**Hydrology Determination**

**FIELD SHEETS**

Available at the SWQB Hydrology Protocol website: (<http://www.nmenv.state.nm.us/swqb/Hydrology/index.html>)

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

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| **Date:** | | **Stream Name:** | | | **Latitude:** |
| **Evaluator(s):** | | **Site ID:** | | | **Longitude:** |
| **TOTAL POINTS:**  *Stream is at least intermittent if ≥ 12* | | **Assessment Unit:** | | | **Drought Index (12-mo. SPI Value):** |
| **WEATHER CONDITIONS** | **NOW:**  \_\_\_ storm (heavy rain)  \_\_\_ rain (steady rain)  \_\_\_ showers (intermittent)  \_\_\_ %cloud cover  \_\_\_ clear/sunny | | **PAST 48 HOURS:**  \_\_\_ storm (heavy rain)  \_\_\_ rain (steady rain)  \_\_\_ showers (intermittent)  \_\_\_ %cloud cover  \_\_\_ clear/sunny | **Has there been a heavy rain in the last 48 hours?**  **­\_\_\_ YES \_\_\_ NO**  \*\*Field evaluations should be performed at least 48 hours after the last known major rainfall event. | |
| **OTHER:**  **Stream Modifications \_\_\_ YES \_\_\_ NO**  **Diversions \_\_\_ YES \_\_\_ NO**  **Discharges \_\_\_ YES \_\_\_ NO**  **\*\***Explain in further detail in NOTES section | |

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| **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. | 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. | | | 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) | | | Dry channel. No evidence of base flows was found. |
| **6** | **4** | | | **2** | | | **0** |
| **1.2. Fish** | Found easily and consistently throughout the reach. | Found with little difficulty but not consistently throughout the reach. | | | Takes 10 or more minutes of extensive searching to find. | | | Fish are not present. |
| **3** | **2** | | | **1** | | | **0** |
| * 1. **Benthic**   **Macroinvertebrates** | Found easily and consistently throughout the reach. | Found with little difficulty but not consistently throughout the reach. | | | Takes 10 or more minutes of extensive searching to find. | | | Macroinvertebrates are not present. |
| **3** | **2** | | | **1** | | | **0** |
| * 1. **Filamentous**   **Algae/Periphyton** | Found easily and consistently throughout the reach. | Found with little difficulty but not consistently throughout the reach. | | | Takes 10 or more minutes of extensive searching to find. | | | Filamentous algae and/or periphyton are not present. |
| **3** | **2** | | | **1** | | | **0** |
| * 1. **Differences in**   **Vegetation** | Dramatic compositional differences in vegetation are present between the stream banks and the adjacent uplands. A distict riparian vegetation corridor exists along the entire reach – riparian, aquatic, or wetland species dominate the length of the reach. | A distinct riparian vegetation corridor exists along part of the reach. Riparian vegetation is interspersed with upland vegetation along the length of the reach. | | | 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. | | | No compositional or density differences in vegetation are present between the streambanks and the adjacent uplands. |
| **3** | **2** | | | **1** | | | **0** |
| * 1. **Absence of Rooted**   **Upland Plants in**  **Streambed** | Rooted upland plants are absent within the streambed/thalweg. | There are a few rooted upland plants present within the streambed/thalweg. | | | Rooted upland plants are consistently dispersed throughout the streambed/thalweg | | | Rooted upland plants are prevalent within the streambed/thalweg. |
| **3** | **2** | | | **1** | | | **0** |
| **SUBTOTAL (#1.1 – #1.6)** | | | | | | | |  |
| **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. **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 of riffles. | | | There is no sequence exhibited. |
| **3** | **2** | | | **1** | | | **0** |
| **SUBTOTAL (#1.1 – #1.9)** | | | | | | | |  |
| **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.** | | | | | | | | |
| * 1. **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 not 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)** | | | | | | | |  |
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| ***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 not found within the study reach. | | | |
| **Present = 1.5** | | | | **Absent = 0** | | | |
| * 1. **Iron Oxidizing**   **Bacteria/Fungi** | Iron-oxidizing bacteria and/or fungi are found  within the study reach. | | | | Iron-oxidizing bacteria and/or fungi are not found  within the study reach. | | | |
| **Present = 1.5** | | | | **Absent = 0** | | | |
| **TOTAL *plus* SUPPLEMENTAL POINTS (#1.1 – #1.14)** | | | | | | | |  |

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

**Photo Descriptions and NOTES**

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| **Photo #** | **Description (US, DS, LB, RB, etc.)** | **Notes** |
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# *LEVEL 1 Field Measurements*

# Pebble Count Tally Sheet

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| --- | --- | --- | --- | --- | --- | --- |
| **Site Name:** |  |  |  | **Storet ID:** |  |  |
| **Date:** |  |  |  | **Crew:** |  |  |
|  |  |  |  |  |  |  |
| Substrate Type | Diameter  Range | | In-Channel COUNT | In-Channel % Composition | Out of Channel COUNT | Out of Channel % Composition |
| Silt/Clay | < 0.06 mm | |  |  |  |  |
| Sand | 0.06 – 2.0 mm (gritty) | |  |  |  |  |
| Gravel | 2.0 – 64 mm | |  |  |  |  |
| Cobble | 64 – 256 | |  |  |  |  |
| Boulder | > 256 mm | |  |  |  |  |
| Bedrock | --- | |  |  |  |  |

**\*\*Please be sure to measure at least 50 pebbles (10 in 5 transects or 5 in 10 transects-**

**depending on stream size) for accurate distributional representation\*\***

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| **INDICATOR #1.8 (*Floodplain and Channel Dimensions*) –**  **MEASUREMENTS & CALCULATIONS\*\*** | | | | | | | |
| **Max Depth**  **(#1)** | **Bankfull Stage**  **(#2)** | **Maximum Depth Value**  **(#3)** | **2x Maximum Depth Value**  **(#3)** | **Flood-Prone Area Location**  **(#4)** | **Flood-Prone Area Width**  **(#5)** | **Bankfull Width**  **(#6)** | **Floodplain to Active Channel**  **Ratio**  (FPA Width / Bankfull Width) |
|  |  |  |  |  |  |  |  |

**\*\*REFER to Figure 3 on page 19 for clarification**

**NMED Surface Water Quality Bureau –**

**LEVEL 2 Hydrology Determination Field Sheet**

**\*\*Borderline Cases\*\***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Date:** | | **Stream Name:** | | | **Latitude:** |
| **Evaluator(s):** | | **Site ID:** | | | **Longitude:** |
| **LEVEL 1 Total Points:** | | **Reach Description:** | | | **Drought Index (12-mo. SPI Value):** |
| **WEATHER CONDITIONS** | **NOW:**  \_\_\_ storm (heavy rain)  \_\_\_ rain (steady rain)  \_\_\_ showers (intermittent)  \_\_\_ %cloud cover  \_\_\_ clear/sunny | | **PAST 48 HOURS:**  \_\_\_ storm (heavy rain)  \_\_\_ rain (steady rain)  \_\_\_ showers (intermittent)  \_\_\_ %cloud cover  \_\_\_ clear/sunny | **Has there been a heavy rain in the last 48 hours?**  **­\_\_\_ YES \_\_\_ NO**  \*\*Field evaluations should be performed at least 48 hours after the last known major rainfall event. | |
| **OTHER:**  **Stream Modifications \_\_\_ YES \_\_\_ NO**  **Diversions \_\_\_ YES \_\_\_ NO**  **Discharges \_\_\_ YES \_\_\_ NO**  **\*\***Explain in further detail in NOTES section | |

***CHECK the appropriate rating for each indicator.***

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| **LEVEL 2 INDICATORS** | **Stream Condition** | | | |
| **Strong** | **Moderate** | **Weak** | **Poor** |
| 2.1. Water in Channel (OPTIONAL) |  |  |  |  |
| 2.2. Hyporheic Zone/Groundwater Table |  |  |  |  |
| 2.3. Bivalves | **Present =** **\_\_\_** | | **Absent =** **\_\_\_** | |
| 2.4. Amphibians | **Present =** **\_\_\_** | | **Absent =** **\_\_\_** | |
| 2.5. Macroinvertebrates (abundance/diversity)\*\* |  |  |  |  |
| 2.6. EPT Taxa\*\* | **Present =** **\_\_\_** | | **Absent =** **\_\_\_** | |
| 2.7. Fish |  |  |  |  |

\*\* Macroinvertebrates and EPT Taxa should not be rated until identification and enumeration has been performed in a laboratory setting by a qualified aquatic biologist/environmental scientist.

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| **Photo #** | **Description (US, DS, LB, RB)** | **Notes** |
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**NOTES:** (use back-side of this form for additional notes)

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**FISH SAMPLING FIELD DATA SHEET**

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| --- | --- | --- | --- | --- | --- |
| Stream name: | | | | | MSB Field No. |
| Location: | | | | | Station ID |
| Lat N\_\_\_\_\_\_\_\_\_\_\_\_\_ Lon W\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ GPS?  | | | River basin: | | |
| Elevation \_\_\_\_\_\_\_\_\_\_ m | Investigators: | | | | |
| Designated Use: | | Agency: | | | |
| Form completed by: | | Date:  Time: | | Reason for survey: | |

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| **SAMPLE COLLECTION** | **Gear**  back pack (Model: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ )  seine (Size/mesh: \_\_\_\_\_\_\_\_\_\_\_\_\_ )  other \_\_\_\_\_\_\_\_\_\_\_\_  **Block nets used?**  Upstream  Downstream  None **Barrier extant?**  Upstream  Downstream  **Sampling Duration** Start time \_\_\_\_\_\_\_\_\_\_ End time \_\_\_\_\_\_\_\_\_\_ Shock seconds \_\_\_\_\_\_\_\_\_\_  **Stream width (m)**  Max\_\_\_\_\_\_\_ Mean\_\_\_\_\_\_\_ **Reach length (m)** \_\_\_\_\_\_\_\_ **Passes:** \_\_\_\_\_\_\_\_  Specific conductance \_\_\_\_\_\_\_\_S/cm Shocker voltage\_\_\_\_\_\_\_\_\_\_ Shocker settings\_\_\_\_\_\_\_\_\_\_  Water temp \_\_\_\_\_\_\_°C Coincident with habitat survey?  Yes  No Reference reach candidate?  Yes  No |
| **HABITAT TYPES** | **Indicate the percentage of each habitat type present**   Riffles\_\_\_\_\_%  Pools\_\_\_\_\_%  Runs\_\_\_\_\_%  Snags\_\_\_\_\_%   Submerged Macrophytes\_\_\_\_\_%  Other ( )\_\_\_\_\_% |
| **GENERAL COMMENTS** |  |

| **SPECIES** | **TOTAL**  **(COUNT)** | **OPTIONAL: Length (mmTL)/Weight (g)**  **(40 SPECIMEN SUBSAMPLE)** | | | | | **ANOMALIES\*** | | | | | | | |
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| **D** | **E** | **F** | **L** | **M** | **S** | **T** | **Z** |
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**\* ANOMALY CODES:** D = deformities; E = eroded fins; F = fungus; L = lesions; M = multiple DELT anomalies; S = emaciated; T = tumor; Z = other