



Appendix D

Level 1 Hydrology Protocol Results
for D Drainage

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:		Basin:	8-digit HUC:
D1-Drainage		Mimbres	13030202
Reach Description:		Upstream lat/long:	Downstream lat/long:
See additional comments section		32.7506/-108.11491	32.74073/-108.12476
Current WQS			Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC			D1-1, D1-2

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	Aerial photos, "ground truthing", drainage profiles, reconnaissance
Reasoning:	Why is the stream homogeneous? See report section 4.2.1

Hydrology Protocol Results		Notes
D1-1 (lat/long): 32.7506/-108.11491	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	Final score: 1, see field form and photos for additional information
D1-2 (lat/long): 32.74073/-108.12476	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	Final score: 1, see field form and photos for additional information
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < -1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	

¹ This form is designed for the expedited UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	Please explain hydrologic impact
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime:		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

Additional Comments:
<p>Two assessment units were identified within sub-watershed D1 (Figure D1-1). Starting at the upstream end, these assessment units are identified as D1-1 and D1-2. The most upstream assessment unit (D1-1) was selected to represent the headwater portions of this sub-watershed but also placed downgradient of a significant reduction in basin slope. The downstream assessment unit (D1-2) was located near the outlet of sub-watershed D1 as representative of the hydrologic processes of the entire drainage area.</p> <p>As shown in the plan and profile plots for sub-watershed D1 (Figure D1-1) the basin slope progressively decreases, as expected, in the downstream direction. Similarly, the degree of valley confinement decreases in the downstream direction. These trends in channel slope and confinement are typical and represent the relative dominance of colluvial versus alluvial channel forming processes and are reflected in the composition of the channel bed itself. That is, the upstream reaches of sub-watershed D1 (D1-1) are bedrock and cobble dominated stream channels indicative hill slope processes (Photos D1-1 and D1-2) whereas the downstream assessment unit (D1-2) are a mixture of sand/gravel/cobble (Photos D1-2-1 and D1-2-2) and reflect the dominance of riverine processes. However, despite the influence of riverine processes within the lower assessment unit we observed very little difference between the "riparian" and upland vegetation. Furthermore, at both assessment units we observed that rooted upland plants occurred, with varying degrees of density, throughout the stream channel. The weight of evidence clearly indicates that sub-watershed D1 is an ephemeral channel that flows only in direct response to significant rainfall events.</p>

ATTACHMENTS:

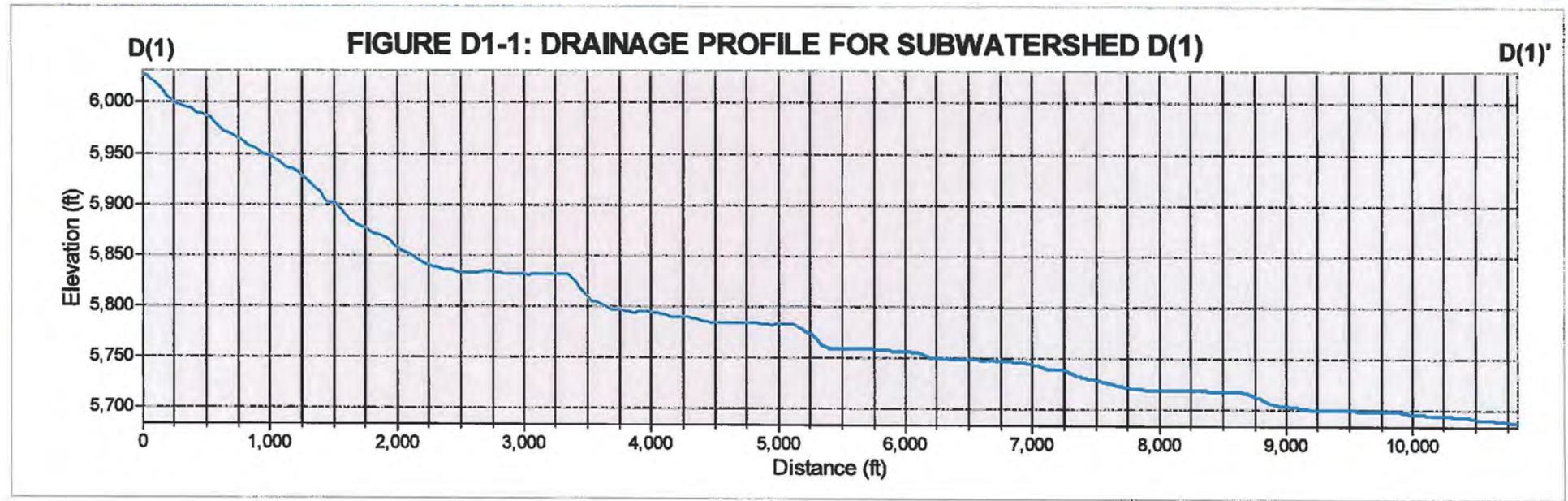
- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (drainage profile and plan view)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40

CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.*
Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the expedited UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by:	
Signed: <u>Benny Foster</u>	Date: <u>10/31/2012</u>
Surface Water Quality Bureau concurs with recommendation. <input type="checkbox"/> Yes <input type="checkbox"/> No	
<i>If no, see attached reasons.</i>	
Signed: _____	Date: _____
EPA Region 6 technical approval granted. <input type="checkbox"/> Yes <input type="checkbox"/> No	
<i>If no, see attached reasons.</i>	
Signed: _____	Date: _____



D1 Drainage Photographs (D1-1 Reach) – Total HP Score of 1 (ephemeral stream)



D1-1: Photographic reference of representative channel bottom characteristics. Note large boulders and cobbles in stream channel, similar to those observed on hillside.



D1-2: Photographic reference of representative channel bottom characteristics. Note large boulders and cobbles in stream channel, similar to those observed on hillside.

D1 Drainage Photographs (D1-1 Reach) – Total HP Score of 1 (ephemeral stream)



D1-3 Photographic reference for indicator 1.1 through 1.6. Typical view of stream bed and banks. Indicator 1.6 scored as 1 - rooted plants are prevalent and consistently dispersed in the streambed. No water or biotic indicators of water observed along survey reach.



D1-4: Photographic reference for indicator 1.5. Photograph of typical vegetation in the upland region of the survey reach. Indicator 1.5 scored as 0. Upland vegetation composition and density similar to stream and stream banks shown in previous photograph.

D1 Drainage Photographs (D1-1 Reach) – Total HP Score of 1 (ephemeral stream)



D1-5: Photographic reference for indicators 1.5 and 1.6. Photographs of stream bed, the bank/upland area and rooted in channel vegetation. Upland vegetation composition and density similar to stream and stream banks. Rooted plants are prevalent and consistently dispersed in the streambed.

D1 Drainage Photographs (D1-2 Reach) – Total HP Score of 1 (ephemeral stream)



D1-2-1: Photographic reference for indicator 1.1 through 1.6. Indicator 1.6 scored as 0. Rooted plants present in the channel bed and are prevalent at similar density as the upslope area. No water or biotic indicators of water observed along survey reach.



D1-2-2: Photographic reference of representative channel bottom characteristics. Note sand/gravel channel bottom with prevalent rooted upland plants throughout.

D1 Drainage Photographs (D1-2 Reach) – Total HP Score of 1 (ephemeral stream)



D1-2-3: Photographic reference for indicator 1.5. Photograph of the overbank and upland area. Indicator 1.5 scored as 1 - evident variation in vegetative density but no dramatic difference in composition. No distinct riparian zone observed.

D1 Drainage Photographs (D1-2 Reach) – Total HP Score of 1 (ephemeral stream)



D1-2-4: Photographic reference for indicators 1.5 and 1.6. Photographs of stream bed, the bank/upland area and rooted in channel vegetation. There is an evident variation in vegetative density but no dramatic difference in composition. Rooted plants present in the channel bed and are prevalent at similar density as the upslope area.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: 6/13/2011		Stream Name: D1	Latitude: N 32.75060
Evaluator(s): Fulton/Barry		Site ID: D-1	Longitude: W 108.11491
TOTAL POINTS: 1 <i>Stream is at least intermittent if ≥ 12</i>		Assessment Unit: D Drainage (D-1)	Drought Index (12-mo. SPI Value): -1.1
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	Has there been a heavy rain in the last 48 hours? ___ YES <input checked="" type="checkbox"/> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications ___ YES <input checked="" type="checkbox"/> NO Diversions ___ YES <input checked="" type="checkbox"/> NO Discharges ___ YES <input checked="" type="checkbox"/> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				1

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.7. Sinuosity	Ratio > 1.4. Stream has numerous, closely-spaced bends, few straight sections.	Ratio < 1.4. Stream has good sinuosity with some straight sections.	Ratio < 1.2. Stream has very few bends and mostly straight sections.	Ratio = 1.0. Stream is completely straight with no bends.
	3	2	1	0
1.8. Floodplain and Channel Dimensions	Ratio > 2.5. Stream is minimally confined with a wide, active floodplain.	Ratio between 1.2 and 2.5. Stream is moderately confined. Floodplain is present, but may only be active during larger floods.	Ratio < 1.2. Stream is incised with a noticeably confined channel. Floodplain is narrow or absent and typically disconnected from the channel.	
	3	1.5	0	
1.9. In-Channel Structure: Riffle-Pool Sequence	Demonstrated by a frequent number of riffles followed by pools along the entire reach. There is an obvious transition between riffles and pools.	Represented by a less frequent number of riffles and pools. Distinguishing the transition between riffles and pools is difficult.	Stream shows some flow but mostly has areas of pools or riffles.	There is no sequence exhibited.
	3	2	1	0
SUBTOTAL (#1.1 – #1.9)				1
<p>If the stream being evaluated has a subtotal ≤ 5 at this juncture, the stream is determined to be EPHEMERAL. If the stream being evaluated has a subtotal ≥ 21 at this point, the stream is determined to be PERENNIAL. YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 5 and 21 continue the Level 1 Evaluation.</p>				
1.10. Particle Size or Stream Substrate Sorting	Particle sizes in the channel are noticeably different from particle sizes in areas close to but not in the channel. There is a clear distribution of various sized substrates in the stream channel with finer particles accumulating in the pools, and larger particles accumulating in the riffles/runs.	Particle sizes in the channel are moderately similar to particle sizes in areas close to but not in the channel. Various sized substrates are present in the stream channel and are represented by a higher ratio of larger particles (gravel/cobble).	Particle sizes in the channel are similar or comparable to particle sizes in areas close to but not in the channel. Substrate sorting is not readily observed in the stream channel.	
	3	1.5	0	
1.11. Hydric Soils	Hydric soils are found within the study reach.		Hydric soils are <u>not</u> found within the study reach.	
	Present = 3		Absent = 0	
1.12. Sediment on Plants and Debris	Sediment found readily on plants and debris within the stream channel, on the streambank, and within the floodplain throughout the length of the stream.	Sediment found on plants or debris within the stream channel although it is not prevalent along the stream. Mostly accumulating in pools.	Sediment is isolated in small amounts along the stream.	No sediment is present on plants or debris.
	1.5	1	0.5	0
TOTAL POINTS (#1.1 – #1.12)				1

SUPPLEMENTAL INDICATORS: The following indicators do not occur consistently throughout New Mexico but may be useful in the determination of perenniality. <u>If the indicator is present</u> record score below and tally with previous score to compute TOTAL.		
1.13. Seeps and Springs	Seeps and springs are found within the study reach.	Seeps and springs are <u>not</u> found within the study reach.
	Present = 1.5	Absent = 0
1.14. Iron Oxidizing Bacteria/Fungi	Iron-oxidizing bacteria and/or fungi are found within the study reach.	Iron-oxidizing bacteria and/or fungi are <u>not</u> found within the study reach.
	Present = 1.5	Absent = 0
TOTAL <i>plus</i> SUPPLEMENTAL POINTS (#1.1 – #1.14)		1

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: 6/13/2011		Stream Name: D1	Latitude: N 32.74073
Evaluator(s): Barry		Site ID: D1-2	Longitude: W 108.12476
TOTAL POINTS: 1 <i>Stream is at least intermittent if ≥ 1</i>		Assessment Unit: D Drainage (D1-2)	Drought Index (12-mo. SPI Value): -1.1
WEATHER CONDITIONS	NOW:	PAST 48 HOURS:	Has there been a heavy rain in the last 48 hours? ___ YES ___X___ NO
	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover _X_ clear/sunny	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover _X_ clear/sunny	**Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications ___ YES ___X___ NO Diversions ___ YES ___X___ NO Discharges ___ YES ___X___ NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				1

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.7. Sinuosity	Ratio > 1.4. Stream has numerous, closely-spaced bends, few straight sections.	Ratio < 1.4. Stream has good sinuosity with some straight sections.	Ratio < 1.2. Stream has very few bends and mostly straight sections.	Ratio = 1.0. Stream is completely straight with no bends.
	3	2	1	0
1.8. Floodplain and Channel Dimensions	Ratio > 2.5. Stream is minimally confined with a wide, active floodplain.	Ratio between 1.2 and 2.5. Stream is moderately confined. Floodplain is present, but may only be active during larger floods.	Ratio < 1.2. Stream is incised with a noticeably confined channel. Floodplain is narrow or absent and typically disconnected from the channel.	
	3	1.5	0	
1.9. In-Channel Structure: Riffle-Pool Sequence	Demonstrated by a frequent number of riffles followed by pools along the entire reach. There is an obvious transition between riffles and pools.	Represented by a less frequent number of riffles and pools. Distinguishing the transition between riffles and pools is difficult.	Stream shows some flow but mostly has areas of pools <u>or</u> riffles.	There is no sequence exhibited.
	3	2	1	0
SUBTOTAL (#1.1 – #1.9)				1
<p>If the stream being evaluated has a subtotal ≤ 5 at this juncture, the stream is determined to be EPHEMERAL. If the stream being evaluated has a subtotal ≥ 21 at this point, the stream is determined to be PERENNIAL. YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 5 and 21 continue the Level 1 Evaluation.</p>				
1.10. Particle Size or Stream Substrate Sorting	Particle sizes in the channel are noticeably different from particle sizes in areas close to but not in the channel. There is a clear distribution of various sized substrates in the stream channel with finer particles accumulating in the pools, and larger particles accumulating in the riffles/runs.	Particle sizes in the channel are moderately similar to particle sizes in areas close to but not in the channel. Various sized substrates are present in the stream channel and are represented by a higher ratio of larger particles (gravel/cobble).	Particle sizes in the channel are similar or comparable to particle sizes in areas close to but not in the channel. Substrate sorting is not readily observed in the stream channel.	
	3	1.5	0	
1.11. Hydric Soils	Hydric soils are found within the study reach.		Hydric soils are <u>not</u> found within the study reach.	
	Present = 3		Absent = 0	
1.12. Sediment on Plants and Debris	Sediment found readily on plants and debris within the stream channel, on the streambank, and within the floodplain throughout the length of the stream.	Sediment found on plants or debris within the stream channel although it is not prevalent along the stream. Mostly accumulating in pools.	Sediment is isolated in small amounts along the stream.	No sediment is present on plants or debris.
	1.5	1	0.5	0
TOTAL POINTS (#1.1 – #1.12)				1

SUPPLEMENTAL INDICATORS: The following indicators do not occur consistently throughout New Mexico but may be useful in the determination of perenniality. <u>If the indicator is present</u> record score below and tally with previous score to compute TOTAL.		
1.13. Seeps and Springs	Seeps and springs are found within the study reach.	Seeps and springs are <u>not</u> found within the study reach.
	Present = 1.5	Absent = 0
1.14. Iron Oxidizing Bacteria/Fungi	Iron-oxidizing bacteria and/or fungi are found within the study reach.	Iron-oxidizing bacteria and/or fungi are <u>not</u> found within the study reach.
	Present = 1.5	Absent = 0
TOTAL <i>plus</i> SUPPLEMENTAL POINTS (#1.1 – #1.14)		1

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: 6/13/2011		Stream Name: D1	Latitude: N 32.74073
Evaluator(s): Fulton		Site ID: D1-2 replicate	Longitude: W 108.12476
TOTAL POINTS: 1 <i>Stream is at least intermittent if ≥ 12</i>		Assessment Unit: D Drainage (D1-2)	Drought Index (12-mo. SPI Value): -1.1
WEATHER CONDITIONS	NOW:	PAST 48 HOURS:	Has there been a heavy rain in the last 48 hours? ___ YES <u>X</u> NO
	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover <u>X</u> clear/sunny	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover <u>X</u> clear/sunny	**Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications ___ YES <u>X</u> NO Diversions ___ YES <u>X</u> NO Discharges ___ YES <u>X</u> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				1

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If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
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LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.7. Sinuosity	Ratio > 1.4. Stream has numerous, closely-spaced bends, few straight sections.	Ratio < 1.4. Stream has good sinuosity with some straight sections.	Ratio < 1.2. Stream has very few bends and mostly straight sections.	Ratio = 1.0. Stream is completely straight with no bends.
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	3	1.5	0	
1.9. In-Channel Structure: Riffle-Pool Sequence	Demonstrated by a frequent number of riffles followed by pools along the entire reach. There is an obvious transition between riffles and pools.	Represented by a less frequent number of riffles and pools. Distinguishing the transition between riffles and pools is difficult.	Stream shows some flow but mostly has areas of pools or riffles.	There is no sequence exhibited.
	3	2	1	0
SUBTOTAL (#1.1 – #1.9)				1
<p>If the stream being evaluated has a subtotal ≤ 5 at this juncture, the stream is determined to be EPHEMERAL. If the stream being evaluated has a subtotal ≥ 21 at this point, the stream is determined to be PERENNIAL. YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 5 and 21 continue the Level 1 Evaluation.</p>				
1.10. Particle Size or Stream Substrate Sorting	Particle sizes in the channel are noticeably different from particle sizes in areas close to but not in the channel. There is a clear distribution of various sized substrates in the stream channel with finer particles accumulating in the pools, and larger particles accumulating in the riffles/runs.	Particle sizes in the channel are moderately similar to particle sizes in areas close to but not in the channel. Various sized substrates are present in the stream channel and are represented by a higher ratio of larger particles (gravel/cobble).	Particle sizes in the channel are similar or comparable to particle sizes in areas close to but not in the channel. Substrate sorting is not readily observed in the stream channel.	
	3	1.5	0	
1.11. Hydric Soils	Hydric soils are found within the study reach.		Hydric soils are <u>not</u> found within the study reach.	
	Present = 3		Absent = 0	
1.12. Sediment on Plants and Debris	Sediment found readily on plants and debris within the stream channel, on the streambank, and within the floodplain throughout the length of the stream.	Sediment found on plants or debris within the stream channel although it is not prevalent along the stream. Mostly accumulating in pools.	Sediment is isolated in small amounts along the stream.	No sediment is present on plants or debris.
	1.5	1	0.5	0
TOTAL POINTS (#1.1 – #1.12)				1

SUPPLEMENTAL INDICATORS: The following indicators do not occur consistently throughout New Mexico but may be useful in the determination of perennality. <u>If the indicator is present</u> record score below and tally with previous score to compute TOTAL.				
1.13. Seeps and Springs	Seeps and springs are found within the study reach.		Seeps and springs are <u>not</u> found within the study reach.	
	Present = 1.5		Absent = 0	
1.14. Iron Oxidizing Bacteria/Fungi	Iron-oxidizing bacteria and/or fungi are found within the study reach.		Iron-oxidizing bacteria and/or fungi are <u>not</u> found within the study reach.	
	Present = 1.5		Absent = 0	
TOTAL <i>plus</i> SUPPLEMENTAL POINTS (#1.1 – #1.14)				1

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
D2-Drainage	Mimbres	13030202
Reach Description:	Upstream lat/long:	Downstream lat/long:
See additional comments section	32.71882/-108.11478	32.71835/-108.11639
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		D2-3

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	Aerial photos, "ground truthing", drainage profiles, reconnaissance
Reasoning:	Why is the stream homogeneous? See report section 4.2.1

Hydrology Protocol Results		Notes
D2-3 (lat/long): 32.71882/-108.11478	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	Final score: 2, see field form and photos for additional information
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < -1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<i>Please explain hydrologic impact</i>

¹ This form is designed for the expedited UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications	If "yes" please describe.
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime:	

Current Uses Observed	If "yes" please describe.
Macroinvertebrates <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use) <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:	

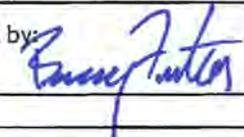
Additional Comments:
<p>A single assessment unit was identified within sub-watershed D2 (D2-3) (Figure D2-1). Assessment unit D2-3 was placed near the outlet of sub-watershed D2 downgradient of a significant reduction in basin slope as representative of the hydrologic processes of the entire drainage area. Average basin slope of sub-watershed D2 is relatively steep (approximately 10%) and highly confined with hill slopes in direct contact with the channel and very little riparian or floodplain areas (Photos D2-1 and D2-2). Sub-watershed D2 is dominated by colluvial processes with very little difference between vegetation composition and density between the stream banks and hillsides. Furthermore, we observed only a few occurrences of rooted upland plants within the channel bottom; however, this is the result of lack of moisture and deep mineral sandy soils within the stream bottom (Photo D2-5) rather than duration of flowing water. The weight of evidence clearly indicates that sub-watershed D2 is an ephemeral channel that flows only in direct response to significant rainfall events</p>

ATTACHMENTS:

- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (drainage profile and plan view)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the expedited UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by:		Date:	<u>10/31/2012</u>
Signed:	_____	Date:	_____

Surface Water Quality Bureau concurs with recommendation. Yes No

If no, see attached reasons.

Signed: _____

Date: _____

EPA Region 6 technical approval granted. Yes No

If no, see attached reasons.

Signed: _____

Date: _____

D2 Drainage Photographs (D2-3 Reach) – Total HP score of 2 (ephemeral stream)



D2-1: Photographic reference of representative channel bottom characteristics. Note large boulders and cobbles in stream channel, similar to those observed on hillside. Note confining nature of hillsides.



D2-2: Photographic reference of representative channel bottom characteristics. Note large boulders and cobbles in stream channel, similar to those observed on hillside. Note confining nature of hillsides.

D2 Drainage Photographs (D2-3 Reach) – Total HP score of 2 (ephemeral stream)



D2-3: Photographic reference for indicators 1.1 through 1.6. Indicator 1.6 scored as 2 – few rooted plants present in the streambed. Lack of instream vegetation most likely a result of the bed material present (boulders) rather than an indicator of flow persistence. No water or biotic indicators of water observed along survey reach.

D2 Drainage Photographs (D2-3 Reach) – Total HP score of 2 (ephemeral stream)



D2-4: Photographic reference for indicator 1.5. Photograph of bank vegetation (also observable in previous photograph) and the upland vegetation. Indicator 1.5 scored as 0. No vegetative compositional or density differences observed between the banks and the upland area.



D2-5: Photographic reference for indicator 1.6. Lack of in-stream vegetation indicative of coarse mineral sediments and complete lack of moisture. Assessment unit representative of channel bottom characteristics. Note dry material sand sediments within channel.

D2 Drainage Photographs (D2-3 Reach) – Total HP score of 2 (ephemeral stream)



D2-6: Photographic reference for indicator 1.5. Photographs of stream bed, the bank/upland area and rooted in channel vegetation. There is no composition difference in vegetation between the bank and the upland area.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: 6/13/2011		Stream Name: D2	Latitude: N 32.71882
Evaluator(s): Fulton/Barry		Site ID: D2-3	Longitude: W 108.11478
TOTAL POINTS: 2 <i>Stream is at least intermittent if ≥ 12'</i>		Assessment Unit: D Drainage (D2-3)	Drought Index (12-mo. SPI Value): -1.1
WEATHER CONDITIONS	NOW:	PAST 48 HOURS:	Has there been a heavy rain in the last 48 hours? ___ YES <u>X</u> NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event.
	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover <u>X</u> clear/sunny	___ storm (heavy rain) ___ rain (steady rain) ___ showers (intermittent) ___ %cloud cover <u>X</u> clear/sunny	OTHER: Stream Modifications ___ YES <u>X</u> NO Diversions ___ YES <u>X</u> NO Discharges ___ YES <u>X</u> NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.7. Sinuosity	Ratio > 1.4. Stream has numerous, closely-spaced bends, few straight sections.	Ratio < 1.4. Stream has good sinuosity with some straight sections.	Ratio < 1.2. Stream has very few bends and mostly straight sections.	Ratio = 1.0. Stream is completely straight with no bends.
	3	2	1	0
1.8. Floodplain and Channel Dimensions	Ratio > 2.5. Stream is minimally confined with a wide, active floodplain.	Ratio between 1.2 and 2.5. Stream is moderately confined. Floodplain is present, but may only be active during larger floods.	Ratio < 1.2. Stream is incised with a noticeably confined channel. Floodplain is narrow or absent and typically disconnected from the channel.	
	3	1.5	0	
1.9. In-Channel Structure: Riffle-Pool Sequence	Demonstrated by a frequent number of riffles followed by pools along the entire reach. There is an obvious transition between riffles and pools.	Represented by a less frequent number of riffles and pools. Distinguishing the transition between riffles and pools is difficult.	Stream shows some flow but mostly has areas of pools <u>or</u> of riffles.	There is no sequence exhibited.
	3	2	1	0
SUBTOTAL (#1.1 – #1.9)				2
<p>If the stream being evaluated has a subtotal ≤ 5 at this juncture, the stream is determined to be EPHEMERAL. If the stream being evaluated has a subtotal ≥ 21 at this point, the stream is determined to be PERENNIAL. YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 5 and 21 continue the Level 1 Evaluation.</p>				
1.10. Particle Size or Stream Substrate Sorting	Particle sizes in the channel are noticeably different from particle sizes in areas close to but not in the channel. There is a clear distribution of various sized substrates in the stream channel with finer particles accumulating in the pools, and larger particles accumulating in the riffles/runs.	Particle sizes in the channel are moderately similar to particle sizes in areas close to but not in the channel. Various sized substrates are present in the stream channel and are represented by a higher ratio of larger particles (gravel/cobble).	Particle sizes in the channel are similar or comparable to particle sizes in areas close to but not in the channel. Substrate sorting is not readily observed in the stream channel.	
	3	1.5	0	
1.11. Hydric Soils	Hydric soils are found within the study reach.		Hydric soils are <u>not</u> found within the study reach.	
	Present = 3		Absent = 0	
1.12. Sediment on Plants and Debris	Sediment found readily on plants and debris within the stream channel, on the streambank, and within the floodplain throughout the length of the stream.	Sediment found on plants or debris within the stream channel although it is not prevalent along the stream. Mostly accumulating in pools.	Sediment is isolated in small amounts along the stream.	No sediment is present on plants or debris.
	1.5	1	0.5	0
TOTAL POINTS (#1.1 – #1.12)				2

SUPPLEMENTAL INDICATORS: The following indicators do not occur consistently throughout New Mexico but may be useful in the determination of perennality. <u>If the indicator is present</u> record score below and tally with previous score to compute TOTAL.	
1.13. Seeps and Springs	Seeps and springs are found within the study reach.
	Present = 1.5
1.14. Iron Oxidizing Bacteria/Fungi	Seeps and springs are <u>not</u> found within the study reach.
	Absent = 0
1.14. Iron Oxidizing Bacteria/Fungi	Iron-oxidizing bacteria and/or fungi are found within the study reach.
	Present = 1.5
	Iron-oxidizing bacteria and/or fungi are <u>not</u> found within the study reach.
	Absent = 0
TOTAL <i>plus</i> SUPPLEMENTAL POINTS (#1.1 – #1.14)	
2	

Cover Sheet
Hydrology Protocol Use Attainability Analysis
for an Ephemeral Stream¹

Stream Name:	Basin:	8-digit HUC:
D3-Drainage	Mimbres	13030202
Reach Description:	Upstream lat/long:	Downstream lat/long:
See additional comments section	32.70307/-108.11088	32.702662/-108.111866
Current WQS		Assessment Unit ID:
<input checked="" type="checkbox"/> Unclassified 20.6.4.98 or 99 NMAC <input type="checkbox"/> Classified 20.6.4. ____ NMAC		D3-23

Reach Evaluation (How homogeneity of reach hydrology was verified)	
Methods Used:	Aerial photos, "ground truthing", drainage profiles, reconnaissance
Reasoning:	Why is the stream homogeneous? See report section 4.2.1

Hydrology Protocol Results		Notes
D3-23 (lat/long): 32.70307/-108.11088	<input checked="" type="checkbox"/> eph <input type="checkbox"/> int <input type="checkbox"/> per	Final score: 2, see field form and photos for additional information
<input type="checkbox"/> Additional location results attached.		

Hydroclimatic Conditions		If "yes" please describe.
Drought (SPI Value < - 1.5)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recent Rainfall (within 48 hours)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Gauge data available?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of above, please explain why these conditions do not impact the UAA conclusion that <i>natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use:</i>		

Hydrologic and Other Modifications		If "yes" please describe.
Dam/diversion	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Channelization/roads	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Groundwater pumping	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Agricultural return flows	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Existing point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Planned point source discharge	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	

¹ This form is designed for the expedited UAA process for ephemeral waters described in Subsection C of 20.6.4.15 NMAC.

Hydrologic and Other Modifications		If "yes" please describe.
Other modifications e.g., land use practices	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	Please explain hydrologic impact
If yes for any of above, please explain why these modifications do not alter the uses supported by the natural flow regime:		

Current Uses Observed		If "yes" please describe.
Macroinvertebrates	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Fish	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Recreation (contact use)	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
If yes for any of the above, please explain why these observed uses are consistent with the UAA conclusion that 101(a)(2) aquatic life and recreational uses are not feasible:		

Additional Comments:

A single assessment unit was identified within sub-watershed D3 (D3-23) (Figure D3-1). Assessment unit D3-23 was placed near the outlet of sub-watershed 3 downgradient of a significant reduction in basin slope as representative of the hydrologic processes of the entire drainage area. Similar to sub-watershed D2, average basin slope of sub-watershed D3 is relatively steep (approximately 6%) and highly confined with hill slopes in direct contact with the channel and very little riparian or floodplain areas (Photos D3-1 and D3-2). As with sub-watershed D2, sub-watershed D3 is dominated by colluvial processes with very little difference between vegetation composition and density between the stream banks and hillsides. Furthermore, we observed only a few occurrences of rooted upland plants within the channel bottom; however, this is the result of lack of moisture and deep mineral sandy soils within the stream bottom (Photo D3-3) rather than duration of flowing water. The weight of evidence clearly indicates that sub-watershed D3 is an ephemeral channel that flows only in direct response to significant rainfall events.

ATTACHMENTS:

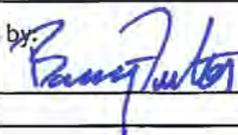
- Map and Photos (required)
- Hydrology Protocol Field Sheets for all locations (required)
- Level 2 Analysis (optional)
- Additional sites and/or documentation (drainage profile and plan view)

CONCLUSION:

This UAA concludes that the stream reach identified above is ephemeral and that Clean Water Act Section 101(a)(2) aquatic life and recreational uses are neither existing nor attainable due to the factor identified in 40 CFR 131.10(g)(2): *natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent.* Based on this conclusion, we recommend that the designated uses and criteria identified in 20.6.4.97 NMAC be applied to this stream reach in accordance with the expedited UAA process set forth in Subsection C of 20.6.4.15 NMAC.

Submitted by:

Signed:



Date:

10/31/2012

Surface Water Quality Bureau concurs with recommendation. Yes No

If no, see attached reasons.

Signed: _____

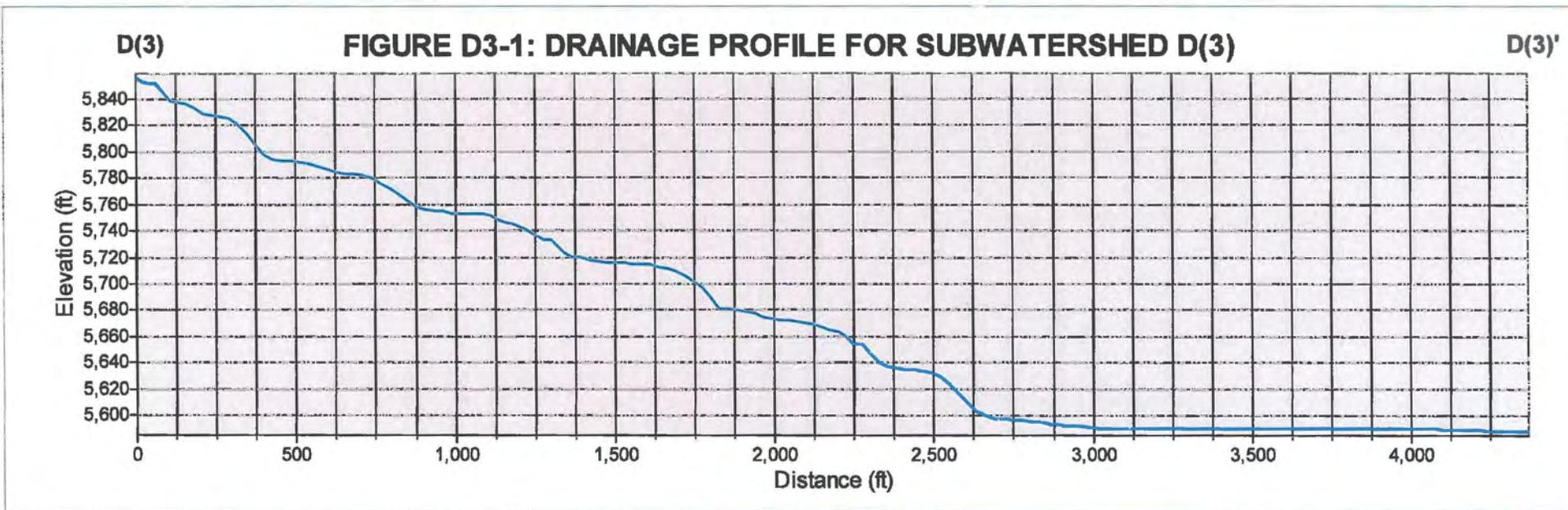
Date: _____

EPA Region 6 technical approval granted. Yes No

If no, see attached reasons.

Signed: _____

Date: _____



D3 Drainage Photographs (D3-23 Reach) – Total HP score of 2 (ephemeral stream)



D3-1: Photographic reference of representative channel bottom characteristics. Note large boulders and cobbles in stream channel, similar to those observed on hillside. Note confining nature of hillside.



D3-2: Photographic reference for indicator 1.1 through 1.6. Photograph of stream bed. Indicator 1.6 scored as 2 – few rooted plants present in the streambed. Lack of instream vegetation most likely a result of the bed material present (boulders) rather than an indicator of flow persistence. No water or biotic indicators of water observed along survey reach.

D3 Drainage Photographs (D3-23 Reach) – Total HP score of 2 (ephemeral stream)



D3-3: Photographic reference for indicator 1.6. Photograph of 7 inch hole excavated in-channel. There is a complete lack of soil structure and moisture. Assessment unit is representative of channel bottom characteristics. Note dry mineral, sand sediments within channel.



D3-4: Photographic reference for indicator 1.5. Photographs of stream bank and upland vegetation. Indicator 1.5 scored as 0. No vegetative compositional or density differences observed between the banks and the upland area.

NMED Surface Water Quality Bureau – LEVEL 1 Hydrology Determination Field Sheet

Date: 6/13/2011		Stream Name: D3	Latitude: N 32.70307
Evaluator(s): Fulton/Barry		Site ID: D3-23	Longitude: W 108.11088
TOTAL POINTS: 2 <i>Stream is at least intermittent if ≥12</i>		Assessment Unit: D Drainage (D3-23)	Drought Index (12-mo. SPI Value): -1.1
WEATHER CONDITIONS	NOW: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	PAST 48 HOURS: <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	Has there been a heavy rain in the last 48 hours? ___ YES ___X_ NO **Field evaluations should be performed at least 48 hours after the last known major rainfall event. OTHER: Stream Modifications ___ YES ___X_ NO Diversions ___ YES ___X_ NO Discharges ___ YES ___X_ NO **Explain in further detail in NOTES section

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.1. Water in Channel	Flow is evident throughout the reach. Moving water is seen in riffle areas but may not be as evident throughout the runs. 6	Water is present in the channel but flow is barely discernable in areas of greatest gradient change (i.e. riffles) or floating object is necessary to observe flow. 4	Dry channel with standing pools. There is some evidence of base flows (i.e. riparian vegetation growing along channel, saturated or moist sediment under rocks, etc) 2	Dry channel. No evidence of base flows was found. 0
1.2. Fish	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Fish are not present. 0
1.3. Benthic Macroinvertebrates	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Macroinvertebrates are not present. 0
1.4. Filamentous Algae/Periphyton	Found easily and consistently throughout the reach. 3	Found with little difficulty but not consistently throughout the reach. 2	Takes 10 or more minutes of extensive searching to find. 1	Filamentous algae and/or periphyton are not present. 0
1.5. Differences in Vegetation	Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distinct riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. 3	A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. 2	Vegetation growing along the reach may occur in greater densities or grow more vigorously than vegetation in the adjacent uplands, but there are no dramatic compositional differences between the two. 1	No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. 0
1.6. Absence of Rooted Upland Plants in Streambed	Rooted upland plants are absent within the streambed/thalweg. 3	There are a few rooted upland plants present within the streambed/thalweg. 2	Rooted upland plants are consistently dispersed throughout the streambed/thalweg 1	Rooted upland plants are prevalent within the streambed/thalweg. 0
SUBTOTAL (#1.1 – #1.6)				2

If the stream being evaluated has a subtotal ≤ 2 at this juncture, the stream is determined to be EPHEMERAL.
 If the stream being evaluated has a subtotal ≥ 18 at this point, the stream is determined to be PERENNIAL.
 YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 2 and 18 continue the Level 1 Evaluation.

LEVEL 1 INDICATORS	STREAM CONDITION			
	Strong	Moderate	Weak	Poor
1.7. Sinuosity	Ratio > 1.4. Stream has numerous, closely-spaced bends, few straight sections.	Ratio < 1.4. Stream has good sinuosity with some straight sections.	Ratio < 1.2. Stream has very few bends and mostly straight sections.	Ratio = 1.0. Stream is completely straight with no bends.
	3	2	1	0
1.8. Floodplain and Channel Dimensions	Ratio > 2.5. Stream is minimally confined with a wide, active floodplain.	Ratio between 1.2 and 2.5. Stream is moderately confined. Floodplain is present, but may only be active during larger floods.	Ratio < 1.2. Stream is incised with a noticeably confined channel. Floodplain is narrow or absent and typically disconnected from the channel.	
	3	1.5	0	
1.9. In-Channel Structure: Riffle-Pool Sequence	Demonstrated by a frequent number of riffles followed by pools along the entire reach. There is an obvious transition between riffles and pools.	Represented by a less frequent number of riffles and pools. Distinguishing the transition between riffles and pools is difficult.	Stream shows some flow but mostly has areas of pools <u>or</u> of riffles.	There is no sequence exhibited.
	3	2	1	0
SUBTOTAL (#1.1 – #1.9)				2
<p>If the stream being evaluated has a subtotal ≤ 5 at this juncture, the stream is determined to be EPHEMERAL. If the stream being evaluated has a subtotal ≥ 21 at this point, the stream is determined to be PERENNIAL. YOU MAY STOP THE EVALUATION AT THIS POINT. If the stream has a subtotal between 5 and 21 continue the Level 1 Evaluation.</p>				
1.10. Particle Size or Stream Substrate Sorting	Particle sizes in the channel are noticeably different from particle sizes in areas close to but not in the channel. There is a clear distribution of various sized substrates in the stream channel with finer particles accumulating in the pools, and larger particles accumulating in the riffles/runs.	Particle sizes in the channel are moderately similar to particle sizes in areas close to but not in the channel. Various sized substrates are present in the stream channel and are represented by a higher ratio of larger particles (gravel/cobble).	Particle sizes in the channel are similar or comparable to particle sizes in areas close to but not in the channel. Substrate sorting is not readily observed in the stream channel.	
	3	1.5	0	
1.11. Hydric Soils	Hydric soils are found within the study reach.		Hydric soils are <u>not</u> found within the study reach.	
	Present = 3		Absent = 0	
1.12. Sediment on Plants and Debris	Sediment found readily on plants and debris within the stream channel, on the streambank, and within the floodplain throughout the length of the stream.	Sediment found on plants or debris within the stream channel although it is not prevalent along the stream. Mostly accumulating in pools.	Sediment is isolated in small amounts along the stream.	No sediment is present on plants or debris.
	1.5	1	0.5	0
TOTAL POINTS (#1.1 – #1.12)				2

SUPPLEMENTAL INDICATORS: The following indicators do not occur consistently throughout New Mexico but may be useful in the determination of perenniality. If the indicator is present record score below and tally with previous score to compute TOTAL.		
1.13. Seeps and Springs	Seeps and springs are found within the study reach.	Seeps and springs are <u>not</u> found within the study reach.
	Present = 1.5	Absent = 0
1.14. Iron Oxidizing Bacteria/Fungi	Iron-oxidizing bacteria and/or fungi are found within the study reach.	Iron-oxidizing bacteria and/or fungi are <u>not</u> found within the study reach.
	Present = 1.5	Absent = 0
TOTAL <i>plus</i> SUPPLEMENTAL POINTS (#1.1 – #1.14)		2

