Needs Survey Training

Source to Tap: Answers
Example Source Project:

- A system’s master plan, dated March 2014, includes the construction of a new 2.0 MGD surface water intake. This is needed to replace one that has been damaged from ice flows. The estimated cost is $1.4 million.

Source Example

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type of Need</th>
<th>Reason for Need</th>
<th>N.S.E.W</th>
<th>C of E</th>
<th>Regulation</th>
<th>Design Capacity</th>
<th>Diameter</th>
<th>Length</th>
<th>Number Hired</th>
<th>Cost Estimate</th>
<th>Cost Date</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>New Surface Water Intake</td>
<td>R7</td>
<td>A5, A6</td>
<td>R</td>
<td>C</td>
<td>1A</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>1,400,000</td>
<td>3/2014</td>
<td>1</td>
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</tbody>
</table>

Name: “New Surface Water Intake”

Type: R7  Parameter: 2.0 MGD
Reason: A5, A6  Cost: $1,400,000
Description: R  Date: 3/2014
Current/Future: C  Documentation: 1
Regulation: 1A
Example Treatment Project #1

- The minutes of a town board meeting discuss the recent solicitation for bids for iron removal treatment to address water quality problems related to taste issues and iron staining.

- The board moved to accept the low bid of $690,000 and sign the contract for the construction of a 1.0 MGD manganese green sand iron removal treatment facility.

### Treatment Example #1

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type</th>
<th>Reason for Need</th>
<th>N.E.P.H.</th>
<th>C or E</th>
<th>Regulation</th>
<th>Design Capacity</th>
<th>Diameter</th>
<th>Length</th>
<th>Number Needed</th>
<th>Cost Estimate</th>
<th>Cost Date</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1030</td>
<td>Iron Removal Plant</td>
<td>T20</td>
<td>A7</td>
<td>N</td>
<td>C</td>
<td>2A</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td>$690,000</td>
<td>08/2014</td>
<td>8</td>
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</table>

**Name:** “Iron Removal Plant”

- **Type:** T20
- **Parameter:** 1.0 MGD
- **Reason:** A7
- **Cost:** $690,000
- **Description:** N
- **Date:** 08/2014
- **Current/Future:** C
- **Documentation:** 8
- **Regulation:** 2A
Example Treatment Project #2

• A system states that their 10 MGD conventional filtration plant needs
  – replacement of filter media
  – rehabilitation of the 200,000 gallon clearwell
  – replace all six 3-MGD raw water pumps
  – upgrade to UV to control Cryptosporidium

• They have no independent documentation of need.
• They have no costs for these projects.

Treatment Example #2

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type</th>
<th>Reason for Need</th>
<th>Regulation</th>
<th>Design Capacity</th>
<th>Diameter</th>
<th>Length</th>
<th>Number Needed</th>
<th>Cost Estimate</th>
<th>Cost Date</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>Treatment/Plant Rehab</td>
<td>T10</td>
<td>A1, A6</td>
<td>H</td>
<td>16</td>
<td>10</td>
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<td></td>
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<td></td>
<td>11</td>
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</tbody>
</table>

Name: “Treatment Plant Rehab”

Type          T10  Regulation  1A
Reason        A1, A6 Parameter  10 MGD
Description   H    Cost       -
Current/Future C    Documentation  11
Example Treatment Project #3

- A system’s CIP indicates that their 10 MGD conventional filtration plant needs
  - replacement of filter media
  - rehabilitation of the 200,000 gallon clearwell
  - replace all six 3-MGD raw water pumps
  - upgrade to UV to control *Giardia*

- The CIP did not provide costs for these projects.

### Treatment Example #3

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type</th>
<th>Reason for Need</th>
<th>S.L.P.A.</th>
<th>C or E</th>
<th>Regulative</th>
<th>Design Capacity</th>
<th>Diameter</th>
<th>Length</th>
<th>Number Needed</th>
<th>Cost Estimate</th>
<th>Cost Save</th>
<th>Documentation</th>
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</thead>
<tbody>
<tr>
<td>1000</td>
<td>Treatment Plant Upgrade</td>
<td>T10</td>
<td>A1, A6</td>
<td>E</td>
<td>G</td>
<td>1A</td>
<td>10</td>
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</tbody>
</table>

**Name:** “Treatment Plant Upgrade”

**Type:** T10  **Regulation:** 1A

**Reason:** A1, A6  **Parameter:** 10 MGD

**Description:** E  **Cost:** -

**Current/Future:** C  **Documentation:** 1
Example Treatment Project #4

- A system’s January 2014 CIP indicates that their 10 MGD conventional filtration plant needs
  - replacement of filter media $2,780,000
  - rehabilitation of 200,000 gallon clearwell $520,000
  - replace all six 3-MGD raw water pumps $1,050,000
  - upgrade to UV to control Giardia $1,495,000

### Treatment Example #4

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type of Need</th>
<th>Reason for Need</th>
<th>N.D.P.A.</th>
<th>Z or Z</th>
<th>Regulations</th>
<th>Design Capacity</th>
<th>Diameter</th>
<th>Length</th>
<th>Number Needed</th>
<th>Cost Estimate</th>
<th>Cost Date</th>
<th>Documentation</th>
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</thead>
<tbody>
<tr>
<td>1000</td>
<td>Replace Filter Media</td>
<td>T42</td>
<td>A1, A6</td>
<td>R</td>
<td>C</td>
<td>14</td>
<td>10</td>
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<td>1</td>
<td></td>
<td>$2,780,000</td>
<td>01/02/14</td>
<td>1</td>
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<tr>
<td>1001</td>
<td>Rehab Clearwell</td>
<td>T7</td>
<td>A1, A6</td>
<td>H</td>
<td>C</td>
<td>14</td>
<td>0.2</td>
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<td>1</td>
<td></td>
<td>$520,000</td>
<td>01/02/14</td>
<td>1</td>
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<tr>
<td>1002</td>
<td>Replace Raw Water Pumps</td>
<td>R8</td>
<td>A1, A6</td>
<td>R</td>
<td>C</td>
<td>14</td>
<td>3</td>
<td></td>
<td>6</td>
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<td>$1,050,000</td>
<td>01/02/14</td>
<td>1</td>
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<tr>
<td>1003</td>
<td>U.V</td>
<td>T6</td>
<td>A1, A6</td>
<td>N</td>
<td>C</td>
<td>14</td>
<td>10</td>
<td></td>
<td>1</td>
<td></td>
<td>$1,495,000</td>
<td>01/02/14</td>
<td>1</td>
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</table>
Example Storage Project #1

- The system has 3 elevated storage tanks each with a capacity of 0.5 MG. They submit survey-generated documentation indicating that they will all require rehab within 20 years.

Storage Example #1

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type</th>
<th>Reason for Need</th>
<th>S or E</th>
<th>Regulation</th>
<th>Design Capacity</th>
<th>Length</th>
<th>Number Needed</th>
<th>Cost Estimate</th>
<th>Cost Date</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1003</td>
<td>Elevated Storage Tanks</td>
<td>S1</td>
<td>A1</td>
<td>F</td>
<td>4A</td>
<td>0.5</td>
<td>3</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Name: “Elevated Storage Tanks”

Type        | S1          | Regulation | 4A
Reason      | A1          | Parameter  | 0.5 MG
Description | H           | Number needed | 3
Current/Future | F             | Documentation | 11
Example Storage Project #2

- A system’s CIP indicates that their old 0.75 MG elevated storage tank is no longer structurally sound and due to past growth the system needs considerably more storage. They intend to take down the old tank and replace it with a new 1.5 MG elevated tank.

Storage Example #2

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type of Need</th>
<th>Reason for Need</th>
<th>N.E.P.H.</th>
<th>C or E</th>
<th>Regulation</th>
<th>Design Capacity</th>
<th>Diameter</th>
<th>Length</th>
<th>Number Needed</th>
<th>Cost Est.</th>
<th>Cost Done</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>Elevated Storage Tank</td>
<td>S1</td>
<td>A1, A3</td>
<td>R</td>
<td>C</td>
<td>4A</td>
<td>1.5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Name: “Elevated Storage Tank”

Type: S1
Reason: A1, A3
Description: R
Current/Future: C
Example Pump Station Project

- The system reports they have 4 booster pump stations, each with a capacity of 0.5 MGD. They are all currently adequate but will need to be rehabilitated within 20 years. The system did not provide a cost.

Pump Station Example

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type</th>
<th>Reason for Need</th>
<th>H x L, Y</th>
<th>Regulation</th>
<th>Design Capacity</th>
<th>Diameter</th>
<th>Length</th>
<th>Number Needed</th>
<th>Cost Estimate</th>
<th>Cost Issue</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>Booster Pump Stations</td>
<td>P2</td>
<td>A1</td>
<td>H</td>
<td>F</td>
<td>4A</td>
<td>0.5</td>
<td>4</td>
<td>4</td>
<td>11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Name: “Booster Pump Stations”

- Type: P2
- Regulation: 4A
- Reason: A1
- Parameter: 0.5 MGD
- Description: Number Needed: 4
- Current/Future: Documentation: 11
Example Pipe Project #1

- A Capital Improvement Plan, dated November 2013, includes the replacement of 25,000 feet of 8-inch cast iron pipe in excess of 70 years old. The CIP estimates that the cost is $3 million.

### Pipe Example #1

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type of Need</th>
<th>Reason for Need</th>
<th>L.E.P.E. Code</th>
<th>Regulations</th>
<th>Design Capacity</th>
<th>Diameter</th>
<th>Length</th>
<th>Number Needed</th>
<th>Cost Estimate</th>
<th>Cost Code</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>Replacement of Cast Iron Pipe</td>
<td>M1</td>
<td>A1</td>
<td>R</td>
<td>C</td>
<td>4A</td>
<td>8</td>
<td>25,000</td>
<td>$3,000,000</td>
<td>11/2013</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Name: “Replacement of Cast Iron Pipe”

- **Type**: M1
- **Reason**: A1
- **Description**: R
- **Current/Future**: C
- **Regulation**: 4A
- **Diameter**: 8 inches
- **Length**: 25,000 ft
- **Cost**: $3,000,000
- **Date**: 11/2013
- **Documentation**: 1
Example Pipe Project #2

• A system records on their inventory that they have 120 miles of pipe in their system. They indicate in survey-generated documentation they need the following pipe projects
  – Replacement of 20,000 feet of 12"
  – Replacement of 43,000 feet of 8 “
  – Replacement of 63,720 feet of 6”

(These projects represent 20% of total pipe in the system)

Pipe Example #2

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type of Need</th>
<th>Size of E</th>
<th>Design Capacity</th>
<th>Diameter</th>
<th>Length</th>
<th>Number Needed</th>
<th>Cost Estimate</th>
<th>Core Date</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>12” Pipe Replacement</td>
<td>B1</td>
<td>A1</td>
<td>R</td>
<td>C</td>
<td>4A</td>
<td>12</td>
<td>10,000</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>8” Pipe Replacement</td>
<td>B1</td>
<td>A1</td>
<td>R</td>
<td>C</td>
<td>4A</td>
<td>8</td>
<td>21,500</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>6” Pipe Replacement</td>
<td>B1</td>
<td>A1</td>
<td>R</td>
<td>C</td>
<td>4A</td>
<td>6</td>
<td>31,860</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

• List three projects
  Replacement of 10,000 feet of 12”
  Replacement of 21,500 feet of 8 “
  Replacement of 31,860 feet of 6”
• Reduced to 10% because no independent doc. provided
Pipe Example #3

- A system records on their inventory that they have 120 miles of pipe in their system. Their Capital Improvement Plan indicates they need the following pipe projects
  - Replacement of 20,000 feet of 12”
  - Replacement of 43,000 feet of 8 “
  - Replacement of 63,720 feet of 6”

(These projects represent 20% of total pipe in the system)

---

### Pipe Example #3

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type of Need</th>
<th>Reason for Need</th>
<th>N/ERU</th>
<th>C or E</th>
<th>Regulation</th>
<th>Design Capacity</th>
<th>Diameter</th>
<th>Length</th>
<th>Number Unwinded</th>
<th>Cost Estimate</th>
<th>Cost Code</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>12” Pipe Replacement</td>
<td>III A1</td>
<td>R C 4A</td>
<td>12</td>
<td>20,000</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>8” Pipe Replacement</td>
<td>III A1</td>
<td>R C 4A</td>
<td>8</td>
<td>43,000</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>6” Pipe Replacement</td>
<td>III A1</td>
<td>R C 4A</td>
<td>6</td>
<td>63,720</td>
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<td></td>
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</tbody>
</table>

- Pipe projects are for 126,720 ft or 20% of the total pipe
- All pipe is included since all pipe projects have independent documentation
Pipe Example #4

• A system has 200 miles of pipe (1,056,000 ft)
• Their 5-year CIP shows an annual pipe replacement program at $2 M per year.
• System indicates that this is an ongoing program that will last more than 20 years at the same rate.
• System enters a project for $40 M (no length)

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type of Need</th>
<th>Reason for Need</th>
<th>N or P</th>
<th>C or S</th>
<th>Regulation</th>
<th>Design Capacity</th>
<th>Diameter</th>
<th>Length</th>
<th>Number Needed</th>
<th>Cost Estimate</th>
<th>Cost Date</th>
<th>Documentation</th>
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</thead>
<tbody>
<tr>
<td>2000</td>
<td>Pipe Replacement Program</td>
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<td>R</td>
<td>C</td>
<td>4A</td>
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<td></td>
<td></td>
<td></td>
<td>$40,000,000</td>
<td>01/2012</td>
<td>1, 10</td>
</tr>
</tbody>
</table>

• System or state demonstrated that this replacement rate is expected for the full 20 years
• Reviewer will be looking for indication that same rate will be sustained for full 20 years
Example Additional Distribution System Project

- A system has 4,000 connections and they will need to replace meters at each connection sometime in the next 20 years. The meter sizes include: 3,500 @ 5/8-inch, 450 @ 3/4-inch, and 50 @ 1-inch.

Additional Distribution Needs Example

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Type of Meter</th>
<th>Reason for Need</th>
<th>N &amp; E</th>
<th>C &amp; E</th>
<th>Design Capacity</th>
<th>Diameter Needed</th>
<th>Length</th>
<th>Number Needed</th>
<th>Cost Estimate</th>
<th>Cost Code</th>
<th>Documentation</th>
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<tbody>
<tr>
<td>3000</td>
<td>5/8&quot; Meters</td>
<td>MB</td>
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<td>R</td>
<td>F</td>
<td>4A</td>
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<td>2,500</td>
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<td></td>
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<tr>
<td>3001</td>
<td>3/4&quot; Meters</td>
<td>MB</td>
<td>A1</td>
<td>R</td>
<td>F</td>
<td>6A</td>
<td>0.75</td>
<td>650</td>
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<tr>
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<td>MB</td>
<td>A1</td>
<td>R</td>
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<td>1</td>
<td>50</td>
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</tbody>
</table>

- List three projects at each meter size (decimals, not fractions)