of a 12-inch diameter hollow stem auger to depths up to 120 feet will require the use of piloting techniques. Piloting will consist of using a 6 or 8 inch hollow-stem auger to create a pilot hole for the 12-inch augers. Sampling operations will be conducted during piloting operations.

Upon drilling to total depth and diameter, the well casing and completion materials should be emplaced through the hollow stem of the auger flights. The use of 12-inch diameter hollow-stem augers for reaming operations will require that a "knock-out" plug be placed in the down-hole end of the 12-inch drill string to prevent cuttings from entering the hollow-stem. Immediately prior to the emplacement of the casing and seven within the drill string, the hollow-stem should be filled with "clean" or chemically compatible water to at least the elevation of the water table. Placement of water within the hollow-stem will prevent the possible washing in of materials into the augers at the time the knock-out or auger plug is removed. Materials washed into the hollow-stem of the augers may cause the stem to be clogged or the well casing and screen to become locked.

Completion materials such as sand, bentonite and grout should be emplaced through the hollow stem of the augers during withdrawal to promote vertical continuity of the completion. Care should taken to ensure that the casing and screen do not become "sand wedged" during the withdrawal of the augers.

All down-hole drilling tools should be thoroughly cleaned using a high-temperature, high-pressure cleaner to prevent cross-contamination between well borings. As a further measure to prevent possible cross-contamination, all soil sampling equipment (A-rods, Shelby tube, and split spoon) should be thoroughly cleaned between borings. The Shelby tube and/or split spoon should be washed and rinsed between samples.

The method and types of fluids employed for cleaning the Shelby tube and/or split spoon between samples will be dependent upon the type of chemical analysis (if any) performed for the soil samples. If organic analyses are required, reagent-grade solvents, such as acetone or methanol alcohol may be required for cleaning operations. If no analyses are to be performed, then only water will be required for washing sampling devices.

No petroleum or lead-based thread compounds should be employed on down-hole tools if organic or trace metal analyses are to be performed. If lubricants are necessary; vegetable oil or a fluorocarbon-based lubricant may be used if they are chemically discernible from parameters to be analyzed.

Care should be taken to prevent the introduction of drill rig fluids, such as lubricating and hydraulic oil, into the well bore-hole. A small earthen berm should be constructed around the bore-hole while it is open to prevent possible entry of surface contaminants during run-off events.

Direct Air-Rotary Method with Casing Drive

Depending on actual conditions encountered in the field, monitor wells deeper than approximately 120 feet should be drilled using air-rotary with casing drive methods. As discussed in Section 7.0, the air rotary with casing drive methods consists of essentially a normal rotary method except that compressed air is employed as the drilling fluid. In order to allow for return of representative cuttings, prevent bore-hole collapse during drilling, and restrict or eliminate vertical movement of ground water within the boring, steel casing should be advanced as the bit proceeds. Normally,

the casing is slightly larger in diameter than the drill bit to allow for a tight formation-to-casing contact. Wobble bits or expanding bits may be employed to create a boring diameter larger than of the driven casing. A standard rotary bit should be used to ensure the highest practical formation-to-casing contact. A wobble or expanding bit may be required if the driving and/or extraction of the temporary casing becomes difficult when a standard bit is used.

As discussed in Section 7.0, the use of air rotary with casing drive promotes the integrity of the bore-hole and should prevent/reduce possible cross-contamination of aquifer subunits during drilling. The air-rotary method yields continuous and accurate geologic and water quality samples with depth. The method also provides for good well completion control.

All air rotary operations should be conducted without the use of liquids where possible. Occasionally, water and/or possibly foam may be required to be injected into the air stream for bore-hole/casing cleanout. Such a requirement is likely to occur where adhesive clay materials are encountered. If water and/or foam is required, care should be taken to ensure that only clean, potable water and chemically compatible foams are introduced into the bore-hole. Petroleum and metal-based thread compounds should not be used for lubricating down-hole tool joints/threads.

Sampling and decontamination operations used for air-rotary drilling operations should essentially be the same as those employed for augering. Samples collected from the cuttings stream, while being geologically representative, will be stripped of some, if not all, volatile hydrocarbons (if present in the strata) as they are produced from the discharge port. If required, representative lithologic samples may be obtained for volatile compounds by tripping out the drillstem and bit and inserting down-hole sampling tools. Such operations will require relatively large amounts of time where samples are to be retrieved at significant depths. The presence of volatile organic organic compounds in deeper, saturated zones may be determined as drilling proceeds by periodically tripping a small-diameter

pump into the bore-hole to purge the bore-hole (after sufficient recovery) to obtain a sample. If a properly sized pump is used, the pump may be deployed with the drillstem and bit in the borehole.

As saturated zones are encountered during drilling, grab samples of ground water will be collected for possible analysis. All cuttings, water samples and downhole drilling tools should be monitored or "sniffed" using an organic vapor analyzer/detector (OVA) to detect the presence of volatile organic compounds during drilling.

Regardless of the drilling method to be employed, the general area of each well boring should be scanned using a buried metal/pipe locater (radio detection) to identify possible near-surface obstructions/hazards before drilling begins. All monitor well locations should be cleared with property owners, public and private agencies and public utilities.

Well Completions

Following the completion of drilling activities at each well, a well screen will be positioned at appropriate monitoring interval(s). Screened interval(s) should be deep enough to accommodate seasonal variations in water levels within the well, where possible. For shallow and deep wells, the casing and screen should be 4-inches in diameter.

The monitor wells should be completed using stainless-steel casing (for the wetted zone only) and screen. Stainless-steel screen and casing present the best choice for durability and dependability. The screen slot size will be compatible with formation and sand pack materials as discussed in Section 7.0. All casing/screen connectings should be flush threaded. No thread compounds or glues should be applied to the casing/screen joints.

The screen section and stainless casing in the saturated zone will be joined to Schedule 40 PVC, flush-threaded casing extending through the unsaturated zone to land surface. No glues, solvents, or thread compounds should be employed for joining the casing/screen sections. Prior to installation, casing and screen sections should be thoroughly washed to remove possible contaminants with chemically compatible water using a high-temperature high-pressure sprayer.

After the casing and screen have been installed at each well, a sand pack will be emplaced between the screen and the boring wall. The pack should consist of washed and bagged Monterey sand or equivalent. The sand pack should extend to at least two feet above the top of the screened interval. The grain-size distribution of the sand pack should be compatible with the screen slot-size and the formation materials.

In the case of auger drilling, the sand pack should be poured into place through the hollow stem of the augers as they are pulled. The air-rotary borings, the sand pack material should be tremied into place as the temporary steel casing is withdrawn.

Granulated bentonite should be tremied or poured above the sand pack to a minimum thickness of two feet to provide a dependable seal. The bentonite seal should be wetted in the borehole using potable water to ensure that the seal is matured before cementing operations commence.

Bentonite cement grout should be tremied from above the top of the bentonite seal to land surface. No more than a ten percent gel mixture should be used. The emplacement of the bentonite and grout should occur as the casing/augers are withdrawn to ensure integrity of the completion.

Surface Completions

After the annulus of each well has been grouted to land surface, surface completions for the wells should be constructed. The type of surface

completion (i.e., above- or below-grade) should be compatible with local land use. The surface completion for each well should provide a reasonable amount of protection against potential vandalism or accidental destruction by vehicles. The surface completion should also provide for an adequate casing seal to ensure that entry of surface contaminants does not occur.

WELL DEVELOPMENT

Following the completion of well construction activities, each monitor well should be thoroughly developed. Development operations are necessary to ensure that the sand pack, screen, and well bore are purged of possible drilling residuals and that the well attains a suitable efficiency.

Development operations should be conducted using a submersible pump or bailer. Non-wetted sections of the well bore should be swabbed and rinsed during development operations. Development operations at each well should be considered complete when the discharge becomes clear or when the operations are considered to be complete by the supervising geologist.

Water displaced from each well during development operations should be containerized in a movable steel tank. Prior to disposal, the water should be chemically characterized so that proper disposal methods are employed. Based on the type and level of contamination expected, it is anticipated that development water will be discharged to the McClellan AFB industrial wastewater treatment plant for treatment/disposal.

SITE CLEAN UP AND CUTTINGS CONTROL

During drilling operations, potentially contaminated cuttings and water will be displaced. All cuttings and water produced during drilling should temporarily be stored in 55-gallon steel drums or in bowsers. Cuttings should be monitored using an organic vapor analyzer to determine the presence of possible volatile contaminants. Based on levels of volatile contaminants in the cuttings (as specified by concerned regulatory agencies

and standards), an appropriate method of disposal should be selected. All well sites should be cleaned up following the completion of well installations to ensure that the appearance of the site is returned to a proper condition.

APPENDIX 8

This appendix provides information regarding Task 8, as discussed in text Section 3.8.

Appendix Contents

There is no Task 8 appendix requirement at this time. Appendix 8 was listed to maintain numeric order with task numbers.

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APPENDIX 9

This appendix provides information regarding Task 9, as discussed in text Section 3.9.

Appendix Contents

9-A Comparison of Equipment and Costs - Portable vs. Dedicated Well Sampling Systems

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TASK 9 APPENDIX

Comparison of Equipment and Costs--
Portable vs. Dedicated Systems

I. Original Equipment Costs (Capital Costs)

Portable System

Bennett Model 180-125	$3,231.25
Repair Kit	53.75
Teflon Bailer	120.00
125' Stainless Steel Cable	125.00
Subtotal	3,530.00
G&A @23.3%	822.49
Total Cost	$4,352.49

Dedicated System

-- Per Well

Well Wizard Model T01200, Pump, Teflon/Stainless Steel	$ 395.00
100' Tubing @ $2.50/ft.	250.00
Cap Assy	28.00
	$ 673.00
x 50 wells	$33,650.00

-- Per System

Controller	$ 1,695.00
Total Costs	$35,345.00
G&A @23.3%	8,235.38
	$43,580.38

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II. Replacement/Repair Costs

Portable System--5 year intervals

Factory Repair of Pump	$ 148.75
Replacement Tubing-- 125' @ $7.20/ft	900.00
	$ 1,048.75

Discounting to present value using single payment present worth factor, 10% rate

5 year	0.6209			
10	.3855			
15	.2394			
20	.1486			
25	.0923			
	1.4867	x 1,048.75	=	1,559.18

Dedicated System

Replacement of Pump and Tubing at 10 year intervals @ $673 each

Discounting to prevent value

10 year	0.3855			
20 year	0.1486			
	.5341	x 673.00	=	359.45

x 50 wells =

Total dedicated system repair costs $17,972.50

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III. Total Equipment Costs

	Portable	Dedicated
Capital Costs	$ 4,352.49	$43,580.38
Repair Costs	1,559.18	17,972.50
TOTAL	$ 5,911.67	$61,552.88

IV. Sampling Labor Costs

	Portable		Dedicated	
	Air Force Labor	Contract Labor	Air Force Labor	Contract Labor
First year, quarterly, 50 wells (200 samples) no discount)	$ 6,100.00 (15.25/hr x 2 hr x 200)	$10,800.00 (27.00 x 2 x 200)	$ 3,050.00 (15.25 x 200)	$ 5,400.00 (27.00 x 200)
Second year, 50 wells (200 samples), discounted to present value (x 0.9091)	5,545.51 (6100 x 0.9091)	9,818.28 (10,000 x 0.9091)	2,772.76 (3050 x 0.9091)	4,909.14 (5400 x 0.0901)
Third through 30th year (28 years) (50 samples) discounted to present value, using	1,525.00 (15.25 x 2 x 50)	2,700.00 (27.00 x 2 x 50)	762.50 (15.25 x 50)	1,350.00 (27.00 x 50)
[present worth factor (n=29)	9,370			
less present worth factor (n=1)]	-0.909			
	8.461			
	12,903.02	22,844.70	6,451.51	11,422.35
Total Labor Costs	$24,548.53	$43,462.98	$12,274.27	$21,731.49

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V. Total System Costs

	Portable		Dedicated	
	Air Force Labor	Contract Labor	Air Force Labor	Contract Labor
Equipment	$ 5,911.67	$ 5,911.67	$61,552.88	$61.522.88
Labor	24,548.53	43,462.98	12,274.27	21,731.49
Total ($)	$30,460.20	$49,374.65	$73,827.15	$83,284.37
adding one more hour of labor per sample for portable option	12,274.27	21,731.49		
	$42,734.47	$71,105.66		
reducing dedicated replacement to once per 5 yrs 0.2394 - 0.5341 - 0.2947 x 673.00 x 50			-9,916.66	-9,916.66
			$63,910.49	$73,367.71

APPENDIX 10

This appendix provides information regarding Task 10, as discussed in text Section 3.10.

Appendix Contents

There is no Task 10 Appendix requirement at this time. Appendix 10 was listed to maintain numeric order with task numbers.

APPENDIX 11

This appendix provides information regarding Task 11, as discussed in text Section 3.11.

Appendix Contents

There is no Task 11 Appendix requirement at this time. Appendix 11 was listed to maintain numeric order with task numbers.

APPENDIX 12

This appendix provides information regarding Task 12, as discussed in text Section 3.12.

Appendix Contents

12-A General Description of Ground-Water Methods

12-B Discussion of "TRANS" Model

12-C Discussion of "USGS-MOC" Model

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APPENDIX 12-A

General Description of Ground-Water Modeling Methods

Ground-water processes, such as advection and contaminant transport, are normally highly complex phenomena. In order for an investigator to better understand and/or predict the behavior of ground-water systems, a system model can be constructed. A ground-water model is a simplification of a system such that the overall behavior of the model is representative of the system of study. The level of sophistication or detail employed by the model is dependent on the nature of the system to be modeled, the extent and reliability of available data, and most importantly, the objectives of the modeling effort.

Ground-water modeling methods range in complexity from system conceptualizations to numerical codes which solve or approximate equations describing subsurface processes. Major categories for ground-water models include the following:

- Conceptual;
- Analog;
- Analytical or mathematical;
- Numerical.

Conceptual ground-water models consist of generalizations and conclusions with respect to the nature and behavior of ground-water systems. They are normally based on available data and scientific knowledge/judgement. The conceptual model is useful for general evaluation of hydrogeologic systems. Conceptual models are not usually suited towards predictive analysis of transient systems.

Analog models are generally described as physical systems whose behavior mimics or parallels that of a ground-water system. Physical systems which have been used to model ground-water phenomena include: resistance-capacitance networks, elastic membranes, Hele-Shaw or parallel-plate analogs, conductive liquids/solids, tanks etc. A general discussion of analog models is included in Davis and DeWiest, 1966.

Analog models are usually logistically difficult to implement and inflexible. Furthermore, most analog models are not well suited for modeling the temporal and spacial distribution of solutes in ground water. Because of significant developments in recent years in digital computers, the use of analog models has generally given way to analytical and numerical models.

Analytical or mathematical models consist of simplified mathematical solutions to the governing equations of ground-water. Analytical models can be used to predict processes in ground-water systems where the system and process of study can justifiably be simplified. Analytical models are not well suited the evaluation of systems which vary spacially and/or temporally, or that incorporate multiple, interrelated processes.

Numerical models are computer codes or numerical schemes implemented for the solution or approximation of governing equations describing physical processes in ground water systems. Methods for the solution of governing equations vary between groups of models and include finite-element, finite-difference and stochastic methods. Normally a mesh or grid is established for a numerical model whereby the characteristic features of a ground-water system are represented. Numerical models are generally better suited the representation of complex systems which vary spacially and/or temporally than the modeling methods described earlier.

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APPENDIX 12-B

Discussion of "TRANS" Model

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TRANS (Prickett et al., 1981) is a recently released mass-transport code for simulating mass-transport in ground-water systems. The finite-difference formulation's used by this model for developing ground-water flow solutions. Solute transport is simulated using the particle-in-cell technique for convection processes. The random-walk method is used for simulating dispersion effects. The code also accounts for retardation caused by chemical reactions between the geologic matrix and the solute. TRANS is capable of simulating one- or two-dimensional non-steady/steady-state flow in heterogenous aquifers. The code can also be used for simulating unconfined, confined, or leaky aquifers.

TRANS has gained wide acceptance among ground-water modeling professionals. Professional short-courses on the application and usage of TRANS are conducted periodically.

Test case and application simultions conducted by the code authors and its users have shown TRANS to be capable of producing reasonably accurate simulations using modern numerical techniques. The source code is written in FORTRAN IV and contains approximately 1700 program lines.

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APPENDIX 12-C

Discussion of "USGS-MOC" Model

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USGS-MOC (Konikow and Bredehoeft, 1978) is a state-of-the-art mass-transport code which can be applied to a large variety of ground-water modeling problems (Kincaid et al, 1984). It can be implemented for one- or two-dimensional anisotropic, non-homogeneous systems involving transient or steady-state flow. The modeling code assumes that gradients of fluid density, viscosity, and temperature do not affect the velocity distribution. It also assumes that significant temporal variation in the saturated thickness of the ground-water system does not occur.

USGS-MOC uses an alternating-direction implicit procedure for solving the finite-difference approximation of the ground-water flow equation. The code couples the ground-water flow solution to the solute-transport solution. The method of characteristics is used to solve the solute-transport equation. The solute-transport portion of the code utilizes a particle-tracking procedure to represent convective transport. A two-step explicit procedure is used to solve a finite-difference equation describing the effects of hydrodynamic dispersion, fluid sources and sinks, and divergence of velocity. The code assumes that the solute is non-reactive.

USGS-MOC has gained wide acceptance among ground-water modeling professionals for mass-transport modeling applications. The Environmental Protection Agency reportedly uses a version of USGS-MOC for the evaluation of waste sites (Kincaid et al., 1984).

Test cases and application simulations conducted by the code authors and its users have shown USGS-MOC to be capable of producing reasonably accurate mass-transport simulations. The source code is written in FORTRAN IV and contains approximately 2000 lines of code.

APPENDIX 13

This appendix provides information regarding Task 13, as discussed in text Section 3.13.

Appendix Contents

There is no Task 13 Appendix requirement at this time. Appendix 13 was listed to maintain numeric order with task numbers.

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