MAI-2012-07

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION
Metal and Nonmetal Mine Safety and Health

REPORT OF INVESTIGATION

Surface Nonmetal Mine
(Construction Sand and Gravel)

Fatal Machinery Accident
May 23, 2012

Meridian Aggregates Company, A Limited Partnership
Broken Bow Sand and Gravel
Eagletown, McCurtain County, Oklahoma
Mine ID No. 34-00460

Investigators

Laurence M. Dunlap
Supervisory Mine Safety and Health Inspector

Mark Shearer
Mine Safety and Health Inspector

Michael C. Superfesky, P.E.
Civil Engineer

Paul B. Shelby
Mine Safety and Health Specialist

Originating Office
Mine Safety and Health Administration
South Central District
1100 Commerce Street Room 462
Dallas, TX 75242-0499
Edward E. Lopez, District Manager

OVERVIEW

On May 23, 2012, John P. Scott, Foreman, age 36, was killed when the excavator he was operating overturned on a dike between two ponds. The ground beneath the excavator tracks failed and the excavator toppled into one of the ponds.

The accident occurred due to management's failure to maintain safe access to the area where the victim intended to operate the excavator. Water had eroded the sandy soil dike on which the excavator operated causing the dike to fail under the weight of the excavator.

GENERAL INFORMATION

Broken Bow Sand and Gravel, a surface operation owned and operated by Meridian Aggregates Company, A Limited Partnership is located near Eagletown, Oklahoma. The principal operating official is David R. Zimmerly, Plant Manager. The mine operates 10 hours per day Monday through Friday and 8 hours per day on Saturday. Total employment is 15 persons.

Excavators load material into haul trucks for delivery to an on-site wash plant where run-of-mine material is crushed, screened and washed. Sand and gravel products are delivered to regional customers for use in commercial and highway construction.

The Mine Safety and Health Administration (MSHA) completed the last regular inspection at this operation on February 14, 2012.

DESCRIPTION OF THE ACCIDENT

On the day of the accident, John P. Scott (victim) arrived at the mine at 6:00 a.m., his usual starting time. He opened the front gate, drove around the plant and reported to the office. At 6:30 a.m., Scott conducted a safety meeting with the miners and made work assignments for the day.

At 6:45 a.m., Scott met with David Zimmerly to discuss overburden removal, production, maintenance, and other issues at the mine including the need to breach an earthen dike between the "old pit" and cell #2 of the settling ponds. Scott rode with Zimmerly in his pickup truck to view the dike from a distance.

At 11:30 a.m., Jonathan Stuart, Plant Operator, observed Scott using an excavator to construct berms along the north side of the pit. About 11:40 a.m., Scott trammed the excavator to the south side of the "old pit" and worked on the berms near cell #3 of the settling ponds.

After completing the berms near cell #3, Scott trammed the excavator over an earthen barricade constructed to prevent access to the dike along the settling ponds. He continued to tram the excavator 147 feet north along the top of the dike before arriving at the area between the "old pit" and cell #2.

About 30 linear feet of the dike between the "old pit" and cell #2 had eroded on either side due to the rising and falling water levels in the two bodies of water. Once the excavator reached the erosion area, Scott steered it to his left and closer to the "old pit". As Scott maneuvered the excavator, the ground beneath the left tracks failed and the excavator overturned into the "old pit" landing on the cab side.

At 12:15 p.m., Jerry Plunk, Loader Operator, working at the main plant, heard Scott speak briefly on the radio. He looked toward where the excavator Scott was operating

should have been but did not see it. Plunk radioed Stuart and suggested that he check on Scott.

Stuart trammed a backhoe/loader from the office to the south side of the "old pit", arriving about 12:23 p.m. Stuart discovered the overturned excavator and radioed Trena Bailey, Office Manager, to call for emergency medical services (EMS). Bailey called EMS at 12:30 p.m.

Sergio Roman, Laborer; Kevin Overturf, Haul Truck Driver; Neal Dossett, Haul Truck Driver; and Stanley Scott, Loader Operator and brother of the victim, responded to the scene of the accident. They removed the back windshield of the excavator, removed Scott, and started performing cardiopulmonary resuscitation (CPR).

EMS arrived at 12:40 p.m. and transported Scott to a local hospital. He was transferred to another hospital in Tulsa, Oklahoma where he was pronounced dead at 4:56 p.m. The cause of death was attributed to drowning.

INVESTIGATION OF THE ACCIDENT

MSHA received notification of the accident at 12:30 p.m. on May 23, 2012, by a telephone call from Penni Carpenter, Area HR/Safety Representative, to MSHA's National Call Center. The National Call Center notified Elwood Burriss, Staff Assistant, and an investigation started the same day. MSHA issued an order under the provisions of 103(j) of the Mine Act to ensure the safety of the miners. This order was later modified to 103(k) of the Mine Act when the first Authorized Representative arrived at the mine.

MSHA's accident investigation team traveled to the mine, made a physical inspection of the accident scene, interviewed employees, and reviewed documents and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management and employees.

DISCUSSION

Location of the Accident

The accident occurred west of the main plant on an earthen dike separating the "old pit" and cell #2 of the settling ponds. The "old pit" had been mined about 15 years earlier. Water collected in the pit after mining ceased. The settling ponds consist of three cells formed by sandy earthen dikes in a pit mined about three years earlier. Water passed through the settling ponds to clarify it for use in the plant.

Earthen Dike

The earthen dike between the "old pit" and the settling ponds was 486 long and 15-18 feet wide between the berms on either side. It consisted of original ground with a 3-foot cap of overburden material containing fine sand, silts, and gravel. The outer slopes of the

dike near the accident location stood at angles of 32-40 degrees while the top portion of the berms stood at angles as large as 60 degrees. These angles are larger than the angle of repose for dry fine sand (27 degrees); therefore, the material in them was subject to sloughing and erosion as moisture content fluctuated.

The dike previously provided access to the west side of the settling ponds. However, there was now an earthen barricade at both ends of the dike to prevent access because a portion of the dike eroded between the "old pit" and cell #2 of the settling ponds. Scott trammed the excavator over the southern barricade to gain access to the dike.

A portion of the dike, about 30 feet long, eroded by the rising and falling water levels in both the "old pit" and cell #2 of the settling ponds. The erosion affected the berms on both sides of the dike, leaving vertical drops into the water and some undercutting of the remaining dike.

Scott intended to breach the dike, using the excavator, to drain the water from the "old pit" into cell #2 allowing reclamation of the "old pit." The eroded portion of the dike, identified for removal, was located about 15 feet north of where the accident occurred and only 3 feet wide.

Excavator

The excavator involved in the accident is a track-mounted Caterpillar 330CL approximately 37 feet long and 11 feet wide at the tracks. The excavator weighs 74,075 pounds and creates about 1000 pounds per square foot of static ground pressure. The excavator was not inspected for defects after the accident since the cab was severely damaged when recovered from the mud and water in the "old pit".

Weather

The weather on the day of the accident was clear with a slight breeze and a temperature about 85 degrees Fahrenheit. Weather was not considered a contributing factor to the accident.

Training and Experience

John P. Scott had over nine years of mining experience, all at this mine. A representative of MSHA's Educational Field Services staff conducted an in-depth review of the mine operator's training records. The training records for Scott were reviewed and found to be in compliance with MSHA training requirements.

Root Cause Analysis

Investigators conducted a root cause analysis and the following root cause identified.

***Root Cause*:** Management failed to maintain safe access to the area where the foreman intended to operate the excavator.

***Corrective Action*:** Safe access was provided by constructing an earthen ramp that was sufficient to support the weight of the excavator. Future excavator work will occur only after the work site has been inspected and safe access has been provided.

CONCLUSION

The accident occurred due to management's failure to maintain safe access to the area where the victim intended to operate the excavator. Water eroded the sandy soil dike on which the excavator operated causing the dike to fail under the weight of the excavator.

ENFORCEMENT ACTIONS

Issued to Meridian Aggregates Company, A Limited Partnership

Order No. 8680801 - Issued on May 23, 2012, under the provisions of section 103(j) of the Mine Act. An Authorized Representative modified this order to section 103(k) of the Mine Act upon arrival at the mine site:

An accident occurred at this mine on May 23, 2012 at 12:15 p.m. This order prohibits miners from entering the area where the accident occurred for the protection of the miners and preservation of evidence.

This order was terminated on June 6, 2012, when the conditions that contributed to the accident no longer existed.

Citation No. 6315014 - Issued on June 12, 2012, under the provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 56.11001:

A fatal accident occurred at this operation on May 23, 2012. A foreman was operating an excavator on a dike separating two ponds. The ground beneath the excavator tracks failed and the excavator toppled into one of the ponds. Safe access was not maintained to the area where the foreman intended to operate the excavator. The foreman engaged in aggravated conduct constituting more than ordinary negligence in that the ground beneath the excavator was sandy soil that had been eroded by water and he did not take measures to provide safe access. This violation was an unwarrantable failure to comply with a mandatory standard.

Approved: _____ Date: October 5, 2012
Edward E. Lopez
District Manager

LIST OF APPENDICES

APPENDIX A

PERSONS PARTICIPATING IN THE INVESTIGATION

Martin Marietta Materials

Penni Carpenter	HR/Safety Representative
William S. Gerbes	Production Manager - East Texas Area
Joseph L. Hewitt	HR/Safety Manager

Meridian Aggregates Company, A Limited Partnership

David R. Zimmerly	Plant Manager

Jackson Kelly

Dana M. Svendsen	Attorney

Mine Safety and Health Administration

Laurence M. Dunlap	Supervisory Mine Safety and Health Inspector
Mark Shearer	Mine Safety and Health Inspector
Michael C. Superfesky, P.E.	Civil Engineer
Paul B. Shelby	Mine Safety and Health Specialist

APPENDIX B

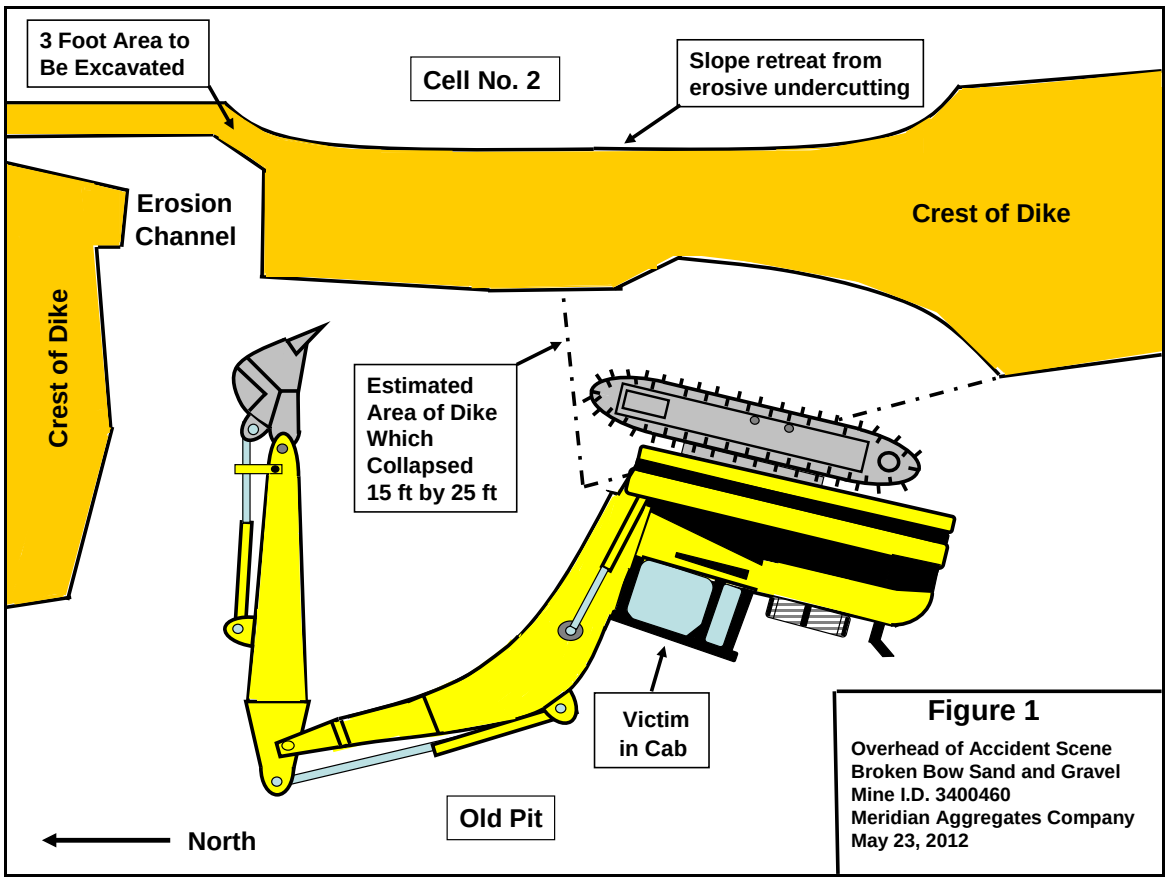


Figure 1

Overhead of Accident Scene
Broken Bow Sand and Gravel
Mine I.D. 3400460
Meridian Aggregates Company
May 23, 2012

APPENDIX C

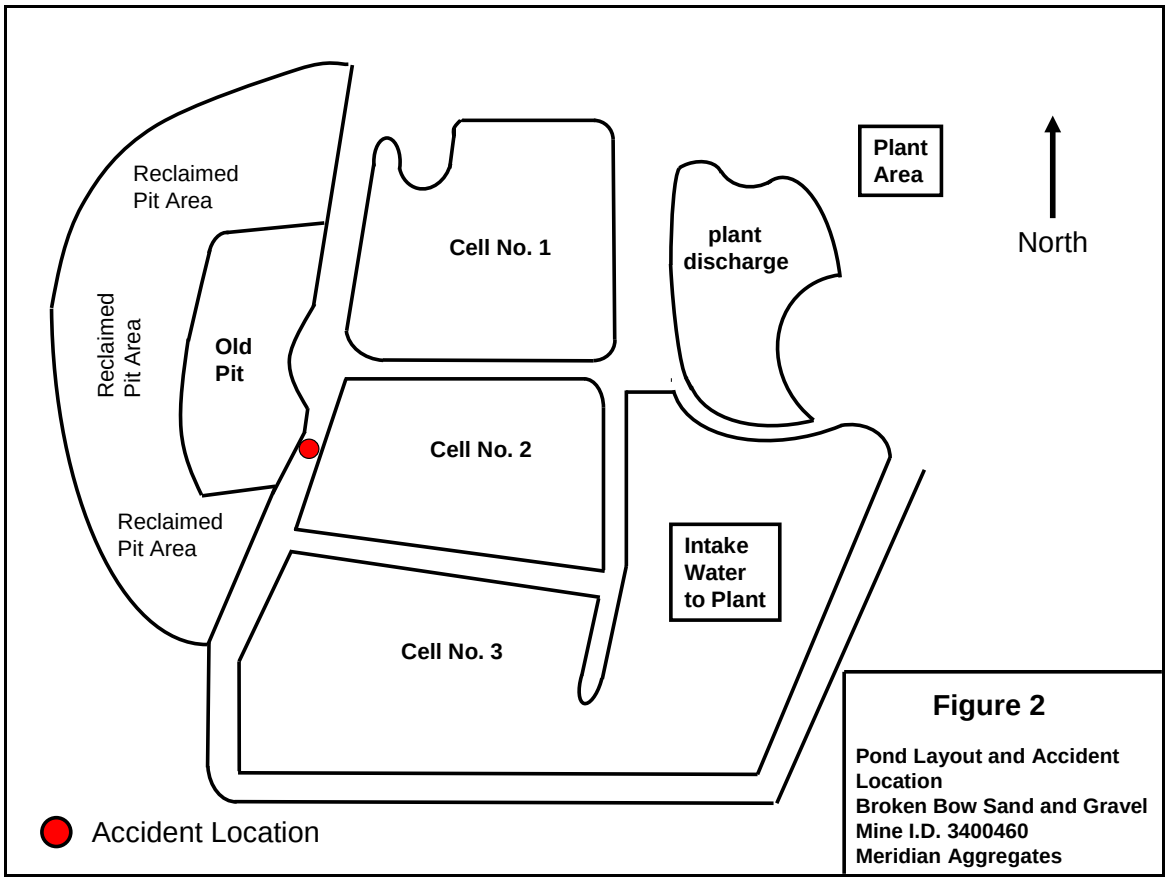
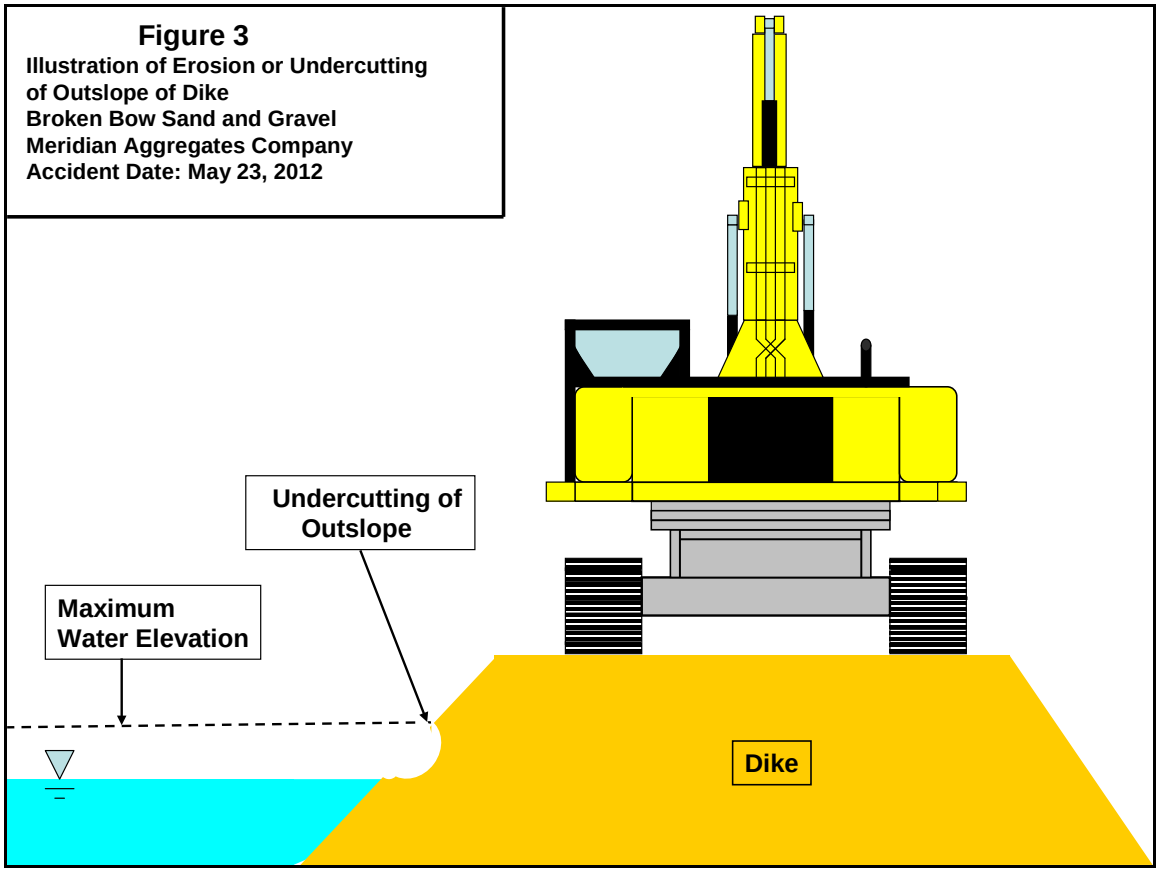


Figure 2

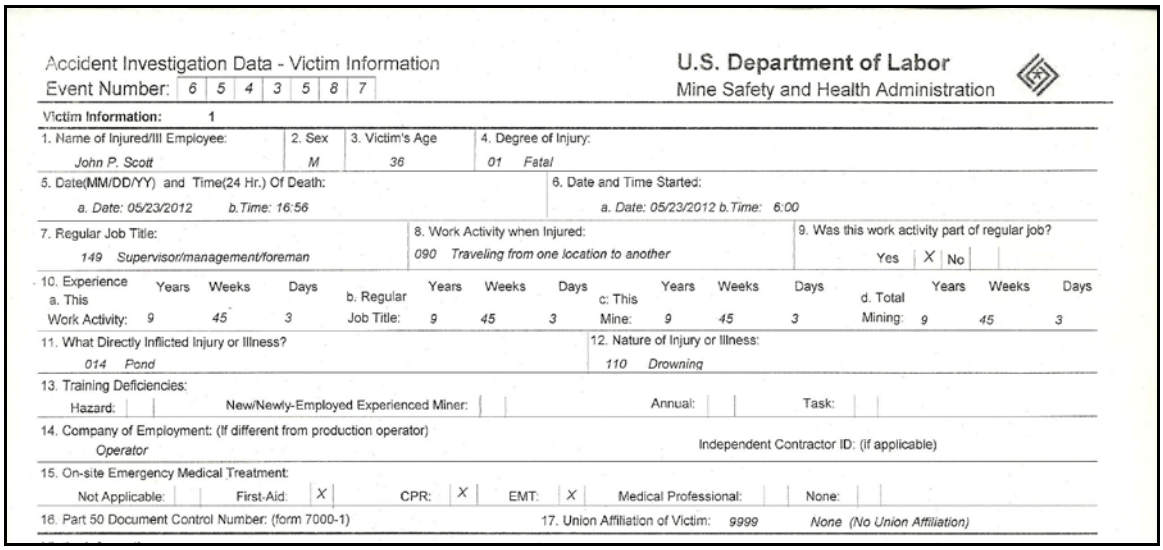
Pond Layout and Accident Location
Broken Bow Sand and Gravel
Mine I.D. 3400460
Meridian Aggregates

APPENDIX D

Figure 3
Illustration of Erosion or Undercutting of Outslope of Dike
Broken Bow Sand and Gravel
Meridian Aggregates Company
Accident Date: May 23, 2012



APPENDIX E



Accident Investigation Data - Victim Information

Event Number: 6 5 4 3 5 8 7

U.S. Department of Labor
Mine Safety and Health Administration

Victim Information: 1

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:
John P. Scott	M	36	01 Fatal

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:	6. Date and Time Started:
a. Date: 05/23/2012 b.Time: 16:56	a. Date: 05/23/2012 b.Time: 6:00

7. Regular Job Title:	8. Work Activity when Injured:	9. Was this work activity part of regular job?
149 Supervisor/management/foreman	090 Traveling from one location to another	Yes X No

10. Experience	Years	Weeks	Days
a. This Work Activity:	9	45	3
b. Regular Job Title:	9	45	3
c. This Mine:	9	45	3
d. Total Mining:	9	45	3

11. What Directly Inflicted Injury or Illness?	12. Nature of Injury or Illness:
014 Pond	110 Drowning

13. Training Deficiencies:
Hazard: | New/Newly-Employed Experienced Miner: | Annual: | Task:

14. Company of Employment: (If different from production operator)
Operator
Independent Contractor ID: (if applicable)

15. On-site Emergency Medical Treatment:
Not Applicable: | First-Aid: X | CPR: X | EMT: X | Medical Professional: | None:

16. Part 50 Document Control Number: (form 7000-1)
17. Union Affiliation of Victim: 9999 None (No Union Affiliation)