

## MEMORANDUM

Date: December 4, 2012

To: Mary Carroll, ESCA RP Biologist

From: Danielle Muir, ESCA RP Biologist

CC: Kristie Reimer, ESCA RP Program Manager  
Chris Spill, ESCA RP Project Manager  
Linda Temple, ESCA RP Remediation Project Manager  
ESCA RP Deliverables

Subject: **Future East Garrison Munitions Response Area (Grenade Range) - Erosion Inspection on December 3, 2012**

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Between November 30, 2012 and December 2, 2012 Future East Garrison (FEG) Munitions Response Area (MRA), along with all ESCA RP work areas, received approximately 3 inches of precipitation. The majority of the precipitation was received on Friday November 30th and on Sunday December 2nd.

Erosion inspections were conducted in the FEG ‘grenade range’ remediation work area by ESCA RP team members on November 19 and 26, 2012 prior to the rain event. At the time of the inspection erosion control measures were observed to be installed adequately and correctly. However, due to the large amount of precipitation received during this rain event, erosion issues in the ‘grenade range’ in FEG were observed during the post rain event erosion inspection conducted on December 3, 2012 by Danielle Muir, ESCA RP Biologist. On December 4, 2012 additional best management practices (BMPs) such as additional straw wattles and sand bags were installed by Weston Solutions to resolve the erosion problems observed.

In the ‘grenade range’ in FEG, sediment laden water left the work area in two locations over the top of installed BMPs (See Map A DYM 2012 12 03). Sediment laden water went over two straw wattles installed on the south end of the work area. The sediment traveled approximately 50 feet into vegetation (Photo 1 and 2). The sediment was observed to be up to 4 inches in depth in vegetated areas. The wattles were pulled out of the sediment and placed on top of the sediment. In addition grading was completed so that less run-off would be directed to this location. One additional straw wattle was also installed at this location (Photos# 3).

The top soil and subsoil have been removed in the eastern end of in the site during remediation work. The soil has been stockpiled in the west side of the grenade range. By removing the soil layers a temporary “catch basin” was created in the eastern end of the site. However, due to the large amount of rain fall received, sediment laden water flowed over the top of this area at the lowest point (Photo 4). Sediment laden water travelled several hundred feet down a dirt road to the east north east of the grenade range (Photo # 5-6). Weston Solutions employees installed four straw wattles with stakes and sand bags at this location on December 4, 2012 to try to resolve this issue (Photo #7).

FORA ESCA Remediation Program Team

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Photo #1



Photo #2



Photo #3



Photo #4



Photo #5

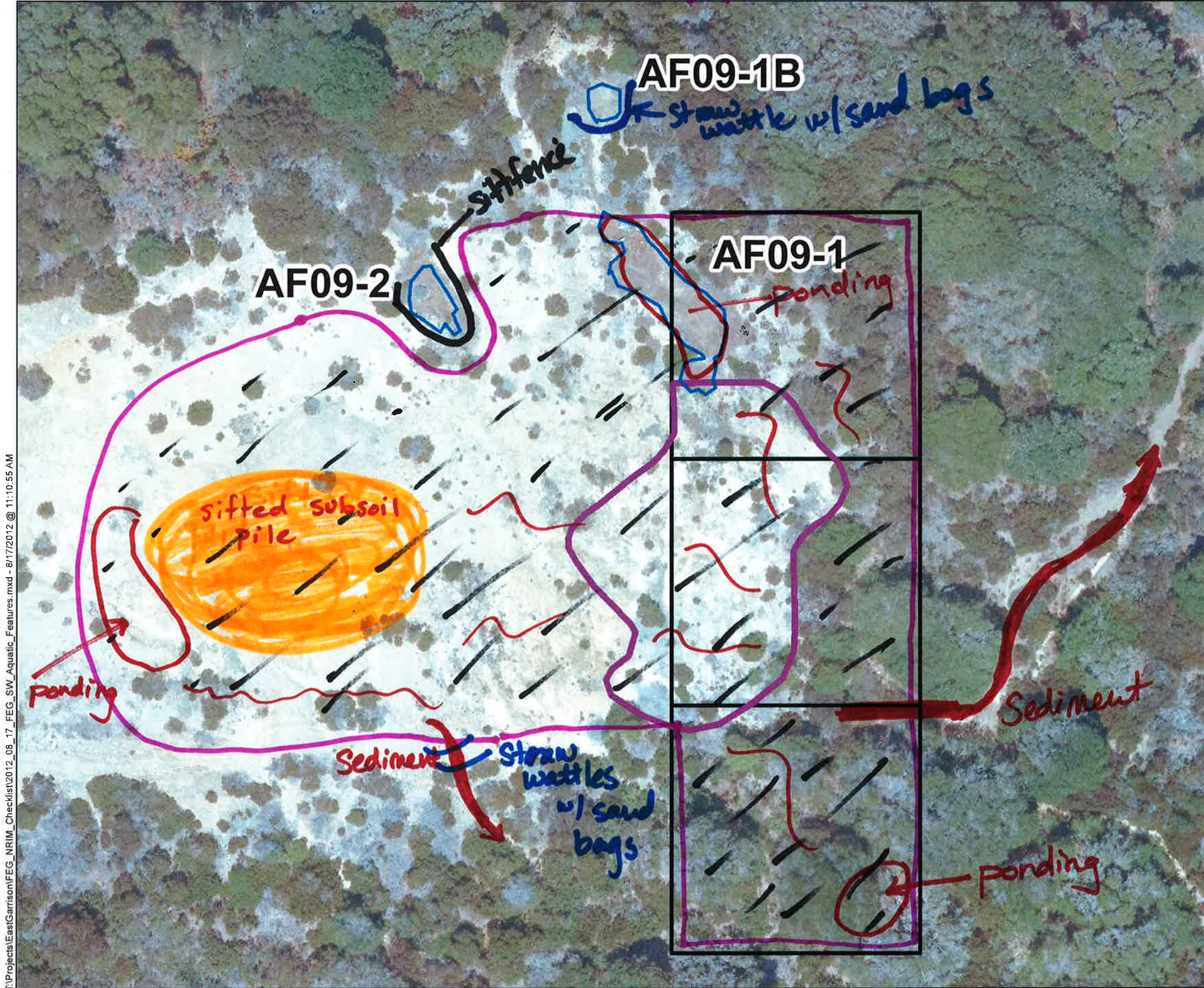


Photo #6



Photo #7

2012 12 03 DYM Map A

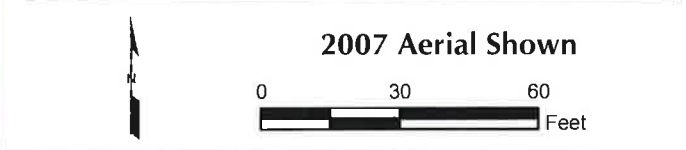
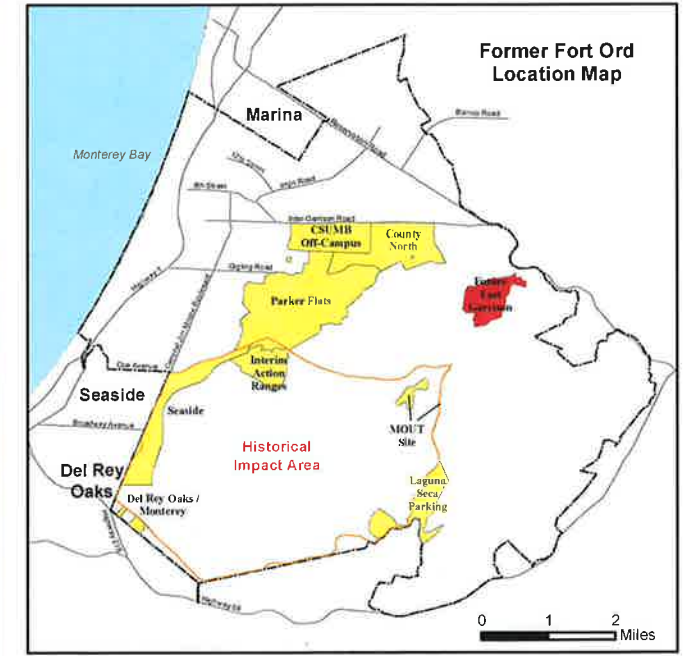
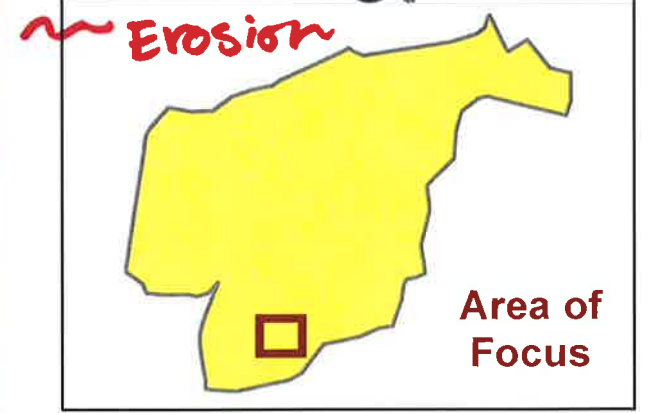


### Legend

- South West (SW) Aquatic Features as of March 2010
- Potential Sifting Area
- Grids Potentially Needing Additional Sifting

**---** Sifted bare soil

**~** Erosion



Future East Garrison MRA  
SW Aquatic Features  
and Potential Sifting Areas

FORA ESCA RP  
Monterey County, California

**DRAFT** Figure 5

T:\Projects\EastGarrison\FEG\_NRM\_Checklist\2012\_08\_17\_FEG\_SW\_Aquatic\_Features.mxd - 8/17/2012 @ 11:10:55 AM

## MEMORANDUM

Date: January 2, 2013

To: Mary Carroll, ESCA RP Biologist

From: Tessa Chapman, ESCA RP Field Operations Manager

CC: Kristie Reimer, ESCA RP Program Manager  
Chris Spill, ESCA RP Project Manager  
Linda Temple, ESCA RP Remediation Project Manager  
ESCA RP Deliverables

Subject: **Future East Garrison Munitions Response Area (Grenade Range) - Erosion Inspection on December 27, 2012**

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The FORA ESCA Remediation Program (RP) Team has been performing pre- and post-precipitation erosion control inspections in Future East Garrison (FEG) Munitions Response Area (MRA) within the Grenade Range. During a pre-precipitation erosion control inspection on 29 November 2012, no evidence of eroding soil sediments was observed. On 03 December 2012, following a rain event that weekend of more than 1.13 inches of accumulated rainfall; a post-precipitation erosion control inspection was conducted. During the post-precipitation erosion control inspections by Danielle Muir, ESCA RP Biologist, there were areas of concern where erosion of soil sediments were causing ruts/gullies to widen and sediments to be deposited down gradient to a trail. Danielle Muir implemented Best Management Practices (BMP) for erosion control measures.

During the week of December 21, 2012, Doug Fischer observed the concerned areas and implemented additional BMP with Mike Filbin of Central Coast Land Clearing. Per Doug's recommendations, Central Coast Land Clearing (CCLC) performed the following activities:

- Installed wattles around the stock piles and placed sandbags every two feet
- Placed sandbags in eroded gullies towards the east end of the Grenade Range.
- Silt Fence was installed around ponds and one portion of the large stockpile

On December 26, 2012, Tessa Chapman and Mike Filbin observed that some of recommendations did not hold the soil sediments as there were torrential rains over the weekend. Doug Fischer, Kristie Reimer, and Mary Carroll were advised of the site condition and approved that additional sandbags were needed Mike Filbin and his crew corrected wattles to help prevent more soil sediments deposit away from the site to the best of their ability. Note: Site extremely saturated.

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FORA ESCA Remediation Program Team

Below are photographs from 26-Dec-12 /27-Dec-12







Below are photographs from 27-Dec-12

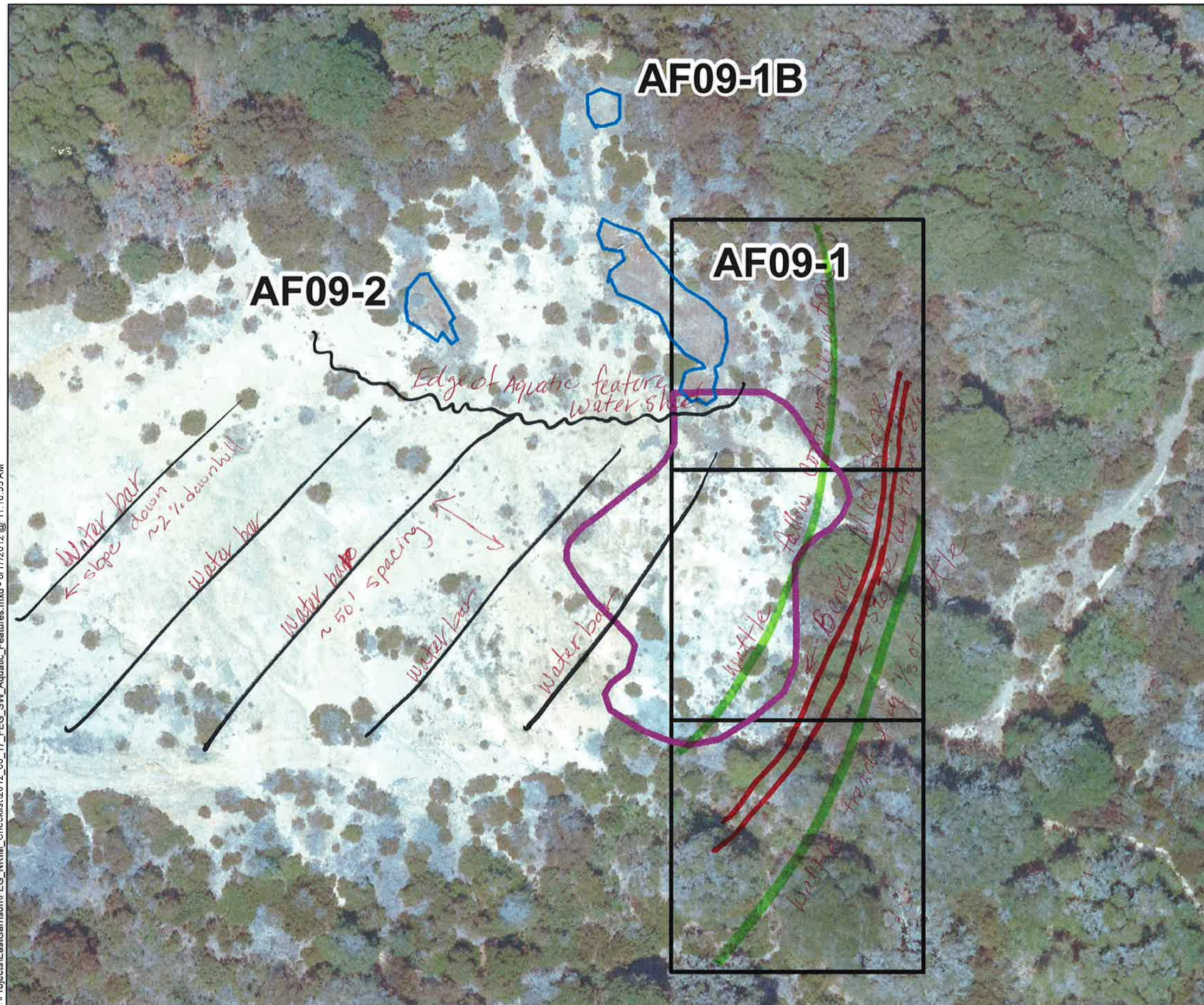









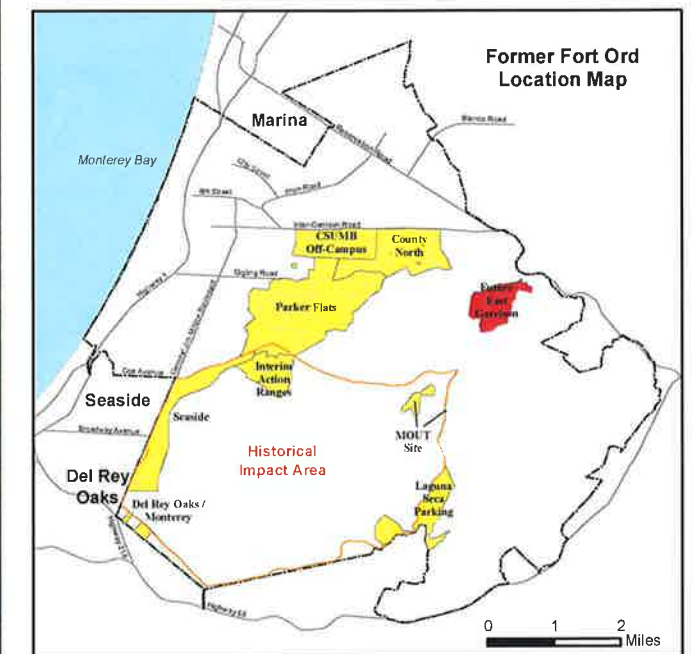
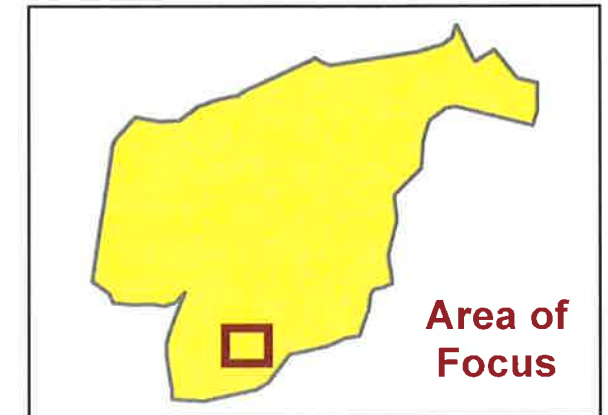
# FEG Grande Range Erosion Control Plan

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## Legend

-  South West (SW) Aquatic Features as of March 2010
-  Potential Sifting Area
-  Grids Potentially Needing Additional Sifting



2007 Aerial Shown



**Future East Garrison MRA  
SW Aquatic Features  
and Potential Sifting Areas**

FORA ESCA RP  
Monterey County, California

**DRAFT**

Figure 5

ESCA RP Erosion Monitoring Form

Conducted By: TALLIS + FENTER

MRA: FEG

Monitoring Date: 2/18/2013

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	old wattles partly over- topped New wattles are fine	Y	old wattles on south side in disrepair - See map on reverse
Blanket	N/A	-	
Silt Fence	N/A	-	
Sand Bags	Y	N	only used to hold wattles in place.
Hydromulch	Y	N	clumping on upper road where steep. Over-all it looks great
water bar	N	Y	one water bar poorly designed, should be repaired. See map on reverse

2. Are there signs of water erosion? Y -  N/A No new signs

Rilling - gulying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: old rilling visible under hydromulch on south side

3. Are there signs of wind erosion? Y -  N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y /  N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

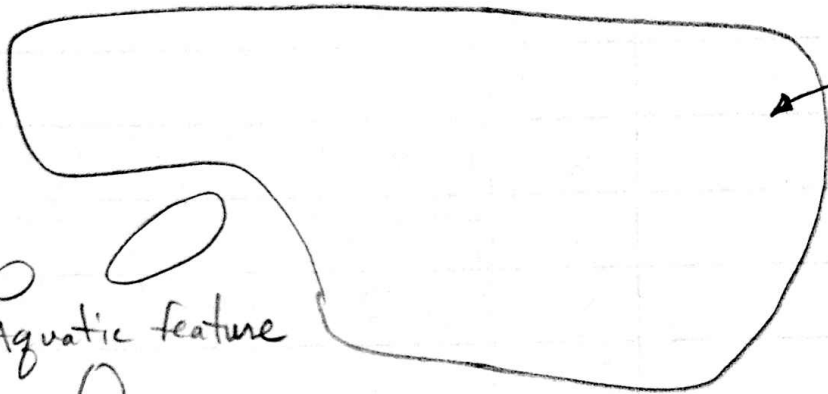
Describe:

6. Do you have other erosion concerns?

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47. Photos 5607 - 5618 taken

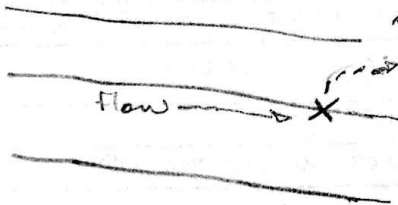


Aquatic feature

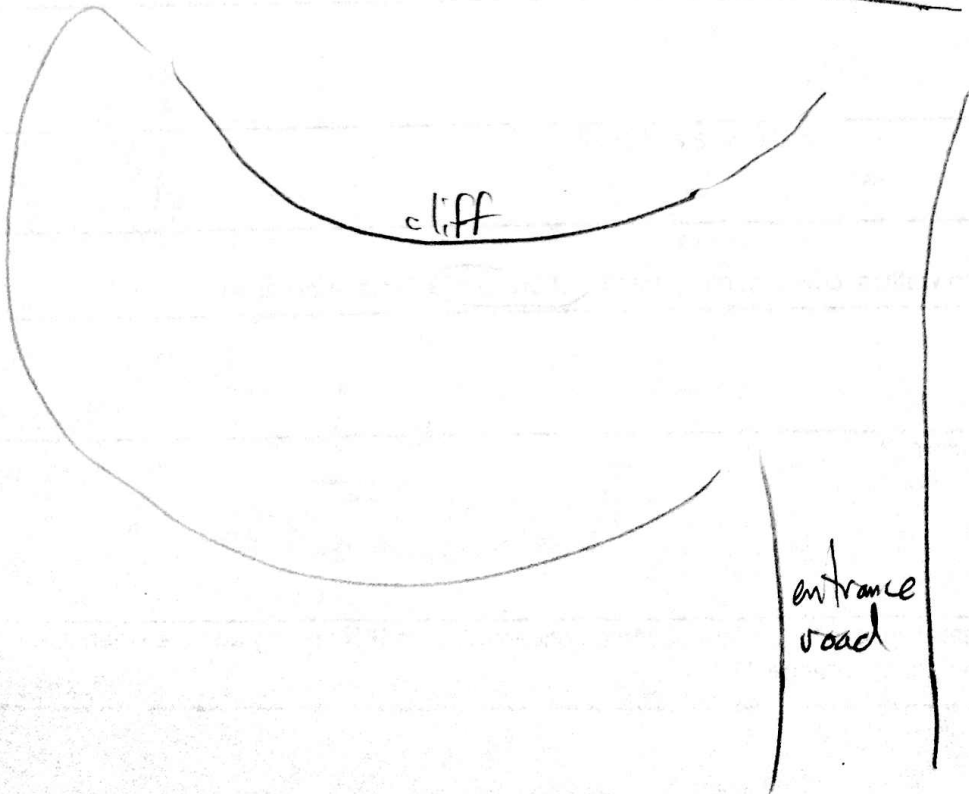


steep area w/  
new wattles  
and water bars

Wattles have been  
overtopped and have  
minimal function.



water bar is too  
low and allows  
water to cut  
through water  
bar @ X



cliff

entrance  
road

**ESCA RP Erosion Monitoring Form**

Conducted By: Danielle Muir + Cynthia  
 Monitoring Date: Feb 21, 2013 Fenter

MRA: FEG - Future East Garrison

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present?  Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	yes	no	Additional wattles could be added on south side of site, but no evidence of overtopping this event.
Blanket	N/A		
Silt Fence	N/A		
Sand Bags	yes - in water bar and w/ wattles	no	sand bags stopped sediment
hydromulch	yes	no	
Water bars	yes	no	Repair completed prior to rain sand bags add to water bar.

2. Are there signs of water erosion? Y  N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: Minimal - small rills above large water bar observed.

3. Are there signs of wind erosion? Y  N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding?  Y  N Size and depth:

minimal ponding in one water bar at the west end of grenade range.

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe: N/A - no stockpiles

6. Do you have other erosion concerns?

no

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.





Photograph #1 – Sand bag repair for water bar



Photograph #2 - Ponding down gradient of water bar



Photograph #3- Potential need for wattle replacement, but no new sediment observed



Photograph #4 – Check dams mid-gradient stopped sediment



Photograph #5 Hydromulch and wattles in good repair



Photograph #6 Water bar and check dams in good repair

ESCA RP Erosion Monitoring Form

Conducted By: Muir + Tallis

MRA: FEG - Grenade Range

Monitoring Date: 3/4/2013

Type of Monitoring: Pre-rain event Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	Y	N	Minor damage to wattles around aquatic feature from animals, other wattles fixed so plants not covered
Blanket	N/A	N/A	A piece of blanket was installed and heavily stake in a small section of rilling in east slope
Silt Fence	N/A	N/A	
Sand Bags	Y	N	
Check Dams	Y	N	

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullying - Loss of fines from surface, Sand/silt deposit in fans/basins

Comments: Small amount of rilling near entry road at west side of of grenade range. 5 sand bags would help prevent it from becoming a larger problem. See photos

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N / Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

**ESCA RP Erosion Monitoring Form**

Conducted By: J. Tallis & D. Muir

MRA: FEG - Grenade Range

Monitoring Date: 3/11/2013

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	yes	No	
Blanket	yes	No	
Silt Fence	N/A		
Sand Bags	yes	no	

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: small rills above water bar 2nd one from west end

3. Are there signs of wind erosion? ~~Y~~ N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding?

Y N Size and depth: 15' long x 1-2' wide x 2" deep  
ponding in 2 water bars  
5' x 1' x 1" deep  
in water bar

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47. Photos:

# ESCA RP Erosion Monitoring Form

Conducted By: J. Muir + C. Fenter

MRA: FEG

Monitoring Date: 4/1/2013

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	yes	No	
Blanket	yes	No	
Silt Fence	N/A		
Sand Bags	yes	No	
Water Bars	yes	No	

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N Size and depth:

5. Work Areas

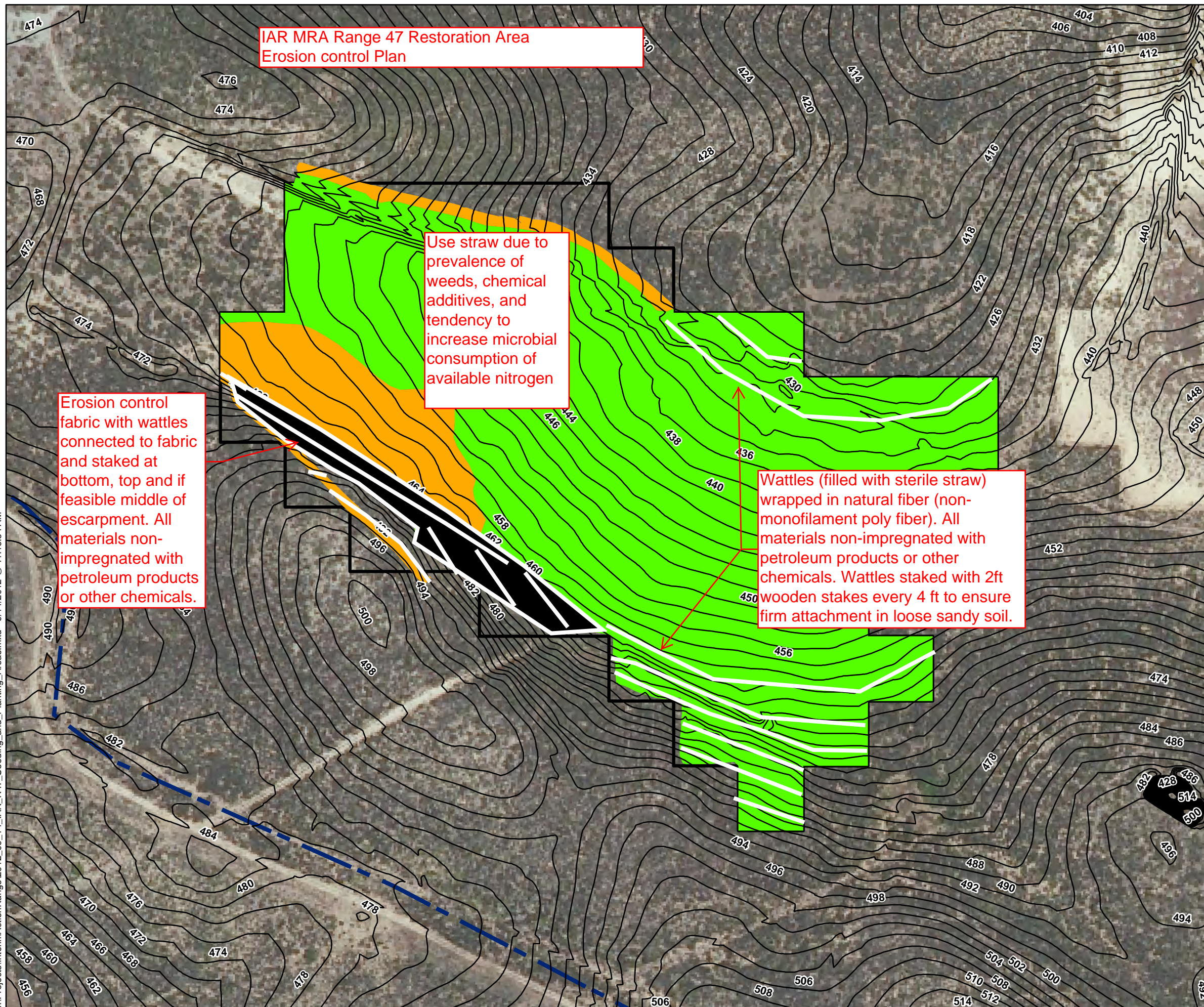
Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable) N/A

Describe:

6. Do you have other erosion concerns? No issues observed

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

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IAR MRA Range 47 Restoration Area  
Erosion control Plan

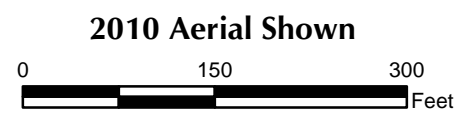
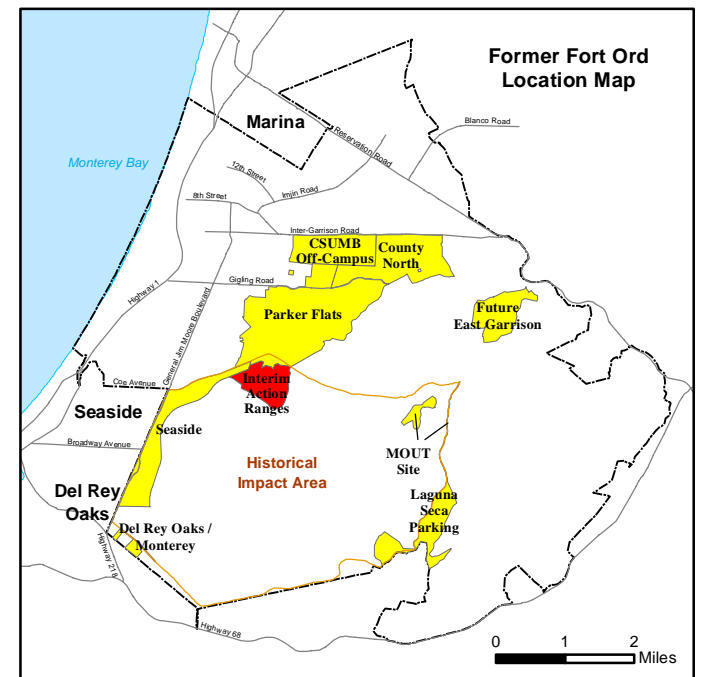
Use straw due to prevalence of weeds, chemical additives, and tendency to increase microbial consumption of available nitrogen

Erosion control fabric with wattles connected to fabric and staked at bottom, top and if feasible middle of escarpment. All materials non-impregnated with petroleum products or other chemicals.

Wattles (filled with sterile straw) wrapped in natural fiber (non-monofilament poly fiber). All materials non-impregnated with petroleum products or other chemicals. Wattles staked with 2ft wooden stakes every 4 ft to ensure firm attachment in loose sandy soil.

### Legend

- Seeding Area
- Seeding and Planting Area
- IAR Range 47 SCA
- 442 2-Foot Topography
- Interim Action Ranges MRA Boundary



Interim Action Ranges MRA  
Range 47 SCA  
**Erosion control Plan**  
FORA ESCA RP  
Monterey County, California

**DRAFT** Figure 091412 - A1

**ESCA RP Erosion Monitoring Form**

Conducted By: CFenter, DMuir

MRA: IAR Restoration Area

Monitoring Date: 2/18/2013

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	90% are, one line has a gap	Yes	added sandbags to close gap (see attached photos)
Blanket	Appears in good working order	No	
Silt Fence	A small section is not properly buried	Yes	covered with sandbags (see attached photos)
Sand Bags			
Straw Bales	Most are in good order and pr	Yes	added sandbags to close gaps (see attached photos)

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: Erosion from watering and previous rain events still apparent.

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe: NA

6. Do you have other erosion concerns?

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.





Photograph #1 – Straw wattles, - gap between run, fixed with sand bags



Photograph #2 - Straw wattles – gaps between irrigation lines, fixed with sandbags



Photograph #3 – Silt fence – Section not properly buried



Photograph #4 – Silt fence – Section not properly buried, covered with sandbags



Photograph #5 – Straw Bales – Gaps under bales



Photograph #6 – Straw Bales – Gaps under bales filled with sandbags

**ESCA RP Erosion Monitoring Form**

Conducted By: *Danielle Muir & Cynthia Fenter*

MRA: *IAR*

Monitoring Date: *Feb 20, 2013*

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<i>most, two areas undermining</i>	<i>yes</i>	<i>Sand bags placed on top of straw wattles. completed 2/20/13</i>
Blanket	<i>yes</i>	<del>no</del> <i>yes</i>	<i>Need to stake top where blanket has come down - small area.</i>
Silt Fence	<i>N/A</i>		
Sand Bags	<i>yes</i>	<i>No</i>	

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: *very small rills. sand bags installed in rills.*

3. Are there signs of wind erosion? Y N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe: *N/A*

6. Do you have other erosion concerns?

*Road down to Range 47 some erosion may need  
to put a ~~at~~ water bar so water/sediment doesn't  
flow straight into site from road.*

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

**ESCA RP Erosion Monitoring Form**

Conducted By: J. Tallis + D. Muir

MRA: IAR Devel. Parcel

Monitoring Date: 2/21+25/2013

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other Inspect for erosion control need.

1. Existing Erosion/Sediment Control Measures Present? Y or N If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles			
Blanket			
Silt Fence			
Sand Bags			

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: Limited rilling as seen on attached map and photos

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments: Abundant throughout southern (upper) 2/3 of development parcel.

4. Are there areas of ponding? Y N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

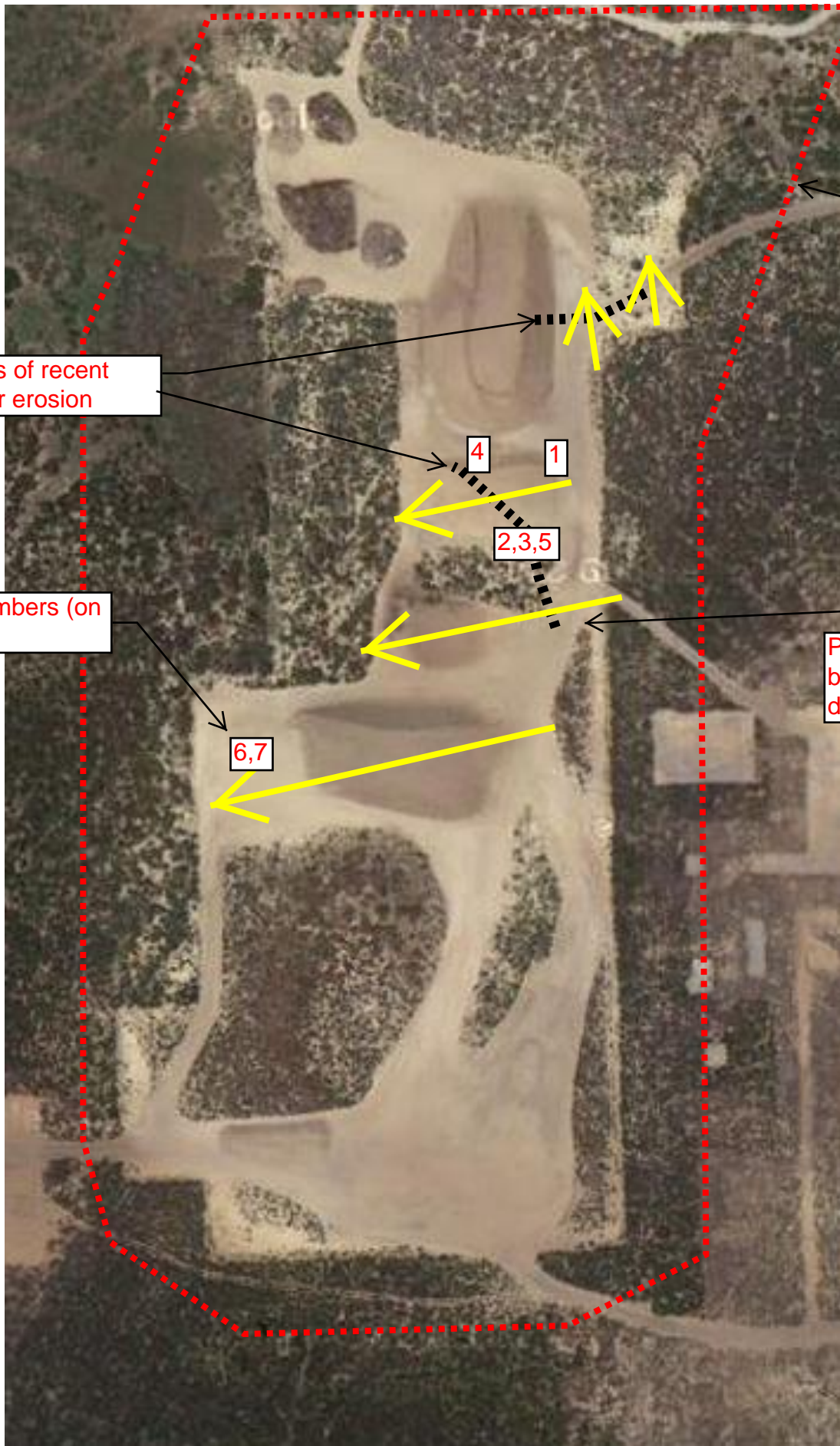
Describe:

6. Do you have other erosion concerns?

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

7 photos taken

IAR Development Parcel Potential Erosion Control Plan. 2/21/2013



Signs of recent water erosion

photo numbers (on server)

Approx devel. parcel boundary

Proposed water bars. Arrow show direction of flow

6,7

4

1

2,3,5











IAR MRA 2/21/2013 Erosion Monitoring





IAR MRA 2/21/2013 Erosion Monitoring



**ESCA RP Erosion Monitoring Form**

Conducted By: MUIR + TALLIS

MRA: IAR - R44 South

Monitoring Date: 3/4/2013

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or  N If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles			
Blanket			
Silt Fence			
Sand Bags			

2. Are there signs of water erosion?  Y -  N - N/A

Rilling gulying - Loss of fines from surface - Sand/silt deposit in fans/basins  
 Comments: Tiny amount of rilling (see photo). Minor soil deposits that may have occurred last wet season

3. Are there signs of wind erosion? Y  N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other  
 Comments:

4. Are there areas of ponding? Y /  N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No. There does not appear to be a large erosion problem, at all. There is the potential for erosion during a major rain event.

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47. photos taken

**ESCA RP Erosion Monitoring Form**

Conducted By: Danelle Muir

MRA: IAR

Monitoring Date: 3/8/2013

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<i>all functioning prop. except one location</i>	<i>yes</i>	<i>add sand bag where water is undermining. 3/11/13 added sand bag</i>
Blanket	<i>yes</i>	<i>No</i>	
Silt Fence	<i>yes</i>	<i>No</i>	
Sand Bags	<i>yes</i>	<i>No</i>	

2. Are there signs of water erosion? Y N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: *Small rills were wattles was undermined add  
sand bags 3/11/13 filled rills with soil.*

3. Are there signs of wind erosion? Y N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

*No*

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: D. Muir, C. Fenter

MRA: IAR, Range 47 and Development Parcel

Monitoring Date: 4/1/2013

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	yes		
Blanket	No -	yes	Blanket on escarpment needs repair - possibly just fell down or deer caused failure a 10 feet long
Silt Fence	N/A		
Sand Bags	yes		
Straw Bales	yes		
Water Bars	yes		

2. Are there signs of water erosion? Y  N/A

Rilling - gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: ~~AS~~

3. Are there signs of wind erosion? Y  N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y  N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable) N/A

Describe:

6. Do you have other erosion concerns? No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.



**ESCA RP Erosion Monitoring Form**

Conducted By: Muir + Tallis

MRA: Seaside

Monitoring Date: 3/4/2013

Type of Monitoring Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles			
Blanket			
Silt Fence			
Sand Bags			
Check Dams	<u>Y</u>	<u>N</u>	Some of the check dams are a bit weak but overall functioning fine.

2. Are there signs of water erosion? Y N N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: There is some erosion but its not crossing  
the blue line.

3. Are there signs of wind erosion? Y N N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

**ESCA RP Erosion Monitoring Form**

Conducted By: D. Muir & J. Tallis

MRA: SEA Blue Line

Monitoring Date: 3-11-2013

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles			
Blanket			
Silt Fence			
Sand Bags			

2. Are there signs of water erosion? Y N N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y N N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No issues observed.

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: *D. Muir & C. Fenner*

MRA: *SEASIDE*

Monitoring Date: *4/1/2013*

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<i>N/A</i>		
Blanket	<i>N/A</i>		
Silt Fence	<i>N/A</i>		
Sand Bags	<i>N/A</i>		
Water Bars	<i>yes</i>	<i>No</i>	<i>Direct water west away from the habitat area.</i>

2. Are there signs of water erosion? Y N - N/A

Rilling - gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: *Some small rills on the blue line road - water bars  
direct water off road to the west away from the habitat*

3. Are there signs of wind erosion? Y N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments: *Some wind erosion on the blue line road.  
Hard pan soil exposed under sand.*

4. Are there areas of ponding? Y N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable) N/A

Describe:

6. Do you have other erosion concerns? N/A

*RQA level 3 work area looks good no erosion  
issues.*

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis + N. Handley

MRA: SEA

Monitoring Date: 11/6/2013

Type of Monitoring: Pre-rain event - Post rain-event - Routine (Other) Assess Army Road Impacts

1. Existing Erosion/Sediment Control Measures Present?  Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles			
Blanket			
Silt Fence			
Sand Bags			
Diversion Ditch	No. Water is not directed into road- side diversion ditch.		See attached photos of diversion ditch and roads. A mild water bar beside the two diversion ditches will help direct flow off the road.

2. Are there signs of water erosion? Y  N N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y  N N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y  N Size and depth:

Areas of potential ponding exist near Broadway West gate where deep ruts have been created by heavy equipment. See photo.

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.



Photo 1. November 6, 2013 in southern Seaside MRA near Watkins Gate Rd. The road has developed a shoulder berm that prevents water from flowing in the direction of the arrow into the cross drain. The recommended erosion control practice is to remove the berm and create a rolling dip. Rolling dips should be cut deep enough to effectively divert water off the road, be backed up by a mound down slope, and be cut wide enough to easily pass traffic (50-100 feet). Department of Transportation specifications are discussed at [http://ntl.bts.gov/lib/24000/24600/24650/Chapters/l\\_Ch7\\_Drainage\\_of\\_Low\\_Volume\\_Roads.pdf](http://ntl.bts.gov/lib/24000/24600/24650/Chapters/l_Ch7_Drainage_of_Low_Volume_Roads.pdf).

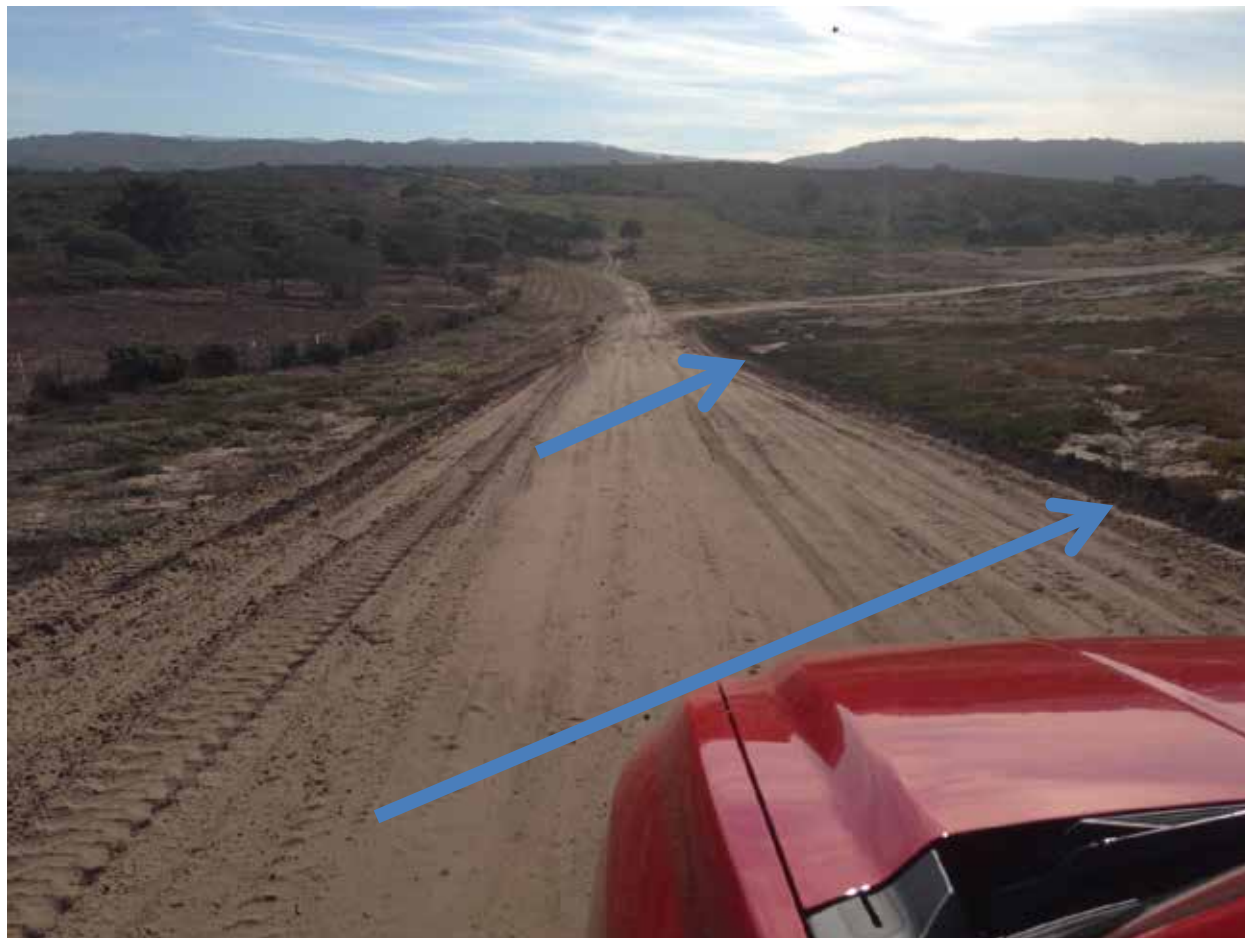
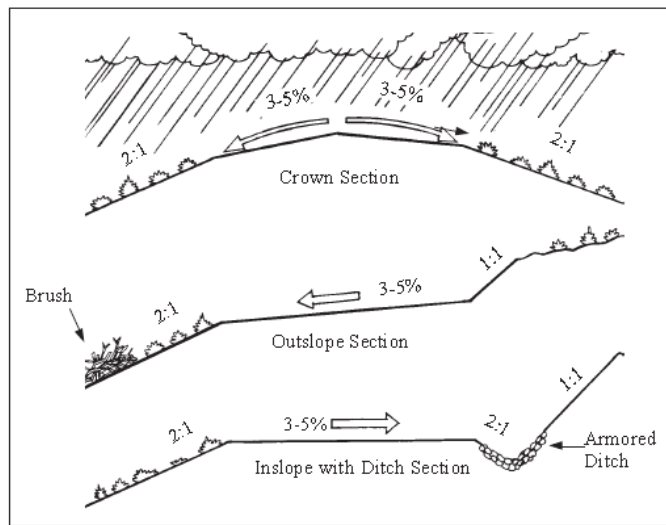


Photo 2. November 6, 2013 in southern Seaside MRA near Watkins Gate Rd. Arrows show two cross drains that are currently blocked by mounded soil on right side of road. Arrows show approximate placement of recommended rolling dips to direct flow off the road.

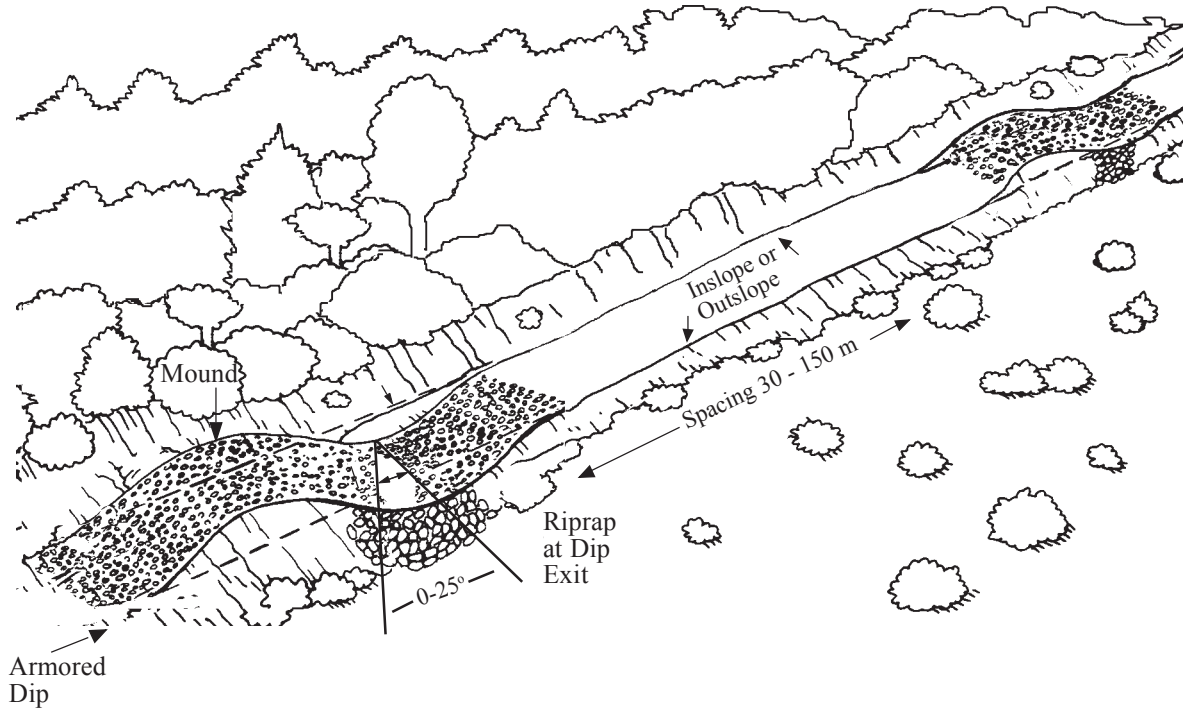


Photo 3. November 6, 2013 in Seaside MRA near Broadway West Gate. The road does not have sufficient crown to provide drainage to the sides. Generally recommended side-slope or crown slope is 4% to protect the road surface from erosion. Two circles show sunken areas with soft sand. During wet season these are at risk of erosion or of softening to the point of inhibiting vehicle passage.

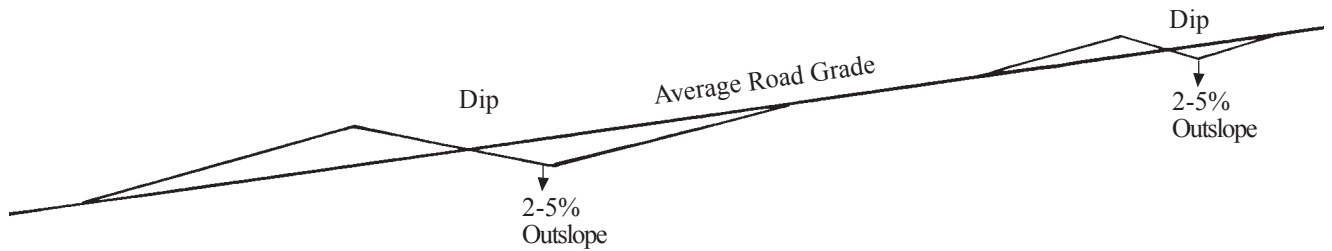
Figure 7.1 Typical Road Surface Drainage Options. From [http://ntl.bts.gov/lib/24000/24600/24650/Chapters/I\\_Ch7\\_Drainage\\_of\\_Low\\_Volume\\_Roads.pdf](http://ntl.bts.gov/lib/24000/24600/24650/Chapters/I_Ch7_Drainage_of_Low_Volume_Roads.pdf)



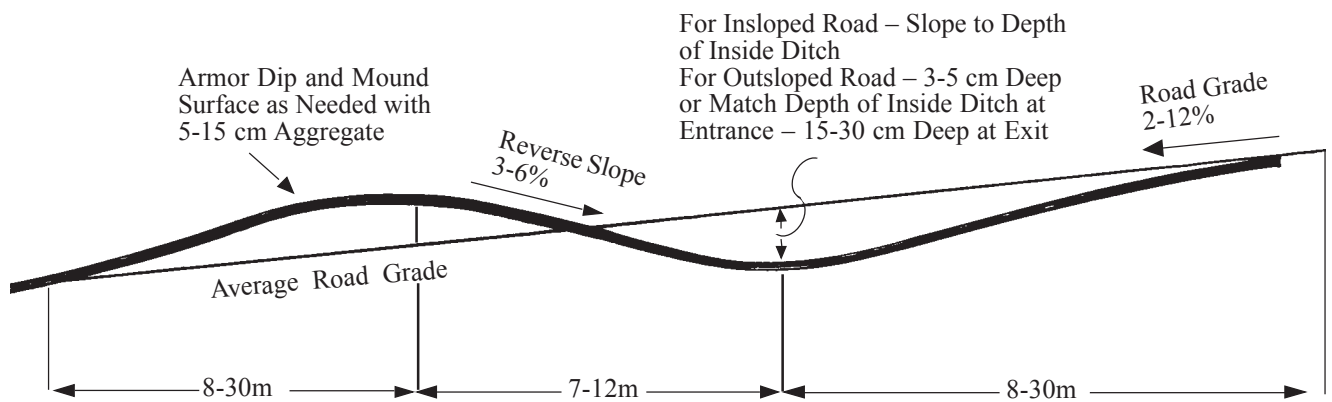
**Figure 7.3 Rolling (broad-based) dip cross-drains.**



**a. Perspective View**



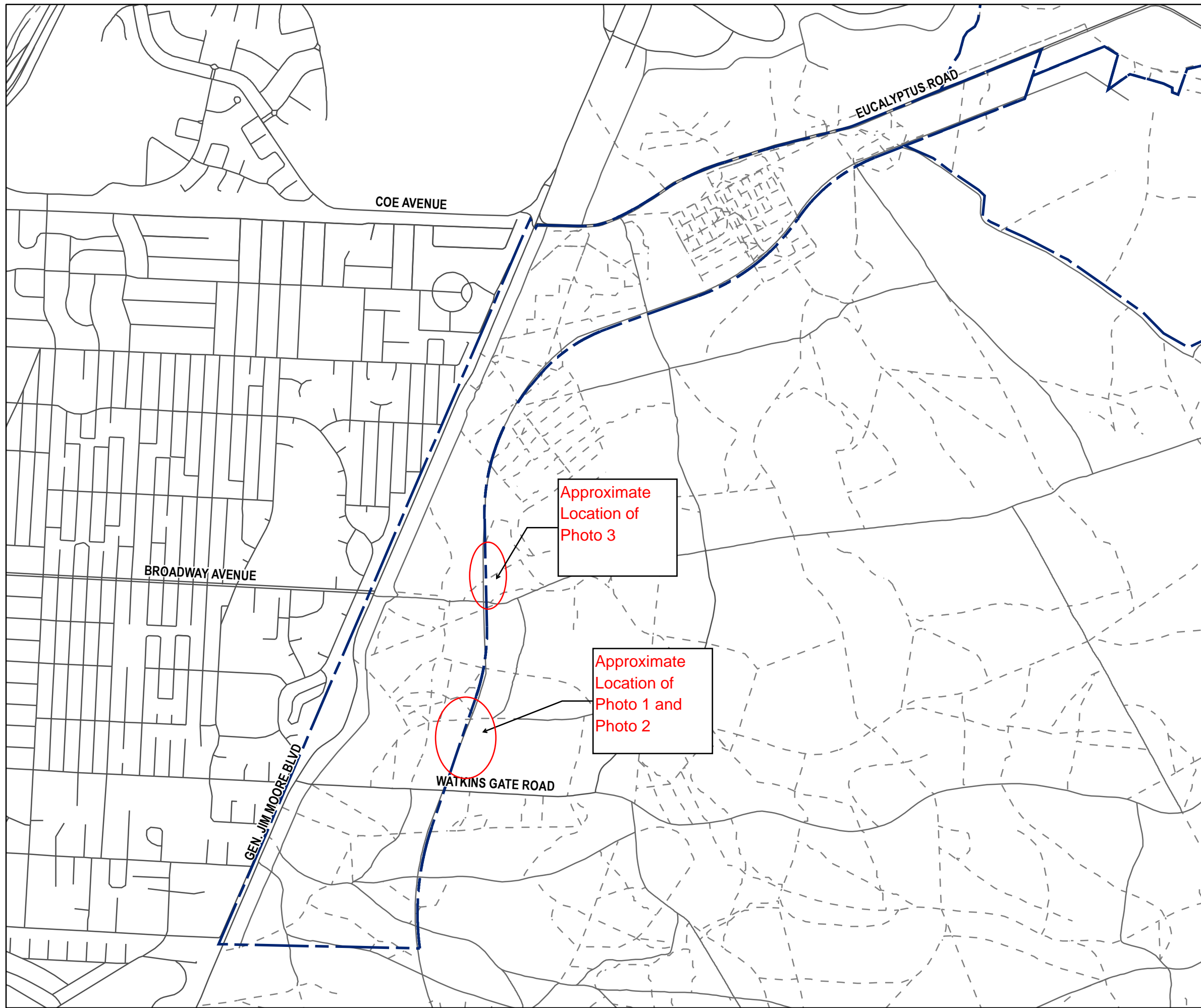
**b. Profile**



**c. Rolling Dip Profile Detail**

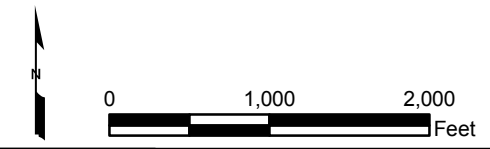
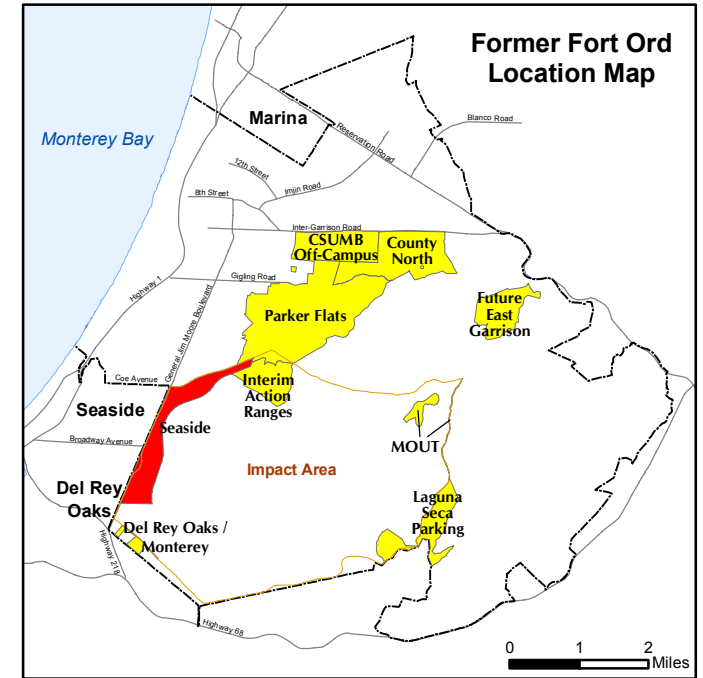


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### Legend

- Potential Erosion Identified in Field
- - - MRA Boundary
- Paved Road
- - - Unpaved Road or Trail



06-Nov-13  
 Seaside MRA  
 Potential Erosion Identified in Field  
 FORA ESCA RP  
 Monterey County, California

Figure 1