

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



MaP Testing's 8-year Anniversary:

**A proven process for development & implementation
of meaningful product performance standards**

A historical perspective & update on MaP Testing

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Origin of a problem...and a solution!

- Fed Govt mandates 1.6-gal maximum flush - 1994
- Early U.S. 1.6-gal siphonic toilets did not flush well
- Why? Because many mfrs simply converted a 3.5-gallon toilet to flush with 1.6 gallons
 - Little engineering or hydraulic redesign - same tank size
 - Replaced buoyant flapper with “early closing” flapper
 - No rigorous performance requirements
- PLUS, many models could be adjusted to increase the flush volume back to 3 - 4 gals!

Current Certification Process - 3 major problems remain today!!

1. Testing fails to replicate “real world” conditions

- Sponges?
- Paper wads....maybe!
- Granules?
- Plastic balls?

2. 100% removal not required!!

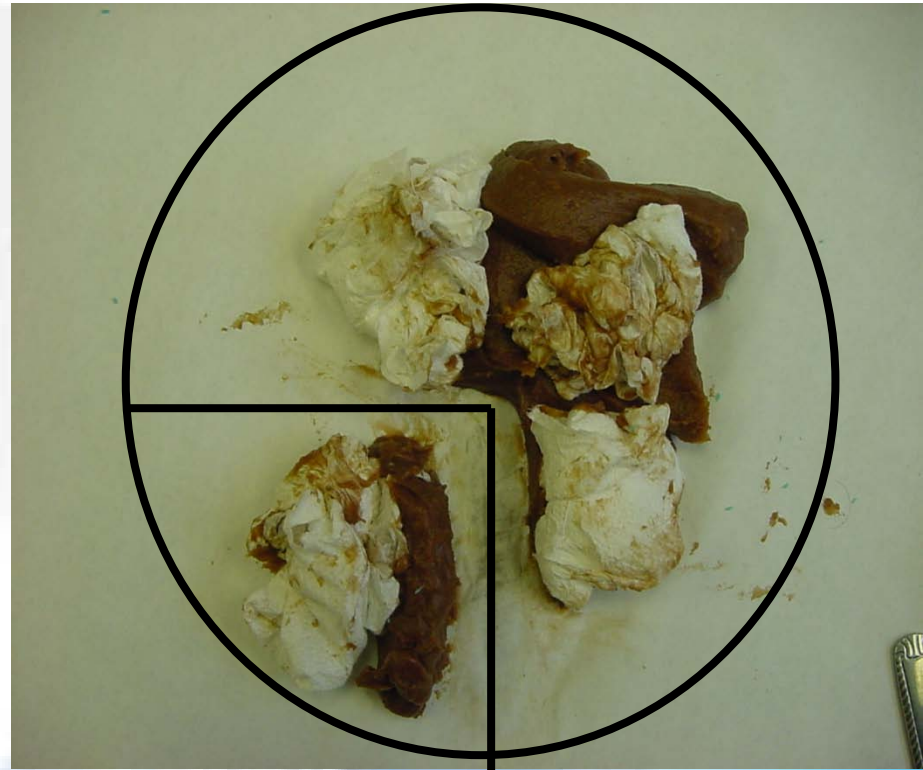
3. Pass/fail only - no rating or ranking of performance for consumers

Expect to resolve shortly via ASME / CSA Standards.



Certification in North America

- Only 22 of 28 media required to clear fixture - ~80%!!
- Question: Would a consumer be satisfied with a toilet that cleared only 80% of waste?



Like saying....

✓ Pilot to passengers:

“Folks, we’re only going to use 3 of our 4 engines - but we’ll be OK...”

✓ Car salesman to customer:

“The brakes on this vehicle will stop the car about 80% of the time!”

✓ Plumber to homeowner:

“This toilet should remove about 80% of the waste!”

Results...

- ✓ Early ULFTs (1.6 gallon) = performance problems
 - ✓ Water utility complaints about sustainability of savings
 - ✓ Customer complaints about flush performance
 - ✓ Outcome: Manufacturers started to get “message” and began developing better products
- ✓ ALSO..... water utility industry steps up to address:
 - ✓ Sustainability of water savings (flappers & adjustability)
 - ✓ Flush performance (customer satisfaction)

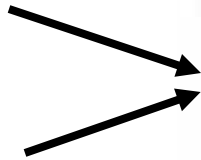
Three Water utility “responses”...

- ✓ 2000 - Los Angeles Supplementary Purchase Specification (L.A. SPS) for tank-type toilets
 - Mandate durable flappers
 - Limit flush volume adjustability
 - Require marking with flapper part number.
- ✓ 2002/03 - Maximum Performance (MaP) testing
 - Addresses flush performance issues
- ✓ 2005 - UNAR developed for W-E programs

UNAR is developed

(Uniform North American Requirements)

LA SPS



MaP

UNAR → WaterSense®

ULFTs & HETs

HETs



Maximum Performance (MaP) Testing of Popular Toilet Models

- Project sponsored by 22 water utilities and agencies in U.S and Canada
- Purposes:
 - Give consumers information they needed / wanted on toilet flush performance
 - Provide water conservation programs with info necessary to populate their approved “lists”

Maximum Performance Testing of Popular Toilet Models (MaP Testing)

- East Bay Municipal Utility District
- Los Angeles Dept of Water & Power
- Tampa Bay Water
- Seattle Public Utilities
- Calif Urban Water Conservation Council
- Toronto, Ontario
- Winnipeg, Manitoba
- Greater Vancouver Regional District
- Canada Mortgage & Housing Corp.
- B.C. Buildings Corp. Victoria B.C.
- Capital Regional District, Victoria B.C.
- Canadian Water & Wastewater Association (Lead)
- Region Durham, Ontario
- Region Halton, Ontario
- Region Waterloo, Ontario
- Hamilton, Ontario
- Region Peel, Ontario
- Calgary, Alberta
- Edmonton, Alberta
- Montreal, Quebec
- Ottawa, Ontario
- Halifax, Nova Scotia

Maximum Performance (MaP) Testing

- Why MaP?MaP testing filled an obvious void as certification testing is sometimes a very poor measure of “real world” performance and consumers want to compare products!
- MaP Features -
 - Replicates “real world” with special test media
 - An independent measure of toilet performance
 - Scientifically based minimum performance threshold for waste removal (250g = 95th percentile for men)
 - User-friendly basis for toilet selection



Test Media: Soy Bean Paste

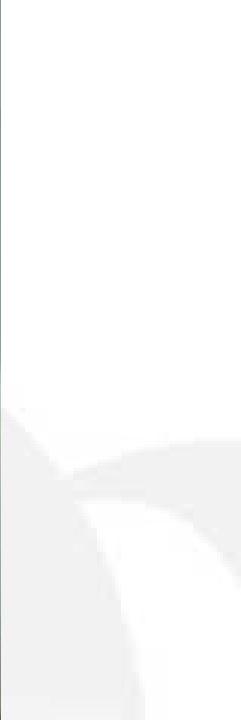












MaP Testing

- ✓ Uncased soy bean paste: primary test media, extruded into 4-inch x 7/8-inch “logs”, 50g each
- ✓ BUT, costs escalate
 - ✓ One-time use
 - ✓ Worldwide distribution
- ✓ Seek out a “re-usable” alternative = encased soy bean paste



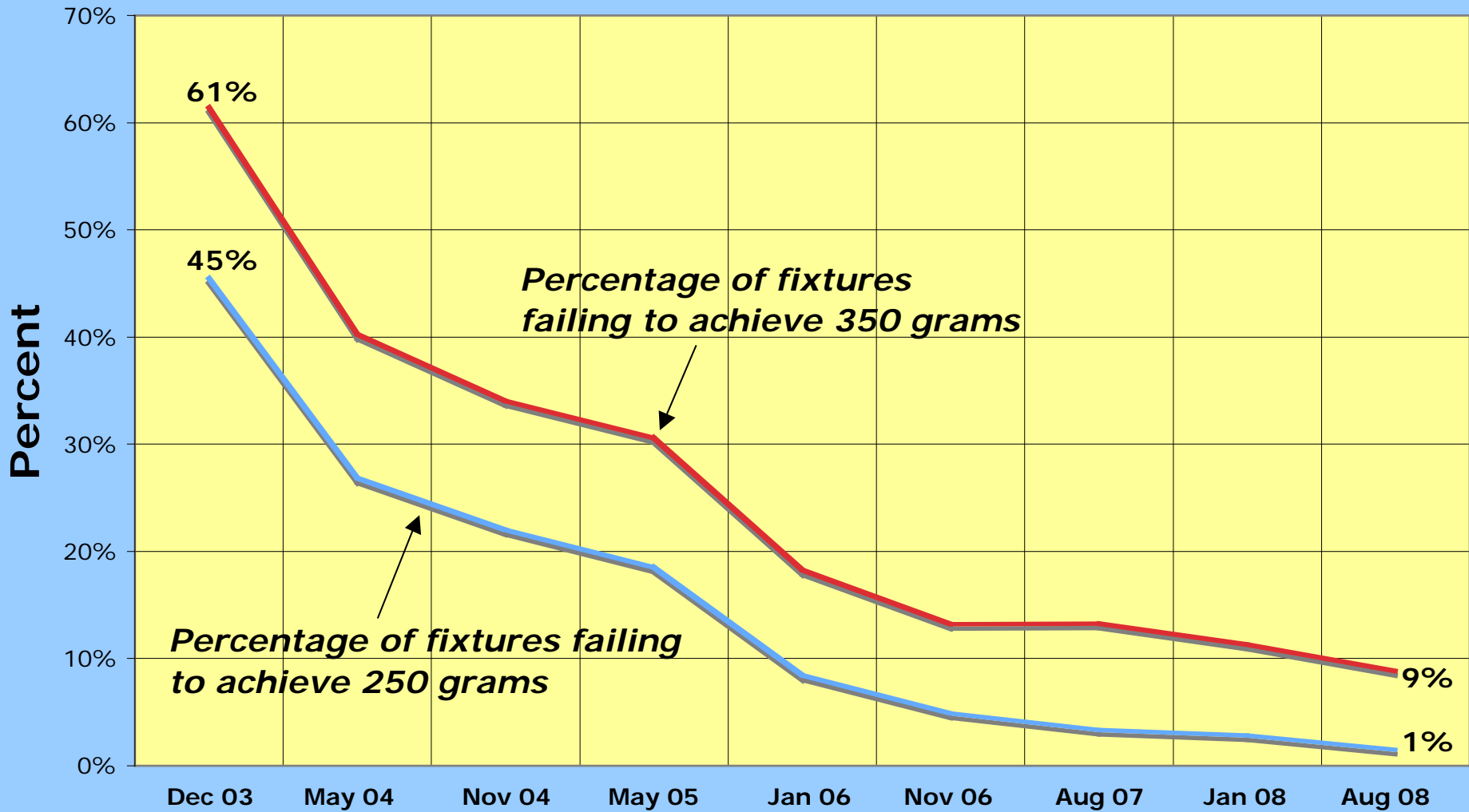
MaP Testing

- ✓ 18th Edition report now posted (August 2010)
 - ✓ 1300+ different toilet fixture models tested!
 - ✓ Tank-type AND flushometer valve fixtures
- ✓ Used or adopted by various large production builders, designers, specifiers, retailers, water utilities, plumbers, consumers, & others for product selection
- ✓ All **WaterSense**[®]-certified HETs **MUST** meet 350g threshold
- ✓ All **WaterSense**[®]-certified HETs must be **INDEPENDENTLY** tested
- ✓ Manufacturers worldwide now testing to MaP
- ✓ Manufacturers submit products for **independent testing**
- ✓ Future MaP initiatives -
 - ▣ Flushometer valve toilet fixtures

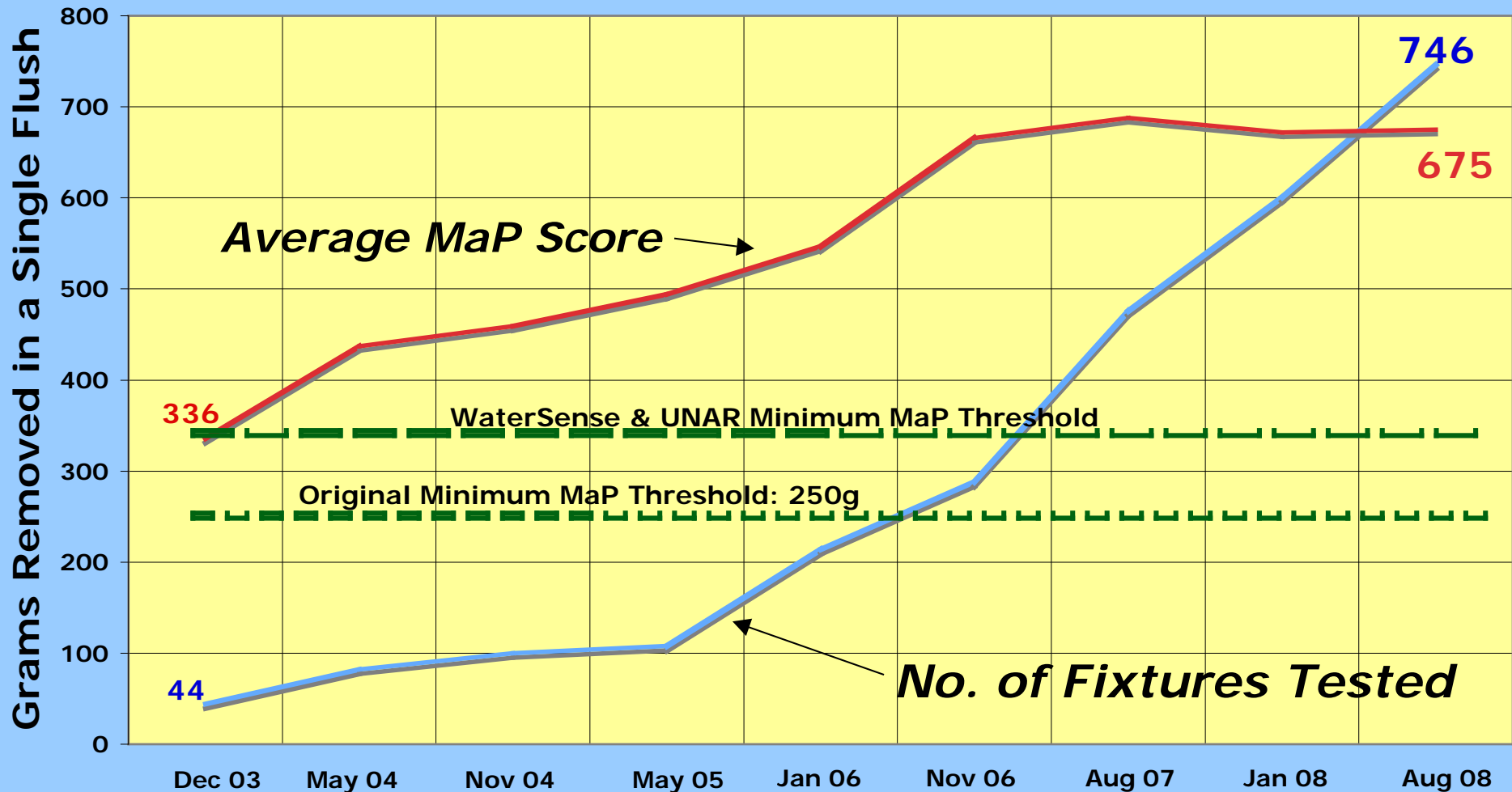
Improving Flush Performance

- Early ULFTs (1.6gal) - minimal testing, poor performance, significant dissatisfaction by consumers
- Today - MaP testing leads to improved performance and improved water savings
- New HETs (0.8 to 1.28gal) offer outstanding performance
- **WaterSense®**-certified HETs outperform older water guzzling toilets
- TODAY: Over 900 different HET models available (>700 are WaterSense certified!)

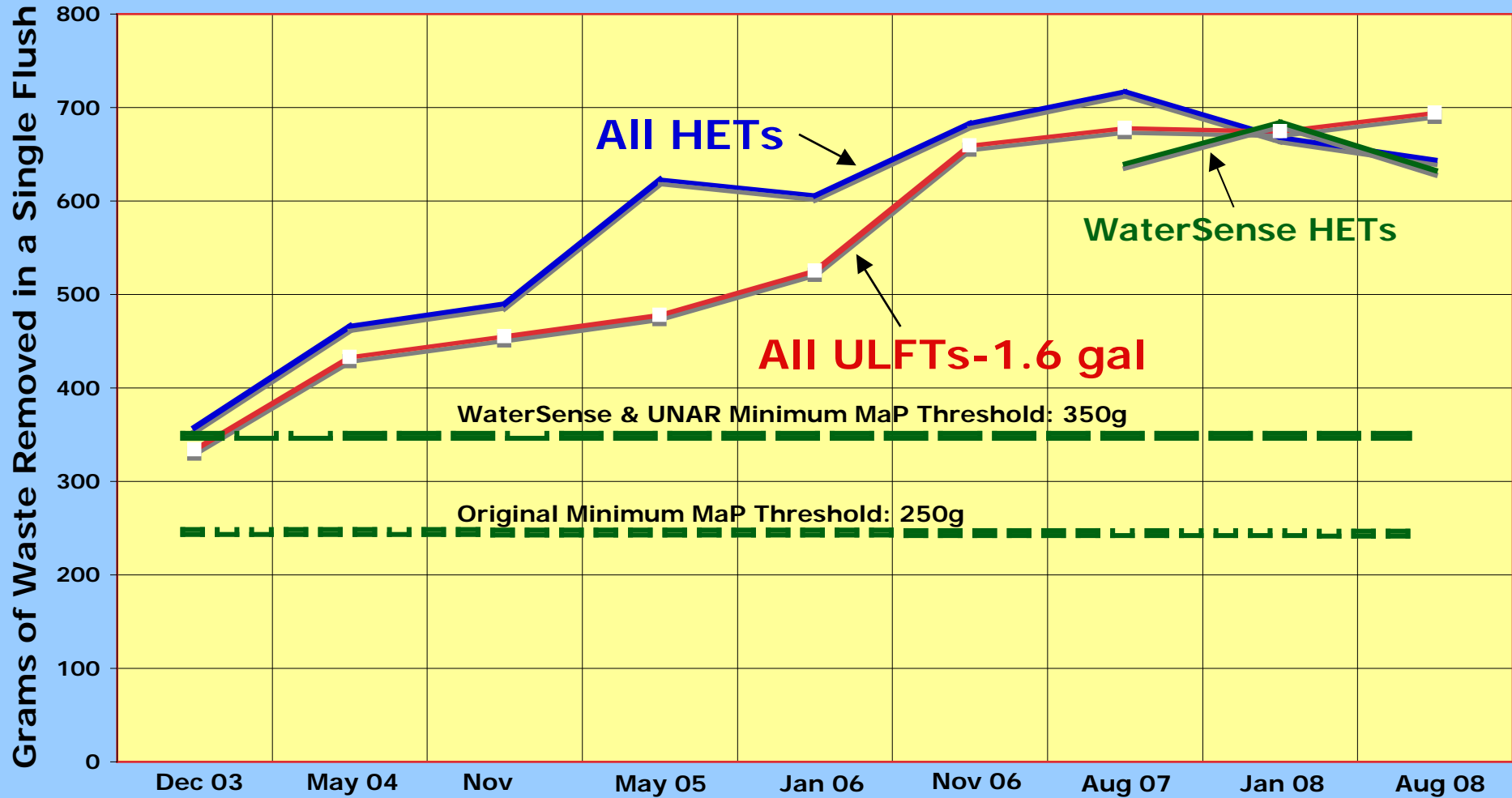
Percentage of MaP-tested fixtures failing to meet minimum performance



Toilet Fixtures Tested - Average MaP Score



Average MaP Scores - 2003 to 2008



Independent Lab Testing

- More and more labs want to conduct MaP and/or WaterSense testing (USA, China, etc.), even though -
 - MaP program is voluntary
 - WaterSense is voluntary
- Consumers and water agencies rely heavily on test results
- Need to ensure “MaP-approved” still means something
- Expanding MaP testing to other products
- **New MaP Logo**
- **New MaP website**



MaP

Maximum Performance





MaP | Maximum Performance



New MaP Website: www.map-testing.com

Industry Links | News and Information | Advertisers | Contact

MaP
Maximum Performance

RESOURCES

About Maximum Performance (MaP) | Info for Consumers | Info for Plumbing Professionals | Info for Design Engineers | Info for Municipalities | Info for Manufacturers | View Reports

MaP Search

Water efficiency is one measure of conservation. 1,600 toilets tested. Which one is right for you?

SEARCH NOW

If present water consumption levels continue, 4.4 billion people will live in areas of water stress within 15 years.

[learn more]

- UN World Water Development Report

Maximum Performance [MaP]

MaP was developed in 2003 to help consumers, businesses and plumbing professionals find the best performing toilet for their application. Today, MaP has become the most accepted measure of toilet performance. MaP delivers an independent rating for toilets based on their flush performance. This allows for informed choice in residential and commercial applications. MaP is free to use and has been endorsed by consumer groups, manufacturers, retailers the US EPA and WaterSense Initiative. [\[Learn more\]](#)

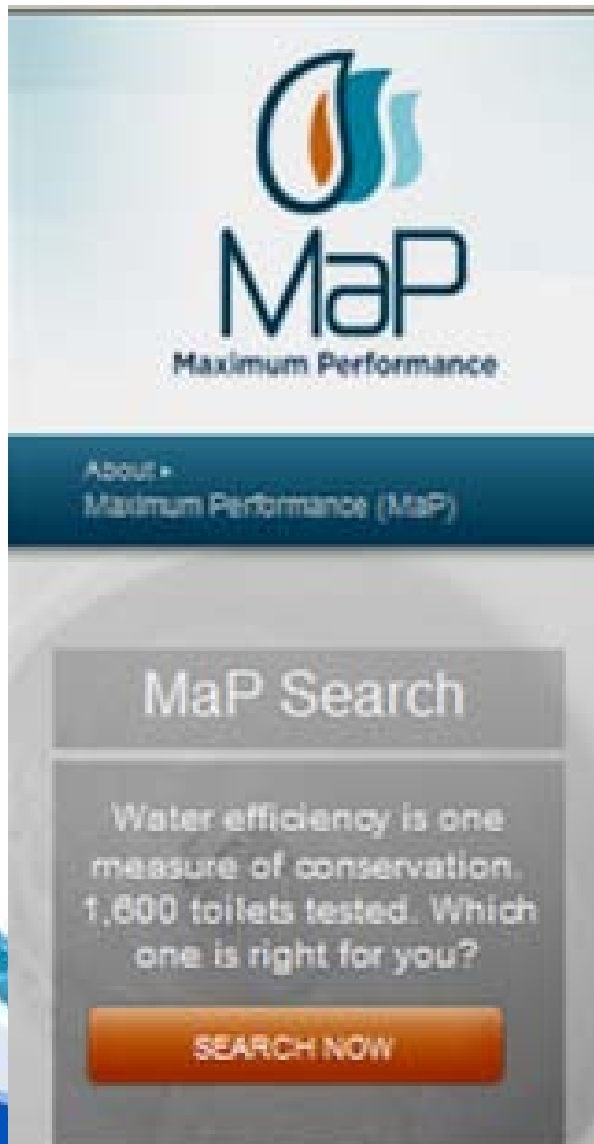
In addition to toilets, MaP offers performance characteristics and reporting on:

- Urinals
- Faucets
- Showerheads
- Humidifiers
- Washing Machines (cloths)
- Dishwashers

AD 1

240x240

Search using selected criteria



- Currently, the test results are posted as an Excel file containing a few individual worksheets.
- Not everyone could “work” the search functions of the sheet.
- Didn’t perform like a “typical” website
- Now – much easier



RESOURCES

About +
Maximum Performance (MaP)

Info for +
Consumers

Info for +
Plumbing Profession

MaP Search

Toilet Fixtures

Enter one or more of the following from each section to filter search.

Fixtures

No search performed.

All Manufacturers

or

All model names

or

Model Number

MaP Report No.

Free Text

Free Text

Water Efficiency Certifications/Ratings

All MaP Flush Score

- WaterSense Certified (EPA Standard)
- Meets SPS requirements
- Meets UNAR/ecoEnergy requirements
- Single-Flush High Efficiency Toilet (HET)
- Dual-Flush High Efficiency Toilet (HET)

Fixture Features

All Floor Mounted Wall Mounted

All 1 Piece Unit 2 Piece Unit

All Bowl Shape

- Meets ADA bowl height
- All Gravity Fed Pressure Assist
- Rear Outlet

Search

Clear/New Search

Water-Sense, single-flush HET, 2-pc, ADA, gravity... 101 records

Fixtures

All Manufacturers or

All model names or

Model Number

MaP Report No.

Free Text

Found 101 records.

Page 3 4 5 6 7 of 26

Manufacturer	Manufacturer	Manufacturer	Manufacturer
Crane	Danze	Danze	ECO-FITT (by Niagara)
Model Name	Model Name	Model Name	Model Name
Eco Opus III EL ADA (lined tank)	Cirtangular EL ADA	Orrington EL ADA (12" rough-in)	Elongated HET ADA (All-In-One package)
Model Number	Model Number	Model Number	Model Number
2386358: 3016.328 OR 3016.601 bowl, 4021.358 tank (lined)	DC023330 bowl, DC022321 tank	DC013330 bowl, DC012323 tank	N2225E-RT: N2225E-RT bowl, N2225T-RT tank
MaP Report No.	MaP Report No.	MaP Report No.	MaP Report No.
14-054D	14-093	15-146	12-129,15-007b

Water Efficiency Certifications/Ratings

All MaP Flush Score

WaterSense Certified (EPA Standard)

Meets SPS requirements

Meets UNAR/ecoEnergy requirements

>=1000	>= 800	>= 800	>=1000
WaterSense certified	WaterSense certified	WaterSense certified	WaterSense certified
Meets SPS	Meets SPS	Meets SPS	Meets SPS
UNAR and ecoEnergy	UNAR and ecoEnergy	UNAR and ecoEnergy	UNAR and ecoEnergy

Am. Std., Water-Sense, single-flush HET, 2-pc, ADA, gravity... 7 records

Fixtures

American Standard

or

All model names for American Sta

or

Model Number

MaP Report No.

Free Text

Found 7 records.

Page 1 2 of 2

Manufacturer
American Standard

Model Name
Cadet 3 FloWise EL
ADA

Model Number
2835.128: 3016.128
OR 3016.001 bowl,
4021.128 tank; NOTE:
this combination is
MaP Report No.
12-114,12-107

Manufacturer
American Standard

Model Name
Cadet 3 FloWise EL
ADA

Model Number
2836.128: 3016.128
OR 3016.001 bowl,
4019.128 tank
MaP Report No.
15-134

Manufacturer
American Standard

Model Name
Cadet 3 Flowise EL
ADA (lined tank)

Model Number
2835.513: 3016.128
OR 3016.001 bowl,
4021.513 tank(lined)
MaP Report No.
14-054

Manufacturer
American Standard

Model Name
Evolution 2 FloWise EL
ADA

Model Number
2754.128: 3068.128
OR 3068.001bowl
(UPC bar code
3305682540)
MaP Report No.
16-074

Water Efficiency Certifications/Ratings

All MaP Flush Score

WaterSense Certified (EPA Standard)

Meets SPS requirements

Meets UNAR/ecoEnergy requirements

>=1000

WaterSense certified

Meets SPS

UNAR and ecoEnergy

>=1000

WaterSense certified

Meets SPS

UNAR and ecoEnergy

>=1000

WaterSense certified

Meets SPS

UNAR and ecoEnergy

>=1000

WaterSense certified

Meets SPS

UNAR and ecoEnergy

Also on website...

- Information for:
 - Consumers
 - Plumbing professionals
 - Design Engineers
 - Municipalities
 - Manufacturers
- Also various reports that deal with much more than toilets
- We may even post YOUR report!

Let's get it right!

- We welcome input from others (including water agencies, labs, consumers, etc.) regarding;
 - How to improve the testing,
 - How to include other relevant tests,
 - Which tests should be changed or deleted,
 - What others products, appliances, etc. should be tested, etc.
 - The WEBSITE
- All advice is welcome!





Thank you...

<http://www.map-testing.com>

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