



LOCUST FIRE B.A.E.R. ACCOMPLISHMENT REPORT

YEAR ONE: 2011



Submitted By: _____ **Date:** _____

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LOCUST FIRE B.A.E.R. - FIRST YEAR ACCOMPLISHMENT REPORT SIGNATURE PAGE

2011 LOCUST FIRE

REVIEW AND APPROVAL – BUREAU OF INDIAN AFFAIRS

I. FIRST YEAR ACCOMPLISHMENT REPORT

- Concur**
- Concur with Revision**
- Do Not Concur**

Explanation for Revision or Disapproval:
--

Nona Tuchawena, Superintendent, Fort Apache Agency, BIA

Date

I. FIRST YEAR ACCOMPLISHMENT REPORT

- Concur**
- Concur with Revision**
- Do Not Concur**

Explanation for Revision or Disapproval:
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2

Bryan Bowker, Regional Director, Western Region, BIA

Date

II. FIRST YEAR ACCOMPLISHMENT REPORT

- Approve**
- Approve with Revision**
- Disapproved**

Explanation for Revision or Disapproval:
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Lyle Carlile, Director, Branch of Fire Management, BIA NIFC

Date

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ACCOMPLISHMENT REPORT

EXECUTIVE SUMMARY

The Locust Fire, AZ-FTA-000047 began on May 6, 2011 in the community of Whiteriver, Arizona on the Fort Apache Indian Reservation. The human-caused fire burned 364 acres before being controlled on May 18, 2011. The Emergency Stabilization (ES) Plan was completed May 24, 2011. The ES Plan contained eleven specifications totaling \$625,006 for FY's 2011, 2012, and 2013 (Locust Fire ES Plan, May 24, 2011) (Table 1).

TABLE 1: PLANNED BUDGET

SPEC #	NFPORS CAT.	PLANNED ACTION	UNITS	# OF UNITS	UNIT COST	FY11	FY12	FY13	TOTAL
1	Planning	Plan Preparation	Acres	1		\$112,688			\$112,688
2	Administration	Implementation Leader	Leader	1		\$21,130	\$14,212	\$7,293	\$42,635
3	Planning	Structural Protection	Each			\$191,840		\$25,072	\$216,912
4	Planning	Floatable Debris Removal	Acres			\$76,256			\$76,256
5	Planning	Culvert Cleaning (BIA)	Each			\$47,060	\$22,330	\$11,165	\$80,555
6	Planning	Culvert Replacement	Each			\$25,100			\$25,100
7	Planning	Culvert Cleaning (ADOT)	Each			\$25,000			\$25,000
8	Planning	Signage	Each			\$4,650			\$4,650
9	Planning	Road Debris Maintenance	Miles			\$10,567	\$5,283		\$15,850
10	Planning	Aerial Seeding	Acres			\$22,100			\$22,100
11	Monitoring	Aerial Seeding Monitoring	Acres				\$1,630	\$1,630	\$3,260
					TOTAL	\$536,391	\$43,455	\$45,160	\$625,006

The first year implementation budget was \$536,391 of the total \$625,006 budgeted. The remaining \$88,615 is to be funded in FY years 2012 and 2013 to conduct monitoring, maintenance, and to uninstall concrete barriers (K-rails).

To date, all specifications are completed except "Culvert Cleaning (ADOT)" and Aerial Seeding Monitoring.

- A. Specification #7, Culvert Cleaning (ADOT), was scheduled to be completed by the Arizona Department of Transportation. It was to fund the cleaning of all culverts under ADOT control that would be impacted by runoff from the Locust Fire watershed. However, ADOT found adequate state funding and completed this task without the aid of B.A.E.R. funds. These funds are unspent (\$25,000).
- B. Specification #11, Aerial Seeding Monitoring", is not scheduled to be started until FY year 2012 and finish in FY 2013.

All of the Specifications were completed by July 17, 2011 except for painting the sandbags (included in Specification #3) and installing warning signs (Specification #8). The delays were caused by monsoonal rains and the time required preparing signage, respectively.

To date there have been three monsoon events that caused significant water/mud flows. No property damages or losses occurred. The aerial seeding was successful and target vegetation levels have been achieved over approximately 70% of the fire.

Total costs incurred to date are \$352,485.56*, leaving a surplus of \$183,905.44 in unspent first year funds for FY 2011 (Table 2 & [Appendix I – Detailed Balance Sheet](#)). \$127,538.16 (36.2%) of the \$352,485.56 was spent employing Tribal members and paying for usage of Tribal resources.

Locust B.A.E.R. Project Balance Sheet

Monday, September 12, 2011 1:02:23 PM

Project Name:	Owner	Project Budget	Tasks Cost	Balance
1 Plan Preparation (Year 1)	B.A.E.R. Planning Team	\$112,688.00	\$112,688.00	\$0.00
2 Implementation Leader (Year 1)	Lloyd "Randy" Fuller	\$21,130.00	\$11,612.27	\$9,517.73
3 Structural Protection (Year 1)	Lloyd "Randy" Fuller	\$191,840.00	\$173,319.21	\$18,520.79
4 Floatable Debris Removal (Year 1)	Lloyd "Randy" Fuller	\$76,256.00	\$24,160.65	\$52,095.35
5 Culvert and Ditch Cleaning (Year 1)	Lloyd "Randy" Fuller	\$47,060.00	\$7,418.28	\$39,641.72
6 Culvert Replacement (Year 1)	Lloyd "Randy" Fuller	\$25,100.00	\$10,663.75	\$14,436.25
7 ADOT Culvert Cleaning (Year 1)	Lloyd "Randy" Fuller	\$25,000.00	\$0.00	\$25,000.00
8 Flood Hazard Signs (Year 1)	Lloyd "Randy" Fuller	\$4,650.00	\$1,610.00	\$3,040.00
9 Road Debris Removal (Year 1)	Lloyd "Randy" Fuller	\$10,567.00	\$0.00	\$10,567.00
10 Aerial Seeding (Year 1)	Lloyd "Randy" Fuller	\$22,100.00	\$11,013.40	\$11,086.60
13 Implementation Leader (Year 2)	Lloyd "Randy" Fuller	\$0.00	\$0.00	\$0.00
16 Culvert and Ditch Cleaning (Year 2)	Lloyd "Randy" Fuller	\$0.00	\$0.00	\$0.00
20 Road Debris Removal (Year 2)	Lloyd "Randy" Fuller	\$0.00	\$0.00	\$0.00
22 Aerial Seeding Monitoring (Year 2)	Lloyd "Randy" Fuller	\$0.00	\$0.00	\$0.00
24 Implementation Leader (Year 3)	Lloyd "Randy" Fuller	\$0.00	\$0.00	\$0.00
25 Structural Protection (Year 3)	Lloyd "Randy" Fuller	\$0.00	\$0.00	\$0.00
27 Culvert and Ditch Cleaning (Year 3)	Lloyd "Randy" Fuller	\$0.00	\$0.00	\$0.00
33 Aerial Seeding Monitoring (Year 3)	Lloyd "Randy" Fuller	\$0.00	\$0.00	\$0.00
		\$536,391.00	\$352,485.56	\$183,905.44

All documents pertaining to the Locust B.A.E.R. ES project are available for inspection at the Fort Apache Agency, 2 West Elm St., Whiteriver, Arizona 85941.

**EXPENDITURES REFLECT CHARGES AND ESTIMATED CHARGES THRU SEPTEMBER 17, 2011 (SEE APPENDIX I).*

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SPECIFICATION ACCOMPLISHMENTS

SPECIFICATION # 1 ~ PLAN PREPARATION

The initial planning preparation began on May 11, 2011. The planning team consisted of 15 members (Appendix A). The close out meeting was held on May 19, 2011. The final plan document was completed on May 23, 2011 and submitted for approval. The plan was fully approved on May 31, 2011. Initial funding to cover the plan preparation was received on May 24, 2011 ([Appendix A](#)).

FUNDING

Funding allocated for Specification # 1 is \$112,688.

EXPENDITURES

The team spent \$112,688 in the plan preparation: this leaves a balance of \$0.00.

IMPLEMENTATION LEADER REPORT

The team consisted of 15 members: a National B.A.E.R. team leader (Darryl Martinez), a Deputy Team Leader (Chris English), and a mix of B.A.E.R. resource specialists and trainees ([Appendix B](#)). The size of this fire (364 acres) provided an excellent opportunity to introduce local specialists, both Federal and Tribal, to the B.A.E.R. process. The team efforts were of the highest standards. Two specialists, Brian Rasmussen (Geologist-NPS) and Lorri Peltz-Lewis (Hydrologist-USFS) were requested because of the potential losses to life and property caused by the proximity of this fire to the local community. The plan was completed on time and on budget in accordance with policy ([USDA FSM 2523](#), and [DOI 620 DM 3T](#)).

REVIEW OF SPECIFICATION OBJECTIVES

The planning phase is very well defined in terms of content and the time necessary to produce the final product in the applicable publications. So when the decision was made to activate a B.A.E.R. Team the planning phase went smoothly.

REVIEW OF TEAM PERFORMANCE

The planning team worked well together and was lead by seasoned B.A.E.R. leaders and B.A.E.R. specialists.

REVIEW OF PRODUCTS

None

SUMMARY OF FOLLOW-UP ACTION RECOMMENDATIONS

None

LESSONS

Several local members of the planning team were assigned as trainees. This was an excellent opportunity to gain valuable experience in B.A.E.R. operations and to function as a B.A.E.R. specialist. B.A.E.R. positions are fire position and like all fire positions they have specific tasks that must be completed in order to qualify to function as a B.A.E.R. Specialist.

ISSUES AND RISKS

None

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SPECIFICATION # 2 ~ IMPLEMENTATION LEADER/ADMINISTRATION

Specification 2 is to fund a project leader to coordinate and oversee the implementation of the Locust Emergency Stabilization Plan. This specification provides funding for three months the first year, 2 months the second year, and one month the third year. The Fort Apache Agency Inventory Forester, Dr. Lloyd Fuller, was selected for this task.

FUNDING

Funding allocated for Specification # 2 is \$21,130, \$14,212 and \$7,293 for the first through the third year, respectively: for a total allocation of \$42,634.

EXPENDITURES

A total of \$11,612.27 has been expended; leaving a first year balance of \$9,517.73.

IMPLEMENTATION LEADER REPORT

This is the first DOI B.A.E.R. project the implementation performed. This was an excellent opportunity to learn the DOI B.A.E.R. requirements and procedures. I look forward to working with the DOI National B.A.E.R. Team on future projects.

REVIEW OF SPECIFICATION OBJECTIVES

The objectives of the Implementation Leader are clearly defined in the [Interagency Burned Area Emergency Response Guidebook \(Version 4.0\)](#) and [Department of the Interior 620 DM 3](#) and [USDA Forest Service Manual 2523](#).

REVIEW OF TEAM PERFORMANCE

None

REVIEW OF PRODUCTS

None

SUMMARY OF FOLLOW-UP ACTION RECOMMENDATIONS

None

LESSONS

The entire B.A.E.R. experience became a valued learning experience. The most useful experience gained was a better understanding of the Incident Business Management functions and procurement procedures. Both the staff at Fort Apache Agency and in Phoenix WRO was extremely helpful and patient as we worked through difficulties together caused by the disruptions from the Wallow Fire.

ISSUES AND RISKS

None

SPECIFICATION # 3 ~ STRUCTURAL PROTECTION

Specification # 3 is composed of several individual tasks:

1. Acquisition of 90,000 sandbags
2. Acquisition of 1,590 tons washed sand
3. Filling the sandbags
4. Placing the sandbags according to the Structural Point Protection Maps
5. Remove K-rails from previous B.A.E.R. installs and placing in new locations according to map
6. Paint the sandbags to shield them from UV radiation and increase longevity
- 7.

FUNDING

Funding allocated for Specification # 3 is \$216,912:

1. Year one funded at: \$191,840
2. Year three funded at: \$25,072
 - a. To remove and store K-rails for future use

EXPENDITURES

A Total of \$173,319.21 has been expended: leaving a first year balance of \$18,520.79.

IMPLEMENTATION LEADER REPORT

Structural Protection is the most detailed, labor intensive, and costly of all specifications to accomplish. This specification called for 90,000 sandbags to be installed by a crew of 20 in 20 days and ¼ mile of K-rails to be installed in 15 days by a crew of 5 (this 5-man crew is also used to paint the 90,000 sandbags).

Acquisition of sandbags became a major hurdle because of the extensive flooding in the Ohio and Mississippi watersheds. The Corps of Engineers purchased large bulk quantities in the millions of bags. Three separate purchases of sandbags (10,000, 8,000, and 72,000 bags) were made in order to complete the task. Prices varied from \$0.14/bag to \$0.28/bag. However, this shortage of sandbags did not delay the completion of this task. Filling and placement of sandbags and placement of K-rails began on June 13, 2011 (funding was completed on June 14, 2011) and was completed by July 15, 2011.

The crews installed 66,000 sandbags, 215 K-rails, and filled 3,000 sandbags to be stored at Fire Management in case of emergency needs. A gravity feed sandbag filler was purchased to aid in this task (www.thesandbagger.com).

On July 20, 2011 the Locust Fire experienced a major rain event totalling 2.0" of rain in 47 minutes. A 2"/hour rain event was the maximum storm event modelled by the team. There were two minor breaches in the sandbags and one moderately severe breach. Breaches were contained during the storm event and no damages or property losses occurred. All of the installations performed exceptionally well because of the design work by the initial planning team, the diligence of the crews placing the sandbags in the field, and the immediate repair work done during the extreme storm event. Further improvements and modifications were made immediately after this rain event using the 3,000 pre-filled sandbags. Another 2,000 sandbags were then filled and pre-positioned at Fire Management in case of another emergency. Approximately 19,000 unfilled sandbags remain and are stored at Fire Management along with the 2,000 filled sandbags.

On each day of August 19 & 20, 2011 the Locust Fire received 0.6" of rain ([Appendix D](#)) which caused water and mud flows into and through the community homes and out onto the lower road. The flows were less severe than the July 20th storm, but still required expenditure of funds to remove mud/debris from the roads and ditches/culverts (See photo page). The weather data was provided by the National Weather Service (NWS) out of Flagstaff, Arizona and consisted of a solar mobile weather station that could be monitored remotely

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through the internet ([Appendix H](#)). This weather unit was placed on the ridge above the Locust Fire on August 4, 2011.

On the night of September 6, 2011 there was a 1.2" rain storm (Appendix H) that caused the fourth significant mud and debris flow. Observers said this was the heaviest of the four flows to date. One house on the Southern end of the fire got some mud inside the back door but no other incidences were reported. This storm resulted in very heavy mud and rock flows which challenged the k-rail installs and drainages to their literal maximum. It was necessary to bring in a bulldozer, excavator, and dump truck, plus addition personell to remove mud and rocks from behind the k-rails (several locations the mud/rocks were within inches of overtopping the k-rails). The drainage behind Whiskey Flats was within 3 inches of being compromised. Had this drainage failed there would have been major flooding into the homes of Whiskey Flats. The excavator was used to remove sediment accumulations from this drainage and haul it to the Tribal farm in Canyon Day. I also had the bulldozer install two more "rolling dips" to aid in the drainage of certain problem crossings and to make minor repairs to the powerline road where there was some accelerated erosion ([Appendix F](#)).

The Implementation Leader started the sandbag installation by setting priorities for all properties considered to be at the highest risk of damage should a storm occur before completion. Of the 137 at risk properties 58 were considered vulnerable to damage from water and mud. Gerd VonGlinsky, the Tribal Hydrologist and Locust B.A.E.R. Operations Chief, and I prioritized the 58 properties. Starting with the highest risk properties and working down the list we finished sandbagging on July 15, 2011. Monsoon rains were predicted to begin on July 15th, however, the rains actually began on July 1st. There were numerous small rain showers that swept the fire during the implementation phase; however no damages or losses were substained. I believe that the priorities we set were correct and lead to the success of this task.

Painting of the sandbags was delayed into September because of monsoonal rains.

REVIEW OF SPECIFICATION OBJECTIVES

The plan called for 4,000 sandbags to be filled and placed every day. This required a maximum effort of over 10 hours per day for 20 days. This level of exertion was not sustainable. I used two Tribal crews that gave us a core workforce of 15 individuals. They were exceptional workers. Even given the exceptional quality of this workforce we were not able to sustain a maximum effort every day. A more realistic requirement would call for a crew of 20 and 2,500-3,000 bags per day. We were able to complete the work just inside of 30 days (working 10-hour days Monday thru Saturday) by using our core Tribal crews, one SWFF crew (11 person crew) for 14 days, and various Type II IA crews that came and went on an irregular schedule (because of fires) that were on loan from our Fire Management group.

Because of a favorable cost structure and exceptional cooperation between BIA Branches and Tribal Forestry the crews were able to complete this specification on time and under budget.

Several items were not accounted for in the initial planning phase: and had there not been a favorable labor force cost structure these items would have run this specification over budget.

1. The sandbag filling machine required a skid steer to keep it filled. Cost was about \$3,000/month.
2. There needed to be an equipment operator for the sandbag filling skid steer at \$15.00/hour.
3. Transportation for the sandbags from the filling site to the placement site required either a truck/trailer combination or a tractor/heavy trailer with qualified CDL driver.
4. Transportation of crews to/from sandbag filling site to point protection sites (SWFF crew).
5. Painting required a truck and trailer to move the paint, sprayer, and crew from site to site.

6. The paint sprayer specified required a generator to provide electricity plus an extra long extension cord so we could move the sprayer around to the back of buildings where the truck could not maneuver.
7. No allowances were made for a semi-tractor and 60,000 pound trailer to move the K-rails. I ended up using a Fire Management transport semi-tractor and bulldozer trailer to accomplish this task. Both were BIA assets and no costs were incurred other than a certified CDL driver.
8. No allowances were made for ground leveling under off-road K-rail installations.
9. Crew comfort (Porta John) is an essential element.

REVIEW OF TEAM PERFORMANCE

One of the highest priorities from the outset of this project was the use of Tribal member labor and equipment whenever possible. Approximately 97% of the labor force was Native American/Tribal employees. Approximately 60% of the equipment used belonged to the White Mountain Apache Tribe. The non-Tribal equipment consisted of two 10,000 pound lift, 4-wheel drive, 4-wheel steer forklifts (rented), one road grader (BIA), paint sprayer (rented), and generator (rented).

The two Tribal crews hired constituted the core labor force and were of exceptional quality. These crews were well trained, well disciplined, and lead by two competent crew leaders. These two crews were involved in all seven specifications that required a labor force (other than aerial seeding).

REVIEW OF PRODUCTS**

SANDBAG FILLING

The sandbag filling machine purchased from The Sandbagger Corporation (www.thesandbagger.com) was a Model GF-2 gravity fed 2 chute design (GSA Contract NSN # 3895-01-460-3910, \$3,833.57 + \$350 Steel surcharge)([Appendix E](#)). The Model GF-2 is advertised as having a fill rate of up to 400 bags per hour. While it was possible to achieve this rate it was not possible to sustain this rate and a more reasonable production rate is 250 to 300 bags per hour.

The rate of sandbag filling is controlled by a couple of factors:

1. Wet sand gravity feeds at a much slower rate than very dry sand. Wet sand required more manual "stirring" to aid in feeding through the two chutes.
2. This particular model has a 1-yard capacity which required very frequent filling thereby slowing production rates.

Overall this style of sandbag filler performed well and was an asset on this type of small fire. However, on much larger fires this unit would not be adequate. Some sort of vibrator/auger to aid in the sand flow would be a distinct advantage. For filling 100,000 or more sandbags I would recommend a four-chute multibagger with auger feed. The cost differences between Model GF-2 and Model MB-3 is significant (\$3,833.57 vs \$23,675.85, respectively) but the increased production capacity should make the larger model cost competitive.

SANDBAGS

This project used two different types of standard sandbags:

1. 14" x 26" white woven polypro basic sandbag with 1600 UVI and tie string costing about \$0.15/bag in bundles of 100 or bales of 1,000. (<http://www.arizonabag.com/product/Sand-Bags/728/>)
2. 14" x 26" various colored "Barricade Bag" without ties costing about \$0.28/bag in bundles of 100 or bales of 1,000. Barricade bags are special sand bags designed to take the wear and tear of holding barricades. (<http://www.arizonabag.com/product/Barricade-Bags/643/>)

The lighter weight white polypro bag was easy to fill and tie, which aided in transporting and "chaining" the bags into position (chaining is simply a line of crew members to pass the bags from one to another in a fire bucket brigade style). This style of bag is designed to withstand 1,600 hours of UV light before deteriorating. However, in the "Arizona Sun" of Whiteriver this style of bag became extremely fragile in as little as 200 hours of sunlight exposure. This project was entirely within developed communities in and around houses. This style of bag did not hold up well to foot traffic or unsupervised children. This style of bag became virtually useless in less than three weeks where unsupervised children were playing. After 200 hours of sunlight you could no longer move/reposition this style of bag ([Appendix F](#)).

The Barricade bags performance was far superior to the light weight polypro bags. After several months the barricade bags were still intact and could be easily repositioned or moved. The bags remained serviceable even after some of the surface roads were chip sealed and the bags were subjected to hot road tar.

I would not recommend the lighter weight white polypro for anything other than a very short duration project. Even with painting I do not believe that these types of light weight bags would remain serviceable longer than 90 days. The added cost of the Barricade bags more than justifies their use on this project because the specification calls for the sandbags to be in place for up to three years.

K-RAIL INSTALLATION

K-rail installation under normal situations would be accomplished along highways by semi-tractor and crane on level ground. However, all of the K-rails for this project were placed off road onto uneven and rough terrain. The 10,000 pound lift, 4-wheel drive, 4-wheel steer construction forklifts proved very adept for this purpose (<http://www.ur.com/index.php/equipment/rental/browse/view/?id=1405&category=Forklifts+%26+Material+Handling&page=3&tab=description>). This type of forklift, when mated with a K-rail grapple, (<http://www.kenco.com/BarrierLift.html>) is ideal for placement of K-rails off road and in difficult places.

***USE OF SPECIFIC PRODUCT NAMES AND/OR WEBSITES DOES NOT CONSTITUTE ANY FORM OF ENDORSEMENT AND ONLY AIDS IN PROVIDING RELEVANT EXAMPLES.*

ISSUES AND RISKS

The continued tampering/vandalism of the sandbags put many properties at risk in the event of a large rain event. There is not adequate funding and personnel available to monitor these installations in an on-going fashion and to effect constant repairs. Should the sandbag tampering/vandalism continue many properties will be put at increased risk of flood damage!

SPECIFICATION # 4 ~ FLOATABLE DEBRIS REMOVAL

There are nine identifiable drainages within the Locust Fire boundary. Most of the drainages that enter and pass through the housing communities contain a large amount of debris that would float should the drainages experience flows. This floatable debris poses a risk of blocking the drainages and culverts and potentially creating unwanted dams. The removal of any debris is essential for unrestricted water/mud flow from the fire watershed through the communities and across Highway 73 and into the North Fork of the White River.

FUNDING

Funding allocated for Specification # 1 is \$76,256.

EXPENDITURES

The team spent \$24,160.65 in the plan preparation: this leaves a balance of \$52,095.35.

IMPLEMENTATION LEADER REPORT

Floatable debris in drainages around community homes contained a certain amount of unidentified trash. For this reason we decided that Mr. Terry Hill, White Mountain Apache Tribe Environmental Protection Office, would supervise this activity. Mr. Hill supervised a 10-person team in the cleanup and acted as the Safety Officer for this task. All debris within the defined channels was removed and placed in 40 cubic yard roll off containers and removed from the Reservation to a dump site in Show Low, Arizona. Approximate 10 loads were removed from all drainages. No floatable debris has caused any blockages of the drainages.

REVIEW OF TEAM PERFORMANCE

This was a difficult task and required care in the handling of this form of debris. Mr. Hill utilized his expertise and the crew to effectively clear this debris away. The plan called for 20 days of work; however, this task was completed in approximately 7 days. The efficiency of the crews saved the project \$52,095.35.

15

REVIEW OF PRODUCTS

No Products to Review

SUMMARY OF FOLLOW-UP ACTION RECOMMENDATIONS

The communities, for various reasons, use the drainages from this fire for trash disposal. Follow-up inspections of all drainages need to be conducted to ensure that they remain clear and to ensure unobstructed flows. Some of the \$52,095.35 in savings should be reallocated to year two and three to keep these drainages free of debris.

ISSUES AND RISKS

The continued use of drainages for trash disposal not only increases the chances of culvert obstruction, but also poses a community health risk. This practice should be strongly discouraged by Tribal authorities.

SPECIFICATION # 5 ~ CULVERT AND DITCH CLEANING

The ability to move water/mud from the fire, through the communities, across Highway 73, and ultimately into the North Fork of the White River is essential. This Specification requires that culverts and inboard ditches in areas at risk to flooding and mud flows, due to post fire watershed conditions, should be cleaned to insure maximum flow capacity. Subsequent to flood events culverts and inboard ditches should be inspected and, if necessary, re-cleaned.

FUNDING

Funding allocated for Specification # 1 is \$80,555 for three years.

1. 1st Year = \$47,060
2. 2nd Year = \$22,330
3. 3rd Year = \$11,165

EXPENDITURES

The team spent \$7,418.28 in cleaning all affected culverts and ditches; this leaves a balance of \$39,641.72 for the first year. (See [Specification # 6](#) for Culvert Replacements)

IMPLEMENTATION LEADER REPORT

I used three heavy equipment operators from the Tribe and equipment from both the BIA Roads Department (roadgrader) and the Tribe (backhoe) to accomplish this task. Mr. Leo Nachu was the crew supervisor and oversaw equipment operations and acted as the on-site safety officer. Mr. Nachu is an experienced heavy equipment operator and was very efficient in his use of the equipment. This task was able to realize considerable savings because I was able to use local Tribal and BIA resources. Every ditch and culvert inspected needed attention. Most culverts were buried and plugged and extensive reworking of the ditches was necessary. The roadgrader was invaluable in recontouring all ditches. Hand shovel and bucket tractor work was necessary to bring the ditches to final grade. Prior to working on the ditches all plugged culverts were removed in preparation for their replacement.

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REVIEW OF SPECIFICATION OBJECTIVES

The "Labor, Materials and other Cost" section of the specification is a reasonable approximation of the costs. We were able to achieve considerable cost savings because of the resources available locally. Had this task been contracted it would have used most of the funds allocated.

REVIEW OF TEAM PERFORMANCE

Because of the many years of experience that Mr. Leo Nachu possessed in heavy equipment he and his crew performed to the highest standards. This task was completed in less time than allocated and under budget.

REVIEW OF PRODUCTS

No Products to Review.

SUMMARY OF FOLLOW-UP ACTION RECOMMENDATIONS

Several of the ditches and roads needed cleaning after the storms on July 20, August 19, and August 20, 2011.

LESSONS

For future reference it should be noted that the 18" culverts specified are too small and became plugged when there was flow of mud/ash/water. This was anticipated by Mr. Dusty Parsons, Navajo County Emergency Manager, who stated during a visit that they should be 24" culverts, and that his experience showed the 18" culverts were always "blown out" from mud/ash flows. His suggestion was to remove all 18" culverts until all risks of flooding had subsided. I made the decision to keep the 18" culverts for three reasons:

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1. New 18" culverts were already in place.
2. Most culverts were for driveways. It was not feasible to use "low water crossings" for driveways.
3. The 24" culverts require a 30"-36" ditch. Using a 24" culvert would have entailed a complete re-engineering of the roadside drainage ditches and some of the culvert systems crossing under Highway 73 (ADOT). This type of action is not allowed in a B.A.E.R. Emergency Stabilization project. The intent B.A.E.R. projects are to stabilize the site and not improve the site. B.A.E.R. projects can only restore infrastructure damaged by a fire, but it cannot improve on what already existed. Replacing existing 18" culverts with 24" culverts would be considered an improvement.

ISSUES AND RISKS

Should the ditches and culverts become obstructed in future rain events the flow around them becomes very unpredictable. This unpredictability will continue to pose a hazard to property with the communities.

SPECIFICATION # 6 ~ CULVERT REPLACEMENT

Most culverts in the potential flooding zone were non-serviceable because they were plugged or damaged. This specification replaces damaged or plugged culverts to reduce the potential for flooding and damage to homes and to maximize the movement of water and mud through the community and into the North Fork of the White River.

FUNDING

Funding allocated for Specification # 6 is \$25,100.

EXPENDITURES

The team spent \$10,663.75 on culvert replacement: this leaves a balance of \$14,436.25.

IMPLEMENTATION LEADER REPORT

All culverts needed cleaning and almost all needed replacement. By combining Specification 5 (Ditch and Culvert Cleaning) with this specification many economies were achieved. The obvious tactic was to remove all culverts and then clean the ditches and then replace the culverts with new culverts. This effectively combined Specification 5 & 6 into one operation. The same crews and supervisors were used for both specifications.

REVIEW OF SPECIFICATION OBJECTIVES

The "Labor, Materials and other Cost" section of this specification seems to be a reasonable approximation of anticipated costs. I was able to achieve considerable cost savings because of the resources available locally and a very favourable labor cost factor. Had this task been contracted it would have used most of the funds allocated.

REVIEW OF TEAM PERFORMANCE

Because of the many years of experience that the lead heavy equipment operator, Mr. Leo Nachu, possessed his crew performed very well. This task was completed in less time than allocated and under budget.

REVIEW OF PRODUCTS

No Products to Review

SUMMARY OF FOLLOW-UP ACTION RECOMMENDATIONS

See Specification 5 for the appropriate follow-up recommendations.

SPECIFICATION # 7 ~ ADOT CULVERT CLEANING

There are 8 drain culverts and two large box culverts that cross Highway 73. These culverts are maintained by the Arizona Department of Transportation (ADOT). This specification cleans all culverts to insure maximum flow capacity.

FUNDING

Funding allocated for Specification # 7 is \$25,000.

EXPENDITURES

The team spent \$0.00: this leaves a balance of \$25,000.

IMPLEMENTATION LEADER REPORT

The culverts and box culverts that cross under Highway 73 belong to ADOT and are considered to be in their right-of-way. In prior conversations with ADOT the area supervisor stated that Arizona did not have the budget to inspect and clean these culverts. Without cleaning of these culverts there was a real possibility that water and mud flows could breach onto Highway 73; posing a very real safety concern. Therefore, the planning team requested funds to aid ADOT in completing this task. After this plan was accepted and funded ADOT found adequate funding to complete this task using State of Arizona funds. Therefore no B.A.E.R. funds were used to complete this Specification.

REVIEW OF SPECIFICATION OBJECTIVES

In view of the budgetary constraints that the State of Arizona is experiencing it was reasonable to request assistance from B.A.E.R.

REVIEW OF TEAM PERFORMANCE

ADOT used an outside contractor that had specialized equipment. These contractors were experts in completing this task. The State of Arizona's performance in completing this task not only saved considerable B.A.E.R. funding, but it also saved me the extra efforts required to contract this task.

REVIEW OF PRODUCTS

No Products to Review.

SUMMARY OF FOLLOW-UN ACTION RECOMMENDATIONS

No follow-up recommendations are required for the BIA or Tribal personnel. ADOT has already made several follow-up inspections of their culverts following storms. It is anticipated that ADOT will continue to perform this function as long as it is necessary. I greatly appreciate the State of Arizona's cooperation and coordination in this important task.

ISSUES AND RISKS

Should the State of Arizona no longer fund ADOT to inspect their culverts under Highway 73, it may become necessary for B.A.E.R. to undertake funding this task. To allow the culverts and box culverts to become plugged poses an unacceptable risk to public safety. If, in the future, additional funding is required I will submit an amendment to the plan.

SPECIFICATION # 8 ~ FLOOD HAZARD SIGNS

Flood and mud flow hazard warning signs should be developed for immediate installation at low water crossings for the protection of life and property.

FUNDING

Funding allocated for Specification # 8 is \$4,650.

EXPENDITURES

The team spent \$1,610: this leaves a balance of \$3,040.

IMPLEMENTATION LEADER REPORT

Contracting for the construction of the signs actually took several weeks which delayed their "immediate" installation. No adverse flooding occurred at the locations where the signs were to be placed between the time the signs were ordered and they were ultimately installed.

REVIEW OF SPECIFICATION OBJECTIVES

This Specification is necessary for public safety and has been used many times on the Reservation with other fires. The costs associated with this specification are very accurate.

REVIEW OF TEAM PERFORMANCE

None

REVIEW OF PRODUCTS

One comment seems relevant to the product ordered. Because these signs are very close to residential communities it was advisable to add anti-vandalism coatings to the signs at an extra cost. This additional expense should increase the useful life of the signs.

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SUMMARY OF FOLLOW-ON ACTION RECOMMENDATIONS

None required

ISSUES AND RISKS

None

SPECIFICATION # 9 ~ ROAD DEBRIS REMOVAL

During major storm events sections of roadways are expected to flood or experience significant surface. Flood events will erode and/or deposit sediment, organic, debris, and boulders on roadways making them unsafe and/or impassable. This specification provides for removal of sediment, debris, and rock fall on roadways.

FUNDING

Funding allocated for Specification # 9 is \$15,850.

1. 1st year = \$10,567
2. 2nd year = \$5,283

EXPENDITURES

The team spent \$0.00: this leaves a balance of \$10,567 for the first year.

IMPLEMENTATION LEADER REPORT

On July 20, 2011 there was a large rain event that produced 2" of rain in approximately 47 minutes. This resulted in large amount of ash and debris movement and water and mud flows across N. Locust Ave. and Tinijeth St. This mud flow caused the immediate closure of these surface roads by myself and the White Mountain Apache Police Department. This closure lasted about one hour. BIA roads equipment was mobilized by Virgil Paxon immediately after the storm and graders and sweeps cleaned the roads. There were two smaller storms (0.6" each) on August 19th and 20th and a 1.2" storm on September 6th that resulted in mud and rock flows across the same roads. BIA roads failed to respond and the roads were cleaned by B.A.E.R. personell even though funds were allocated for cleaning the roads. Clarification needs to be obtained on the responsible party for cleaning BIA roads. If BIA roads cannot respond then the \$15,850 needs to be returned to NIFC so that it can be reallocated to other B.A.E.R. projects. If BIA roads cannot respond because of funding needs then the \$15,850 should to be allocated to the roads department to assist in road debris removal.

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REVIEW OF SPECIFICATION OBJECTIVES

It is very reasonable to assist BIA and Tribal roads departments that might incur extra expenses because of this fire. BIA roads department operates on a very limited budget and it not reasonable to expect them to absorb these additional charges for maintenance without reimbursement.

REVIEW OF TEAM PERFORMANCE

BIA roads responded to the July 20, 2011 storm immediately. Initial clean up was completed within one hour. The next day BIA roads had a sweeper cleaning up the remaining debris. There performance was exceptional considering their limited staff: both Mike Lomayaktewa and Virgil Paxon are to be commended.

REVIEW OF PRODUCTS

No Products to Review

SUMMARY OF FOLLOW-ON ACTION RECOMMENDATIONS

It is expected that there will be several more large rain events within the next three years that will deposit mud and debris on surface roads.

ISSUES AND RISKS

The surface roads of N. Locust Ave. and W. Tenijieth Ave. will remain at risk of collecting mud and debris. Because of the design of the existing drainages the flow of water and mud across these surface streets is unavoidable. A provision for continued maintenance of these roads is necessary for public safety.

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SPECIFICATION # 10 ~ AERIAL SEEDING

In order to aid in emergency soil stabilization aerial seeding was selected to establish vegetation on areas of low to moderate burn severity.

FUNDING

Funding allocated for Specification # 1 is \$22,100.

EXPENDITURES

The team \$11,013.40 on aerial seeding: this leaves a balance of \$11,086.60.

IMPLEMENTATION LEADER REPORT

The Helitac helicopter was already on contract and Marwin Dazen (Helicopter Manager) was able to modify this contract to add aerial seeding. Since the flight rate for the Aerospatiale helicopter (Eurocopter AS350 B3) was already negotiated and discounted this allowed the project to realize a considerable savings. Mountain Air Helicopters, Inc. (<http://www.mountainairheli.com>) had aerial seeding qualified pilots and a new seeder. The initial budget allocated 15 hours of flight time, but by placing the operational helipad close to the fire on the backside of the ridge the contractor was able to complete the project in 7 flight hours.

REVIEW OF THE BUSINESS CASE

The approved Aviation Project Plan dated 7/5/2011 is on file at the Fort Apache Agency.

REVIEW OF SPECIFICATION OBJECTIVES

This specification called for 85 pounds of seed per acre, or 0.03 ounce per square foot. This translates to about 20 seeds per square foot. The objective was to use up the remaining seed from seed from the 2002 Rodeo-Chediski Fire. There were 600 50-pound bags of seed remaining (30,000 pounds). A viability test showed that this seed still had approximately 85% PLS. Instead of disposing of this seed it was decided that the mix was a good match for the Locust habitat and that we would use all of the seed across the fire.

NOTE: There were initial questions about the viability of the seed from the Rodeo-Chediski Fire, but germination tests and after seeding surveys I conducted show that this seed source still contains high PLS (Percent Live Seed). Initial surveys show that there is very good germination. So the decision to use this seed source is validated.

REVIEW OF TEAM PERFORMANCE

The pilot and Helitack ground support crew completed this task on time and under budget.

REVIEW OF PRODUCTS

The ASTAR B3 is an exceptional high performance helicopter and performed without incidence.

SUMMARY OF FOLLOW-UP ACTION RECOMMENDATIONS

This specification requires follow up surveys in years two and three to assess the establishment of the seed ([See Specification # 11 ~ Aerial Seeding Monitoring Effectiveness](#)).

LESSONS

The lesson to be learned from this task is that seed properly stored (cool and dry) can retain highly viable for extended periods of time.

ISSUES AND RISKS

None

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SPECIFICATION # 11 ~ AERIAL SEEDING MONITORING EFFECTIVENESS

The purpose of the effectiveness monitoring is to assess grass establishment to aid in erosion control and burn site stabilization in 2012 and 2013. The plan calls for the successful establishment of plants at 5.7 plants per square yard by evaluation of 1/300 acre circular plots.

FUNDING

Funding allocated for Specification # 1 is \$3,260.

1. 2nd year (2012) = \$1,630
2. 3rd year (2013) = \$1,630

EXPENDITURES

The team spent \$0.00 the first year on this specification: this leaves a balance of \$0.00.

1. Monitoring expenditures begin in 2012 and end in 2013.

IMPLEMENTATION LEADER REPORT

It is necessary to evaluate the effectiveness of aerial seeding on this type of fire for future reference. The high application rate of 85 pounds per acre coupled with the still high viability gives this site the best possibility for successful grass establishment. Just after seeding the monsoon rains regularly swept the fire with gradual soaking rains that will encourage successful germination and establishment. The July 20th storm did transport seed off of the mountain and downslope and onto powerline road. However, significant seed still remains embedded behind and around the heavy rock armoring that is pervasive on this site. Coupled with the strong re-emergence of the native plants the aerial seed has a very good chance of long-term establishment.

NOTE: Visual indications and anecdotal measurements in late August and Early September of 2011 show a very high germination rate and more than adequate establishment. Therefore I can say that the aerial seeding was very successful. ([Specification # 10](#)) ([See Photos](#))

REVIEW OF SPECIFICATION OBJECTIVES

It is necessary to quantify the successful establishment of the aerial seeding efforts. A standard seedling establishment survey technique is adequate to determine the success/failure of Specification # 10.

REVIEW OF TEAM PERFORMANCE

None

REVIEW OF PRODUCTS

None

SUMMARY OF FOLLOW-ON ACTION RECOMMENDATIONS

This Specification is to be implemented the second and third year after the fire. There are no first year activities to report.

LESSONS

The lesson to be learned from this task is that seed properly stored (cool and dry) can retain highly viable for extended periods of time.

ISSUES AND RISKS

None

APPENDICES

APPENDIX A – INITIAL FUNDING NOTICE

May 24, 2011

Memorandum

To: Regional Director, Western Region
Attention: Forestry/Fire Management

From: Acting Director, Branch of Wildland Fire Management

Subject: Additional 2011 Locust Fire Emergency Stabilization Funding Approval

The Bureau of Indian Affairs, National Interagency Fire Center (BIA-NIFC) approves additional Emergency Stabilization (ES) funding of \$70,000 for the Locust Fire on the White Mountain Apache Tribe Reservation, Fort Apache Agency, to address emergency post-fire public safety and resource protection issues. This additional funding, with previous funding of \$30,000, now brings the total ES funding authorized for the Locust Fire to \$100,000. The region will not receive any additional funding documents authorizing expenditures for Emergency Stabilization (ES) projects, but under ES the Fort Apache Agency can begin expenditures for this project. Maximum distribution of ES funds is as follows:

Funding Codes

REGION	FFS FUND CODE	FFS PROGRAM	PROJECT DESCRIPTION	PROJECT NUMBER	MAXIMUM AMOUNT
Western	92500	92320	Locust Fire ES	F3G9	\$ 100,000

Use of these funds will be specified in the Emergency Stabilization plan currently being finalized by the Western Regional Burned Area Emergency Rehabilitation (BAER) team on site.

Emergency stabilization activities are funded through the emergency operations account (92500) with a program code of 92320. Please note that DOI Manual 620 DM 3, 3.8 specifies ES treatments to be carried out within one (1) year following containment of a wildland fire. Repair or replacement of treatments or monitoring can be done up to three (3) years following containment where failure would imperil a watershed or cause serious loss of downstream values.

The Western Regional Office is required to update National Fire Plan Operations & Reporting System quarterly and the Fort Apache Agency Superintendent is required to submit an accomplishment report to the National BAER Coordinator by September 15, 2011.

If you have any questions or need assistance on this matter, please contact Myron Hotinger, BAER Coordinator, BIA-NIFC at 208-387-5246 or Darryl Martinez, Tri-Regional BAER Coordinator at 505-331-3514.

cc: Darryl Martinez, BIA-NIFC Inter-Regional BAER Coordinator
Dalan Romero, BIA-NIFC Asst Director-Fire Operations
Maggie Moran, BIA-NIFC Budget Officer

bcc: BIA231:Surname:BIA231Chrono:BureauRF:Hold
BIA231:Mhotinger:5.24.2011:AdditionalLocustFireESfundingApproval5_23_2011.doc
208.387.5246

Project Name: Locust Fire B.A.E.R. Accomplishment Report (Year One: 2011)

Document Number / Version Number: BAER 2011-1/1.0

APPENDIX B – LIST OF B.A.E.R. TEAM MEMBERS AND CONTACTS

REGIONAL BURNED AREA EMERGENCY RESPONSE (BAER) TEAM ~ LOCUST FIRE										
POSITION	CODE	NAME/AFFILIATION	UNIT ID	GACC	WORK PHONE	HOME PHONE	CELL	FAX	E-MAIL	
BAER Planning Team	Team Leader	BAEL	Darryl Martinez, BIA NIFC, Albuquerque	NMSWC	SW	(505) 563-3369	(505) 879-1811	(505) 331-3514	(505) 563-3052	darryl.martinez@bia.gov
	Dep. Team Leader	BAEL	Chris English, BIA WRO	AZWEA	SW	(602) 379-6798	(602) 252-3484	(602) 421-2112	(602) 379-6826	chris.english@bia.gov
	Forester	BAFO	Randy Fuller, Ph.D., BIA Ft. Apache Agency	AZFTA	SW	(928) 338-5304	(928) 521-0906	(928) 205-1856	(928) 338-5385	loyd.fuller@bia.gov
	Hydrologist	BAES	Bill Goodman, USFS R4 Ogden UT	UT	EGB	(801) 625-5368		(435) 691-3778		wgoodman@fs.fed.us
	Soil Scientist (T)	BASS	Robert Hetzler, BIA, San Carlos Agency	AZSCA	SW	(928) 475-2326	(928) 402-0908	(928) 812-0232		robert.hetzler@bia.gov
	Hydrologist (T)	BAHY	Gerd Von Glinsskik, WMAT	AZFTA	SW	(928) 205-3569	(928) 338-5824	(928) 205-3569	(928) 330-3933	gwonglinski@wmat.us
	Cultural Specialist	BACS	Mark Altaha, Arch., WMAT	AZFTA	SW			(928) 338-3033		maltaha@wmat.us
	Env. Pro. Spec.	BAEN	Richard Powskey, BIA WRO	AZWEA	SW	(602) 379-6798	(602) 370-5273	(602) 321-7488	(480) 379-6798	richard.powskey@bia.gov
	Geo. Info. Spec.	GISS	Rachel Enfield, WMAT	AZFTA	SW	(928) 338-5417	(928) 338-1375	(928) 207-8861		rach.enfield@frontiernet.net
	Geologist	BAGE	Brian Rasmussen, NPS, Whiskeytown, CA	CAWUA	CA	(530) 242-3444		(530) 949-9838		brian.rasmussen@nps.gov
	Geo Info Specialist	GISS	Ida Rose Cosay, WMAT	AZFTA	SW	(928) 338-5417				ircosay@wmat.us
	Roads Engineer	BAEN	Michael Lomayaktewa, BIA, Ft. Apache Agency	AZFTA	SW	(928) 338-5486		(928) 205-9527		michael.lomayaktewa@bia.gov
	Hydrologist	THSP	Lorri Peltz-Lewis, USFS, R5, Ogden, UT	CAR05	CA	(916) 640-1049		(916) 995-3107		lpeltz@fs.fed.us
	Geo. Info Spec. (T)	GISS	Anthony Thompson, BIA, Laguna Agency	NMLAA	SW	916-640-1049				anthony.thompson@bia.gov
	Operations	BAOP	Keith Burnette, BIA WRO	AZWEA	SW	(602) 379-6798		(602) 317-6133		kburnette@bia.gov
	Dam Safety		Waylon Truax, Safety of Dams Engineer	AZFTA	SW	(928) 338-1404		(928) 266-4572		waylontruax@wmat.us
	Enviro Prot Off		Terry Hill, Environmental Specialist, WMAT	AZFTA	SW	(928) 338-2484			(928) 338-5195	thill@wmat.us
	T&E		Cynthia Dale, Sensitive Species Coord., WMAT	AZFTA	SW	(928) 338-4385			(928) 338-1712	cdale@wmat.us
	Tribal Forest Mgr.		Jonathan Brooks, Forest Manager, WMAT	AZFTA	SW	(928) 338-1665				jbrooks@wmatforestry.com
	Heavy Equip. Mgr.		Virgil Paxson, BIA, Roads	AZFTA	SW	(928) 338-5482		(928) 205-9524		Virgil.Paxson@bia.gov
	Emerg. Response		Shannon Tsosie, Emergency Response Coord., WMAT	AZFTA	SW	(928) 338-2641		(928) 594-1608	(928) 338-1615	stosie@wmat.us
	Tribal PIO		Gwendena Real Bird, Exec. Assit. To the Tribal Chariman	AZFTA	SW					gwendena@wmat.us
	Tribal PIO		Jerome Kasey, Exec. Assit. To the Vice Chairman	AZFTA	SW					jeromekasey@wmat.us
			Brenda Begay							
			Amos Tate							
	Fire Air Operations		Sabino Archuleta, BIA, Aviation, Fort Apache	AZFTA	SW					Sabino.Archuleta@bia.gov
	Fire Mgt		John Cervantes, Fire, BIA, Fort Apache	AZFTA	SW					John.Cervantes@bia.gov
	Communications		Thelma Dawahongva, Communications, BIA, Ft. Apache	AZFTA	SW					Thelma.Dawahongva@bia.gov
	Helitack Operations		Marwin Dazen, Helitack, BIA, Fort Apache	AZFTA	SW					Marwin.Dazen@bia.gov
	Public Information	BAIO	Candy Lupe, Fire Mgt. Specialist, PIO, BIA, Fort Apache	AZFTA	SW					Candy.Lupe@bia.gov
			Manuel Dahkoshay							
	Fire Mgt		Brian Quintero, Fire Mgt. SWFF, BIA, Fort Apache	AZFTA	SW					Brian.Quintero@bia.gov
	Fire Mgt		Ralph Thomas, Fire Mgt., Operations, BIA, Fort Apache	AZFTA	SW					Ralph.Thomas@bia.gov
			Trenton Prins							
	Training		Yarnell Gatewood, Training, BIA, Fort Apache	AZFTA	SW	(928) 338-5481	(928) 338-1825	(928) 205-9523		yarnellg@yahoo.com
	Forest Manager		Robert Lacapa, Forest Manager, BIA, Fort Apache	AZFTA	SW					Robert.LaCapa@bia.gov
	Superintendent		Nona Tuchawena, Superintendent, BIA, Fort Apache	AZFTA	SW	(928) 338-5303				nona.tuchawena@bia.gov
	Fire Chief		Paul Kuehl, Fire Chief, WMAT	AZFTA	SW	(928) 338-1701	(928) 338-4881		(928) 338-1710	pkuehl@wmat.us
	Chuck Coplan		Wagon Wheel Roll Off			928-537-8913			928-537-5385	
	Rusty		American Fence Co. (Culverts)			928-537-5745			928-537-7474	
Richard		Liberty Fence & Supply			928-537-3333			928-537-7721		
		LT, Crew Leader						928-5946139		
		Darlene Beach, Crew Leader						928-594-2704		
Heavy Equip. Op.		Leo						928-594-3648		
Meteorologist		Daryl J Onton, NOAA Weather Forecast Office ~ Flagstaff			(928) 556-9161			(928) 774-3914	daryl.onton@noaa.gov	
Meteorologist		George Howard, NOAA Warning Coordination Meteorologist ~ Flagstaff			(928) 556-9161			(928) 774-3914	george.howard@noaa.gov	
WMAT Land Ops		Al Brooks			(928) 338-1504		(928) 521-3647	(928) 338-3509	albrooks@wmat.us	
WMAT Land Ops		Jimmy Brownfeather, Water Ops			(928) 338-4825		(928) 521-9354	(928) 338-3945		
County Gov		Tiffany S Ashworth, Grants Admin			(928) 524-4271		(928) 241-2185	(928) 524-4052	tiffany.ashworth@navajocountyaz.gov	
County Gov		Trent Larson, Flood Control			(928) 524-4387		(928) 241-2104	(928) 524-4122	trant.larson@navajocountyaz.gov	

APPENDIX C – COMPLETED FUNDING NOTICE

JUN.14.2011.09:36
 01.01.2000.01.2011.

#2509 P.002 / 0

ACTION: R SCREEN: **SPRJ** USERID: **VFOH**
 SUBPROJECT REFERENCE TABLE
 KEY IS BFYS, FUND, DIV, ORG, PROGRAM, RPTG, JOB
 01-

		*** SUB-PROJECT ***				
BFYS	FUND	DIV	ORG	PROGRAM	RPTG	JOB
2011	92500			92320		F3G9

MAX AMOUNT: 600,000.00 FUNDS CONTROL IND: S STATUS IND: O
 EST REIM AMT: 0.00
 PROJECT LEVEL JOB CODE: **K11**
 DESCRIPTION: 2011 **LOCUST FIRE ES**

*** SUBPROJECT-TO-DATE ***			
COMMITMENTS:	0.00	BILLING ADJUST:	0.00
OBLIGATIONS:	0.00	EXP ADJUST IN:	0.00
EXPENDITURES:	35,639.64	ORIG ADJUST IN:	0.00
PROJ CHARGES:	0.00	NET AVAIL BAL:	564,360.36
ACT REIM AMT:	0.00		

< 112,688.000 01

APPENDIX D – MOBILE WEATHER STATION PRINT OUT

Weather Conditions At wx7fgz-4

Last report from wx7fgz-4 received 40 seconds ago
 Wind from 341 degrees @ 13.0 MPH Gusts to 20.0 MPH Temp 76F Humidity 53% Dewpoint 57F Pressure 1021.8 mb

PROGRESSIVE

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findU links for wx7fgz-4

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- [- Nearby weather activity](#)
- [- Raw APRS data](#)
- [- Weather data](#)
- [- Raw weather data](#)
- [- Metric units](#)
- [- Nautical units](#)
- [- Position](#)
- [- Weather Warnings](#)

Citizen Weather links

- [- CWOP info](#)
- [- CWOP News and Status](#)
- [- Current report listing](#)
- [- Quality control graphs for wx7fgz-4](#)

External links for wx7fgz-4

- [- ORZ Lookup](#)
- [- MSN map \(North America\)](#)
- [- MSN map \(Europe\)](#)
- [- MSN map \(world\)](#)

findU general links

- [- Latest News](#)
- [- Advanced cgi parameters](#)

Historical Data (Last 10 days) [12 hours](#) [1 day](#) [2 days](#) [3 days](#) [5 days](#)

Temperature/Dew point

Wind (MPH)

Barometer (millibars)

Rain (inches)

Rain displayed depends on what is being sent from the station, may be cumulative, last hour, last 24 hours, or since midnight

Wind Distribution (last 240 hours)

Wind Distribution (last 2 hours)

GPS Tracking Software
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GPS Fleet Tracking
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Times and dates in UTC

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Flash flood warning [Back to local forecast](#)

National Weather Service Tuesday, September 06, 2011 6:53 PM Local Time

FLASH FLOOD STATEMENT NATIONAL WEATHER SERVICE FLAGSTAFF AZ 653 PM MST TUE SEP 6 2011 AZ0017-070245-

TO CON.KPGZ.PP.W.0042.00000700002-1109070345Z NAVAJO AZ- 653 PM MST TUE SEP 6 2011 -A FLASH FLOOD WARNING REMAINS IN EFFECT UNTIL 745 PM MST FOR EXTREME SOUTHEASTERN NAVAJO COUNTY... AT 650 PM MST... VERY HEAVY RAINFALL HAS ALREADY TAKEN PLACE OVER THE LOCUST FIRE BURN AREA IN WHITERIVER... WITH RAINFALL AMOUNTS UP TO ONE INCH ESTIMATED SO FAR. LAW ENFORCEMENT OFFICIALS REPORT THAT FLASH FLOODING HAS ALREADY BEGUN. PRECAUTIONARY/PREPAREDNESS ACTIONS... THE HEAVY RAIN WILL LIKELY TRIGGER LIFE-THREATENING FLASH FLOODS AND DEBRIS FLOWS WITHIN AND DOWNHILL FROM THE LOCUST FIRE BURN AREA. FLASH FLOODING WILL LIKELY BEGIN WITHIN A FEW MINUTES AND MAY HAVE ALREADY STARTED. IF YOU CAN NOT MOVE SAFELY OUT OF THE WAY OF FLASH FLOODING... IT IS BEST TO SHELTER IN PLACE IN A STURDY STRUCTURE. AREAS IMPACTED BY THIS WARNING INCLUDE THOSE LOCATIONS IN WHITERIVER FROM LOCUST STREET TO KNOTS LANDING ROAD BETWEEN THE BURN AREA AND THE WHITE RIVER... INCLUDING HIGHWAY 73. LAT...LON 3393 11000 3391 10990 3380 10983 3379 11000

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Last report from wx7fgz-4 received 23 seconds ago

Wind Calm Gusts to 7.0 MPH Temp 58F Humidity 95% Dewpoint 56F Rain last 24 hours 1.08 inches Pressure 1025.4 mb

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Temperature/Dew point

Wind (MPH)

Barometer (millibars)

Rain (inches)

Rain displayed depends on what is being sent from the station, may be cumulative, last hour, last 24 hours, or since midnight

Wind Distribution (last 120 hours)

Wind Distribution (last 2 hours)

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Times and dates in UTC

Station Location

APPENDIX E – SANDBAGGER BROCHURE

The Sandbagger Corp.

PO Box 5798
 Villa Park, IL 60185
 www.thesandbagger.com
 800.770.7263 toll free
 815.363.1400
 815.876.8558 fax

CONTACT PERSON:
 Tim Vandergrift, President

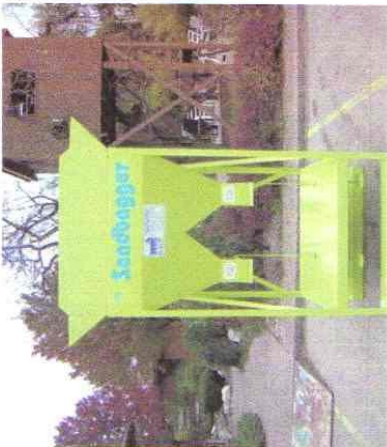
FSC Group: 23, Part V
 Vehicle Multiple Award Schedule (VMAS)
 FSC: 3895
 Special Item # (SIN) 272-105
 New Technologies
 Equipment Used to Fill Sandbags
 Contract Number: GS-30F-0005K



**The Sandbagger Multibagger
 Model MB-3
 NSN # 3895-01-460-4545
 GSA Price \$ 23,675.85**



**The Sandbagger Trailbagger
 Model C-2T Towing Package
 NSN # 3895-01-460-4548
 GSA Price \$ 3,136.27**



**The Sandbagger Model GF 2
 Gravity Fed 2 Chute
 NSN # 3895-01-460-3910
 GSA Price \$ 3,833.57**



**The Sandbagger Model I
 GF Gravity Fed
 NSN # 3895-01-399-5889
 GSA Price \$ 7,280.58**



**The Sandbagger Model II
 Motorized Auger
 NSN # 3895-01-399-5890
 GSA Price \$ 16,768.73**

APPENDIX F – SPECIFICATION PHOTOGRAPHS



Specification 3

Closed grate would plug with debris if allowed to remain in place.

Culvert grate covering removed
7/15/2011

Culvert under Highway 73 at Mulberry Ave.



On 7/20/2011 and 8/19 & 8/20/2011 flows would have been blocked by grate and resulted in flooding of Highway 73.

Structural Protection
Sand bagging





Sandbag Damage due to animals, children, and supplier quality.*



Undamaged bags.

Specification 3 ~ K-rail installation



Specification 4 ~ Floatable Debris Removal



Specification 5 ~ Culvert and Ditch Cleaning (BIA)



Yes...there is actually a culvert at the end of his shovel...!



Specification 6 ~ Culvert Replacement



Replacing a culvert...such as the one located at the end of the shovel on the preceding page.

Specification 7 ~ Culvert Cleaning (ADOT)

This 48" culvert under Highway 73 runs from Locust St. down to the river... total run of about 400 feet. This took ADOT contractors three days to clean out.



Specification 8 ~ Signage



Existing Highway 73 sign

Example of signs added to the entrances to power line road (minus the graffiti).



Specification 9 ~ Road Debris Maintenance



Specification 10 ~ Aerial Seeding



Motorized seed spreader

Note the seed trailing behind the spreader









Behind k-rail right after installation

Behind k-rail after 9/6/2011 storm. Too much rock and sediment.



Solution after 9/6/2011 storm to remove rock/sediment and aid in drainage.



After first three storms too much sediment was building up behind sandbags.

Solution after 9/6/2011 storm was to remove sediment and improve drainage before major flooding occurred.



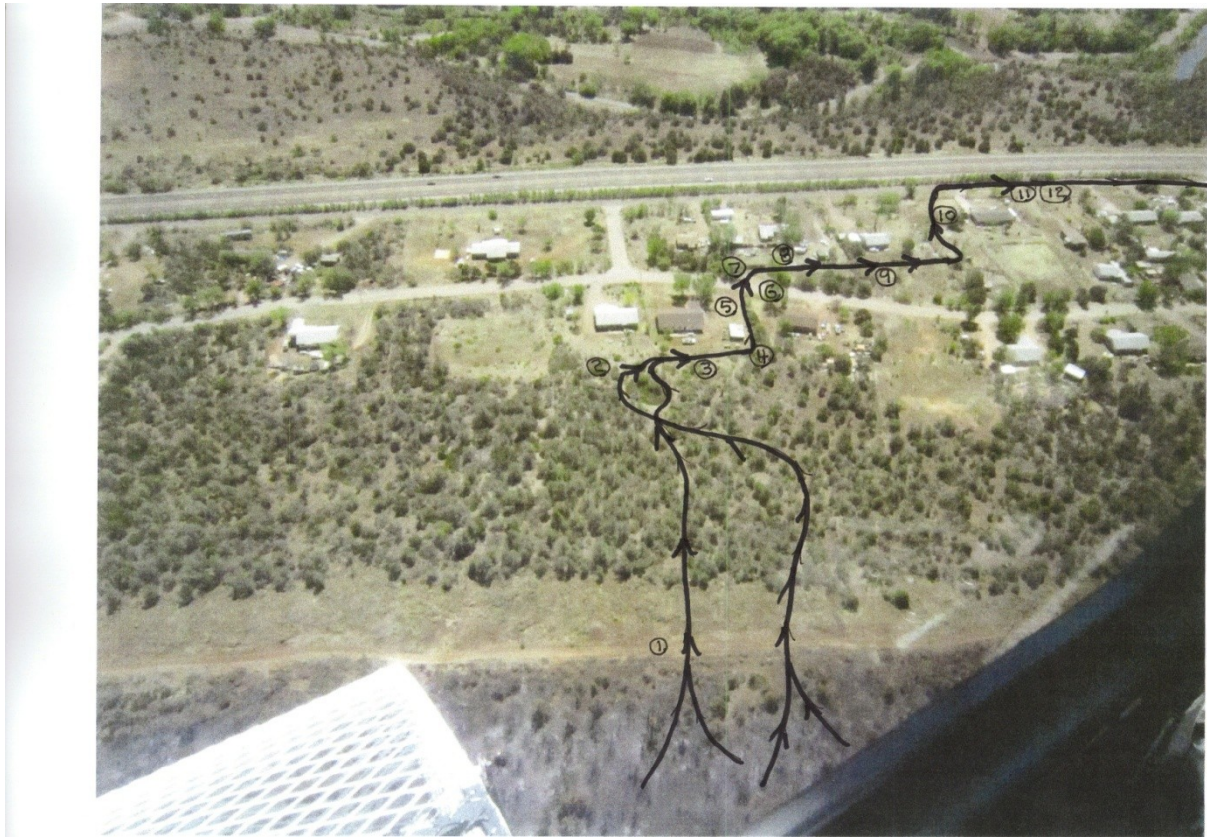


After first small storm: Notice pipe and cap in foreground. Before fire the hydrant was fully visible.



Same location after 4th storm: Note pipe and cap in foreground..but missing fire hydrant under the mud.

APPENDIX G - Sample Flow Control



47

1
Off the Fire
&
Across Power
line Rd.





2
Into the K-rails



3
Down the K-rails



4
Around the Corner

5

Down between the houses



6

Across N Locust

6

Across N Locust



6

Across N Locust





7
Over the Embankment



8
Behind the houses



9
Down the Sandbags

10

Thru the Corrales



Onto Tenijeth Ave.

11



12

Down the Road to the Drainage



13

Across the Highway
at Mulberry Ave.



14

And into the North Fork of the White River



APPENDIX H – NATIONAL WEATHER SERVICE MOBILE STATION

Solar remote NWS station installed on August 4, 2011



APPENDIX I - DETAILED PROJECT BALANCE SHEET

Project Name 1 Plan Preparation (Year 1)

Owner	B.A.E.R. Planning Team BAER	Status	In Progress
Category	(3) Budgeting	Start Date	5/24/2011
Priority	(1) High	End Date	5/31/2011

Title	Due Date	Assigned To	Status	Cost	Cost in Days
Plan Preparation	5/24/2011	B.A.E.R. Planning Team BA	Completed	\$112,688.00	
			Budget in Days	0.00	Budget \$112,688.00
			Cost in Days	0.00	Cost \$112,688.00
			Balance	0.00	Balance \$0.00

Project Name 2 Implementation Leader (Year 1)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(1) Implementation	Start Date	5/24/2011
Priority	(1) High	End Date	5/24/2014

Title	Due Date	Assigned To	Status	Cost	Cost in Days
Payroll	6/16/2011	Lloyd "Randy" Fuller	In Progress	\$1,662.38	0.00
Payroll	6/26/2011	Lloyd "Randy" Fuller	In Progress	\$1,684.54	0.00
Payroll	7/2/2011	Lloyd "Randy" Fuller	In Progress	\$1,728.87	0.00
Payroll	7/9/2011	Lloyd "Randy" Fuller	In Progress	\$2,172.17	0.00
Payroll	7/16/2011	Lloyd "Randy" Fuller	In Progress	\$1,174.75	0.00
Payroll	7/23/2011	Lloyd "Randy" Fuller	In Progress	\$509.80	0.00
Payroll	7/30/2011	Lloyd "Randy" Fuller	In Progress	\$443.30	0.00
Payroll	8/6/2011	Lloyd "Randy" Fuller	In Progress	\$398.97	0.00
Payroll	8/13/2011	Lloyd "Randy" Fuller	In Progress	\$0.00	0.00
Payroll	8/20/2011	Lloyd "Randy" Fuller	In Progress	\$908.77	0.00
Payroll	8/27/2011	Lloyd "Randy" Fuller	In Progress	\$418.92	0.00
Payroll	9/11/2011	Lloyd "Randy" Fuller	In Progress	\$509.80	0.00
			Budget in Days	0.00	Budget \$21,130.00
			Cost in Days	0.00	Cost \$11,612.27
			Balance	0.00	Balance \$9,517.73

Project Name 3 Structural Protection (Year 1)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(1) Implementation	Start Date	6/13/2011
Priority	(1) High	End Date	5/24/2014

Title	Due Date	Assigned To	Status	Cost	Cost in Days
Payroll To Paint Sandbags			Not Started	\$0.00	0.00
Paint sprayer (RSC)			Not Started	\$0.00	0.00
Generator to run sprayer			Not Started	\$0.00	0.00
Extension cord for sprayer			Not Started	\$0.00	0.00
10,000 Sandbags	5/25/2011	Lloyd "Randy" Fuller	Completed	\$3,013.36	0.00
2 Fork Lifts for K-rails	6/7/2011	Lloyd "Randy" Fuller	Completed	\$5,764.00	0.00
Purchase Sandbagger	6/13/2011	Lloyd "Randy" Fuller	Completed	\$4,188.57	0.00
Repair BIA Roads Loader	6/15/2011	Lloyd "Randy" Fuller	Completed	\$2,359.49	0.00
Payroll	6/19/2011	Lloyd "Randy" Fuller	Completed	\$12,310.84	0.00
72,000 Sandbags	6/22/2011	Lloyd "Randy" Fuller	Completed	\$20,520.00	0.00
Payroll	6/26/2011	Lloyd "Randy" Fuller	Completed	\$14,361.57	0.00
Larry's Repair of Trailer	6/27/2011	Lloyd "Randy" Fuller	Completed	\$49.80	0.00
Payroll	7/2/2011	Lloyd "Randy" Fuller	Completed	\$11,956.09	0.00
Payroll	7/9/2011	Lloyd "Randy" Fuller	Completed	\$10,027.86	0.00
Fuel for 2 fork lifts	7/13/2011	Lloyd "Randy" Fuller	Completed	\$273.64	0.00
Sand from Perkins Cinders	7/15/2011	Lloyd "Randy" Fuller	In Progress	\$23,053.82	0.00
Sand from WMAT Land Ops	7/15/2011	Lloyd "Randy" Fuller	In Progress	\$10,344.76	0.00
8,000 sandbags (All In Safety)	7/15/2011	Lloyd "Randy" Fuller	Completed	\$1,327.00	0.00
Native Transport Bus Service	7/15/2011	Lloyd "Randy" Fuller	Completed	\$6,160.00	0.00
Payroll	7/16/2011	Lloyd "Randy" Fuller	Completed	\$12,628.26	0.00
Use of Tribal Skid Steer for sand	7/21/2011	Lloyd "Randy" Fuller	Completed	\$2,915.00	0.00
Payroll	7/23/2011	Lloyd "Randy" Fuller	Completed	\$4,298.59	0.00
Paint for Sandbags	8/1/2011	Lloyd "Randy" Fuller	In Progress	\$3,004.72	0.00
Payroll	8/20/2011	Gerd VonGliinski	In Progress	\$800.36	0.00
Emergency Repair Tractor	8/22/2011	Lloyd "Randy" Fuller	Completed	\$261.03	0.00
Payroll	8/27/2011	Gerd VonGliinski	In Progress	\$236.47	0.00
Payroll	9/11/2011	Lloyd "Randy" Fuller	In Progress	\$3,792.15	0.00
Dump Truck (estimated)	9/24/2011	Lloyd "Randy" Fuller	Not Started	\$2,500.00	0.00
Payroll (estimated)	9/24/2011	Lloyd "Randy" Fuller	Not Started	\$7,000.00	0.00
Excavator (estimated)	9/24/2011	Lloyd "Randy" Fuller	Not Started	\$2,500.00	0.00
Tribal Payments	9/30/2011	Lloyd "Randy" Fuller	In Progress	\$7,671.83	0.00

Budget in Days	0.00	Budget	\$191,840.00
Cost in Days	0.00	Cost	\$173,319.21

Balance 0.00 Balance \$18,520.79

Project Name 4 Floatable Debris Removal (Year 1)

Owner Lloyd "Randy" Fuller Status In Progress
 Category (1) Implementation Start Date 6/13/2011
 Priority (1) High End Date 7/15/2011

Title	Due Date	Assigned To	Status	Cost	Cost in Days
Labor Payroll (10manx5days)	7/15/2011	Lloyd "Randy" Fuller	Completed	\$12,500.00	0.00
Terry Hill Payroll	7/15/2011	Lloyd "Randy" Fuller	Completed	\$742.00	0.00
Wagon Wheel Roll-Offs	7/15/2011	Lloyd "Randy" Fuller	Completed	\$4,761.00	0.00
WMAT Solid Waste Dumpster	7/15/2011	Lloyd "Randy" Fuller	Completed	\$1,313.25	0.00
Port-O-John	7/15/2011	Lloyd "Randy" Fuller	Completed	\$1,064.00	0.00
WMAT Solid Waste Dumpster	7/31/2011	Lloyd "Randy" Fuller	Completed	\$1,802.50	0.00
Repair of Fence (WagonWheel)	8/22/2011	Lloyd "Randy" Fuller	In Progress	\$893.00	0.00
Tribal Payments	9/30/2011	Lloyd "Randy" Fuller	In Progress	\$1,084.90	0.00

Budget in Days	0.00	Budget	\$76,256.00
Cost in Days	0.00	Cost	\$24,160.65
Balance	0.00	Balance	\$52,095.35

Project Name 5 Culvert and Ditch Cleaning (Year 1)

Owner Lloyd "Randy" Fuller Status In Progress
 Category (1) Implementation Start Date 6/13/2011
 Priority (1) High End Date 7/15/2011

Title	Due Date	Assigned To	Status	Cost	Cost in Days
Repair of BIA Road Grader	6/17/2011	Lloyd "Randy" Fuller	In Progress	\$83.38	0.00
Tribal Payroll	7/1/2011	Lloyd "Randy" Fuller	In Progress	\$6,250.00	0.00
Use of Tribal BackHoe	7/1/2011	Lloyd "Randy" Fuller	In Progress	\$0.00	0.00
Tribal Payments	9/30/2011	Lloyd "Randy" Fuller	In Progress	\$1,084.90	0.00

Budget in Days	0.00	Budget	\$47,060.00
Cost in Days	0.00	Cost	\$7,418.28
Balance	0.00	Balance	\$39,641.72

Project Name 6 Culvert Replacement (Year 1)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(1) Implementation	Start Date	6/13/2011
Priority	(1) High	End Date	7/15/2011

Title	Due Date	Assigned To	Status	Cost	Cost in Days
Tribal Labor	6/25/2011	Lloyd "Randy" Fuller	In Progress	\$6,250.00	0.00
American Fence 100' Culverts	6/25/2011	Lloyd "Randy" Fuller	In Progress	\$1,795.12	0.00
Liberty Fence 80' Culverts	6/25/2011	Lloyd "Randy" Fuller	In Progress	\$1,233.28	0.00
Liberty Fence 40' Culverts	6/25/2011	Lloyd "Randy" Fuller	In Progress	\$631.08	0.00
Tribal Payments	9/30/2011	Lloyd "Randy" Fuller	In Progress	\$754.27	0.00

Budget in Days	0.00	Budget	\$25,100.00
Cost in Days	0.00	Cost	\$10,663.75
Balance	0.00	Balance	\$14,436.25

Project Name 7 ADOT Culvert Cleaning (Year 1)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(2) Monitoring	Start Date	5/24/2011
Priority	(2) Normal	End Date	5/24/2014

Title	Due Date	Assigned To	Status	Cost	Cost in Days
ADOT Culvert Cleaning		ADOT	Deferred	\$0.00	0.00

Budget in Days	0.00	Budget	\$25,000.00
Cost in Days	0.00	Cost	\$0.00
Balance	0.00	Balance	\$25,000.00

Project Name 8 Flood Hazard Signs (Year 1)

Owner Lloyd "Randy" Fuller Status In Progress
 Category (1) Implementation Start Date 5/24/2011
 Priority (1) High End Date 8/1/2011

Title	Due Date	Assigned To	Status	Cost	Cost in Days
Labor To Install Signs & Posts		Lloyd "Randy" Fuller	Not Started	\$0.00	0.00
CenterLine Supply 5 signs	7/31/2011	Lloyd "Randy" Fuller	In Progress	\$1,610.00	0.00

Budget in Days	0.00	Budget	\$4,650.00
Cost in Days	0.00	Cost	\$1,610.00
Balance	0.00	Balance	\$3,040.00

Project Name 9 Road Debris Removal (Year 1)

Owner Lloyd "Randy" Fuller Status In Progress
 Category (2) Monitoring Start Date 5/24/2011
 Priority (2) Normal End Date 5/24/2014

Title	Due Date	Assigned To	Status	Cost	Cost in Days
BIA Road Debris Removal		BIA Roads	Deferred	\$0.00	0.00

Budget in Days	0.00	Budget	\$10,567.00
Cost in Days	0.00	Cost	\$0.00
Balance	0.00	Balance	\$10,567.00

Project Name 10 Aerial Seeding (Year 1)

Owner Lloyd "Randy" Fuller Status In Progress
 Category (1) Implementation Start Date 7/3/2011
 Priority (2) Normal End Date 7/10/2011

Title	Due Date	Assigned To	Status	Cost	Cost in Days
Helicopter Contract & Seeder	7/17/2011	Lloyd "Randy" Fuller	Completed	\$8,593.40	0.00
Type I Tender for dust control	7/22/2011	Lloyd "Randy" Fuller	Completed	\$2,420.00	0.00

Budget in Days	0.00	Budget	\$22,100.00
Cost in Days	0.00	Cost	\$11,013.40
Balance	0.00	Balance	\$11,086.60

Project Name 13 Implementation Leader (Year 2)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(1) Implementation	Start Date	5/24/2012
Priority	(1) High	End Date	9/30/2012

Budget in Days	0.00	Budget	\$0.00
Cost in Days	#Error	Cost	#Error
Balance	#Error	Balance	#Error

Project Name 16 Culvert and Ditch Cleaning (Year 2)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(1) Implementation	Start Date	6/13/2011
Priority	(1) High	End Date	7/15/2011

Title	Due Date	Assigned To	Status	Cost	Cost in Days
Culvert and Ditch Cleaning (2)			Not Started	\$0.00	0.00

Budget in Days	0.00	Budget	\$0.00
Cost in Days	0.00	Cost	\$0.00
Balance	0.00	Balance	\$0.00

Project Name 20 Road Debris Removal (Year 2)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(2) Monitoring	Start Date	5/24/2011
Priority	(2) Normal	End Date	5/24/2014

Budget in Days	0.00	Budget	\$0.00
Cost in Days	#Error	Cost	#Error
Balance	#Error	Balance	#Error

Project Name 22 Aerial Seeding Monitoring (Year 2)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(2) Monitoring	Start Date	7/10/2011
Priority	(2) Normal	End Date	5/24/2014

Budget in Days	0.00	Budget	\$0.00
Cost in Days	#Error	Cost	#Error
Balance	#Error	Balance	#Error

Project Name 24 Implementation Leader (Year 3)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(1) Implementation	Start Date	5/24/2011
Priority	(1) High	End Date	5/24/2014

Budget in Days	0.00	Budget	\$0.00
Cost in Days	#Error	Cost	#Error
Balance	#Error	Balance	#Error

Project Name 25 Structural Protection (Year 3)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(1) Implementation	Start Date	6/13/2011
Priority	(1) High	End Date	5/24/2014

Budget in Days	0.00	Budget	\$0.00
Cost in Days	#Error	Cost	#Error
Balance	#Error	Balance	#Error

Project Name 27 Culvert and Ditch Cleaning (Year 3)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(1) Implementation	Start Date	6/13/2011
Priority	(1) High	End Date	7/15/2011

Budget in Days	0.00	Budget	\$0.00
Cost in Days	#Error	Cost	#Error
Balance	#Error	Balance	#Error

Project Name 33 Aerial Seeding Monitoring (Year 3)

Owner	Lloyd "Randy" Fuller	Status	In Progress
Category	(2) Monitoring	Start Date	7/10/2011
Priority	(2) Normal	End Date	5/24/2014

Budget in Days	0.00	Budget	\$0.00
Cost in Days	#Error	Cost	#Error
Balance	#Error	Balance	#Error