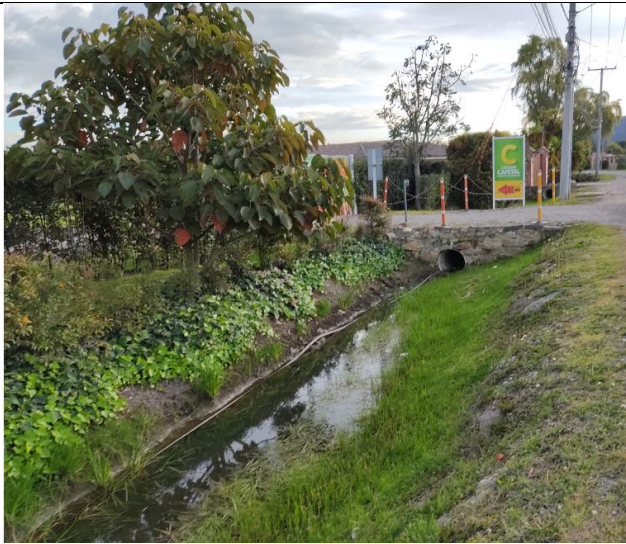
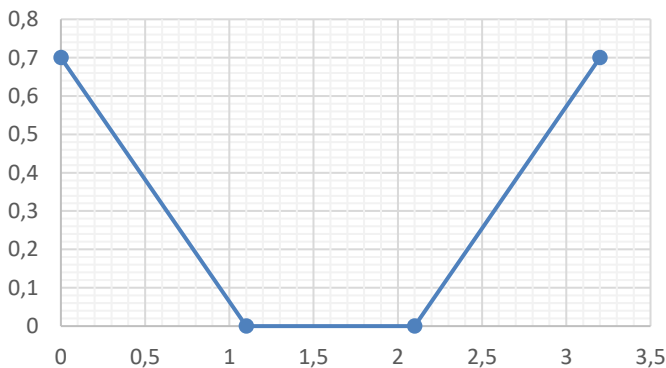
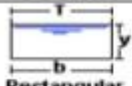
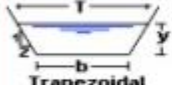


|                                                                                   |                                                                                                                                                                                                                                                 |                                                                                                                                        |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
|  | CONTRATO DE CONSULTORÍA No. 002 DE 2020                                                                                                                                                                                                         | <br><b>Arco Consultorías y Construcciones Ltda.</b> |
|                                                                                   | REVISIÓN EXCEPCIONAL DEL PLAN BÁSICO DE ORDENAMIENTO TERRITORIAL (PBOT) E INCORPORACIÓN DEL POMCA DEL RIO BOGOTÁ, REALIZACIÓN DE LOS ESTUDIOS DE AMENAZA, VULNERABILIDAD Y RIESGO (AVR) E INCORPORACIÓN, DEL MUNICIPIO DE CAJICÁ – CUNDINAMARCA |                                                                                                                                        |

| <b>NOMBRE PUNTO: P 26 d</b>                                                         |                      |                                                                                                                                                                                                                                                                                                                                                                                               |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
|-------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|------------|---|---|-----|---|-----|---|---|-----|---|---|-----|-----|
| Barrio/Centro Poblado/Vereda: Canelón                                               |                      |                                                                                                                                                                                                                                                                                                                                                                                               |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| Sistema de coordenadas (WGS84)                                                      |                      | <b>REGISTRO HISTÓRICO</b>                                                                                                                                                                                                                                                                                                                                                                     |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| Latitud: 4,915025                                                                   | Longitud: -74,038375 |                                                                                                                                                                                                                                                                                                                                                                                               |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| Sistema de coordenadas (CTM12)                                                      |                      | Nivel Observado (cm):                                                                                                                                                                                                                                                                                                                                                                         |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| X: 4884916,76983                                                                    | Y: 2101192,82354     | Nivel Observado (cm):                                                                                                                                                                                                                                                                                                                                                                         |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| CORRIENTE:                                                                          |                      | Nivel Observado (cm):                                                                                                                                                                                                                                                                                                                                                                         |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| <b>ESTRUCTURA HIDRÁULICA:</b>                                                       |                      | <b>REGISTRO FOTOGRÁFICO</b>                                                                                                                                                                                                                                                                                                                                                                   |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| Tipo: Rectangular                                                                   |                      |                                                                                                                                                                                                                                                                                                            |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| <b>Dimensiones</b>                                                                  |                      |                                                                                                                                                                                                                                                                                                                                                                                               |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| Altura(H):                                                                          | Base(b):             |                                                                                                                                                                                                                                                                                                                                                                                               | Diámetro(D): |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| 0,70                                                                                | 1 m                  |                                                                                                                                                                                                                                                                                                                                                                                               | 0,60         |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| <b>Esquema</b>                                                                      |                      | <b>OBSERVACIONES</b><br><br>Canal con poco flujo de agua, canal sin construcción, en partes presenta erosión.                                                                                                                                                                                                                                                                                 |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
|   |                      |                                                                                                                                                                                                                                                                                                                                                                                               |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| <b>SECCIÓN TRANSVERSAL</b>                                                          |                      |                                                                                                                                                                                                                                                                                                                                                                                               |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| <b>Dimensiones</b>                                                                  |                      | <b>Esquema</b>                                                                                                                                                                                                                                                                                                                                                                                |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
|  |                      | <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>ID</th> <th>DISTANCIA (m)</th> <th>ALTURA (m)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0</td> <td>0,7</td> </tr> <tr> <td>2</td> <td>1,1</td> <td>0</td> </tr> <tr> <td>3</td> <td>2,1</td> <td>0</td> </tr> <tr> <td>4</td> <td>3,2</td> <td>0,7</td> </tr> </tbody> </table> | ID           | DISTANCIA (m) | ALTURA (m) | 1 | 0 | 0,7 | 2 | 1,1 | 0 | 3 | 2,1 | 0 | 4 | 3,2 | 0,7 |
| ID                                                                                  | DISTANCIA (m)        | ALTURA (m)                                                                                                                                                                                                                                                                                                                                                                                    |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| 1                                                                                   | 0                    | 0,7                                                                                                                                                                                                                                                                                                                                                                                           |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| 2                                                                                   | 1,1                  | 0                                                                                                                                                                                                                                                                                                                                                                                             |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| 3                                                                                   | 2,1                  | 0                                                                                                                                                                                                                                                                                                                                                                                             |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |
| 4                                                                                   | 3,2                  | 0,7                                                                                                                                                                                                                                                                                                                                                                                           |              |               |            |   |   |     |   |     |   |   |     |   |   |     |     |

**NOTA:** grilla a 0.5 cm

APOYO DIDACTO PARA DUMMIES

| Tipo de sección                                                                                  | Área A (m2)                              | Perímetro mojado P (m) | Radio hidráulico Rh (m)                          | Espejo de agua T (m)                                     |
|--------------------------------------------------------------------------------------------------|------------------------------------------|------------------------|--------------------------------------------------|----------------------------------------------------------|
| <br>Rectangular | $by$                                     | $b+2y$                 | $\frac{by}{b+2y}$                                | $b$                                                      |
| <br>Trapezoidal | $(b+zy)y$                                | $b+2y\sqrt{1+z^2}$     | $\frac{(b+zy)y}{b+2y\sqrt{1+z^2}}$               | $b+2zy$                                                  |
| <br>Triangular  | $zy^2$                                   | $2y\sqrt{1+z^2}$       | $\frac{zy}{2\sqrt{1+z^2}}$                       | $2zy$                                                    |
| <br>Circular    | $\frac{(\theta-\text{sen}\theta)D^2}{8}$ | $\frac{\theta D}{2}$   | $(1-\frac{\text{sen}\theta}{\theta})\frac{D}{4}$ | $(\frac{\text{sen}\theta}{2})D$<br>ó<br>$2\sqrt{y(D-y)}$ |
| <br>Parabólica  | $\frac{2}{3}Ty$                          | $T+\frac{8y^2}{3T}$    | $\frac{2T^2y}{3T+8y^2}$                          | $\frac{3A}{2y}$                                          |

| <b>NOMBRE PUNTO:</b> Aroma 2                                                                                                                                                                       |                         | <b>REGISTRO FOTOGRÁFICO</b>                                                                                                                                                  |  |              |            |      |    |      |   |      |   |      |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------|------------|------|----|------|---|------|---|------|----|
| <b>Municipio:</b> DUITAMA <b>Barrio/Centro Poblado/Vereda:</b> Barrio La Perla                                                                                                                     |                         | <br> |  |              |            |      |    |      |   |      |   |      |    |
| <b>Sistema de coordenadas:</b> WGS 84                                                                                                                                                              |                         |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |
| <b>X:</b> 5°49'11.1" N                                                                                                                                                                             | <b>Y:</b> 73°01'38.0" W |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |
| <b>Z:</b> 2504 m.s.n.m.                                                                                                                                                                            |                         |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |
| <b>CORRIENTE:</b> Quebrada La Aroma                                                                                                                                                                |                         | <b>OBSERVACIONES</b><br><br>Estructura Hidráulica- Muro de Contención – limita la vía de la Aroma.                                                                           |  |              |            |      |    |      |   |      |   |      |    |
| <b>DIMENSIONES:</b><br>Nivel Actual: cm/Nivel Observado: cm                                                                                                                                        |                         |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |
| <table><tr><th>DISTANCIA(m)</th><th>ALTURA (m)</th></tr><tr><td>1. 0</td><td>14</td></tr><tr><td>2. 0</td><td>0</td></tr><tr><td>3. 6</td><td>0</td></tr><tr><td>4. 6</td><td>14</td></tr></table> |                         |                                                                                                                                                                              |  | DISTANCIA(m) | ALTURA (m) | 1. 0 | 14 | 2. 0 | 0 | 3. 6 | 0 | 4. 6 | 14 |
| DISTANCIA(m)                                                                                                                                                                                       | ALTURA (m)              |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |
| 1. 0                                                                                                                                                                                               | 14                      |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |
| 2. 0                                                                                                                                                                                               | 0                       |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |
| 3. 6                                                                                                                                                                                               | 0                       |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |
| 4. 6                                                                                                                                                                                               | 14                      |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |
| <b>ESTRUCTURA HIDRÁULICA:</b><br>Largo: 13 metros<br>Ancho: 0,3 metros<br>Alto: 6 metros<br>Muro de contención                                                                                     |                         |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |
| <b>ESQUEMA:</b><br>                                                                                             |                         |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |
| <b>AROMA 2</b><br>                                                                                              |                         |                                                                                                                                                                              |  |              |            |      |    |      |   |      |   |      |    |

Ilustración 5. Ejemplo de bitácoras utilizadas en la labor de campo.