



City of Alamogordo

Purchasing Dept. • 2600 N. Florida Ave. • Alamogordo, NM 88310 • (575) 439-4115 • FAX (575) 439-4117

May 29, 2018

**ADDENDUM NO. 2
PUBLIC WORKS BID NO. 2018-003
GRIGGS RESERVOIR OUTFALL STRUCTURE MODIFICATIONS AND STORM DRAIN
IMPROVEMENTS**

Each bidder shall acknowledge receipt of this Addendum Number Two (2) by including in the Bid proposal.

Addendum Number Two (2) is issued to provide changes and/or clarifications to the above referenced PWB as follows:

Bid opening date is changed to June 6, 2018. Bid Opening time and location remains unchanged. No further questions will be considered.

Clarification:

1. Revised Section 3 – Revised Item Descriptions. Attached
 - Item No. 10: Engineer Fill/Owner Provided Borrow
 - Item No. 11: 4" HMA SP-IV PG 64-22 Complete. Includes subgrade prep, base course & prime coat, CIP.
 - Item No. 15: 48" UltraFlo Storm Drain Pipe Including Trenching, Backfill & Compaction
 - Item No. 16: 54" UltraFlo Storm Drain Pipe Including Trenching, Backfill & Compaction
 - Item No. 17: 60" UltraFlo Storm Drain Pipe Including Trenching, Backfill & Compaction
2. Technical Specifications order of governing Contract Documents. Attached.
3. Supplement to Technical Specification- Earthwork. Attached.
4. Geotechnical Report and Addendum 1 to Geotechnical Report for Griggs Reservoir Attached.
5. Sheet D1.6- Typical Pavement Patch, Replace PG 74-22 with PG 64-22.

All other provisions of the Contract Documents shall remain unchanged. This addendum is hereby made part of the Contract Documents. Each bidder shall acknowledge receipt of this Addendum Number Two (2) using this acknowledgement page and submit with the Bid proposal.

Sincerely,

Barbara Pyeatt
Chief Procurement Officer

Received By: _____

Date Received: _____

Business Name: _____

Signature: _____

SECTION 3 - BID SCHEDULE

BIDDER agrees to perform all of the work described in the specifications and shown on the plans for the following unit or lump sum prices. Prices should be written in numerals in the spaces provided.

**Public Works Bid No. 2018-003
Griggs Reservoir Outfall Structure Modifications and Storm Drain Improvements
ADDENDUM NO. 2**

ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	TOTAL AMOUNT
1	Mobilization	LS	1		
2	Clearing and Grubbing	LS	1		
3	Project Removals	LS	1		
4	Stormwater Pollution Prevention Plan (SWPPP)	LS	1		
5	Traffic Control Management	LS	1		
6	Construction Staking and Surveying	LS	1		
7	Utility Allowance	AL	1	\$20,000	\$20,000
8	Diversion and Care of Storm Water Allowance	AL	1	\$8,000	\$8,000
9	Unclassified Excavation	CY	35,000		
10	Engineered Fill/Owner Provided Borrow	CY	4,200		
11	4" HMA SP-IV PG 64-22 Complete, Includes Subgrade Prep, Base Course, and Prime Coat, CIP	SY	390		
12	Standard Curb and Gutter, Type II	LF	20		
13	Concrete Sidewalk, 4" Thick	SY	20		
14	Manhole, 8' Diameter	EA	7		
15	48" Ultraflo Storm Drain Pipe, Including Trenching, Backfill, and Compaction	LF	662		
16	54" Ultraflo Storm Drain Pipe, Including Trenching, Backfill, and Compaction	LF	1,110		
17	60" Ultraflo Storm Drain Pipe, Including Trenching, Backfill, and Compaction	LF	1,104		
18	60" Culvert Headwall	EA	1		
19	Not Used	EA	0		
20	1' Thick Wire Enclosed Rip Rap	CY	81		

21	6' X 6' Junction Box, Precast Concrete Structure	EA	1		
22	Channel Outlet, Includes Bleeder Pipe with Flap Gate, and Concrete Weir, CIP	LS	1		
23	Griggs Concrete Intake Riser, Includes Foundation, Soil Cement Slab, Complete	LS	1		
24	30" X 30" Concrete Box Culvert, Including Excavation and Backfill	LF	152		
25	Griggs Emergency Spillway, 6" Thick Reinforced Concrete, Including Cutoff Wall, CIP	CY	200		
26	Remove and Replace Existing Asphalt Per City of Alamogordo Pavement Patch Detail	SY	1,206		

TOTAL BASE BID AMOUNT EXCLUDING NMGR \$ _____

NOTE: Gross receipts tax shall be paid with each pay request as it is submitted at the current tax rate for the City of Alamogordo, New Mexico (8.0%)

To the City of Alamogordo, New Mexico (hereinafter called "OWNER"), the undersigned, (hereinafter called "BIDDER"), in compliance with your invitation for bids for the construction of **Griggs Reservoir Outfall Structure Modifications and Storm Drain Improvements, Public Works Bid No. 2018-003**, having carefully examined the Contract Documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the Contract Documents, within the time set forth herein, and at the unit prices stated above. These prices are to cover all expenses incurred in performing the work required under the Contract Documents of which this Bid Schedule is a part. Quantities shown in this Bid Schedule are estimated and actual payment will be made on the basis of the unit bid prices for confirmed quantities as constructed.

BIDDER acknowledges receipt of the following addenda: _____

CALLOUT NOTICE ACKNOWLEDGMENT:

Authorized Signature of Bidder

Business Name of Bidder

Authorized Signature of Bidder

Printed Name and Title of Authorized Signature

BIDDER'S New Mexico Contractor's License No. & Classification

Address

Telephone

Fax

(SEAL) If Bid Proposal is submitted by a corporation

TECHNICAL SPECIFICATIONS

This project shall be built in accordance with the New Mexico State Department of Transportation Standard Specifications for Highway and Bridge Construction State Construction Bureau, Current Edition and all applicable Supplemental Specifications and Revisions to the New Mexico State Department of Transportation Standard Specifications for Highway and Bridge Construction State Construction Bureau, as published by the New Mexico Department of Transportation except as modified by the City of Alamogordo Contract Documents and Technical Specifications and Special Provisions to the Contract Documents and Technical Specifications.

The Contract Documents will govern in the following order of importance:

1. Addenda
2. Project Plan Drawings
3. NMDOT Supplemental Specifications
4. NMDOT Standard Specifications, Division 200 through Division 900
5. NMDOT Standard Drawings
6. City of Alamogordo Contract Documents, General Specifications Section 1 thru Section 13
7. City of Alamogordo Technical Specifications

1.4.2 Unclassified Excavation

Unclassified excavation shall be to the lines and grades shown on the plans and shall be finished to reasonably smooth and uniform surfaces. Contractor is responsible for performing cross section measurement of the existing ground in accordance with NMDOT Section 203.4.

1.4.3 Earth Fill Placement

All fill material excavated shall be placed in controlled compacted layers not exceeding 8 inches (loose thickness) with approved compaction equipment. Sheepsfoot, vibratory sheepsfoot or segmented steel wheel type compactors should be used. If handheld compaction equipment is used then the loose limits should be reduced to 4 inches. Where fill is placed on slopes steeper than 5:1 (horizontal to vertical) the embankment should be benched with a minimum of 1.5 foot wide benches and maximum 1 foot vertical intervals.

All fill material shall be properly blended to produce a homogeneous dam embankment meeting the grading requirements. No lifts of high permeability material or material differing substantially from the lift below shall be permitted. If the compactors "walk out" during compaction or if a flat wheel compactor is used, the upper 1 to 2 inches of the lift shall be scarified prior to placing a subsequent lift. The dam embankment shall be raised uniformly. All compaction shall be accomplished in accordance with the following table:

ZONE	Moisture Content (%)	% Compaction ASTM D-698
Dam Embankment, CBC, Intake Structure Junction Structure, & Channel	Optimum to +3%	Minimum of 95%
Retention Area	Optimum to +3%	Minimum of 90%

Fill above and below the principal spillway culverts should be placed and compacted as outlined above. In the zone within two feet of the battered sides of the culverts, fill should be placed in maximum 6 inch loose lifts, moisture conditioned and compacted as outlined above, using manually controlled walk behind rolling compactors, vibratory plate compactors or jumping jacks capable of compacting the soil immediately adjacent to the culverts. Continuous observation and testing should be performed by a representative of the geotechnical engineer during the backfilling process to verify compaction. No placement or compaction activities adjacent to the concrete box culvert and Intake structure until the specified concrete compressive strength has been achieved. Continuous observation and testing shall be performed during the placement and compaction process.

1.5 METHOD OF MEASUREMENT AND PAYMENT

1.5.1 Unclassified Excavation.

Unclassified excavation payment will only be made for the excavation of in-place materials. No payment will be made for excavation of stockpiled materials, structural excavation of previously placed materials and over depth cuts. No payment will be paid for haul. Payment for unclassified excavation will include the cost for all excavation, moisture conditioning and hauling material to the embankment, hauling excess material to the City Public Works Yard, foundation preparation/densification of cut section, embankment, placement and compaction. Quantities will be measured and paid in accordance with NMDOT Sections 203, surface subtraction from existing grade to

final grade for excavated materials (cut). Measurement and payment will be to neat line as shown in the plans. No payment will be made for shrink or swell.

1.5.2 Engineer Fill/Borrow

Material from the approved borrow sources to be used as engineer fill material required for construction of the dam embankment or other work approved by the owner. Borrow shall include excavation, moisture conditioning, haul, placement and compaction of soil material from the borrow source location to the dam embankment area. Contractor is responsible for performing cross section measurement of the existing ground prior to performing CBC trenching and again for the final grade to develop surface subtraction for borrow payment quantities. Measurement and payment will be to neat line as shown in the plans. No payment will be made for shrink or swell.

1.5.3 BASIS OF PAYMENT

Pay Item	Pay Unit
<i>Unclassified Excavation</i>	Cubic Yard
<i>Engineer Fill/Borrow</i>	Cubic Yard

SUPPLEMENT TO NMDOT SECTION 206: EXCAVATION & BACKFILL FOR CULVERTS AND MINOR STRUCTURES

2.0 DESCRIPTION

This work consists of performing excavation, preparing the foundation placing and compacting backfill for the Junction Box, Concrete Box Culvert and the Intake Structure. This work includes the excavation, hauling, disposing, placing, and compacting materials in accordance with the construction drawings and specifications. Materials excavated onsite and that are in conformance with the specified gradation tables (see Section 1.2.2 above) shall be used as backfill. If additional material is required to complete the backfill, the contractor should use the owner provided borrow. The borrow site is located on the east side of the plastic lined water reservoir, refer to construction drawing sheet no. C-101. Excess cut material shall be stockpiled at the City's Public Works Yard, located directly south of the Dam; final stockpile location shall be approved by the owner.

2.1 FILL MATERIALS

All fill materials shall be obtained from the onsite excavations and the designated borrow source location as detailed in the following sections.

2.2.2 Fill Material- Fill Material in this area shall conform to the Gradation Table No.01, see below. Use on-site excavated material that is conforming to the below specification before using owner provided borrow unless approved by the owner.

For Contractor Information Only:

Concrete Box Culvert Cut = 4,320 cubic yards. Backfill = 4,320 cubic yards

2.3 CONSTRUCTION REQUIREMENTS

See "1.4.3 Earth Fill Placement" above.

2.4 METHOD OF MEASUREMENT AND PAYMENT

See NMDOT Section 206.5.1 "Work Included in Payment"

Excavation, disposal of unsuitable material, backfill and backfill of owner provided borrow material including haul, placement and compaction shall be included in the included in the contract unit price per linear foot of Concrete Box Culvert and contract unit price for the Intake Structure and Junction Box.

2.5 Materials & Construction Requirements for Ultra Flo Storm Drain

Backfill, bedding, construction requirements and method of measurement shall follow NMDOT Section 206.

March 1, 2016
Job No.1-50902

Wilson and Company, Inc.
4900 Lang Avenue NE
Albuquerque, New Mexico 87109

ATTN: Ms. Brigitte M. Fuller, P.E.

RE: Addendum 1 to Report No. 1-50902 (10-26-2015)
Griggs Reservoir
Alamogordo, New Mexico

Dear Ms. Fuller:

In accordance with your request, we have reviewed the change in scope of the original work as well as our original Geotechnical Engineering Services report on the referenced project for the purpose of presenting additional recommendations for embankment backfill specifications as well as criteria for site grading.

SITE GRADING

The following general guidelines should be included in the project construction specifications to provide a basis for quality control during site grading. It is recommended that all structural fill and backfill be placed and compacted under engineering observation and in accordance with the following:

- 1) After clearing, grubbing and removal of all existing construction debris and any undocumented fill and loose soils, the exposed native soils within the area to be backfilled should be densified prior to construction or placement of structural fill.
- 2) Densification of the native soils should consist of scarifying to a depth of 8 inches, moisture conditioning or drying to the optimum moisture content or above, and compacting the area to a minimum of 95 percent of maximum dry density as determined in accordance with ASTM D-698.
- 3) All structural fill for embankment should be free of vegetation, debris,

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

and contain no rocks larger than 3 inches. Gradation of the backfill material as determined in accordance with ASTM D-422 should be as follows:

Size	Percent Passing
3 inch	100
No. 4	90 - 100
No. 200	65 - 95

- 4) The plasticity index of the material should be between 7 and 20 when tested in accordance with ASTM D-4318.
- 5) Fill or backfill, consisting of soil approved by the geotechnical engineer, should be placed in 8-inch loose lifts and compacted with approved compaction equipment. If hand held compaction equipment is used, loose lifts should be reduced to 4-inch. Where fill is placed on slopes steeper than 5:1 (horizontal to vertical) the embankment should be benched with a minimum of 1.5 foot wide benches and maximum 1 foot vertical intervals.
- 6) All compaction of fill or backfill should be accomplished to a minimum of 95 percent of the maximum dry density determined in accordance with ASTM D-698. The moisture content of the material, during compaction, should be at the optimum moisture content to +3 percent above.
- 7) Tests for degree of compaction should be determined by the ASTM D-1556 method or ASTM D-6938. Observation and field tests should be carried on during fill and backfill placement by the geotechnical engineer to assist the contractor in obtaining the required degree of compaction. If less than 95 percent is indicated, additional compaction effort should be made with adjustment of the moisture content as necessary until 95 percent compaction is obtained.

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

This addendum should be attached to the original report and made a part thereof. Should any questions arise concerning this addendum we would be pleased to discuss them with you

Respectfully submitted:

Reviewed by:

GEO-TEST, INC.



Timothy Matson, Geologist



Robert D Booth, P.E.

cc: brigitte.fuller@wilsonco.com
eric.hamilton@wilsonco.com

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660



**GEOTECHNICAL
ENGINEERING SERVICES
JOB NO. 1-50902
GRIGGS RESERVOIR
ALAMOGORDO, NEW MEXICO**

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

**PREPARED FOR
WILSON AND COMPANY, INC**



October 26, 2015
Job No. 1-50902

Wilson and Company, Inc.
4900 Lang Avenue NE
Albuquerque, New Mexico 87109

ATTN: Ms. Brigitte M. Fuller, P.E.

**RE: Geotechnical Engineering Services
Griggs Reservoir
Alamogordo, New Mexico**

Dear Ms. Fuller:

Submitted herein is the Geotechnical Engineering Services Report for the above referenced project. The report contains the results of our field investigation, laboratory testing, and recommendations for embankment preparation, as well as criteria for site grading.

It has been a pleasure to serve you on this project. If you should have any questions, please contact this office.

Respectfully submitted:

Reviewed by:

GEO-TEST, INC.

Timothy Matson, Geologist

Robert D Booth, P.E.

cc: Addressee (3)

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
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2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

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GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
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2805-A LAS VEGAS CT.
LAS CRUCES,
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88007
(575) 526-6260
FAX (575) 523-1660

INTRODUCTION

This report presents the results of a geotechnical engineering services investigation performed by this firm for the proposed renovations at the Griggs reservoir located in Alamogordo, New Mexico.

The objectives of this investigation were to:

- 1) Evaluate the nature and engineering properties of the subsurface soils comprising the existing embankments.
- 2) Provide recommendations for site grading.

The investigation includes subsurface exploration, selected soil sampling, laboratory testing of the samples, performing an engineering analysis and preparation of this report.

PROPOSED CONSTRUCTION

It is understood that the project consists of lowering the height of the existing earthen dam and deepening the existing reservoir area.

Should project details vary significantly from those outlined above, this firm should be notified for review and possible revision of the recommendations contained herein.

FIELD EXPLORATION

Three exploratory borings were drilled along the top of the dam to approximately 21½ feet below existing site grades. In addition, a percolation test was performed within the dam embankment and within the reservoir area. Locations of the borings and percolation tests are shown on the Boring Location Map, Figure 1. The soils encountered in the borings were continuously examined, visually classified and logged during the drilling operation. The boring logs are presented in a following section of this report. Drilling was accomplished using a truck mounted drill rig equipped with 8.0-inch diameter continuous flight hollow stem auger. Subsurface materials were sampled at five foot intervals or less utilizing an open tube split barrel sampler and a brass ring-lined sampler driven by a standard penetration test hammer.

Two percolation tests were also performed, one within the embankment and one in the reservoir area. The tests were performed in accordance with the

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
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FAX (575) 523-1660

procedures outlined by the New Mexico Environment Department, the results of which are presented in a following section of this report.

LABORATORY TESTING

Selected soil samples were tested in the laboratory to determine certain engineering properties of the soils. Moisture contents were determined to evaluate the various soil deposits with depth. The results of these tests are shown on the boring logs.

Sieve analysis and Atterberg limits tests were performed to aid in soil classification. Results of these tests are presented in the Summary of Laboratory Results and on the individual test reports presented in a following section of this report.

SITE CONDITIONS

A brief surface reconnaissance was performed during our site exploration. The existing dam is somewhat "L" shaped and is approximately 2,000 feet long and is broken up into 3 separate embankments. The reservoir and dam are located south of Fairgrounds Road, north of 26th Street, east of the City of Alamogordo maintenance yard, and west of a residential subdivision. The existing reservoir area has been partially grubbed and piles of tree cuttings were observed in several areas. Construction debris along and within a drainage swale that cuts through the dam was also observed.

SUBSURFACE SOIL CONDITIONS

As indicated by the exploratory borings, the soils encountered in the borings consist primarily of clays with various amounts of silty and fine sand. These soils are generally firm to hard, range from low to medium in plasticity, and extended to full depths explored. The soils encountered at the percolation test location within the reservoir consisted of silty sand with gravel to a depth of 2 feet underlain by clayey sands which extended to 5 feet, the full depth of the boring.

Soil moisture contents were relatively low throughout the full depth of the borings and no groundwater was encountered.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the existing embankments are suitable in their present condition for their intended purpose, at least from a geotechnical standpoint. All of the embankment soils encountered in the borings are firm to hard and

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
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2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

can be readily excavated using normal earth moving and excavation equipment. Accordingly, the existing structures are considered suitable in their present condition to make the necessary modifications or renovations. It is recommended that all slopes be protected to minimize erosion and that periodic maintenance due to minor sloughing and erosion be performed.

The results of this investigation indicate that the surficial soils encountered in the percolation test borings within the reservoir area can be readily excavated using normal earth moving and excavation equipment. Any excavated slopes within the reservoir area should be designed and constructed in accordance with any applicable state or local regulations. All fill and cut slopes should be no steeper than 2 to 1 (horizontal to vertical). If shoring, bracing or benching is necessary, it should be performed by the contractor for in accordance with the strictest governing safety standards.

Detailed recommendations concerning the required site preparation are presented in the following sections of this report.

PERCOLATION TESTS

A percolation rate of 120 minutes per inch was recorded at the percolation test performed within the dam embankment and a rate of 60 minutes per inch was recorded at the test location in the reservoir area.

SITE-GRADING

The following guidelines should be included in the project construction specifications to provide a basis for quality control during site grading. It is recommended that all structural fill and backfill be placed and compacted under engineering observation and in accordance with the following:

- 1) After cutting the embankment to its proposed finished grade and prior to placement of any fill, the exposed cut surface should be densified. Areas to receive fill should be cleared, grubbed and densified prior to backfilling.
- 2) Densification of the exposed cut surface should consist of scarifying, moisture conditioning to the optimum moisture content, and compacting the area to a minimum of 95 percent of maximum dry density as determined in accordance with ASTM D-1557. The moisture content during compaction should be at or above the optimum moisture content.
- 3) Fill or backfill, consisting of soil approved by the geotechnical

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

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ALBUQUERQUE,
NEW MEXICO
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(505) 857-0933
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2805-A LAS VEGAS CT.
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NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

engineer, should be placed in 8 inch loose lifts and compacted with approved compaction equipment. Loose lifts should be reduced to 4 inches if hand held compaction equipment is used. All compaction of fill or backfill should be to a minimum of 95 percent of the maximum dry density determined in accordance with the ASTM D-1557 test method. The moisture content of the material during compaction should be within 2 percent of the optimum moisture content

- 4) Tests for degree of compaction should be determined by the ASTM D-1556 method or ASTM D-6938. Observation and field tests should be carried on during fill and backfill placement by the geotechnical engineer to assist the contractor in obtaining the required degree of compaction. If less than 95 percent is indicated, additional compaction effort should be made with adjustment of the moisture content as necessary until 95 percent compaction is obtained.

FOUNDATION REVIEW AND INSPECTION

This report has been prepared to aid in the evaluation of this site and to assist in the design of this project. It is recommended that the geotechnical engineer be provided the opportunity to review the design drawings and specifications in order to determine whether the recommendations in this report are applicable to the design. Review of the design drawings and specifications should be noted in writing by the geotechnical engineer.

CLOSURE

Our conclusions, recommendations and opinions presented herein are:

- 1) Based upon our evaluation and interpretation of the findings of the field and laboratory program.
- 2) Based upon an interpolation of soil conditions between and beyond the explorations.
- 3) Subject to confirmation of the conditions encountered during construction.
- 4) Based upon the assumption that sufficient observation will be provided during construction.
- 5) Prepared in accordance with generally accepted professional geotechnical engineering principles and practice.

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

This report has been prepared for the sole use of Wilson and Company, Inc., specifically to aid in the design of the proposed renovations to the Griggs reservoir located in Alamogordo, New Mexico and is not for the use by any third parties.

We make no other warranty, either express or implied. Any person using this report for bidding or construction purposes should perform such independent investigation as he deems necessary to satisfy himself as to the surface and subsurface conditions to be encountered and the procedures to be used in the performance of work on this project. If conditions encountered during construction appear to be different than indicated by this report, this office should be notified.

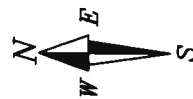
All soil samples will be discarded 60 days after the date of this report unless we receive a specific request to retain the samples for a longer period of time.

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

BORING LOCATION MAP



Griggs Reservoir
Alamogordo, New Mexico
Job No. 1-52902

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GEOTECHNICAL ENGINEERING
AND MATERIAL TESTING
SANTA FE - ALBUQUERQUE - LAS CRUCES

Figure 1



Project: Griggs Reservoir

Date: 09/21/2015

Elevation:

Project No: 1-50902

Type: 8" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 1

During Drilling: None

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE	
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft
5			SS	12-22-44 66	12				
			SS	14-21-24 45	12				
10			SS	12-18-24 42	11		FILL	FILL: CLAY (CL), low plasticity, hard, slightly moist to dry, light brown to brown	
15			SS	15-15-18 33	12				
20			SS	17-22-20 42	11				
25								STOPPED AUGER AT 20' STOPPED SAMPLER AT 21.5'	

LOG OF TEST BORING 1-50902 GRIGGS RESERVOIR GPJ GEO TEST GDT 9/28/15

LEGEND

SS - Split Spoon
 AC - Auger Cuttings
 UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level
 CS - Continuous Sampler
 UD - Undisturbed
 ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Griggs Reservoir

Date: 09/21/2015

Elevation:

Project No: 1-50902

Type: 8" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 2

During Drilling: None

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE	
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft
5		7-10-12	SS	22	8		FILL	FILL: SILTY CLAY (CL-ML), low plasticity, firm to hard, slightly moist to dry, light brown to brown	22
		10-20-22	SS	42	12				42
		22-30	UD	52	13				52
10		13-20-21	SS	41	11				41
15		14-14-20	SS	34	12				34
20		12-13-15	SS	28	8			28	
25									

LOG OF TEST BORING 1-50902 GRIGGS RESERVOIR GPJ GEO TEST GDT 9/28/15

LEGEND

SS - Split Spoon
 AC - Auger Cuttings
 UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level
 CS - Continuous Sampler
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Project: Griggs Reservoir

Date: 09/21/2015

Elevation:

Project No: 1-50902

Type: 8" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 3

During Drilling: None

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE	
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft
5			SS	10-12-18 30	6				30
			SS	6-11-19 30	5				30
			SS	15-17-22 39	7				39
10			SS	27-18-12 30	7		FILL	FILL: CLAY WITH SAND (CL), low to medium plasticity, hard, dry, light brown to brown	30
15			SS	5-7-10 17	7			moderately firm	17
20			SS	22-23-35 58	11		CL	CLAY, low to medium plasticity, weakly to moderately cemented, hard, slightly moist to dry, tan	58
25								STOPPED AUGER AT 20' STOPPED SAMPLER AT 21.5'	

LOG OF TEST BORING 1-50902 GRIGGS RESERVOIR GPJ GEO TEST GDT 9/28/15

LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Griggs Reservoir

Date: 09/21/2015

Elevation:

Project No: 1-50902

Type: 8" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: Perc 1

During Drilling: None

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE				
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft 20 40 60 80			
5	[Hatched Pattern]						FILL	FILL: SILTY CLAY (ML-CL), low plasticity, firm to hard, slightly moist to dry, light brown to brown				
10									STOPPED AUGER AT 10'			
15												
20												
25												

LOG OF TEST BORING 1-50902 GRIGGS RESERVOIR GPJ GEO TEST.GDT 10/12/15

LEGEND

SS - Split Spoon
 AC - Auger Cuttings
 UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level
 CS - Continuous Sampler
 UD - Undisturbed
 ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Griggs Reservoir

Date: 10/07/2015

Elevation:

Project No: 1-50902

Type: 5.5" OD HSA



LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: Perc 2

During Drilling: None

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	SAMPLE				SUBSURFACE PROFILE				
				N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft			
									20	40	60	80
5			GB		16		SM	SILTY SAND WITH GRAVEL, fine to medium grained, low plasticity to non-plastic, slightly moist, dark brown				
				SC		CLAYEY SAND, fine to medium grained, medium plasticity, moist, gray/brown						
								STOPPED AUGER AT 5'				
10												
15												
20												
25												

LOG OF TEST BORING 1-50902 GRIGGS RESERVOIR GPJ GEO TEST GDT 10/12/15

LEGEND

SS - Split Spoon
 AC - Auger Cuttings
 UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level
 CS - Continuous Sampler
 UD - Undisturbed
 ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

SUMMARY OF LABORATORY RESULTS

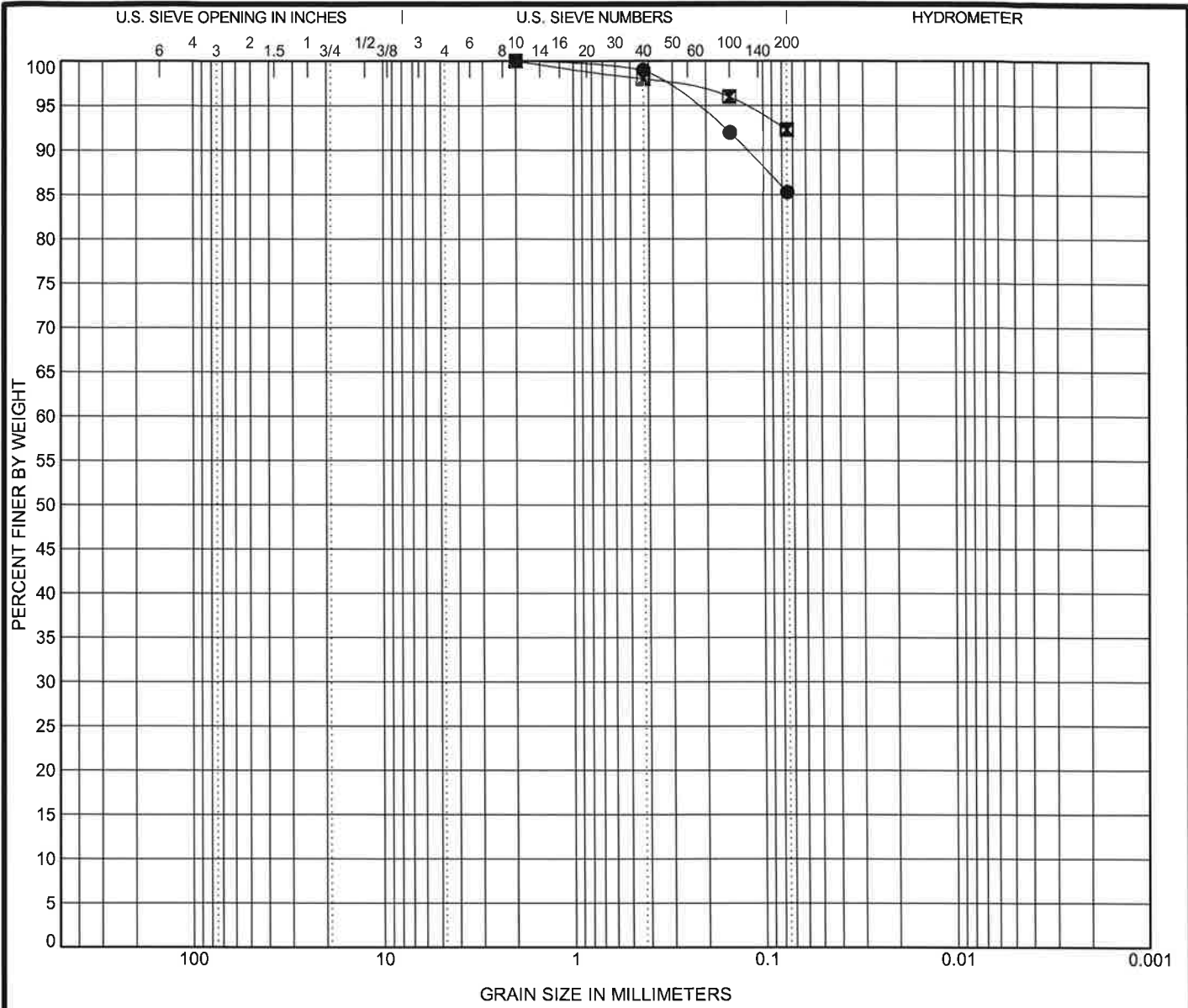
TEST HOLE	DEPTH (FEET)	UNIFIED CLASS	(% MOIST)	LL	PI	SIEVE ANALYSIS PERCENT PASSING												
						NO 200	NO 100	NO 40	NO 10	NO 4	3/8"	1/2"	3/4"	1"	1 1/2"	2"	4"	
1	2.5	CL	11.9	31	12	85	92	99	100									
1	5.0		11.5															
1	10.0		10.7															
1	15.0	CL	11.8	29	11	92	96	98	100									
1	20.0		11.3															
2	0.5		8.0															
2	2.5		11.8															
2	5.0	CL-ML	12.7	21	5	88	92	98	100									
2	10.0	CL-ML	10.5	23	7	85	91	94	96	96	96	100						
2	15.0		12.1															
2	20.0		8.4															
3	0.5		5.9															
3	2.5		4.9															
3	5.0		6.5															
3	10.0	CL	6.9	31	14	72	79	86	91	93	97	98	100					
3	15.0		7.2															
3	20.0	CL	10.6	33	16	89	94	99	100									
Perc 2	2.0-5.0	SC	16.3	46	25	45	59	77	86	91	93	99	100					

SUMMARY OF LABORATORY RESULTS 1-50902 GRIGGS RESERVOIR GPJ GEO TEST GDT 10/12/15

GEO-TEST

LL = LIQUID LIMIT
PI = PLASTICITY INDEX
NP = NON PLASTIC or NO VALUE

Project: Griggs Reservoir
Location: Alamogordo, New Mexico
Number: 1-50902



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● 1 2.5	LEAN CLAY(CL)	31	19	12		
☒ 1 15.0	LEAN CLAY(CL)	29	18	11		

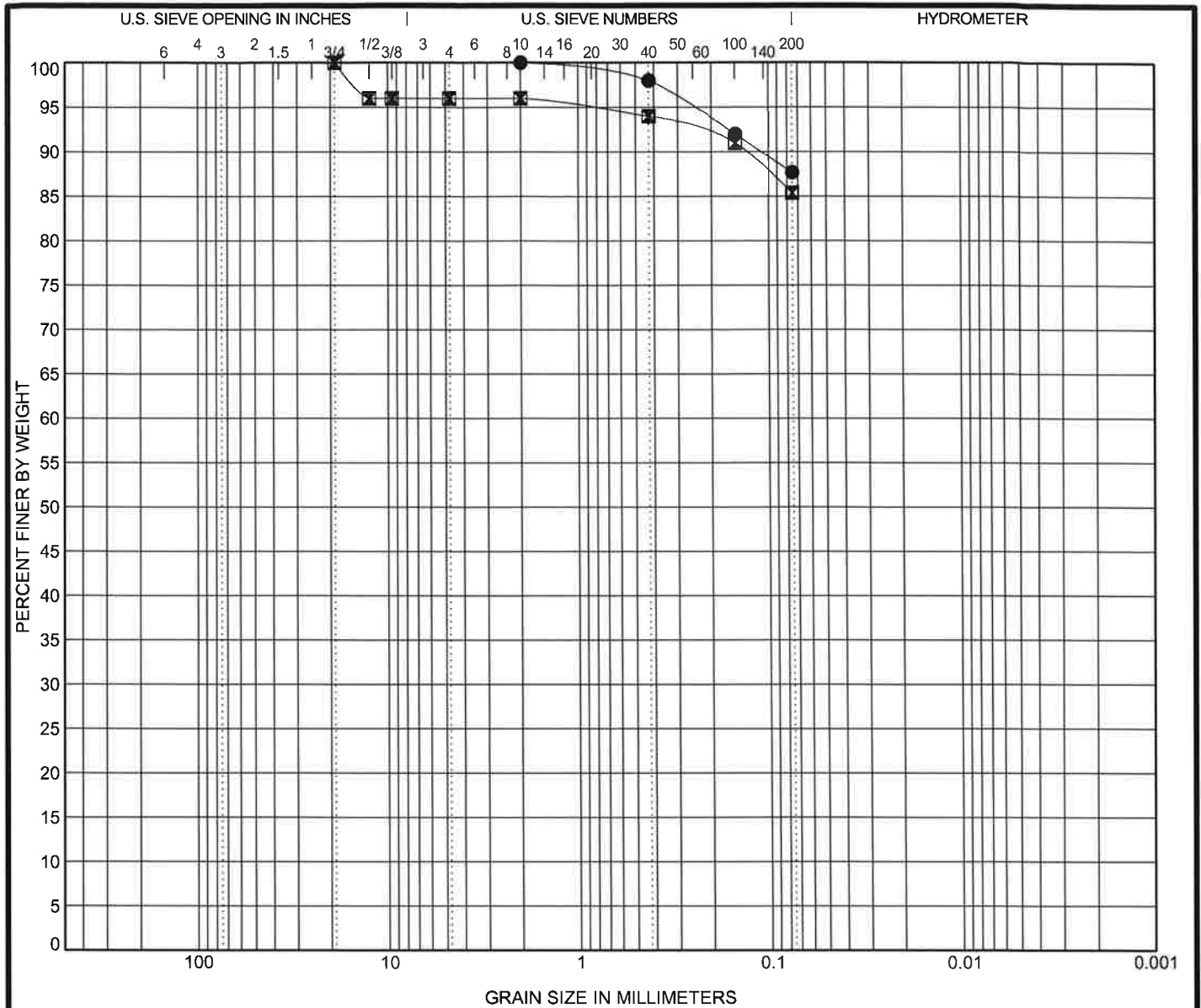
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 1 2.5	2				0.0	14.7	85.3	
☒ 1 15.0	2				0.0	7.7	92.3	

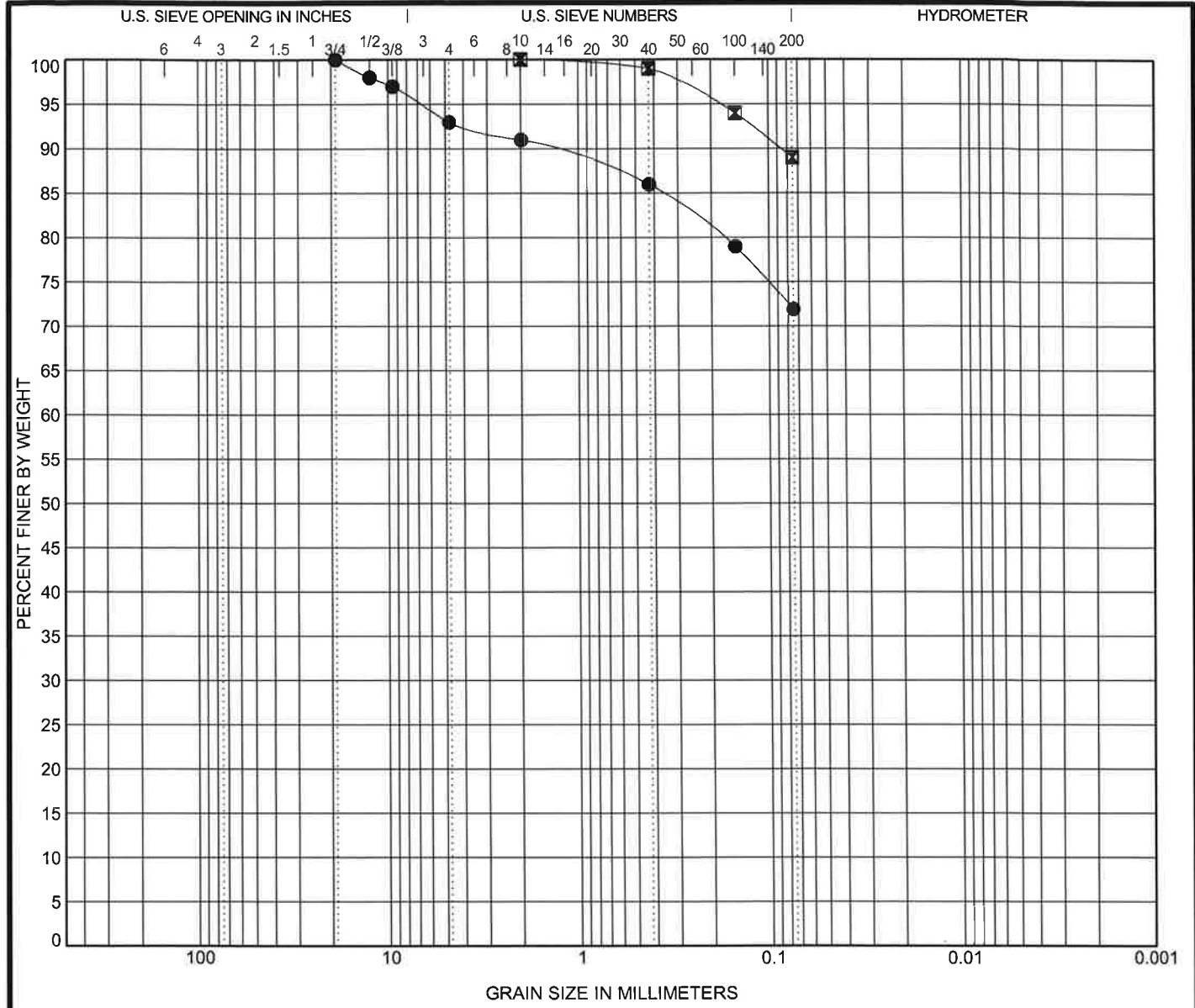


GRAIN SIZE DISTRIBUTION

Project: Griggs Reservoir
 Location: Alamogordo, New Mexico
 Number: 1-50902

U.S. GRAIN SIZE 1-50902 GRIGGS RESERVOIR.GPJ GEO TEST.GDT 9/28/15





COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● 3 10.0	LEAN CLAY with SAND(CL)	31	17	14		
☒ 3 20.0	LEAN CLAY(CL)	33	17	16		

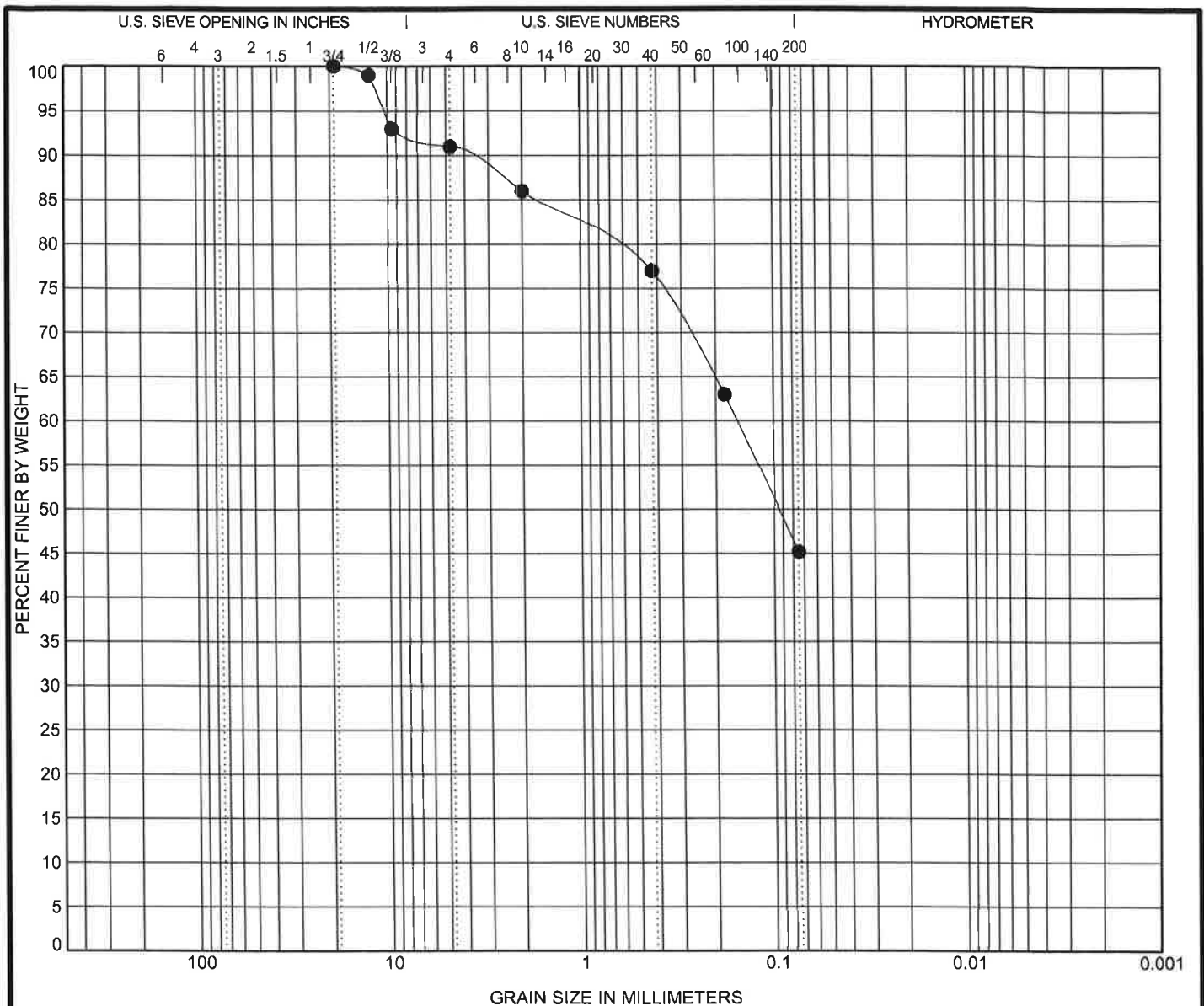
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 3 10.0	19				7.0	21.1	71.9	
☒ 3 20.0	2				0.0	11.0	89.0	



GRAIN SIZE DISTRIBUTION

Project: Griggs Reservoir
 Location: Alamogordo, New Mexico
 Number: 1-50902

US GRAIN SIZE 1-50902 GRIGGS RESERVOIR.GPJ GEO TEST GDT 9/28/15



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● Perc 2 2.0-5.0	CLAYEY SAND(SC)	46	21	25		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● Perc 2 2.0-5.0	19	0.155			9.0	45.8	45.2	

GRAIN SIZE DISTRIBUTION
 Project: Griggs Reservoir
 Location: Alamogordo, New Mexico
 Number: 1-50902



U.S. GRAIN SIZE 1-50902 GRIGGS RESERVOIR.GPJ GEO TEST.GDT 10/12/15