Proposal for C2Y
WG14 N3304

Title:	leftover dependency on **`WANT`** macro
Author, affiliation:	C FP group
Date:	2024-06-26
Proposal category:	Editorial
Reference:	N3220

This proposal addresses an issue pointed out in

> From: Joseph Myers <josmyers@redhat.com>
> Subject: [SC22WG14.24752] __STDC_WANT_IEC_60559_EXT__ and DFP interfaces
> Date: February 15, 2024 at 12:43:12 PM PST
> To: sc22wg14@open-std.org
>
> ...
>
> Some decimal floating-point interfaces in <math.h> are conditional on the user defining __STDC_WANT_IEC_60559_EXT__, but others aren't. Specifically, _Decimal32_t, _Decimal64_t, HUGE_VAL_D32, HUGE_VAL_D64, HUGE_VAL_D128 are conditional on the user defining that macro, while DEC_INFINITY, DEC_NAN, FP_FAST_* for decimal types, and all functions other than those in Annex F are not.
>
> I don't think this division of dependency on that macro makes sense. My understanding of the intent of what was agreed after the October 2020 discussion of N2570 was that only the interfaces defined in Annex F should be conditional on __STDC_WANT_IEC_60559_EXT__ - that is, the totalorder and payload functions and CR_DECIMAL_DIG, but the decimal interfaces enumerated above should not be so conditional. (FE_SNANS_ALWAYS_SIGNAL is in Annex F but *not* conditional on __STDC_WANT_IEC_60559_EXT__. Since FE_* is a reserved namespace for <fenv.h>, I think that's fine.)

Suggested changes:

In 7.12 #4 change

> They are present only if the implementation defines **`__STDC_IEC_60559_DFP__`** ~~and additionally the user code defines **`__STDC_WANT_IEC_60559_EXT__`**~~ before any inclusion of **`<math.h>`**.

In 7.12 #6 change

> The macros in this paragraph are only present if the implementation defines **`__STDC_IEC_60559_DFP__`** ~~and additionally the user code defines **`__STDC_WANT_IEC_60559_EXT__`**~~ before any inclusion of **`<math.h>`**.

In B.11, in the list under

> Only if the implementation defines **__STDC_IEC_60559_DFP__**:

include

> **_Decimal32_t**
> **_Decimal64_t**
> **HUGE_VAL_D32**
> **HUGE_VAL_D64**
> **HUGE_VAL_D128**

In B.11, in the list under

> Only if the implementation defines **__STDC_IEC_60559_DFP__** and additionally the user code defines **__STDC_WANT_IEC_60559_EXT__** before any inclusion of :

delete

> ~~**_Decimal32_t**~~
> ~~**_Decimal64_t**~~
> ~~**HUGE_VAL_D32**~~
> ~~**HUGE_VAL_D64**~~
> ~~**HUGE_VAL_D128**~~

Make changes to the Index entries for

> **__STDC_WANT_IEC_60559_EXT__**

and

> **__STDC_WANT_IEC_60559_EXT__** macro

to reflect the changes above.