

RESOLUTION OF THE
RESOURCES AND DEVELOPMENT COMMITTEE
Of the 23rd Navajo Nation Council---Second Year 2016

AN ACTION
RELATING TO RESOURCES AND DEVELOPMENT; APPROVING THE ISSUANCE OF
A SAND AND GRAVEL LEASE TO BUREAU OF INDIAN AFFAIRS, NAVAJO
REGION, FOR 8.5 ACRES, MORE OR LESS, TO EXTRACT SAND AND GRAVEL
IN THE RED LAKE CHAPTER VICINITY FOR THE RED LAKE DAM
MODIFICATION, RED LAKE CHAPTER VICINITY, NAVAJO NATION (MCKINLEY
COUNTY, NEW MEXICO)

Section One. Findings

A. Pursuant to 2 N.N.C. Section 501 (B)(2), the Resources and Development Committee of the Navajo Nation Council has authority to give final approval of non-mineral leases and surface easements on Navajo Nation land and unrestricted (fee land).

B. The Bureau of Indian Affairs, Navajo Region, Safety of Dams., P.O. Box 1060, Gallup, New Mexico 87305, has requested a sand and gravel lease to use 8.5 acres, more or less, of Navajo Nation Trust Lands for sand and gravel lease area

C. The proposed gravel lease site is within Sections 35, Township 21 North, Range 21 West, McKinley County, New Mexico. The location of the site is more particularly described on the map marked Exhibit "2."

D. The Project Review Section with the Navajo Land Department has obtained the consent from the affected land users (i.e. grazing permittees). The consent document is attached hereto as Exhibit "3."

E. All environmental and archaeological studies and clearances are attached hereto and incorporated herein by this reference.

Section Two. Approval

A. Resources and Development Committee of the Navajo Nation Council hereby approves a Sand and Gravel Lease for the Bureau of Indian Affairs, Navajo Region for 8.5 acres, more or less, in the

Red Lake Chapter vicinity, Navajo Nation (McKinley County, New Mexico). The location is more particularly described on the survey map attached hereto as Exhibit "2".

B. The Resources and Development Committee of the Navajo Nation Council hereby approves the Bureau of Indian Affairs, Navajo Region Sand and Gravel Lease subject to, but not limited to the terms and conditions in the Lease attached hereto as Exhibit "1" and made a part hereof.

C. The Resources and Development Committee of the Navajo Nation Council hereby authorizes the President of the Navajo Nation to execute any and all documents necessary to implement the intent and purpose of this resolution.

CERTIFICATION

I, hereby, certify that the foregoing resolution was duly considered by the Resources and Development Committee of the 23rd Navajo Nation Council at a duly called meeting at Navajo Nation Council Chambers, Window Rock, Navajo Nation (Arizona), at which quorum was present and that same was passed by a vote of 3 in favor, 0 opposed, 1 abstained this 19th day of February, 2016.



Alton Joe Shepherd, Chairperson
Resources and Development Committee
Of the 23rd Navajo Nation Council

Motion: Honorable Leonard Pete
Second: Honorable Davis Filfred



EXHIBIT "A"

NAVAJO NATION SAND AND GRAVEL LEASE/PERMIT

THIS AGREEMENT for a Sand and Gravel Lease (Lease) is made and entered by and between the Navajo Nation whose address is at P. O. Box 7460, Window Rock, AZ 86515, and Bureau of Indian Affairs Navajo Region herein called the Lessee and whose address is at P.O. Box 1060, Gallup, NM 87305.

Definitions:

Sand & Gravel means: Borrow (Earth,) Sand and Natural or Processed Gravel

Department means the Navajo Nation Minerals Department.

Navajo Nation (Navajo Nation) means the Navajo Tribe of Indians.

Secretary means the Secretary of the U.S. Department of Interior or his/her designated representative.

Performance bond means a surety bond, collateral bond or self-bond or a combination Navajo Nation thereof, by which a lessee assures faithful performance of all the requirements this lease and mining and reclamation plan.

Reclamation means those actions taken to restore mined land as required to a post-mining land use approved by the Department.

Resources and Development Committee means the Resources and Development Committee of the Navajo Nation Council.

Slope means average inclination of a surface, measured from the horizontal, normally expressed as a unit of horizontal distance to vertical distance.

Stabilize means to control movement of soil, or areas of disturbed earth by modifying the geometry of the mass, or by otherwise modifying physical or chemical properties, such as by providing a protective surface coating.

Ton means 2,000 pounds.

Water table means the upper surface of a zone of saturation.

Lessee, Permittee & Operator means the lessee of the Sand and gravel lease/permit.

The Navajo Nation hereby grants Lessee a Lease right to extract sand and gravel from a borrow area consisting of Eight and one-half (8.5) acres in Sections 35, Township 21 North, Range 21 West, County, McKinley, NM. The area encompassed by the lease is 8.5 acres, more or less. The location and legal description are shown in Exhibit "B".

The Lessee shall use existing public roads and the Red Lake Dam Modification Project Temporary Construction Easement to access the lease areas.

1. The Lease shall be valid for a period of (3) years effective the date it is approved by the Secretary. This date shall be known as the Effective Date of the Lease.

2. Payments to the Navajo Nation by the Lessee:

(i) The Lessee shall pay an annual advance royalty in the amount of Two thousand and five hundred, twenty dollars (\$2,520) is due within ten (10) days of the Effective Date. The annual advance royalty payment shall be credited against production royalties only during the year for which the advance royalty has been paid.

(ii) A royalty at the rates of \$1.40 per ton for each ton of sand and gravel material removed and sold from the Lease premises. The royalty payment shall be made on a monthly basis within ten (10) days following the month for which the royalty is due.

(iii) If the material is not weighed, the Lessee shall measure the density of the material which shall be used to compute the tonnage.

3. Mining and Reclamation Plan: The Lessee shall abide by the mining and reclamation plan approved by the Navajo Nation and the U.S. Department of the Interior (DOI). The Lessee shall incorporate all recommendations and changes mandated by the Navajo Nation and the DOI in the mining and reclamation plan submitted by the Lessee. The Mining and Reclamation Plan is attached to this lease as Exhibit "C".

The majority of the revegetated species will be native to the area. The Lessee shall ensure that no poisonous and noxious vegetation are allowed to grow in the leased area. The Lessee shall ensure that the final post-mining topographic plan do not allow water to collect in the leased area. No water shall be discharged off the leased area without written authorization from the Navajo Nation and all federal agencies having jurisdiction.

4. Bond: The Lessee shall furnish a performance and reclamation bond for one hundred sixty-five thousand (\$165,000). The bond shall be in place before the start of pit operation. The Lessee shall maintain this bond at all times even if the Lease has expired or is terminated. The bond shall only be released with the written consent of the Navajo Nation. The bond may also be increased by the Navajo Nation. The bond shall not be released without the written approval of the Navajo Nation.

5. Water Use Permit: Lessee shall not use water for the Project unless the required Navajo Nation water use permit is issued by the Navajo Nation Department of Water Resources.

6. Records and Reports: The Lessee shall maintain accurate records of all sand and gravel material extracted, stockpiled, sold and removed from the Lease and the royalty due

and paid to the Navajo Nation. A copy of the records shall be provided to the DOI and the Navajo Nation Minerals Department (P.O. Box 1910, Window Rock, AZ: 86515) on a monthly basis within fifteen (15) days following the sale month. Monthly production reports must be filed even if there was no sale of material.

7. Method of Payments: All required payments under Section 2 of this Lease shall be made to the Navajo Nation Minerals Department, in lawful money of the United States.

8. Disposition of Minerals and Surface: The Navajo Nation expressly reserves the right to use, lease or otherwise dispose of the minerals not covered by this Lease and the surface of the lands embraced within this Lease under existing laws and laws hereinafter enacted. Lesser further reserves the right to grant additional leases for the extraction and removal of sand and gravel or for any other purposes from the lands described herein. Such disposition and use shall be subject to the prior rights of the Lessee herein to use of so much of the said surface as is necessary in the extraction and removal of sand and gravel described in accordance with this Lease.

9. Diligence: The Lessee shall exercise diligence in the conduct of its mining operation and the land described herein shall not be held for speculative purposes, but in good faith for the extraction of sand and gravel and shall begin operation within one (1) year of the Effective Date or the date of unfettered access to the pit sites, whichever is later.

10. No work shall commence until the mandatory mine health and safety training has been provided to the workers pursuant to 30 CFR, Part 46. The lessee must develop its own course instruction. The Lessee shall maintain the required training plan pursuant to the provisions of 30 CFR, Part 46.

11. The Lessee may develop, use and occupy the area under the Lease for the purpose of removing sand and gravel material. The Lessee may not develop, use or occupy the area under the Lease for any other purpose without the prior written approval of the Navajo Nation and the Secretary. Such approval of the Navajo Nation may be granted upon conditions or withheld at the sole discretion of the Navajo Nation. The Lessee may not develop, use or occupy the area under the permit for any unlawful purpose. Any unlawful use of the land within the Lease shall render the Lease void at the option of the Navajo Nation and/or the Secretary.

12. Sand and gravel material shall be used only for the reconstruction of Red Lake Dam.

13. In all activities conducted by the Lessee within the Navajo Nation, the Lessee shall abide by all laws and regulations of the Navajo Nation and of the United States, now in force and effect or as hereafter may come into force and effect, including but not limited to the following:

- a. Title 25, Code of Federal Regulations, Parts 162 and 169;

- b. Title 30, Code of Federal Regulations, Parts 46 and 56;
- c. The Navajo Nation Mine Safety Code 18 N.N.C. § 401;
- d. All applicable federal and Navajo Nation antiquities laws and regulations, with the following additional condition: In the event of a discovery, all operations in the immediate vicinity of the discovery must cease and the Navajo Nation Historic Preservation Department must be notified immediately. As used herein, "discovery" means any previously unidentified or incorrectly identified cultural resources, including but not limited to archaeological deposits, human remains, or location reportedly associated with Native American religious/traditional beliefs or practice;
- e. The Navajo Preference in Employment Act, 15 N.N.C. §§ 601 et seq., the Navajo Nation Business Opportunity Act, 5 N.N.C. §§ 201 et seq.; and
- f. The Navajo Nation Water Code, 22 N.N.C. § et seq., Lessee shall apply for and submit all applicable permits and information to the Navajo Nation Water Resources Department, or its successor.

14. The Lessee shall ensure that the air quality of the Navajo Nation is not unduly degraded during operations by violating federal and Navajo Nation's applicable laws and regulations.

15. The Lessee shall clear and keep clear the lands within the Lease area to the extent compatible with the purpose of the Lease, and shall dispose of all vegetation and other materials cut, uprooted, or otherwise accumulated during any surface disturbance activities.

16. The Lessee shall at all times during the term of the Lease and at the Lessee's sole cost and expense, maintain the land subject to the Lease and all improvements located thereon and make all necessary reasonable repairs.

17. The Lessee shall obtain prior written permission to cross an existing permit or lease areas, if any, from the appropriate parties.

18. The Lessee shall be responsible for and promptly pay all damages when they are sustained, from actions the Lessee causes.

19. The Lessee shall indemnify and hold harmless the Navajo Nation and the Secretary and their respective authorized agents, employees, land users and occupants against any liability for loss of life, personal injury and property damages arising from the development, use or occupancy or use of area under the Lease by the Lessee.

20. The Lessee shall not assign, convey, transfer or sublet in any manner whatsoever, the lease or any interest therein, or in or to any of the improvements on the land subject to the lease, without the prior written consent of the Navajo Nation and the Secretary. Any such

attempted assignment, conveyance or transfer without such prior written consent shall be void and of no effect. The consent of the Navajo Nation may be granted, granted upon conditions or withheld at the sole discretion of the Navajo Nation. However, the Lessee may retain a contractor for the project and require the contractor to fully comply with the terms and conditions of the lease.

21. The Navajo Nation may recommend termination of the Lease by DOI for violation of any of the terms and conditions stated herein.

22. At the termination of the Lease, the Lessee shall peaceably and without legal process deliver up the possession of the premises, in good condition, usual wear and tear excepted. Upon the written request from the Navajo Nation, the Lessee shall provide the Navajo, at the Lessee's sole cost and expense, with an environmental audit assessment of the premises at least thirty (30) days after completion and notification to the Navajo Nation that all required reclamation has been performed.

23. Holding over by the Lessee after the termination of the Lease shall not constitute a renewal or extension thereof or give the Lessee any rights hereunder or in to the land subject to the Lease or to any improvements located thereon.

24. The Navajo Nation and the Secretary shall have the right, at any reasonable time during the term of the permit, to enter upon the premises, or any part thereof, to inspect the same and any improvements located therein. The Navajo Nation and Secretary have further right to audit all payments due to the Navajo Nation.

25. By acceptance of the grant of Lease, the Lessee assures that the Contractor shall consent to the full territorial legislative, executive and judicial jurisdiction of the Navajo Nation, including but not limited to the jurisdiction to levy fines and to enter judgments for compensatory and punitive damages and injunctive relief, in connection with all activities conducted by the Lessee within the Navajo Nation or which have a proximate (legal) effect on persons or property within the Navajo Nation.

26. By acceptance of the grant of the Lease, the Lessee covenants and agrees that the Contractor will not contest or challenge the legislative, executive or judicial jurisdiction of the Navajo Nation on the basis that such jurisdiction is inconsistent with the status of the Navajo Nation as an Indian Navajo Nation, or that the Navajo Nation government is not a government of general jurisdiction, or that the Navajo Nation government does not possess full police power (i.e., the power to legislate and regulate for the general health and welfare) over all lands, persons and activities within its territorial boundaries, or on any other basis not generally applicable to a similar challenge to the jurisdiction of a state government. Nothing contained in this provision shall be construed to negate or impair federal responsibilities with respect to the land subject to the Lease or to the Navajo Nation.

27. Any action or proceeding brought by the Lessee against the Navajo Nation in connection with or arising out of the terms and conditions of the Lease shall be brought only

in the Courts of the Navajo Nation, and no such action or proceeding shall be brought by the Lessee against the Navajo Nation in any court of any state.

28. Nothing contained herein shall be interpreted as constituting a waiver, express or implied, of the sovereign immunity of the Navajo Nation.

29. Except as prohibited by applicable federal law, the law of the Navajo Nation shall govern the performance and enforcement of the terms and conditions contained herein.

30. The terms and conditions contained herein shall extend to and be binding upon the successors, heirs, assigns, executors, administrators, employees and agents, including all contractors and subcontractors, of the Lessee, and the term "Lessee" whenever used herein, shall be deemed to include all such successors, heirs, assigns, executors, administrators, employees and agents.

31. There is expressly reserved to the Navajo Nation full territorial legislative, executive and judicial jurisdiction over the area under the Lease and all lands burdened by the Lease, including without limitation over all persons, including the public, and all activities conducted or otherwise occurring within the area under the Lease and all lands burdened by the Lease shall be and forever remain Navajo Indian Country for purposes of Navajo Nation jurisdiction.

32. The Lessee is an integral part of the United States government which self-insures, and thus is backed by the full faith and credit of the United States. The Lessee recognizes its liability for any damages whether personal, property or to the natural resources of the Navajo Nation and will pay any damages that may be determined.

33. Signs shall be permanently posted to keep people off the submerged area in order to prevent accidental drowning.

34. The Lessee shall have an emergency evacuation plan in place and all workers must be thoroughly familiar with the plan. The Emergency Evacuation Plan is attached to this lease as Exhibit 'D'.

THE NAVAJO NATION

Date

By _____
President
The Navajo Nation

Date

By _____



BUREAU OF INDIAN AFFAIRS
NAVAJO REGION

RED LAKE DAM MODIFICATIONS
BUREAU OF INDIAN AFFAIRS - SAFETY OF DAM PROGRAM
NAVAJO REGION, AZ

20 DOWNSLOPES
AROUND PERIMETER OF RED LAKE DAM

RED LAKE DAM MODIFICATIONS
BUREAU OF INDIAN AFFAIRS - SAFETY OF DAM PROGRAM
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BUREAU OF INDIAN AFFAIRS - SAFETY OF DAM PROGRAM
NAVAJO REGION, AZ

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704	1815076.35
705	1815151.88
706	1815227.43
707	1815302.97
708	1815378.54
709	1815454.12
710	1815529.68

Table with 2 columns: Point #, Elevation

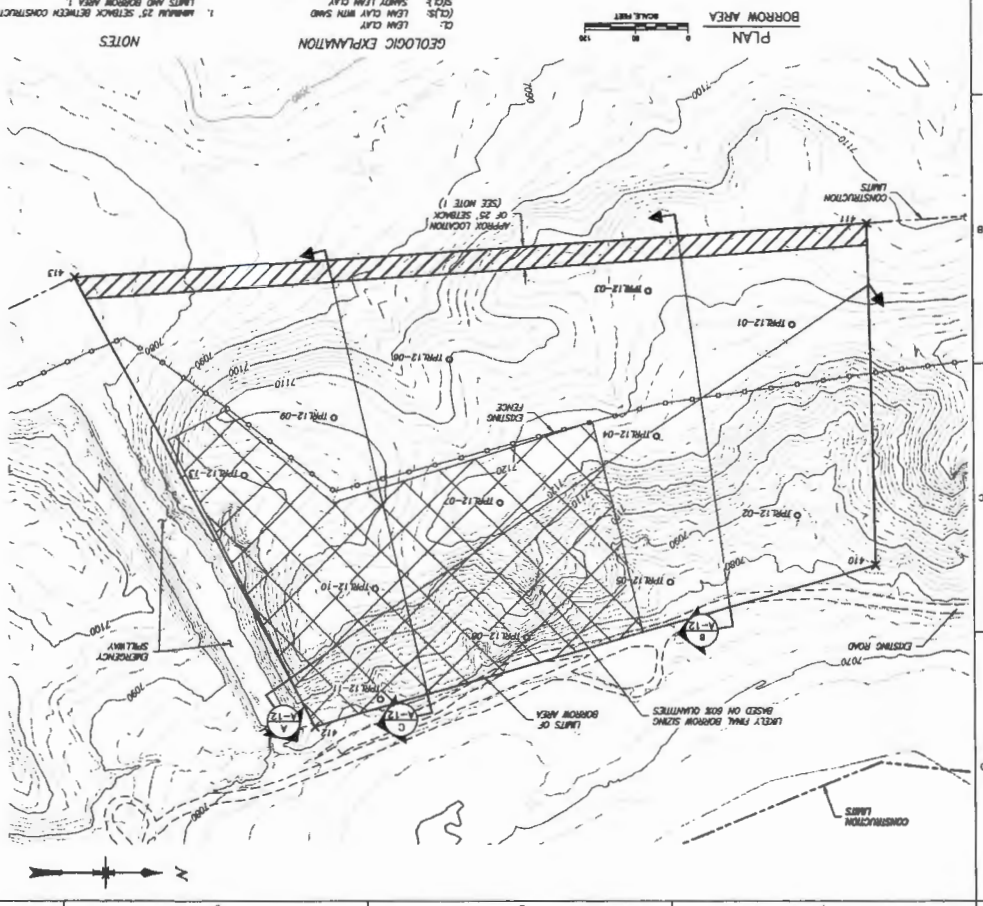
Point #	Elevation
711	1815605.25
712	1815680.81
713	1815756.35
714	1815831.88
715	1815907.43
716	1815982.97
717	1816058.54
718	1816134.12
719	1816209.68
720	1816285.25

Table with 2 columns: Point #, Elevation

Point #	Elevation
721	1816360.81
722	1816436.35
723	1816511.88
724	1816587.43
725	1816662.97
726	1816738.54
727	1816814.12
728	1816889.68
729	1816965.25
730	1817040.81

Table with 2 columns: Point #, Elevation

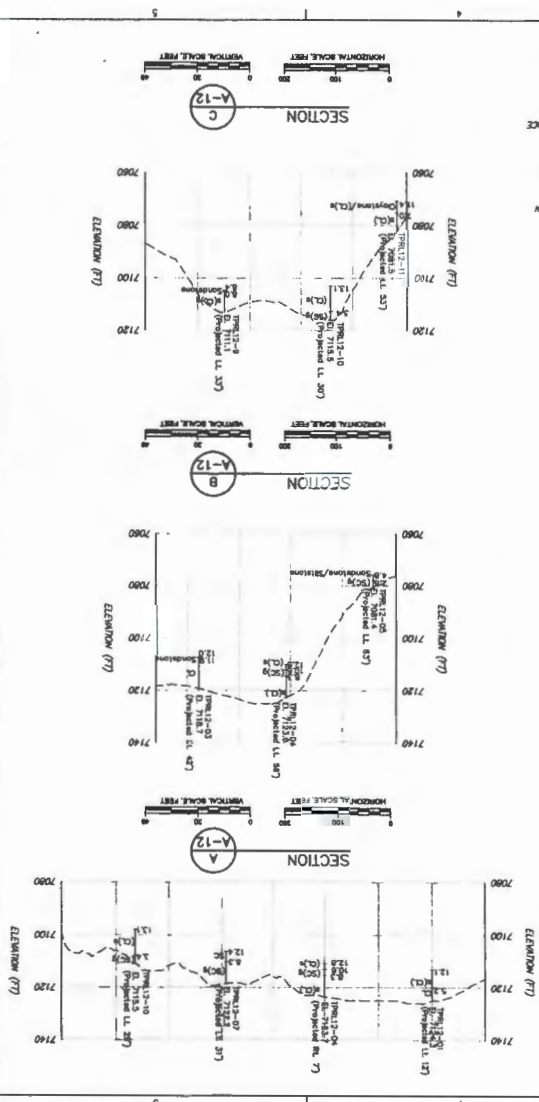
Point #	Elevation
731	1817116.35
732	1817191.88
733	



- NOTES**
1. BORROW AREA A-12 FOR CONSTRUCTION LIMITS
 2. SEE DRAWING A-5 FOR CONSTRUCTION LIMITS
 3. RECLAIM BORROW AREA FOR SPECIFICATIONS
 4. SEE DESIGN SUMMARY REPORT FOR SUBSURFACE INFORMATION

GEOLOGIC EXPLANATION

CL: LEAN CLAY
SC: CLAYEY SAND WITH GRAVEL
SL: SWIFT LEAN CLAY WITH GRAVEL
SC2: SWIFT LEAN CLAY
CL2: LEAN CLAY WITH SAND



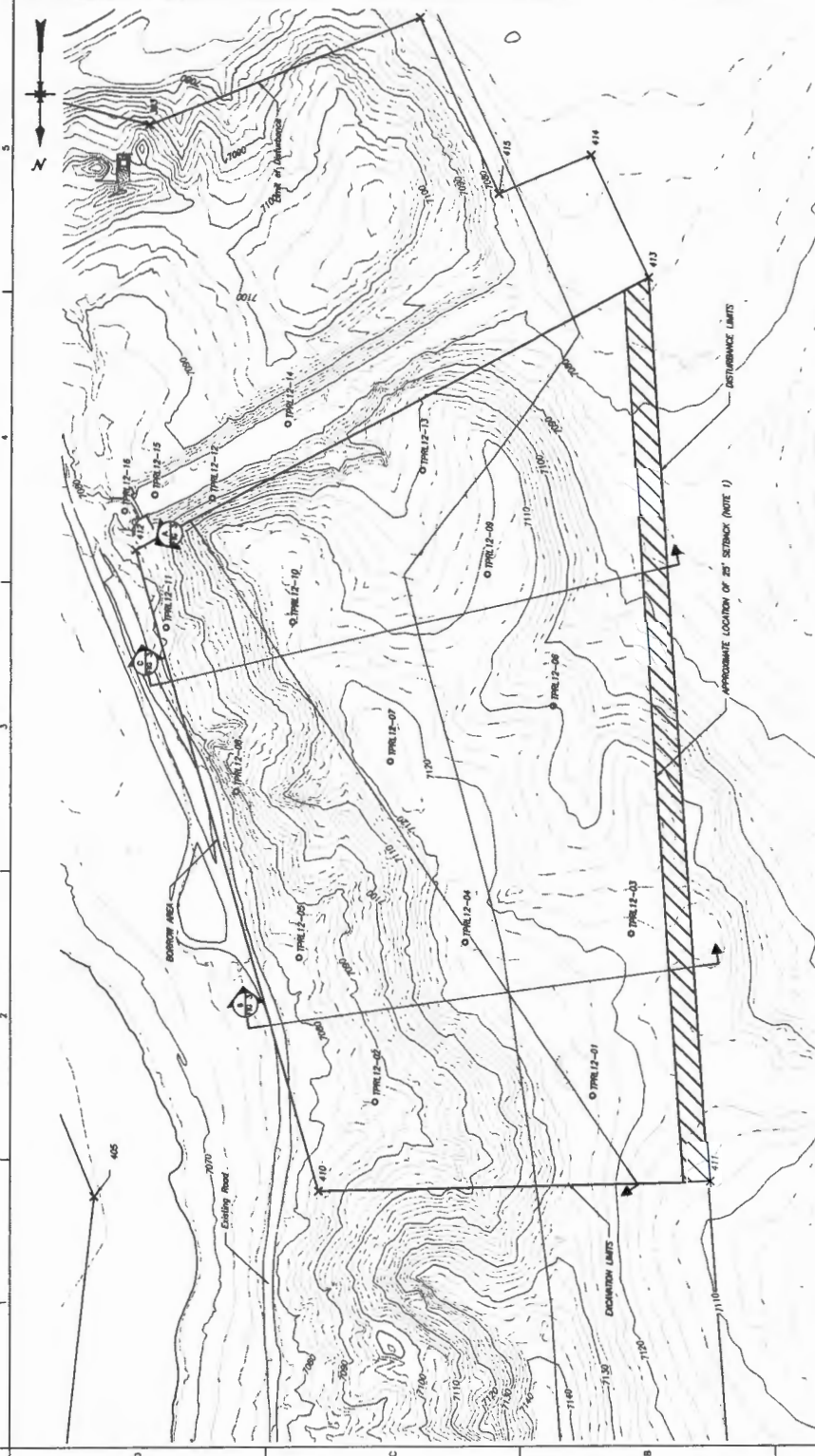
Drawing A-12
BORROW AREA -
PLAN AND SECTIONS

BORROW AREA
PLAN AND SECTIONS

RED LAKE DAM MODIFICATIONS
PLAN AND SECTIONS

GEI
Geotechnical Engineering Inc.
10000 Highway 100, Suite 100
Edmonton, Alberta T6E 4E7
403-440-1100

P:\1114109 - RED LAKE DAM\PROJECTS\SWR AND ORREL\FIGURE 2 - SEE PLATING AND 2015 REVISIONS



LEGEND

- Limit of Disturbance
- Borrow Area
- ▨ Borrow Area and Limit of Disturbance Control Point
- TPRL 12-03 Test Pit, United States Bureau of Reclamation, May and June 2012
- ▨ 25' Station Location Between Limit of Disturbance and Borrow Area Excavation

NOTES

1. Minimum 25' setback between Limits of Disturbance and excavation for Borrow Area.
2. See Figure 1 for Survey Control Points.

25' Station Location Between Limit of Disturbance and Borrow Area Excavation

APPROXIMATE LOCATION OF 25' SETBACK (NOTE 1)

DISTURBANCE LIMITS

EXCAVATION LIMITS

RED LAKE DAM MODIFICATIONS
LIMITS OF BORROW AREAS - SURVEY AND DISTANCE
FOR THE BORROW AREAS, SEE THE BORROW AREAS

BORROW AREA LOCATION PLAN



BUREAU OF RECLAMATION
UNITED STATES DEPARTMENT OF THE INTERIOR
WATER RESOURCES DIVISION

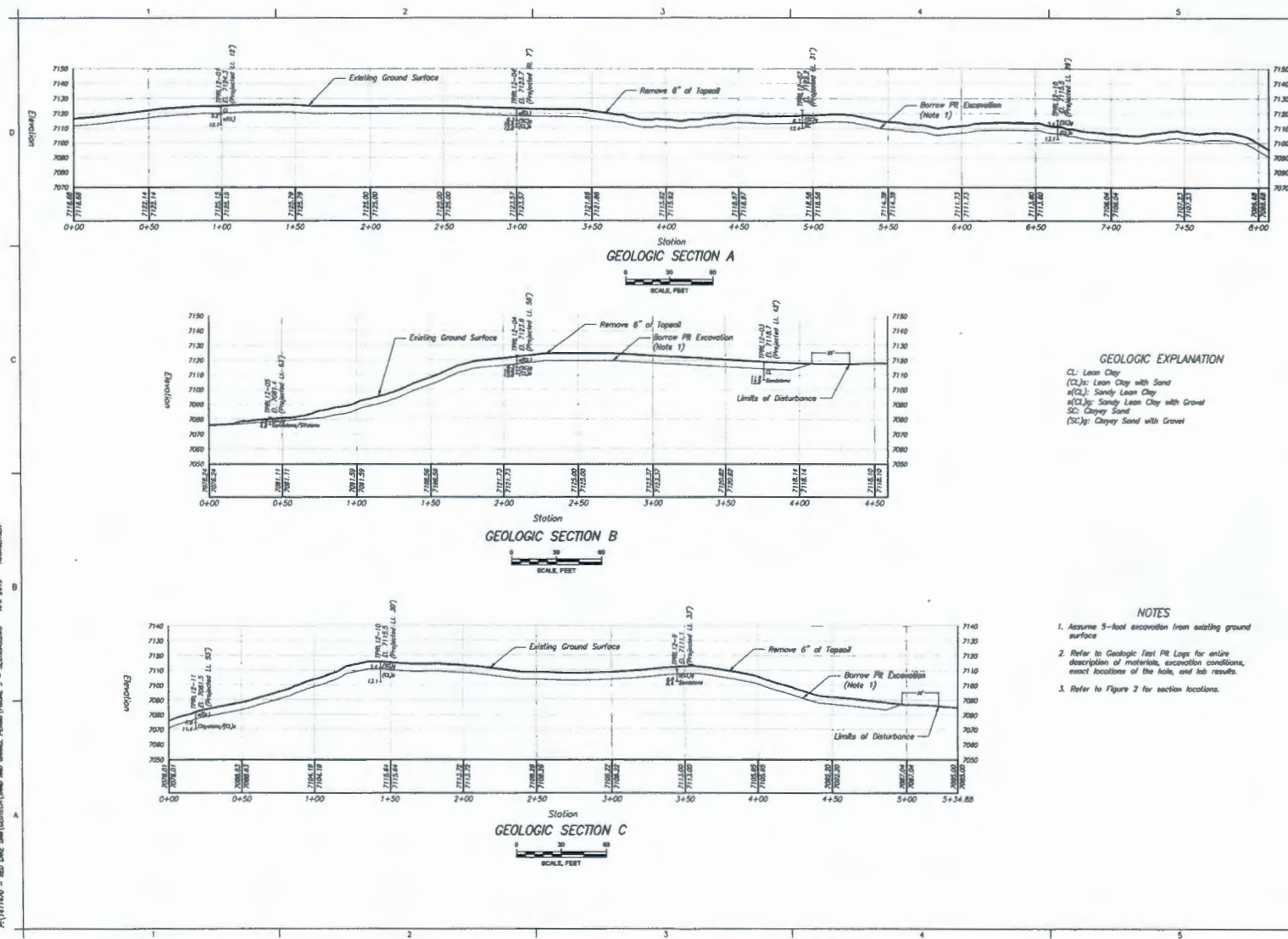


GEI
Engineering & Environmental
10000 13th Avenue, Suite 200
Boulder, CO 80501
303.440.1234

BORROW AREA
LOCATION PLAN

FIGURE 2
SHEET 1 OF 1

PL 111470 - RED LAKE DAM CORROSION AND CRACK MONITORING (PAGE 3 - GEOLOGICAL) APR 2013 UNCLASSIFIED



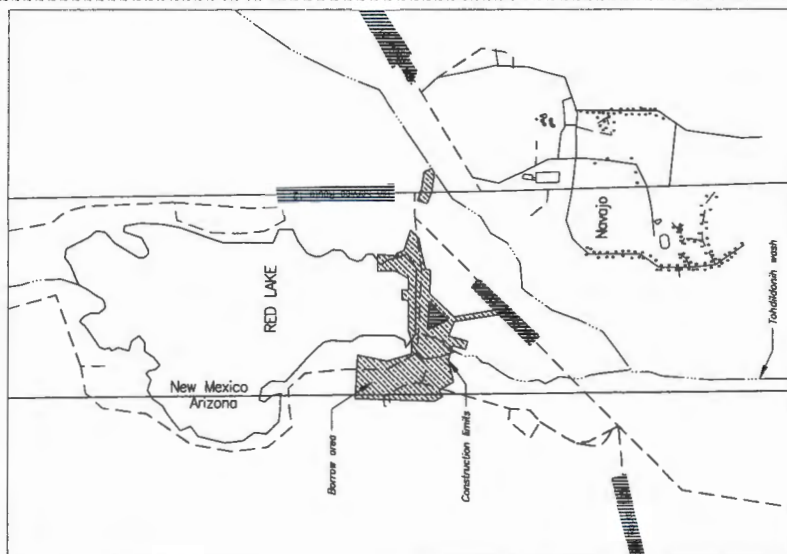
RED LAKE DAM CORROSION AND CRACK MONITORING (PAGE 3 - GEOLOGICAL) APR 2013 UNCLASSIFIED

BORROW AREA GEOLOGIC SECTIONS

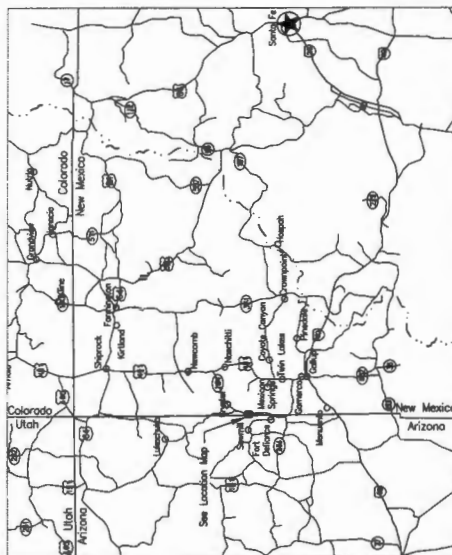
APPROVED
 PREPARED
 REVIEWED
 DESIGNED
 DRAWN

BORROW AREA
 GEOLOGIC SECTIONS

FIGURE 3
 SHEET 1 OF 1







[illegible]

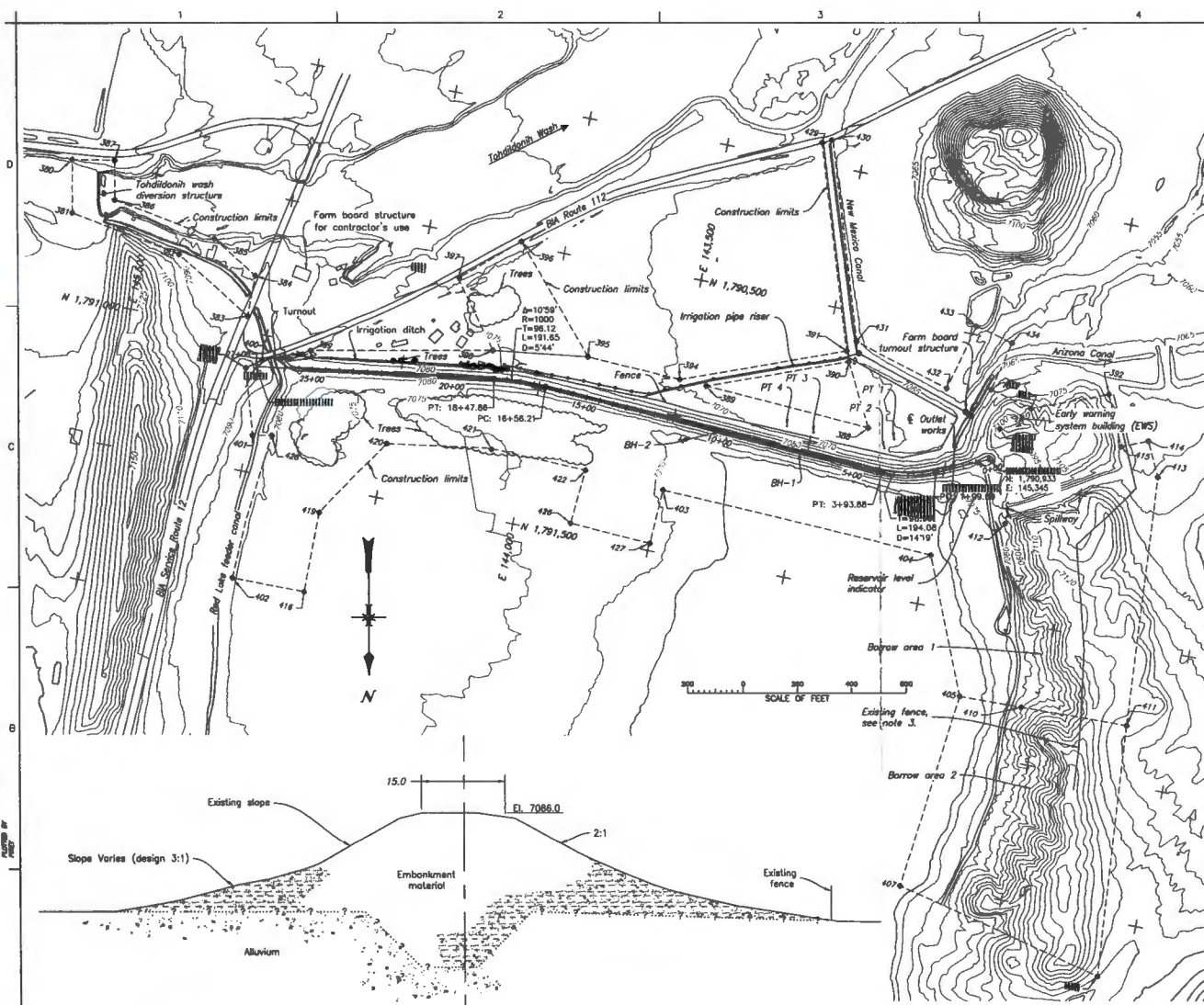
LOCATION MAP



VICINITY MAP

- ## LEGEND

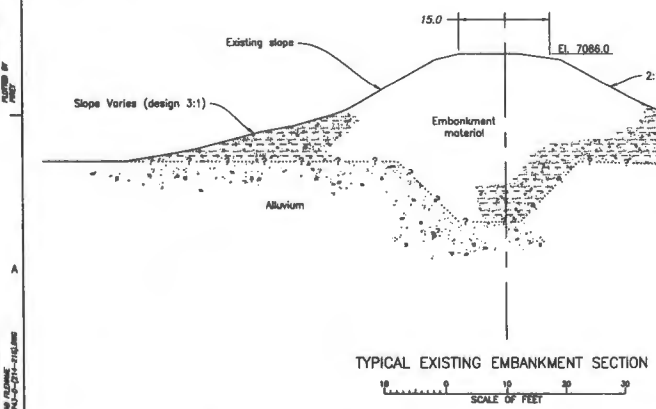
- | | |
|---|--------------------|
|  | INTERSTATE HIGHWAY |
|  | STATE HIGHWAY |
|  | DIRT ROAD |
|  | CONTINENTAL DIVIDE |
|  | WASH/IRRIGATION |
|  | STATE CAPITAL |



Construction Easement		
Point #	Northing	Easting
380	1790506.66	145803.54
381	1790697.50	145767.14
382	1790772.39	145368.48
383	1790943.78	145083.03
384	1790794.80	145083.03
385	1790691.92	145254.37
386	1790621.56	145628.92
387	1790479.94	145655.93
388	1790906.47	142796.91
389	1790873.71	143407.85
390	1790684.27	142912.72
391	1790647.32	142928.01
392	1790519.81	141863.45
393	1790725.25	142234.85
394	1790868.45	143506.03
395	1790850.39	143842.86
396	1790487.76	144162.38
397	1790660.21	144361.33
398	1790895.36	144190.73
399	1791021.86	144831.39
400	1791089.91	145001.02
401	1791365.22	144963.65
402	1791887.85	144957.76
403	1791274.16	143488.67
404	1791317.33	142486.25
405	1791801.27	142287.35
407	1792518.81	142365.90
408	1792703.07	141603.66
418	1791887.85	144689.89
419	1791593.83	144689.89
420	1791300.06	144499.72
421	1791248.00	144128.00
422	1791256.64	143773.80
426	1791455.83	143791.07
427	1791472.97	143497.30
428	1791351.86	144914.60
429	1789923.24	143160.88
430	1789907.26	143125.67
431	1790606.72	142898.16
432	1790712.27	142546.68
433	1790462.66	142485.87
434	1790504.83	142348.14
435	1790685.91	142389.23

Borrow Area 1		
Point #	Northing	Easting
410	1791796.69	142062.26
411	1791788.43	141670.41
412	1791152.54	142247.21
413	1790880.01	141732.92
414	1790756.62	141791.19
415	1790793.70	141883.66

Construction Control Point			
Point #	Northing	Easting	Description
98	1791129.93	145053.84	cp-1
99	1790818.66	142331.73	cp-2



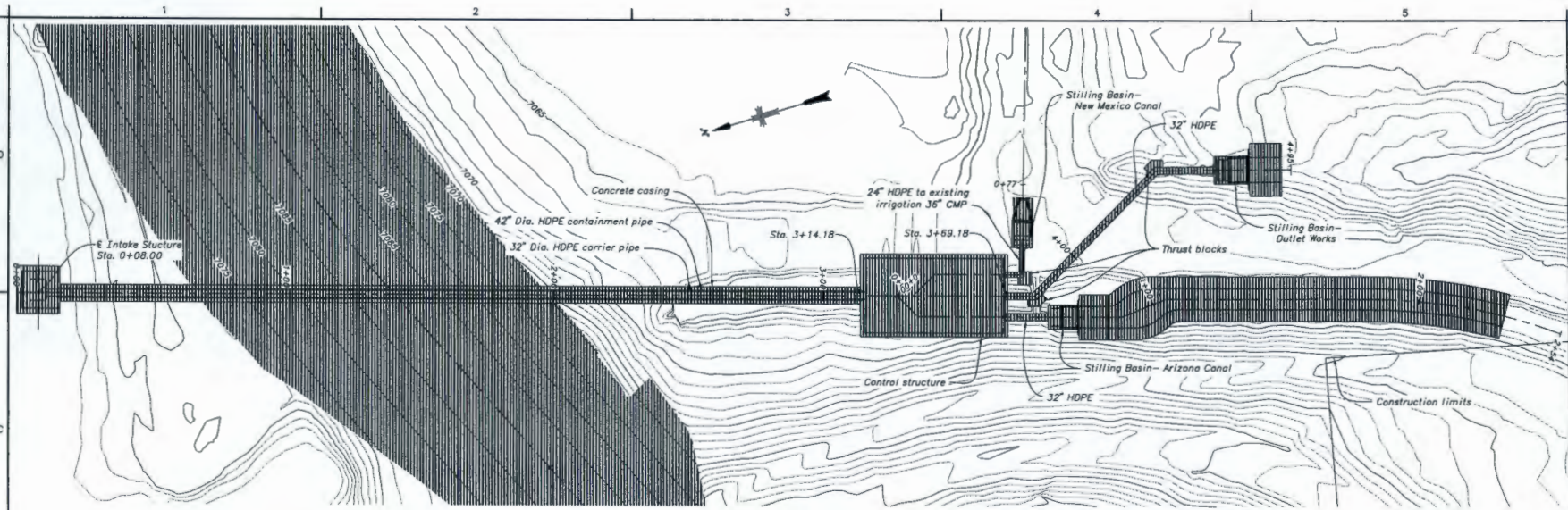
NOTES

1. The 1927 North American DATUM (NAD 27) and the 1929 National Geodetic Vertical Datum (NGVD 29) are the horizontal and vertical datum utilized on all drawings. All topography, coordinates, and elevations shown are in grid New Mexico State Plane Coordinate System, New Mexico West Zone, U.S. Survey Feet. The topography was generated from aerial photography dated November 2006. Combined Scale Factor = 0.9997217 Grid to Ground = 1.0002783775
2. Restricted areas will be staked/fenced in field as directed by COR.
3. Existing fencing in the borrow area shall be removed as required. Fence shall be reinstalled following construction activities.
4. Contour intervals at 5.0 feet.

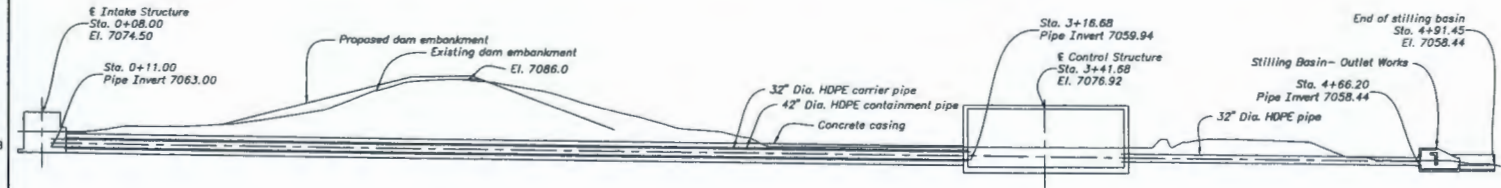
RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY
U.S. Department of the Interior
BUREAU OF RECLAMATION - SAFETY OF DAMS PROGRAM
RED LAKE DAM MODIFICATIONS
DAM MODIFICATIONS
EXISTING PLAN AND SECTION

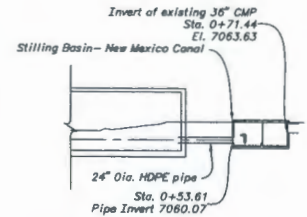
DAM MODIFICATIONS
EXISTING PLAN AND SECTION
1743-D-214
SHEET 1 OF 1



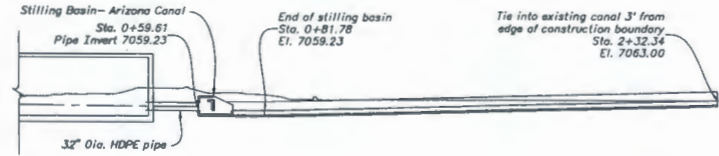
PLAN
SCALE OF FEET



PROFILE
SCALE OF FEET



NEW MEXICO CANAL PROFILE
SCALE OF FEET



ARIZONA CANAL PROFILE
SCALE OF FEET

NOTES

1. For general concrete outline notes, see 40-D-7012.
2. For general notes and minimum requirements for detailing reinforcement, see 40-D-6263 (Table 4-60).
3. Design of reinforcement is based on reinforcing steel having a minimum specified yield strength of 60,000 psi and having a minimum compressive strength of 4,000 psi @ 28 days.
4. * Dimension measured normal to slope.
5. Reinforcement required but not shown.
6. Waterstops and embedded metalwork not shown.
7. Chamfer all exposed corners $\frac{1}{4}$ " unless otherwise shown.
8. Anchor bars not shown, see (XXXX).

REFERENCE DRAWINGS

DAM: GENERAL PLAN AND SECTIONS 1743-D-217

ALWAYS THINK SAFETY
Use Only
RED-TAKE DAM MODIFICATIONS
Not for Distribution

DESIGNED
DRAWN
CHECKED
FIELD REVIEW
APPROVED

1743-D-243
SHEET 1 OF 1

[illegible]

NOT FOR DISTRIBUTION

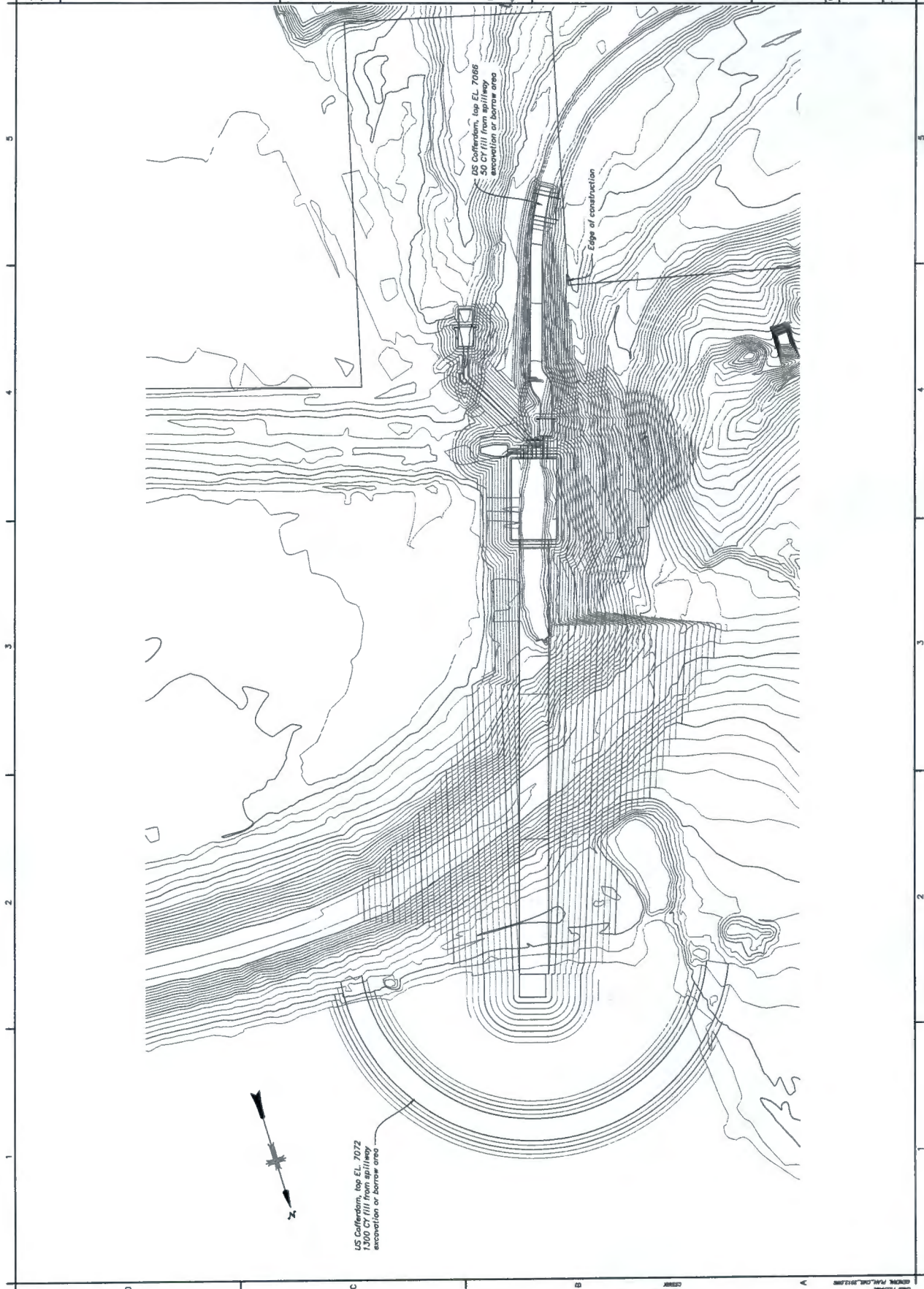
RED TAPE DATA MODIFICATIONS

BUREAU OF INDIAN AFFAIRS - MINNEAPOLIS, MINN.

USE ONLY

SAFETY THINK ALWAYS

RECLAMATION

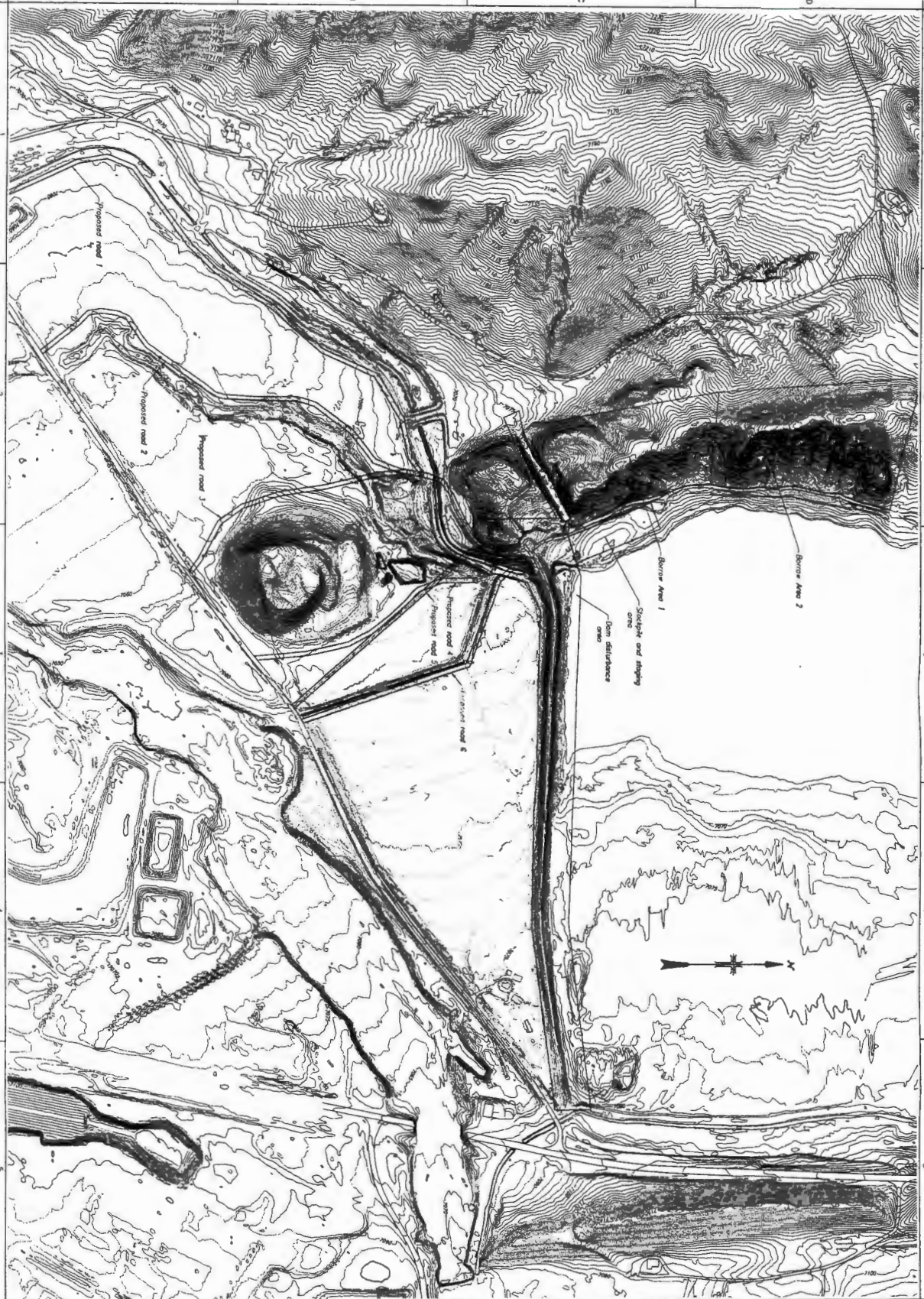


US Cofferdam, top EL. 7072
1300 CY fill from spillway
excavation or borrow area ---

OGD SYSTEM
 APPROX 14.15L
 OGD FLEWET
 GENERAL PLAN, 2012.DWG
 2
 CHECK
 PLOTTED BY
 PRINTED 13.08.12 12:40
 DWT AND DWT PLAN

CAD SYSTEM
 ARCADIS 10 12
 CAD FILENAME
 RED_LAKE_CADPOLAR 0-11-11.BMC

DATE AND TIME PLOTTED
 APRIL 13, 2011 12:48
 PLOTTED BY
 RICHARD



⊕ ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
 BUREAU OF RECLAMATION
 BUREAU OF RIVER AFFAIRS
 HAROLD RECON-HAROLD RIVER RECREATION, NEW MEXICO
RED LAKE DAM AND RESERVOIR
 PROPOSED ROADS
 GENERAL PLAN

200 100 0 100 200
 SCALE OF FEET

RECLAMATION
 Mapping Unit of the

PRJ-SIA-SEC
 SHEET 1 OF 1

DETAILS (UP TO THREE
 LINES)

DATE AND TIME PLOTTED
 APRIL 13, 2011 12:48
 PLOTTED BY
 RICHARD

Red Lake Dam Modification Project**Mining and Reclamation Plan**

This plan covers two locations within the project, Borrow Area 1 and Spillway Borrow Area, which are sufficiently dissimilar as to require two separate mining and reclamation plans within this plan.

Borrow Area 1

- a. The pit layout is depicted on Figure 1, Site Plan, *Red Lake Dam Modifications*. This proposed borrow pit is anticipated to be used to produce approximately 18,000 tons of Zones 1 clayey material. Most of the materials needed to complete the modifications to the Red Lake Dam will be material excavated from the existing dam, stockpiled, and then re-embanked as the dam is reconstructed. The material from Borrow Area 1 will be used to replace unusable materials excavated from the old dam. The unusable material from the dam will be buried in the pit after borrowing is complete. All activity will take place beginning in 2015 and ending in 2017.
- b. Pit configuration – The pit is an irregular polygon totaling 8.5 acres which will be mined to an average depth of 5 feet.
- c. Estimated reserve and annual tonnage to be extracted - The estimated reserve is considered to be the 18,000 tons of Zones 1 material required to complete the modifications. No future or commercial use is planned for this borrow pit.
- d. Highwall slope stability - Borrow pit walls will be 3(Horizontal):1(Vertical) slope or flatter. Five foot benches will be incorporated into the pit walls if deeper cuts are required. The wall configuration will be designed as the pit progresses with safety and accessibility being the primary criteria.
- e. Spoil and stockpile slope stability - Spoil piles and stockpiles will be configured in a manner that will maximize safety and minimize potential slope failure and/or erosion. The top soil will be spread in windrows for use in reclamation of the pit.
- f. Cross section maps of the pit – Attached: Drawing A-12, Borrow Area – Plan and Sections, *Red Lake Dam Modifications*.
- g. Describe method of mining and list all equipment; -
 - a. The exposed Zones 1 materials will be selectively mined under the direction of the on-site inspector.
 - b. The average mined thickness over the pit's area will be approximately 5 feet. The mined thickness will vary depending on the quality and type of material available.
 - c. In order to selectively mine adequate material, the cuts will be deeper in some locations and thinner in others.
 - d. All initial stripping will use a motor grader to windrow the 0.5 feet of top soil then wheel tractor-scrapers pushed by a track-type tractor will scrape up

windrows and spread the topsoil adjacent to the north-easterly boundary of the pit.

- e. Next, any overburden will be scraped up and deposited in a scraper spread adjacent to the borrow pit next to the topsoil stockpile.
- f. The suitable embankment materials will be then be excavated and hauled to the dam for placement.
- g. All inferior materials will be spread over the already mined areas and graded into a reasonably level surface.
- h. Equipment:
 - i. Three wheel-tractor scrapers
 - ii. Grader
 - iii. Track-type tractor
- i. Personnel –
 - i. Borrow operations supervisor
 - ii. Grade checker
 - iii. Three wheel-tractor scraper operators
 - iv. Grader operator
 - v. Track-type tractor operator
- h. Provide drilling and blasting plans - There will be no drilling or blasting in this borrow pit.
- i. Describe the geology, hydrology, and the drainage control plan;
 - a. Geology – This borrow pit is situated in old valley fill material of Pleistocene age. Old valley fill occurs as remnant caps and mounds of a once extensive and thick alluvial and eolian deposit that was laid down over much of the area at a level of erosion higher than the present erosion surface. This material is in general coarser grained than the nearby alluvium and can contain abundant sand and gravel with minor amounts of cobble to boulder sized rock.
 - b. Hydrology – The average annual precipitation is 12 to 16 inches per year, putting it in the semi-arid category. No defined channels cut through it.
 - c. Drainage control plan – Local surface drainage approaching the pit area will be diverted around the pit and drainage from the pit will be controlled by silt fence or equivalent means.
- j. Provide plan for erosion and sedimentary control –
 - a. Control of erosion will be by the use of border berms and silt fence as needed to prevent runoff from entering the pit or erosion by rainfall running off of the pit or stockpiles. The Contractor will be required to obtain a Clean Water Act Section 402 Stormwater Pollution Prevention Plan permit which address controlling erosion and sediment.

- k. Provide pre-mining and post-mining contour maps;
- a. The pre-mining contours are shown in Figure 2, Borrow Area Location Plan, *Red Lake Dam Modifications*. Post-mining contours will be similar as the mined material will be replaced by the unusable material it replaced.
- l. Furnish performance and reclamation bonds
- a. The Lessee's Contractor will be required to post a \$165,000 bond. Operation shall not commence unless the bond is posted. The bond shall not be released without the written approval of the Navajo Nation.
- m. Describe re-vegetation and how the success of re-vegetation will be established.
- All disturbed areas will be mulched and reseeded using seed mix and methodologies set forth by Navajo Nation Department of Agriculture for reclamation of rights of way, equipment/supply yards, access roads, sand & gravel pits. The areas that will be underwater (below the spillway crest) after the Project is completed will not be reseeded.
- n. Top soil removal and storage. - A total of up to 6,900 cubic yards of topsoil will be stripped from portions of the approximately 8.5 surface acres of the proposed Borrow Area 1. This 0.5 feet thick layer of topsoil will be stockpiled within or near the borrow pit boundaries, but within the TCE. Upon completion of borrow activities, including placement of unusable earthen material from the dam and over burden, this topsoil will then be spread in a uniform minimum of 4 inch layer over the re-contoured disturbed area. All precaution shall be taken to prevent the loss or degradation of the topsoil. The topsoil storage area shall be clearly marked with signs.
- o. Map showing the location of all facilities – No temporary, permanent or fixed facilities are located in the vicinity of this pit. The contractor use area is identified on Drawing A-06, General Plan of Modifications, *Red Lake Dam Modifications*.

The proposed borrow pit will be within the designated pit boundaries as shown by the dimensions and configuration of the proposed borrow pit on attached drawing Figure 1, Site Plan, *Red Lake Dam Modifications*. The 9,000 cubic yards of borrow are scheduled to be extracted as early as late summer and early fall of 2015, but no later than the fall of 2017, depending on weather and ground conditions. No high wall configuration is anticipated for this relatively shallow borrow pit. As previously stated, the walls will be either sloped or benched to achieve a safe working environment. Spoil piles and stockpiles will be configured in a manner that will maximize safety and minimize potential slope failure and/or erosion. The top soil will be spread in windrows for future reclamation applications. These spoils will be removed and spread by scrapers north of the borrow pit boundaries, oriented in the southerly sector.

Red Lake Dam Modification Project

Emergency Evacuation Plan

Purpose: The purpose of this plan is to establish basic evacuation procedures in the event of an emergency such as flooding. First priority is preservation of life followed minimizing damage to property and Tribal resources.

Types of Emergencies: The following is a short and general list of possible emergencies where evacuation may be needed.

- Flooding – Although the uncontrolled watershed around the Red Lake is relatively small, flash flooding from thunderstorms is possible.
- Chemical spill – Depending on the type of spill noxious fumes may be released requiring evacuation.
- Extreme weather – Although rare, tornados and other high wind events are possible. A tornado was sighted between Chinle, AZ and Many Farms, AZ a few years ago.
- Others

Flooding: This is one type of emergency that has warning signs that it's about to happen.

- Warning signs:
 - Heavy rain in the immediate vicinity and to the north over the immediate watershed.
 - Rising lake level behind the cofferdam.
 - The lake level is 1 foot or less below the top of the lowest part of the cofferdam crest.
- Actions to take:
 - As soon as possible, call the BIA that there's an emergency situation. Use the Contact List in the Construction Emergency Action Plan.
 - Move all people out of low lying areas to high ground well above the level of the spillway crest. Take a head count to make sure everyone is accounted for.
 - If (and only if) time permits:

- Move construction supplies to high ground. Give priority to anything that could create pollution downstream such as grout, dental concrete, chemical agents, etc.
- Move equipment to high ground.

Chemical Spill:

- Warning signs: None. Presumably this was the consequence of an accident, whether by contractor personnel or someone else.
- Actions to take:
 - Assess the risk (safely).
 - If the chemical is known to be non-toxic, cleanup can be initiated, however
 - If there is any doubt as to what the chemical is or it's known to be hazardous, evacuate all personnel, visitors and the public well up-wind and call 9-1-1, and prevent people and livestock from entering any area potentially hazardous.

Extreme Weather:

- Warning signs: Weather forecasts, high wind/storm warnings.
- Actions to take:
 - Evacuate to shelter. The portable buildings of the construction camp are NOT likely to be safe shelter. Otherwise park the heavy equipment with cabs close to each other in a location upwind of the Contractor Camp. Shelter in the cabs and underneath.
 - Take a head count and account for everyone.
 - Contact BIA.

Others:

The general procedure for unanticipated kinds of emergencies where evacuation is prudent:

- Assess the nature of the threat.
- Determine where it's safe to evacuate to within the time available, and evacuate.
- Take a head count.

- Call 9-1-1 as appropriate.
- Contact BIA.

Evacuation Routes: BIA N-12 and N-112 are available for evacuation. N-12 is preferred as it's paved and is generally on higher ground than N-112. N-112 should only be used to reach N-12. If Black Creek/Tohdildonih Wash is flooding, use caution before crossing the N-12 bridge.

Contact List

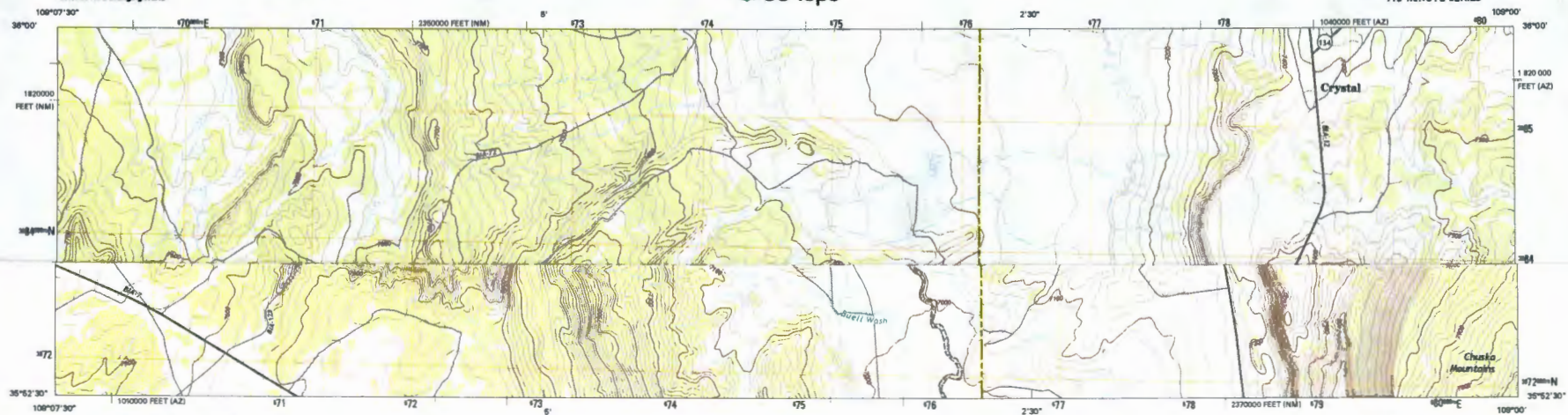
NAME	OFFICE	FAX	HOME	CELL
BIA Navajo Region SOD Officer – Pearl Chamberlin	505-863-8393	505-863-8214	--	505-870-1851
BIA Navajo Region SOD Backup – Chuck Nixon	505-863-8310	505-863-8214	505-722-2666	505-870-1487
Window Rock District Navajo Police – 24-hr Dispatch	928-871-6111, 6112	928-871-2431		



U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY



BUELL PARK QUADRANGLE
ARIZONA-NEW MEXICO
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1000-meter grid: Universal Transverse Mercator, Zone 12S
10 000-foot ticks: Arizona Coordinate System of 1983 (west
zone), New Mexico Coordinate System of 1983 (west zone)

This map is not a legal document. Boundaries may be
generalized for this map scale. Private lands within government
reservations may not be shown. Obtain permission before
entering private lands.

Imagery.....MAP, June 2013
Roads.....HEAL, 03/03
Names.....GNS, 2013
Hydrography.....National Hydrography Dataset, 2013
Contours.....National Elevation Dataset, 1999
Boundaries.....Multiple sources; see metadata file 1972-2014
Public Land Survey System.....BLM, 2011



U.S. National Grid
100,000-m Square B
100



CONTOUR INTERVAL 20 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the
National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 9.5.16



ROAD CLASSIFICATION
Expressway Local Connector
Secondary Hwy Local Road
Ramp 4WD
International Route US Route State Route

1	2	3
4	5	6
7	8	9

AD JOHNSON QUADRANGLES

BUELL PARK, AZ-NM
2014



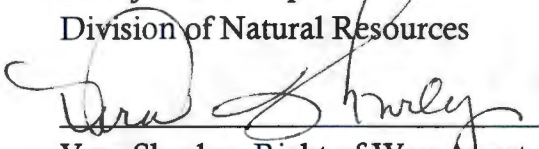
THE NAVAJO NATION



RUSSELL BEGAYE
JONATHAN INEZ

INTER OFFICE MEMO:

TO : Howard Draper, Program & Project Specialist
Navajo Land Department
Division of Natural Resources

FROM : 
Vera Shurley, Right of Way Agent
Project Review Section/NLD

DATE : August 27, 2015

SUBJECT : Field Clearance Report for BIA/Safety of Dams (Borrow Pit)

Bureau of Indian Affairs/Safety of Dams, Post Office Box 1060, Gallup, New Mexico 87305 submitted an application for borrow pit to extract 18,000 tons of clayey material for the Red Lake Dam Modification Project.

The 8.5 acres Borrow Area I Pit is within the approved Temporary Construction Easement (RDCJY-41-15) in Parcel No. 1 of Section 35, Township 20 North, Range 21 West, NMPM containing 64. Acres.

District 18 Red Lake #18 Chapter Grazing Committee Member, Mr. Paul Milford identified the following valid permit holder: Albert Yazzie. The permit holder gave his consent without opposition and is not requesting for compensation. He is in full support to restore the dam.

Field clearance for the above mentioned project is complete.

Attachments

cc: Project File

CONSENT 3

(Waiver of compensation for damages)

**CONSENT TO USE
NAVAJO TRIBAL LANDS**

TO WHOM IT MAY CONCERN

I, Albert Yazzie hereby grant consent to the Navajo Nation and the Bureau of Indian Affairs to permit Bureau of Indian Affairs/Safety of Dams of Post Office Box 1060, Gallup, New Mexico 87305 to use a portion of my land use area for the following purpose(s): for borrow pit of 8.5 acres within the Temporary Construction Easement approved the Resources & Development Committee (RDCJY-41-15) to extract 18,000 tons of clayey material for the Red Lake Dam Modification Project as shown on the map showing the location of the proposed project on the back of this consent form.

I hereby waive any rights I may have to compensate for the diminishment in value of my land use rights as a result of the above-referenced project as proposed.

REMARKS: _____

8-19-15
Date:

Albert Yazzie
Land Users Signature (or thumb print)

91746
Census No.

18-01-12
Permit No.

8-19-15
Date:

Paul Milford
Grazing Committee/Land or Farm Board Member

18-2
District No

Acknowledgement of Field Agent

I acknowledge that the consents of this consent form was read / ☒ or fully explained ☒ to the land user in Navajo ☒ or English ☒ (check where applicable).

Verat Shuley 8-19-2015
Field Agent Signature

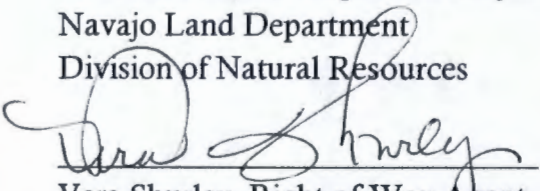


THE NAVAJO NATION

RUSSELL BEGAYE
JONATHAN NEZ

INTER OFFICE MEMO:

TO : Howard Draper, Program & Project Specialist
Navajo Land Department
Division of Natural Resources

FROM : 
Vera Shurley, Right of Way Agent
Project Review Section/NLD

DATE : August 27, 2015

SUBJECT : Field Clearance Report for BIA/Safety of Dams (Borrow Pit)

Bureau of Indian Affairs/Safety of Dams, Post Office Box 1060, Gallup, New Mexico 87305 submitted an application for borrow pit to extract 18,000 tons of clayey material for the Red Lake Dam Modification Project.

The 8.5 acres Borrow Area I Pit is within the approved Temporary Construction Easement (RDCJY-41-15) in Parcel No. 1 of Section 35, Township 20 North, Range 21 West, NMPM containing 64. Acres.

District 18 Red Lake #18 Chapter Grazing Committee Member, Mr. Paul Milford identified the following valid permit holder: Albert Yazzie. The permit holder gave his consent without opposition and is not requesting for compensation. He is in full support to restore the dam.

Field clearance for the above mentioned project is complete.

Attachments
cc: Project File



N461/WRSD

United States Department of the Interior

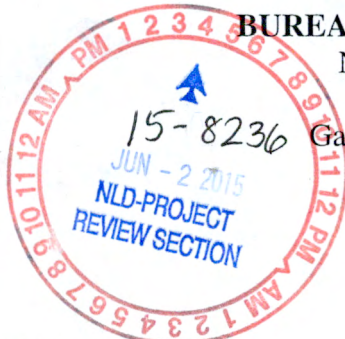
BUREAU OF INDIAN AFFAIRS

NAVAJO REGION

P.O. Box 1060

Gallup, New Mexico 87305

TAKE
PRIDE IN
AMERICA



MAY 27 2015



Mr. Howard Phillip Draper, Jr.
Navajo Land Department, Project Review Section
Navajo Nation Division of Natural Resources
P.O. Box 9000
Window Rock, AZ 86515

Subject: Application for Sand and Gravel Lease for the Red Lake Dam Modification Project –
Bureau of Indian Affairs - Safety of Dams Program - Arizona.

Dear Mr. Draper:

Several dam safety deficiencies have been identified at the Red Lake Dam through the Bureau of Indian Affairs' (BIA) National Safety of Dams (SOD) program. The BIA is in the process of preparing a contract to perform the necessary modifications to correct these deficiencies.

The dam modifications will require a sand and gravel lease for a borrow site within the temporary construction easement (also being applied for) to provide supplemental materials necessary to perform the work. It is estimated the work will commence as early as September 2015 and is scheduled to be completed in October 2017.

By this letter, the BIA is initiating application for the sand and gravel lease needed solely for the Red Lake Dam modification project. The duration of the lease will extend through December 31, 2017 to encompass the duration of construction.

Enclosed please find the following documents:

1. APPLICATION FOR BORROW PIT LEASE, RED LAKE DAM MODIFICATION
2. Location Reference Map (Buell Park, AZ-NM Topographic map)
3. Proposed Sand and Gravel Lease/Permit
4. Red Lake Dam Rehabilitation, Drawing Figure 1- Site Plan.
5. Red Lake Dam Rehabilitation Project – Mining and Reclamation Plan
6. Emergency Evacuation Plan
7. Final Environmental Assessment, Red Lake Dam Rehabilitation, Expedited Dam Safety Action EA-12-107 (with FONSI).
8. Red Lake Rehabilitation - Supplemental Environmental Assessment with Finding of No New Significant Impact.
9. Cultural Resource Compliance Form, (*Appendix C – Final Environmental Assessment – Red Lake Dam Rehabilitation*)
10. Chapter resolution from Red Lake Chapter supporting the Red Lake Dam Rehabilitation Project

BIA and its contractors will operate with all due prudence and diligence during entry, construction and exit of the project.
On site construction management of this project will be provided by GEI Consultants, a private engineering firm under contract to BIA.

If you have any questions, please contact Pearl Chamberlin at 505-863-8393.

Sincerely,



Regional Director, Navajo

Enclosures

cc: Biddah N. Becker, Executive Director
Navajo Nation
Division of Natural Resources
P.O. Box 9000
Window Rock, AZ 86515

Ray Benally, Director
Navajo Nation
Department of Water Resources
P.O. Drawer 678
Ft. Defiance, AZ 86504

April Bowman, Supervisor
Bureau of Indian Affairs
Fort Defiance Agency
Real Estate Services
P.O. Box 619
Fort Defiance, AZ 86504

RECLAMATION

Managing Water in the West

FOR OFFICIAL USE ONLY

Final Environmental Assessment

Red Lake Dam Rehabilitation

Expedited Dam Safety Action EA-12-107

Navajo Nation, New Mexico



U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center
Denver, Colorado



U.S. Department of the Interior
Bureau of Indian Affairs
Navajo Regional Office
Gallup, New Mexico



Navajo Nation
Window Rock, Arizona

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

FINDING OF NO SIGNIFICANT IMPACT

INTRODUCTION

In accordance with the National Environmental Policy Act of 1969 (Public Law 91-190, as amended), the Bureau of Reclamation (Reclamation) in concert with the Bureau of Indian Affairs (BIA) and Navajo Nation Safety of Dams Program, has issued the Final Environmental Assessment (EA) for Red Lake Dam Rehabilitation Expedited Dam Safety Action. The project is to rehabilitate Red Lake Dam and its appurtenances so that irrigation operations may continue safely. The dam is a homogeneous earthfill structure on a tributary of the Tohdildonih Wash located at the community of Navajo, New Mexico, in McKinley County about 20 miles northeast of Window Rock, Arizona, on Navajo Nation lands. The western edge of Red Lake Reservoir, when full, crosses the State boundary into Apache County, Arizona. The EA discloses the potential environmental impacts associated with implementing proposed corrective measures to address Safety of Dams (SOD) structural deficiencies.

BACKGROUND

The purpose for rehabilitating Red Lake Dam is to address SOD structural deficiencies and safety concerns for residents below the dam. Reclamation's 2009 Comprehensive Dam Review concluded that Red Lake Dam has an unacceptably high probability of seepage-related failure as well as an unacceptably high probability of failure associated with erosion and slope instability along the upstream slope. The risks were also determined to be high for failure of the spillway structure, resulting in an uncontrolled release of the reservoir.

Failure of Red Lake Dam could potentially result in a dam failure flood that could devastate the Navajo Nation. A dam failure flood, or large flows through the emergency spillway would potentially endanger a Population-At-Risk of up to roughly 1,746 people including the community of Fort Defiance, Arizona and the Highway 264 bridge between Window Rock and Saint Michaels.

Soil test pit excavations were conducted from May 29 through June 8, 2012. A Corps of Engineers Nationwide Permit 6 per Section 404 of the Clean Water Act was obtained for this activity. Water Quality Certification per Section 401 of the Clean Water Act was also obtained from the Navajo Nation Environmental Protection Agency. Applications for a Clean Water Act and Rivers and Harbors Act *Nationwide Permit 3 Maintenance* and Water Quality Certification for the construction project were submitted on November 20, 2012. Work will not begin until permitted and certified.

In order to address structural deficiencies and safety concerns, the project entails rehabilitating the dam, spillway channel, and outlet works system. Elements of construction include: clearing, grubbing and stripping; obtaining construction water; protecting the upstream face of the dam from erosion; controlling seepage in the foundation; constructing a temporary cofferdam; removing and replacing the outlet works system; increasing spillway capacity; constructing a filter and drain system; protecting the dam crest from erosion and improving employee access; and restoring the site.

Borrow material will be obtained from the spillway channel, from the hilltop west by northwest of the dam nearest the spillway, and from a commercial source.

ALTERNATIVES CONSIDERED

Reclamation, BIA, and Navajo Nation SOD considered 3 alternatives in this EA that were developed by the Value Engineering Team and the Design Team. They include the No Action Alternative, Revised Design 1 Alternative, and Revised Design 2 (Preferred Alternative).

The No Action Alternative did not meet the purpose and need for the project and would have long-term negative impacts to farmers relying on irrigation water as well as to fish, wildlife, and riparian habitat due to the lower water level as pool elevation restrictions would continue to be imposed by Safety of Dams. The Revised Design 1 Alternative's cost was not feasible, the permitting requirements were difficult, and the environmental impacts were greater than those of the preferred alternative. The Revised Design 2 was the chosen alternative as it meets the project's purpose and need with minimal environmental impacts, other environmental benefits, and reduced costs compared to Revised Design 1.

Revised Design 2 (Preferred Alternative). The dam, spillway, and outlet works system would be rehabilitated and upgraded. The safety concerns would be addressed, the spillway would be capable of passing the estimated 10,000-year storm event, and the reservoir could be restored to full capacity.

CONSULTATION, COORDINATION, AND PUBLIC INVOLVEMENT

Reclamation, in cooperation with the BIA and the Navajo Nation Department of Water Resources including the SOD Program, coordinated with several Navajo Nation governmental departments, including the Land Department, Forestry Department, Department of Fish and Wildlife, Navajo Historic Preservation Department, Navajo Nation EPA, and Minerals Department. The Navajo Farm Board was also consulted as well as the USFWS, US Department of Agriculture NRCS, the EPA, NTUA, Army Corps of Engineers, and Frontier Communications. The permittees adjacent to the project area were also contacted. The draft EA was distributed to potentially affected or interested entities, organizations and agencies; sent to the Gallup Independent and Navajo Times Newspapers; and posted on Reclamation's Denver Office web site for public review with a comment deadline of November 21, 2012. Three comments were received and addressed in the final EA attachment. No changes to the project were made.

MAJOR CONSIDERATIONS

The following issues that were addressed in the EA have been taken into consideration in Reclamation's deliberation whether a Finding of No Significant Impact is appropriate, or an environmental impact statement should be prepared.

1. Beneficial and adverse environmental impacts. The EA demonstrates that there will be no significant adverse or beneficial impacts on the quality of the human environment including living resources, land resources, water resources, air, cultural resources, socioeconomic conditions, environmental justice, resource use patterns, Indian trust assets, hazardous materials, methylmercury, noise, traffic, or aesthetics. Impacts to physical and biological resources will be localized and relatively minor. Following construction, the affected area would be rehabilitated as appropriate to stabilize soils and minimize potential soil erosion and resultant effects to vegetation.

2. Public health and safety. Public health will not be affected by the project. There will be no disproportionately high and adverse human health effects on populations defined in Executive Order 12898 (Environmental Justice) or the general public. Controlled access to active work areas and appropriate hazardous material management and waste disposal associated with construction will minimize any potential risks to public health, safety, and the environment. Corrective action will substantially reduce the risk to the public from potential dam failure.

3. Unique characteristics of the geographic area. The project area is not unique within its geographical setting and is similar to many other areas of tribal land in the region. There are no prime farmlands, wild and scenic rivers, wilderness areas, refuges, park lands, unique ecological areas, or other unique or rare characteristics of the land and aquatic environs that will be significantly affected. The project area is within the Navajo designated biological preserve. It is believed that the designation was established because of the number of migrating waterfowl and shorebirds that stopover at Red Lake. This stopover value has greatly diminished because of the pool elevation restrictions, but is expected to be restored after the project is complete. Any wetland habitat that may have been present has also diminished with the pool level restriction of 2003. This too is expected to improve after the pool level restriction is lifted pending project completion.

4. Degree to which the effects on the quality of the human environment are likely to be highly controversial. There are no known scientific controversies over the effects of the proposed project on the human environment.

5. Degree to which the effects are highly uncertain or involve unique or unknown risks. There are no known effects on the human environment that are highly uncertain or involve unique or unknown risks. The proposed construction is consistent with standard engineering criteria used in the design of dams, spillways, and outlet works systems.

6. Degree to which this action will establish a precedent for future action with significant effects. This project does not set a precedent for similar projects that may be implemented by Reclamation, BIA or other agencies. Correction of dam deficiencies is a standard practice that enhances public safety and welfare.

7. Relationship to other actions with cumulatively significant impacts. Cumulative effects of the proposed project were considered in the EA. There are no known incremental effects of the action that become significant when added to other past, present, or reasonably foreseeable future actions that have affected, or will affect, the project area.

8. Degree to which the action may affect districts, sites, objects, or structures listed on, or eligible for, the National Register of Historic Places, or may cause loss of significant cultural resources. A Reclamation archaeologist conducted a records check at the Navajo Historic Preservation Department (NHPD) and surveyed the project site on July 25, 2006, and August 2, 2011. The project was revised to avoid two historic properties that are located in the project area. The revised project area is more than 50 feet away from the cultural resources, therefore, there will be no impact to these properties. In the event of a discovery of a previously unidentified or incorrectly identified cultural resource(s), all operations in the immediate vicinity of the discovery must cease, and the NHPD must be notified.

9. Degree to which the action may affect threatened, endangered, or sensitive species or their habitat. The EA demonstrates that Navajo or federally listed species will not be affected by the proposed project. No species listed as threatened or endangered by the Navajo Nation Department of Fish and Wildlife (NNDFW) or USFWS occur in the project area. Reclamation coordinated with the NNDFW and U.S. Fish and Wildlife Service (USFWS) to make this determination.

10. Whether the action violates Federal or local laws or requirements imposed for the protection of the environment. The proposed project will not violate any Federal or local environmental laws or requirements.

11. Indian Trust Assets. There will be temporary impacts to farmers who use the irrigation water from Red Lake. They may be forced to forego farming during the construction and water recharge period or resort to dry farming. The U.S. Department of Agriculture Natural Resource Conservation Service (USDA NRCS) will work with the Red Lake Farm Board on issues concerning USDA NRCS. A tree cutting permit was obtained from the Navajo Forestry Department, and a sand and gravel permit will be obtained by the contractor from the Navajo Minerals Department and a Navajo Water Resource Permit for construction water will be obtained by the contractor unless a waiver is granted. Overall, it was determined that the long-term project benefits will outweigh the temporary impacts to Indian Trust Assets.

FINDING OF NO SIGNIFICANT IMPACT

Based upon consideration of the impacts presented in the Final EA (Reclamation 2012), Reclamation, BIA, and NNSOD have determined the Proposed Action will not significantly impact the human environment and that preparation of an environmental impact statement is not warranted.

Document cited above.

Bureau of Reclamation (Reclamation). 2012. Final environmental assessment. Red Lake Dam Rehabilitation Expedited Dam Safety Action. November 2012. Technical Services Center, Denver, CO.

United States Department of the Interior
Bureau of Reclamation
Technical Service Center
Denver Colorado

In concert with

Bureau of Indian Affairs
Safety of Dams Office
Navajo Regional Office
Gallup, New Mexico

and

Navajo Nation
Department of Water Resources
Navajo Nation

FINDING OF NO SIGNIFICANT IMPACT

Red Lake Dam Rehabilitation
Expedited Dam Safety Action EA-12-107

Approved: _____
Harrilene Yazzie
Regional NEPA Coordinator
Bureau of Indian Affairs – Navajo Region

Date: _____

FONSI No. EA-12-107



United States Department of the Interior
Navajo Region
P.O. Box 1060
Gallup, NM 87305

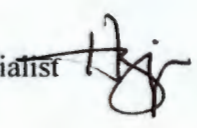


MC:620/Branch of Environmental Quality Act Review & Compliance

MAR 24 2015

MEMORANDUM

To: Pearl Chamberlin, Regional Safety of Dams Officer
Engineering and Technical Support Division

From: Harrilene Yazzie, Supervisory Environmental Protection Specialist
Branch of Environmental Quality Act Compliance & Review 

Subject: Finding of No New Significant Impact – Red Lake Dam Modification, Safety of Dams Rehabilitation Project, McKinley County, New Mexico

The Branch of Environmental Quality Act Review and Compliance reviewed the supplemental environmental assessment, *Red Lake Dam Rehabilitation 2015 – Supplemental Environmental Assessment*, prepared by the BIA. The 22-foot high dam is located on Navajo Tribal Trust lands in Navajo, New Mexico. The proposed project entails modification of the existing dam to correct dam safety deficiencies that pose an unacceptable risk to people and resources downstream of the dam in the communities of Navajo, New Mexico and Fort Defiance, Arizona. The BIA is the lead federal agency pursuant to NEPA.

In accordance with Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended, and the Council of Environmental Quality's Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations (CFR) Parts 1500-1508), the Bureau of Indian Affairs, Navajo Region finds that the Proposed Action is not a major federal action that will significantly impact the quality of the human environment. Therefore, an Environmental Impact Statement is not required for implementing the Proposed Action. This Finding of No New Significant Impact (FONNSI) is supported by the attached Supplemental Environmental Assessment (EA) and supporting appendices and documents.

Should you have any questions, please contact Ms. Harrilene Yazzie, Supervisory Environmental Protection Specialist, at (505) 863-8287.

**FINDING OF NO NEW SIGNIFICANT IMPACT
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT, EA-15-8583
RED LAKE DAM REHABILITATION, SAFETY OF DAMS
McKINLEY COUNTY, NEW MEXICO
APACHE COUNTY, ARIZONA**

**Location: Unplatted & Projected, Section 2, T19N, R21W, G&SRPM
Section 35 & 36, T20N, R21E, G&SRPM
Buell Park Quadrangle, Apache County, Arizona (G&SRPM) and McKinley County, New
Mexico (NMPM)**

The proposed repairs and rehabilitation are to address the Safety of Dams (SOD) structural deficiencies in the Issue Evaluation of Red Lake Dam (DeWolf 2010) and Comprehensive Dam Review (CDR) (Bureau of Reclamation (Reclamation) 2009) safety concerns for residents below the dam. The project is to rehabilitate Red Lake Dam and its appurtenances so that irrigation operations may continue safely. The dam is a homogeneous earthfill structure on a tributary of the Tohdildonih Wash located at the community of Navajo, New Mexico, in McKinley County about 20 miles northeast of Window Rock, Arizona, on Navajo Nation lands. The western edge of Red Lake Reservoir, when full, crosses the State boundary into Apache County, Arizona. The EA discloses the potential environmental impacts associated with implementing proposed corrective measures to address Safety of Dams (SOD) structural deficiencies.

The original Red Lake Dam Rehabilitation Final Environmental Assessment (Reclamation 2012), prepared by the Reclamation, assessed impacts associated with three alternatives: No Action Alternative, Revised Design 1 Alternatives, and the Revised Design 2 Alternative. The original Red Lake Dam Rehabilitation Final Environmental Assessment identified the Revised Design 2 Alternative as the Preferred Alternative; however, due to the high cost of the original design produced by Reclamation the design was amended. GEI Consultants identified modifications to the Reclamation's Revised Design 2, referred to as the Red Lake Dam Rehabilitation Modification, which addressed the safety deficiencies and economical. The Red Lake Dam Rehabilitation Modification was selected by the Bureau of Indian Affairs as the Preferred Alternative. The change to the design also has in a smaller footprint than the previous Revised Design 2.

In accordance with Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended, and the Council of Environmental Quality's Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations (CFR) Parts 1500-1508), the Bureau of Indian Affairs, Navajo Region finds that the Proposed Action is not a major federal action that will significantly impact the quality of the human environment. Therefore, an Environmental Impact Statement is not required for implementing the Proposed Action. This Finding of No New Significant Impact (FONNSI) is supported by the attached Supplemental Environmental Assessment (EA) and supporting appendices and documents.

The affected environment and environmental consequences analyses as described in the Red Lake Dam Rehabilitation Final Environmental Assessment were reviewed with the current/new

available information described in the Red Lake Dam Rehabilitation Supplemental EA. A summary of the environmental consequences as presented in the Supplement EA are provided below.

The following issues that were addressed in the EA have been taken into consideration in BIA's deliberation whether a Finding of No New Significant Impact is appropriate, or an environmental impact statement should be prepared.

1. Beneficial and adverse environmental impacts. The EA demonstrates that there will be no significant adverse or beneficial impacts on the quality of the human environment including living resources, land resources, water resources, air, cultural resources, socioeconomic conditions, environmental justice, resource use patterns, Indian trust assets, hazardous materials, methylmercury, noise, traffic, or aesthetics. Impacts to physical and biological resources will be localized and relatively minor. Following construction, the affected area would be rehabilitated as appropriate to stabilize soils and minimize potential soil erosion and resultant effects to vegetation.
2. Public health and safety. Public health will not be affected by the project. There will be no disproportionately high and adverse human health effects on populations defined in Executive Order 12898 (Environmental Justice) or the general public. Controlled access to active work areas and appropriate hazardous material management and waste disposal associated with construction will minimize any potential risks to public health, safety, and the environment.
3. Unique characteristics of the geographic area. The project area is not unique within its geographical setting and is similar to many other areas of tribal land in the region. There are no prime farmlands, wild and scenic rivers, wilderness areas, refuges, park lands, unique ecological areas, or other unique or rare characteristics of the land and aquatic environs that will be significantly affected. The project area is within the Navajo designated biological preserve. It is believed that the designation was established because of the number of migrating waterfowl and shorebirds that stopover at Red Lake. This stopover value has greatly diminished because of the pool elevation restrictions, but is expected to be restored after the project is complete. Any wetland habitat that may have been present has also diminished with the pool level restriction of 2003. This too is expected to improve after the pool level restriction is lifted pending project completion.
4. Degree to which the effects on the quality of the human environment are likely to be highly controversial. There are no known scientific controversies over the effects of the proposed project on the human environment.
5. Degree to which the effects are highly uncertain or involve unique or unknown risks. There are no known effects on the human environment that are highly uncertain or involve unique or unknown risks. The proposed construction is consistent with standard engineering criteria used in the design of dams, spillways, and outlet works systems.
6. Degree to which this action will establish a precedent for future action with significant effects. This project does not set a precedent for similar projects that may be implemented by the BIA or other agencies. Correction of dam deficiencies is a standard practice that enhances public safety and welfare.
7. Relationship to other actions with cumulatively significant impacts. Cumulative effects of the proposed project were considered in the EA. There are no known incremental effects

of the action that become significant when added to other past, present, or reasonably foreseeable future actions that have affected, or will affect, the project area.

8. Degree to which the action may affect districts, sites, objects, or structures listed on, or eligible for, the National Register of Historic Places, or may cause loss of significant cultural resources. A Reclamation archaeologist conducted a records check at the Navajo Historic Preservation Department (NHPD) and surveyed the project site on July 25, 2006, and August 2, 2011. The project was revised to avoid two historic properties that are located in the project area. The current revised project area is more than 50 feet away from the cultural resources; therefore, there will be no impact to these properties. In the event of a discovery of a previously unidentified or incorrectly identified cultural resource(s), all operations in the immediate vicinity of the discovery must cease, and the NHPD must be notified.
9. Degree to which the action may affect threatened, endangered, or sensitive species or their habitat. The EA demonstrates that Navajo or federally listed species will not be affected by the proposed project. No species listed as threatened or endangered by the Navajo Nation Department of Fish and Wildlife (NNDFW) or USFWS occur in the project area. Reclamation coordinated with the NNDFW and U.S. Fish and Wildlife Service (USFWS) to make this determination.
10. Whether the action violates Federal or local laws or requirements imposed for the protection of the environment. The proposed project will not violate any Federal or local environmental laws or requirements.
11. Indian Trust Assets. A tree cutting permit will be obtained from the Navajo Forestry Department, and a sand and gravel permit will be obtained by the contractor for the Navajo Minerals Department. A Navajo Water Resource Permit for construction water will be obtained by the contractor unless a waiver is granted. Overall, it was determined that the long-term project benefits will outweigh the temporary impacts to Indian Trust Assets.

CONCLUSION

The proposed action is the Preferred Alternative. It does not constitute a major federal action, which normally requires preparation of an environmental impact statement (EIS).

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.


Regional NEPA Coordinator

2/24/2015
Date

Bureau of Indian Affairs – Navajo Region

Red Lake Dam Rehabilitation 2015 – Supplement Environmental Assessment

Expedited Dam Safety Action – Navajo, New Mexico

3/22/2015

2 Propose & Need For Action

Pursuant to the National Environmental Policy Act, the Department of Interior, Bureau of Indian Affairs, Navajo Region is preparing this Final Supplemental Environmental Assessment (EA) for the Red Lake Dam Rehabilitation 2015 Project (Proposed Act or Project). This Final Supplemental EA is being prepared to address the Safety of Dam's (SOD) structural deficiencies identified in the Issue Evaluation of Red Lake Dam (DeWolfe 2010) and the Comprehensive Dam Review (CDR) (Bureau of Reclamation (Reclamation) 2009). This Final Supplemental EA supplements the Red Lake Dam Rehabilitation Final EA (Reclamation 2012) (herein referred to as the 2012 Final EA), includes a review of the 2012 Final EA, synthesizes discussions/results where the conditions have changed, and evaluates potential impacts due to implementation of the Proposed Action in consideration of changed conditions or new data/information that have occurred since the approval of the 2012 Final EA.

The National Environmental Policy Act requires that an EA include the need for the proposed action, the proposed action and alternatives, the probable environmental impacts of the proposed action, and the agencies and persons consulted during the preparation of the EA. The Final Supplemental EA serves as the factual support document for the conclusion in the corresponding Finding of No New Significant Impact (FONNSI).

As the Final Supplemental EA is partially based on the analyses and conclusions in the 2012 Final EA, the 2012 Final EA is incorporated by reference.

The proposed repairs and rehabilitation are to address the Safety of Dams (SOD) structural deficiencies in the Issue Evaluation of Red Lake Dam (DeWolf 2010) and Comprehensive Dam Review (CDR) (Bureau of Reclamation (Reclamation) 2009) safety concerns for residents below the dam.

The 2009 CDR concluded that the Red Lake Dam has an unacceptably high probability of seepage-related failure associated with:

- Piping through the foundation;
- Piping along or into the existing outlet works;
- Piping along the abandoned outlet works; and,
- Piping due to an increased reservoir head during flooding resulting in higher seepage exit velocities.

In addition, the Red Lake Dam was also found to have an unacceptable high probability of failure associated with erosion and slope instability along the upstream slope (Reclamation 2009). The risks were also determined to be high for failure of the spillway structure, resulting in an uncontrolled release of the reservoir.

The need for the action is to address the deficiencies and reduce risk associated with potential dam failure. The original environmental assessment identified a Population-at-Risk at approximately 1,746 people, including the community of Fort Defiance, Arizona and the Highway 264 bridge between Window Rock and Saint Michaels, Arizona, could be potentially endangered. The Red Lake Dam CDR,

Report of Findings (Reclamation, 2009) outlines the potential failure modes and likelihood of development and consequence ratings.

Red Lake Dam – Independent Design Review, Potential Alternatives, and Conceptual Level Design Report

The Bureau of Indian Affairs (BIA) Safety of Dams (SOD) Program identified significant concerns regarding the estimated project costs and gaps in Reclamation decision documentation regarding potential cost savings and risk reduction options for proposed modifications to Red Lake Dam. Due to these concerns, the BIA initiated an Independent Design Review (IDR). The purpose of the IDR is to review the existing Reclamation Red Lake Revised Design 2 design and to determine if other design alternatives can provide appropriate dam safety risk reduction at lower cost.

Consistent with the Department of the Interior Manual, Reclamation performed a VE study. The purpose of the VE study was to identify potential design or construction alternatives that could result in improved dam performance, cost savings, or construction processes while maintaining the risk reduction related to the identified deficiencies at Red Lake Dam. Participants in the VE study included Reclamation, BIA Central Office, Navajo Region SOD, and Navajo Nation SOD Office staff. The final Red Lake VE study report identified proposed alternatives that, if implemented, could result in potential cost savings of approximately \$7 million. However, the Reclamation Design Team chose to reject the majority of the VE study recommendations, and these savings were not realized in the final construction documents. A Record of Decision by the Reclamation Design Team for these choices was not provided to BIA. One decision by the Design Team significantly increased the cost of the cement-bentonite cutoff wall by relocating it from the upstream toe of the dam to near the dam centerline. The subsequent construction costs for Reclamation's final design were estimated to be approximately \$17.5 million.

BIA SOD remains concerned about the cost vs. performance efficiency of the Reclamation design. Several of the VE study alternatives appear to have merit and other potential cost saving alternatives may have been missed by both the Reclamation Designers and VE team that would address the identified deficiencies at Red Lake Dam. BIA SOD hired GEI consultants to conduct an IDR including review of investigations analyses and conceptual and final design analysis documentation; identification of potential alternative designs, evaluation of potential risk reductions through the implementation of preferred alternatives, development of conceptual level design and associated cost estimates for comparison with the current Reclamation cost estimates; and providing a summary of the analysis and recommendations in a conceptual level report.

DESIGN CHANGES:

As part of this IDR, the GEI Team reviewed Reclamation's design and backup documentation for Red Lake Dam and identified several cost effective design alternatives which provide the necessary dam safety risk reductions to the project. Based on GEI Team evaluations of the alternatives the GEI Team recommends the following design modifications for Red Lake Dam:

- **Embankment:** Remove the c-b cutoff wall in its entirety. While this feature would increase the seepage path within the embankment, an appropriately-designed filter and drain system are much more cost effective and will provide the similar reduction in risk to the highlighted PFMs.
- **Spillway:** The existing spillway can route the IDF and meet minimum residual freeboard requirements that apply to BIA dams, so a new spillway is not required. The GEI Team recommends that the spillway apron be extended with filtered drain provision and that riprap erosion protection be extended downstream of the spillway apron to provide additional scour protection and improve the overall seepage performance of the facility. Some minor grading along the spillway channel may improve the hydraulic performance of the spillway.
- **Outlet Works:** Install a CIPP lining within the outlet works conduit and construct a filter diaphragm around the downstream section of the conduit. This modification will provide protection from piping of embankment material into the pipeline and general piping along the outside of the conduit. Abandon the existing tower in place by backfilling with concrete. Construct a downstream filter diaphragm to protect against piping along the conduit encasement. Replace the intake and outlet structure. The conduit will function as an unpressurized system with upstream control provided by a hydraulically operated sluice gate.
- Alternatively, the embankment and spillway recommendations could be maintained and combined with the following outlet works recommendation:
- **Outlet Works:** Remove the existing 33-inch-diameter concrete pipe using cut and cover methods to remove the conduit, tower, and existing structures. Replace the outlet works with the construction of a new concrete encased 36-inch-diameter steel pipe with a concrete encasement and backfill consistent with the embankment template used for the dam modifications. Construct a downstream filter diaphragm to protect against piping along the conduit encasement. Construct new intake and outlet structures. The conduit will function as an unpressurized system with upstream control provided by a hydraulically operated sluice gate.

RISK ANALYSIS

The risk reduction analysis team convened between October 28 and October 30, 2014 to evaluate the risk reduction of potential design alternatives for Red Lake Dam. The meeting was held at the BIA Lakewood Office. Participants were represented by the following: Navajo Nation, BIA, GEI Consultants, Inc., Geotechnical Consultants, Inc., and Byers Group LLC.

Risk Reduction Estimates for Alternatives The three major design options to the Reclamation design were identified as follows:

- **Option 1:** Remove the cement-bentonite cutoff wall and construct a downstream filter trench. Simplify the overall embankment re-construction configuration.
- **Option 2:** Remove and replace the existing outlet works using cut and cover construction with upstream control of the outlet works. Construct a downstream filter diaphragm around the conduit to protect against piping.

- Option 3: Slipline the existing outlet works using CIPP techniques. Abandon the existing tower, and provide upstream control of the outlet works.

These options could be constructed independently or paired together. Construction of Option 1 by itself could reduce the estimated annualized failure probability for all three highlighted PFMs. However, Options 2 and 3 alone would have a negligible effect on PFMs A.1 and A.3 and would not bring these PFMs within tolerable risk criteria.

Next Alternatives that incorporated one or two of the Options were reviewed.

Alternative 1 – Option 1 Filter Trench Only

Alternative 2 –Combination of Option 1 Filter Trench and Option 2 Cut and Cover Outlet Works.

Alternative 3 -Combination of Option 1 Filter Trench and Option 3 Sliplining Existing Outlet Works

After completion of the risk reduction analysis, the three alternatives were compared to the baseline condition to establish the overall reduction of AFP for the three highlighted PFMs. A total “relative” mean risk was established for the baseline and each alternative and is presented in Table 22. This total only included the AFP contributions for the three highlighted PFMs. Based on the values summarized above, Alternative 1 will not meet the risk reduction criteria. Alternatives 2 and 3 will reduce the AFP to within acceptable limits.

All alternatives assume construction of the internal drainage improvements (chimney filter, toe drain) to the dam as well as upstream slope improvements. All alternatives also assume that the cement-bentonite cutoff wall is not constructed.

The Supplement EA evaluates the impacts associated with the rehabilitation project under a revised Preferred Alternative – Red Lake Dam Rehabilitation Modification (RLDRM). The Bureau of Indian Affairs is preparing the Supplemental EA consistent with their lead role in repairing and rehabilitating to address structural deficiencies identified for Red Lake Dam.

The original environmental assessment assessed impacts associated with the “Revised Design 2” outlined in the Conceptual Design Report (Reclamation 2001b); however, due to the high cost of the original design produced by Reclamation the design was amended. GEI Consultants identified modifications to the Reclamation’s Revised Design 2 that will result in decreased cost (Red Lake Dam Rehabilitation Modification). The change to the design also has in a smaller footprint than the previous Revised Design 2, **Figure 1**.

2.1 Project Location & Environmental Setting

Incorporate by reference Section 1.1 Project Location & Environmental Setting (Final EA, 2012).

2.2 Background and Other Related Documents

Incorporate by reference Section 1.2 Background and Other Related Documents (Final EA, 2012), other than the Conceptual Design Project Plan

3 Alternatives

The alternatives in the original EA included a Revised Design 2, which was the Preferred Action, and the Revised Design 1 Alternative. Due to cost constraints associated with the Revised Design 2, SOD sought an alternative that would be technical feasible but also be economically viable. As a result, the Red Lake Dam Rehabilitation Modification Alternative developed and evolved into the Preferred Alternative. The project description remains the same, except as noted in Design Changes.

3.1 Red Lake Dam Rehabilitation Modification (RLDRM) (Preferred Alternative), Figure 2, includes:

- **Slurry Cutoff Wall:** Elimination of the slurry cutoff wall. This feature was judged to have little benefit to the safety of the dam relative to its high cost. The purpose was to control the seepage going through and under the dam.
 - Change in environmental impact:
 - The excavation into undisturbed ground under the dam for the slurry cutoff wall will be eliminated. The slurry cutoff wall that will be eliminated is 2,700 feet long, 57 feet deep and 2 feet wide. The area of impact eliminated is 5,400 sq. feet, with a corresponding volume of 11,400 cubic yards.
 - Foreign material (cement-bentonite slurry) will not be placed underground, penetrating through clay soil layers interspersed with sand lenses.
 - Alignment: Not applicable as it's eliminated.
- **Vertical Foundation Filter:** A vertical foundation filter was added underneath the toe drain on the downstream side of the dam to intercept seepage and direct it into the toe drain to safely dispose of the water that might otherwise cause internal erosion of the dam. This feature eliminates the need for the slurry trench at a much lower cost. Approximately 12,000 cy of filter sand and 4,700 cy of drain gravel will be used.
 - Change in environmental impact:
 - The vertical foundation filter is 2,700 feet long, 12 feet deep and 2.5 feet wide. The area of impact is contained with the toe drain construction footprint, but it will add additional excavation underneath the toe drain of 3,000 cubic yards which will be filled with filter sand. This is less than the 11,400 cubic yards of slurry trench being replaced.
 - Filter sand differs from the sand lenses in the foundation only by the absence of silt and clay particles. As such, filter sand is less of an impact in the foundation than the cement-bentonite slurry it will replace.
 - Alignment: The vertical foundation filter is aligned with the toe drain alignment in the original design.
- **Outlet Works:** The outlet works design was changed to a simpler one where the downstream control house was replaced with a smaller one which reduced the overall footprint of the outlet works, thereby reducing its environmental impact. This change also reduces the risk of failure over the original design by eliminating pressurization of the

conduit through the dam. The new design consists of three conduits enclosed in a single concrete encasement installed through the embankment as opposed to the original design of one 42" concrete-encased containing a 32" pipe that splits into three in the downstream control house. One conduit will supply the New Mexico Canal; another will supply the Arizona Canal; and the third will be used solely for emergency evacuation of the reservoir. To protect against the possibility of seepage along the outside of the outlet works causing a dam failure by internal erosion, a filter diaphragm will be constructed around the concrete-encased conduits near the downstream of the dam. The diaphragm will consist of a 3-foot-thick collar of filter sand material completely surrounding the pipe, and extending approximately 10 feet in all directions. Discharges from Red Lake Dam will be controlled by three new upstream sluice gates mounted in a new outlet works intake structure on each conduit. The gate for emergency evacuation is designed to throttle flows from zero at full closure to over 100 cfs with the reservoir at elevated flood levels and the gate fully opened. The gates will be controlled by hydraulic operators, with the hydraulic cylinders mounted to the gate frames or to the new intake structure with hydraulic lines running up to the crest of the dam to a control building which will also house the Early Warning System. The downstream control house is eliminated as unnecessary because all flow regulation has been relocated to upstream end of the outlet works.

- Change in environmental impact:
 - The changes in the outlet works design occur in the same foot print as the original design, with nearly identical requirements for construction, excavation and fill. The only change in environmental impact is that it allows eliminating the downstream control house.
 - Alignment: The alignment of the outlet works is very nearly unchanged and in any case it lies within the dam embankment footprint.
- **Control House:** The downstream control house which was to control flows to the two irrigation canals and the downstream channel, has been replaced with a simpler structure downstream of the dam where the existing canal bifurcates into the New Mexico and Arizona canals.
 - Change in environmental impact:
 - The downstream control house occupies an area of 1,674 sq. feet, which will be eliminated.
 - Alignment: Not applicable as it's eliminated.
- **Spillway Crest:** Instead of building a new labyrinth spillway crest on the site of the existing spillway crest, the existing spillway crest will be protected from scour downstream of the crest.
 - Change in environmental impact:
 - Concrete construction footprint:
 - Original design – (new labyrinth spillway crest) 4,966.3 sq. feet
 - New design – (add wing walls to existing spillway crest and extend downstream apron) 480.5 sq. feet
 - Net reduction: 4,485.8 sq. feet
 - Riprap footprint (channel lining just downstream of spillway crest in both

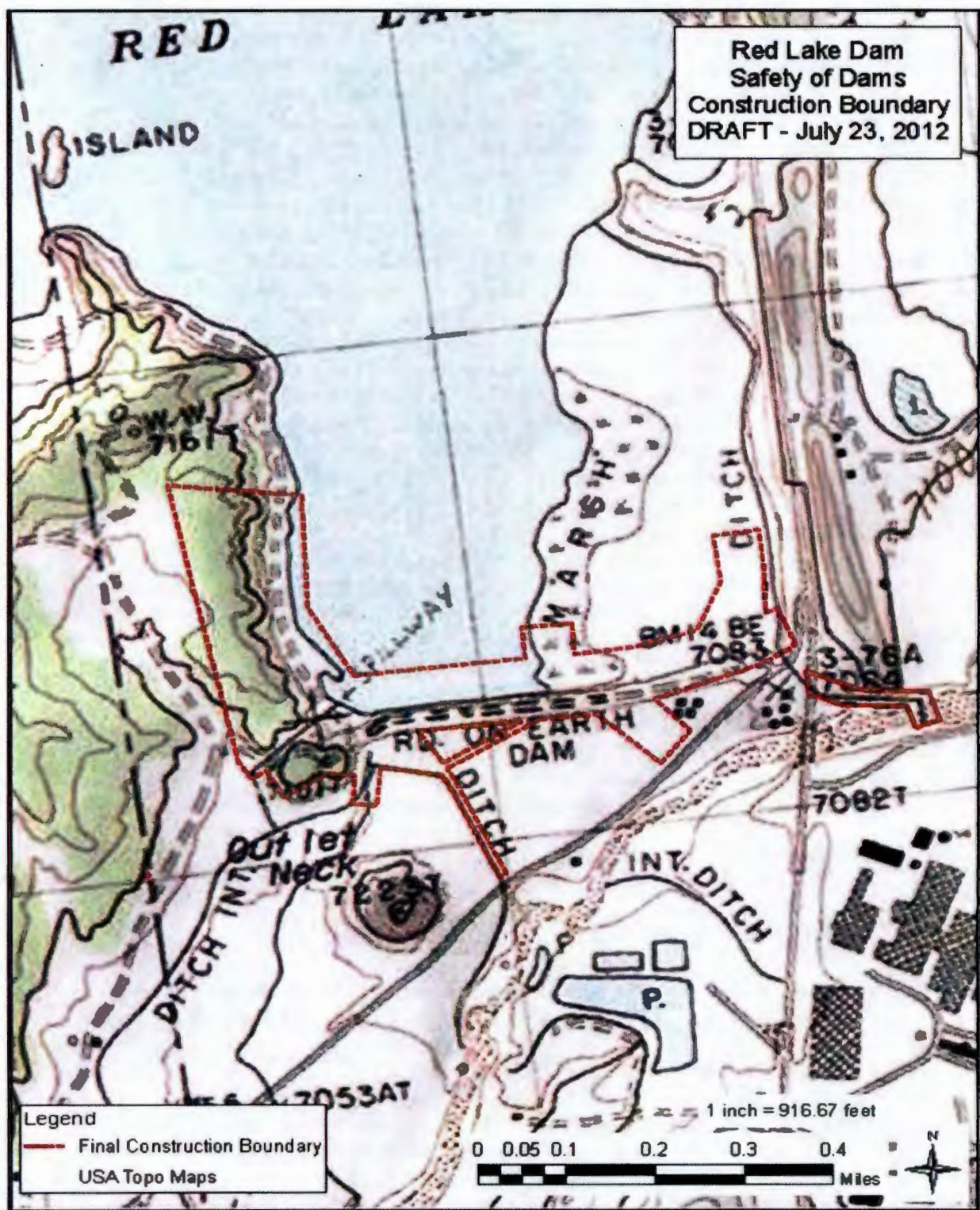


Figure 1 Overview of Revised Design 2 project footprint on USGS Buell Park Quadrangle Map

4 Affected Environment

Incorporate by reference Section 3.0 Affected Environment (Final EA, 2012).

5 Environmental Consequences

Environmental consequences for the Revised Design 2, the alternative that was the not selected, were determined to be the same or less than those identified for the Preferred Alternative for all the resources analyzed. This is due to identified modifications, outlined in Section 2.1, which resulted in a smaller footprint. In addition, all mitigation measures, best management practices, and requirements will remain unless otherwise indicated.

5.1 Living Resources

5.1.1 Ecosystem, Biological Communities, Vegetation, and Wildlife

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2012 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) - Impacts to biological resources and wildlife continue to be primarily limited to the clearing and grubbing areas directly impact by construction. These areas include: staging, stockpiling, borrow sites, a new access road, and the areas in the immediate vicinity of the dam and spillway channel. Traffic will generally use existing road network or travel on the dewatered section of the reservoir bed.

No significant long-term impacts to vegetation and biological communities are anticipated as a result of the Preferred Alternative. Potential minor effects of the project include short-term loss of plant cover, dust, noise, and other disturbances caused by equipment operation and human activity; however, existing wildlife in the area are currently accustomed to direct and indirect effects from current ranching, farming, light traffic, and recreational activities.

5.1.2 Special Status Species

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2012 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) – Environmental consequences will be the same as the Revised Design 2 and contractor shall abide the same conditions.

The contractor will be required to comply with the provisions of the Bald and Golden Eagle Protection Act, as amended. Although there are no nesting activity for bald eagles near Red Lake there is suitable perch sites more than 1.6 km away from the construction sites.

The project is not anticipated to have a significant impact on any special status species.

5.2 Geology, Topography, Soils

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2012 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) – Similar to the Revised Design 2 Alternative, soils not suitable for the dam construction would be replaced in the borrow site, with the topsoil preserved as cover to help reestablish vegetation. Other best management practices will be employed to help prevent and minimize erosion.

The project would have some minor-long term impacts as a result of borrow excavation. Construction activities will result in minor to minor short-term direct impacts and indirect impacts.

5.3 Water Resources

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2012 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) – The Preferred Alternative will result in water levels to rise up to full capacity of 7,080 feet elevation. Environmental consequences outlined for the Revised Design 2 would also be the resultant impacts for this alternative.

5.4 Air Quality

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2012 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) - Environmental consequences would be the same as those outlined for Revised Design 2 since the construction activities would be the same. The contractor would have to abide by the BMPs outlined in this section.

Air quality in the project area is in attainment of the Clean Air Act Nation Ambient Air Quality Standards. The Preferred Action will result in short-term construction emissions associated with the proposed action would have localized and minor effects on air quality.

5.5 Cultural Resources

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2012 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) – The Preferred Alternative would result in similar impacts as the Revised Design 2 Alternative. The roads eliminated from the project will still be eliminated in order to avoid the two historic properties located within the project area. The conditions outlined in the Cultural Resources Compliance Form shall be followed for Site PM-P-8-8.

5.6 Environmental Justice

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2102 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) – Incorporate by reference Section 4.6 of the 2102 Final EA. There would be no potential to disproportionately and adversely affect the health or environmental of low-income or minority populations.

5.7 Socioeconomic Conditions

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2102 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) – Incorporate by reference Section 4.7 Socioeconomic Conditions. The Preferred Alternative will still result in a two year construction period, as well as the additional time necessary to fill the reservoir for irrigation. The BIA Regional Safety of Dams Officer will still notify the USDA informing them that the dam safety rehabilitation will result in lack of water and the rehabilitation project impacts to the water deliveries should be considered.

5.8 Resource Use Patterns

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2102 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) - Incorporate by reference Section 4.8 Resource Use Patterns of the 2102 Final EA.

In the long-term, there would be a greater supply of stored water for biological resources, recreation, and irrigation to downstream water users.

5.9 Indian Trust Assets

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2102 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) – Incorporate by reference Section 4.9 Indian Trust Assets. Permits would have to be updated to reflect current construction schedule (e.g., Non-Commercial Tree Cutting Permit, sand and gravel permits).

Although there may be short-term impacts to local farmers from loss of irrigation water during construction, in the long term, there would be a greater supply of stored water for fish, wildlife, recreation, and potential future irrigation releases to downstream water users.

5.10 Hazardous Materials

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2102 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) - Incorporate by reference Section 4.9 Indian Trust Assets. The contractor will continue to be responsible for ensuring that safe use, storage, and disposal of hazardous materials and solid waste associated with construction will be in accordance with all Tribal, local, and Federal laws and regulations.

It is not anticipated that this project will result in risk from any hazardous materials.

5.11 Methylmercury

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2102 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) – U.S. Environmental Protection Agency and the Navajo Nation Environmental Protection Agency will be contacted for sampling completed prior to construction to ensure methylmercury are at a safe level.

5.12 Noise, Traffic, Aesthetics

No Action – Same as outlined in 2012 Final EA.

Revised Design 2 – Same as outlined in 2102 Final EA.

Red Lake Dam Rehabilitation Modification (Preferred Alternative) - Incorporate by reference Section 4.12 Noise, Traffic, Aesthetics.

6 Consultation & Coordination

The Branch of Environmental Quality Act Compliance and Review worked with the Safety of Dams Project, Navajo Region.

7 Environmental Commitments

Environmental commitments are written statements of intent to monitor and mitigate for potential adverse environmental impacts of an action. The following environmental commitments will be incorporated for this project.

- Contractor will ensure that all equipment tires, equipment, and implements are to be cleaned prior to entering the project site to help prevent spread of noxious weeds.
- Contractor is responsible to comply with provisions of the MBTA. Contractor shall not harass eagles or other migratory birds.
- Because local habitat may support nesting of migratory birds, tree removal shall not occur between March 1 and August 15 unless a survey for nesting birds is performed.

- Contractor shall comply with Federal, Tribal, and local laws and regulations. The Contracting Officer may stop any construction activity in violation of Federal, Tribal, or local laws and additional expenses resulting from work stoppage will be responsibility of Contractor.
- Construction activities will employ best management practices to preserve the natural landscape and land use values where practicable. Except where earthmoving is required for temporary and permanent structures, approved staging/stockpiling areas, and borrow activity, all trees, shrubbery, and other vegetation would be protected from damage. Upon completion of the project, all work areas would be left in a condition to provide for proper drainage, protect from erosion, and facilitate re-vegetation. Any removed topsoil will be replaced in the best location to facilitate re-vegetation. Impacts to land within the project area would be reduced through implementation of site erosion control.
- Contractor is required to comply with provisions of the Bald and Golden Eagle Protection Act, as amended.
- Disturbed sites will be stabilized and reseeded where appropriate.
- In the event of a discovery of previously undocumented cultural resources, all operations in the immediate vicinity of the discovery would be suspended pending notification to NNHPD at 928-871-7147 or -7148.
- All required Clean Water Act permits such as Section 404 and 401 permits would be obtained prior to any construction activities in Waters of the U.S. or Waters of the Navajo Nation.
- Contractor will comply with RSHS and NNOSHA.
- All waste would be removed following construction and transported to an appropriately permitted disposal facility.
- Contractor will conform to most stringent requirement in cases of conflict between specifications, regulatory requirements, and RSHS.
- Land contours in areas not required for permanent facilities such as the dam, outlet works, stilling basins, or control houses would be restored by the contractor to the extent practicable.
- Removal of native vegetation will be minimized to the extent practicable.
- Contractor is responsible for preventing contaminants or pollutants from entering the water; having a spill prevention, control, and counter measure plan; and stockpiling construction materials away from jurisdictional waters.
- Contractor is responsible for damages resulting from dust originating from Contractor operations in accordance with clause at FAR 52.236-7, Permits and Responsibilities.

DUST CONTROL

Contractor will provide dust control and abatement during performance of work. o Contractor is required to prevent, control, and abate dust pollution on rights-of-way provided by Government or elsewhere during performance of work. o Contractor will provide labor, equipment, and materials, and use efficient methods wherever and whenever required to prevent dust nuisance or damage to persons, property, or activities, including, but not limited to, crops, orchards, cultivated fields, wildlife habitats, dwellings, and residences, agricultural activities, recreational activities, traffic, and similar conditions.

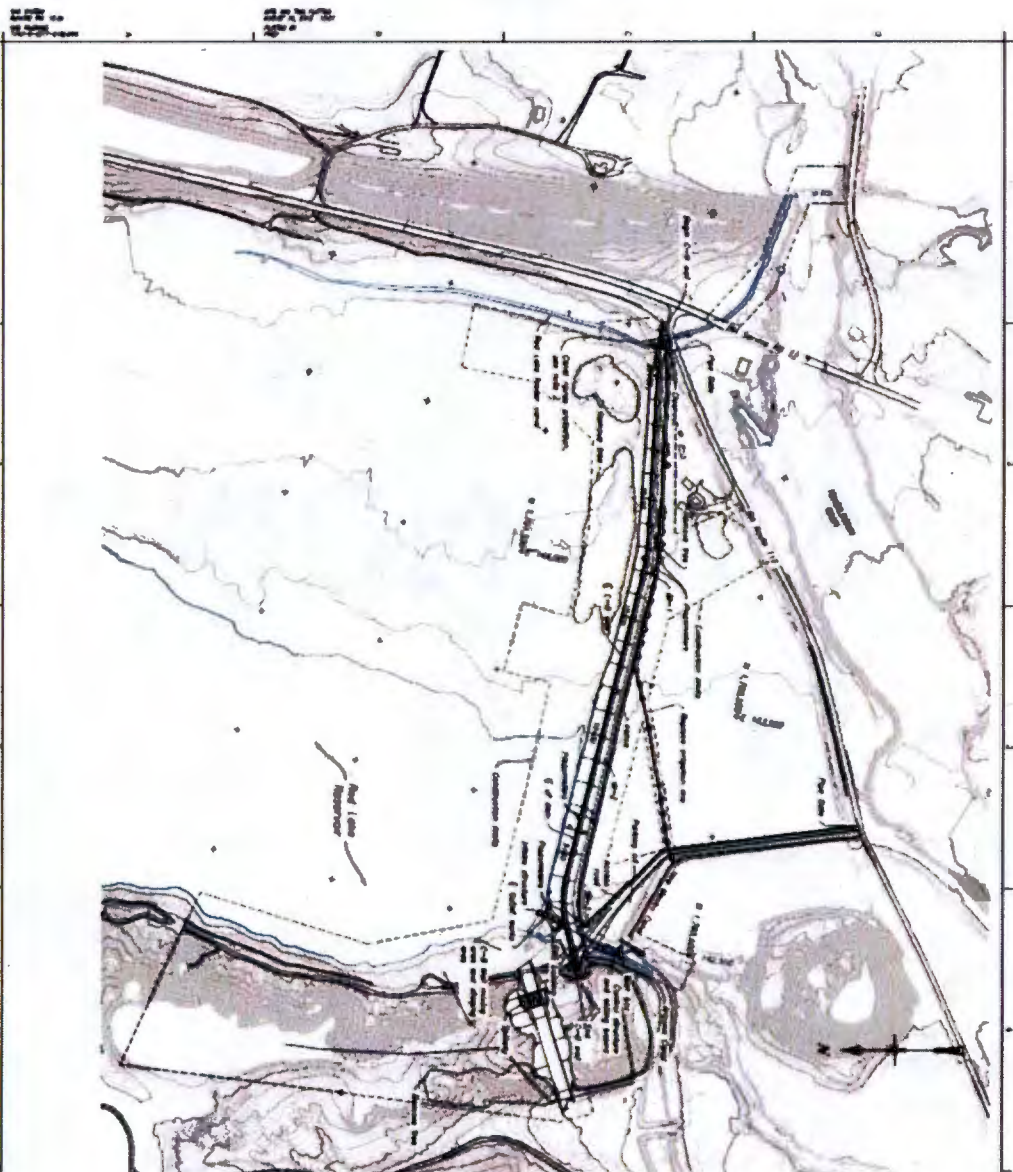
AIR POLLUTION CONTROL

Contractor will use reasonably available methods and devices to prevent, control, and otherwise minimize atmospheric emissions or discharges of air contaminants. o Contractor will not operate equipment and vehicles that show excessive exhaust gas emissions until corrective repairs or adjustments reduce such emissions to acceptable levels.

NOISE CONTROL

Construction activities would be limited to daylight hours to minimize disturbance in the early mornings and evenings. Only construction activities approved by Contracting Officer's Representative (COR) will be allowed during the hours of 8:00 p.m. to 6:00 a.m. COR may grant permission to work additional hours. o Equipment mufflers are required.

APPENDIX A



NOTES

1. The 1947 map shows the dam and reservoir as of 1947. The 1950 map shows the dam and reservoir as of 1950. The 1955 map shows the dam and reservoir as of 1955. The 1960 map shows the dam and reservoir as of 1960. The 1965 map shows the dam and reservoir as of 1965. The 1970 map shows the dam and reservoir as of 1970. The 1975 map shows the dam and reservoir as of 1975. The 1980 map shows the dam and reservoir as of 1980. The 1985 map shows the dam and reservoir as of 1985. The 1990 map shows the dam and reservoir as of 1990. The 1995 map shows the dam and reservoir as of 1995. The 2000 map shows the dam and reservoir as of 2000. The 2005 map shows the dam and reservoir as of 2005. The 2010 map shows the dam and reservoir as of 2010. The 2015 map shows the dam and reservoir as of 2015. The 2020 map shows the dam and reservoir as of 2020.



LEGEND

Symbol Description

<p>1743-0-218</p>	<p>GENERAL MAP</p>	<p>ALWAYS THINK SAFETY</p> <p>AN AWARENESS OF THE DANGER</p> <p>OF THE DAM IS ESSENTIAL</p> <p>FOR THE PROTECTION OF LIFE AND PROPERTY</p> <p>RED LAKE DAM MODIFICATIONS</p> <p>DAM MODIFICATIONS</p>	<p>RECOMMENDATIONS</p>
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CULTURAL RESOURCES COMPLIANCE FORM

THE NAVAJO NATION
HISTORIC PRESERVATION DEPARTMENT
PO BOX 4950
WINDOW ROCK, ARIZONA 86515

OFFICIAL FILE COPY	
PROJECT AREA OFFICE	
DATE: 04/01/11	
NAME	CODE
HPD-11-937	
OTHER PROJECT NO.	
CI-BR-PXAO	CRS-2011-006
RETURN TO:	
CLASSIFICATION:	ENV-3.0
CONTROL NO.	11912017
PROJECT	Compliance
FORM	

ROUTING: COPIES TO
AZ/NM SHPO
XX REAL PROPERTY MGT/330
BOR

NNHPD NO. HPD-11-937
OTHER PROJECT NO.
CI-BR-PXAO CRS-2011-006

PROJECT TITLE: Red Lake Dam Safety of Dam Modification

LEAD AGENCY: BOR

SPONSOR: Bureau of Reclamation, 6150 West Thunderbird Road, Glendale, Arizona 85306-4001

PROJECT DESCRIPTION: The proposed undertaking will involve two proposed borrow areas; a stockpile and staging area; six access roads. Ground disturbance will be intensive and extensive with the use of heavy equipment.

LAND STATUS: Navajo Tribal Trust

CHAPTER: Red Lake

LOCATION: Unplatted & Projected T.19N, R.21W - Sec. 2; T.20N, R.21E - Sec. 35 & 36; Buell Park Quadrangle, Apache County, Arizona G&SRPM and McKinley County, New Mexico NMPPM

PROJECT ARCHAEOLOGIST: Jon S. Czapliski
NAVAJO ANTIQUITIES PERMIT NO.: None

DATE INSPECTED: 08/01/11

DATE OF REPORT: 08/26/11

TOTAL ACREAGE INSPECTED: 8.0-ac

METHOD OF INVESTIGATION: Class III pedestrian inventory with transects spaced 5-10 m apart.

LIST OF CULTURAL RESOURCES FOUND: (1) Site (NM-P-8-8) & (1) Traditional Cultural Property (TCP)
LIST OF ELIGIBLE PROPERTIES: (1) Site (NM-P-8-8) & (1) TCP
LIST OF NON-ELIGIBLE PROPERTIES: None
LIST OF ARCHAEOLOGICAL RESOURCES: None

EFFECT/CONDITIONS OF COMPLIANCE: No historic properties will be affected with the following conditions:

Site NM-P-8-8:

Site will be avoided by abandoning Road #2.

TCP:

TCP will be avoided by abandoning Roads #3 & 4.

In the event of a discovery ("discovery" means any previously unidentified or incorrectly identified cultural resources including but not limited to archaeological deposits, human remains, or locations reportedly associated with Native American religious/traditional beliefs or practices), all operations in the immediate vicinity of the discovery must cease, and the Navajo Nation Historic Preservation Department must be notified at (928) 871-7148.

FORM PREPARED BY: Tamara Bilic

FINALIZED: October 7, 2011

Notification to

Proceed Recommended:

Yes XX No

Conditions:

Yes XX No

Alan S. Downer, Navajo Nation
Historic Preservation Officer

Date

Navajo Region Approval:

Yes X No

BIA-Regional Director

Date

RECEIVED

JUN 14 2013

DIVISION OF ENVIRONMENTAL
CULTURAL AND SAFETY MANAGEMENT

TEL 10/20/11

Red Lake Dam Rehabilitation Expedited Dam Safety Action

**Final Environmental Assessment (EA-12-107)
Navajo Nation, New Mexico**

Prepared by

**Bureau of Reclamation
Technical Service Center**

In cooperation with

**Bureau of Indian Affairs
Navajo Regional Office**

And

**Navajo Nation
Department of Water Resources**

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Acronyms and Abbreviations

ac	acre
AQI	Air Quality Index
AZ	Arizona
BH	Borehole
BIA	Bureau of Indian Affairs
CAA	Clean Air Act
CDP	Census-designated place
CDR	Comprehensive Dam Review
CEQ	Council on Environmental Quality
COR	Contracting Officer's Representative
CO ₂	Carbon dioxide
CPT	Cone penetration test
cy	Cubic yard
DOI	Department of the Interior
DVA	Deficiency Verification Analysis
EA	Environmental Assessment
EAP	Emergency Action Plan
EO	Executive Order
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
EWS	Emergency Warning System
FER	Field Exploration Request
FCCO	Four Corners Construction Office
FWCA	Fish and Wildlife Coordination Act
GHG	greenhouse gases
HDPE	High density polyethylene
ITA	Indian Trust Assets
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act

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Expedited Dam Safety Action

NEPA	National Environmental Policy Act
NESL	Navajo Endangered Species List
NHPD	Navajo Historic Preservation Department
NM	New Mexico
NN	Navajo Nation
NNDFW	Navajo Nation Department of Fish and Wildlife
NNDWR	Navajo Nation Department of Water Resources
NNEPA	Navajo Nation Environmental Protection Agency
NNOSHA	Navajo Nation Occupational Safety and Health Administration
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NTUA	Navajo Tribal Utilities Authority
OHWM	Ordinary High Water Mark
PAR	Population-At-Risk
PMF	Probable Maximum Flood
Reclamation	Bureau of Reclamation
RSHS	Reclamation Safety and Health Standards
RCRA	Resource Conservation and Recovery Act
SEED	Safety Evaluation of Existing Dams
SOD	Safety of Dams
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Office
VE	Value Engineering
WA	Washington
U.S.	United States
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey

1.0 PURPOSE AND NEED FOR ACTION

The proposed repairs and rehabilitation are to address the Safety of Dams (SOD) structural deficiencies identified in the Issue Evaluation of Red Lake Dam (DeWolfe 2010) and Comprehensive Dam Review (CDR) (Bureau of Reclamation (Reclamation 2009) safety concerns for residents below the dam.

The 2009 CDR concluded that Red Lake Dam has an unacceptably high probability of seepage-related failure associated with piping through the foundation, piping along or into the existing outlet works, piping along the abandoned outlet works, piping due to an increased reservoir head during flooding that results in higher seepage exit velocities. The Red Lake Dam was also found to have an unacceptably high probability of failure associated with erosion and slope instability along the upstream slope (Reclamation 2009). The risks were also determined to be high for failure of the spillway structure, resulting in an uncontrolled release of the reservoir.

Failure of Red Lake Dam could potentially result in a dam failure flood that could have devastating consequences for the Navajo Nation. In addition, a dam failure flood, or large flows through the emergency spillway, would potentially endanger a Population-At-Risk (PAR) of up to roughly 1,746 people including the community of Fort Defiance, Arizona and the Highway 264 bridge between Window Rock and Saint Michaels. The summary of potential failure modes and their likelihood of development and consequence ratings are shown in the Red Lake Dam Issue Evaluation (DeWolfe 2010)

This Environmental Assessment (EA) evaluates the environmental impacts associated with the rehabilitation project.

1.1 Project Location and Environmental Setting

Red Lake Dam is a homogeneous earthfill structure on a tributary of the Tohdildonih Wash (Wash), also called Black Creek. It is located at the community of Navajo, New Mexico, in McKinley County about 20 miles northeast of Window Rock, Arizona, on Navajo Nation lands (see Figure 1). The western portion of the reservoir formed by Red Lake Dam crosses the State boundary and is within Apache County, Arizona. The watershed upstream of the dam is approximately 32 square miles in area. In addition to runoff from the watershed, Red Lake receives water from a feeder canal which brings water from a diversion structure located on the Tohdildonih Wash to the southeast (Reclamation 2009). The water flowing in the Tohdildonih Wash that is diverted to Red Lake mostly originates from releases at Asaayi Dam.

Final Environmental Assessment
Red Lake Dam Rehabilitation
Expedited Dam Safety Action

The dam and lake are located in the relatively flat erosional Red Valley, a feature of the Defiance Plateau. Surrounding hills are composed of uplifted Chinle Formation and volcanic material. Upland habitat encompassing Red Lake consists of Great Basin Conifer Woodland and Plains and Great Basin Grasslands as described by Brown (1994). Ponderosa pine (*Pinus ponderosa*) forest occurs at higher elevations near the eastern and western flanks of Red Valley. Pinyon (*Pinus edulis*), juniper (*Juniperus* spp.), big sagebrush (*Artemisia tridentata*), and various species of grasses dominate valley bottoms and hillsides adjacent to the lake. Barren ground and residual grasses and forbs occupy most of the downstream embankment and crest of the dam.

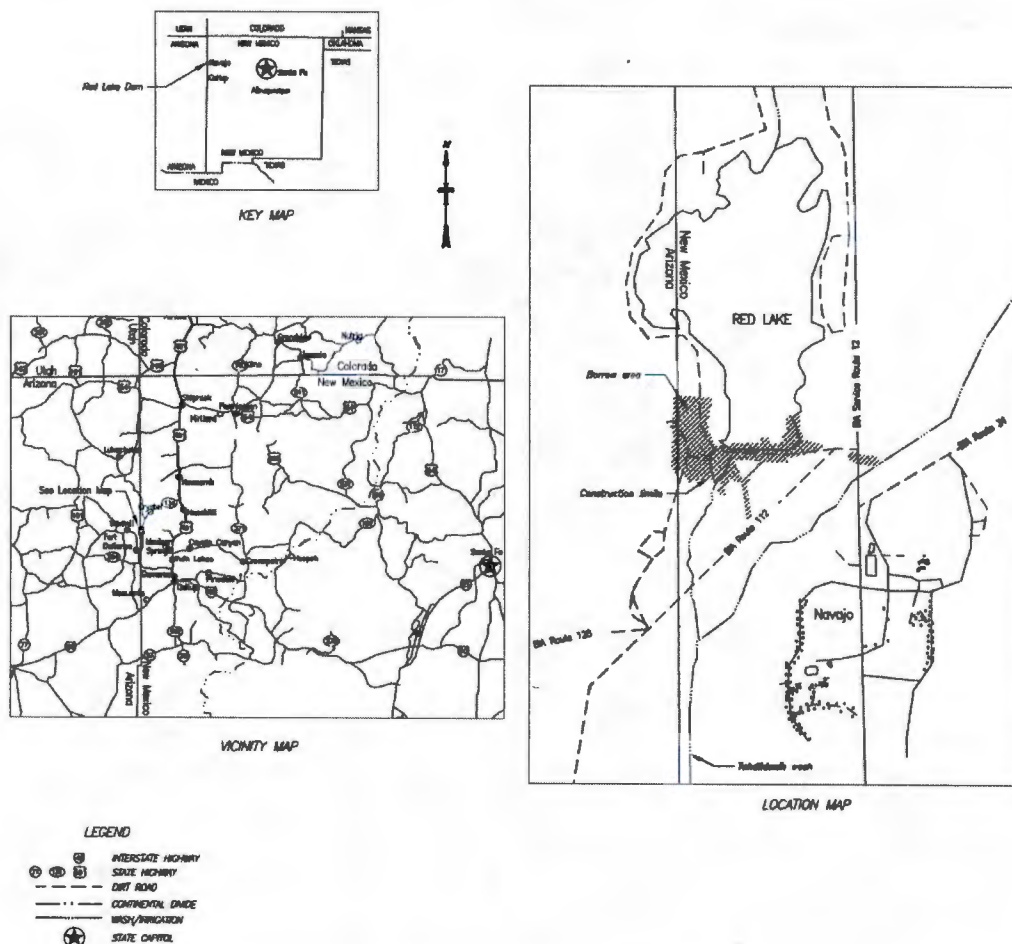


Figure 1. Map of Project Area (see also Figure 1743-D-213 in Appendix A)

The shoreline fluctuates greatly—especially during the growing season when water is needed for agriculture. In late summer and/or during especially dry years, the Lake can get relatively low.

1.2 Background and Other Related Documents

The information in this section was taken from the Red Lake Dam CDR (Reclamation 2009) and the Conceptual Design Project Plan (Reclamation 2010) unless otherwise specified.

Red Lake Dam was originally constructed in 1895 as a seven-foot-high embankment. The dam was overtopped and rebuilt several times. In 1937 the west end of the dam was extended about 150 feet and in 1953 the dam was enlarged and raised. It is an off-stream facility comprised of homogeneous earthfill with a maximum structural height of 32.0 feet from the base of a 10 foot cutoff trench to the crest of the dam. The dam has a crest elevation of 7,086 feet and crest width of 15 feet. The embankment crest is 2,600 feet long and it is 22 feet above the original stream bed.

Since the current and new spillway invert (elevation 7080) will remain six feet below the dam crest (i.e., 6 feet of freeboard), normal reservoir storage depth is 16 feet and normal reservoir volume is approximately 9,700 acre-feet. In 2003, the reservoir was restricted to 7,073 feet due to foundation seepage concerns (Reclamation, 2008a) as evidenced by the presence of several sand boils and artesian pressures just downstream of the dam. Although the dam has a 10-foot deep cutoff trench, the artesian pressures and boils suggest that the cutoff is ineffective in protecting the dam from foundation seepage. The boils reappear when the reservoir is at or above elevation 7074. In 2010, the Bureau of Indian Affairs (BIA) and the Navajo Nation decided to impose an additional 1-foot reservoir restriction to 7,072 feet elevation (Reclamation, 2011b). The maximum section of the dam is founded on approximately 80 feet of alluvial deposits.

The outlet works has a 33-inch-diameter concrete pipe with a trashracked concrete intake structure with invert elevation 7064.12. It functions by a manually-operated 36-inch regulating slide gate located 77 feet downstream of the intake and discharges through a concrete headwall to an unlined discharge channel. There is only 37 feet of embankment between the slide gate and the discharge end of the outlet works conduit.

The spillway is an unlined open channel with a concrete overflow structure located 250 feet to the right of the dam as you are facing downstream. The concrete spillway overflow structure crest (elevation 7080) is 25 feet long and has a discharge capacity of 1,500 ft³/s with the reservoir at the dam crest (elevation 7086). It is rated to pass about ½ of the Probable Maximum Flood (PMF). Portions of the spillway are excavated in alluvial deposits and crest structure does not have a positive cutoff. The wall of the spillway may have experienced differential settlement and the spillway structure is likely to experience significant

damage for long-duration flows. Failure of the spillway crest structure would result in an uncontrolled release of the reservoir.

The dam was first formally inspected on July 30 and 31, 1978, by a consultant for the U.S. Army Corps of Engineers (TOUPS/ECI Consultants, 1978). The 1978 inspection report classified the dam as "High Hazard" and determined the dam to be safe but the spillway was undersized and could not pass the PMF. Numerous recommendations were made including that the spillway should be enlarged and that erosion protection be added to the upstream embankment slope.

In 1982, the initial formal Safety Evaluation of Existing Dams (SEED) examination was performed (Seymour, 1982) and a Reclamation flood study documented additional supporting evidence that the dam was likely to be overtopped by a large flood event (Reclamation, 1982). These reports were followed by another SEED report (Reclamation, 1983), various SEED examinations (1984, 1987, 1990, 1993, 1996, 1998, 1999, 2001, 2003, 2005, and 2008) and closed circuit television inspections by the NNSOD of the outlet works on April 29, 2002, and November 23, 2004 (Reclamation 2005); and on October 22, 2007, (Reclamation, 2008b). Repairs were made to the outlet works after the 2004 inspection, but the conduit continues to be rated as "Conditionally Poor" after the 2007 inspection.

A CDR inspection was performed in 2002 (Reclamation 2003) and a Deficiency Verification Analysis (DVA) was completed in 2008 (Reclamation, 2008a). A Red Lake Dam CDR was again performed in 2009.

An Emergency Action Plan (EAP) has been prepared and exercised and an Early Warning System has been installed and made operational.

The dam embankment suffers from severe erosion of the upstream face causing over steepening and lack of riprap for erosion protection. At elevated reservoir water levels, slope failure is possible as is further damage from wave action during a flood.

The embankment does not have any designed filters or a toe drain. Despite prior tree and shrub removals on the upstream embankment slope, numerous root penetrations remain. Also, the downstream slope of the embankment is riddled by many prairie dog burrows and several telephone/power line pole penetrations. The poles have been cut flush with the ground surface but the penetrations of the wooden poles remain and likely extend to beyond the foundation contact. All of these penetrations shorten seepage pathways through the embankment.

Other related documents include the Categorical Exclusion Checklist (2006) and the U.S. Fish and Wildlife Service (USFWS) (2005) document on methylmercury

and other environmental contaminants. Citations for these documents are listed in the *References* Section.

2.0 ALTERNATIVES

Most of the information here was obtained from the Red Lake Dam Conceptual Design Report (Reclamation 2011b) which should be referred to for additional information.

The design team in concert with the Value Engineering (VE) team considered various options to meet the purpose and need of this SOD action. The two teams eventually identified two potential alternatives that brought together the most valuable elements among both the original alternatives developed by the Design Team and the proposed alternatives developed by the VE team. They are identified as *Revised Design 1* and *Revised Design 2*.

2.1 Revised Design 2 (Preferred Alternative)

Project Description – In order to address safety of dams concerns, a SOD rehabilitation project is proposed. The project description is detailed below. Refer also to Figure 2 below as well as the engineers' drawings in Appendix A.

- **Clearing, Grubbing and Stripping** – The construction limits for the Red Lake Modification are shown in Figure 1743-D-214 in Appendix A. The area 200 feet upstream of the dam will be cleared, grubbed and stripped to provide a work area for the contractor. Trees within this area will also need to be removed as shown by "clouds" outlined in Figure 1743-D-218 in Appendix A General Plan. The work area will be used to temporarily stockpile materials and as a haul route for construction equipment.

The area downstream of the dam and the spillway footprint will also be cleared, grubbed, and stripped and will be used to temporarily stockpile excavated materials. The entire borrow area will not be disturbed during construction. The majority of the disturbance will be on the southern limits of the borrow area adjacent to the spillway. Material will be excavated from the southern portions of the borrow area and will proceed north as required. This area of the borrow site has been identified as the prime source for fill materials since it is sparsely covered with trees as opposed to the areas on the north and east ends of the borrow areas. Trees within the required disturbance area will be removed as shown by the "cloud" outline in Figure 1743-D-218 in Appendix A.

The total construction limits area shown in Figure 1743-D-214 Appendix A is approximately 67.1 acres. The estimated area for clearing, grubbing, and stripping is approximately 47.2 acres as described above. Of the 47.2 acres only 10.84 acres are below the ordinary high water line (elevation 7073 ft)

- **Obtaining Construction Water** – Construction water would be obtained by excavating a storage pond in the reservoir or at the diversion dam at the Tohdildonih Wash within the identified construction limits (Figure 1743-D-218 in Appendix A).
- **Protect Against Erosion of the Upstream Face** – Given that the existing riprap on the dam is sparse, wave action has led to an over-steepened upstream slope. Improvements to the upstream slope will begin by excavating and stockpiling approximately 19,000 cubic yard (cy) of riprap and embankment materials with scrapers and/or track excavators. These materials will be reused to reconstruct the upstream slope of the dam. Re-grading the upstream slope will result in a net fill of approximately 1,240 cy of riprap and 495 cy of soil below the ordinary high water line (see Figure 1743-D-230 in Appendix A). Since the existing riprap is sparse, there is not a sufficient amount of riprap available to cover the entire upstream slope. Riprap will be imported from a commercial source and will range between 6 and 30 inches with an average size of approximately 18 inches. The source of the soil will be from the excavated embankment, the spillway excavation, and/or from the borrow area. The permanent net fill placed below the ordinary high water mark (OHWM) is along the upstream dam face and is approximately 0.40 acre.
- **Control Upstream-Downstream Seepage Path in the Foundation** – A cement-bentonite (C-B) cutoff wall will be constructed through the existing embankment into the foundation alluvium to reduce seepage beneath the dam. The C-B wall will be 2-ft wide; excavated with a long stick excavator to a maximum depth of 65 feet (Figure 1743-D-230 in Appendix A). A mixture of water, bentonite, and cement will be placed in the excavation to keep the excavation open. The mixture of water, bentonite, and cement will cure in-place and form the less permeable zone in the foundation reducing the seepage through the foundation. None of this work will result in a net fill below the ordinary high water line.
- **Construct Temporary Cofferdam** – A cofferdam will be constructed upstream of the outlet works excavation to minimize the risk from flooding during construction. The cofferdam will be 6 ft high with a crest width of 10-ft and 3:1 side slopes. The source of the material for the coffer dam will be from the spillway excavation. The total quantity of fill



Figure 2. Overview of project footprint on USGS Buell Park Quadrangle map.

will be roughly 1,350 cy, which will all be temporarily placed below the ordinary high water line (See *conceptual design* drawing at end of Appendix A).

- **Remove and Replace Outlet Works System** – The entire existing outlet works will be removed. All pipe, valves, and other materials will be removed and disposed of offsite in a proper disposal area. Refer to Figure 1743-D-243 Appendix A as you read the following description of the outlet works system, including the stilling basins. The new outlet works will consist of a 30-inch high density polyethylene (HDPE) pipe inside a 42-inch carrier pipe. An intake structure with a trash rack and guard slide gate will be constructed within the reservoir that will feed water to the outlet works. The guard slide gate will be operated from the Emergency Warning System (EWS) Building located on the upstream crest of the dam. The guard slide gate hydraulic pump will be either hand operated or operated by a generator. The components within the reservoir will result in a net fill of 68 cy of concrete from the intake structure.

A control structure will be constructed downstream of the dam at the location of the existing irrigation diversion structure. The outlet works will continue in a pipe through the existing Main Canal (i.e. between the dam and the irrigation diversion structure). This distance is approximately 70 feet and will result in net fill within the existing canal channel of 78.1 cy of concrete, 70 feet of 30-inch and 42-inch HDPE pipe and 30.7 cy of soil.

The control structure will divert outlet works releases to the New Mexico Canal, Arizona Canal or the Outlet Works Channel. The two canals are solely for irrigation purposes. The Outlet Works Channel is a safety feature for emergency evacuation of the reservoir. The valves in the control structure will be powered by solar-powered battery. All three discharge locations will discharge into a concrete stilling basin. The stilling basins are necessary to reduce erosion potential of discharges from the outlet works. Two of the stilling basins will be provided with a riprap lined channel and the third will discharge into an existing corrugated metal pipe. The net fill into the existing canal channel from the control structure and the stilling basin locations is approximately 222 cy of concrete, 210 cy of riprap, and 105 cy of riprap bedding combined. The permanent net fill to be placed below the OHWM within the Outlet Works Channel is approximately 0.01 acre. The permanent net fill to be placed below the OHWM in the canals is 0.07 acre.

- **Increase Spillway Capacity** – The existing spillway will be removed and replaced with a wider Labyrinth spillway capable of passing the estimated 10,000-yr storm event. The concrete debris from the existing spillway

removal will be disposed of offsite in a proper disposal area. The new spillway crest structure will be 45 feet wide. Downstream of the structure the spillway channel will be riprapped for a minimum of 50 feet downstream. All of this work will be above the OHWM.

- **Construct a Filter and Drain System** – A chimney filter will be constructed in the embankment using scrapers and compaction equipment. Downstream of the chimney filter, a gravel chimney drain will be used to relieve excess pore pressures. Seepage will be collected in a gravel trench and toe drain system (Figure 1743-D-230 in Appendix A). Downstream of these filter and drainage elements the embankment will be reconstructed using fill from the existing embankment excavation, spillway excavation or borrow areas. The toe drain will convey the water to the outlet works channel. The water will flow through concrete inspection wells, where the flow will be measured and inspected for sediment. None of this work will be below the ordinary high water line. The sand filter and gravel drain material will be imported from an offsite commercial supplier. Approximately 9,000 cy of filter sand and 4,700 cy of drain gravel will be used.
- **Protect the Dam Crest from Erosion and Improve Access for Employees** – A thick layer (1-ft) of gravel surfacing will be constructed on the dam crest. A geotextile fabric will be used beneath the gravel surfacing to improve the road subgrade (Figure 1743-D-230 in Appendix A). The crest of the dam is not wide enough to accommodate two-way traffic so a gate will be installed at the left abutment to restrict public access along the crest of the dam. Access to the right abutment will be improved by construction of a new access road downstream of the dam. This will improve access to the control structure and stilling basin for Navajo Nation SOD and Farm Board personnel. Due to type and cost of the control structure and equipment, a pipe gate will be installed at the intersection of the access road near the New Mexico Canal and BIA Route 112 to restrict public vehicular traffic. A gravel surface road at the toe of the dam will also improve access to the toe of the dam. The total amount of fill required for the construction of the access road is approximately 4,900 cy. The only portion of this work below the ordinary high water line is at the Main Canal crossing between the dam and the control structure, however the net fill for the access road was accounted for in the above description under *Remove and Replace the Outlet Works System*.
- **Restoring the Site** – The improvements to Red Lake Dam will likely generate approximately 29,000 cy of soil unsuitable for the embankment construction. This material will be placed within the borrow area, shaping

the slopes to match the existing contours. Approximately 6 inches of topsoil will be placed and seeded in all disturbed areas.

Table 1 below lists approximate amounts of fill material to be placed in Waters of the U.S. and Waters of the Navajo Nation. The delineation line for these Waters lies at 7073 ft elevation (the restricted pool level as of 2003, further restricted to 7072 in 2011). See Chapter 5 Coordination and Consultation for Clean Water Act permitting information.

Fill Materials	Design Feature*			Total
	Protect against Erosion of the Upstream Face	Construct Temporary Cofferdam	Remove and Replace Outlet Works System	
Clearing, Grubbing and Stripping (ac)	10.84 ac			
Soil (cy)	495	1,350	31	1,876
Riprap (cy)	1,240		210	1,450
Bedding (cy)			105	105
Concrete (cy)			368	368
30 & 42" HDPE Pipe (lf)			71	71
30" Steel Piping (lf)			161	161

Table 1. Summary table of approximate acreages and amounts of fill material to be placed below the ordinary high water line (elevation 7073 ft).

2.2 Revised Design 1 Alternative

Project Description – All the elements described for the *Revised Design2* Alternative also apply to the *Revised Design 1* Alternative with the exception of the dam crest, which is modified as follows:

This design involves expanding the existing dam crest width from 15 feet to 24 feet. This would result in a wider dam that would require more fill to be placed within the reservoir. Under this alternative the dam crest would remain as the main access to the dam and would be open to public access. Guardrails would be installed on the crest maintaining a travel width of 20 feet. Geotextile would be placed (by overlapping the seams) over the embankment crest sub grade and no

additional seams treatment would be performed. An 18-inch thick gravel layer would be placed as protection of the geotextile and to control surface erosion.

More detailed information about the conceptual design alternatives developed and the alternatives proposed in the VE study (Stage 2) can be found in the *Red Lake Dam Conceptual Design Report* (Reclamation, July 2011b).

Because *Revised Design 1* includes widening of the dam which would encroach into the reservoir, this alternative would result in much higher cost, greater environmental impacts, and additional permitting requirements. *Revised Design 1* was eliminated from further consideration and *Revised Design 2* is the preferred alternative.

3.0 AFFECTED ENVIRONMENT

This chapter discusses the environmental resources that may be affected by the Proposed Action. The following environmental issues are considered:

- Living Resources
- Land Resources
- Water Resources
- Air
- Cultural Resources
- Socioeconomic Conditions
- Environmental Justice
- Resource Use Patterns
- Indian Trust Assets (ITA)
- Hazardous Materials
- Methylmercury
- Noise, Traffic, Aesthetics

Public health and safety are addressed in various sections throughout the document and safety is a primary purpose and need for the project. Climate change and global warming were considered and it was determined that the temporary nature of the project was of relatively small scope and magnitude and in such an isolated area that it would not have a significant direct or cumulative impact on climate change and global warming.

3.1 Living Resources

Figure 3 below is an aerial photograph showing the lake at restricted pool elevation of 7,073 feet. The project area is outlined in yellow and after

rehabilitation, at full capacity the lake could rise to elevation 7,080 feet (green line) without Spillway Discharge.

3.1.1 Ecosystems, Biological Communities, Vegetation

The dam and lake are located in the relatively flat erosional Red Valley, a feature of the Defiance Plateau. Surrounding hills are composed of uplifted Chinle Formation and volcanic material. Upland habitat encompassing Red Lake consists of Great Basin Conifer Woodland and Plains and Great Basin Grasslands as described by Brown (1994). Ponderosa pine (*Pinus ponderosa*) forest occurs at higher elevations near the eastern and western flanks of Red Valley. Pinyon (*Pinus edulis*), juniper (*Juniperus* spp.), big sagebrush (*Artemisia tridentata*), and various species of grasses dominate the lower elevations, hillsides, and valley bottoms around the lake. Barren ground, residual grasses, and forbs occupy most of the downstream embankment and crest of the dam. Residual grasses and forbs occupy most of the downstream embankment and crest of the dam. Along the low-lying eastern edge of the lake, residual bulrush (*Schoenoplectus* spp.) are evident. Slightly higher along the eastern edge are willows (*Salix* spp.), salt cedar (*Tamarix* spp.), and Russian olive (*Elaeagnus angustifolia*). Higher still, are occasional cottonwoods (*Populus* spp.). The irrigation canals are lined with cattails (*Typha* spp.) and rushes at the bottom and willows, salt cedar, and Russian olive along the canal edges. The area is designated by the Navajo Nation Department of Fish and Wildlife as a Biologic Preserve. The lake has been an important attractant to migrating waterfowl and other migratory birds.

To help prevent the spread of noxious weeds, all equipment tires and implements coming into contact with the ground will be thoroughly cleaned prior to entering the project area.

3.1.2 Wildlife

The Great Basin Conifer Woodland and grasslands adjoining Red Lake support a varied mammal community that includes several notable species: black bear (*Ursus americanus*), mountain lion (*Puma concolor*), bobcat (*Lynx rufus*), mule deer (*Odocoileus hemionus*), and Gunnison's prairie dog (*Cynomys gunnisoni*). Sixteen species of herptiles potentially occupy the area (Brennan and Holycross 2006). More than 200 avian species have been recorded in McKinley County (BISON-M 2006).

Other wildlife species noted in the vicinity include coyote, blacktail jackrabbit, Colorado chipmunk, rock squirrel, wood rat, white-footed mouse, cliff chipmunk, cottontail, porcupine, skunk, and gray fox. Resident birds include bushtit, piñon jay, plain titmouse, black-chinned hummingbird, Woodhouse's jay, red-tailed hawk, red-shafted flicker, and rock wren (USFWS 2005). Bald eagles have been



Figure 3. Aerial photograph showing project area and reservoir pool elevations of 7,073 feet and 7,080 feet (maximum pool elevation after rehabilitation).

observed feeding on fish and waterfowl from this lake (Smith 2012). Smith also noted that since the lake has dried up in recent months even golden eagles have been observed foraging on fish. During an April 2012 site visit, white faced ibis (*Plegadis chihi*) were sighted on the lake.

Rocky Mountain elk, wild turkey, mule deer, and black bear are known to be present in the area. These species are of cultural and economic significance to the Navajo Nation. It is anticipated that construction would cause temporary displacement of these highly mobile species. Because the lake would be virtually dry, except for runoff, in preparation of project construction, these species would likely spend less time there and find water and food in the streams and washes nearby. Temporary impacts causing avoidance of the project area are anticipated; however, these impacts would be localized and temporary and most wildlife will be able to avoid the area during construction.

3.1.3 Special Status Species

In response to a data request, the Navajo Nation Department of Fish and Wildlife (NNDFW) sent a letter listing the species with the potential to occur on the 7.5 minute *Buell Park, NM* quadrangle map. Table 2 lists these species along with their Federal and Navajo status. Critical habitat for species listed by the USFWS does not occur within the project area.

The kit fox is the only species reported within one mile of the project area on the Navajo Endangered Species List (NESL) (Appendix B) pursuant to the Navajo Nation Code, Title 17 Section 507. As of 2005, no kit fox dens or peregrine falcon and golden eagle nests had been recorded near the dam (Reclamation 2006). Smith (2012) confirmed that there was no suitable habitat within the project area and that any kit foxes in the vicinity would likely be found in the open grasslands to the north.

Site assessments were conducted by a biologist from Reclamation's Phoenix Area Office (July 25, 2006), biologists from Reclamation's Technical Service Center (April 20 – 23, 2012), and a biologist and botanist from the Navajo Nation Department of Fish and Wildlife (September 4, 2012). The Navajo Nation Species Accounts (Navajo Nation 2008) and the 2006 CEC (Reclamation 2006) were also referenced. Based on the site assessments and information from the 2008 Species Accounts, 2006 CEC and personal and email communications (Smith 2012, Kyselka 2012, Hazelton 2012), it was determined that the following species are not found within the project area due to the lack of suitable habitat, edaphic conditions, and/or because the current range for the species is outside the project area: black-footed ferret, Mexican spotted owl, southwestern willow flycatcher, western yellow-billed cuckoo, mountain plover, American dipper, blue grouse, northern leopard frog, Nokomis fritillary, band-tailed pigeon, three-toed

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woodpecker, kit fox, tree swallow, northern saw-whet owl, Zuni bluehead sucker, Navajo bladderpod, Zuni fleabane, and whooping crane.

Common Name	Scientific Name	Status
Northern Saw-Whet Owl	<i>Aegolius acadicus</i>	NESL Group 4/MBTA
Clark's Grebe	<i>Aechmophorus clarkia</i>	NESL Group 4/MBTA
Golden Eagle	<i>Aquila chrysaetos</i>	NESL Group 3/MBTA
Zuni Bluehead Sucker	<i>Catostomus discobolus</i>	NESL Group 3
Rocky Mountain Elk	<i>Cervus elaphus nelson</i>	Economic significance
Mountain Plover	<i>Charadrius montanus</i>	NESL Group 4/ESA Proposed Threatened/MBTA
American Dipper	<i>Cinclus mexicanus</i>	NESL Group 4/MBTA
Blue Grouse	<i>Dendragapus obscores</i>	NESL Group 4/
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	NESL Group 2/ESA Endangered/MBTA
Peregrine Falcon	<i>Falco peregrinus</i>	NESL Group 4/MBTA
Bald Eagle	<i>Haliaeetus leucocephalus</i>	NESL Group 2/MBTA
Wild Turkey	<i>Meleagris gallopavo</i>	Cultural and economic significance
Black-Footed Ferret	<i>Mustela nigripes</i>	NESL Group 2/ESA Endangered
Northern Leopard Frog	<i>Rana pipiens</i>	NESL Group 2
Mule Deer	<i>Odocoileus hemionus</i>	Cultural and economic significance
Nakomis Fritillary/New Mexico Silverspot Butterfly	<i>Speyeria nokomis</i>	NESL Group 3
Band-Tailed Pigeon	<i>Patagioenas fasciata</i>	NELS Group 4/MBTA
Three-Toed Woodpecker	<i>Picoides dorsalis</i>	NESL Group 4/MBTA
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	NESL Group 3/ESA Threatened
Kit Fox	<i>Vulpes macrotis</i>	NESL Group 4
Tree Swallow	<i>Tachycineta bicolor</i>	NESL Group 4/MBTA
Black Bear	<i>Ursus americanus</i>	Cultural and economic significance
Rhizome Fleaband/Zuni Fleabane	<i>Erigeron rhizomatus</i>	NESL Group 2/ESA Threatened
Navajo Bladderpod	<i>Erigeron rhizomatus</i>	NESL Group 3
Yellow-Billed Cuckoo	<i>Coccyzus americanus</i>	ESA Candidate
Whooping Crane	<i>Grus Americana</i>	ESA Experimental, Non-essential Population

Table 2. Navajo and Federally listed species found within the Buell Park Quadrangle map {Navajo Nation NESL (Attachment 1)} and McKinley County, New Mexico (USFWS, http://www.fws.gov/southwest/es/NewMexico/SBC_view.cfm?spcnty=McKinley). NESL Group 2 and 3: Protected by Navajo Nation. NESL Group 4: no legal protection. Migratory Bird Treaty Act (MBTA): Protected by MBTA. ESA: Endangered Species Act.

Bald and golden eagles migrate through and stopover at Red Lake mostly in the spring (Smith 2012). Smith believes they take a different route in the fall, likely stopping over at Wheatfields Lake to the north in Arizona and that no nesting activity has been reported for this species at Red Lake. He stated that most bald and golden eagle activity is concentrated away from the project area. Project activities would be restricted to the extreme southern margins of the lake outside of areas typically used by bald or golden eagles for foraging. Although golden eagles prefer to feed on cottontail and jackrabbits, Smith (2012) noted that since Red Lake has been drawn down, golden eagles have fed on fish as well.

Because of these factors, 1) golden eagles primarily forage more than 1.5 kilometers away from the project area; 2) the lake is currently drawn down and will likely remain so until project completion; and 3) there is a home and farming activities nearby, it is unlikely that any golden eagles will nest within the 1.2 km *loud noise buffer* of the project area (the noise buffer zone was defined in the Navajo Nation Species Accounts (2008). Noise and associated construction activities may discourage the presence of potential golden eagles as well as their potential prey from the construction site. It is anticipated that golden eagles may experience minor impacts from the project and they would be temporary.

The peregrine falcon is not recorded as nesting at the project area (Navajo Nation 2008), but there may be appropriate foraging habitat in the area. The species nests on steep cliffs over 30 meters high, and there are none in the project area. Foraging habitat quality is an important factor; often, but not always, extensive wetland and/or forest habitat is within the falcon's hunting range of 12 kilometers or less. Variability in topographic features, such as elevation and slope, may also indicate the availability of prey. The lake is currently dry and will be at a restricted level until the project is completed, so it is unlikely that the peregrine falcon will be in the project area. No project impacts are anticipated for this species.

Clark's grebe may be present during migration seasons (Smith 2012). However, since the lake has been and will remain at a restricted level until project completion, it is anticipated that this species will stopover elsewhere. It is only documented at Morgan Lake at Fruitland, New Mexico (Navajo Nation Species Accounts 2008). No project impacts are anticipated for this species.

3.2 Geology, Topography, and Soils

The CDR (Reclamation 2009) describes the topography, geology, and soil types of the area. Below is an account from the CDR. For more detailed information, please refer to the 2009 CDR.

3.2.1 Topography and Regional Geology

Red Lake Dam is situated in the Navajo section of the Colorado Plateau physiographic province and lies on a synclinal valley between the Defiance Plateau on the west and the Chuska Mountains on the east. Red Valley, in which Red Lake is impounded, lies at an altitude of 7,070 feet, and is 1 to 2 miles wide. The streambed elevation is 7064 feet. The top of the hillside at the borrow site to the west of the lake reaches an elevation of 7,150 feet. To the east, the area is much flatter rising very gradually until it meets the highway.

The rocks in the area are predominantly of sedimentary origin, ranging from Permian to Cretaceous in age and consisting of a thick sequence of alternating shale and sandstone containing minor amounts of conglomerate and limestone. Local occurrences of Pliocene volcanic rocks, consisting of basaltic flows, dikes, necks, lapilli tuff and associated agglomerate and breccia are also present. Deposits of Quaternary alluvium along drainage channels overlie the bedrock.

3.2.2 Site Geology

The dam and lake are located in the relatively flat erosional Red Valley, a tributary to Black Creek. The southward flowing stream has carved a valley 1 to 2 miles wide, about 2 miles east of the crest of the east flank of the Defiance Plateau. The Chinle Formation constitutes bedrock at the site and consists of sedimentary shale, sandstone and limestone, which are Upper Triassic in age. The Petrified Forest Member of the Chinle Formation forms the upper right abutment for the dam and likely underlies roughly the right half of Red Valley at the dam axis. This interbedded sandstone, siltstone, and mudstone unit contains an intercalated sandstone, the Sonsela, which in this area, is a proven aquifer. The upper left abutment and roughly the left half of the Red Valley at the dam axis is underlain by the Owl Rock Member of the Chinle Formation. This unit is a cherty limestone interbedded with calcareous siltstone.

The uplifting which formed the Defiance Plateau and compressional stresses have tilted the sedimentary and tuffaceous strata in the Red Lake area and introduced minor folding. Bedrock generally dips easterly, toward the left abutment. Jointing is present in the sandstone ledges along the canyon walls, near-vertical secondary jointing being the most prominent. Geologic mapping performed during Stage 2 of the DVA verified this local site geology.

There are no known faults which crop out or are suspected to be present in the immediate vicinity of the dam, and the geologic mapping performed during Stage 2 of the DVA process did not record any faults.

3.2.3 Stratigraphy

Talus – Rockfall breccia consisting of unsorted, unconsolidated fragments of minette and minette breccia forms the slopes of Outlet Neck, a small butte located 1,000 feet downstream of the right abutment of Red Lake Dam. The talus ranges in size from sand and gravel to boulders up to 15 feet in diameter.

Alluvium – Alluvium consists of silty sand and sandy lean clay with varying percentages of sand, silt, and clay. Sandy components such as poorly graded sand (SP) and silty sand (SM) are generally brown in color and are found upstream and downstream of the eastern half of the dam east of cone penetration test (CPT) 06-7. Clayey materials such as clayey sand (SC) and sandy lean clay (CL) are generally dark gray to black in color and are found in close proximity to the shore of Red Lake with the lake at elevation 7072. Sandy clay is also present in the marshy area that extends about 160 feet downstream of the right one-third of the dam west of CPT06-7. Interbedded lean clay and sandy lean clay with varying amounts of silt and sand forms the right abutment and the slopes upstream of the dam. The clays have medium to high plasticity and are sticky when wet. Gravel and cobble-size sandstone fragments litter the surface. The alluvium overlies the bedrock to an estimated maximum thickness of 80 feet below the foundation of the dam based on the results of the CPT soundings, which showed a sharp change at the bottom of the soundings indicating harder material. Boreholes BH-1 and BH-2, drilled from the crest of the dam to a depth of 80.1 and 91.0 feet, respectively, did not encounter bedrock.

Minette – Outlet Neck is a small butte located approximately 1,000 feet downstream of the right abutment of Red Lake Dam. The butte is the eroded remains of a volcanic neck and is composed of minette and minette breccia. The rock is dark gray to medium dark gray and dark olive gray in color and consists primarily of biotite phenocrysts in a groundmass of feldspar and biotite. Large fragments of wall rock (mostly sandstone) are incorporated in the breccia. Outlet Neck was the source of the rip rap used to protect the upstream slope of the dam.

Chinle Formation Owl Rock Member – The Owl Rock Member of the Chinle Formation consists of cherty limestone interbedded with calcareous siltstone. The rock is thought to underlie the left abutment of the dam, but is not seen in outcrop at the dam site. The Owl Rock Member is exposed east of the left abutment, across Tribal Route 12. Bedding strikes N10°W and dips 10 to 20° east.

Petrified Forest Member – The Petrified Forest Member of the Chinle Formation is subdivided into Units 4, 3, and 2. Units 4 and 3 are not exposed at the dam site, but are thought to underlie the left abutment of the dam. U.S. Geologic Survey (USGS) reports describe Unit 4 as consisting of laminated, slightly clayey siltstone. Unit 3 is dominantly a medium-grained sandstone. Unit 2 of the Petrified Forest Member of the Chinle Formation underlies the right

abutment and outcrops in the spillway excavation and along the west and south sides of the hill that forms the right abutment. The siltstone is described in USGS reports as being slightly sandy near the top of the unit and near the dam and in the spillway; the siltstone is interbedded with very fine- to fine-grained sandstone beds up to 2 feet thick. The sandstone varies in color from pale red purple to pale grayish orange. The siltstone is generally light gray to light brownish gray. The siltstone is mostly laminated to very thinly bedded ($\frac{1}{4}$ to $\frac{1}{2}$ inch apart). Bedding in the sandstone ranges from moderately to thickly bedded (spaced from 2 to 18 inches apart), but is generally moderately bedded (spaced 5 inches apart.). Some cross-bedding is apparent in thicker beds. Weathering is dependent upon the thickness of the bedding. Beds generally greater than $\frac{3}{4}$ inch thick are moderately weathered and moderately hard, whereas beds less than $\frac{3}{4}$ inch thick are intensely weathered and soft. Bedding tends to be closer spaced as you approach the top of the exposure. Iron oxide staining follows some bedding joints, especially where the sandstone is cross-bedded. In general, the siltstone weathers to form gentle chip covered slopes with resistant ledges of sandstone. The orientation of bedding varies greatly from exposure to exposure and within outcrop. This is probably a factor of the low dip angle and the presence of cross bedding. Within the spillway excavation, the strike of the bedding varies from N80°W to N30° W and dips 11-18° NE. Bedding exposed approximately 400 feet west of the right abutment is oriented N40-50° E, 10- 20° NW. Fractures are generally moderately to widely spaced (0.5 to 1.5 feet apart), excluding bedding joints. Joints are oriented N30°W, 30° NE; N85°W, 90°; and N60°E, 50°NW.

Spillway Area – The spillway is located approximately 200 feet upstream of the right abutment and consists of an unlined, trapezoidal-shaped channel with a concrete control weir structure. The cutslopes which form the first 220 feet of the spillway consist of light brown to moderate reddish brown, sandy lean clay with a very hard consistency. The clay is laminated and breaks into 1 inch chunks when dug with a geologic pick and has a strong reaction with HCL. Further up the slope, the sandy lean clay grades into lean clay containing a lesser amount of sand. The top of the hill is capped with a veneer of polished, rounded to subangular gravel and platy sandstone fragments. Downstream of the clay, siltstone with interbedded sandstone forms the cutslopes of the spillway. The siltstone is laminated to very thinly bedded and contains sandstone beds up to 18 inches thick. The siltstone is intensely weathered and soft and the sandstone is moderately weathered and moderately hard, and forms resistant ledges in the cutslope. The floor of the spillway is covered with an unknown thickness of clayey slopewash.

3.3 Water Resources

3.3.1 Surface Water

Red Lake is a relatively broad, shallow lake with banks gradually deepening to a maximum depth of 16 ft when at full capacity (spillway crest elevation 7,080 feet). It is situated on Black Creek tributary, also known as Tohdildonih Wash. The watershed upstream of the dam is approximately 32 square miles in area. In addition to runoff from the watershed, the primary source of water to Red Lake comes from a feeder canal that brings water primarily from Asaayi Reservoir from a diversion structure located on the Tohdildonih Wash to the southeast (Reclamation 2009). Although shallow, the lake is approximately 846 acres in surface area and will have a maximum capacity of approximately 9,300 acre-feet once repaired.

The water is used for recreation (fishing) as well as agriculture (ranching and farming). Cattle and horses are frequently seen in or around Red Lake. The irrigation water is conveyed to agricultural fields via the New Mexico Canal and the Arizona Canal. Water rights are addressed under *Indian Trust Assets* in section 3.9. See also *Water Quality* Section below for more information on the affected environment for surface water.

3.3.2 Ground Water

The Petrified Forest Member of the Chinle Formation likely underlies roughly the right half of Red Valley at the dam axis. This interbedded sandstone, siltstone and mudstone unit contains an intercalated sandstone, the Sonsela, which in this area, is a proven aquifer.

Groundwater conditions present at the site, prior to the impoundment of Red Lake, are unknown and only minimal data is presently available. During 1997, four observation wells were installed downstream of the toe of the dam. These wells, which monitor the groundwater in the near-surface alluvium, show a rapid response with changes in the elevation of Red Lake and also infer a possibly excessive hydraulic gradient. Two of these wells exhibit artesian pressures at higher reservoir elevations and it was this behavior along with several nearby sand boils which led to the recommendation in 2003 to restrict the reservoir elevation.

3.3.3 Water Quality

USFWS (2005) conducted a study on contaminants in water and fish from recreational fishing lakes on the Navajo Nation. The study found methylmercury concentrations were highest in the southern portion of Red Lake. It also found that catfish in Red Lake may contain mercury at levels that may pose health risks to bald eagles who consume catfish more than 30 days per year and to certain people

who eat fish more than twice a week—especially women of childbearing age, nursing mothers, infants, and young children.

Testing for other water quality parameters was not conducted for this study however, the report noted that organochlorine pesticides and other environmental contaminants, could be present and recommended developing a site-specific standard for aluminum in certain recreational lakes.

Livestock use the area and are often walking the edges of the lake and lounging in the shade in the vegetation bordering the lake. This mucks up the water and creates turbidity. There is no appreciable surface flow as the lake is predominantly fed from a diversion canal from Tohdildonih Wash near the southeastern edge of the lake near the dam rather than being river fed from the north side of the lake, opposite the dam. Suspended sediments tend to remain for long periods of time.

Table 1 above lists approximate amounts of fill material to be placed in Waters of the U.S. and Waters of the Navajo Nation. The delineation line for these Waters is at 7073 ft elevation, the restricted pool level as of 2003 (further restricted to 7072 in 2011), i.e., the area of the reservoir that lies below elevation 7073 ft is designated a Water of the U.S. and a Water of the Navajo Nation. See Chapter 5 Coordination and Consultation for Clean Water Act permitting information.

3.4 Air Quality

Summary of the Clean Air Act 42 U.S.C. §7401 et seq. (1970): the Clean Air Act (CAA) is the comprehensive Federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants.

The project area lies at an approximate elevation of 7,100 feet and is in an arid, rural setting. Air quality in the project area is typical of a rural, high desert setting. Occasional high winds contribute to temporary increases in the levels of atmospheric dust. Other dust contributing factors include local traffic on unpaved roads, ranching and farming operations. Air quality and visibility is generally good. The Navajo Nation EPA has an air quality monitoring site in Fort Defiance, approximately 15 miles from Red Lake. Their website lists the 2011 monthly Air Quality Index (AQI) for Fort Defiance as shown below in Table 3. Index readings below 50 are considered *Good*. Indexes from January 2011 through July 2011 ranged from 4 in January to 22 in April (Table 3).

Fort Defiance, New Mexico	
January	4
February	11
March	10
April	22
May	12
June	10
July	7

Table 3. Monthly AQI for 2011 in Fort Defiance, New Mexico (Source:
<http://www.navajonationepa.org/aqcp/AirMonitoringSite.html>)

3.5 Cultural Resources

An archaeologist from the Reclamation Phoenix Area Office conducted a records check at the Navajo Historic Preservation Department (NHPD) and initially surveyed the project site on July 25, 2006 prior to geotechnical testing at the dam. The records check showed that one site had been recorded in the vicinity of the dam by the Navajo Nation Archaeology Department in 2000. The site is a Navajo habitation with associated artifact scatter (NM-P-8-8) and was determined eligible by the Navajo Preservation Department. A Traditional Cultural Property (TCP) is also located nearby. Both sites were located away from the geotechnical testing and a determination of No Effect to Historic Properties was made by Reclamation (certified letter dated August 7, 2006; received August 14, 2006). NHPD did not respond to this consultation letter within the required 30-day period from receipt of the letter, thereby implying concurrence with the recommendation.

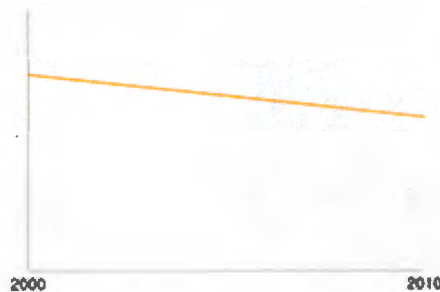
Reclamation conducted another survey on August 1, 2011 for two new proposed borrow areas, a stockpile and staging area, six proposed access roads, and a disturbed area on the north site of dam. This survey identified the two previously recorded sites noted above (the Navajo habitation and artifact scatter and the TCP) as potentially being affected by three of the six proposed access roads (Road Numbers. 2, 3, and 4). It was recommended that Reclamation revise the project to eliminate these roads and a determination of *No Historic Properties* was made to the NHPD (certified letter dated August 30, 2011 received September 9, 2011). The NHPD concurred with these recommendations in a Cultural Resources Compliance Form dated October 14, 2011. The project was revised to eliminate these road and is now more than 50 feet away from any identified cultural resources. See Chapters 4 and 5 for information on this.

3.6 Environmental Justice

Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," was issued by the President of the United States (U.S.) on February 11, 1994. This order established requirements to address Environmental Justice concerns within the context of agency operations. As part of the National Environmental Policy Act (NEPA) process, agencies are required to identify and address disproportionately high and adverse human health or environmental effects on minority or low-income communities. Federal agencies are directed to ensure that Federal programs or activities do not result, either directly or indirectly, in discrimination on the basis of race, color, or national origin. The order also requires that "the responsibilities set forth shall apply equally to Native American programs."

From 2000 to 2010, the Navajo Census-designated place (CDP) population growth percentage was down 21.6% (or from 2,097 people to 1,645 people) (cubitplanning.com 2012). According to the CUBIT website for demographic data (<http://www.cubitplanning.com/city/23680-navajo-cdp-census-2010-population>) the following 2 figures best illustrate the demographics of the region.

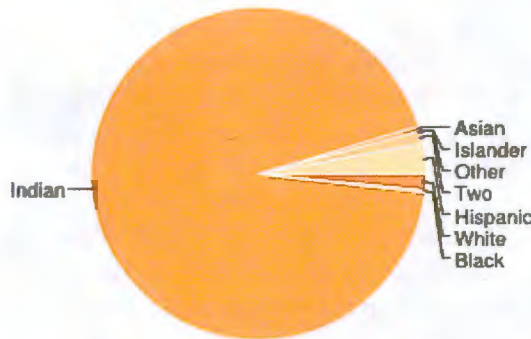
Population Growth: Census 2000 to Census 2010 According to Navajo CDP Census 2010 results, the population of the area was approximately 1,645 people. From 2000 to 2010, the Navajo CDP population growth percentage was -21.6% (or from 2,097 people to 1,645 people).



The following information is from the U.S. Census Bureau, as of the 2010 census (http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_DP_DPDP1&prodType=table) http://en.wikipedia.org/wiki/Navajo,_New_Mexico - cite note-GR2-1: 98.9% of the 1,645 people in Navajo CDP were American Indian or Alaska Native. Approximately half (821) of this population were 19 years old or younger. Some 590 people were between the ages of 20 to 49. There were 220 people between the ages of 50 and 74, and only 14 people 75 or older. There are slightly more females than males (54% to 46%).

There were 475 households and 406 families living in Navajo, New Mexico. The population density was 928.1 people per square mile (358.3/km²). There were 560 housing units at an average density of 247.8 per square mile (95.7/km²). The racial makeup of Navajo, New Mexico was 96.42% Native American, 2.86% White, 0.48% from two or more races, and 0.24% from other races. Hispanic or Latino of any race were 0.62% of the population.

Census 2010 Race Data Race data for Navajo CDP include the racial breakdown percentages of 0.2% black, 0.5% Asian and 3.0% Hispanic. This is illustrated in the following pie chart. There were 475 households out of which 68.0% had



children under the age of 18 living with them, 40.6% were married couples living together, 37.7% had a female householder with no husband present, and 14.5% were non-families. 12.8% of all households were made up of individuals and 0.8% had someone living alone at least 65 or older. The average household size was 4.41 and the average family size was

4.81 (<http://www.cubitplanning.com/city/23680-navajo-cdp-census-2010-population>)

In Navajo, the population was spread out with 51.9% under the age of 18, 9.4% from 18 to 24, 26.1% from 25 to 44, 10.5% from 45 to 64, and 2.0% who were 65 years of age or older. The median age was 17 years. For every 100 females there were 88.2 males. For every 100 females age 18 and over, there were 78.4 males.

The median income for a household in Navajo was \$14,688, and the median income for a family was \$12,569. Males had a median income of \$21,518 versus \$24,083 for females. The per capita income for Navajo was \$4,551. About 64.0% of families and 67.4% of the population were below the poverty line, including 76.0% of those under age 18 and 63.9% of those age 65 or over.

3.7 Socioeconomic Considerations

In the immediate vicinity of the project area, farming and ranching is evident. According to a local resident who grew up there, alfalfa and oats are what is grown. These crops are used to feed livestock or as supplementary income. One of the consequences of the dam safety rehabilitation project is the lack or restriction of water for irrigation downstream from the dam. The Red Lake Dam Rehabilitation project would result in no irrigation for the two year construction period and the additional time required to fill the reservoir for irrigation. The time required for filling the reservoir is controlled by the diversions from the Tohdildonih Wash and inflows from the north. The BIA Regional Safety of Dams Officer has informed the Farm Board that irrigation water will not be released from Red Lake Dam for at least the estimated 2 year construction period.

One of the USDA NRCS criteria is that no Environmental Quality Incentives Program (EQIP) funds can be available for land that has not been irrigated for two or more years prior to the funding assistance application. Given the lack of water to the farmers, the farmers would no longer qualify for the EQIP funds that might help them get the land back into production. In addition to notifying the Farm Board, the BIA Regional Safety of Dams Officer will also draft a memorandum to USDA informing them that the dam safety rehabilitation project will result in a lack of water to farmers and the dam rehabilitation project impacts to water deliveries should be considered when evaluating farming requirements for any future applications to the USDA for assistance

3.8 Resource Use Patterns

The landscape around Red Lake Dam consists primarily of pasture, irrigated croplands, pinyon-juniper pine forest, and grasslands. Land resource uses within this area include farming, horse and cattle ranching, and some water-based recreation such as fishing, canoeing, and minor boating. Red Lake is not developed for recreation and is part of a designated biological preserve by the NNDFW. Hunting is not allowed.

Although not developed for recreation, the lake attracts many people. Small boats, canoes, and people fishing are sometimes seen on the lake. Teens and adults frequent the lakeside often to 4-wheel drive, party, and hang out, sometimes leaving trash and graffiti behind. Historically, the lake has been an important stopover for migrating waterfowl and some shorebirds, so bird watching could be another recreational use. Although it is designated as a biological preserve, there are no Management Plans in place or means to enforce them (Kyselka 2012).

Crop lands are present to the south and southwest of Red Lake and tend to follow along the Tohildonih Wash. Historically, Navajo farmers have planted corn, melons, squash, and beans, with the addition of alfalfa in the 20th century (NPS 2005). According to a local resident who lives next to the project area and has grown up there, the only crops currently grown in the near vicinity are alfalfa and oats. Since irrigation water would be unavailable for 2 years during project construction, farmers would have to dry farm or forego farming during this time. This is addressed above in Section 3.6 and also in Section 4.6 below.

As part of the project, a pipe gate will be erected that will restrict public access across the dam. A new access and maintenance road to the downstream control structure will be constructed. A pipe gate will also be installed at the entrance to the access and maintenance road at the intersection of BIA Route 112 (see Appendix A, Drawing 1743-D-218). These gates would not be removed upon project completion and the public would no longer have access to the lake from the road across the dam.

3.9 Indian Trust Assets

Indian Trust Assets (ITA) are legal interests in property held in trust by the U.S. through the Department of Interior for federally recognized Indian Tribes or individual Tribal members. Examples of things that may be trust assets are lands, mineral rights, hunting, fishing, or traditional gathering rights and water rights. The U.S., including all of its bureaus and agencies, has a fiduciary responsibility to protect and maintain rights reserved by or granted to Indian Tribes or individual Tribal members by treaties, statutes, and Executive Orders. This trust responsibility requires that all Federal agencies, including Reclamation, ensure their actions protect trust assets. Secretarial Order 3175 (incorporated into the Departmental Manual at 512 DM 2) requires that the potential impacts of Department of the Interior (DOI) bureau actions on ITA, and Tribal health and safety, must be addressed in planning and decision documents, such as this EA. The DOI bureau must also consult with the appropriate level of Tribal government whose trust assets are potentially affected or when tribal health and safety are at risk.

Trust assets of the Navajo Nation that would be affected by the proposed project include farming, land excavation, trees, and surface water resources. Reclamation, in cooperation with the BIA and the Navajo Nation SOD Program, coordinated with several Navajo Nation governmental departments, including the Land Department, Forestry Department, Department of Fish and Wildlife, Department of Water Resources, Navajo Nation EPA, and Minerals Department. The Navajo Farm Board was also consulted. As noted above, farming activities may be impacted for 2 or more years during construction and refill of the reservoir, as water for irrigation would not be available (see Section 3.7 above and Sections 4.7 below). In the long-run, the increased water storage capacity may yield additional water for irrigation purposes.

3. 10 Hazardous Material

No sites contaminated with hazardous or non-hazardous solid wastes are known to occur within the area potentially affected by construction. Use, storage, and disposal of hazardous materials and solid waste associated with construction have the potential to adversely affect the environment if these materials are improperly managed. In general, most potential impacts are associated with the release of these materials to the environment (e.g., leaks, spills, other discharges). Direct impacts of such releases would include contamination of soil, water, and vegetation, which could result in indirect impacts to wildlife, aquatic life, and humans.

3.11 Methylmercury

USFWS in coordination with the Navajo Nation EPA conducted a study of Methylmercury and Other Environmental Contaminants in Red Lake in 2005 (USFWS 2005). Fish tissue and water samples were taken from the lake and analyzed. The highest concentration of mercury from a water sample taken was 0.00366 ug/L which is significantly below the EPA's national recommended water quality criteria for protection of aquatic life (these values are 1.4 ug/L for acute and 0.77 ug/L for chronic conditions) (see <http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm>).

Though the mercury in the water column was found to be low, mercury in reservoirs tends to undergo microbial methylation and then tends to bioaccumulate in biota (Spence 2012). The study found that catfish in Red Lake may contain mercury at levels that may pose health risks to bald eagles who consume catfish more than 30 days per year and to certain people who eat fish more than twice a week—especially women of childbearing age, nursing mothers, infants, and young children. In response to this study, the NNEPA issued a Fish Advisory¹. In 4 catfish filets tested, the geometric mean value for methylmercury, converted to wet weight was 0.424 mg/kg. The EPA recommends 0.3 mg/kg. Red Lake contains a somewhat higher than recommended level. Spence (2012) suggested that sediment sampling may be warranted.

Higher concentrations of methylmercury were noted in samples collected from the southern portion of the reservoir near the dam. Generally, the deepest portion of the reservoir has the highest probability of exhibiting conditions that support mercury methylation (anoxic conditions in which sulfate reducing bacteria are present). Hence, higher concentrations in the water column and fish tissue in this area are not unexpected (Spence 2012).

Studies in the Four Corners area have identified that atmospheric deposition of mercury in reservoirs in the area is a major contributor to fish consumption advisories (Spence 2012). Because the project area is in a rural desert setting and no known industrial sources for the mercury were identified, it is likely that the mercury associated with fish tissue in this reservoir is from atmospheric deposition.

The lake would be drawn down and the ground allowed to dry before any construction activities could begin, therefore, the risk from mercury at the site is

¹ Children under 6 years old: no more than 3 oz of fish per month. Women who are pregnant, nursing, or may become pregnant: no more than one 8-oz meal of fish per month. Adults and children over 6 years old: no more than one 8-oz meal of fish every 2 weeks

anticipated to be minimal. Spence (2012) suggested contacting EPA Region 6 for further assistance if concerned. The NNEPA would also have to be involved.

3.12 Noise, Traffic, Aesthetics

There would be noise and visual impacts from construction activities and increased traffic from Highway 12 to Red Lake Dam associated with the project. Three residences near the project area may be affected by the noise, traffic, and visual impacts from the heavy equipment, trucks, and other machinery, and the dust they make. These residents have been informed of the project.

Construction activities would be limited to daylight hours to minimize disturbance in the early mornings and evenings. Traffic is not expected to be significantly impacted. The area is relatively rural and the additional traffic created by transport of machinery, equipment, fill material, construction workers, etc., is not anticipated to cause significant congestion along Highway 12.

The nearest businesses are a gas station and store. Depending on the size of the work crew(s) and when they begin work, finish work, and take lunches/breaks, parking at these businesses could fill up. However, significant impacts are not anticipated as adjustments could be made to accommodate the locals and workers. The project is expected to take 2 years to complete. Impacts to local residents and businesses from noise and traffic would be temporary and the businesses may benefit from increased revenue generated by the construction of the project (see *Environmental Justice* above).

4.0 Environmental Consequences

Environmental consequences for Revised Design 1, the alternative that was not selected, were determined to be the same as or worse than those identified for the preferred alternative for all resources analyzed. This is due to the wider embankment and additional fill material required to rehabilitate the dam.

4.1 Living Resources

4.1.1 Ecosystems, Biological Communities, Vegetation, and Wildlife

No Action – Under the No Action alternative, existing habitat conditions and biological communities would persist into the foreseeable future unless and until SOD concerns require additional water level restrictions. Additional drawdown of the reservoir due to embankment instability could potentially reduce flows and affect vegetation and vegetative cover around the lake's edges, further reducing

its attractiveness to migrating waterfowl and other wildlife and fish. Reservoir restrictions reduce available water for fish and wildlife.

Risk from flood related dam failure would remain high and without dam repairs this risk is expected to gradually increase over time due to deterioration of outlet works, continued seepage, and erosion. To minimize risk of dam failure, increased water level restrictions are anticipated.

Impacts to biological communities, vegetation, and wildlife from ever-increasing water restrictions on the lake are anticipated to increase over time under the No Action alternative.

Revised Design 2 (Preferred Alternative) – Impacts to biological communities, vegetation, and wildlife as a result of the proposed action are primarily limited to clearing and grubbing areas directly impacted by construction. These areas are likely to include staging, stockpiling, borrow sites, a new access road, and the areas in the immediate vicinity of the dam and spillway channel (see figure D1743—D—218). Most construction traffic would generally use the existing road network or travel on the dewatered section of the reservoir bed.

Construction and excavation activities associated with the dam and outlet works, borrow site, spillway channel, and new road alignment would result in disturbance to approximately 47.2 acres, most of which is already highly disturbed lands. Table 4 shows a breakdown of each area of disturbance. It is anticipated that enough material can be excavated from Borrow Area 1 and the spillway channel so that Borrow Area 2 will not be needed. Excavation and clearing in the Borrow Areas will result in a loss of between 2.7 acres (Borrow Area 1) to 8 acres (Borrow Areas 1 and 2) of pinyon juniper habitat. The primary area selected for excavation has the fewest trees and is mostly bare ground and rock as shown in Figure 4 below. Borrow Area 2 will only be used if needed. Construction of the new road alignment will result in relatively permanent loss of approximately 2.6 acres of already highly disturbed agricultural lands. The site for the new road alignment is located next to the existing irrigation canal that needs occasional maintenance and already experiences disturbance for maintenance activities. The road would allow these maintenance activities to be more efficient.

Building the cofferdam is at the discretion of the contractor awarded the project. If a cofferdam is built, it would result in a temporary (2 year) disturbance of approximately 0.2 acres of the lake bed while it is dry (see Appendix A drawing labeled *Conceptual Design*).

Approximately 5.8 acres of land will be cleared of trees and shrubs such as cottonwoods, Russian olives, willows, and tamarisk. Most of this is on the east

Disturbance Area		
Borrow Area 1 (Range):	2.7	8.0
New Road Alignment:	2.6	
Cofferdam:	0.2	
Tree Clearings:	5.8	
Spillway Channel:	2.0	
Dam:	33.9	
TOTAL:	47.2	52.5

Table 4. Acreages of potential disturbance itemized by individual features and locations within the project area.

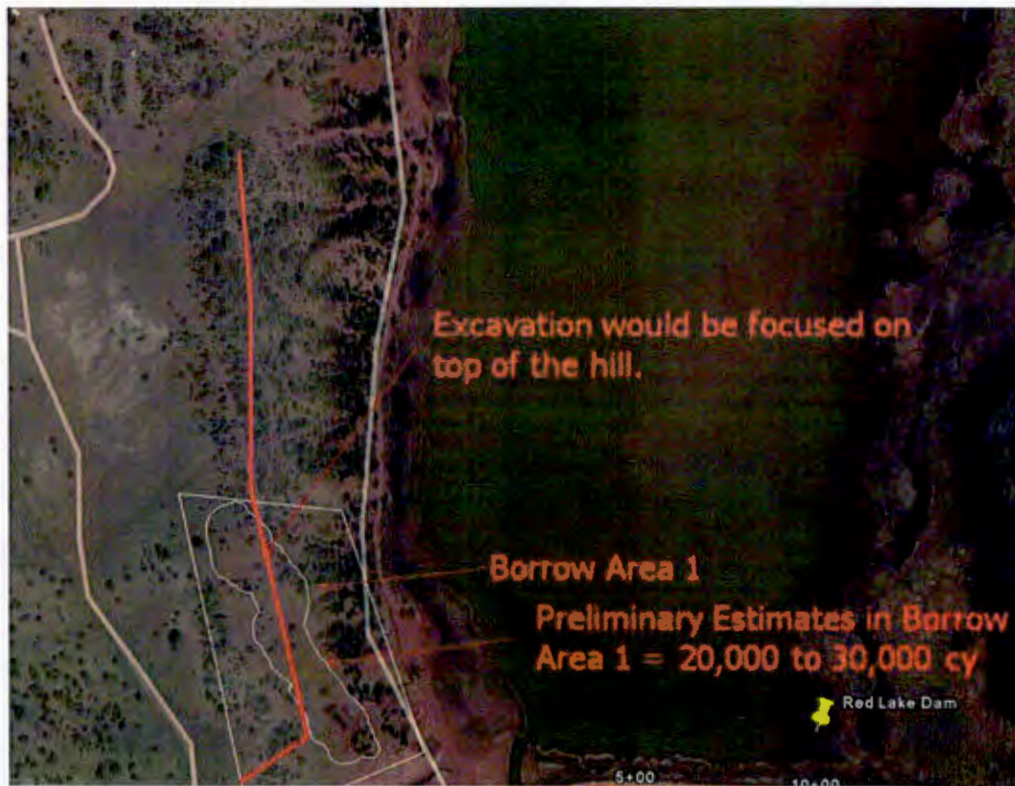


Figure 4. Borrow Area 1 (2.7 acres) with anticipated area to be excavated outlined in thin white 'cloud'. The red line depicts an existing fence. Excavation is estimated to yield up to 30,000 cy of fill material.

end of the project north of the dam, but some more tree clearing will occur at the residence' yard along the south side of the dam. The vegetation clearing is to provide access and staging/stockpile areas for construction activities and equipment as well as to remove the potential for tree root-related seepage problems through the dam. The permittee living immediately south of the dam

agreed to the tree removal as the branches may fall and damage her buildings and she does not like it when the trees go to seed. Additionally, another adjacent permittee requested removal of the cottonwood trees in their fields a little further south as these trees are in the way of their agricultural activities. This will result in clearing about 5.8 acres of vegetation, most of which is riparian type habitat used by birds and wildlife. The NNDFW said that the cottonwoods on the east end of the project may represent potential bald eagle nesting habitat. If possible, the NNDFW would like preservation or enhancement of the cottonwood patch upon project completion.

Other potential effects of the project include short-term loss of plant cover, dust, noise, and other disturbances caused by equipment operation and human activity. However, existing wildlife in the area is currently accustomed to direct and indirect effects from ranching, farming, relatively light traffic, and recreational activities. Temporary displacement of small mammals and reptiles would likely occur on sites where ground cover is removed, such as the borrow area. Construction activities also have potential to cause direct mortalities through crushing of smaller mammals, reptiles, and amphibians.

It is anticipated that larger, more mobile wildlife would avoid the area when active construction is occurring. It is also anticipated that this impact would be minimal as most wildlife in the area are likely accustomed to ranching and farming operations, as well as recreational use of the area. Project dewatering of the reservoir would impact waterfowl and shorebirds by reducing available aquatic habitat during the construction period. The effects of temporary dewatering on migratory birds would be localized to the project area and it is anticipated that migrating birds would find alternate stopover sites during migration such as Black Lake, Long Lake, Wheatfields Reservoir, Tsaile Reservoir, Asaayi Reservoir, Todacheene, and other water bodies nearby. No negative regional impacts are anticipated due to the proximity to other water bodies. Upon project completion, the reservoir pool elevation would be allowed to reach full capacity. The perimeter vegetation could re-establish and provide attractive cover for wildlife and fish. The long-term, cumulative impact of the project on wildlife communities would be overall beneficial and support more habitat diversity.

Project dewatering of the reservoir would also reduce the available water for terrestrial wildlife. The impacts of reduced water and increased disturbance are likely to be mitigated in the short-term by the proximity of Black Lake and Long Lake and the abundance of intermittent and permanent water bodies in the project vicinity. All equipment tires and implements need to be cleaned prior to entering the project site to help prevent spread of noxious weeds.

No significant long term impacts to vegetation and biological communities are anticipated as a result of this project.

4.1.2 Special Status Species

No Action – Under the No Action Alternative, the project would not be implemented. The dam would continue to be restricted to 7,072 feet elevation, perhaps reduced further in the future. The lake would remain less attractive to migrating waterfowl and shorebirds than it was before the pool elevation was restricted. Cover and aquatic habitat for fish would remain low since the perimeter vegetation has dried up. No impacts to special status species are anticipated from the No Action alternative as compared to the preferred alternative.

Revised Design 2 (Preferred Alternative) – No species listed as threatened or endangered by the Navajo Nation or USFWS occur in the project area. Migratory birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Nest Protection Policy (NNDFW 2008). According to Smith (2012), bald and golden eagles forage at Red Lake but there are no records of them nesting there. Suitable perch sites for bald eagles are more than 1.6 km away from the construction sites. Additionally, the lake is currently on a reservoir restriction, and plans are to keep the reservoir restricted until the rehabilitation is completed, therefore not providing much habitat for the bald eagle's main diet of waterfowl and fish. Although they prefer to feed on cottontail and jackrabbits, Smith noted that golden eagles have also fed on fish since the lake dried up in May 2012. There are no known bald or golden eagle nests within 2 km of the project area and bald eagle perch sites are more than 1.6 km from construction boundaries. These distances are outside the 0.8 km avoidance zone for bald eagle perch site and the 1.2 km *loud activity buffer* zone for both species nest sites as mentioned in the 2008 Species Accounts (Navajo Nation 2008). Therefore, the project is not anticipated to have a significant impact on these species.

Migratory Bird Treaty Act (MBTA) – This MBTA decreed that all migratory birds and their parts (including eggs, nests, and feathers) were fully protected. The MBTA is the domestic law that affirms, or implements, the U.S. ' commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource.

The 2008 Navajo Species Account states the following with respect to migratory birds listed in CFR 50:10:13 that are not protected under the NESL or ESA:

Species

Non-Endangered Raptors include: American kestrel (*Falco sparverius*), barn owl (*Tyto alba*), Cooper's hawk (*Accipiter cooperii*), great horned owl (*Bubo virginianus*), loggerhead shrike (*Lanius ludovicianus*) long-

eared owl (*Asio otus*), northern harrier (*Circus cyaneus*), osprey (*Pandion haliaetus*), prairie falcon (*Falco mexicanus*), red-tailed hawk (*Buteo jamaicensis*), sharp-shinned hawk (*Accipiter striatus*), Swainson's hawk (*Buteo swainsoni*), turkey vulture (*Cathartes aura*), and western screech-owl (*Megascops kennicottii*)

Survey Method: Surveys specific for these species are not required; however, the following Avoidance Guidelines are recommended if active nest(s) are discovered within close proximity to project site.

Avoidance: Non-Endangered Raptors: No disturbance within 0.15 km (490 ft) of active nest during incubation to fledging (as determined by direct field observation or qualified literature source specific for nesting dates in the Southwestern U.S.).

Migratory Birds: No disturbance within 50 m (165 ft) of active nest during incubation to fledging (as determined by direct field observation or qualified literature source specific for nesting dates in the Southwestern U.S.).

Per NNDFW (Kyselka 2012), the specific nesting and incubation periods for these species are from April 15 through August 15. Work must begin prior to April 15 or after August 15 to avoid the potential for "taking" any MBTA-protected species. Otherwise, tree-to-tree nest surveys may be necessary to determine if active nests of MBTA-protected birds are present. If present, a 50 m avoidance buffer is recommended. The contractor must comply with the MBTA and may not kill, remove, take, possess, capture, hunt, pursue, sell, or transport any MBTA-protected birds or their parts, nests, or eggs.

Bald and Golden Eagle Protection Act of 1940, as Amended – This Act prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their nests, or eggs. The Act defines take as "pursue, shoot, poison, wound, kill, capture, trap, collect, molest or disturb." Disturb is further defined as injury; decreased productivity by substantially interfering with normal breeding, feeding or sheltering behavior; or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior.

The contractor would be required to comply with provisions of the Bald and Golden Eagle Protection Act, as amended. Language to this affect will be incorporated into the construction contract.

Because there is no nesting activity for bald eagles at Red Lake and they forage more than 1.6 km away from proposed project activities, no impact on this species is anticipated.

Since there are no golden eagle nests within 2 km of the project area, and this is outside the 1.2 km *loud activity buffer* mentioned in the 2008 Species Accounts (Navajo Nation 2008), the project is not anticipated to have a significant impact on this species.

In accordance with the Fish and Wildlife Coordination Act (FWCA) of 1934, as amended, coordination with the USFWS is hereby requested. USFWS review of this document satisfies the coordination requirements of the FWCA.

4.2 Geology, Topography, Soils

No Action – Existing conditions would likely persist into the foreseeable future. No impacts are anticipated from the No Action alternative.

Revised Design 2 (Preferred Alternative) – Under the proposed alternative, excavation of approximately 2.7 acres to 8.0 acres of soil would be taken from the borrow area and approximately 2.0 acres of soil would be excavated from the spillway channel and used for the dam. Some of the soils would not be suitable for the dam and would be replaced in the borrow site, with the topsoil to be preserved for the top to help reestablish vegetation. Other best management practices will be employed to prevent or minimize erosion. Upon project completion, it is anticipated that the borrow site would be approximately 5 to 10 feet lower in elevation than its current height of 7,125 feet.

The spillway channel will be left permanently wider. Slope and other best management practices will be employed to prevent or minimize erosion and encourage revegetation.

4.3 Water Resources

No Action – Under the No Action alternative, water quality parameters would remain the same or may continue to decline if additional water level restrictions are imposed. The notice issued about the presence of methylmercury would remain in place, recommending that women of childbearing age, nursing mothers, infants and young children not eat fish from the lake more than twice a week.

Revised Design 2 (Preferred Alternative) – Under this alternative, water levels would be allowed to rise up to full capacity of 7,080 feet elevation. It is anticipated that certain water quality parameters would improve with increased amounts of water in the reservoir. With increased water levels, temperatures may

decrease thereby improving habitat for fish; vegetation should reestablish along the lake perimeters which could improve water quality through shoreline stabilization effect and filtration effect; and turbidity may improve through dilution effect. It is unknown if methylmercury concentrations would improve under the preferred alternative. Since there is no known point source for the methylmercury, it is likely atmospheric and not sedimentary. The Fish Advisory issued by NNEPA advising people to limit their consumption of fish caught at Red Lake should remain in place until further studies support lifting this notice (referred to sections 3.10 and 4.10 for more information on methylmercury). All required Clean Water Act permits such as Section 404 and 401 permits would be obtained prior to any construction activities in Waters of the U.S. or Waters of the Navajo Nation.

4.4 Air Quality

No Action – Under the No Action alternative, no changes in land use patterns are expected in the project area that would contribute to long-term changes in air quality. Compared to the preferred alternative, permanent SOD pool elevation restrictions would increase exposure of silty material in the lake basin to wind erosion.

Revised Design 2 – Under the preferred alternative, air quality would be temporarily impacted. Increased dust from ground disturbances and tailpipe emissions from equipment would result from construction activities. Primary sources of dust would include earth moving associated with excavation from the borrow site and spillway channel, construction of the cofferdam (if one is installed) and dam face slope improvement and stabilization, construction of the outlet works, clearing, grubbing, and stripping to create access and staging/stockpile areas, and construction of the new road alignment. Transport of materials, workers, and equipment along unpaved roads will also add to the dust and vehicle emissions. Soils that are destabilized by ground-disturbing activities would likely become a passive source of wind-blown dust until stabilization efforts can be implemented.

Vehicles and machinery would generate minor amounts of engine combustion products such as carbon dioxide, and fuel exhaust. These emissions would not produce measurable changes in ambient concentrations of regulated pollutants or result in a change in attainment status for the air quality region. Direct emission of CO₂-equivalent greenhouse gases (GHG) from the proposed project would be substantially below the level considered by Council on Environmental Quality (CEQ) to be relevant in a NEPA evaluation.

The contractor would be required to adhere to the following conditions:

- Provide dust control and abatement during performance of work.
- Prevent, control, and abate dust pollution on rights-of-way provided by Government or elsewhere during performance of work.
- Provide labor, equipment, and materials, and use efficient methods wherever and whenever required to prevent dust nuisance or damage to persons, property, or activities, including, but not limited to, crops, orchards, cultivated fields, wildlife habitats, dwellings, and residences, agricultural activities, recreational activities, traffic, and similar conditions.
- Use reasonably available methods and devices to prevent, control, and otherwise minimize atmospheric emissions or discharges of air contaminants.
- Do not operate equipment and vehicles that show excessive exhaust gas emissions until corrective repairs or adjustments reduce such emissions to acceptable levels.

Air quality in the project area is in attainment of CAA NAAQS. Short-term construction emissions associated with the proposed action would have localized and minor effects on air quality.

4.5 Cultural Resources

No Action – Under this alternative, the project would not be implemented and no adverse effects to cultural resources are anticipated compared to the preferred alternative.

Revised Design 2 – Two historic properties were located so the project was revised to eliminate proposed roads 2, 3, and 4 from the project and the project area is now more than 50 feet away from them, therefore, there would be no impact to these properties (see Chapter 5 *Consultation and Coordination* for additional information).

In the event of a discovery of a previously unidentified or incorrectly identified cultural resource(s), all operations in the immediate vicinity of the discovery must cease, and the NHPD must be notified at 928-871-7148. The NHPD approved the project with 3 conditions pertaining to Site NM-P-8-8: 1) Site boundaries will be flagged prior to any construction activities within the area; 2) Site will be avoided by at least 50 feet of any construction activities; 3) Any construction activities within 50 feet of the site must be monitored by a qualified cultural resource

specialist approved by the Navajo Nation Historic Preservation Office (see Chapter 5 *Consultation and Coordination* and Attachment C).

4.6 Environmental Justice

The project is on the Navajo Nation and although it will introduce a temporary inconvenience to farmers using irrigation water from the lake, it will serve to benefit the Navajo Nation in several ways.

No Action – Under the No Action Alternative, the project would not proceed and the dam would be left as is. This is not anticipated to cause a disproportionate or adverse effect to the health or environment of low-income or minority populations.

Revised Design 2 (Preferred Alternative) – Construction activities should not introduce chemical, biological, physical agents, or situations that have the potential to disproportionately and adversely affect the health or environment of low-income or minority populations.

4.7 Socioeconomic Conditions

No Action – Additional loss of reservoir storage due to enhanced operating restrictions could further impact the local economy associated with lake-based recreation and irrigated farming.

Revised Design 2 (Preferred Alternative) – As mentioned above in Section 3.6, one of the consequences of the dam safety rehabilitation project is the lack or restriction of water for irrigation downstream from the dam. The Red Lake Dam Rehabilitation project would result in no irrigation for the two year construction period and the additional time required to fill the reservoir for irrigation. The time required for filling the reservoir is controlled by the diversions from the Tohdildonih Wash and inflows from the north. The BIA Regional Safety of Dams Officer has informed the Farm Board that irrigation water will not be released from Red Lake Dam for at least the estimated 2 year construction period.

One of the USDA NRCS criteria is that no EQIP funds can be available for land that has not been irrigated for two or more years prior to the funding assistance application. Given the lack of water to the farmers, the farmers would no longer qualify for the EQIP funds that might help them get the land back into production. In addition to notifying the Farm Board, the BIA Regional Safety of Dams Officer will also draft a memorandum to USDA informing them that the dam safety rehabilitation project will result in a lack of water to farmers and the dam rehabilitation project impacts to water deliveries should be considered when

evaluating farming requirements for any future applications to the USDA for assistance. On November 1, 2012 Mr. Richard Begay, Program Liaison for USDA-NRCS submitted an email comment on the Draft EA stating that he had met with the Red Lake Farm Board the previous week to discuss how NRCS can assist Navajo farmers in this area. He stated that they had a good conversation and that USDA NRCS would continue to work with the Red Lake Farm Board on issues concerning USDA NRCS.

4.8 Resource Use Patterns

No Action – Under the No Action alternative the same resource use patterns are anticipated to continue into the foreseeable future. There are not anticipated impacts to resource use patterns from the No Action alternative.

Revised Design 2 (Preferred Alternative) – This alternative may introduce temporary impacts on farming during the construction and refill period (see sections 3.7 and 4.7) and may have potentially long-term effects for boating, fishing, and bird watching due to restricting public access from the road across the dam. There are no anticipated effects on grazing. The farmers who use water from Red Lake for irrigation of crops, may be temporarily impacted by the project. It is understood that these farmers grow alfalfa and oats primarily for their livestock or as supplementary income. It is anticipated that they will forego irrigated farming until the project is complete and the lake is refilled.

In the long term, there would be a greater supply of stored water for fish, wildlife, recreation, and potential future irrigation releases to downstream water users.

4.9 Indian Trust Assets

Trust assets of the Navajo Nation that may be affected by the proposed project include land and surface water resources. Reclamation, BIA, and the Navajo Nation SOD Program coordinated with several Navajo Nation governmental departments, including the Department of Water Resources, Department of Fish and Wildlife, Minerals Department, Forestry Department, Red Lake Chapter, and Red Lake Farm Board, during the planning phase of the project.

No Action – Under the No Action alternative, there would be no direct and foreseeable impact to ITA, since no project would be implemented. Current SOD operating restrictions would remain in effect into the foreseeable future. If further water level restrictions are placed upon the reservoir, this may have an impact on the irrigation water supply.

Revised Design 2 (Preferred Action) – Ground disturbances resulting from construction and contractor use would affect approximately 47.2 acres of land at

the dam, spillway, staging/stockpile areas, new road alignment, cofferdam, and borrow site. Access to Tribal land within active work areas would be restricted during the estimated 2-year construction period to protect public safety and welfare.

Construction activities would employ best management practices to preserve the natural landscape and land use values. Except where earthmoving is required for temporary and permanent structures, approved staging/stockpiling areas, and borrow activity, all trees, shrubbery, and other vegetation would be protected from damage. Upon completion of the project, all work areas would be left in a condition to provide for proper drainage, protect from erosion, and facilitate revegetation. Impacts to land within the project area would be reduced through implementation of site stabilization and erosion control practices where practicable.

Irrigated croplands may be temporarily impacted by the project as the water supply would be restricted for the 2-year construction period plus the length of time to refill the reservoir. See sections 3.7 and 4.7 for more information on impacts to agriculture from this loss of water.

Typically, the Navajo Minerals Department issues sand and gravel permits. Under this permitting process, grazing permit holders are monetarily compensated for each acre of land that is excavated for the project. The BIA and Reclamation's Four Corners Office is coordinating with the Navajo Minerals Department to provide advance notice that the construction contractor will likely be obtaining a sand and gravel permit. The sand and gravel permit would be issued to the contractor.

BIA and Reclamation have been working with NNSOD to obtain a Non-Commercial Tree Cutting Permit from the Navajo Department of Forestry for the removal of trees in the project area. A permit was issued to NNSOD on September 11, 2012. Trees would be removed primarily from the borrow site and the 200-foot-wide access corridor along the north side of the east half of the dam. A few cottonwood trees would also be removed from the adjacent permittees' lands at their request. The Forestry Department will count the number of trees cut afterward for billing purposes and they will be paid for the trees cut after clearing has occurred.

Although there may be short-term impacts to local farmers from loss of irrigation water during construction, in the long term, there would be a greater supply of stored water for fish, wildlife, recreation, and potential future irrigation releases to downstream water users.

4.10 Hazardous Materials

No Action – Under the No Action alternative, the project would not be implemented. There are no anticipated impacts from hazardous materials under the No Action alternative as compared to the preferred alternative.

Revised Design 2 (Preferred Alternative) – No sites contaminated with hazardous or non-hazardous solid wastes are known to occur within the area potentially affected by construction. The contractor is responsible for ensuring that safe use, storage, and disposal of hazardous materials and solid waste associated with construction will be in accordance with all Tribal, local, and Federal laws and regulations and to abide by Reclamation's Safety and Health Standards (language will be included in contract specifications). It is not anticipated that this project will result in risk from any hazardous materials.

4.11 Methylmercury

No Action – Under the No Action alternative, the project would not be implemented. Methylmercury is present in the lake (see Section 3.10 *Methylmercury*) and certain groups of people (e.g., women of childbearing age, nursing mothers, infants and young children) are advised not to consume catfish from Red Lake more than twice a week. This advisory is already in place and there are no additional impacts anticipated from methylmercury under the No Action alternative as compared to the preferred alternative.

Revised Design 2 (Preferred Alternative) – Methylmercury is known to be present in the lake (USFWS 2005). The USFWS 2005 study found that catfish in Red Lake may contain mercury at levels that may pose health risks to bald eagles who consume catfish more than 30 days per year and to certain people who eat fish more than twice a week—especially women of childbearing age, nursing mothers, infants, and young children. In 4 catfish filets tested, the geometric mean value for methylmercury, converted to wet weight was 0.424 mg/kg. The EPA recommends 0.3 mg/kg. Red Lake contains a somewhat higher than the EPA recommended level. Spence (2012) suggested that sediment sampling may be warranted and recommends contacting EPA's Region 6 office for assistance. Studies in the Four Corners area have identified that atmospheric deposition of mercury in reservoirs in the area is a major contributor to fish consumption advisories (Spence 2012). Because the project area is in a rural desert setting and no known industrial sources for the mercury were identified, it is likely that the mercury associated with fish tissue in this reservoir is from atmospheric deposition.

The lake would be drawn down and the ground allowed to dry within the project area accessed by the contractor before any construction activities could begin,

therefore, the risk from mercury at the site is anticipated to be minimal. Spence (2012) suggested contacting EPA Region 6 for further assistance if concerned.

4.12 Noise, Traffic, Aesthetics

No Action – Under the No Action alternative the project would not be implemented. There would be no anticipated noise, traffic, or aesthetic concerns as compared to the Revised Design 2 alternative.

Revised Design 2 (Preferred Alternative) – Under this alternative, there would be relatively short-term noise and visual impacts from construction activities and increased traffic associated with the project from Highway 12 to Red Lake Dam. Three residences near the project area may potentially be temporarily affected by the noise, traffic, and visual impacts from the heavy equipment, trucks and other machinery, and the dust they make (see also *Air Quality* sections 3.4 and 4.4).

Construction activities would be limited to daylight hours to minimize disturbance in the early mornings and evenings.

The nearest businesses are a gas station and store. Depending on the size of the work crew(s) and when they begin work, finish work, and take lunches/breaks, parking at these businesses could fill up. However, significant impacts are not anticipated as adjustments could be made to accommodate the locals and workers. The project is expected to take 2 years to complete. Impacts to local residents and businesses from noise and traffic would be temporary and the businesses may benefit from increased revenue generated by the construction of the project (see *Environmental Justice* above).

The area is relatively rural and the additional traffic created by transport of machinery, equipment, fill material, construction workers, etc., is not anticipated cause significant congestion along Highway 12. Traffic is not expected to be significantly impacted. Noise and aesthetic impacts will be temporary.

5.0 CONSULTATION AND COORDINATION

Per Section 106 of the National Historic Preservation Act, an archaeologist from the Phoenix Area Office conducted a records check at the NHPD and surveyed the project site on July 25, 2006. The records check showed that one site had been recorded in the vicinity of the dam by the Navajo Nation Archaeology Department in 2000. A TCP is also located nearby. Both sites are located away from the geotechnical testing and a determination of No Effect to Historic Properties was made by Reclamation and concurred with by the NHPD. Reclamation conducted another survey on August 1, 2011, for two new proposed

borrow areas, a stockpile and staging area, six proposed access roads, and a disturbed area on the north site of dam. This survey identified the two previously recorded sites noted above (the Navajo habitation and artifact scatter (NM-P-8-8 and the TCP) as potentially being affected by three of the six proposed access roads (Nos. 2, 3, and 4). It was recommended that these roads be abandoned. Reclamation submitted to the NHPD on October 7, 2011 a *Proceed Recommendation* as no historic properties will be affected with the *Conditions* to avoid Site NM-P-8-8 and TCP by abandoning proposed roads 2, 3, and 4. In the event of a discovery of a previously unidentified or incorrectly identified cultural resource(s), all operations in the immediate vicinity of the discovery must cease, and the NHPD must be notified at 928-871-7147 or -7148. NHPD approved this on October 14, 2011. On July 8, 2011 the Reclamation archaeologist from the Phoenix Office forwarded a copy of a letter dated August 7, 2006 from the Phoenix Area Office to the NHPD regarding a 2006 Blanket Permit for geotechnical testing at Red Lake Dam and recommended a determination of *No Effect to Historic Properties*. Attached to the letter was a NHPD Cultural Resources Compliance Form dated 12/28/2000 for a Cultural Resources Inventory of the Dam for the creation of a non-exclusive, permanent easement for the SOD Program to access the dam and surrounding areas for maintenance, construction, and emergency operations. This compliance form stated that No historic properties will be affected with 3 conditions pertaining to Site NM-P-8-8. 1) Site boundaries will be flagged prior to any construction activities within the area; 2) Site will be avoided by at least 50 feet of any construction activities; 3) Any construction activities within 50 feet of the site must be monitored by a qualified cultural resources expert approved by the NHPD.

On October 31, 2011, the Corps of Engineers sent a letter that a preliminary jurisdictional determination was made and it appears that there are jurisdictional Waters of the U.S. on the project site.

On November 2, 2011, Reclamation sent NNEPA Water Quality Program a Clean Water Act Section 401 Water Quality Certification application for excavation of test pits in Waters of the U.S.

Reclamation also sent an application to the Corps of Engineers for a Clean Water Act Section 404 permit (Nationwide 6) for the test pit excavation, subject to the following special conditions: 1) Under section 401 of the Clean Water Act, certification of compliance with State or Tribal water quality standards by the State water quality agency or Tribal water quality certifying authority is required for any discharge of dredged and fill material into Waters of the U.S. under Section 404 of the Clean Water Act... you are not authorized to begin work under this nationwide permit until you have obtained water quality certification from the Tribe; 2) the bald eagle is considered a delisted species of interest. If it is encountered during construction, stop everything, walk away, and wait for the bird to leave especially while the bird is wintering. Other conditions of the

nationwide six permit include allowing representatives from the Corps of Engineers to inspect the authorized activity at any time deemed necessary to ensure that it is being, or has been, accomplished in accordance with the terms and conditions of the nationwide permit. Certification that the work, including any required a mitigation, was completed in compliance with the nationwide permit should be signed and submitted within 30 days of completion of work.

On November 17, 2011, Reclamation issued a Field Exploration Request (FER) for gathering data to help develop project designs.

On December 12, 2011, The Corps of Engineers issued a verification that the test pits project is authorized by Nationwide Permit 6 for Survey Activities.

On January 3, 2012, the Navajo Nation Environmental Protection Agency (NNEPA) (issued a 30-day public notice for water quality certification per Section 401 of the Clean Water Act. On February 8, 2012, the NNEPA issued a letter denying section 401 water quality certification for the project due to unresolved issues over a previous water quality certification. They later issued the water quality certification (see below under April 16, 2012)

On January 17, 2012, Reclamation's Four Corners Construction Office (FCCO) submitted to request for permission to survey to the Navajo Nation Land Department. On February 28, 2012 Reclamation's FCCO submitted to BIA a request for permission to survey in the project area. On March 26, 2012 BIA included this letter and submitted a request to the Navajo Land Department for permission to survey for test pit excavations in the project area, including borrow site. On May 11, 2012 permission to survey from the Navajo Land Department was granted with the following conditions: 1) the rights of local Navajo people will be respected and protected; 2) Personnel with Division of Natural Resources will retain the right to monitor the field survey; 3) the field survey will be conducted at your own risk. The Navajo Nation will not be held liable for any personal injury or property damage that might occur during the course of the field survey; 4) Vehicles will be kept on existing roads and trails. Surface disturbance will be kept to an absolute minimum while conducting the field survey; 5) A complete copy of any reports generated from the field survey will, within one month of its completion, be submitted to Navajo Land Department and the Minerals Department; 6) Permission to conduct the survey will be effective for one year from the date of this letter; 7) The permittee will comply with all applicable Tribal and Federal laws and regulations; 8) Approval of right-of-way or any actual construction is not implied. A letter from BIA Acting Regional Director dated May 18, 2012 gave authorization to proceed with the necessary test pit survey, subject to any prior rights or adverse claims and to all applicable regulations of 25 CFR. The authorization is for SURVEY ONLY and upon completion, a formal application for right-of-way for the project should be

submitted to the BIA Regional Director, Fort Defiance Agency, Real Estate Services in accordance with 25 CFR 169. Test pit excavations were conducted from May 29 through June 8, 2012.

On April 12, 2012, the Corps of Engineers issued a wetland verification of the pasture, just south of the Dam. The Corps has determined that there appear to be no waters of the U.S. on this site.

On April 16, 2012, the NNEPA issued a water quality certification for test pit excavations per section 401 of the Clean Water Act. The water quality certification was granted with several conditions, mostly pertaining to environmental protection measures such as best management practices, including protecting from erosion, runoff, and sedimentation; re-vegetating the area upon project completion; preventing contaminants or pollutants from entering the water; having a spill containment plan in place; using safe construction materials; stockpiling construction materials away from jurisdictional waters; and limiting construction activities to dry areas or waiting till the areas dry out. It is also required that the photographic documentation of the project area before and after project completion be submitted to the NNEPA Water Quality Program.

On June 14, 2012, the geologist from Reclamation's FCCO sent an email stating that there are no utilities at any of the test pit sites, except for TPRL12-31, where a 2-inch steel pipe was encountered approximately 1 foot below the surface. He said the pipe appeared to head into the dam embankment and would be surveyed and shown on a map next week. Mr. Hall recommended contacting New Mexico One, however, they are a State entity and do not have jurisdiction.

On June 20, 2012, the Navajo Tribal Utilities Authority (NTUA) was contacted by phone and was sent maps of the project area via email to see if there are any utilities that must be avoided in the project area. They were contacted again on September 18, 2012 and October 10, 2012. On October 12, 2012 Chris with NTUA Gas Department returned the call from Reclamation. He said there are no gas lines within the project area. However, there are several water lines in the area. He is going to contact NTUA's Water Department and Electric Department and have them call Reclamation. Clearances will be obtained prior to initiating any excavation in the project area.

On August 10, 2012, a project description was submitted to NNDFW with a data request for species of concern. On August 27, 2012, a response was issued to Reclamation. The species list included 25 species that may be present within the USGS Buell Park Quadrangle Map (see Attachment B).

On August 20, 2012, Ms. Brenda Hatathlie from NNSOD called Reclamation to inform them of the status of the Forestry Permit that BIA SOD applied for to clear trees. The application was for 1) heavy equipment access during construction, 2)

staging/stock pile area, and 3) borrow material access. Ms. Hatathlie said she went out with the Ed Sam of NN Department of Forestry on August 13, 2012, and again on August 15, 2012. The permit to cut was issued to NNSOD on September 11, 2012 and expires on December 31, 2012.

On September 4, 2012, a botanist and biologist from NNDFW conducted a site visit to assess the potential for habitat to support Zuni fleabane and Navajo bladderpod. They determined that there was no suitable habitat in the project area for these species. While walking along the borrow site, they were met by a nearby resident who expressed concern over the removal of the trees in the borrow area (trees in both Borrow Areas 1 and 2 were marked by the Navajo Forestry Department). He said people drink and drive around by the lake and make messes and vandalize the area and he would like the trees left in place as a buffer from such activities. In subsequent communications with Reclamation, this resident asked if the fence going through the borrow area would be replaced. He was told that if it was removed during project construction that it would be replaced. He also asked if his road could be graveled as compensation. He was told this should be negotiated with BIA. He will receive a copy of this Draft EA and will be invited to comment at that time. The appropriate time to make this request is during the public comment period.

On October 10, 2012, Frontier Communications was contacted and a *Cable Locate* was submitted. On October 12, 2012, Michael Yazzie with Frontier Communications informed Reclamation of the location of 2 lines running parallel to BIA Service Road 12 (Highway 12) and BIA Route 112 (the diagonal dirt road extending from Highway 12 to the southwest) that may be within the project area. Mr. Yazzie then went to the site and flagged them. These are locations that will not be excavated. Mr. Yazzie will ask their engineer, Larissa Mitchell to map these lines for Reclamation. Mr. Yazzie also said their above ground telephone lines are 18 ft high.

In accordance with the FWCA of 1934, as amended, coordination with the USFWS is hereby requested by issue of this document. This review satisfies the coordination requirements of the FWCA.

Native American Graves Protection and Repatriation Act (NAGPRA) –
NAGPRA is intended to ensure that Native American human burials, associated and unassociated funerary objects, sacred objects, and items of cultural patrimony currently curated by Federal agencies, or by museums or institutions receiving Federal funding, are identified and inventoried for possible return to an appropriate Tribe. NAGPRA provides regulations covering how the intentional excavation or accidental discovery of Native American human remains and associated cultural items on Federal or Tribal lands must be handled.

There are no known human burials within the project area. If any are discovered during construction activities, work will immediately cease and the Tribal Historic Preservation Office (THPO) will be notified. Work may not resume until cleared by the THPO.

Resource Conservation and Recovery Act (RCRA), as Amended – RCRA establishes thresholds and protocols for managing and disposing of solid waste. Solid wastes that exhibit the characteristic of hazardous waste, or are listed by regulation as hazardous waste, are subject to strict accumulation, treatment, storage, and disposal controls.

The project is not expected to generate hazardous waste as defined and regulated under RCRA. To minimize the possible impact of hazardous materials (petroleum, oil, and lubricants) used during construction, all equipment would be periodically inspected for leaks. Any significant leaks would be promptly corrected. Nonhazardous solid waste would be disposed of in accordance with State and Federal regulations at an EPA-approved landfill. Spills and disposal of contaminated media would be managed in accordance with Tribal and Federal requirements.

EO 11988 (Floodplain Management) – This Presidential directive encourages Federal agencies to avoid, where practicable alternatives exist, the short- and long-term adverse impacts associated with floodplain development. Federal agencies are required to reduce the risk of flood loss; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains in carrying out agency responsibility.

The proposed project would improve public safety and obviate potential flood losses associated with failure of Red Lake Dam.

6.0 ENVIRONMENTAL COMMITMENTS

Environmental commitments are written statements of intent to monitor and mitigate for potential adverse environmental impacts of an action. The following environmental commitments will be incorporated for this project.

- Contractor will ensure that all equipment tires, equipment, and implements are to be cleaned prior to entering the project site to help prevent spread of noxious weeds.
- Contractor is responsible to comply with provisions of the MBTA. Contractor shall not harass eagles or other migratory birds.

- Because local habitat may support nesting of migratory birds, tree removal shall not occur between April 15 and August 15 unless a survey for nesting birds is performed.
- Contractor shall comply with Federal, Tribal, and local laws and regulations. The Contracting Officer may stop any construction activity in violation of Federal, Tribal, or local laws and additional expenses resulting from work stoppage will be responsibility of Contractor.
- Construction activities will employ best management practices to preserve the natural landscape and land use values where practicable. Except where earthmoving is required for temporary and permanent structures, approved staging/stockpiling areas, and borrow activity, all trees, shrubbery, and other vegetation would be protected from damage. Upon completion of the project, all work areas would be left in a condition to provide for proper drainage, protect from erosion, and facilitate revegetation. Any removed topsoil will be replaced in the best location to facilitate revegetation. Impacts to land within the project area would be reduced through implementation of site erosion control.
- Contractor is required to comply with provisions of the Bald and Golden Eagle Protection Act, as amended.
- Disturbed sites will be stabilized and reseeded where appropriate.
- In the event of a discovery of previously undocumented cultural resources, all operations in the immediate vicinity of the discovery would be suspended pending notification to NNHPD at 928-871-7147 or -7148.
- All required Clean Water Act permits such as Section 404 and 401 permits would be obtained prior to any construction activities in Waters of the U.S. or Waters of the Navajo Nation.
- Contractor will comply with Reclamation Safety and Health Standards and Navajo Nation Occupational Safety and Health Administration. In cases of conflict between specifications and regulatory requirements, contractor will conform to most stringent requirements.
- All waste would be removed following construction and transported to an appropriately permitted disposal facility.

- Land contours in areas not required for permanent facilities such as the dam, outlet works, stilling basins, or control houses would be restored by the contractor to the extent practicable.
- Removal of native vegetation would be minimized to the extent practicable.
- Contractor is responsible for preventing contaminants or pollutants from entering the water; having a spill prevention, control, and counter measure plan; and stockpiling construction materials away from jurisdictional waters.
- Contractor is responsible for damages resulting from dust originating from Contractor operations in accordance with clause at FAR 52.236-7, Permits and Responsibilities.
- **DUST CONTROL**
 - Contractor will provide dust control and abatement during performance of work.
 - Contractor is required to prevent, control, and abate dust pollution on rights-of-way provided by Government or elsewhere during performance of work.
 - Contractor will provide labor, equipment, and materials, and use efficient methods wherever and whenever required to prevent dust nuisance or damage to persons, property, or activities, including, but not limited to, crops, orchards, cultivated fields, wildlife habitats, dwellings, and residences, agricultural activities, recreational activities, traffic, and similar conditions.
- **AIR POLLUTION CONTROL**
 - Contractor will use reasonably available methods and devices to prevent, control, and otherwise minimize atmospheric emissions or discharges of air contaminants.
 - Contractor will not operate equipment and vehicles that show excessive exhaust gas emissions until corrective repairs or adjustments reduce such emissions to acceptable levels.
- **NOISE CONTROL**
 - Construction activities would be limited to daylight hours to minimize disturbance in the early mornings and evenings. Only construction activities approved by Contracting Officer's Representative (COR)

will be allowed during the hours of 8:00 p.m. to 6:00 a.m. COR may grant permission to work additional hours.

- Equipment mufflers are required.

7.0 DISTRIBUTION LIST

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Final Environmental Assessment
Red Lake Dam Rehabilitation
Expedited Dam Safety Action

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Final Environmental Assessment
Red Lake Dam Rehabilitation
Expedited Dam Safety Action

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Navajo Times Newspaper

Final Environmental Assessment
Red Lake Dam Rehabilitation
Expedited Dam Safety Action

Gallup Independent Newspaper
500 N. 9th St (POB 1210)
Gallup NM 87301 (87305)

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8.0 REFERENCES

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Red Lake Dam Rehabilitation
Expedited Dam Safety Action

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Attachment Comments and Responses for the Public Draft EA

Comment: In a memo dated October 23, 2012, wildlife biologist Pamela A. Kyselka with the Navajo Fish and Wildlife Department had 2 comments. First, Ms. Kyselka commented about the draft EA having 2 different dates for migratory bird breeding season: April 15 – August 15 (page 33, last paragraph) and March 1 – August 15 (page 47 bullet 4). Ms. Kyselka highly recommended that the grubbing, clearing, and stripping of vegetation be completed before March 1 to fully protect any migrating birds that may arrive early.

Response: There was an error in the draft EA. In both places, the dates should have been April 15 – August 15. Original versions of the EA contained an avoidance period between March 1 – August 15 due to the potential for tree swallows to nest over or next to the lake. Given the Tree Swallow is no longer of concern since the lake is drawn down and based upon consultation with the Navajo Department of Fish and Wildlife on September 19, 2012, the avoidance period was revised to April 15 – August 15.

Comment: The second comment from the Navajo Department of Fish and Wildlife was a request for a more complete project description and a copy of the Conceptual Design Report that was referenced in the draft EA. Specifically, Ms. Kyselka asked if there would be any open pits or trenching required during construction and how and when would it be known if more borrow material would be needed from the northern borrow area.

Response: On November 1, 2012 an email was sent to Ms. Kyselka referring her to BIA Safety of Dams Officer to request a copy of the Conceptual Design Report. It was noted in this email that the draft EA had a more complete and current project description than the Conceptual Design Report. Regarding open pits and trenching, please see Section 2.1 *Revised Design 2 (Preferred Alternative)* bullet 4 *Control Upstream-Downstream Seepage Path in the Foundation*. Please note that the trench for the C-B wall will be immediately backfilled leaving no open trenches or pits. See also bullet 6 *Remove and Replace Outlet Works System*. At 2 times during construction, there will be an excavation for the outlet works. Removal of the outlet works is the first excavation and it will be backfilled as soon as the outlet works is removed in order to construct the C-B wall. After the C-B wall is constructed, another excavation will be necessary to install the new outlet works with 4:1 side slopes. Once the new outlet works is installed the excavation will be backfilled so no open pits or trenches will remain after the project is complete. In reference to the borrow material, please refer to Figures 3 and 4. All borrow material will come from within the area outlined as the *Final Construction Boundary* on the west side of the project in Figure 3. However, it is anticipated that all or nearly all of the necessary material can be obtained from the smaller white outlined “cloud” shape in Figure 4. This area was chosen as it would cause the least amount of environmental damage as it is 1) already mostly bare ground and minimal tree removal would be necessary; 2) is next to the previously disturbed spillway channel and close to the dam; and 3) is at the top of the hill to avoid runoff and landslide and facilitate restoration. At this time, it is unknown if the contractor will need additional borrow material outside this white outline. It will depend on the quality of the subsurface soils which won’t be known until excavation begins.

Comment: On November 1, 2012 Mr. Richard Begay, Program Liaison for USDA-NRCS submitted an email comment providing his new email address and stating that he had met with

the Red Lake Farm Board the previous week to discuss how NRCS can assist Navajo farmers in this area. He stated that they had a good conversation and that USDA NRCS would continue to work with the Red Lake Farm Board on issues concerning USDA NRCS.

Appendix A

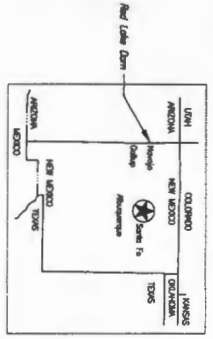
Project Drawings

Appendix B

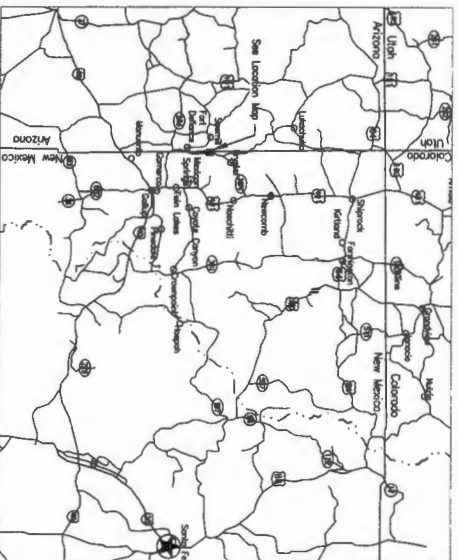
List of Species from Navajo Nation Department of Fish and Wildlife

REFERENCE DRAWINGS

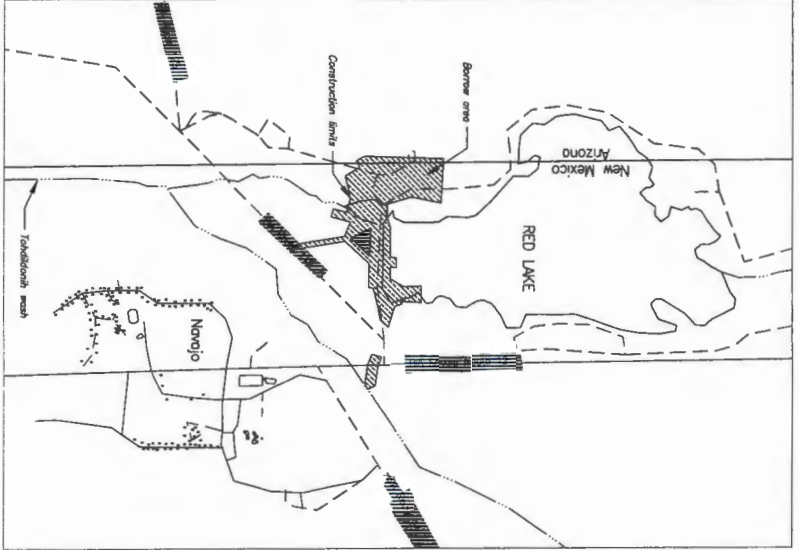
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KEY MAP



VICINITY MAP



LOCATION MAP

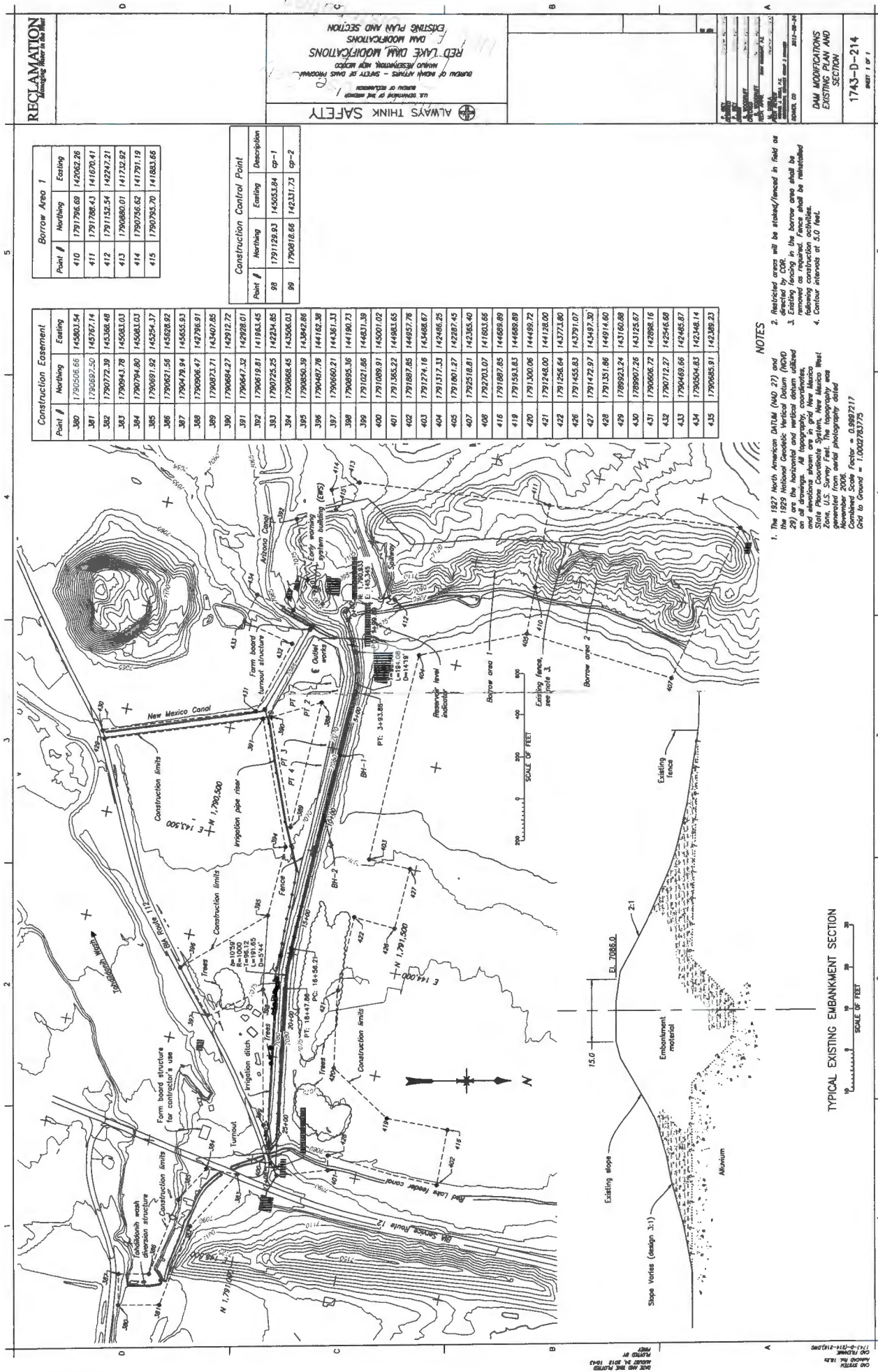
- LEGEND**
- | | |
|--|--------------------|
| | INTERSTATE HIGHWAY |
| | STATE HIGHWAY |
| | DIRT ROAD |
| | CONTINENTAL DIVIDE |
| | MOUNTAIN RANGE |
| | STATE CAPITAL |

LEGEND

D SYSTEM
 WORD ROL 14.20
 D FILING
 1.5-0-0111

DATE AND TIME PLOTTED
AUGUST 24 2012 07:14
PLOTTED BY
[Signature]

DAM MODIFICATIONS
KEY MAP-VICINITY
MAP-LOCATION MAP
1743-D-213
SHEET 1 OF 1



Borrow Area 1		
Point #	Northing	Easting
410	1791796.69	142062.26
411	1791798.43	141670.41
412	1791152.54	142247.21
413	1790080.01	141732.82
414	1790756.62	141791.19
415	1790793.70	141883.66

Construction Control Point		
Point #	Northing	Easting
88	1791129.83	145033.84
89	1790816.66	142331.73

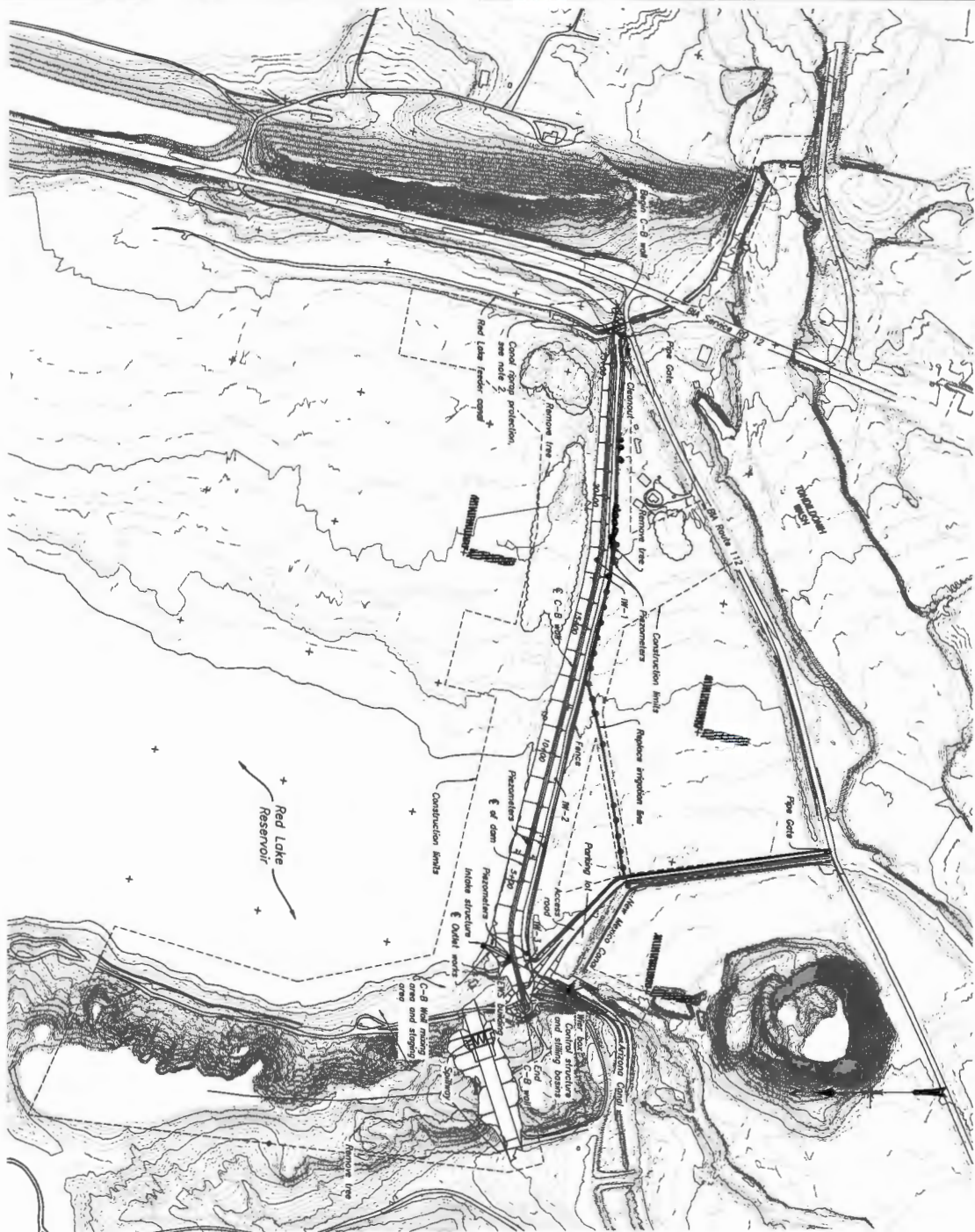
Construction Easement		
Point #	Northing	Easting
380	1790506.66	145803.54
381	1790592.50	145767.14
382	1790772.39	145366.48
383	1790643.78	145003.03
384	1790794.80	145083.03
385	1790691.92	145254.37
386	1790621.56	145628.92
387	1790478.94	145655.93
388	1790606.47	142786.91
389	1790673.71	143407.65
390	1790684.27	142912.72
391	1790647.32	142928.01
392	1790619.81	141963.45
393	1790725.25	142334.85
394	1790686.45	143506.02
395	1790650.39	143942.86
396	1790487.78	144162.38
397	1790660.21	144361.33
398	1790695.36	144190.73
399	1791021.86	144831.39
400	1791089.91	145001.02
401	1791353.22	144981.65
402	1791887.85	144957.76
403	1791274.16	143486.67
404	1791317.33	142486.25
405	1791801.27	142827.45
406	1792516.81	142365.40
407	1792703.07	141601.66
408	1791887.85	144957.76
409	1791887.85	144957.76
410	1791300.06	144499.72
411	1791246.00	144128.00
412	1791256.64	143771.80
413	1791455.83	143791.07
414	1791472.97	143497.30
415	1791351.86	144914.60
416	1790923.24	143160.88
417	1790907.28	143125.67
418	1790606.72	142986.16
419	1790712.27	142546.89
420	1790469.66	142485.87
421	1790504.83	142346.14
422	1790685.91	142389.23

ALWAYS THINK SAFETY
 U.S. DEPARTMENT OF THE INTERIOR
 BUREAU OF LAND MANAGEMENT
 RED LAKE DAM, MODIFICATIONS
 DAM MODIFICATIONS
 EXISTING PLAN AND SECTION

NOTES
 1. The 1927 North American DATUM (NAD 27) and the 1929 National Geodetic Vertical Datum (NGVD 29) are the horizontal and vertical datum utilized in all drawings. All topography, contours, and elevations were obtained from the National Geodetic Survey, U.S. Survey Feet. The topography was obtained from aerial photography dated September 2006.
 Combined Scale Factor = 0.9997217
 Grid to Ground = 1.000278375

TYPICAL EXISTING EMBANKMENT SECTION





NOTES

- ¹ The 1927 *North American DATUM* (NAD 27) and the 1929 *National Geodetic Vertical Datum* (NGVD 29) are the horizontal and vertical datum utilized on all drawings. All topography, coordinates and elevation shown are as given. New Mexico State Plane Coordinate System, New Mexico West Zone, U.S. Survey Feet. The topography was generated from aerial photography dated November 2006. Combined Scale Factor = 0.9992717.
- Grid to Ground = 1.000276375

LEDEND

● *Inspection Wells*



 ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR

LAKE DAM MODIFICATIONS

RED LAKE DAM, MODIFICATIONS
Net For Dict. 10/11

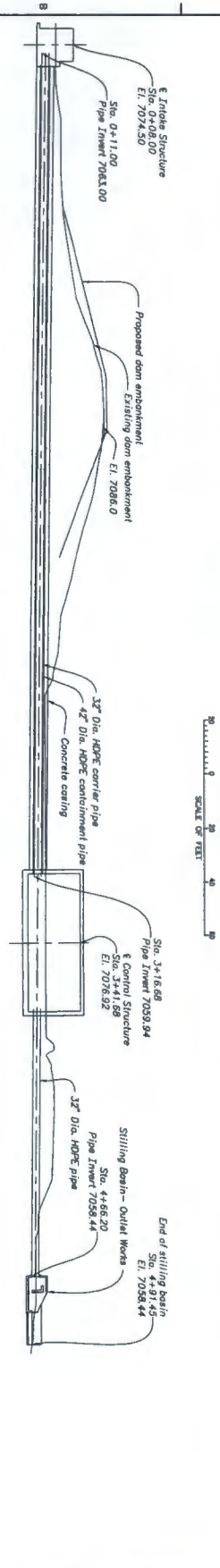
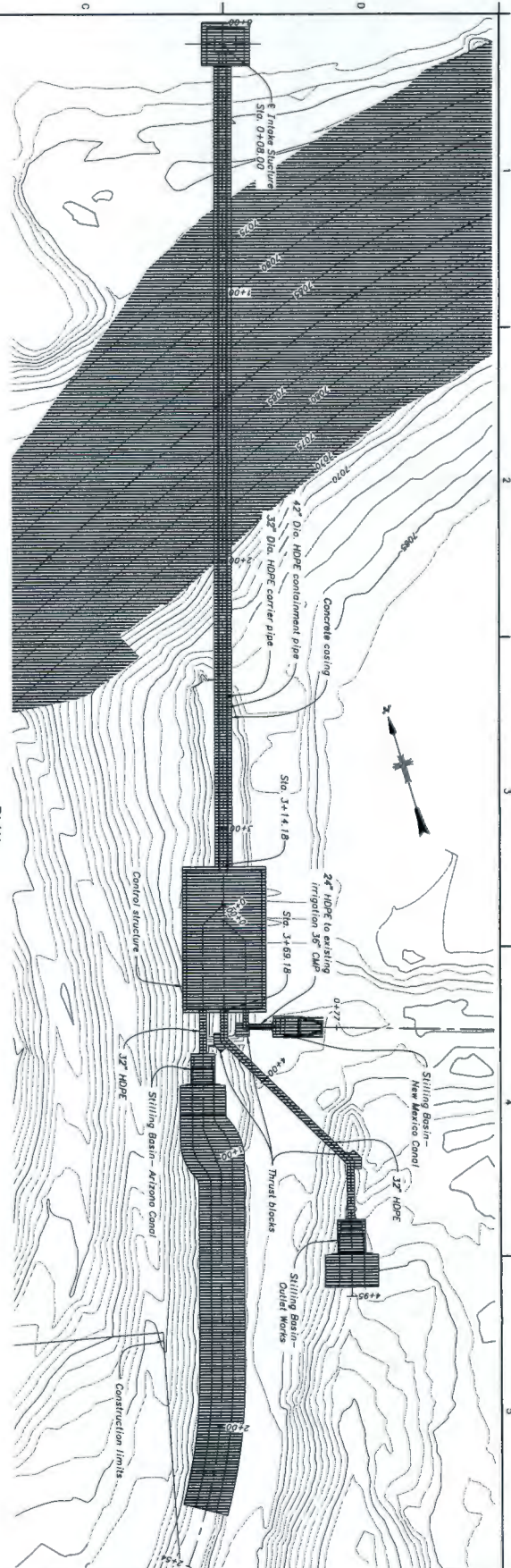
RECLAMATION

GENERAL PLAN

1743-D-21E

DATE : 10/1/2017

ALWAYS THINK SAFETY
Use Only
RED-LAKE DAM MODIFICATIONS
OUTLET WORKS-PLAN, PROFILE AND SECTIONS
Not For Distribution



NOTES

1. For general concrete outline notes, see 40-D-7012.
2. Reinforcement is shown in cross-section only.
3. Design of reinforcement is based on reinforcing steel having a minimum compressive strength of 60,000 psi and having a minimum yield strength of 40,000 psi @ 28 days.
4. Reinforcement required but not shown.
5. Welded and embedded meshwork not shown.
6. Channel all exposed corners unless otherwise shown.
7. Anchor bars not shown, see (XXXX).

REFERENCE DRAWINGS

DATE: 1743-D-217
GENERAL PLAN AND SECTIONS

NEW MEXICO CANAL PROFILE
SCALE OF FEET

ARIZONA CANAL PROFILE
SCALE OF FEET

DATE: 1743-D-217
GENERAL PLAN AND SECTIONS

DATE AND TIME PLANNED
1743-D-217
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SAFETY

ALWAYS THINK SAFETY

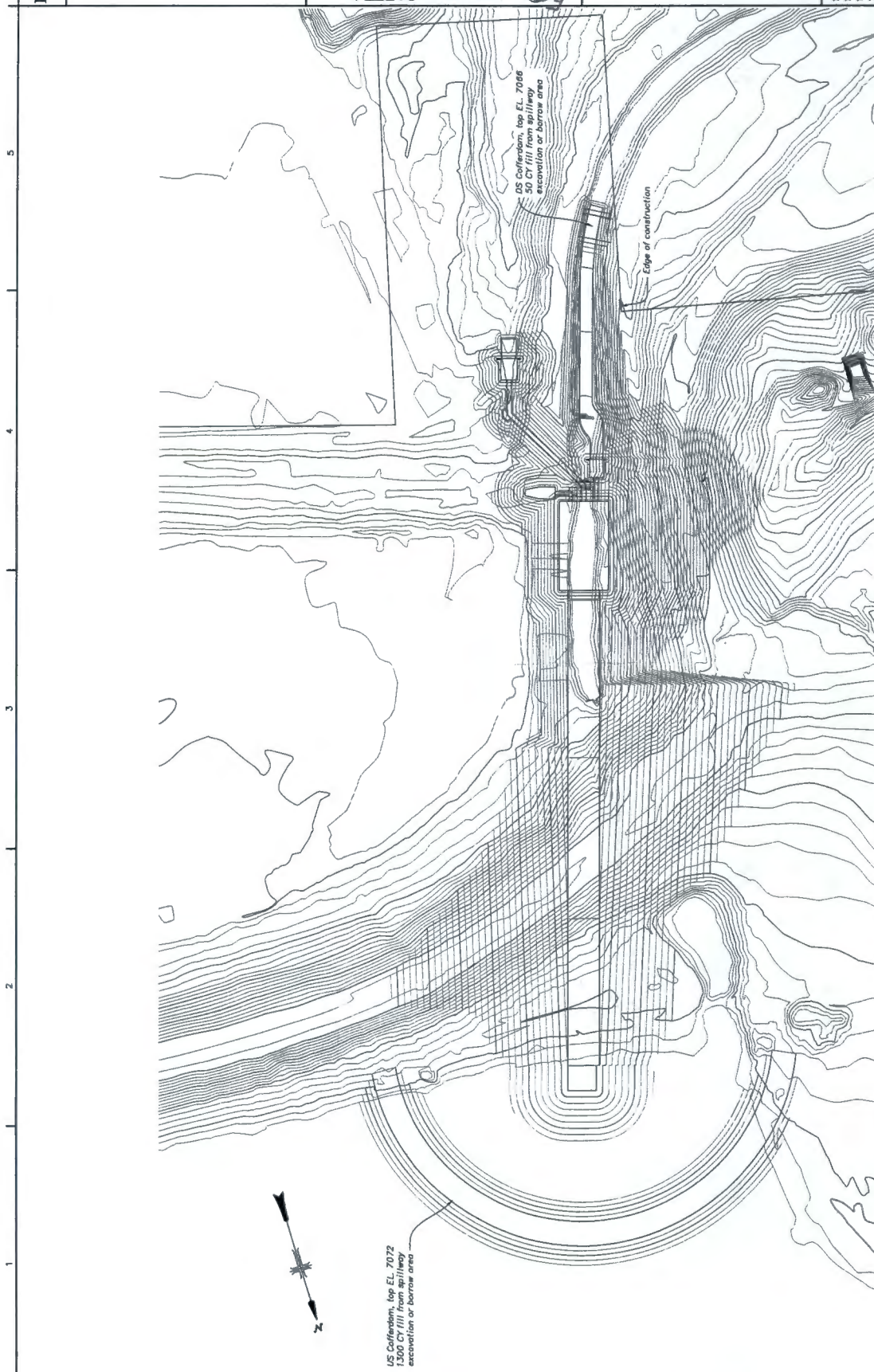
RED TONE DAM ADDITIONS

FOR MORE INFORMATION CONTACT YOUR LOCAL DISTRIBUTOR OR VISIT US ONLINE AT WWW.DAMADDITIONS.COM

Not For Distribution

Use Only

RECLAMATION



US Cofferdam, top EL 7072
1300 CY fill from spillway
excavation or borrow area ---

DS Cofferdam, top E.L. 7066
50 CY fill from spillway
excavation or borrow area

Edges of construction

DATE AND TIME PLOTTED
JANUARY 13 2012 12:40
FLOWER #
CROWN



NAVAJO NATION
Department of Fish & Wildlife
Navajo Natural Heritage Program
P.O. Box 1480
Window Rock, AZ 86515



Phone: 928.871.6472 • Fax: 928.871.7603 • <http://nnhp.undfw.org>

Ben Shelly, President

Rex Lee Jim, Vice-President

27 August 2012

File#12BOR-01

Yvonne K. Bernal, Natural Resource Specialist
Bureau of Reclamation Technical Service Center
P.O. Box 25007 Mailstop 86-68290
Denver, CO 80225-0007

NAVAJO ENDANGERED SPECIES LIST (NESL) INFORMATION FOR:

PROJECT: RED LAKE DAM REHABILITATION
SAFETY OF DAMS ACTION
LOCATED ON 67.1 ARES IN SEC. 3, T19N, R21W
LAT: °N 30°54'57.56"N
LONG: °W 109° 2'23.13"W
RED LAKE, NAVAJO, MCKINLEY COUNTY, NM

Ms. Bernal:

The following information on species of concern¹ is provided in response to your 10 August 2012 request concerning the subject project, which consists of the proposed Red Lake Dam Rehabilitation project. The project includes the following as listed in your request letter:

Project Description:

In order to address safety of dams concerns, a Safety of Dams rehabilitation project is proposed. The project description incorporates these components:

- **Construction Water**
Construction water would be obtained by excavating a storage pond in the reservoir or at the diversion dam at the Tohdiildonih Wash.
- **Protect Against Erosion of the Upstream Face**
The upstream slope of the embankment will be protected with riprap ranging between 6 and 30 inches with an average size of approximately 18 inches.
- **Control Upstream-Downstream Seepage Path in the Foundation**

¹"Species of concern" include protected, candidate, and other rare or otherwise sensitive species, including certain native species and species of economic or cultural significance. For each species, the following tribal and federal statuses are indicated: Navajo Endangered Species List (NESL), Federal Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), and Eagle Protection Act (EPA). No legal protection is afforded species with only ESA candidate or NESL group 4 status; please be aware of these species during surveys and inform the NFWF of observations. Documentation that these species are more numerous or widespread than currently known, and addressing these species in project planning and management is important for conservation and may contribute to ensuring they will not be uplisted in the future. Species without ESA or NESL legal protection (e.g., NESL group 4 species) are only included in responses on a regular basis and may not be included in this response. Please refer to the NESL for a list of group 4 species; contact me if you need a copy.

A cement-bentonite (C-B) cutoff wall will be constructed through the existing embankment into the foundation alluvium. The C-B wall will be 2-ft wide constructed to a maximum depth of 65 feet. The C-B wall will be excavated to bedrock on the left side of the dam and through a less permeable zone in the middle of the dam.

- **Construct Temporary Cofferdam**

A cofferdam will be constructed upstream of the outlet works excavation to minimize the risk of flooding during construction. The cofferdam will be 6ft high with a crest width of 10-ft and 3:1 side slopes. The total quantity of fill will be roughly 1,200 cy.

- **Remove and Replace Outlet Works System**

The existing outlet works will be removed. All pipe, valves and other materials will be removed and disposed of off site in a proper disposal area. The new outlet works will consist of a 30-inch HDPE pipe inside a 42-inch pipe. An intake structure with a trash rack and guard slide gate will be constructed within the reservoir that will feed water to the outlet works. The Emergency Warning System (EWS) Building will be located on the upstream crest of the dam. The guard gate in the intake structure will be operated from the EWS building. A control structure will be constructed downstream of the dam. The control structure will divert outlet works releases to the New Mexico Canal, Arizona Canal or the Outlet Works channel.

- **Increase Spillway Capacity**

The existing spillway will be removed and replaced with a labyrinth spillway capable of safely passing the 10,000-yr storm event. The spillway will be 45 feet wide.

- **Construct a Filter and Drain System**

A chimney filter will be constructed in the embankment. Downstream of the chimney filter, a geonet composite will be used to relieve excess pore pressures. Seepage will be collected in a gravel trench and toe drain system. The toe drain will convey the water to the outlet works channel. The water will flow through concrete inspection wells, where the flow will be measured.

- **Protect the Dam Crest from Erosion and Improve Access to the Dam**

A thick layer (1-ft) of gravel surfacing will be constructed on the dam crest. A geotextile fabric will be used beneath the gravel surfacing to improve the road subgrade. Access to the right abutment will be improved by construction of a new access road downstream of the dam. A gravel surface road at the toe of the dam will also improve access to the toe of the dam.

Known to occur within one mile of the project site:

	SCIENTIFIC NAME	COMMON NAME	NESL	FEDERAL STATUS AND/OR MBTA*
1.	<i>Vulpes macrotis</i>	Kit Fox	G4	

*MBTA-Migratory Bird Treaty Act

All or parts of this project currently are within areas protected by the Raptor Electrocution Prevention Regulations; consult with NNDFW Zoologist and/or EA Reviewer for more information and recommendations.

Species of concern with potential to occur on the 7.5-minute *Buell Park, NM* quadrangle(s) containing the project boundaries include the following. Potential is based primarily on quadrangle-wide coarse habitat characteristics and species range information. Your project biologist should determine habitat suitability at the project site(s).

	SCIENTIFIC NAME	COMMON NAME	NESL	FEDERAL STATUS AND/OR MBTA*
1.	<i>Aegolius acadicus</i>	Northern Saw-whet Owl	G4	MBTA
2.	<i>Aechmophorus clarkia</i>	Clark's Grebe	G4	MBTA

3.	<i>Aquila chrysaetos</i>	Golden Eagle	G3	MBTA
4.	<i>Catostomus discobolus</i>	Bluehead Sucker	G4	
5.	<i>Cervus elaphus nelsoni</i>	Rocky Mountain elk. This species is of economic significance.		
6.	<i>Charadrius montanus</i>	Mountain Plover	G4	ESA Proposed Threatened; MBTA.
7.	<i>Cinclus mexicanus</i>	American Dipper	G3	MBTA
8.	<i>Dendragapus obscurus</i>	Blue Grouse	G4	
9.	<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	G2	ESA Endangered; MBTA.
10.	<i>Falco peregrinus</i>	Peregrine Falcon	G4	MBTA
11.	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G2	MBTA
12.	<i>Meleagris gallopavo</i>	Wild Turkey This species is of cultural and economic significance.		
13.	<i>Mustela nigripes</i>	Black-footed Ferret	G2	ESA Endangered
14.	<i>Lithobates pipiens</i>	Northern Leopard Frog	G2	
15.	<i>Odocoileus hemionus</i>	Mule Deer. This species is of cultural and economic significance.		
16.	<i>Speyeria nokomis</i>	Nokomis Gritillary	G3	
17.	<i>Patagioenas fasciata</i>	Band-tailed Pigeon	G4	MBTA
18.	<i>Picoides dorsalis</i>	Three-toed Woodpecker	G4	MBTA
19.	<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	G3	ESA Threatened; MBTA.
20.	<i>Vulpes macrotis</i>	Kit Fox	G4	
21.	<i>Tachycineta bicolor</i>	Tree Swallow	G4	MBTA
22.	<i>Ursus americanus</i>	Black bear. This species is of cultural and economic significance.		
23.	<i>Erigeron rhizomatus</i>	Rhizome Fleabane/Zuni Fleabane	G2	ESA Threatened.
24.	<i>Lesquerella navajoensis</i>	Navajo Bladderpod	G3	

25.	<i>Vulpes macrotis</i>	Kit Fox	G4	
-----	------------------------	---------	----	--

*MBTA=Migratory Bird Treat Act

AREA 3: LOW SENSITIVITY WILDLIFE RESOURCES
 AREA 5: BIOLOGICAL PRESERVE

Potential for the black-footed ferret should be evaluated if prairie-dog towns of sufficient size (per NFWD guidelines) occur in the project area.

Potential for *Puccinellia parishii* should be evaluated if wetland conditions exists that contain white alkaline crusts.

Biological surveys need to be conducted during the appropriate season to ensure they are complete and accurate please refer to NN Species Accounts.⁴ Further questions pertaining to surveys should be referred to Species Account. Surveyors on the Navajo Nation must be permitted by the Director, NFWD. Contact Jeff Cole at (928) 871-7068 for permitting procedures. Questions pertaining to surveys should be directed to the NFWD Zoologist (Chad Smith) for animals at 871-7070 and Botanist (Andrea Hazelton) for plants at (928) 523-3221. Questions regarding biological evaluations should be directed to Pamela Kyselka (Acting Environmental Reviewer) at 871-7065.

Potential impacts to wetlands should also be evaluated. The U.S. Fish & Wildlife Service's National Wetlands Inventory (NWI) maps should be examined to determine whether areas classified as wetlands are located close enough to the project site(s) to be impacted. In cases where the maps are inconclusive (e.g., due to their small scale), field surveys must be completed. For field surveys, wetlands identification and delineation methodology contained in the 'Corps of Engineers Wetlands Delineation Manual' (Technical Report Y-87-1) should be used. When wetlands are present, potential impacts must be addressed in an environmental assessment and the Army Corps of Engineers, Phoenix office, must be contacted. NWI maps are available for examination at the NFWD's Natural Heritage Program (NHP) office, or may be purchased through the U.S. Geological Survey (order forms are available through the NHP). The NHP has complete coverage of the Navajo Nation, excluding Utah, at 1:100,000 scale; and coverage at 1:24,000 scale in the southwestern portion of the Navajo Nation.

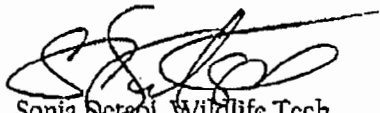
The information in this report was identified by the NFWD's biologists and computerized database, and is based on data available at the time of this response. If project planning takes more than two (02) years from the date of this response, verification of the information provided herein is strongly recommended. It should not be regarded as the final statement on the occurrence of any species, nor should it substitute for on-site surveys. Also, because the NFWD's information is continually updated, any given information response is only wholly appropriate for its respective request.

For a list of sensitive species on the Navajo Nation in addition to the species listed on the Navajo Endangered Species List (NESL) please refer to our website at www.nndfw.org.

An invoice for this information is attached.

If you have any questions I may be reached at (928) 871-6472.

⁴ Available free of charge on our website at <http://nnhp.navajofishandwildlife.org/>



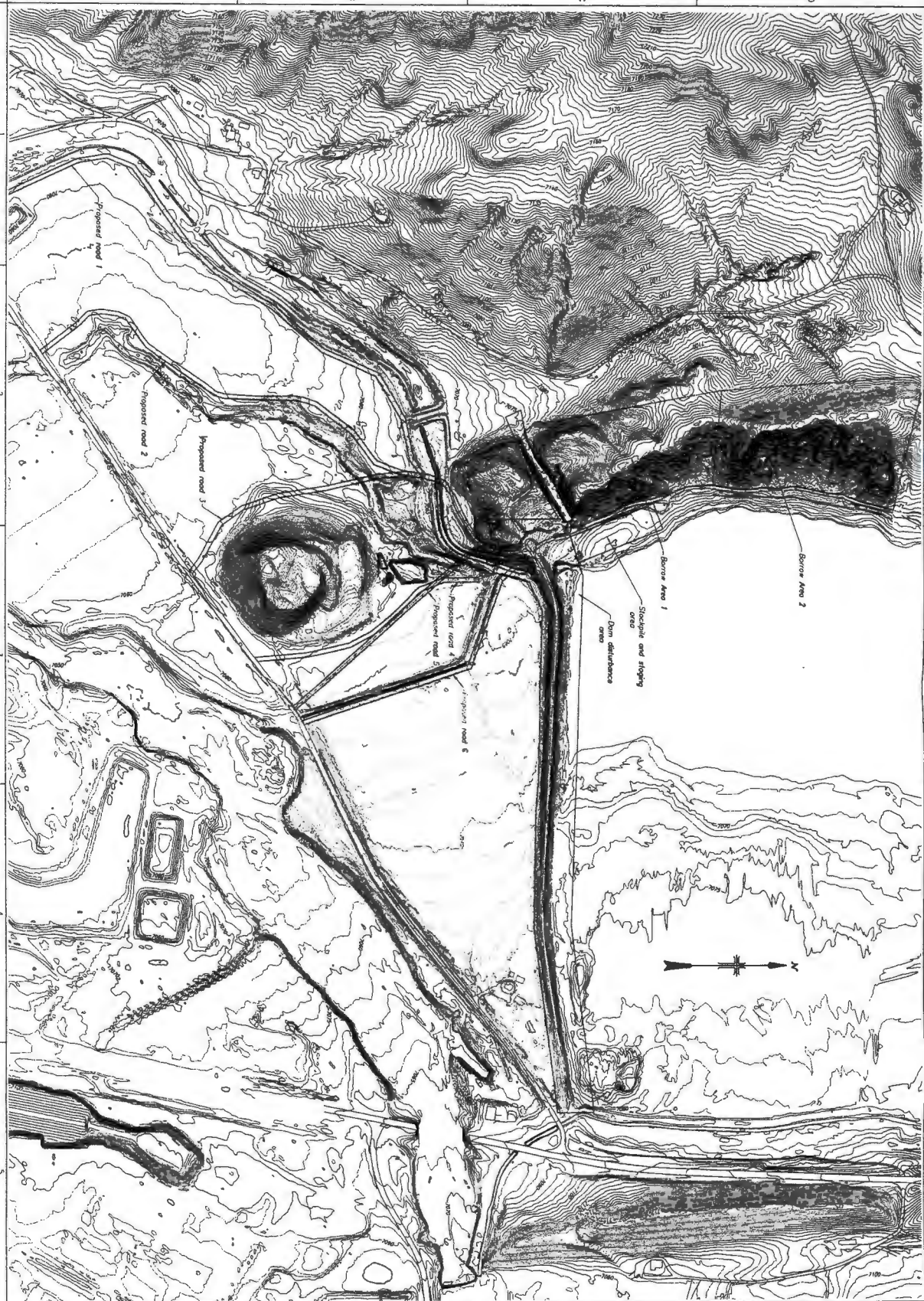
Sonja Detsch, Wildlife Tech.
Natural Heritage Program
Department of Fish and Wildlife
xc: file/chrono

Appendix C

Cultural Resources Correspondence

CAD SYSTEM
 ARCAD 10 18 15
 CAD FILENAME
 RED_LAKE_CONTOURS 4-11-11.DWG

DATE AND TIME PLOTTED
 APRIL 13, 2011 12:48
 A UNIT OF
 RECLAMATION



⊕ ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
 BUREAU OF RECLAMATION
 BUREAU OF INDIAN AFFAIRS
 HAWAII REGION—HAWAII INDIAN RESERVATION, NEW HAWAII
 RED LAKE DAM AND RESERVOIR
 PROPOSED ROADS
 GENERAL PLAN

SCALE OF FEET
 0 100 200 300

RECLAMATION
 Managing Water in the West

DETAILS (UP TO THREE
 LINES)
 PRJ-ST1A-SEC
 SHEET 1 OF 1

**BIOLOGICAL RESOURCES COMPLIANCE FORM
NAVAJO NATION DEPARTMENT OF FISH AND WILDLIFE
P.O. BOX 1480, WINDOW ROCK, ARIZONA 86515-1480**

It is the Department's opinion the project described below, with applicable conditions, is in compliance with Tribal and Federal laws protecting biological resources including the Navajo Endangered Species and Environmental Policy Codes, U.S. Endangered Species, Migratory Bird Treaty, Eagle Protection and National Environmental Policy Acts. This form does not preclude or replace consultation with the U.S. Fish and Wildlife Service if a Federally-listed species is affected.

PROJECT NAME & NO.: Borrow Pit for Red Lake Dam Modification Project

DESCRIPTION: The BIA SOD program is applying for borrow site lease that will be located within the TCE. The borrow pit will provide aggregate materials necessary for dam modification project. Project duration is expected to be begin as early as SEP 2015 and completed by OCT 2017. There will be no drilling or blasting in the borrow pit.

LOCATION: Borrow Area 1, Section 35, T20N, R21W, NMPM, Red Lake, McKinley County, New Mexico

REPRESENTATIVE: Pearl Chamberlin, Bureau of Indian Affairs - Safety of Dams Program

ACTION AGENCY: Bureau of Indian Affairs - Safety of Dams Program (BIA SOD)

B.R. REPORT TITLE / DATE / PREPARER: Final EA-Red Lake Dam Rehabilitation/date unk/USBR

SIGNIFICANT BIOLOGICAL RESOURCES FOUND: Area 5.

POTENTIAL IMPACTS

NESL SPECIES POTENTIALLY IMPACTED: NA

FEDERALLY-LISTED SPECIES AFFECTED: NA

OTHER SIGNIFICANT IMPACTS TO BIOLOGICAL RESOURCES: NA

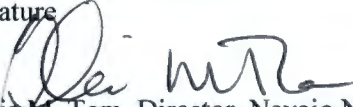
AVOIDANCE / MITIGATION MEASURES: [1] In addition to re-seeding, the NNDFW recommends that re-vegetation of the disturbed site includes the planting of native tree saplings and seedlings.

CONDITIONS OF COMPLIANCE*: NA

FORM PREPARED BY / DATE: Pamela A. Kyselka/10 JUL 2015

COPIES TO: (add categories as necessary)

☐ _____ ☐ _____

2 NTC § 164 Recommendation: <input checked="" type="checkbox"/> Approval <input type="checkbox"/> Conditional Approval (with memo) <input type="checkbox"/> Disapproval (with memo) <input type="checkbox"/> Categorical Exclusion (with request letter) <input type="checkbox"/> None (with memo)	Signature  Gloria M. Tom, Director, Navajo Nation Department of Fish and Wildlife	Date 7/10/15
--	--	------------------------

*I understand and accept the conditions of compliance, and acknowledge that lack of signature may be grounds for the Department not recommending the above described project for approval to the Tribal Decision-maker.

Representative's signature

Date



THE NAVAJO NATION

RUSSELL BEGAYE **PRESIDENT**
JONATHAN NEZ **VICE PRESIDENT**



ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF EXECUTIVE DIRECTOR/ADMINISTRATION

OFFICE OF ENVIRONMENTAL REVIEW

PO BOX 339 WINDOW ROCK ARIZONA 86515 Office: 928/871-7188 Fax: 928/871-7996

Website: www.navajonationepa.org

M E M O R A N D U M

TO: Howard Draper, Program & Project Specialist
Project Review Office
Navajo Land Department
Division of Natural Resources

FROM:

Rita Whitehorse-Larsen, Senior Environmental Specialist
Office of Executive Director/Administration
Office of Environmental Review
NNEPA

DATE: September 21, 2015

SUBJECT: 164 EOR 00 004115 BIA Safety of Dams Borrow Lease Red Lake Dam

The Bureau of Indian Affairs, Navajo Region, Safety of Dams submitted a sand and gravel lease to extract clayey materials from a proposed borrow pit, Borrow Area 1 located approximately 1/10 mile northwest of the west end of the Red Lake Dam. Approximately 18,000 tons of clayey materials will be used during the existing dam modification. The borrow pit is within the temporary construction easement for the Red Lake Dam Modification.

Navajo Nation Environmental Protection Agency (NNEPA) reviewed ¹ and recommends **conditional approval** for the proposed borrow lease at the Red Lake Dam TCE.

The proposed action is required to meet the following and attain each required permit before commencing any construction activities.

1. **Navajo Nation Clean Water Act (CWA):**

- a. **CWA Section §401:** The proposed borrow area appears to be outside of any jurisdictional waters. The overall Red Lake Dam Modification Project is covered by

¹ USBOR USBIA Reclamation Managing Water in the West Final Environmental Assessment Red Lake Dam Rehabilitation Expedited Dam Safety Action EA-12-107 Navajo Nation New Mexico. Date Unknown.

401 Water Quality Certification, as determined by Mr. Patrick Antonio, Principal Hydrologist at NNEPA Water Quality/NNPDES Program.

- b. **CWA Section §402 Multi-Sector General Permit (USEPA):** The proposed action is greater than 1 acre. BIA Safety of Dam, including sub-contractors are subject to complete the requirements under the Clean Water Act Section 402. *Borrow pits and sand and gravel operations are covered by the federal general permit for storm water discharges associated with industrial activities known as the Multi Sector General Permit (MSGP). Borrow pits is under Sector J for Mineral Mining and Dressing and J1 for Construction Sand and Gravel. Full compliance with the MSGP requirements should adequately protect jurisdictional waters including Ganado Lake. USEPA recently reissued the MSGP that became effective June 4, 2015. Under the MSGP, the discharge authorization date is 30 days after USEPA notifies you that after receiving the Notice of Intent (NOI) and the SWPPP must be prepared before submission of the NOI. The NOI should be submitted to USEPA. ADOT is not the appropriate approval authority for NOI on projects within Navajo Nation. Determined by Patrick Antonio, Principal Hydrologist, NNEPA Water Quality/NNPDES Program.*

2. Navajo Nation Air Pollution Prevention and Control Act:

- a. The proposed action is not located in an attainment area.
- b. Visibility is good to excellent.
- c. Dust suppression must be implemented in the Best Management Practice.
- d. The Air Quality Control Program: Activity Application must be completed and submitted to NNEPA Operating Permit Program.

3. Navajo Nation Safe Drinking Water Act:

- a. No proposed drinking water system is expected to be at the proposed borrow pit site.
- b. No proposed domestic waste water system is expected to be at the proposed borrow pit.
- c. Portable toilet rentals should be provided for construction workers at the expense of BIA Safety of Dam. The portable toilet rentals shall be maintained and protected from vandalism during off working hours and holidays by BIA Safety of Dam.

4. Navajo Nation Solid Waste Act:

- a. Do not allow public to take construction waste, cumulatively NNEPA receives complaints and reports on illegal trash dumpings on rural areas and in the waters of the US and Navajo Nation.
- b. The BIA Safety of Dam is subject to control the solid waste littering and shall provide solid waste bins for construction workers. The bins shall be maintained and protected from vandalism during off working hours and holidays by BIA Safety of Dam.

5. Navajo Nation Comprehensive, Environmental Response, Compensation and Liability Act (CERLA):

- a. No hazardous material will be stored, transported, generated and distributed from the proposed borrow pit site.
- b. According the Navajo CERCLA, petroleum is considered hazardous material and any spills ≥ 25 gallons should be reported to NNEPA Office of Executive Director/Administration at 928/871-7692.

6. Navajo Nation Storage Tank Act (NNSTA) (formerly Underground Storage Tank (UST) Act; amended February 2012):

- a. No storage tanks are proposed on the borrow pit site.
- b. If there are plans to install underground and/or aboveground storage tanks greater than 100 gallons, the plans must meet the design specifications as outlined by NNEPA Storage Tank Program. The specifications must be approved by the

Storage Tank Program. Contact the Storage Tank Program at 928/871-7993 for further technical assistance.

- c. NNEPA Storage Tank Program staff will need to be onsite before installing any above and underground storage tanks.

7. ***Federal Insecticide Fungicide and Rodenticide Act (FIFRA)/NN Pesticide Act:***

- a. The BIA Safety of Dam is subject to control and prevent the spread of invasive and noxious weeds.
- b. Contact the NNEPA Pesticide Program at 928/871-7815/7810 before applying any pesticides and herbicides to control noxious and invasive plant species to ensure the product is in compliance and appropriately applied by a certified and licensed applicator.
- c. Pesticide staff will also may need to be onsite to monitor during pesticide/herbicide application.

8. ***Others To Contact Within Navajo Nation:***

- a. Existing public roads will be used for access during the construction activities.

If there are any questions, you may contact Rita Whitehorse-Larsen at 928/871-7188. Thank you.

Cc: NNEPA Water Quality; Operating Permit Program; Administration chrono file
Contact Person: Pearl Chamberlin, 505/863-8393

CULTURAL RESOURCES COMPLIANCE FORM

THE NAVAJO NATION
HISTORIC PRESERVATION DEPARTMENT
PO BOX 4950
WINDOW ROCK, ARIZONA 86515

OFFICIAL FILE COPY		
PROJECT AREA OFFICE		
RECEIVED:		
04 11 11		
FILE	SUB NAME	CODE
NNHPD NO.	HPD-11-937	
OTHER PROJECT NO.		
CI-BR-PXAO	CRS-2011-006	
RETURN TO:		
CLASSIFY:	ENV-3.00	
CONTROL NO.	1191217	
PROJECT	Compliance	
	Form	

ROUTING: COPIES TO
AZ/NM SHPO
XX REAL PROPERTY MGT/330
BOR

NNHPD NO. HPD-11-937
OTHER PROJECT NO. _____
CI-BR-PXAO CRS-2011-006

PROJECT TITLE: Red Lake Dam Safety of Dam Modification

LEAD AGENCY: BOR

SPONSOR: Bureau of Reclamation, 6150 West Thunderbird Road, Glendale, Arizona 85306-4001

PROJECT DESCRIPTION: The proposed undertaking will involve two proposed borrow areas; a stockpile and staging area; six access roads. Ground disturbance will be intensive and extensive with the use of heavy equipment.

LAND STATUS: Navajo Tribal Trust

CHAPTER: Red Lake

LOCATION: Unplatted & Projected T.19N, R.21W - Sec. 2; T.20N, R.21E - Sec. 35 & 36; Buell Park Quadrangle, Apache County, Arizona G&SRPM and McKinley County, New Mexico NMPM

PROJECT ARCHAEOLOGIST: Jon S. Czaplicki

NAVAJO ANTIQUITIES PERMIT NO.: None

DATE INSPECTED: 08/01/11

DATE OF REPORT: 08/26/11

TOTAL ACREAGE INSPECTED: 8.0-ac

METHOD OF INVESTIGATION: Class III pedestrian inventory with transects spaced 5-10 m apart.

LIST OF CULTURAL RESOURCES FOUND:

(1) Site (NM-P-8-8) & (1) Traditional Cultural Property (TCP)

LIST OF ELIGIBLE PROPERTIES:

(1) Site (NM-P-8-8) & (1) TCP

LIST OF NON-ELIGIBLE PROPERTIES:

None

LIST OF ARCHAEOLOGICAL RESOURCES:

None

EFFECT/CONDITIONS OF COMPLIANCE: No historic properties will be affected with the following conditions:

Site NM-P-8-8:

Site will be avoided by abandoning Road #2.

TCP:

TCP will be avoided by abandoning Roads #3 & 4.

In the event of a discovery ["discovery" means any previously unidentified or incorrectly identified cultural resources including but not limited to archaeological deposits, human remains, or locations reportedly associated with Native American religious/traditional beliefs or practices], all operations in the immediate vicinity of the discovery must cease, and the Navajo Nation Historic Preservation Department must be notified at (928) 871-7148.

FORM PREPARED BY: Tamara Billie

FINALIZED: October 7, 2011

Notification to

Proceed Recommended:

Yes XX No _____

Conditions:

Yes XX No _____

Alan S. Downer, Navajo Nation
Historic Preservation Officer

Date

Navajo Region Approval:

Yes X No _____

BIA-Regional Director

Date

TLm 10/20/11



Red Lake Chapter

P.O. Box 130
Navajo, NM 87328

RESOLUTION #RLC-05-12-31

Alfred Barney
PRESIDENT

Richard Bitsie
VICE-PRESIDENT

Kathleen Shuley
SECRETARY/TREASURER

Paul Milford

GRAZING COMMITTEE MEMBER

SUPPORTING THE RED LAKE DAM RENOVATION PROJECT AND RESPECTFULLY REQUESTING THE BUREAU OF INDIAN AFFAIRS SAFETY OF DAMS TO EXPEDITE THE DAM RENOVATION PROJECT SO THAT LOCAL FARMERS ECONOMIC LIVELIHOOD CAN BE RESTORED

WHEREAS:

1. Pursuant to 26 N.M.C Section 3(A), the Red Lake Chapter is a certified chapter of the Navajo Nation as listed under 11, NNC, Part 1 Section 10 and is delegated the governmental authority to make discussion and local matters consistent with Navajo Law, custom and tradition
2. The Red Lake Farm Board is established as an entity of the Navajo Nation Government to oversee farming activities and ensure optimum utilization and to protect the rights and interests of all farm land with the Red Lake Irrigation Project
3. The Red Lake Farm Board officers are chapter members in good standing with the Red Lake Chapter and vote in the chapter;
4. The Red Lake Farm Board approved the Red Lake Dam Renovation; as a result, Bureau of Indian Affairs Safety of Dams has put the renovation project on top priority for funding and contract for the project is set for November 2012 and construction is set to start June 2013. The Red Lake Farm Board requests the Red Lake Chapter's support for the Red Lake Dam Renovation Project
5. The local farmer's livelihood is at a standstill with no irrigation water, no rain, no snow and the drought has devastated the annual crops that use to thrive during the growing seasons.

NOW THEREFORE BE IT RESOLVED THAT:

The Red Lake Chapter supports the Red Lake Dam Renovation Projects. The Red Lake Chapter respectfully requests the Bureau of Indian Affairs Safety of Dams to expedite the dam renovation project so that the local farmer's economic livelihood can be restored.

C-E-R-T-I-F-I-C-A-T-I-O-N

I hereby certify that the foregoing resolution was duly considered by the Red Lake Chapter (Navajo Nation) a called meeting in Navajo, New Mexico at which a quorum was present and that same was passed by a vote of 30 in favor, 0 approved 4 abstained, this 23rd day of May 2012

Motioned: Sam Johnson

Alfred Barney
Alfred Barney,
Chapter President

Second: Aaron Nez

Roscoe Smith

PHONE: (505) 777-2810

FAX: (505) 777-2815

CHAPTER COORD



Red Lake Chapter

P.O. Box 130
Navajo, NM 87328

Alfred Barney
PRESIDENT

Richard Bitsie
VICE-PRESIDENT

Kathleen Shurley
SECRETARY/TREASURER

Paul Milford
GRAZING COMMITTEE MEMBER

DATE: June 20, 2012

TO: Sharon Pinto, Regional Director
BIA Navajo Region
Gallup, NM 87305

FROM: *Alfred Barney* Chapter President
Red Lake #18 Chapter
Navajo, NM 87328

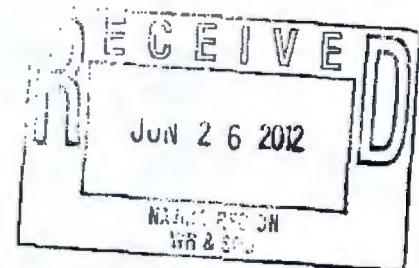
RE: RESOLUTION: RLC-05-12-31

RECEIVED
2012 JUN 22 AM 10 19
GENERAL OFFICE FOR
NAVAJO NATION OFFICE

Enclosed is Red Lake Chapter's supporting resolution for the Red Lake Dam Renovation. We are certainly pleased that this dam renovation is in process. Our local farmers are looking forward to the completion of the renovation project.

Thank you for your diligent assistance. If there are any questions, please call 505-777-2810.

Enclosed



Council Delegates:

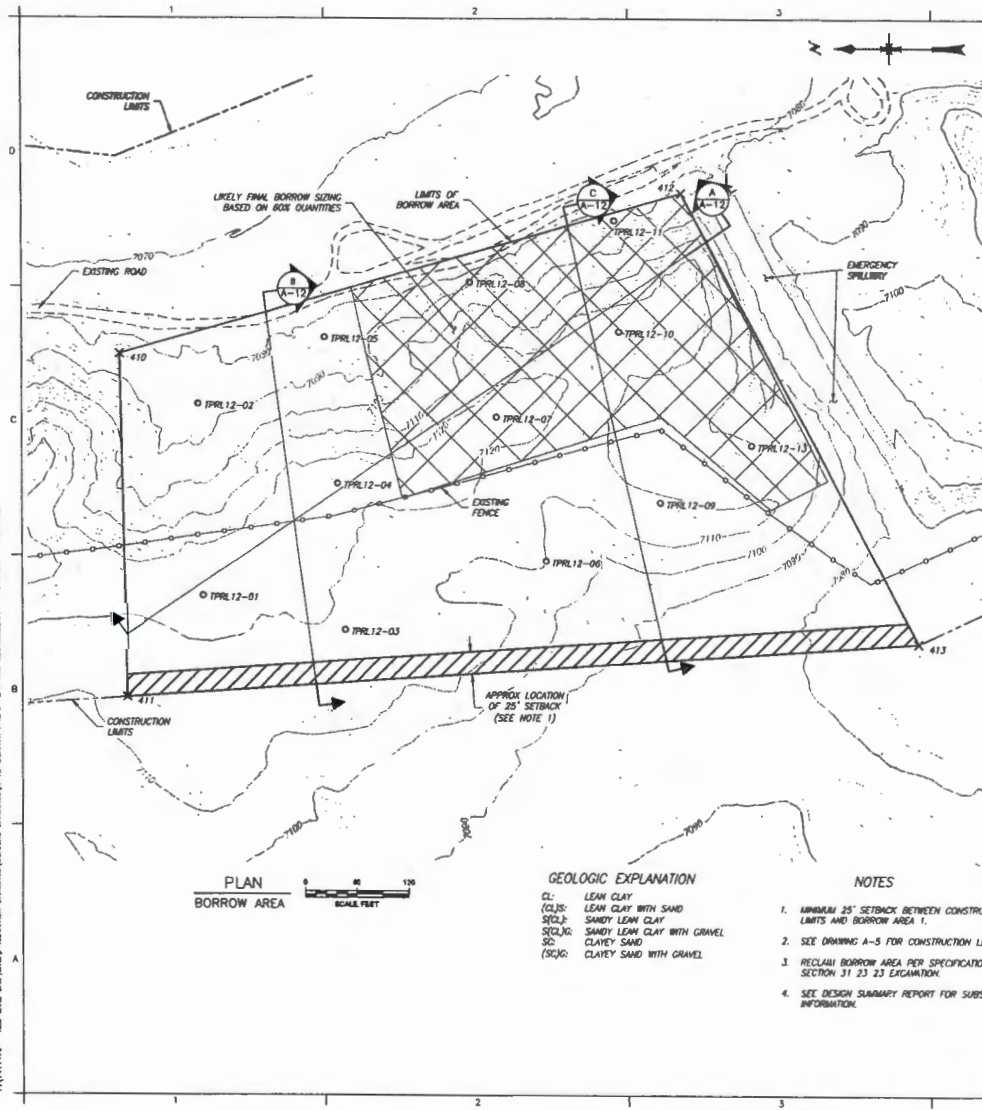
PHONE: (505)777-2810

Roscoe Smith

FAX: (505)777-2815

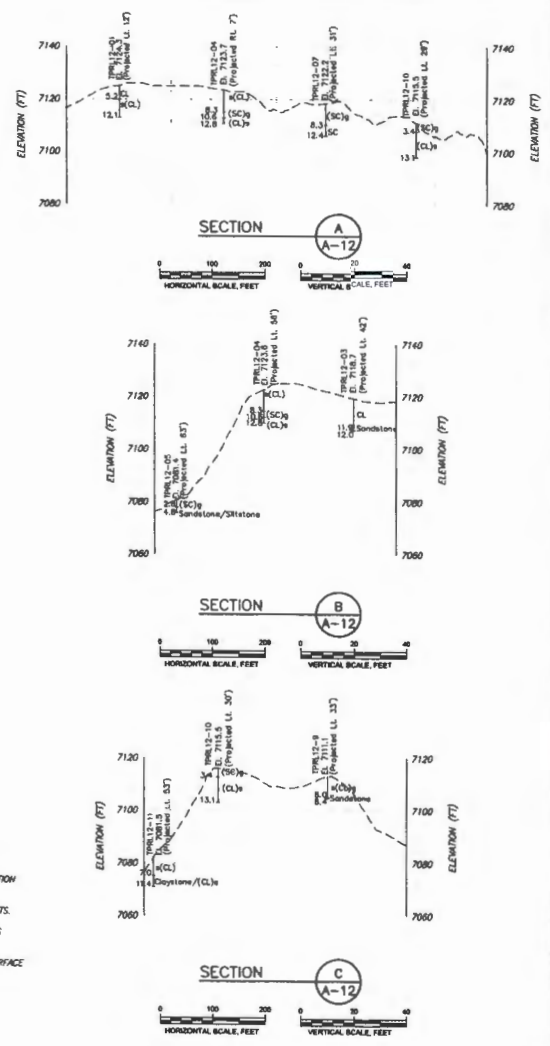
CHAPTER COORD.


PLAN AND SECTION A-12 - RED LANE DAM (CONSTRUCTION) BORROW AREA - 12-BORROW AREA PLAN AND SECTION A-12 - SHEET 12 OF 12



GEOLOGIC EXPLANATION
 CL: LEAN CLAY
 (CL)S: LEAN CLAY WITH SAND
 (CL)G: SANDY LEAN CLAY
 (CL)SG: SANDY LEAN CLAY WITH GRAVEL
 SC: CLAYEY SAND
 (SC)G: CLAYEY SAND WITH GRAVEL

- NOTES**
1. MINIMUM 25' SETBACK BETWEEN CONSTRUCTION LIMITS AND BORROW AREA 1.
 2. SEE DRAWING A-5 FOR CONSTRUCTION LIMITS.
 3. RECLAIM BORROW AREA PER SPECIFICATIONS SECTION 31 23 EXCAVATION.
 4. SEE DESIGN SUMMARY REPORT FOR SUBSURFACE INFORMATION.





GEI Consultants
 4801 OTC Boulevard
 Denver, Colorado 80227
 303-492-0100

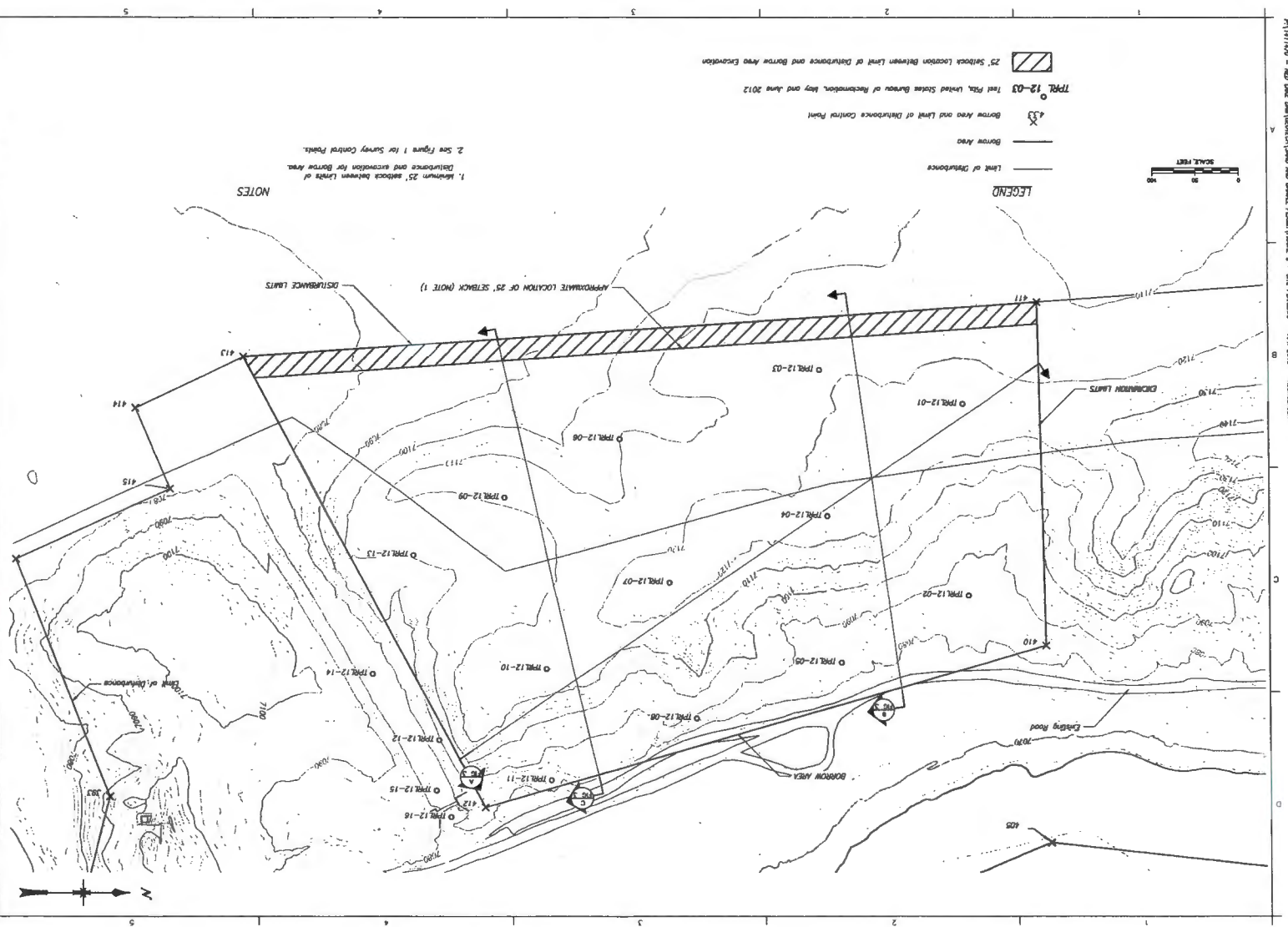
BORROW AREA - PLAN AND SECTIONS

RED LANE DAM MODIFICATIONS

PLAN AND SECTIONS

Drawing A-12

SHEET 12 OF 12



LEGEND

- 25' Setback Location Between Level of Disturbance and Borrow Area Excavation
- Limit of Disturbance
- Borrow Area
- Test Pit, United States Bureau of Reclamation, May and June 2012

NOTES

1. Minimum 25' setback between Limits of Disturbance and excavation for Borrow Area.
2. See Figure 1 for Survey Control Points.

FIGURE 2

BORROW AREA LOCATION PLAN

DATE: 11/11/2010

BY: [Redacted]

FOR: [Redacted]

PROJECT: [Redacted]

LOCATION: [Redacted]

SCALE: 1" = 60'

RED LAKE DAM MODIFICATIONS

BORROW AREA LOCATION PLAN

BUREAU OF LAND MANAGEMENT

U.S. DEPARTMENT OF AGRICULTURE

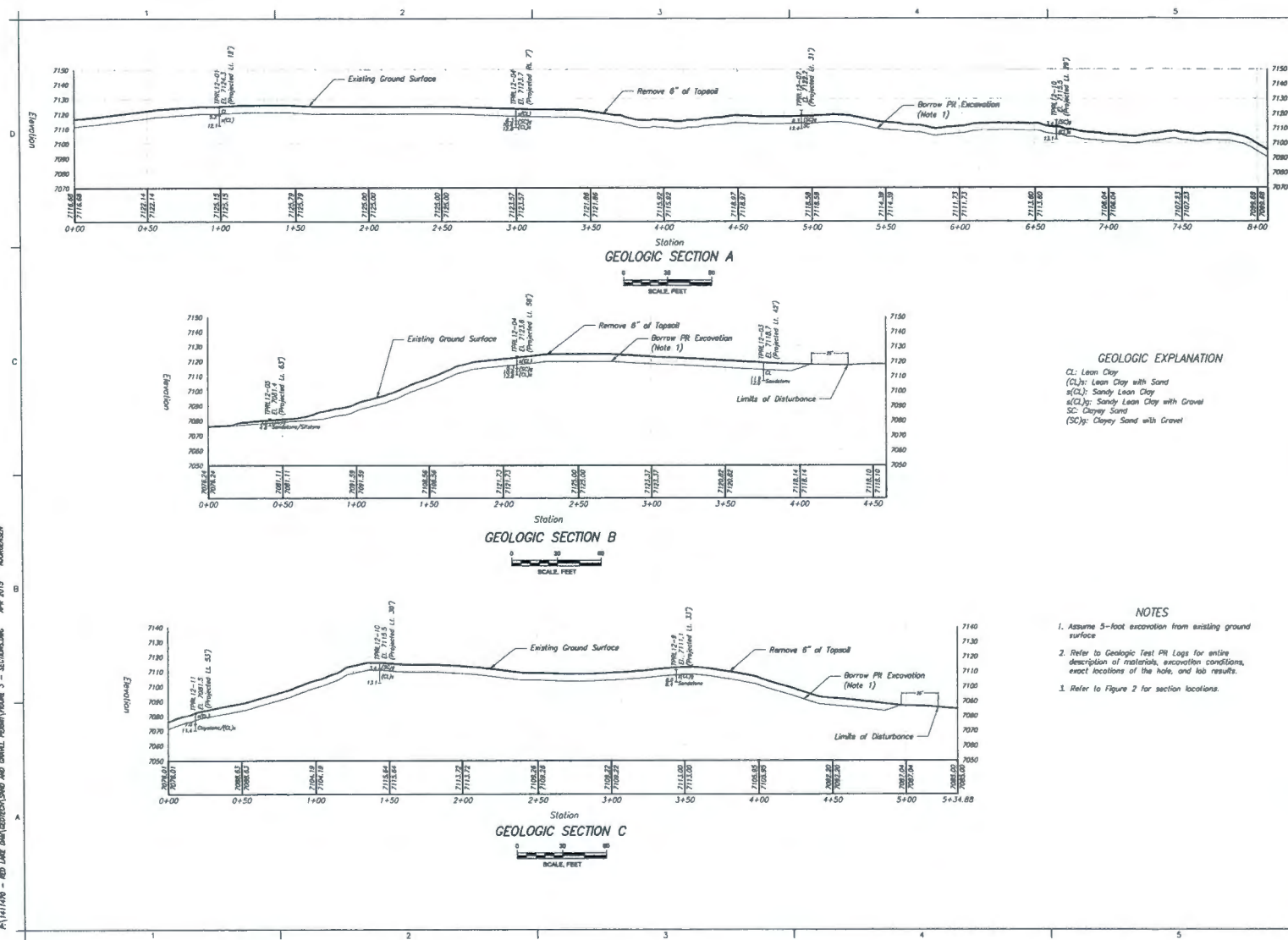
WYOMING REGION

300-450-0000

300-450-0000

300-450-0000

P1411470 - RED LAKE DAM (SECTION) AND CIVIL POINT (FIGURE 3 - SECTION) APP 2013 MODIFICATIONS



GEOLOGIC EXPLANATION

CL: Lean Clay
 (CL): Lean Clay with Sand
 s(CL): Sandy Lean Clay
 s(CL)s: Sandy Lean Clay with Gravel
 SC: Clayey Sand
 (SC): Clayey Sand with Gravel

- NOTES**
1. Assume 5-foot excavation from existing ground surface.
 2. Refer to Geologic Test Pit Logs for entire description of materials, excavation conditions, exact locations of the hole, and lab results.
 3. Refer to Figure 2 for section locations.



RED LAKE DAM MODIFICATIONS
 BORROW AREA GEOLOGIC SECTIONS

DESIGNED	
DRAWN	
CHECKED	
IN CHARGE	
DATE REVIEW	
BORROW AREA GEOLOGIC SECTIONS	
FIGURE 3	
SHEET 1 OF 1	

APPLICATION FOR BORROW PIT LEASE,
RED LAKE DAM MODIFICATION,
NAVAJO NATION, APACHE COUNTY, ARIZONA



The Bureau of Indian Affairs, Navajo Region, Safety of Dams (BIA), hereby requests a sand and gravel lease/permit to extract clayey materials from a proposed borrow pit, Borrow Area 1, approximately 1/10 mile northwest of the west end of Red Lake Dam. Borrow Area 1 will be used to produce approximately 18,000 tons of suitable Zone 1 material to be used to modify the existing dam structure. The project is scheduled to be completed within 900 days of the Notice to Proceed issuance date. This project was designed by GEI Consultants and implemented by the Bureau of Indian Affairs (BIA). The lands involved are controlled by the BIA and all borrow pit operations are on these lands. Under a contract agreement to be enacted between the BIA and the Contractor (to be determined) the Contractor will extract materials from the proposed borrow pits on behalf of the BIA in order to complete the construction of this project. The BIA assures that the Contractor shall abide by all the terms and conditions of the lease/permit including the bond and royalty payment terms.

1. Company name, address, telephone and principal officers. Map and legal description of the proposed pit;

- a. The applicant for the sand and gravel lease/permit is the Bureau of Indian Affairs, Navajo Region.
- b. Map and legal description are attached;


The proposed Red Lake Dam borrow pit will be located in western McKinley County, New Mexico within the Navajo Nation. The existing Red Lake Dam is approximately 1/3 mile northwest of Navajo, NM. The coordinates of the proposed borrow areas are based on 1983 State Plane, New Mexico West Zone and the Northings and Eastings are listed in a table on attached drawing Figure 1- Site Plan, *Red Lake Dam Modifications* under the heading of "BORROW AREA". Borrow Area 1 falls within Section 35, of T20N R21W, New Mexico Prime Meridian according to the Land Survey Information System. Borrow Area 1 covers 8.5 acres.

2. Map and legal description of any access road to be constructed;

The borrow pit is within the Temporary Construction Easement (TCE) for the Red Lake Dam Modification. The boundary of the TCE is laid out on attached drawing A-05- Survey Control and Site Access, *Red Lake Dam Modification*. The TCE is accessed by public roads Indian Road 112 and Navajo Route 12.

All new haul roads will be within the confines of the designated construction easement (see attached drawing A-06, *General Plan of Modifications*).

3. Land users consent



Land users consent will be obtained by Project Review through their customary process. A resolution from the Red Lake/Wheatfields Chapter supporting the Red Lake Dam Modifications is attached.

4. Environmental and Biological Assessment Reports

The Final Environmental Assessment, Red Lake Dam Modifications, Safety of Dams Project is attached, along with the supplemental document Finding Of No New Significant Impact, which addressed changes in design since the Final Environmental Assessment was issued.

5. Archeological Clearance Report

Included in the attached Final Environmental Assessment, Red Lake Dam Modifications, Safety of Dams Project.

6. Detailed Mining and Reclamation Plan - Attached

7. Health and Safety

The Contractor's operation will be required to comply with the Federal Mine and Health Act of 1977, all regulations under 30 CFR, Part 46 and 56, and the Navajo Nation Mine Safety Code.

No Contractor employee will work at the operation unless they have completed the mandatory training under 30 CFR, Part 46. The training will be provided pursuant to a training plan developed pursuant to 30 CFR, Part 46.

8. Water Use Permit

- a. A water use permit will applied for by the Contractor which will be processed the Navajo Nation Department of Water Resources. This permit will be issued prior to any disturbance within the proposed borrow pit boundaries at the Red Lake Dam site.

9. Payments to the Navajo Nation

Annual rental and royalty – The estimated tonnage to be extracted is 18,000 tons. Since all of it will be used in construction by the lessee, the applicable royalty rate is \$1.40 per ton. The total projected royalty is then \$25,200.00. The final tonnage will be calculated from surveys of pit volumes removed factored by bulk density test data taken during borrowing operations. If a scale is not used, the applicant shall take samples to measure the density and the average density shall be used to determine the quantity. The applicant shall pay an advance royalty in the amount of \$2,520.00 and this amount shall be credited against production royalty. The quantity of material

removed along with the amount of payment shall be reported to the Navajo Nation Mineral Department at P.O. Box 1910, Window rock, AZ 86515.

Appendix D

Permission to Survey Correspondence



THE NAVAJO NATION

BEN SHELLY
PRESIDENT

KEA LEE JIM
VICE-PRESIDENT

May 11, 2012

Ms. Sharon Pinto, Regional Director
Bureau of Indian Affairs
Navajo Region
Post Office Box 1060
Gallup, New Mexico 87301

RE: Preliminary Surface Survey

Dear Ms. Pinto:

The Bureau of Reclamation (BOR), Upper Colorado Region, Four Corners Construction Office, 2200 Bloomfield Highway, Farmington, New Mexico 87401-8110, has submitted a permission to survey request to conduct a walk-on survey on Navajo Nation Trust lands for the purpose of preparing maps, environmental assessment, archaeological reports, ethnographic survey and studies for the Red Lake Dam Modification Project located in the vicinity of Navajo, New Mexico.

The request for permission to survey for BIA, Navajo Area Dam Safety Program is hereby granted subject to the following terms and conditions:

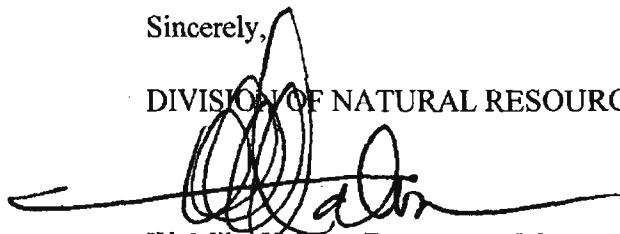
1. The rights of local Navajo people will be respected and protected.
2. Personnel with Division of Natural Resources (DNR) will retain the right to monitor the field survey.
3. The field survey will be conducted at your own risk. The Navajo Nation will not be held liable for any personal injury or property damage that might occur during the course of the field survey.
4. Vehicles will be kept on existing roads and trails. Surface disturbance will be kept to an absolute minimum while conducting the field survey.

Letter to Ms. Sharon Pinto, Regional Director
May 11, 2012
Page Two

5. A complete copy of any reports generated from the field survey will, within one month of its completion, be submitted to Navajo Land Department (NLD) and the Minerals Department.
6. Permission to conduct the survey will be effective for one (1) year effective from the date of this letter.
7. The Permittee will comply with all applicable Tribal and Federal laws and regulations.
8. Approval of right-of-way or any actual construction is not implied.

Sincerely,

DIVISION OF NATURAL RESOURCES

A handwritten signature in black ink, appearing to read 'W. Mike Halona', is written over the typed name. The signature is fluid and cursive, with a long horizontal stroke extending to the left.

W. Mike Halona, Department Manager III
Navajo Land Department

xc: Chrono File
Red Lake Chapter



United States Department of the Interior

BUREAU OF INDIAN AFFAIR

Navajo Region

P.O. Box 1060

Gallup, New Mexico 87305-1060

420/Division of Real
Estate Services



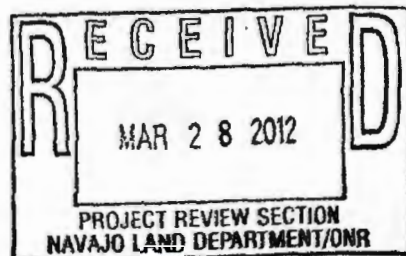
MAR 26 2012

Honorable Ben Shelly,

President, the Navajo Nation

Attention: Howard Draper, Project Review Office
Navajo Land Department

Dear President Shelly:



Enclosed is a letter and 7.5 minute topographic map from the Bureau of Reclamation (BOR), Farmington, New Mexico. BOR is requesting Permission to Survey for the Red Lake Dam Modification Project located on Navajo Tribal Trust land, Navajo, New Mexico.

The permission to survey entails compiling design data; archeological and biological surveys, geological investigation and subsurface investigation such as test pits and/or auger holes. BOR is coordinating with BIA-Safety of Dams, Navajo Region on this project.

Your recommendation is requested within thirty (30) days from the date of this letter.

Sincerely,

Acting Regional Director

Enclosure(s)



United States Department of the Interior

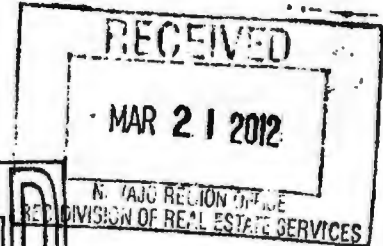
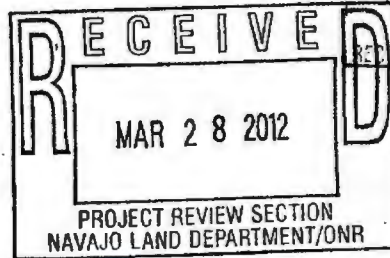
BUREAU OF RECLAMATION
Upper Colorado Region
Four Corners Construction Office
2200 Bloomfield Highway
Farmington, NM 87401-8110

IN REPLY REFER TO:

FCCF-140
LND.3.00

Ms. Sharon Pinto
Regional Director
Bureau of Indian Affairs
Navajo Region
P.O. Box 1060
Gallup, NM 87301

FEB 28 2012



Subject: Permission to Survey - Red Lake Dam Modification Project - Bureau of Indian Affairs
(BIA) Navajo Area Dam Safety Program - Navajo Nation, Arizona

Dear Ms. Pinto:

The Red Lake Dam Modification Project (Project) is a BIA, Navajo Region, Safety of Dams (BIA-SOD) project. The Bureau of Reclamation is providing technical assistance to BIA-SOD in the design and construction management of the Project. In this capacity, Reclamation is required to conduct related survey activities.

By this letter, Reclamation requests permission to conduct survey activities associated with the Project. The Project is located in the S $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ and Lots 2, 3 and 4 of Section 35, Township 20N, Range 12W; together with the SW $\frac{1}{4}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$ of Section 36, Township 20N, Range 21W, N.M.P.M. Reclamation is in the process of compiling design data including land, archeological, and biological surveys, geological investigations and subsurface investigations such as test pits and/or auger holes. The investigations are necessary to determine site conditions, types of materials available and to comply with the National Environmental Protection Act (NEPA). Enclosure No. 1 contains a brief description of the Project, Enclosure 2 contains a Location Map and Attachment 3 is a copy of a 7.5 Minute Series (Topographic) (Buell Park, Ariz-N. Mex) showing the location of the Project.

Reclamation recognizes its responsibility to pay damages promptly when they are sustained in accordance with 25 CFR, Part 169, § 169.4 permission to survey.

If you have any questions, please contact Doug Dockter at 505-324-5006.

Sincerely,

ACTING FOR

Barry Longwell
Construction Engineer

Enclosures - 3

cc: See Next Page

Cc: Ms. Pearl Chamberlin, SOD Officer
Mr. Chuck Nixon, Hydraulic Engineer
Bureau of Indian Affairs
Navajo Region Office
P.O. Box 1060
Gallup, NM 87305

Acting Reality Officer
Real Estate Services
Ft. Defiance Agency
Bureau of Indian Affairs
P.O. Box 7H
Ft. Defiance Agency, AZ 86504

Mr. Ray Benally, Director
Navajo Nation
Department of Water Resources
P.O. Box 678
Fort Defiance, AZ 86504
(w/encls to ea)

Enclosure No. 1

Background

Red Lake Dam is a homogeneous earth fill structure, with a maximum structural height of 22 feet. The 2,600 foot-long crest of the dam is 15 feet wide at elevation 7086.0. The dam is located on Navajo Nation lands in northwest New Mexico near the Arizona border about 20 miles north of Window Rock, Arizona near the town of Navajo, New Mexico. First constructed in 1895, the embankment has been overtopped on a number of occasions and was last rebuilt in 1950. The reservoir provides water for irrigation and recreational use.

Red Lake Dam has been determined to be a high-hazard facility based on preliminary hydraulic analysis performed for the Safety Evaluation of Existing Dams (SEED) Report. Failure of the dam has the potential to inundate several residences along Black Creek, as well as, portions of the paved road which provide the main access to the dam.

The purpose of the proposed project is to address identified Safety of Dams deficiencies and other safety issues.

[illegible]



United States Department of the Interior
BUREAU OF INDIAN AFFAIRS



Fort Defiance Agency
P.O. Box 619
Fort Defiance, Arizona 86504

Real Estate Services
M/C: 6N420

Mr. Barry Longwell, Construction Engineer
Bureau of Reclamation
Upper Colorado Region
Four Corners Construction Office
2200 Bloomfield Highway
Farmington, New Mexico 87401-8110

MAY 18 2012

Dear Mr. Longwell:

Reference is made to your letter (copy enclosed) dated February 28, 2012 requesting for permission to survey for the Red Lake Dam modification in the vicinity of Red Lake, McKinley County, New Mexico.

The Navajo Nation has given its concurrence to the survey by letter (copy enclosed) dated May 11, 2012 with terms and conditions.

Authorization is granted to proceed with the necessary survey, subject to any prior rights or adverse claims and to all applicable regulations of 25 CFR. This authorization is for SURVEY ONLY. Upon completion, a formal application for right-of-way for the project should be submitted in accordance with 25 CFR 169, to the Regional Director, Bureau of Indian Affairs, Fort Defiance Agency, Attention: Real Estate Services, P. O. Box 619, Fort Defiance, Arizona 86504.

If you have any questions, please contact Oma M. Wauneka, Realty Specialist, at (928) 729-7211.

Sincerely,

Acting Regional Director

Enclosures

cc: Program/Project Specialist, Project Review, NLD

Document No. 004115Date Issued: 06/08/2015**EXECUTIVE OFFICIAL REVIEW**Title of Document: BIA-Safety of Dams Borrow Pit Lease Contact Name: DRAPER, HOWARDProgram/Division: DIVISION OF NATURAL RESOURCESEmail: howarddraper@frontiernet.net Phone Number: 928/871-6447☐ **Business Site Lease** Sufficient Insufficient

- | | | | |
|---|-------------|---|---|
| 1. Division: _____ | Date: _____ | □ | □ |
| 2. Office of the Controller: _____ | Date: _____ | □ | □ |
| (only if Procurement Clearance is not issued within 30 days of the initiation of the E.O. review) | | | |
| 3. Office of the Attorney General: _____ | Date: _____ | □ | □ |

☐ **Business and Industrial Development Financing, Veteran Loans, (i.e. Loan, Loan Guarantee and Investment) or Delegation of Approving and/or Management Authority of Leasing transactions**

- | | | | |
|--|-------------|---|---|
| 1. Division: _____ | Date: _____ | □ | □ |
| 2. Office of the Attorney General: _____ | Date: _____ | □ | □ |

☐ **Fund Management Plan, Expenditure Plans, Carry Over Requests, Budget Modifications**

- | | | | |
|---|-------------|---|---|
| 1. Office of Management and Budget: _____ | Date: _____ | □ | □ |
| 2. Office of the Controller: _____ | Date: _____ | □ | □ |
| 3. Office of the Attorney General: _____ | Date: _____ | □ | □ |

☐ **Navajo Housing Authority Request for Release of Funds**

- | | | | |
|--|-------------|---|---|
| 1. NNEPA: _____ | Date: _____ | □ | □ |
| 2. Office of the Attorney General: _____ | Date: _____ | □ | □ |

☐ **Lease Purchase Agreements**

- | | | | |
|--|-------------|---|---|
| 1. Office of the Controller: _____ | Date: _____ | □ | □ |
| (recommendation only) | | | |
| 2. Office of the Attorney General: _____ | Date: _____ | □ | □ |

☐ **Grant Applications**

- | | | | |
|---|-------------|---|---|
| 1. Office of Management and Budget: _____ | Date: _____ | □ | □ |
| 2. Office of the Controller: _____ | Date: _____ | □ | □ |
| 3. Office of the Attorney General: _____ | Date: _____ | □ | □ |

☐ **Five Management Plan of the Local Governance Act, Delegation of an Approving Authority from a Standing Committee, Local Ordinances (Local Government Units), or Plans of Operation/Division Policies Requiring Committee Approval**

- | | | | |
|--|-------------|---|---|
| 1. Division: _____ | Date: _____ | □ | □ |
| 2. Office of the Attorney General: _____ | Date: _____ | □ | □ |

☐ **Relinquishment of Navajo Membership**

- | | | | |
|--|-------------|---|---|
| 1. Land Department: _____ | Date: _____ | □ | □ |
| 2. Elections: _____ | Date: _____ | □ | □ |
| 3. Office of the Attorney General: _____ | Date: _____ | □ | □ |

164 FOR 004115

☐ Land Withdrawal or Relinquishment for Commercial Purposes

Sufficient Insufficient

- | | | | | |
|------------------------------------|-------|-------------|--------------------------|--------------------------|
| 1. Division: | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Office of the Attorney General: | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |

☒ Land Withdrawals for Non-Commercial Purposes, General Land Leases and Resource Leases

- | | | | | |
|-------------|--------------------|------------------|-------------------------------------|--------------------------|
| 1. NLD | <i>[Signature]</i> | Date: 07 July 15 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. F&W | <i>[Signature]</i> | Date: 7/10/15 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. HPD | <i>[Signature]</i> | Date: 7/24/15 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Minerals | <i>[Signature]</i> | Date: 9/4/15 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. NNEPA | <i>[Signature]</i> | Date: 9-21-2015 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. DNR | <i>[Signature]</i> | Date: 9/23/15 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. DOJ | <i>[Signature]</i> | Date: 10-9-15 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8. OPVP | <i>[Signature]</i> | Date: 10/15/15 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

☐ Rights of Way

- | | | | | |
|------------------------------------|-------|-------------|--------------------------|--------------------------|
| 1. NLD | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. F&W | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. HPD | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Minerals | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. NNEPA | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Office of the Attorney General: | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. OPVP | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |

☐ Oil and Gas Prospecting Permits, Drilling and Exploration Permits, Mining Permit, Mining Lease

- | | | | | |
|-------------|-------|-------------|--------------------------|--------------------------|
| 1. Minerals | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. OPVP | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. NLD | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |

☐ Assignment of Mineral Lease

- | | | | | |
|-------------|-------|-------------|--------------------------|--------------------------|
| 1. Minerals | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. DNR | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. DOJ | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |

☐ ROW (where there has been no delegation of authority to the Navajo Land Department to grant the Nation's consent to a ROW)

- | | | | | |
|-------------|-------|-------------|--------------------------|--------------------------|
| 1. NLD | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. F&W | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. HPD | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Minerals | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. NNEPA | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. DNR | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. DOJ | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. OPVP | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |

☐ OTHER:

- | | | | | |
|----------|-------|-------------|--------------------------|--------------------------|
| 1. _____ | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. _____ | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. _____ | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. _____ | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. _____ | _____ | Date: _____ | <input type="checkbox"/> | <input type="checkbox"/> |



NAVAJO NATION DEPARTMENT OF JUSTICE

DOCUMENT REVIEW REQUEST FORM



☐ RESUBMITTAL

DOJ	
9/30/15	349pm
DATE / TIME	
<input type="checkbox"/> 7 Day Deadline	
DOC #:	004115
SAS #:	
UNIT:	NRU

*** FOR NNDOJ USE ONLY - DO NOT CHANGE OR REVISE FORM. VARIATIONS OF THIS FORM WILL NOT BE ACCEPTED. ***

CLIENT TO COMPLETE			
DATE OF REQUEST:	7/9/2015 9/30/2015	DIVISION:	Div. of Natural Resources
CONTACT NAME:	Howard Draper/ Kayla Bia	DEPARTMENT:	Navajo Land Department
PHONE NUMBER:	928/871-6447	E-MAIL:	howarddraper@frontiernet.net
TITLE OF DOCUMENT: Approving the Agreement for a Sand and Gravel Lease between Navajo Nation and BIA Navajo Region, Safety of Dams Borrow Pit Lease			
DOJ SECRETARY TO COMPLETE			
DATE/TIME IN UNIT:	9.30.15 430	REVIEWING ATTORNEY/ADVOCATE:	Sage Garland 10-9-15
DATE TIME OUT OF UNIT:	10-9-15 3:08pm		
DOJ ATTORNEY / ADVOCATE COMMENTS			
Document is legally sufficient			
REVIEWED BY: (Print)	Date / Time	SURNAMED BY: (Print)	Date / Time
Sage Garland	10-8-15/4:42pm	Veronica Blackhat	10/9/15 2:40pm
DOJ Secretary Called: Kayla Bia for Document Pick Up on 10-9-15 at 3pm By: RJ			
PICKED UP BY: (Print)	DATE / TIME:		

NNDOJ/DRRF-July 2013

COMPLETED



THE NAVAJO NATION

MINERALS DEPARTMENT

Post Office Box 1910

Window Rock, Arizona 86515

Phone: (928) 871-6587 • Fax: (928) 871-7095

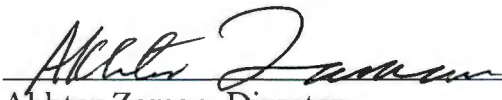
Russell Begaye
President

Jonathan Nez
Vice-President

September 4, 2015

MEMORANDUM

TO : ALL CONCERNED

FROM : 
Akhtar Zaman, Director
Minerals Department

SUBJECT : DELEGATION OF AUTHORITY

Mr. Ram S. Das, Principal Mining Engineer is hereby delegated to act in the capacity of the Director of the Minerals Department beginning at 8:00 A.M. on Friday, September 4, 2015 and ending at 5:00 P.M. on Friday, September 4, 2015.

Your cooperation with Mr. Das will be appreciated.

ACKNOWLEDGMENT


Ram S. Das,
Minerals Department

/kjs
Distribution




THE NAVAJO NATION

RUSSELL BEGAYE PRESIDENT
JONATHAN NEZ VICE PRESIDENT

September 23, 2015

MEMORANDUM

TO: ALL CONCERNED

FROM: 
Bidtah Becker, Division Director
Division of Natural Resources

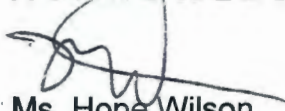
SUBJECT: Delegation of Authority

Be advised that Ms. Hope Wilson, Senior/Programs Projects Specialist, DNR, is hereby given the authority to oversee activities of the Division of Natural Resources starting September 23, 2015, at 8:00 a.m. and ending on September 24, 2015 @ 5:00 p.m.

Ms. Wilson is responsible for reviewing all documents and for directing and signing off on routine duties except for those that she feels needs my personal attention.

Your cooperation with Ms. Wilson is appreciated.

ACKNOWLEDGED:



Ms. Hope Wilson
Senior Programs and Projects Specialist
Division of Natural Resources

CULTURAL RESOURCES COMPLIANCE FORM

THE NAVAJO NATION
HISTORIC PRESERVATION DEPARTMENT
PO BOX 4950
WINDOW ROCK, ARIZONA 86515

OFFICIAL FILE COPY PHOENIX AREA OFFICE		
04 1000 71		
FILE	SUB-NAME	CODE
NNHPD NO.	HPD-11-937	
OTHER PROJECT NO.		
CI-BR-PXAO	CRS-2011-006	
RETURN TO:		
CLASSIFICATION	ENV-3.00	
CONTROL NO.	11912217	
PROJECT	Compliance	
FILE NO.	Form	

ROUTING: COPIES TO
AZ/NM SHPO
XX REAL PROPERTY MGT/330
BOR

NNHPD NO. HPD-11-937
OTHER PROJECT NO.
CI-BR-PXAO CRS-2011-006

PROJECT TITLE: Red Lake Dam Safety of Dam Modification

LEAD AGENCY: BOR

SPONSOR: Bureau of Reclamation, 6150 West Thunderbird Road, Glendale, Arizona 85306-4001

PROJECT DESCRIPTION: The proposed undertaking will involve two proposed borrow areas; a stockpile and staging area; six access roads. Ground disturbance will be intensive and extensive with the use of heavy equipment.

LAND STATUS: Navajo Tribal Trust

CHAPTER: Red Lake

LOCATION: Unplatted & Projected T.19N, R.21W - Sec. 2; T.20N, R.21E - Sec. 35 & 36; Buell Park Quadrangle, Apache County, Arizona G&SRPM and McKinley County, New Mexico NMPM

PROJECT ARCHAEOLOGIST: Jon S. Czaplicki
NAVAJO ANTIQUITIES PERMIT NO.: None

DATE INSPECTED: 08/01/11

DATE OF REPORT: 08/26/11

TOTAL ACREAGE INSPECTED: 8.0-ac

METHOD OF INVESTIGATION: Class III pedestrian inventory with transects spaced 5-10 m apart.

LIST OF CULTURAL RESOURCES FOUND:

(1) Site (NM-P-8-8) & (1) Traditional Cultural Property (TCP)

LIST OF ELIGIBLE PROPERTIES:

(1) Site (NM-P-8-8) & (1) TCP

LIST OF NON-ELIGIBLE PROPERTIES:

None

LIST OF ARCHAEOLOGICAL RESOURCES:

None

EFFECT/CONDITIONS OF COMPLIANCE: No historic properties will be affected with the following conditions:

Site NM-P-8-8:

Site will be avoided by abandoning Road #2.

TCP:

TCP will be avoided by abandoning Roads #3 & 4.

In the event of a discovery ["discovery" means any previously unidentified or incorrectly identified cultural resources including but not limited to archaeological deposits, human remains, or locations reportedly associated with Native American religious/traditional beliefs or practices], all operations in the immediate vicinity of the discovery must cease, and the Navajo Nation Historic Preservation Department must be notified at (928) 871-7148.

FORM PREPARED BY: Tamara Billic

FINALIZED: October 7, 2011

Notification to

Proceed Recommended:

Yes XX No

Conditions:

Yes XX No

Alan S. Downer, Navajo Nation
Historic Preservation Officer

Date

Navajo Region Approval:

Yes X No

BIA-Regional Director

Date

Tim 10/20/11