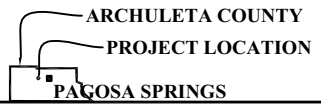
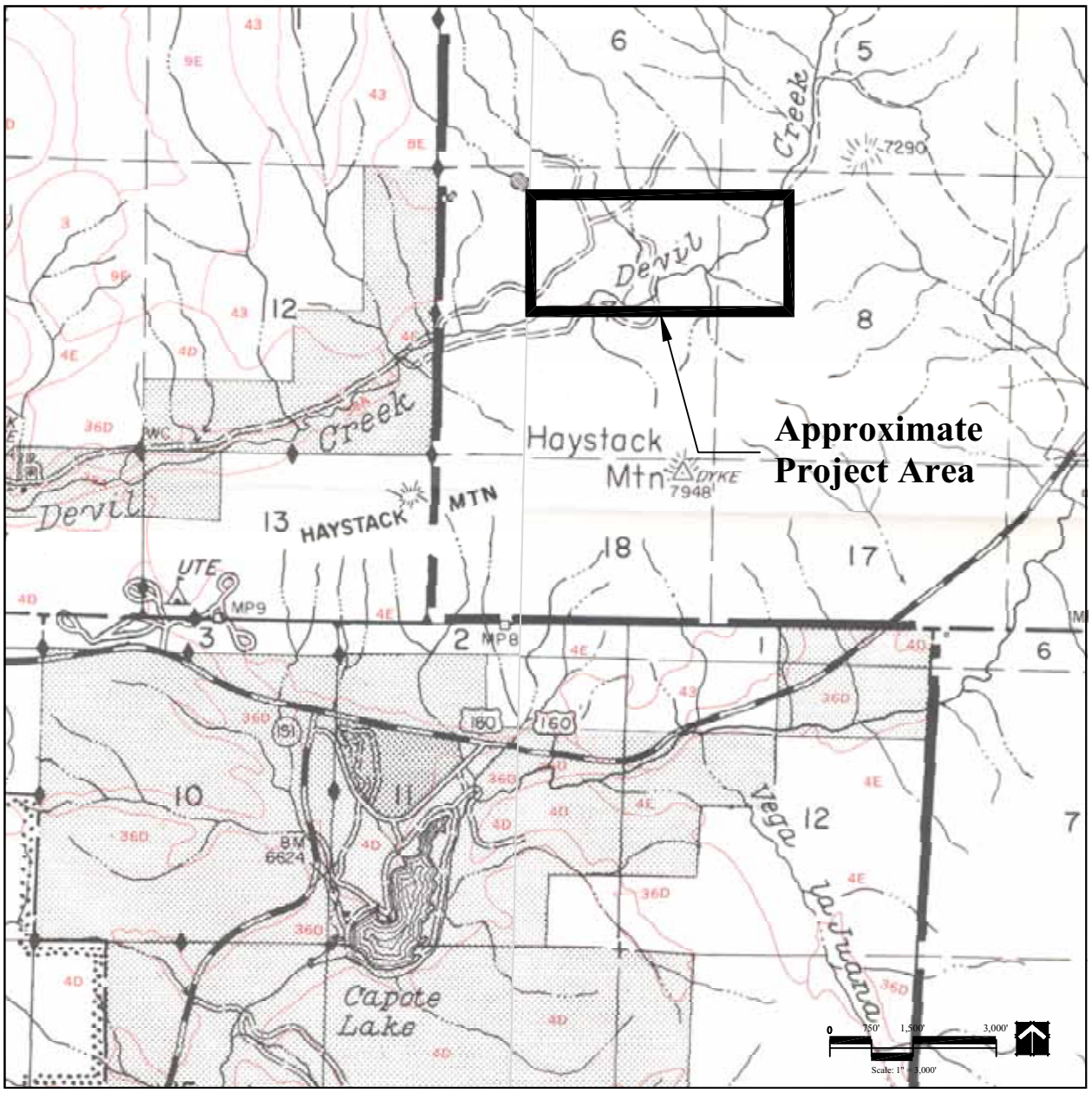
ADJACENT SOILS TYPES:

36D: Nunn loam, 4 to 25% slopes.
4E: Carracas loam, 25 to 65% slopes.
43: Sandstone outcrop-Ustorthents complex.

S:\Base Data\DRGs\co-state_crp.tif





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SUGNET and ASSOCIATES
Environmental Planning / Landscape Architecture

NRCS SOILS MAP

RECLAMATION & WETLAND MITIGATION PLAN AT KEYAH GRANDE GRAVEL PIT

FIGURE 10

Source: NRCS Soils Survey of Piedra Area, Colorado

Date: November 07 2004
Drawn By: DLG
Reviewed By: DLG
Job No.: 050056
File: Keyah Grande
Scale: 1" = 100'
Revisions
Revised: Nov. 3 2006

04

RECLAMATION & WETLAND MITIGATION PLAN
KEYAH GRANDE GRAVEL PIT

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

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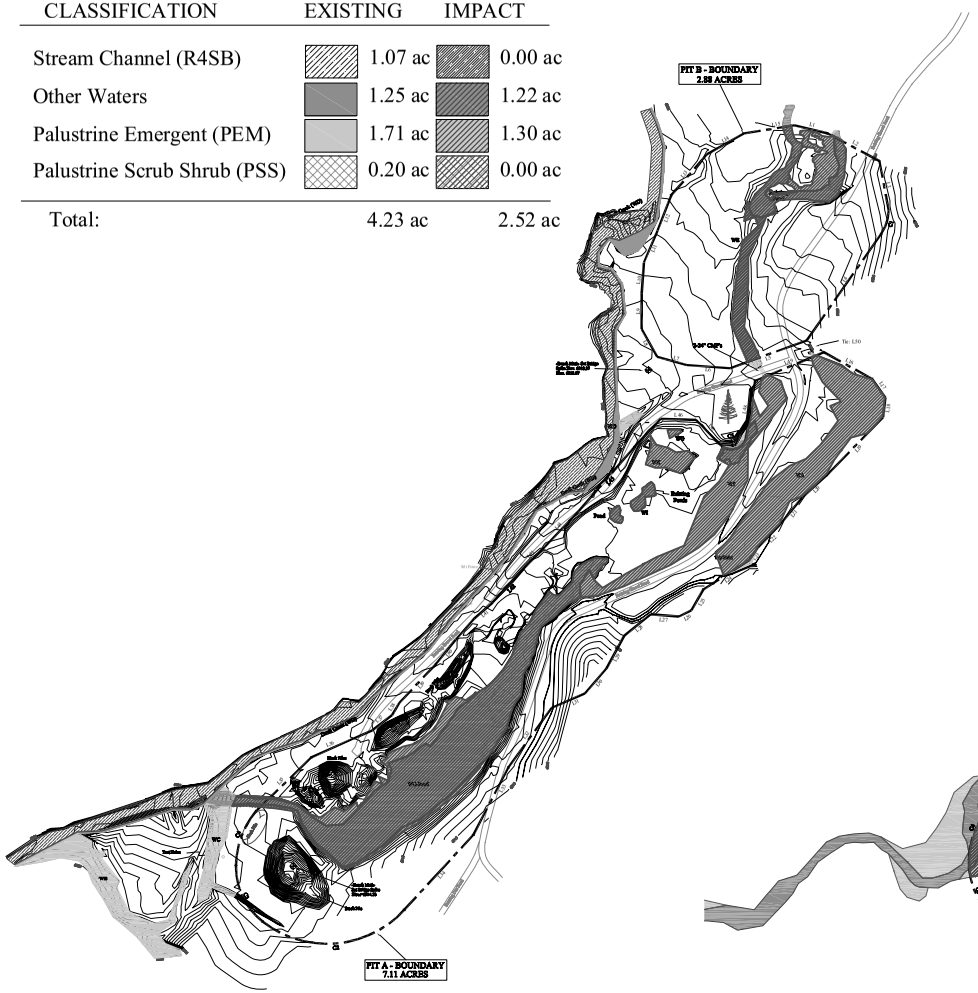
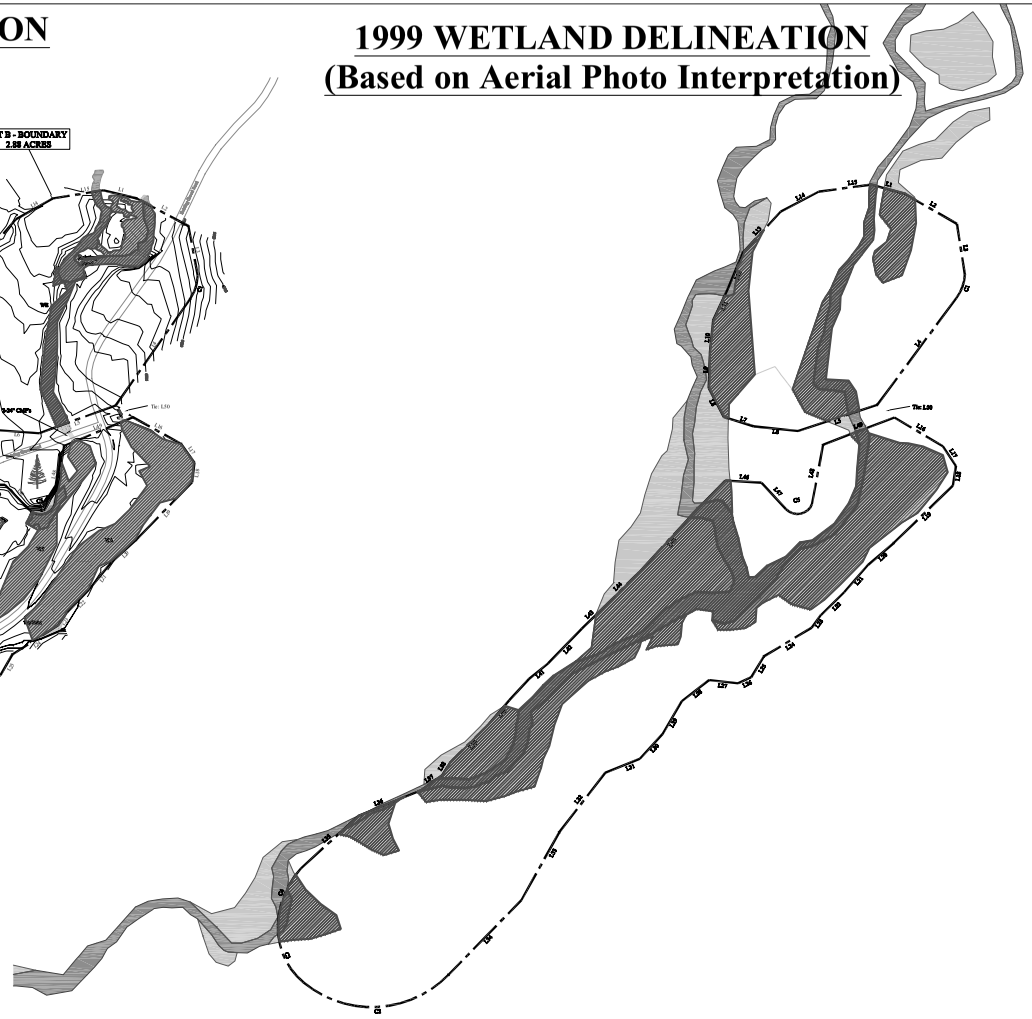
2005 WETLAND DELINEATION

CLASSIFICATION	EXISTING	IMPACT
Stream Channel (R4SB)	1.07 ac	0.00 ac
Other Waters	1.25 ac	1.22 ac
Palustrine Emergent (PEM)	1.71 ac	1.30 ac
Palustrine Scrub Shrub (PSS)	0.20 ac	0.00 ac
Total:	4.23 ac	2.52 ac



1999 WETLAND DELINEATION
(Based on Aerial Photo Interpretation)



0 50 100' 200'

CLASSIFICATION	EXISTED	IMPACTED
Other Waters - Stream Channel	3.69 ac	0.74 ac
Willow Communities (With a Minor PEM Component)	5.23 ac	2.66 ac
Total:	8.92 ac	3.40 ac

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PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

COMPARISON OF TOTAL IMPACTS: PAST CONDITIONS VS. CURRENT CONDITIONS
RECLAMATION & WETLAND MITIGATION PLAN
KEYAH GRANDE GRAVEL PIT

Date: November, 07 2005
Drawn By: JJD
Reviewed By: PJ
Job No: 050056
File: Figure6b.dwg
Scale: As Shown

Revisions:
Revised October, 04 2006
Revised November 7, 2006 bkw

06b

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Extended Riparian Buffer Preservation & Enhancement Area

CLASSIFICATION	CREATION	RESTORATION	CONVERSION
R3SB	0.49 ac	0.00 ac	0.63 ac
Open Waters (OW)	3.06 ac	0.88 ac	
Palustrine Scrub Shrub (PEM_PSS)	1.03 ac	1.65 ac	1.56 ac
Total:	4.58 ac	2.53 ac	2.19 ac

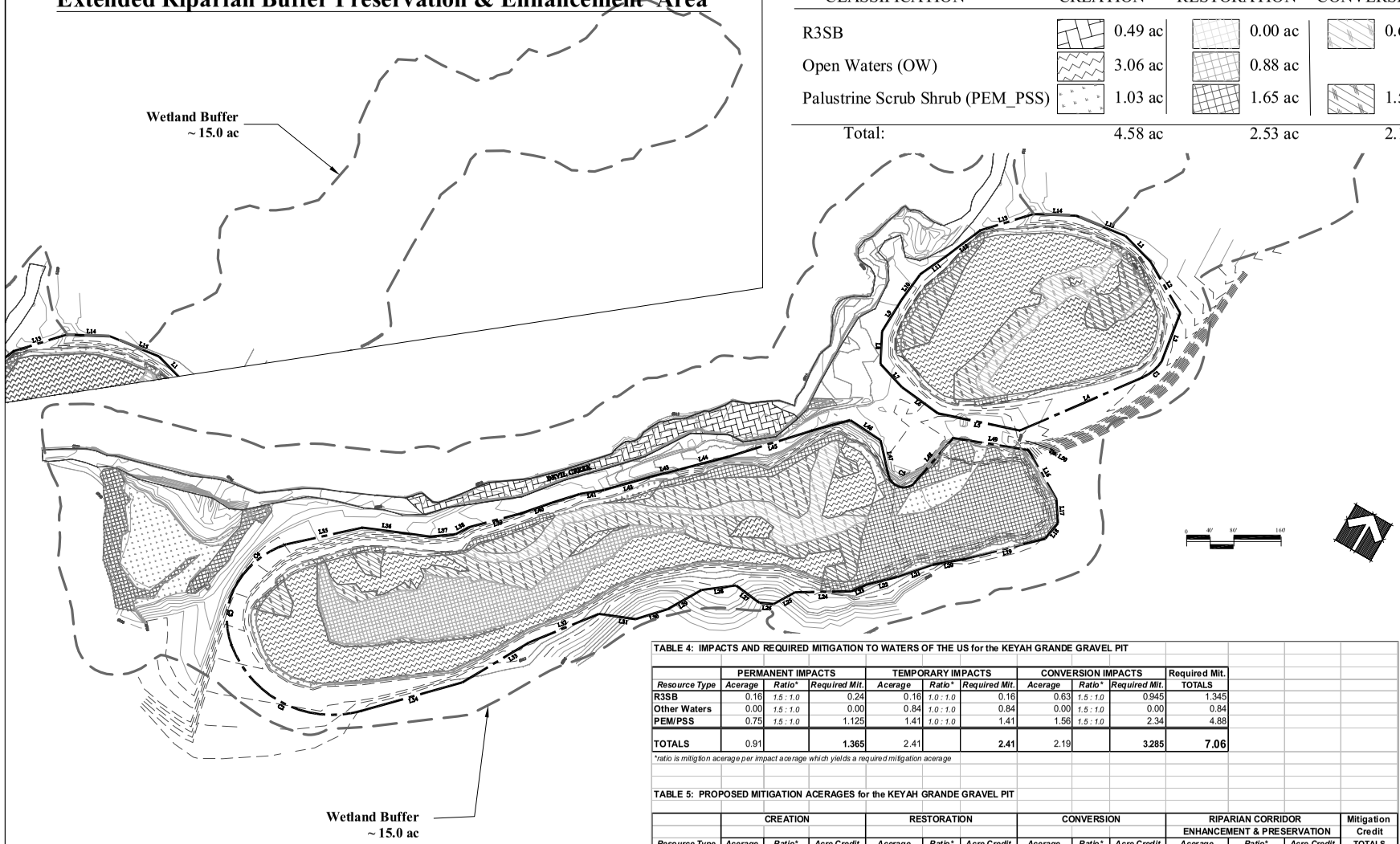

TABLE 4: IMPACTS AND REQUIRED MITIGATION TO WATERS OF THE US for the KEYAH GRANDE GRAVEL PIT

	PERMANENT IMPACTS			TEMPORARY IMPACTS			CONVERSION IMPACTS			Required Mit.
Resource Type	*Acerage*	*Ratio**	*Required Mit.*	*Acerage*	*Ratio**	*Required Mit.*	*Acerage*	*Ratio**	*Required Mit.*	TOTALS
R3SB	0.16	*1.5 : 1.0*	0.24	0.16	*1.0 : 1.0*	0.16	0.63	*1.5 : 1.0*	0.945	1.345
Other Waters	0.00	*1.5 : 1.0*	0.00	0.84	*1.0 : 1.0*	0.84	0.00	*1.5 : 1.0*	0.00	0.84
PEM/PSS	0.75	*1.5 : 1.0*	1.125	1.41	*1.0 : 1.0*	1.41	1.56	*1.5 : 1.0*	2.34	4.88
TOTALS	0.91		**1.365**	2.41		**2.41**	2.19		**3.285**	**7.06**

**ratio is mitigtion acerage per impact acerage which yields a required mitigation acerage*

TABLE 5: PROPOSED MITIGATION ACERAGES for the KEYAH GRANDE GRAVEL PIT

	CREATION			RESTORATION			CONVERSION			RIPARIAN CORRIDOR ENHANCEMENT & PRESERVATION			Mitigation Credit
Resource Type	*Acerage*	*Ratio**	*Acre Credit*	*Acerage*	*Ratio**	*Acre Credit*	*Acerage*	*Ratio**	*Acre Credit*	*Acerage*	*Ratio**	*Acre Credit*	TOTALS
R3SB	0.49	*1.0 : 1.0*	0.49	0.00	*1.0 : 1.0*	0.00	0.00	*1.0 : 5.0*	0.00	*N/A*	*N/A*	*N/A*	0.49
Other Waters	3.06	*1.0 : 3.0*	1.02	0.88	*1.0 : 1.0*	0.88	2.19	*1.0 : 5.0*	0.458	*N/A*	*N/A*	*N/A*	2.358
PEM/PSS	1.03	*1.0 : 1.0*	1.03	1.63	*1.0 : 1.0*	1.63	0.00	*1.0 : 5.0*	0.00	*N/A*	*N/A*	*N/A*	2.66
Riparian Buffer	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	15.00	*1.0 : 8.0*	1.875	1.875
TOTALS	4.58		**2.54**	2.51		**2.51**	2.19		**0.438**	15.00		**1.875**	**7.36**

**ratio is mitigation credit per mitigtion acre, which yields an acre credit*

SUGNET and ASSOCIATES
Environmental Planning / Landscape Architecture

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

RECLAMATION & WETLAND MITIGATION PLAN
KEYAH GRANDE GRAVEL PIT

Date: November, 07 2005
Drawn By: JMD
Reviewed By: PH
Job No: 050056
File: Figure7.dwg
Scale: As Shown

Revisions:
Revised: August 21, 2006
Revised: November 7, 2006 bkw

07

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TAB 6

KEYAH GRANDE, IP APPLICATION
SITE PHOTO DOCUMENTATION
Photos of existing site conditions taken on June 24, 2006 by PH.

PP1: Panoramic view looking east at existing gravel pit.

PP1: Panoramic view looking west at proposed wetland creation and restoration area at the west end of the site.

PP2: Panoramic view looking west to north at proposed wetland creation and restoration area at the west end of the site.

PP3: View looking north at west end restoration area (standing water is back waters from Devil Cr.)

PP3: View looking south at west end restoration area (coarse debris will be removed and wetland restored)

PP4: View looking west (downstream) at Devil Cr.

PP4: View looking east (upstream) at Devil Cr.

PP5: View looking west (downstream) at Devil Cr.

PP5: View looking east (upstream) at Devil Cr.

PP6: Panoramic view of floodplain looking northeast to southeast (upstream) at Devil Creek (on the left) the existing berm (to be improved, at center) and the adjacent wetland areas (on the right).

PP6: Panoramic view of floodplain looking southwest to northwest (downstream) at Devil Creek (on the right) the existing berm (to be improved, at center) and the adjacent wetland and gravel pit (on the left).

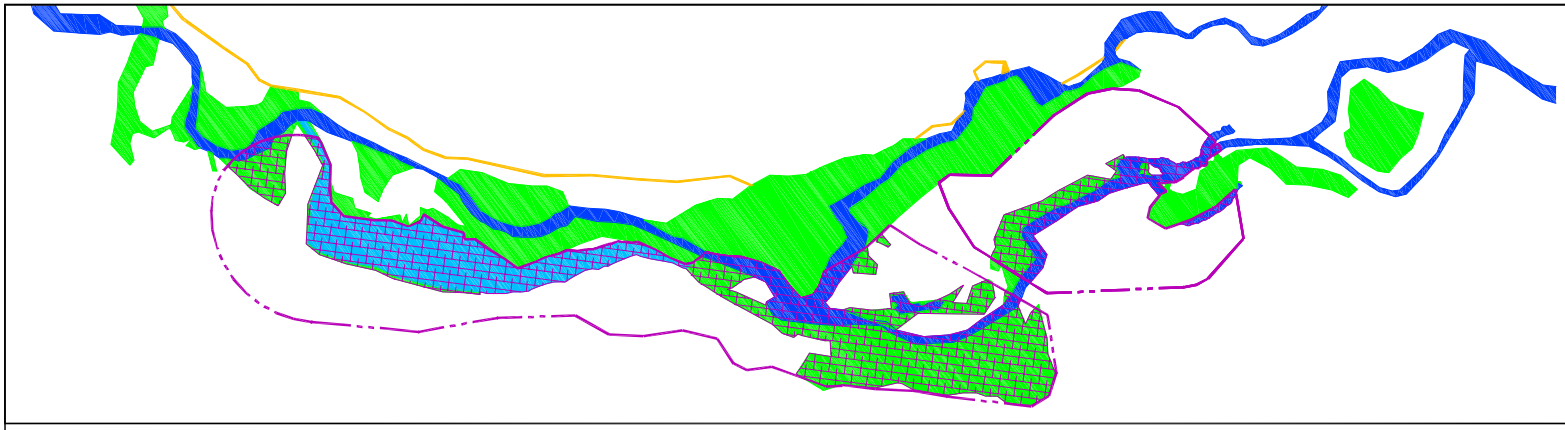
PP7: Panoramic view of existing wetland looking east to south. Area will be used as temporary stockpile area and restored to a PEM/PSS wetland upon reclamation.

PP7: Panoramic view of existing wetland looking southwest to west and existing roadway. Area will be used as temporary stockpile area and restored to a PEM/PSS wetland upon reclamation.

PP8: View looking southwest from existing culverted road crossing of existing wetland.

PP8: View looking northeast from existing culverted road crossing of existing wetland and location of proposed Pond B.

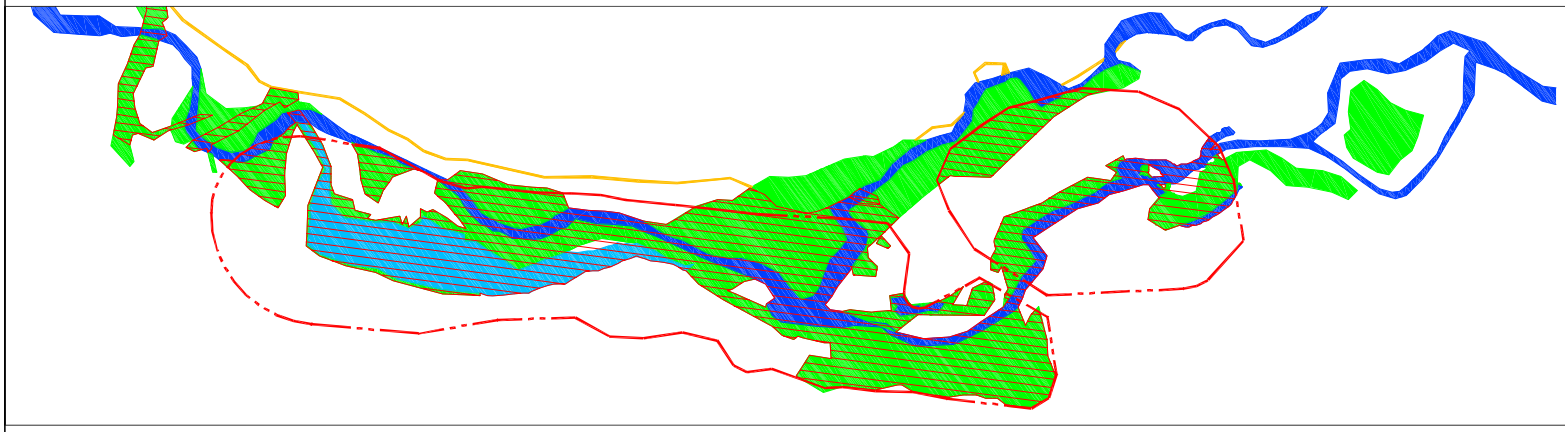
PP9: Panoramic view of east end of site looking northwest-northeast. Pond B is proposed for the area to the left of the photo and the proposed riparian buffer preservation and enhancement area is to the right.



ALTERNATIVE A

0 50' 100' 200'

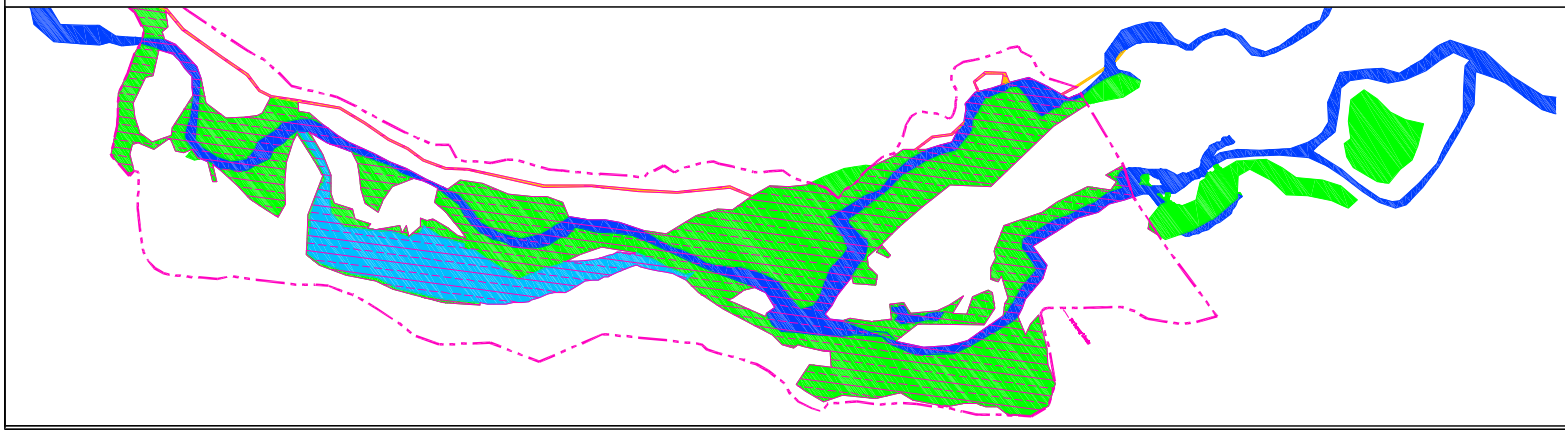
CLASSIFICATION	ACREAGE	IMPACTS
Other Waters		
Palustrine Emergent		
Palustrine Scrub Shrub		
Total:	10.04 ac	3.03 ac



ALTERNATIVE B

0 50' 100' 200'

CLASSIFICATION	ACREAGE	IMPACTS
Other Waters		
Palustrine Emergent		
Palustrine Scrub Shrub		
Total:	10.44 ac	5.71 ac



ALTERNATIVE C

0 50' 100' 200'

CLASSIFICATION	ACREAGE	IMPACTS
Other Waters		
Palustrine Emergent		
Palustrine Scrub Shrub		
Total:	10.44 ac	6.39 ac

SUGNET and ASSOCIATES
ENGINEERING PLANNING / LANDSCAPE ARCHITECTURE

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

ALTERNATIVE ANALYSIS
KEYAH GRANDE GRAVEL PIT

Date : November, 07 2005
Drawn By : DJD
Reviewed By : PH
Job No : 050056
File : Figure2.dwg
Scale : As Shown

Revisions :
Revised: May, 16 2006

02

\Projects\050056-Keyah Grande, Archuleta Co\CAD\Alt Analysis\Figure2.dwg, 6/23/2006 6:37:44 PM

TABLE 1: OFF-SITE ALTERNATIVES

Site	Leaseable/Purchasable and within Archuleta County	Suitable and Appropriate Surface Area, Geology and Aggregate Volume	Operation Cost (Access, Infrastructure, Process, Remediation, Etc.)	Environmental Constraints	Total	Economically and Logistically Practicable	Environmental Damage
1. Garcia Property	5 - Owner requires standard market royalty.	10 - Meets County specifications.	0 - Access onto CO 151 in section with blind horizontal curves and fairly steep grade. Long acceleration/ deceleration land would be mandatory; cost to construct is project-prohibitive (estimated at $300-500K).	5 - Located along side of the Stolsteimer Creek. Further Environmental Site Analysis would be needed.	20	NO - Good location for southwestern part of County; long haul for rest of County. Access would be difficult and create hazard.	MORE
2. Chavez Property	0 - Owner requires more than standard market royalty.	0 - Gravel does not meet County specification.	0 - Access onto CR 500 with section of blind horizontal curves; very steep grade to west; weight-restricted bridge to east.	5 - Located along side of the San Juan River. Further Environmental Site Analysis would be needed.	5	NO - Good location for south part of County, but long haul for rest of County. Access would create hazard.	MORE
3. Oso Diversion Tunnel Spoils (Existing)	10 - Owner does not want royalty for gravel.	5 - Gravel does not meet County specification for needs County-wide; County may use this gravel for minor repairs in the immediate vicinity.	5 - Access available; existing gravel pit.	5 - Located along Rio Blanco. Site is already disturbed. Further Environmental Site Analysis would be needed.	25	SOMEWHAT - Good location for Blanco Basin Road (CR 326); haul for rest of County is long.	SAME
4. Dillinger Pit (Existing)	5 - Owner requires standard market royalty.	5 - Meets County specifications, but would provide less than 1 year supply of gravel for entire County; less than 3 year supply for Blanco Basin Road (CR 326).	5 - Existing gravel pit.	5 - Located along Rio Blanco. Site is already disturbed. Further Environmental Site Analysis would be needed.	20	SOMEWHAT - Good location for Blanco Basin Road (CR 326); haul for rest of County is unacceptable.	SAME
5. Klett Pit (Existing)	0 - Owner requires more than standard market royalty.	0 - Less than 1 year supply of gravel for entire County. Gravel does not meet County specification.	0 - Access onto CR 500 with section of blind horizontal curves; very steep grade and weight-restricted bridge to west. Existing gravel pit to be closed as soon as stockpiled gravel is removed.	5 - Located along San Juan River. Site is already disturbed. Further Environmental Site Analysis would be needed.	5	NO - Good location for south part of County; long haul for rest of County. Access would be difficult and create hazard.	SAME
6. Keyah Grande	10 - Owner does not want royalty for gravel.	10 - Gravel meets County specification.	10 - Access onto highway on open stretch of US 160; visibility for trucks entering highway is good.	5 - Located along Devil Creek. Site is already disturbed. Some wetland impact.	35	YES - Convenient and central location for entire County.	BASE PROJECT

0 = Major Constraints
5 = Minor Constraints
10 = No Constraints