Water Supply Planning Unit
Technical Projects Update

Metropolitan Area Water Supply Advisory Committee

January 22, 2014

METROPOLITAN COUNCIL

Assessing Water Conservation by Private Industrial Water Users

Metropolitan Area Water Supply Advisory Committee

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Scope

- Permitted private industrial water users: 101 billion gallons/year statewide
- 543 well permits
- We don’t know much about them
  - Are significant business decisions guided by water use considerations?
  - Is the cost of water treatment an important criterion for business decision-making?
  - Who does your business rely on or trust for water treatment information: consultants, vendors, state agencies, industry trade groups, academics, peers

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Scope

- Partnered with the Minnesota Technical Assistance Program (MnTAP)
- A twenty-five year track record of helping Minnesota businesses improve efficiency
- Project commenced in 2011
  - Task 1: Survey
  - Task 2: On-site water assessments
  - Task 3: Summer engineering internships

Minnesota Technical Assistance Program

UNIVERSITY OF MINNESOTA

Driven to Discover℠

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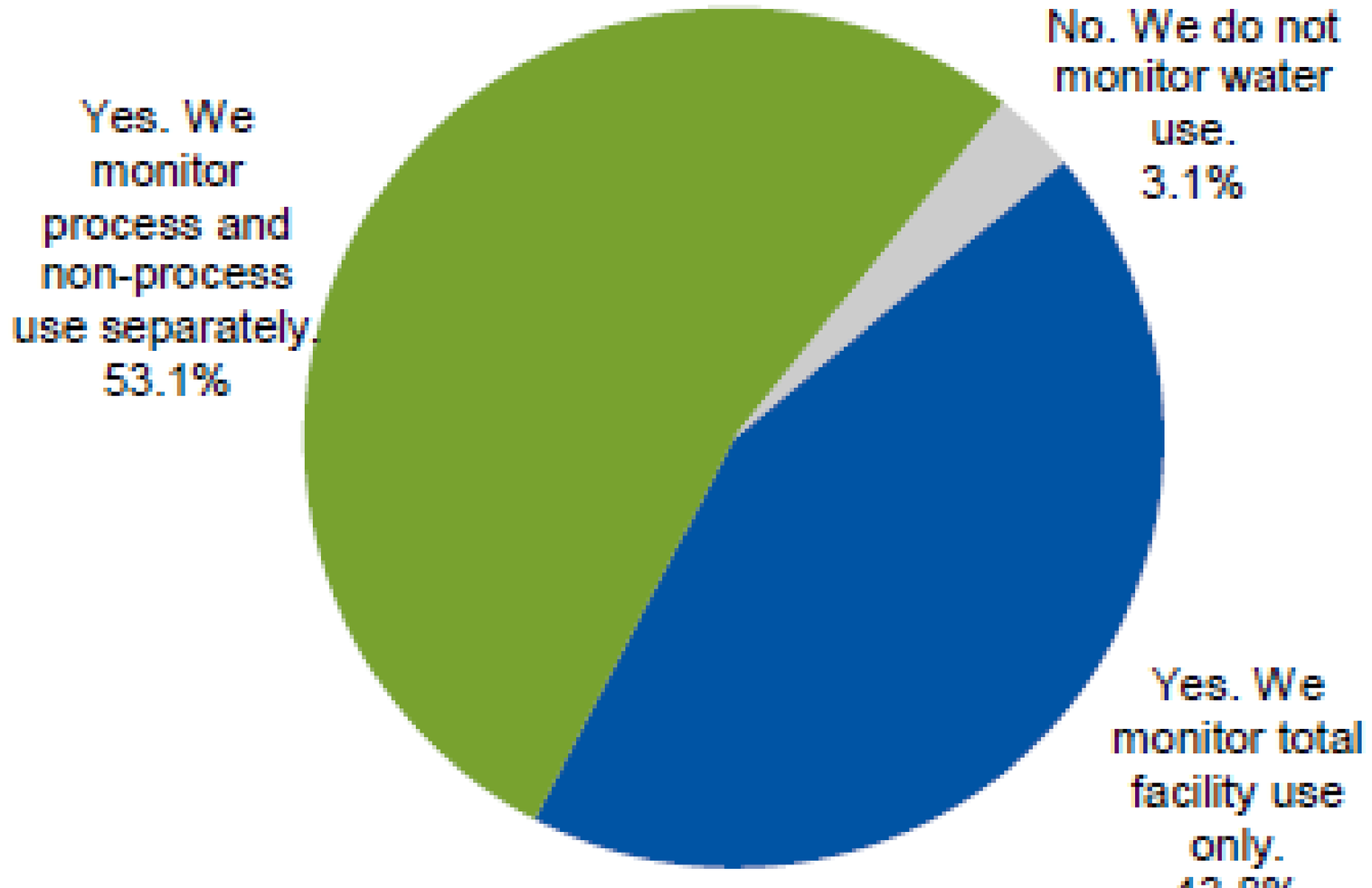
Survey

- 84 candidate companies surveyed - anonymously
- 33 surveys completed (39% response rate)
- 12 (assessment), 14 (intern)
- Many types of industries responded



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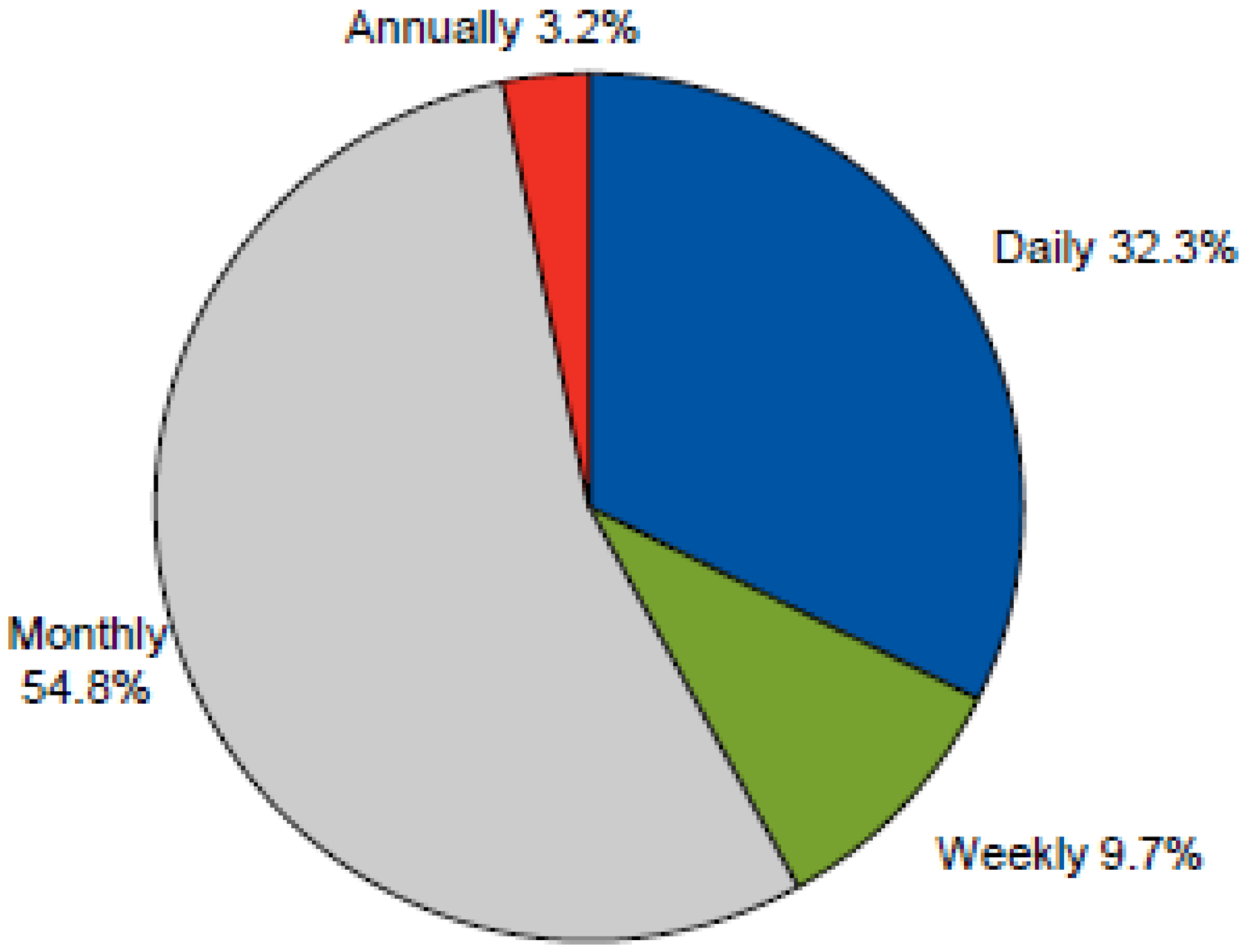
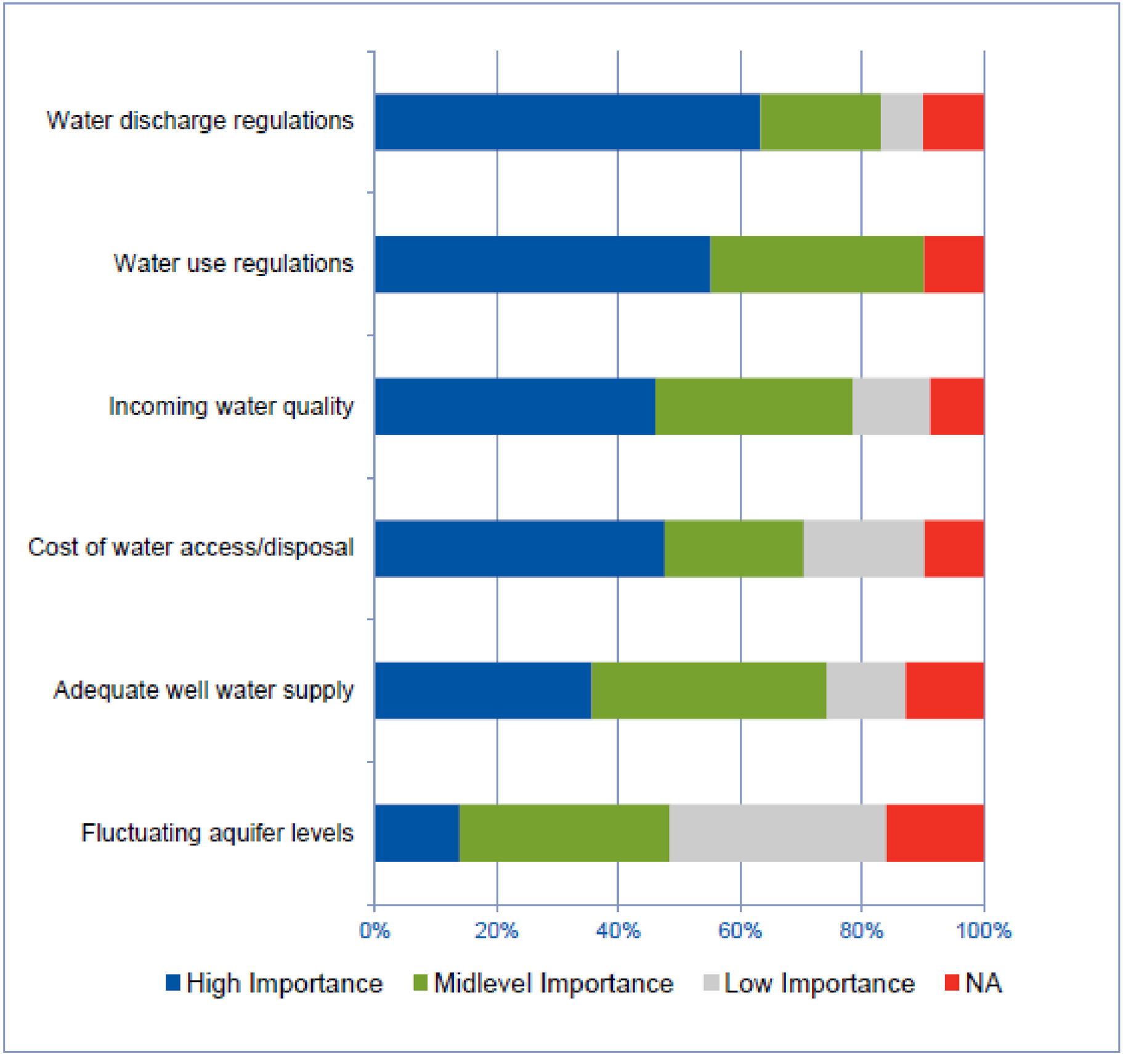
Survey

How often do you monitor water use in your facility?

Survey page 4 Question 1.



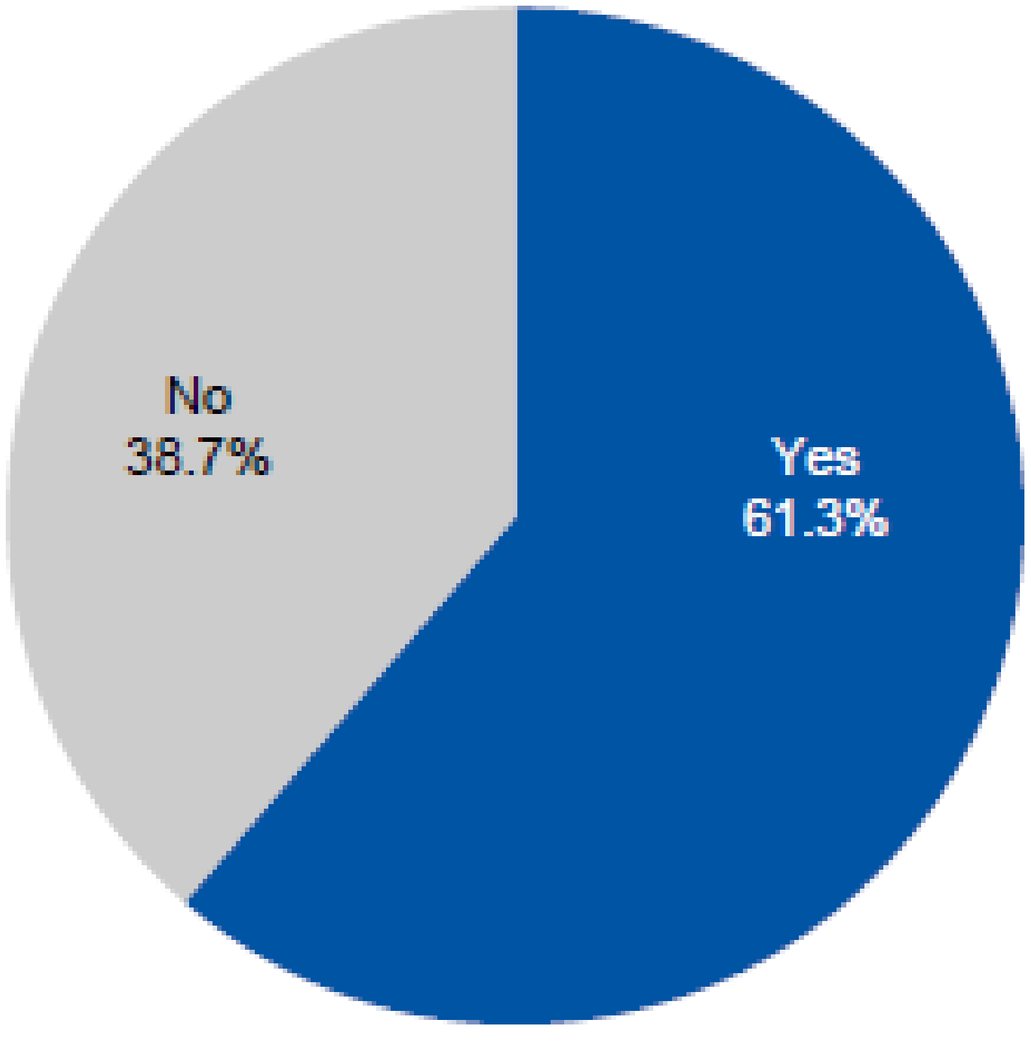
Survey


Water discharge regulations
Water use regulations
Incoming water quality
Cost of water access/disposal
Adequate well water supply
Fluctuating aquifer levels
0%
20%
40%
60%
80%
100%
High Importance
Midlevel Importance
Low Importance
NA

Survey

Has your company investigated water conservation opportunities like reuse and recycling?

Survey page 6 Question 4.



Survey

- 42.5% have no water conservation initiatives
- 45% of water measurement is facility-wide
- Water permitting costs are not a constraint
- Water treatment costs are a concern
- Wastewater discharge regulations are a concern

Assessments

- MnTAP completed 7 on-site assessments
- Six food-related facilities
- One metal fabrication facility
- Numerous water conservation opportunities identified
  - Potential 50% reduction at one facility
  - Annual savings of 71.9 million gallons (2.6% of total 2010 industrial well water use)

Gedney Foods, Chaska

- Pickling Plant
  - Fermented
  - Fresh Pack
  - Relish, Condiments, Preservatives

Gedney Foods, Chaska

Recommendation	Environmental Impact	Annual Savings	Status
Reroute pasteurizer overflow	22,000 therms; 3,085,000 gallons water	$10,600	Planned
Reuse fermentation tank brine	213,000 lbs. salt; 214,500 gallons water	$21,300	Testing in progress
Reduce salt storage level	364,500 lbs. salt; 383,000 gallons water	$36,450	Testing in progress
Reduce fermentation and salt storage level	460,500 lbs. salt; 543,200 gallons water	$46,500	Testing in progress
Fix water leaks	2,220,400 gallons water; 790 therms	$380	Planned

Michael Foods- Northern Star, Chaska

- Northern Star Company is a division of Michael Foods
- Produce potato products for retail and food service needs

Michael Foods- Northern Star, Chaska

Recommendation	Water Saved (per year)	Net savings (per year)	Status
Repair broken solenoids	1.4 million gallons	$6,000	Completed
Replace basket washer float	6.7 million gallons	$29,000	Completed
Reduce peeler spray time	93,000 gallons	$400	Completed
Reduce potato washer water level	2.8 million gallons	$12,000	Completed
Reuse RO reject water	5.25 million gallons	$22,600	Completed

Federal Cartridge, Anoka

Federal Cartridge Overview

Small arms ammunition manufacturer

Divided into rimfire, centerfire, and shotshell areas

Headquartered in Anoka, MN on 175 acres with 1,700+ employees.

RIMFIRE

RIFLE

HANDGUN

SHOTSHELL

Federal Cartridge, Anoka

	Recommendation	Waste reduced (GPY)	Annual Savings	Status
1.	Remove redundant rinse cycle	652,200	$9,500	In progress
2.	Install faucet control	2,803,000	$40,900	Approved
3.	Install conductivity meter control	? Current flows @11,520 GPD	?	Equipment delivered
4.	Install automatic shut-offs on washers	778,500	$11,400	Waiting for Electrical
5.	Fix faucet leak	55,500	$800	Completed
6.	Recycle effluent to clean sand filters	1,752,000	$28,300	Waiting for Plumbing
9.	Invest in a chiller recycle loop	54,750	$11,700	Sent in purchase request
10.	Recycle rinse water used for cooling	692,000	$10,600	Awaiting approval
Total Water Conservation		7 million gallons water	$113,200	8-10% of facility water use

Project Summary

- 44 million gallons of water/yr saved at 3 companies with summer interns
- 71.9 million gallons of water/yr identified at 7 other companies in one-day assessments
- $360,430/yr of cost savings
- 3 interns funded, but 14 were requested
- Significant interest in water conservation

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Lowertown Ballpark Rainwater Harvesting and Reuse

Metropolitan Area Water Supply Advisory Committee

January 22, 2014

Opportunity

- Metro Transit OMF
  - 4 acres of roof
  - Currently piped to Mississippi River
  - 2” rainfall = 226,000 gallons
- Lowertown Ballpark
  - 120,000 square feet of irrigated ballfield
  - 1” per week irrigation = 75,000 gallons/week
  - Toilets inside stadium
- Located directly adjacent to each other
- Excellent opportunity to reduce potable water use for irrigation

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Site Plan

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Lowertown Ballpark

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Operations and Maintenance Facility

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Concept

- Harvest rainwater from 2 acres of OMF roof
- Pipe rainwater to north side of OMF
- Deliver rainwater to Lowertown Ballpark
- City designs and installs rainwater reuse system
  - Ballfield irrigation
  - Non-potable use in bathrooms

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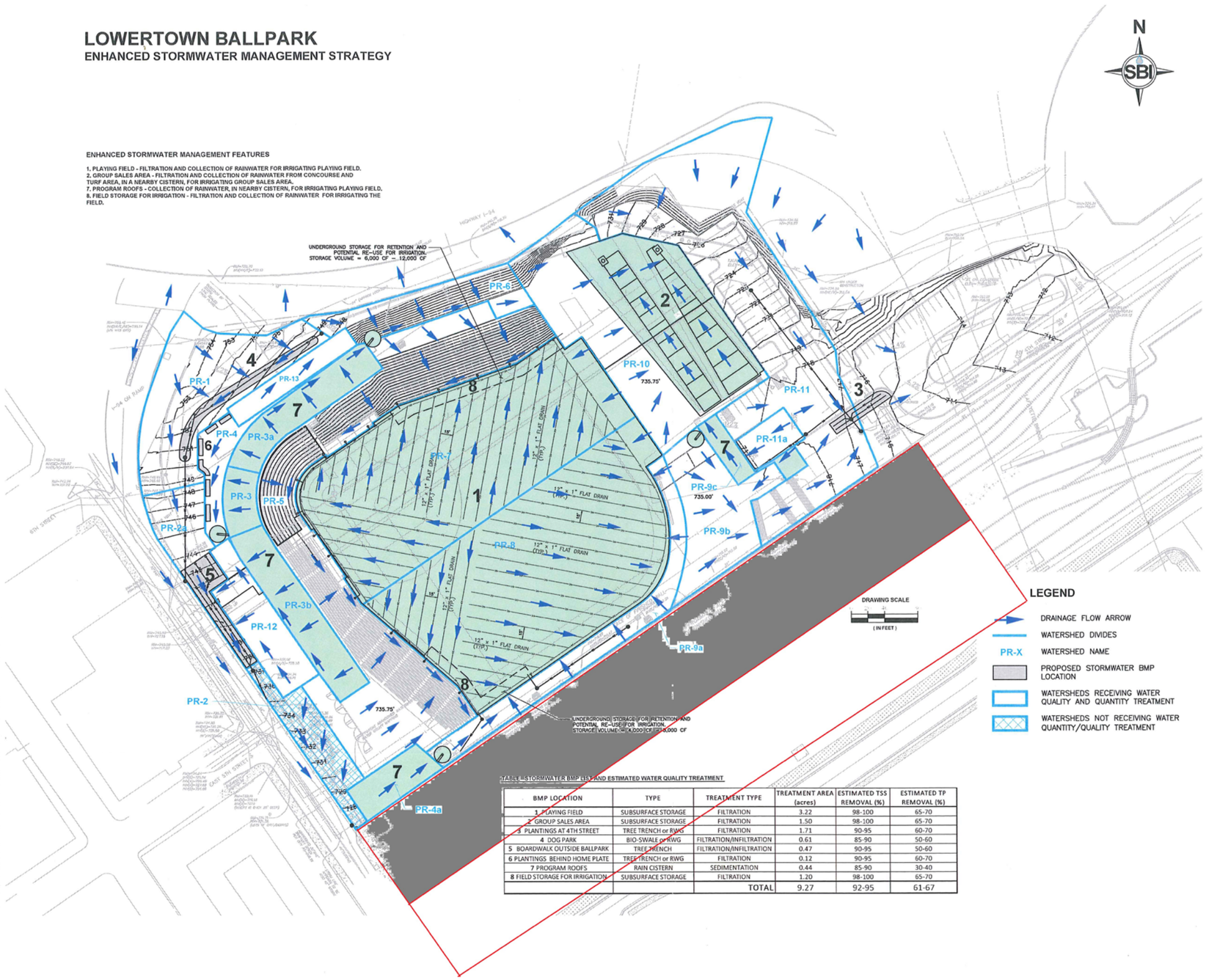
Plan View

LOWERTOWN BALLPARK
ENHANCED STORMWATER MANAGEMENT STRATEGY

ENHANCED STORMWATER MANAGEMENT FEATURES

1. PLAYING FIELD - FILTRATION AND COLLECTION OF RAINWATER FOR IRRIGATING PLAYING FIELD.
2. GROUP SALES AREA - FILTRATION AND COLLECTION OF RAINWATER FROM CONCOURSE AND TURF AREA, IN A NEARBY CISTERN, FOR IRRIGATING GROUP SALES AREA.
7. PROGRAM ROOFS - COLLECTION OF RAINWATER, IN NEARBY CISTERN, FOR IRRIGATING PLAYING FIELD.
8. FIELD STORAGE FOR IRRIGATION - FILTRATION AND COLLECTION OF RAINWATER FOR IRRIGATING THE FIELD.



LEGEND

- DRAINAGE FLOW ARROW
- WATERSHED DIVIDES
- PR-X WATERSHED NAME
- PROPOSED STORMWATER BMP LOCATION
- WATERSHEDS RECEIVING WATER QUALITY AND QUANTITY TREATMENT
- WATERSHEDS NOT RECEIVING WATER QUANTITY/QUALITY TREATMENT

TABLE - STORMWATER BMP TYPES AND ESTIMATED WATER QUALITY TREATMENT

BMP LOCATION	TYPE	TREATMENT TYPE	TREATMENT AREA (acres)	ESTIMATED TSS REMOVAL (%)	ESTIMATED TP REMOVAL (%)
1 PLAYING FIELD	SUBSURFACE STORAGE	FILTRATION	3.22	98-100	65-70
2 GROUP SALES AREA	SUBSURFACE STORAGE	FILTRATION	1.50	98-100	65-70
3 PLANTINGS AT 4TH STREET	TREE TRENCH or RWG	FILTRATION	1.71	90-95	60-70
4 DOG PARK	BIO-SWALE or RWG	FILTRATION/INFILTRATION	0.61	85-90	50-60
5 BOARDWALK OUTSIDE BALLPARK	TREE TRENCH	FILTRATION/INFILTRATION	0.47	90-95	50-60
6 PLANTINGS BEHIND HOME PLATE	TREE TRENCH or RWG	FILTRATION	0.12	90-95	60-70
7 PROGRAM ROOFS	RAIN CISTERN	SEDIMENTATION	0.44	85-90	30-40
8 FIELD STORAGE FOR IRRIGATION	SUBSURFACE STORAGE	FILTRATION	1.20	98-100	65-70
		TOTAL	9.27	92-95	61-67

RYAN
BUILDING LASTING RELATIONSHIPS

RYAN A+E, INC.
50 South Tenth Street, Suite 300
Minneapolis, MN 55403-2012
612-492-4000 tel
612-492-3000 fax

Solution Blue Inc.
318 Cedar Street
Saint Paul, MN 55101
office: 612-294-0338

PROJECT NAME
LOWERTOWN BALLPARK

LOCATION
ST. PAUL, MN

ISSUE RECORD		
ISSUE #	DATE	DESCRIPTION
1	8/14/13	CRWD MEETING #2

8/14/2013 11:56:53 AM

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

ENGINEER'S NAME

REGISTRATION NO. DATE

SHEET TITLE
ENHANCED STORMWATER MANAGEMENT WATERSHEDS & DRAINAGE FLOW

SHEET NO.
X.X

DRAWN BY MJH | CHECKED BY

JOB NO. 130401 | DATE

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Timeline and Challenges

- OMF roof re-construction in late summer 2014
- After completion of stadium reuse system
- After Green Line has begun operations

- Working on agreement with City
- Coordinating with Metro Transit
- Scheduling of OMF roof re-construction will be closely coordinated to minimize disruption to Green Line operations

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Regional Benefits

- Showcase rainwater harvesting and reuse system
- Significant reduction in potable water use for irrigation

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